

1A HOME INTERPHONE

Western Electric Company
INCORPORATED

1A HOME INTERPHONE

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1A HOME INTERPHONE

1.00 GENERAL

1.01 The 1A home interphone provides central office line pickup and holding, interphone between stations, and door-answering features.

1.02 Central office line pickup is provided at all stations.

1.03 Central office line holding is provided at all 1A home interphone stations.

1.04 Interphone calls originate from telephone handset; operation is hands-free at called stations.

1.05 The 1A home interphone is limited to five telephone-set locations.

1.06 Door units may be answered from any 1A home interphone telephone-set location.

1.07 The 1A home interphone is limited to two door-answering units.

2.00 IDENTIFICATION

2.01 The 1A home interphone consists of the following components:

Telephone sets: 511DRW, 558DRW, or 711BW.

Transmitters: 659A, 660A, or 664A.

Control unit, 51AW.
Receiver (door-answering unit), 730AW.

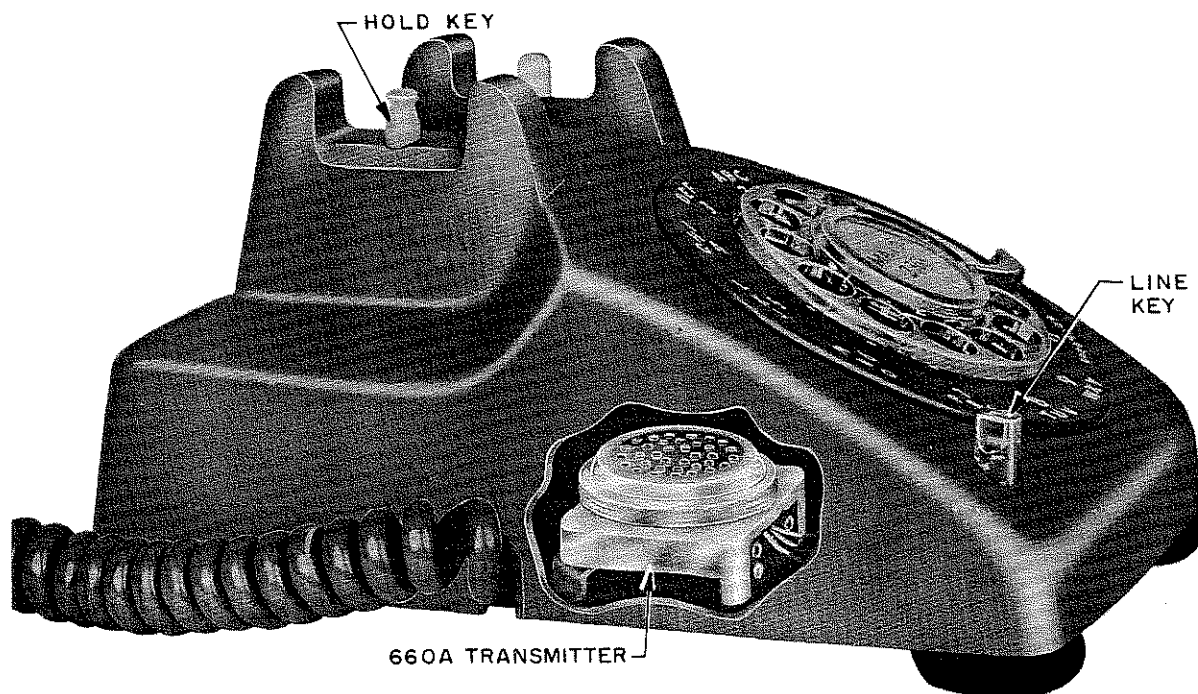


Fig. 1 — 511DRW Telephone Set Modified to Include 660A Transmitter Unit

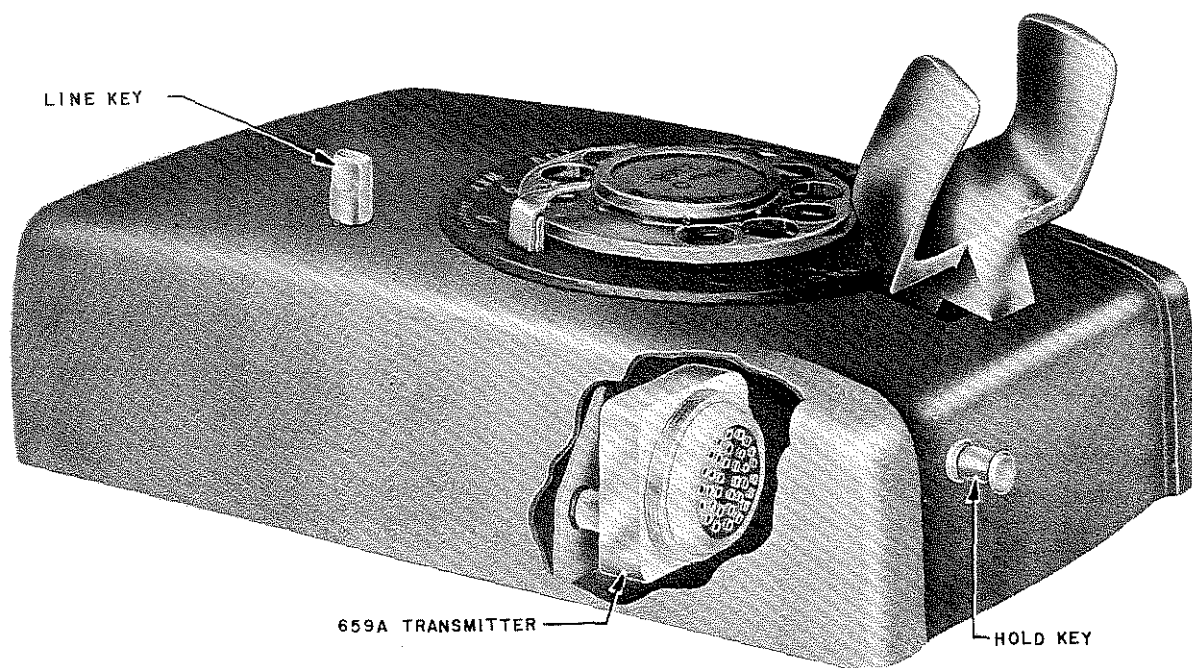


Fig. 2 — 558DRW Telephone Set Modified to Include 659A Transmitter Unit

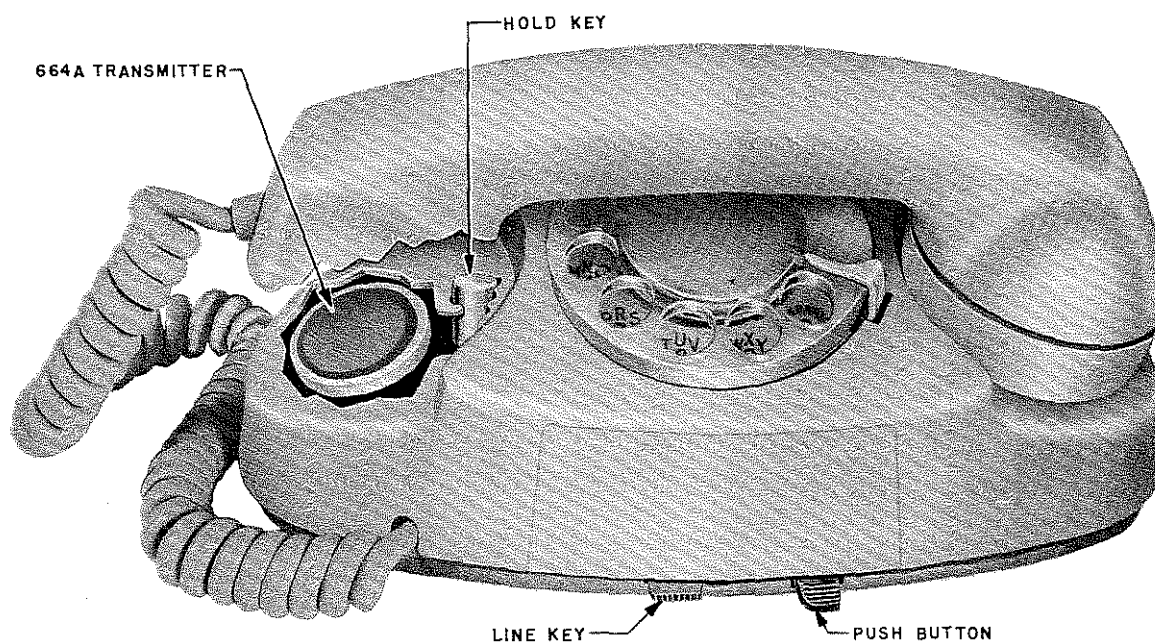


Fig. 3 — 711BW Telephone Set Modified to Include 664A Transmitter Unit

Loudspeaker, 759AW.

