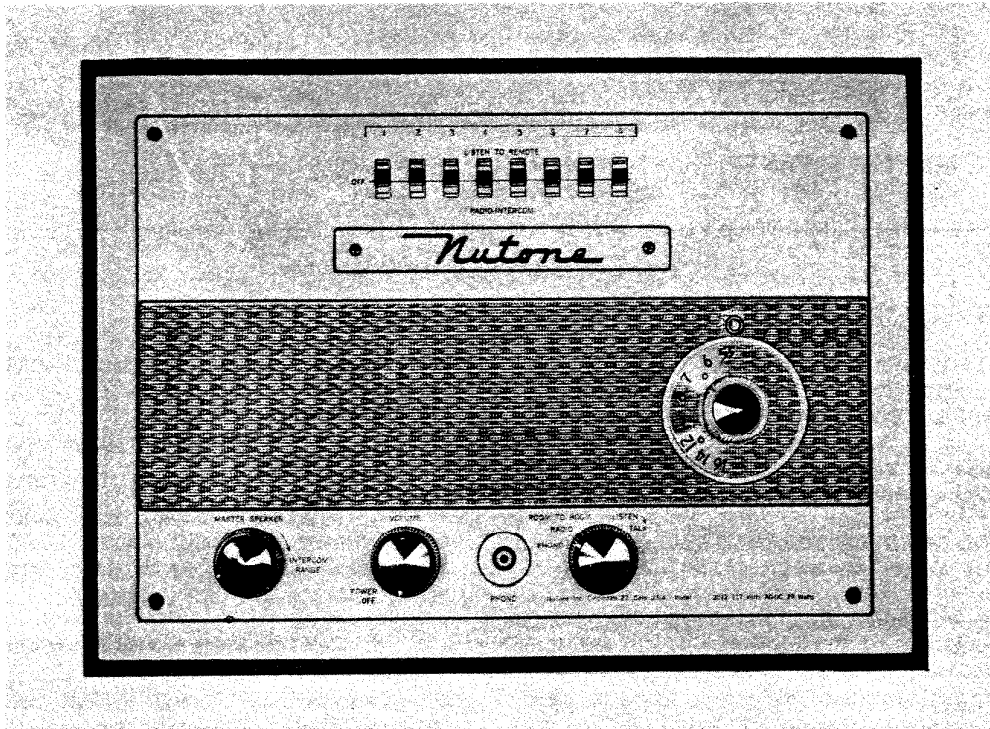


NuTone

SERVICE MANUAL



INTERCOM - RADIO

Models 2011-2012

NuTone

MADISON & RED BANK ROADS

CINCINNATI, OHIO 45227

Part No. 7646 HI
Printed in U.S.A. 10-77

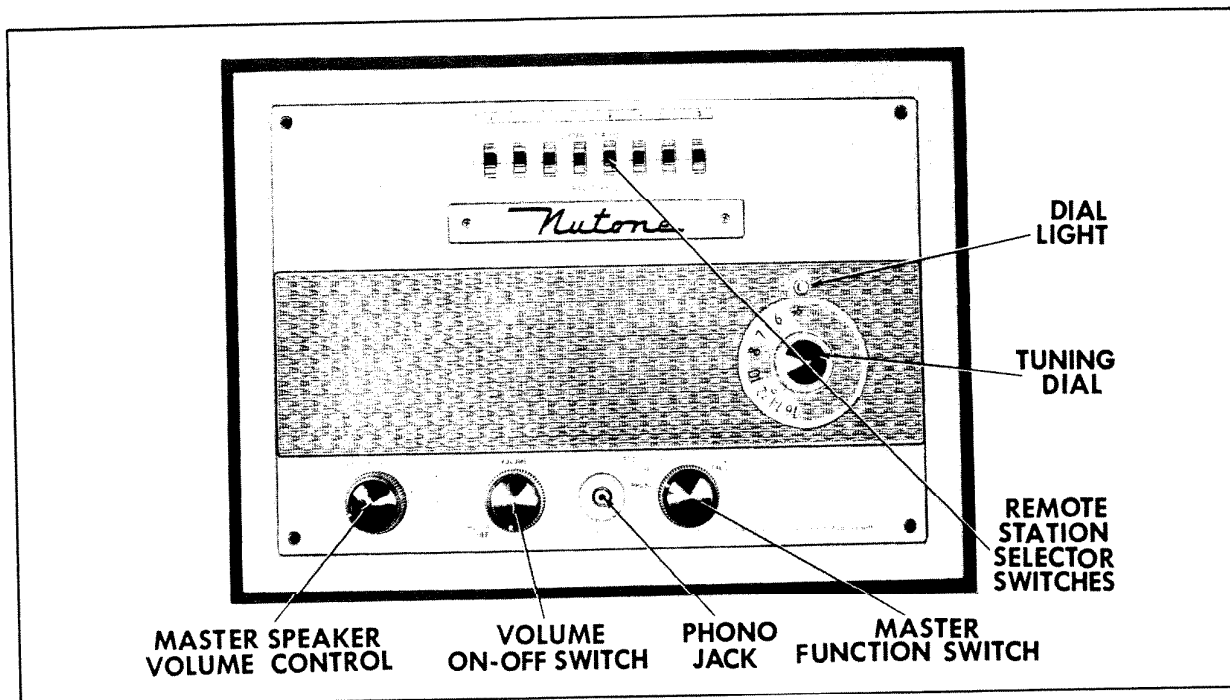


Fig. 1. Master Station Front Panel

CHECK-OUT PROCEDURE

FAILURE TO PASS ANY OF THESE TESTS INDICATES A FAULT THAT SHOULD BE REMEDIED — SEE "TROUBLESHOOTING", PAGE 3.

1. Push all Remote Station Selector switches to OFF position (centered in slot).
2. Turn MASTER SPEAKER Volume control to maximum clockwise position.
3. Turn on VOLUME control switch. Rotate VOLUME control to 2/3 clockwise. Tuning dial light should glow.

4. Turn Master Function switch to RADIO position.

5. Allow Radio to warm up. Select Radio station and check reception.

6. With Radio playing, push down all Remote Station Selector switches (RADIO-INTERCOM position). Check all Remote stations for Radio reception. Check Remote station VOLUME controls.

7. Call into Master from Remote stations while checking Radio reception.

MASTER STATION DISASSEMBLY INSTRUCTIONS

Partial Disassembly

(For Minor Servicing--Tubes, Etc.)

1. Remove four Phillips head screws from corners of panel.
2. Slide out Master unit until tabs on bottom chassis plate engage angle mounting brackets in wall box. Then allow unit to hang forward supported by ground strap. See Fig. 5.

NOTE: To operate unit in this position, attach a standard TV line cord from plug on chassis to convenient AC wall outlet. Reverse the plug if a loud hum occurs.

Complete Disassembly

1. Remove four Phillips head screws from corners of panel.

2. Slide out Master unit until tabs on bottom chassis plate engage angle mounting brackets in wall box. Then allow unit to hang forward supported by ground strap.

3. Remove all Remote speaker station wires from terminal board. Be sure identifying tags supplied with the unit are on the wires. If not, place an identifying tag on each individual set of wires during removal.

