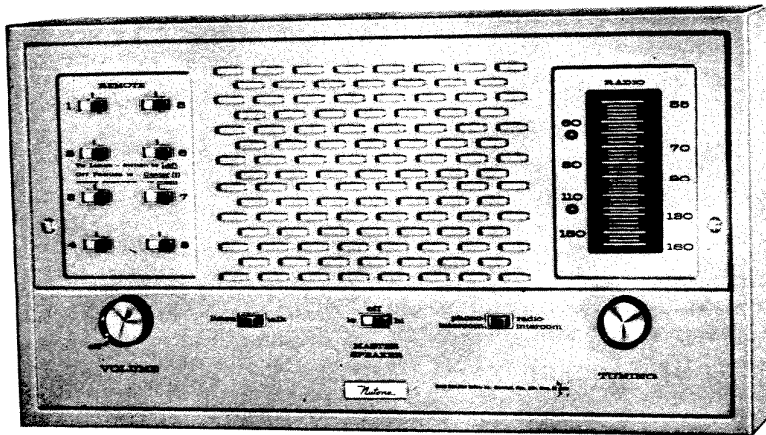


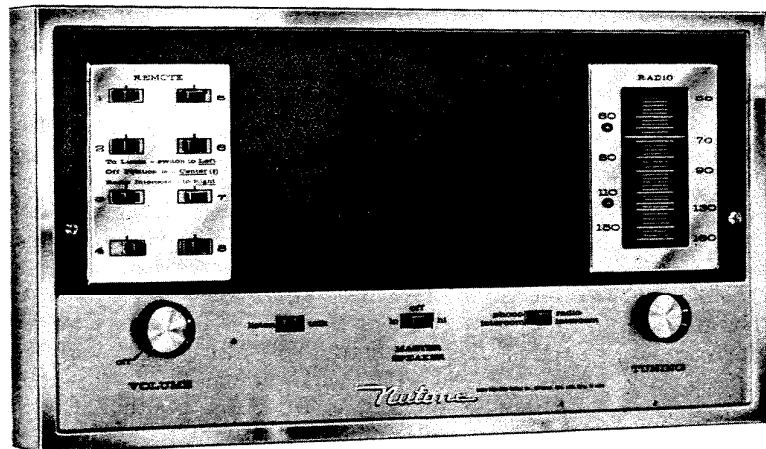
NuTone

SERVICE MANUAL



AM-RADIO and INTERCOM

Models
2031-2032
2053 or 2054



NuTone

Madison & Red Bank Roads, Cincinnati, Ohio 45227

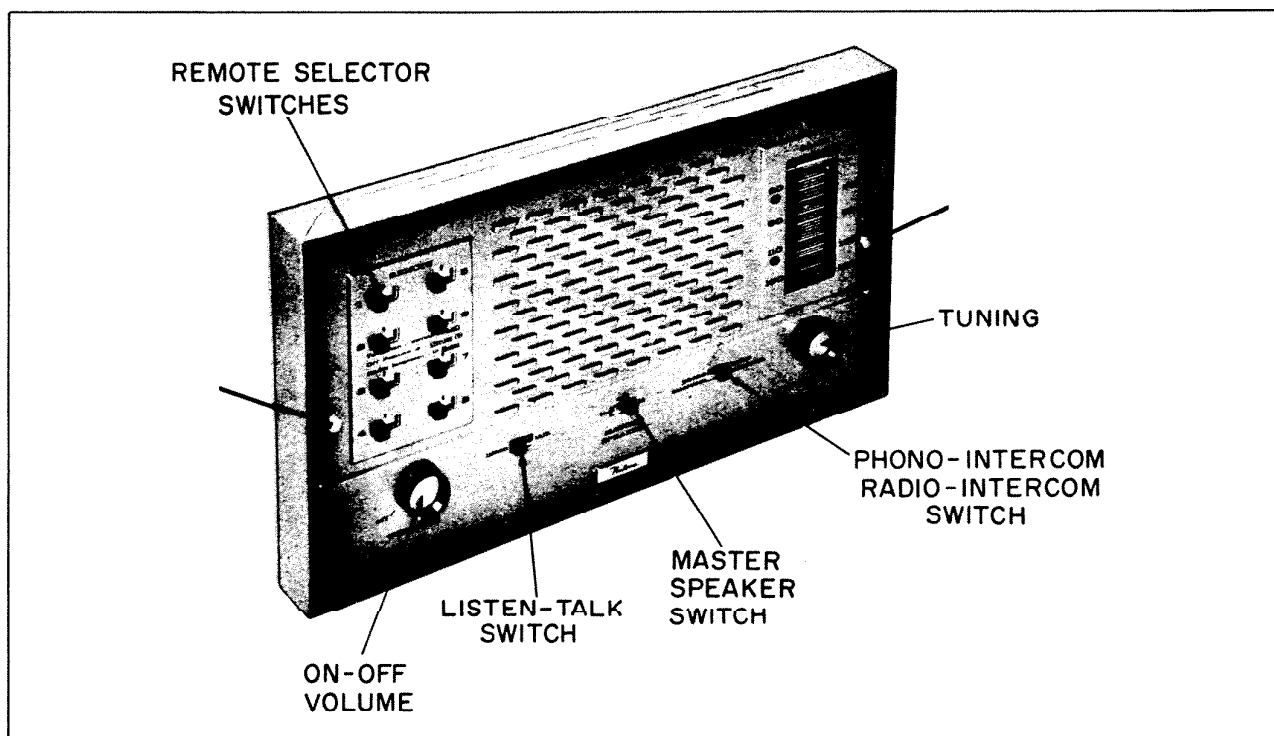


Fig. 1. Master station front panel.

CHECK-OUT PROCEDURE

Failure to pass any of these tests indicates a fault that should be remedied—
See "Troubleshooting," page 3.

1. Set all Remote station selector switches to the OFF or Center position.
2. Set Master Speaker switch to the "hi" position.
3. Turn unit on with Volume control knob and turn control two-thirds clockwise from its Off position.
4. Set Phono/Intercom-Radio/Intercom switch to the Radio/Intercom position.
5. Allow radio to warm up. Tune in a radio station and check for reception.
6. With radio playing, push all Remote station selector switches to the Right (Radio-Intercom position). Check all Remote speaker stations for radio reception. Check operation of all Remote speaker Volume controls.
7. Talk from Master to the Remote speaker stations while radio is playing. Check for intercom reception at all Remote speakers.
8. Hold Talk-Listen switches at Remote speaker stations in Talk position; talk from each Remote speaker station to Master while radio is playing. Check for intercom reception at Master.
9. With radio playing, push all Remote station selector switches on Master to the Left (Listen position). Leave Talk-Listen switches at Remote speaker stations in the Listen position and talk from each Remote speaker station to the Master. Check for intercom reception at Master.
10. Return all Remote station selector switches to Radio-Intercom or Center-Off position. Connect signal from phonograph into Phono jack on Master. Place Phono/Intercom-Radio/Intercom switch in the Phono/Intercom position. Check for phono reception at Master.