Transformer, 2012A or KS-16184.

2.02 The 511DRW, 558DRW, and 711BW telephone sets are modified by adding the 660A, 659A, and 664A transmitter units, respectively. These function as microphones to provide the hands-free, talk-back interphone feature.

2.03 The 51AW Control Unit consists of:
Apparatus box similar to but larger than a 105 apparatus box.

Terminal board to connect wiring from one to five telephone sets.

Printed-wiring board which includes the transistorized microphone and loudspeaker amplifiers, and power supply.

A dual wire spring relay which switches between the interphone and door answering, and supplies power to the amplifiers.

2.04 The 759AW Loudspeaker consists of a dynamic loudspeaker and a 12-terminal connecting block. They are mounted on a metal base and covered with a plastic housing. The loudspeaker provides hands-free interphone reception.

2.05 The 730AW Receiver consists of a dynamic loudspeaker, a modified U1 receiver unit, and a 2-terminal connecting block. They are mounted on a metal base and covered with a weatherproof plastic housing. The 730AW receiver provides hands-free communication at door locations.

2.06 The 2012A or KS-16184 Transformer:
Encased in ceramic.

Operates on 105 to 130 volts 60 cycles.

Secondary voltage: 6 to 8 volts 60 cycles.

Plugs directly into an electric outlet by means of two protruding prongs.

Supplies power for 51AW control unit or dial light.

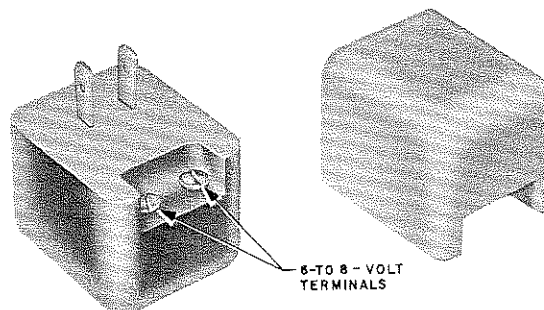
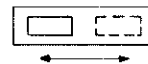


Fig. 4 — 2012A or KS-16184 Transformer

3.00 OPERATION OF 1A HOME INTERPHONE

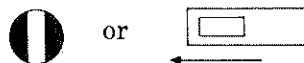
3.01 Telephone-set-line-key position for:

511DRW and 558DRW
telephone set:



711BW Telephone set:

3.02 Central Office Connection:

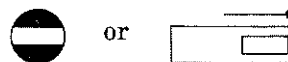


With line key in position shown, telephone set is connected for incoming and outgoing service. Ringer will operate on incoming calls with line keys in either position.

3.03 Central Office Line Holding:

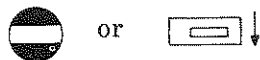
Central office line may be held, to answer interphone or door units, by operating the hold key. To re-establish central office connection, operate line key to central office position and depress hold key.

3.04 Interphone:



With line key in position shown, associated handset can communicate with all interphone stations simultaneously. Called interphone stations may answer hands-free or use the handset with line key in interphone position.

3.05 Door Answering:



With line key in position shown, off-

hook station is transferred from interphone to door answering by momentarily depressing push button. To transfer to interphone, momentarily operate switchhook or operate line key to central office line position and back to interphone.

1A HOME INTERPHONE (INSTALLATION)

4.00 GENERAL

4.01 The 1A home interphone is limited to five stations and two door-answering units. Sample arrangements are shown in Fig. 5.

4.02 Dial-light power is furnished from a separate 2012A or KS-16184 transformer.

4.03 When installing a dial light transformer, make certain that telephone protector and/or signaling ground conduc-

tor is connected to the best ground available.

Damage to the transformer may result if a sufficient difference of potential is allowed to develop between the power and telephone grounds. Because difference of ground potential appears between the windings of the transformer, voltage from a lightning surge could break down the insulation between the windings.

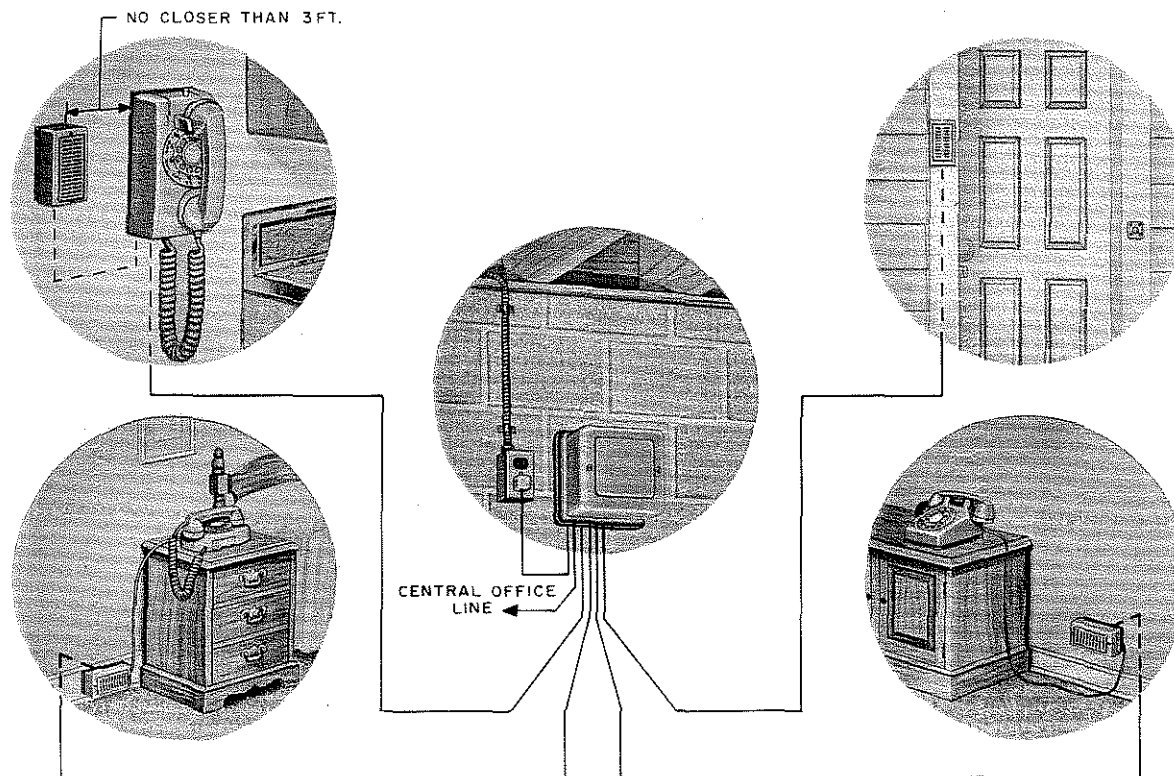


Fig. 5 — 1A Home Interphone

5.00 COMPONENTS OF 1A HOME INTERPHONE

The following units are ordered separately:

Control unit, 51AW.