4. Remove antenna wire from connecting post behind tuning dial.

5. Loosen ground strap screw on top of chassis. Unhook the ground strap.

6. Lift Master unit until tabs clear angle brackets. Slide out unit.

7. Remove four Phillips head screws from chassis bottom plate. Remove bottom plate.

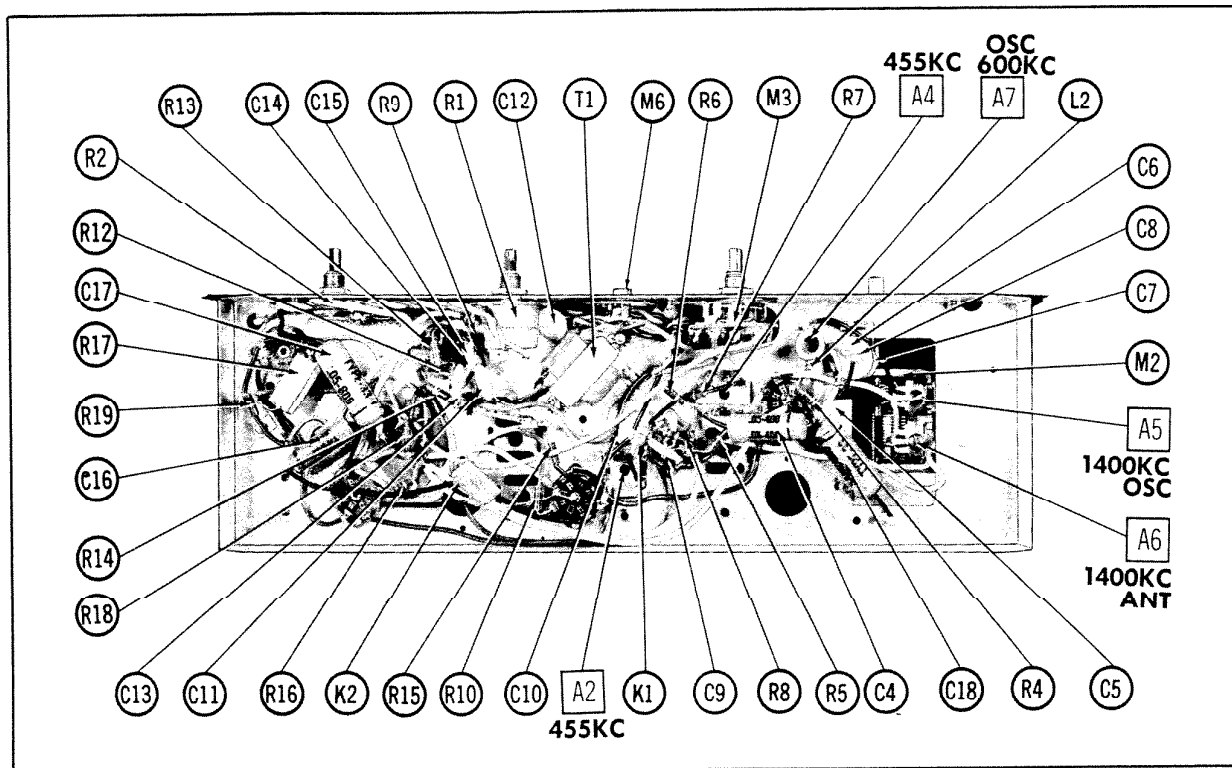


Fig. 2. Master Chassis – Bottom View

TROUBLESHOOTING

Below is a useful trouble chart. Different positions of the Master Function switch connect circuitry common to several operations. Therefore, in some

cases, one trouble may cause malfunctioning in several positions of the Function switch. See "DISASSEMBLY INSTRUCTIONS", page 2, for access in servicing.

TRUBLE CHART

TROUBLE	SUGGESTED CHECK POINTS
Tubes light, but radio is "dead". All controls set for proper operation. Function switch in RADIO position.	Check Function switch (M3) contacts. Check tubes V1, V2, and V3. Check voltage and resistance readings as designated on schematic (Fig. 10). Replace defective components.
One or more Remote stations transmit, but do not receive. Function switch in RADIO position. Master station receives. All controls and switches set for proper operation.	Check inoperative Remote station for bad wiring connections at both the Remote and Master stations. Check Remote Station Selector switch (M4) for proper contact. Check Remote station TALK-LISTEN switch (M5). Check Function switch (M3) contacts.
One or more Remote stations receive, but do not transmit. Function switch in RADIO position. Master station receives Radio. All controls and switches set for proper operation.	Check inoperative Remote station for bad wiring connections at both the Remote and Master stations. Check Remote station TALK-LISTEN switch (M5). Check (V4) and associated circuitry. Replace defective components.
One or more Remote stations neither receive nor transmit. Function switch in Radio position. Master station receives Radio. All controls and switches set for proper operation.	Check for open Remote speaker VOLUME control (R3), or Remote speaker (SP2) or (SP3).
One or more Remote stations do not transmit. Function switch in LISTEN position. Master station receives. All controls and switches set for proper operation.	Check Station Selector switch (M4) for proper contact of inoperative Remote station. Check Function switch (M3) contacts.

INSTALLATION INSTRUCTIONS

Outside Remote Station

Connect the two-conductor wire in wall box to the terminals on the back of the speaker. (Fig. 3A).

Fasten unit to wall box with slotted aluminum screws provided (Fig. 3B). Tighten firmly to insure weatherproofing seal.

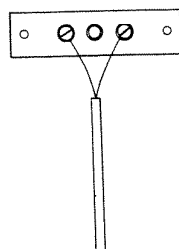


Fig. 3A. Terminal Board — Outside Remote

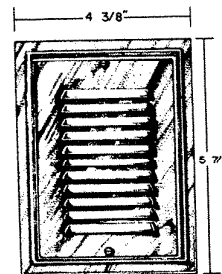


Fig. 3B. Outside Remote Station

Inside Remote Station

Connect the three-conductor wire in wall box to the terminals on the back of the speaker (Fig. 4A).

Place silver wire below screw marked "SILVER".

Place center wire (copper) below screw marked "CENTER".

Place copper wire below screw marked "COPPER".

Fasten unit to wall box with aluminum screws provided (Fig. 4B).

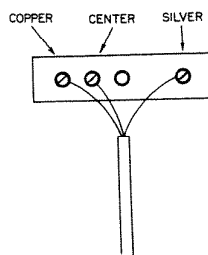


Fig. 4A. Terminal Board — Inside Remote

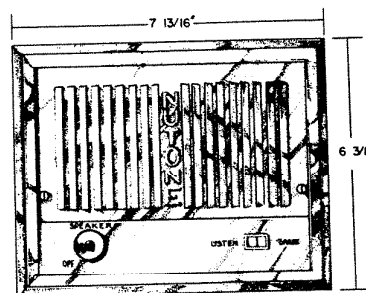


Fig. 4B. Inside Remote Station

Master Station

Place Master unit partially into wall box with tabs on chassis bottom cover behind the angle mounting brackets. Attach ground strap in wall box to ground screw on top of chassis (Fig. 5).

This allows you to work with both hands when hooking up the Remote speaker wires and antenna.

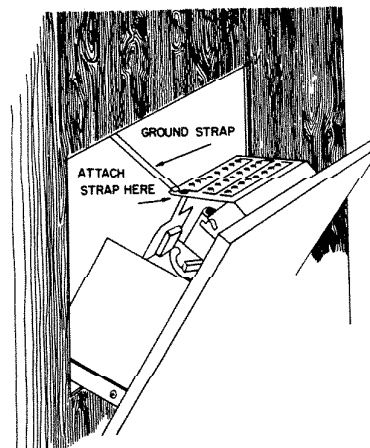


Fig. 5. Master Station Mounting

Connecting Remote Stations

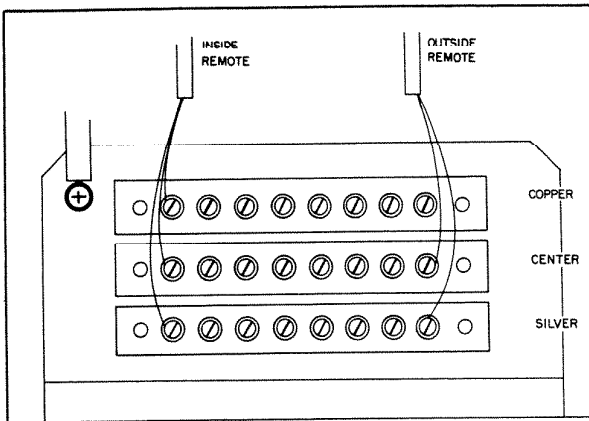


Fig. 6A. Inside Remote Station Hook-Up

Fig. 6B. Outside Remote Station Hook-Up

Connect the three-conductor inside Remote station wires to terminal board on Master chassis in the following manner: (Fig. 6A).