Telephone sets, 511DRW, 558DRW, or 711BW.

Transmitter units, 659A, 660A, or 664A.

Receiver unit (door answering), 730AW.

Loudspeaker unit, 759AW.

Adapter assembly, 146A.

Transformer, 2012A or KS-16184.

6.00 LOCATION AND MOUNTING

6.01 The 51AW control unit is mounted upright on a vertical surface.

6.02 659A and 660A transmitter units are mounted in telephone sets as shown in Fig. 6 and 7.

6.03 The 664A transmitter differs from the 659A and 660A transmitter in that it is not a one-piece unit. The transmitter unit and bracket are installed on the cord terminal strip while the component board assembly is installed under the dial as shown in Fig. 8 and 9. Be certain that the transmitter bracket is connected to terminal 9 on the cord terminal strip and lies between the two molded pegs of the terminal strip as shown. The component board

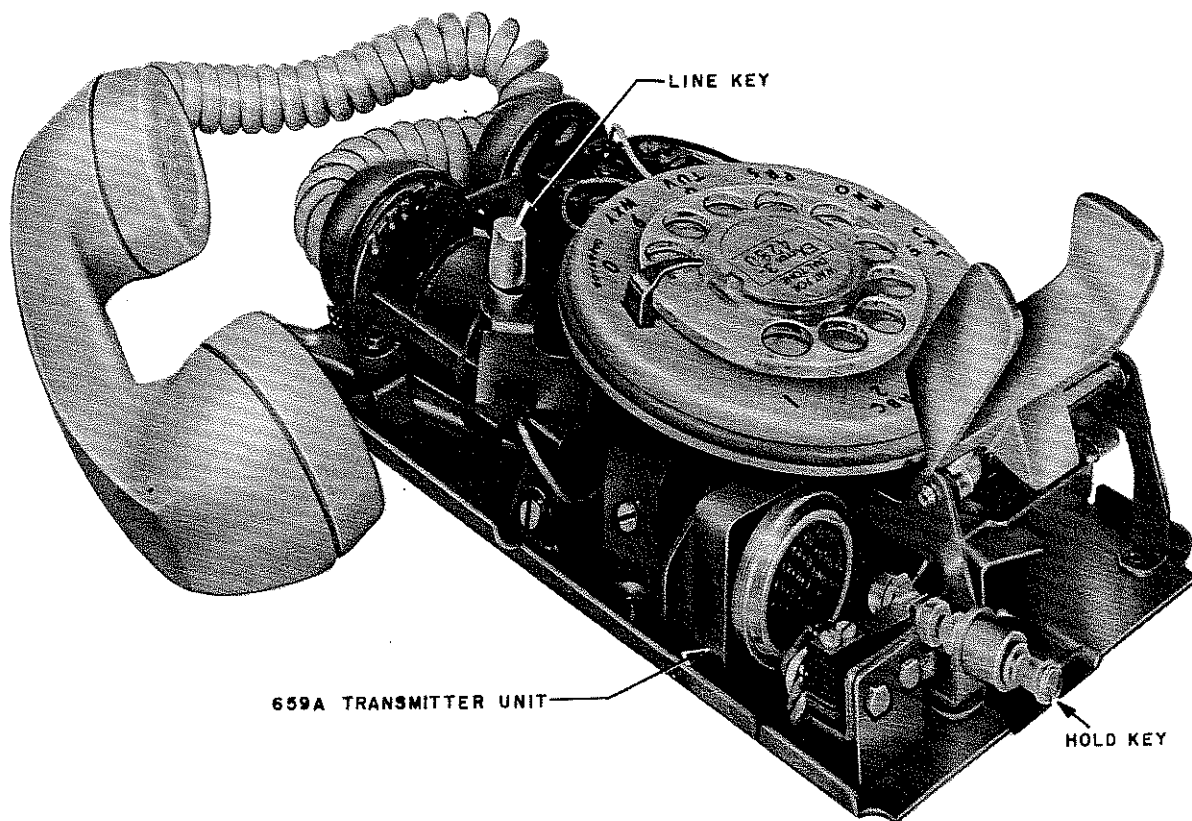


Fig. 6 — 659A Transmitter Unit Mounted in 558DRW Telephone Set

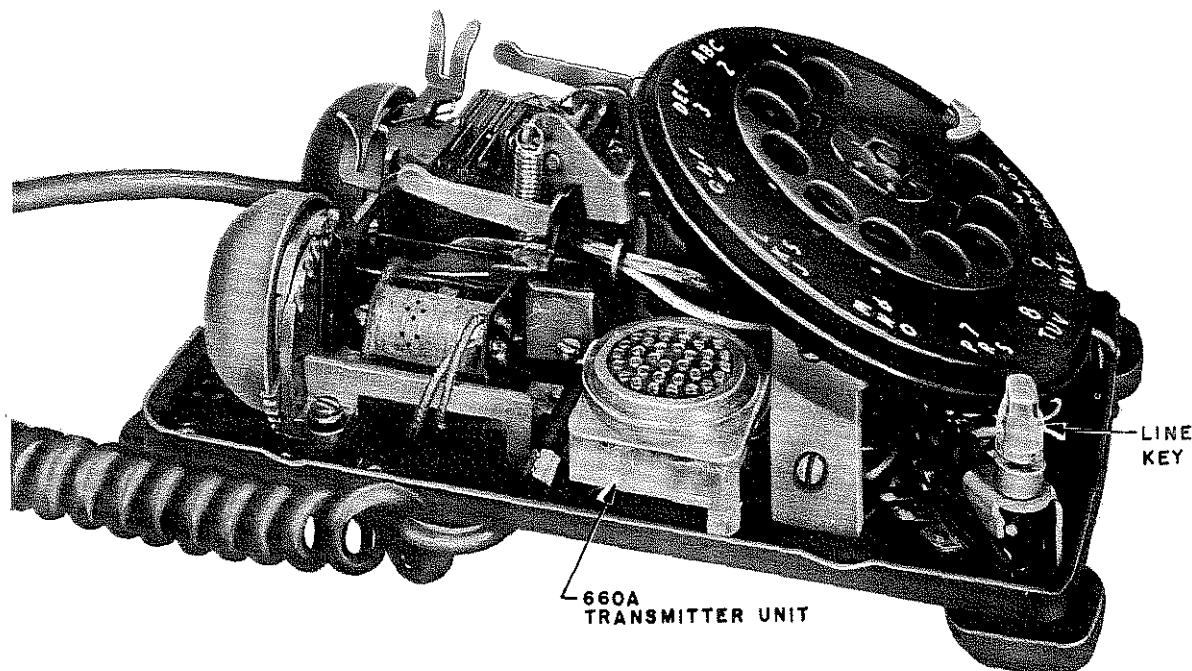


Fig. 7 — 660A Transmitter Unit Mounted in 511DRW Telephone Set

assembly is notched on one end to fit in the slots of the dial mounting bracket and is held in place by a screw in the other end. The board is placed so that the components are on the under side when installed. Fig. 8 shows a transmitter and board assembly partially installed. Fig. 9 shows the completed installation.

6.04 Care should be exercised to avoid puncturing or otherwise damaging the delicate membrane covering of the N-type transmitter unit. Damage may result in poor transmission quality.

6.05 The 759AW loudspeaker is drilled to mount on a 63A bracket or, by using a 146A adapter assembly, it may be mounted on a standard electrical outlet box. A backboard is not required for mounting. Four mounting holes are provided in the base for securing to the mounting surface. The cord and cable may enter through two holes provided in the base or through the end by removing the knockouts. The 12-terminal

connecting block serves as a junction for the telephone set cord and a 6-pair cable from the wall telephone set or 51AW control unit. A cord hook is provided on the connecting block to anchor the set cord (see Fig. 10).

6.06 The 730AW receiver (door-answering), see Fig. 11, is mounted on the door casing or outside wall at a convenient height for microphone pickup and out of reach of children. If this location is not desirable, the speaker may be mounted overhead just above the door. Four mounting holes are provided in the base similar to those in the 759AW loudspeaker. Wiring may enter through two holes provided in the base or through the end of the base by removing the knockouts. A backboard is not required for mounting. The 730AW receiver is weatherproof. Additional weather protection is not required. Cable pair is run directly to U1 receiver unit and connected to screw terminals on the bottom of the unit.

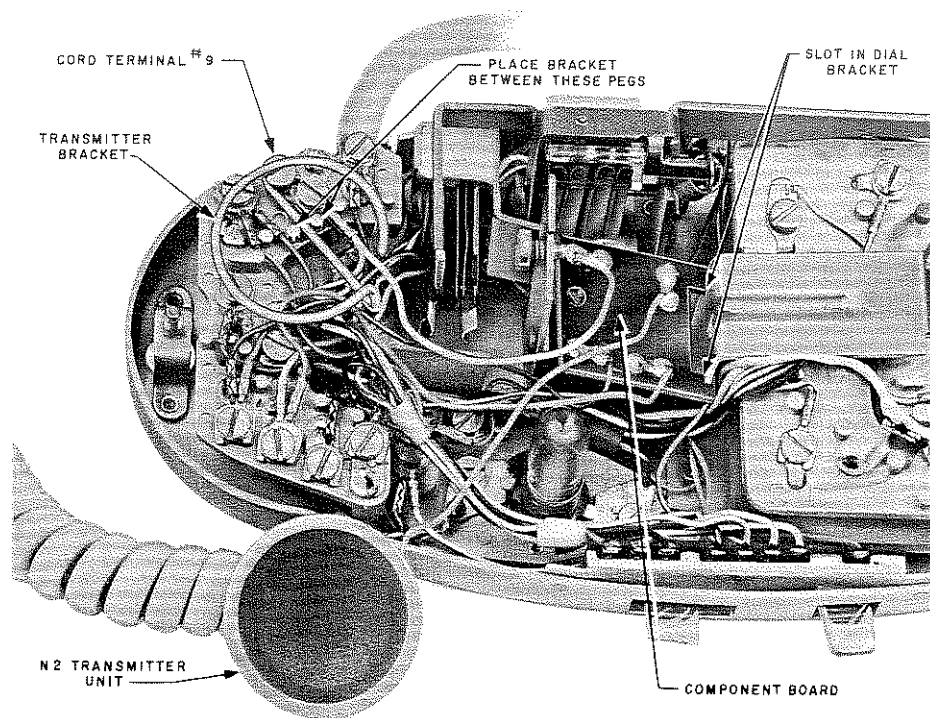


Fig. 8 — Location of 664A Transmitter Unit Components in 711BW Telephone Set

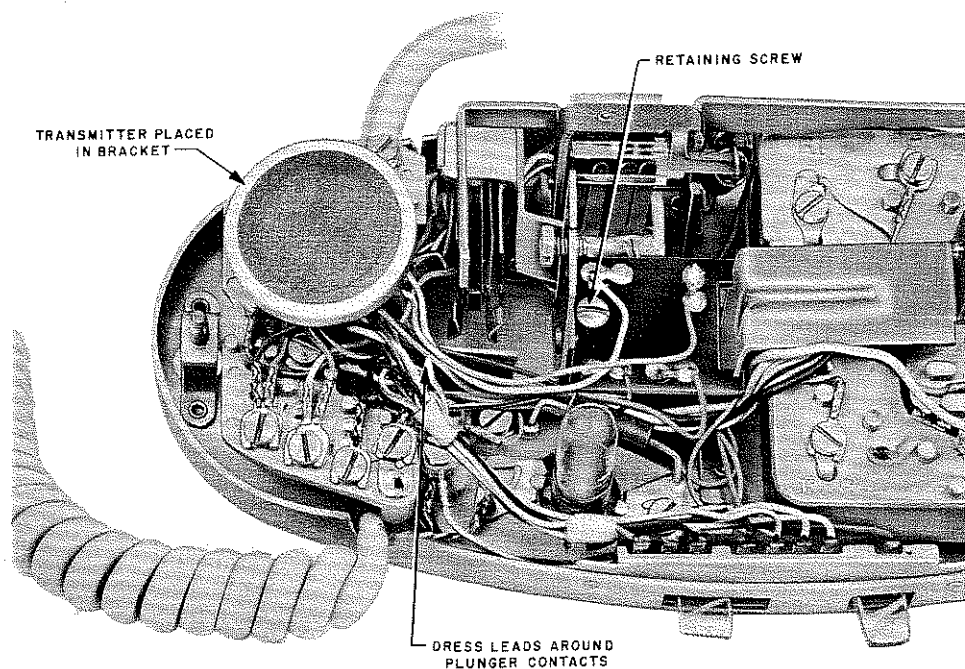


Fig. 9 — Final Assembly of 664A Transmitter Unit in 711BW Telephone Set

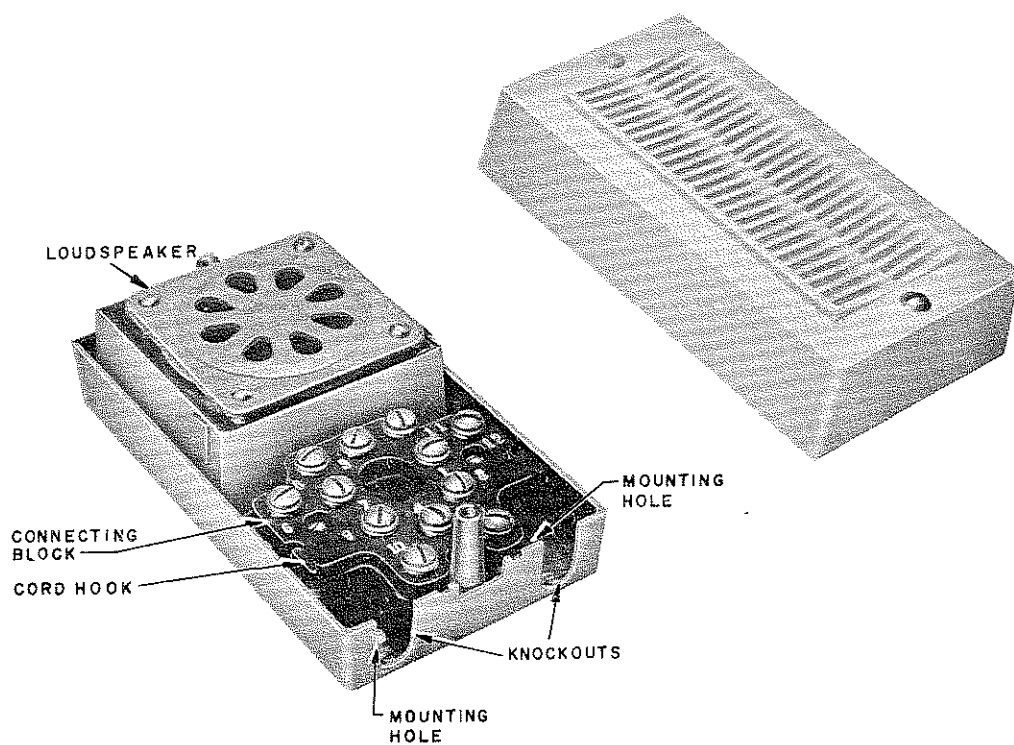


Fig. 10 — 759AW Loudspeaker

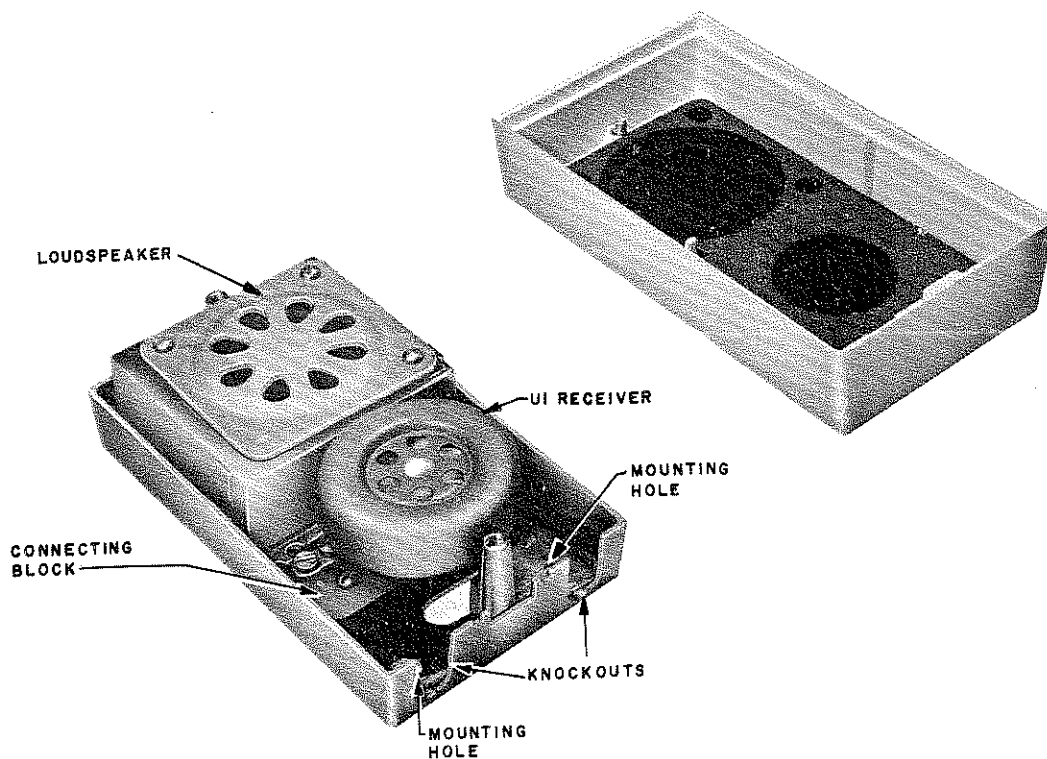


Fig. 11 — 730AW Receiver

6.07 The 146A adapter assembly is provided to mount the 730AW receiver or 759AW loudspeaker to a standard electrical-outlet box. It is drilled and tapped, and screws are provided for mounting.

6.08 The 2012A or KS-16184 transformer plugs directly into a standard 105- to 130-volt 60-cycle convenience outlet. The 6- to 8-volt 60-cycle power for the 51AW control unit appears on the two screw terminals. Transformer must operate from a power outlet not controlled by a switch.

7.00 SYSTEM ADJUSTMENT

7.01 System adjustment requires that microphone and loudspeaker amplifier gain controls be adjusted to satisfy customer requirements. If properly adjusted, there should be no "sing" or "squeal" when any handset is removed.

7.02 Turn microphone and loudspeaker amplifier gain controls to their maximum counterclockwise (minimum gain) position (see Fig. 12).