Silver wire to terminal marked "SILVER".

Center wire to terminal marked "CENTER".

Copper wire to terminal marked "COPPER".

Connect the two-conductor outside remote speaker wires to terminals marked "SILVER" and "CENTER" on Master terminal board (Fig. 6B).

On new installations, Remote station wires may be connected to any set of switch terminals. When re-installing older installations after servicing, be sure Remote station wires are reconnected as tagged during disassembly.

Connecting Antenna Lead

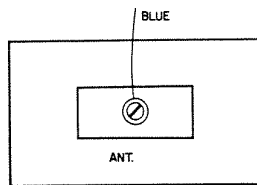


Fig. 7. Antenna Connection

Connect blue wire to antenna terminal (located behind tuning dial on chassis, Fig. 7). Coil up and tape off red wire.

Final Installation

After all leads have been connected, slide Master unit into wall box. Line up plug on chassis with receptacle in wall box. Push firmly into place (Fig. 8A). Fasten unit to wall box with Phillips head screws provided (Fig. 8B).

SPECIAL NOTE: Perform "CHECK-OUT PROCEDURE" on page 2.

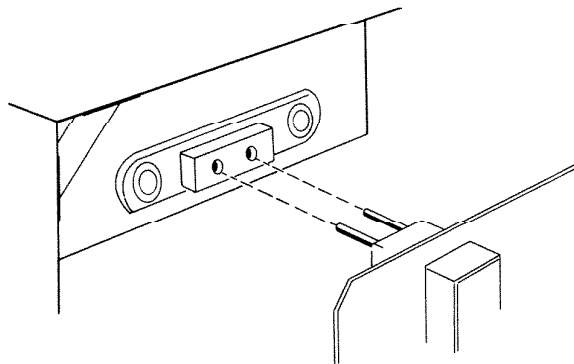


Fig. 8A. Master Station Plug-In

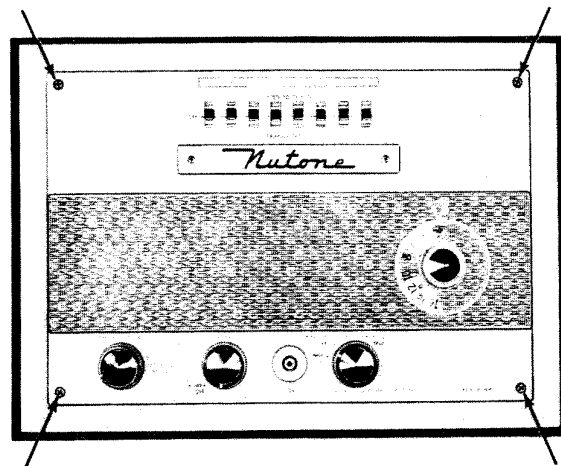


Fig. 8B. Front Panel Mounting

ALIGNMENT INSTRUCTIONS – READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use 117V line isolation transformer (preferably adjustable with voltmeter) for operating unit under test. Isolation is also required for all associated test equipment to avoid possible capacity currents (due to chassis-to-line capacitors in test gear) from flowing in the B-to chassis capacitors in the unit under test.
 Volume control should be at minimum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

TUNING RANGE—BROADCAST 540 to 1620KC						
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1. .01mfd	High side to pin 1 (grid) of 12BA6 (V2). Low side to chassis.	455KC (400v Mod.)	Tuning gang fully open.	DC probe to high side of R1, Common to B-.	A1, A2	Adjust for maximum deflection. Use lowest signal not more than 10DB above background noise.
2. 10mmf	High side to pin 7 (grid) of 12BE6 (V1) Low side to chassis.	"	Tuning gang set at MID scale.	"	A3, A4	Adjust for maximum deflection. Do not repeat step No. 1.
3. 50mmf	High side to ant. terminal. Low side to chassis.	1400KC	1400KC	"	A5, A6	Adjust for maximum deflection.
4. "	"	600KC	Tune for 600KC signal.	"	A7, A8	Adjust for maximum deflection. Correct adjustment of A8 occurs at peak with slug farthest "in". REPEAT STEPS 3 and 4.