7.03 All station handsets must be in the on-hook position.

7.04 Connect 1011BW, or equivalent, test set to terminals 2R and 2T on 51AW control unit with switch in TALK position.

7.05 Microphone amplifier adjustment:

Turn microphone amplifier gain control clockwise 1/8 turn.

7.06 Loudspeaker amplifier adjustment:

Turn loudspeaker amplifier gain control clockwise until a squeal is heard in the test set.

Turn loudspeaker amplifier gain control counterclockwise until the singing or squealing stops.

7.07 When possible, have the customer check the operation to ensure satisfactory adjustment.

7.08 If, after adjustment, the gain is not at a satisfactory level, it may be in-

creased somewhat by the following method:

1. Proceed as in 7.02.
2. Lift the handset from *one* of the interphone stations to off-hook position. Be sure that the line switch is in the interphone position.
3. Connect 1011BW, or equivalent test set, to terminals 2R and 2T on 51AW control unit with test set switch in MONITOR position.
4. Proceed with adjustments as in 7.05 and 7.06.
5. Remove 1011BW test set and restore station handset to on-hook position.

7.09 Final check of interphone and door answering features:

1. Operate line key to INTERPHONE position at test station.
2. Remove handset.
3. Test microphone sensitivity and loudspeaker volume at all locations in the house.
4. Momentarily depress pushbutton.
5. Test door-answering unit for satisfactory loudspeaker volume and microphone sensitivity.

Note: Microphone and loudspeaker amplifiers are now adjusted for satisfactory operation at all locations. Any change in settings will affect the levels of both the telephone-set locations and the door-answering units.

8.00 MAINTENANCE

Caution: Tests on 51AW Control Unit, Using a Test Receiver or 1011BW, or equivalent Test Set, Must Be Confined to the Terminal Board. Proceed as in 11.00 When Working on Circuits Containing Diodes, Varistors, or Transistors.

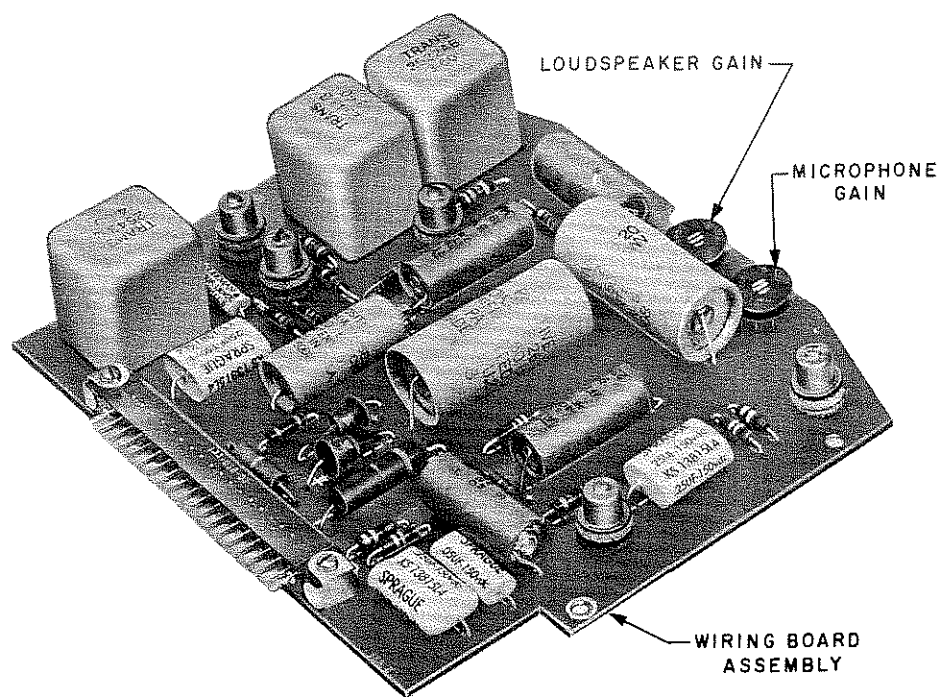


Fig. 12 — Amplifier Gain Controls

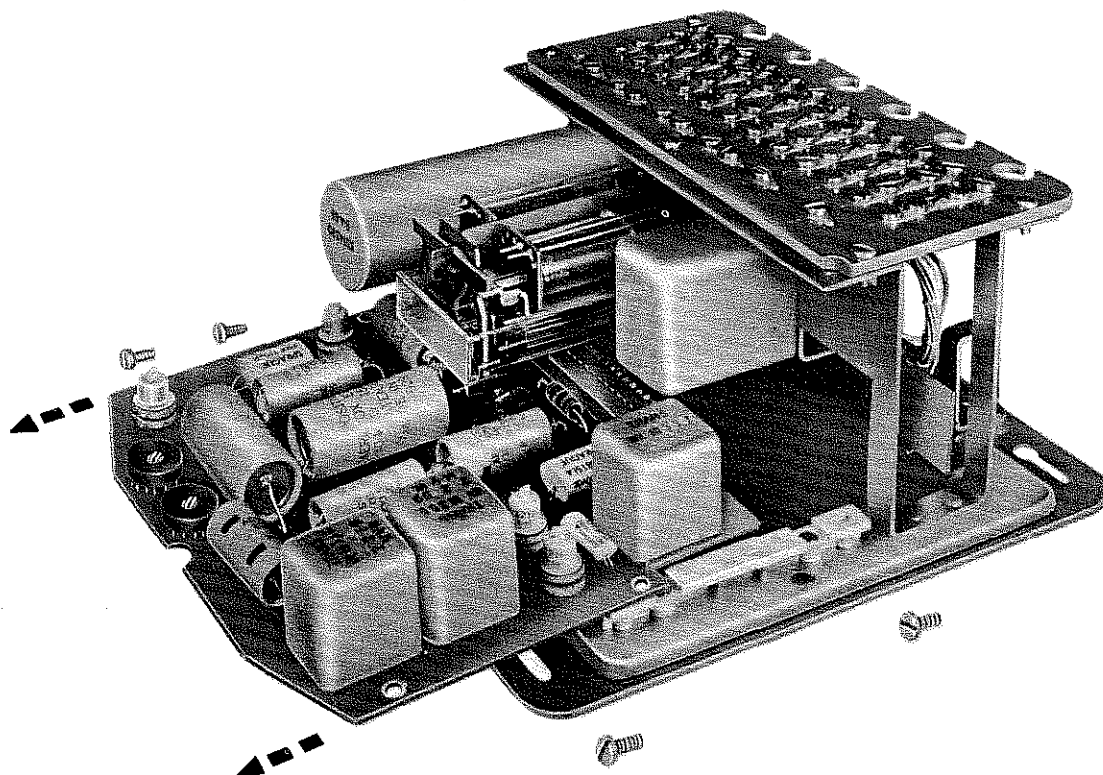


Fig. 13 — Wiring Board Assembly Removal

8.01 Maintenance of 51AW control unit should be limited to replacement of:
Wiring board assembly P-11E655.
51AW control unit.

8.02 Wiring board assembly is removed from the 51AW control unit by removing the four mounting screws and pulling the board away from the jack connector (see Fig 13).

TABLE A
TROUBLE LOCATION INFORMATION

Trouble Indications	Trouble Cause	Test for	Test Equipment	Trouble Correction
Interphone Dead	AC Power Failure	105 to 130V AC at Outlet	Trouble Lamp	Restore outlet power.
	2012A or KS-16184 Transformer	6 to 8V AC Term. P1-P2 on 51AW Unit	Voltmeter AC scale	Replace transformer or wire to transformer.
	Power Supply or Amplifiers	Interphone Talk Battery	Installer Test Set on Term. 2T and 2R (51AW)	Replace amplifier board.
	K1A Relay	Interphone Talk Battery	Installer Test Set on Term. 2T and 2R (51AW)	Clean relay contacts or Replace 51AW control unit.
All Microphones Dead, Loudspeakers OK	Contacts of K1B Relay Amplifier Board			Clean relay contacts. Replace amplifier board. Replace 51AW control unit.
All Loudspeakers Dead, Microphones OK	Contacts of K1B Relay Amplifier Board			Clean relay contacts. Replace amplifier board. Replace 51AW control unit.
Door Units Dead, Interphone Dead	Contacts of K1A Relay or K1B Relay			Clean relay contacts or Replace 51AW control unit.

9.00 TROUBLE LOCATION

9.01 Table A is furnished to assist in locating trouble in the 1A home interphone.

9.02 Trouble indications listed are, in general, limited to common troubles

which may occur in the 51AW control unit.

9.03 Individual station troubles may be corrected by using the connection information or schematic drawings (Fig. 14 and 15).

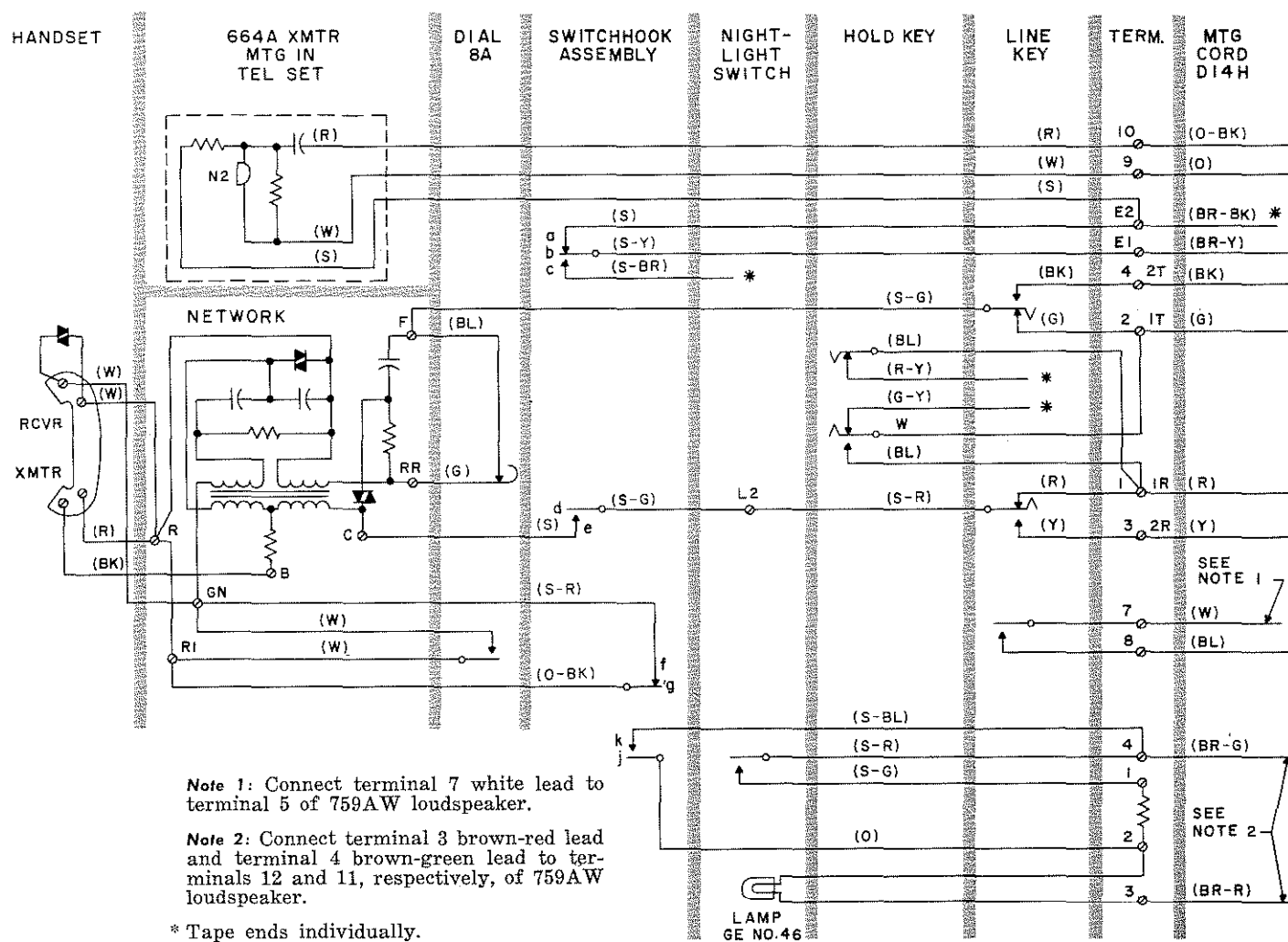


Fig. 14 — 711BW Telephone Set Connections to 1A Home Interphone

1A HOME INTERPHONE

(CONNECTIONS)

10.00 GENERAL

10.01 Information shown in Fig. 16 through 18 should be used for 1A home interphone equipment connections.

10.02 Connection of additional dial-light transformer to terminals P3 and P4 is made only when station requires dial-light power.