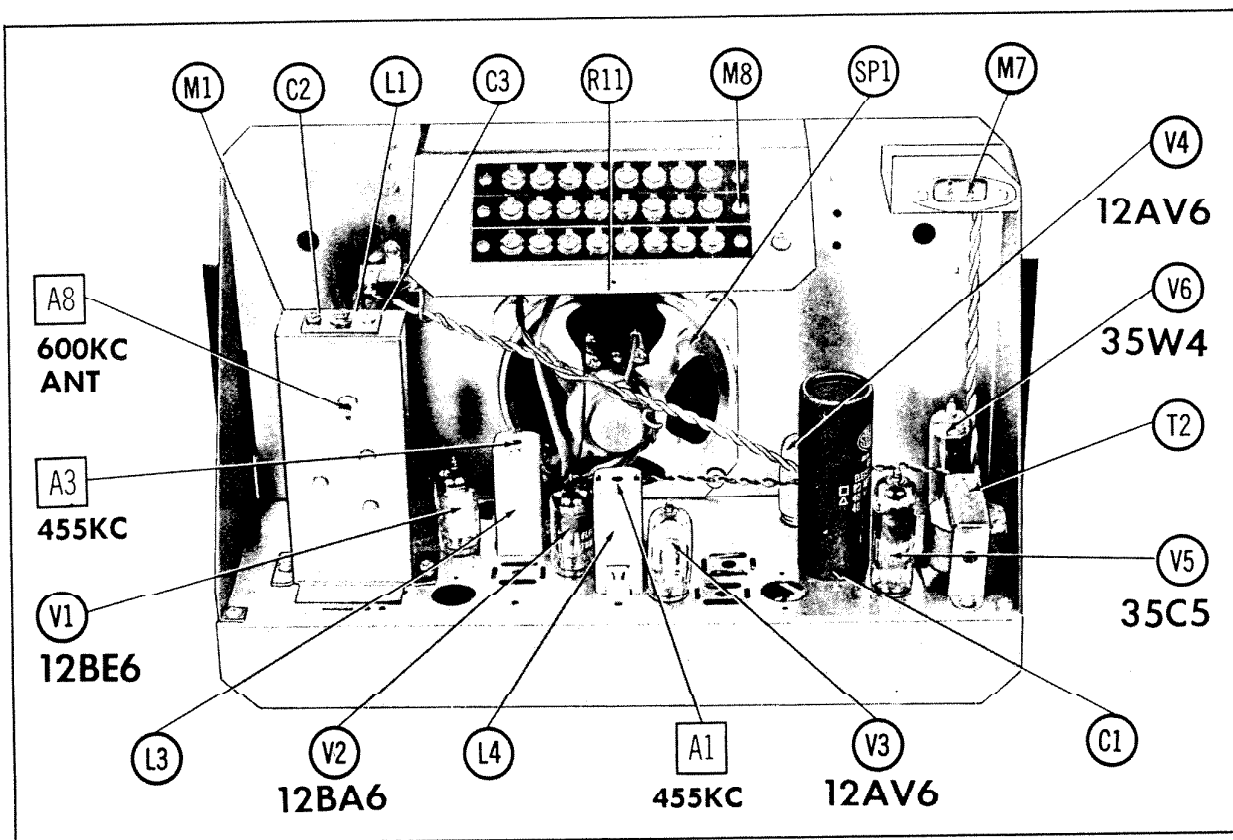


Fig. 9. Master Chassis – Top View

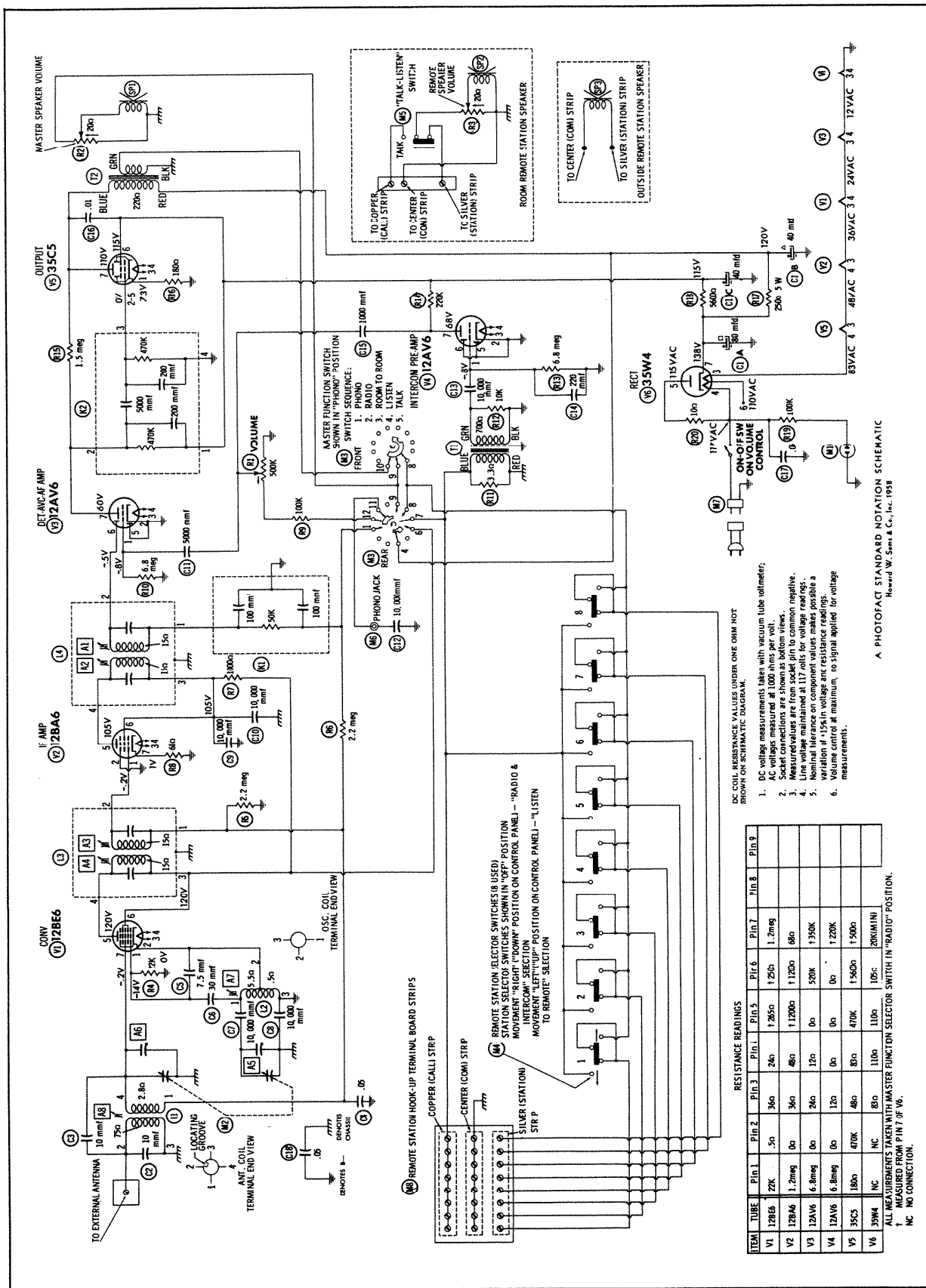


Fig. 10. Schematic Diagram

A PHOTOFAC STANDARD NOTATION SCHEMATIC
 Howard W. Sams & Co., Inc. 1958

PARTS LIST

Ref. No.	Part No.	Description
V1		12BE6, Converter
V2		12BA6, IF Amplifier
V3		12AV6, Det.-AVC-AF Amplifier
V4		12AV6, Intercom Preamplifier
V5		35C5, Output
V6		35W4, Rectifier
C1A	35000	Cap., Elect., 80 mfd @ 150V.
C1B		Cap., Elect., 40 mfd @ 150V.
C1C		Cap., Elect., 40 mfd @ 150V.
C2		Cap., Ceramic Disc, 10 mmf. @ 1000V. 10% NPO
C3		Cap., Ceramic Disc, 10 mmf. @ 1000V. 10% NPO
C4		Cap., Molded Tub., .05 mfd. @ 400V.
C5		Cap., Ceramic Disc, 7.5 mmf. @ 1000V. 10% NPO
C6		Cap., Ceramic Disc, 30 mmf. @ 1000V. 10% N750
C7		Cap., Ceramic Disc, 10,000 mmf. @ 1000V. GMV
C8		Cap., Ceramic Disc, 10,000 mmf. @ 1000V. GMV
C9		Cap., Ceramic Disc, 10,000 mmf. @ 600V. GMV
C10		Cap., Ceramic Disc, 10,000 mmf. @ 1000V. 20%
C11		Cap., Ceramic Disc, 5000 mmf. @ 600V. GMV
C12		Cap., Ceramic Disc, 10,000 mmf. @ 1000V. GMV
C13		Cap., Ceramic Disc, 10,000 mmf. @ 600V. GMV
C14		Cap., Ceramic Disc, 220 mmf. @ 1000V. GMV
C15		Cap., Ceramic Disc, 1000 mmf. @ 1000V. GMV
C16		Cap., Molded Tub., .01 mfd. @ 400V.
C17		Cap., Molded Tub., .05 mfd. @ 600V.
C18		Cap., Molded Tub., .05 mfd. @ 600V.
R1	34002	Master Volume Control & Switch. 500K
R2	34011	Master Speaker Volume Control, 20Ω W.W.
R3	34011	Remote Speaker Volume Control, 20Ω W.W.
R4		Resistor, 22K, 1/2 Watt
R5		Resistor, 2.2 meg., 1/2 Watt

Ref. No.	Part No.	Description
R6		Resistor, 2.2 meg., 1/2 Watt
R7		Resistor, 1000Ω, 1/2 Watt
R8		Resistor, 68Ω, 1/2 Watt
R9		Resistor, 100K, 1/2 Watt
R10		Resistor, 6.8 meg., 1/2 Watt
R11		Resistor, 3.3Ω, 1/2 Watt
R12		Resistor, 10K, 1/2 Watt
R13		Resistor, 6.8 meg., 1/2 Watt
R14		Resistor, 220K, 1/2 Watt
R15		Resistor, 1.5 meg., 1/2 Watt
R16		Resistor, 180Ω, 1/2 Watt
R17		Resistor, 250Ω, 5 Watt
R18		Resistor, 5600Ω, 1/2 Watt
R19		Resistor, 100K, 1/2 Watt
R20		Resistor, 10Ω, 1/2 Watt
K1	37000	Component Combination (Diode Filter); Consists of 50K Resistor and Two 100 mmf. Capacitors