10.03 When only one 730AW receiver (door answering) is used, the 12-ohm re-

sistor should remain connected to terminal S3 on the 51AW control unit.

10.04 When adding a second 730AW receiver (door answering), remove the 12-ohm resistor lead from terminal S3 on the 51AW control unit.

10.05 To modify telephone sets to adapt to 1A home interphone, see Fig. 16, 17, and 18.

10.06 1A home interphone cannot be connected for tip-party identification.

TESTING OF CIRCUITS CONTAINING DIODES, VARISTORS, OR TRANSISTORS

11.00 GENERAL

11.01 When testing a circuit containing diodes, varistors, or transistors it is important that the following rules be observed.

Diodes and Varistors

11.02 Voltage and resistance measurements may be made on circuits containing diodes or varistors only with the KS-14510 volt-ohm-milliammeter or an equivalent meter having a minimum of 20,000 ohms per volt sensitivity.

11.03 Use of a test receiver in circuits containing diodes or varistors *must not be attempted*.

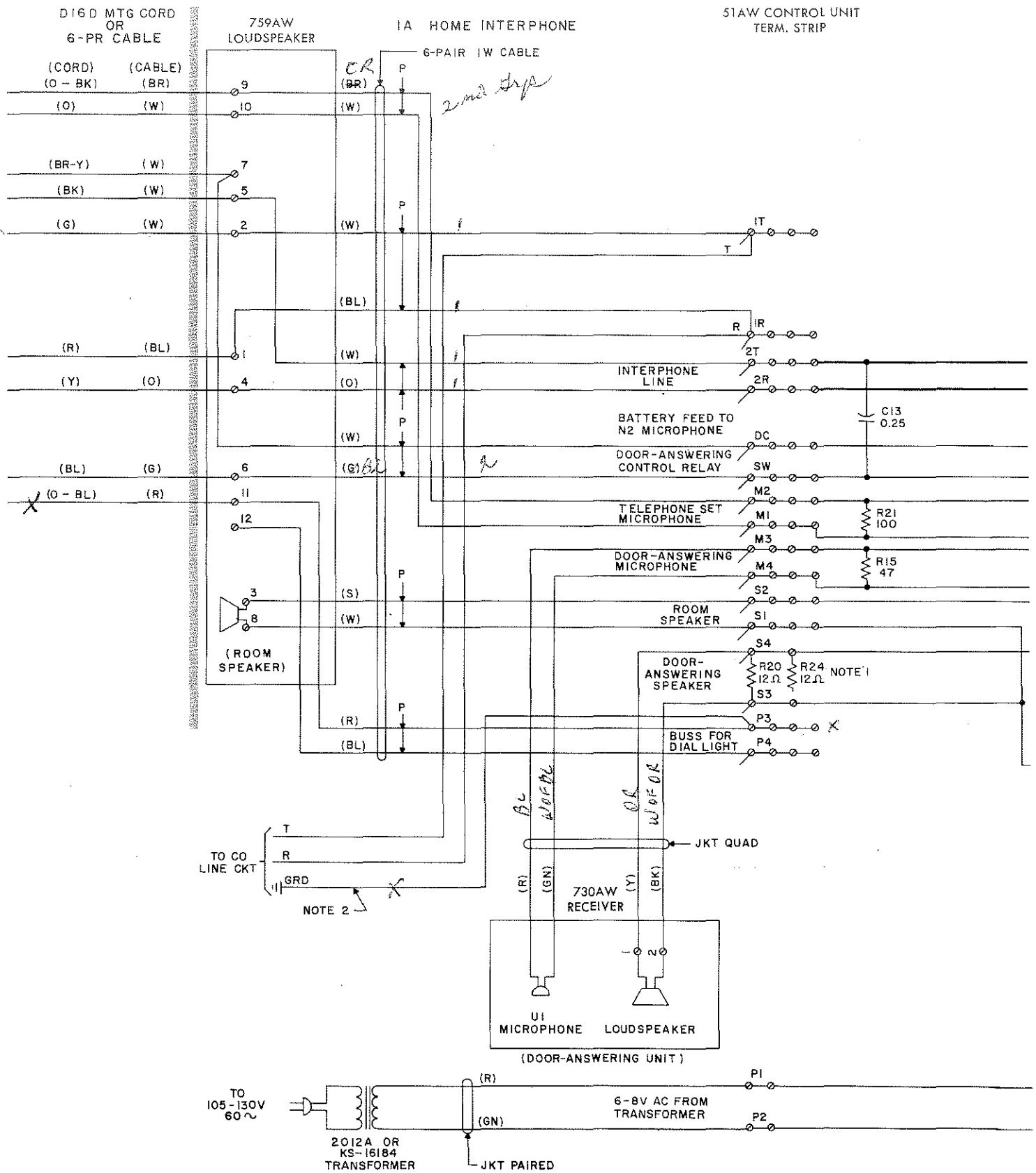
Transistors

11.04 Voltage measurements should only be made using a voltmeter of 20,000 ohms per volt or greater sensitivity such as an electron tube voltmeter or KS-14510 volt-ohm-milliammeter.

11.05 Resistance measurements should only be made using an electron tube voltmeter such as the RCA WV-97A Senior Volt ohmyst. This type of meter is satisfactory since it limits the voltage applied to the test probes to 3 volts on the higher ohms scales. *Do not use the Rx1 or Rx10 scales.*

11.06 Use of a test receiver in circuits containing transistors *must not be attempted*.

4 P.



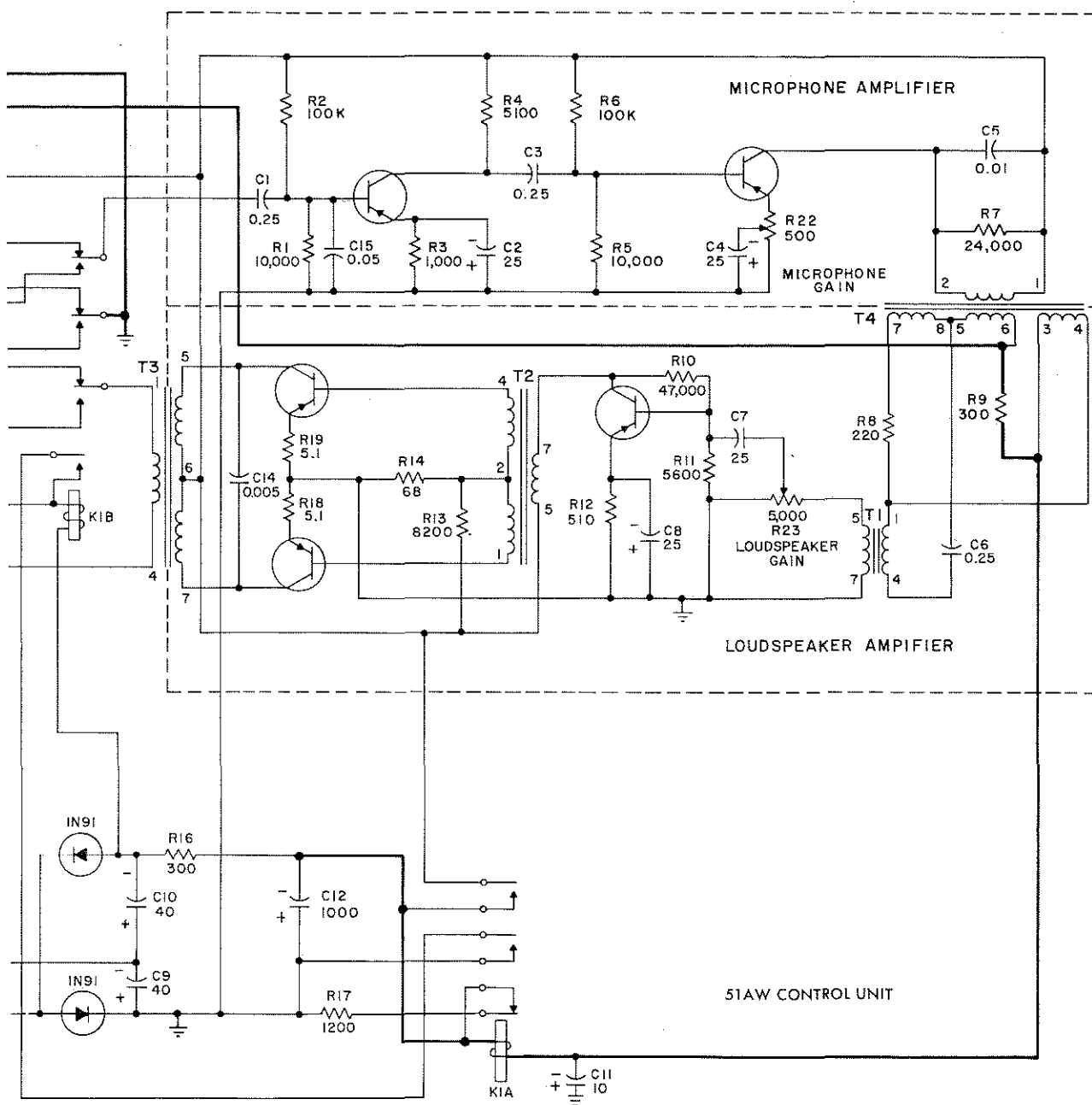


Fig. 15 — 511DRW or 558DRW Telephone Set Connections to 1A Home Interphone

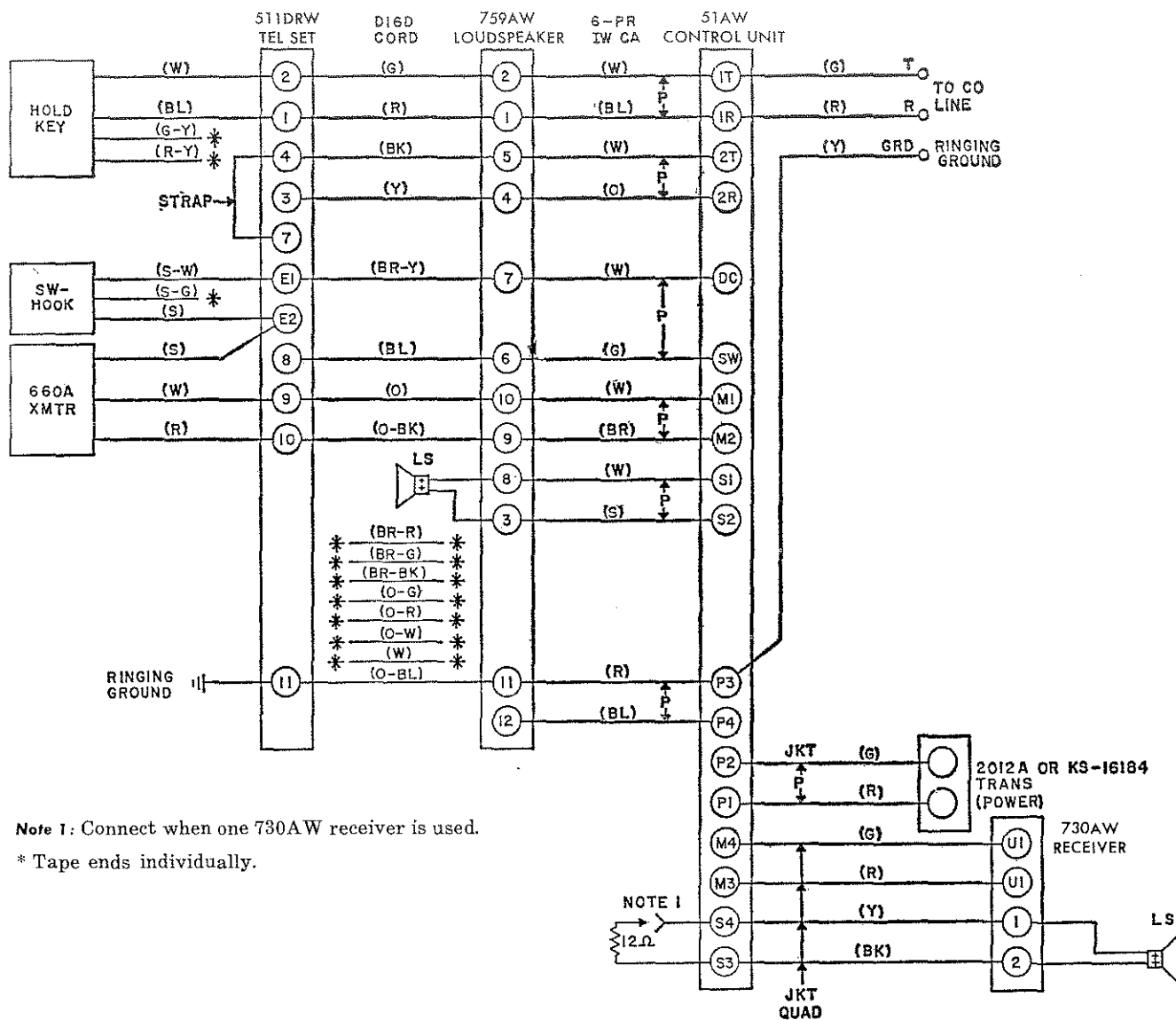


Fig. 16 — 511DRW Telephone Set Connections to 1A Home Interphone

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WESTERN ELECTRIC COMPANY
Supplement #1
to
1A Home Interphone Bulletin
T-2836

This supplement is issued to change and update the information contained in issue 1 of the subject Bulletin dated July 1961.

The following paragraphs should be changed to add or delete information as indicated:

6.05 - Add - "To prevent feedback on the intercommunicating system, install the loudspeaker approximately 3 feet from and to the left of a wall-type telephone set."

6.06 - Delete - "Cable pair is run directly to etc."

Add - "Two cable pairs are run directly to the U1 receiver unit. One pair is connected to screw terminals on the bottom of the unit, and the other pair is connected to the terminal strip."

7.05 - Delete - "Microphone amplifier adjustment etc."

Add - "Amplifier Adjustment

1. Turn the loudspeaker amplifier gain control clockwise (from a minimum gain position) 1/4 turn.
2. Turn the microphone amplifier gain control clockwise (from a minimum gain position) until squeal is heard in the test receiver and then counterclockwise until the ringing or squealing stops."

7.06 - Delete - Delete this paragraph in its entirety.

8.03 - Add - New sub paragraph "When radio interference is encountered in the 1A home interphone system, it may be suppressed in the following manner.

1. The P-11E655 amplifier wiring boards, series one and two, dated prior to 5-60 can be corrected by connecting a KS-13814, List 1 capacitor 0.1 mf (150-volt rating) between terminals M1 and M2. Also, connect the same type capacitor between terminals M3 and M4. The date is stamped at the top of the board, and the series number is stamped in the lower left corner.

(OVER)

2. The boards dated 5-60 or later in series other than one and two, should have the radio interference controlled by a manufacturing change. The value of C15 was changed from 0.005-mf to a 0.05-mf capacitor. However, if radio interference is encountered, determine the lead that is acting as the antenna and then connect a 1542A inductor."

Figure 14 - ~~Delete~~ - Delete note 2 in its entirety.

January 1963