K2	37001	Component Combination (Audio Couplate); Consists of - Two 200 mmf. Capacitors, One 5000 mmf Capacitor, and Two 470K Resistors
T1	30501	Input Transformer
T2	30500	Output Transformer
L1	30509	Antenna Coil
L2	30012	Oscillator Coil
L3	30004	Input IF
L4	30004	Output IF
SP1	36006	Master Station Speaker (4" Square, 3-4Ω)
SP2	*	Room Remote Station Speaker (4" Square, 3-4Ω)
SP3	*	Outside Remote Station Speaker (3 1/2" Square, 3-4Ω)
M1	31015	Neon Indicator
M2	35003	Tuning Gang, 2 Section
M3	34502	Switch, Master Function Selector; Rotary, Wafer-Type 5 Position (5 th Position Spring Return)
M4	34503	Switch, Remote Station Selector; Single Pole 3 Position, Slide Type (8 Used)
M5	*	Switch, Room Remote "Talk-Listen" Switch; Single Pole Double Throw, Spring Return
M6	7608	Phono Jack
M7	31026	Power Interlock Plug (Recessed)
M8	31004	Remote Station Hook-Up Terminal Strip (3 Used)

* For part numbers, refer to Factory Parts Price Lists covering Remote Speaker Assemblies for Models 2006 and 2025.