MASTER STATION DISASSEMBLY INSTRUCTIONS

Partial Disassembly (For Minor Servicing—Tubes, etc.)

1. Remove two screws from sides of front panel.
2. Slide Master unit out until upper tabs on chassis are placed in the V-shaped slots in front edges of support brackets (See Fig. 15). This allows the unit to hang forward in a servicing position.

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

Complete Disassembly

1. Perform Steps 1 and 2 above under "Partial Disassembly."
2. Disconnect blue antenna wire by removing wire nut.
3. Disconnect output leads (green and black) and input leads (red and black) from remote station hook-up terminal board.
4. Remove four slotted acorn nuts that secure terminal board to front panel. Remove terminal board (with remote station wiring still attached) from its mounting studs.

5. Push master unit slightly to the left or right until chassis clears slots in support brackets. Lift unit up and out.

Should servicing of unit require that the chassis be removed from the front panel, proceed as follows after performing Steps 1 through 5 above:

1. Pull and remove Volume and Tuning knobs.
2. Remove speaker leads.
3. Remove two spacer nuts which secure the remote station terminal board shield to the front panel. Remove metal shield.
4. Remove two chassis mounting nuts at sides of front panel and one at top of dial assembly. Remove chassis.
5. To gain access to printed circuitry on bottom of chassis, remove four nuts which secure fiber paper shield to bottom of chassis. Remove shield.

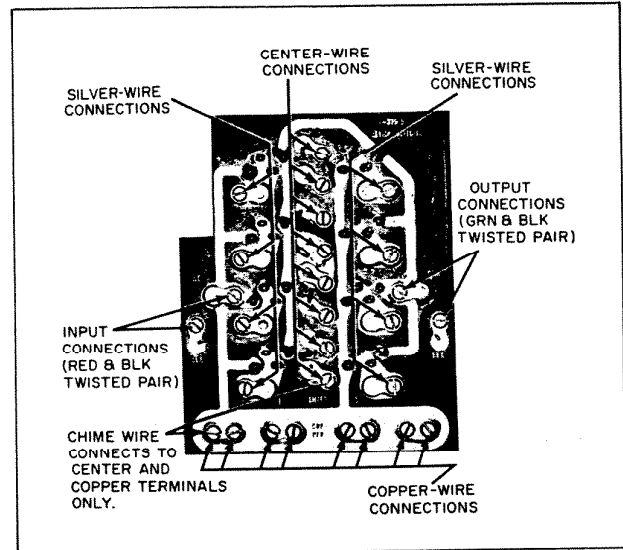


Fig. 2. Bottom view of printed circuit terminal board.

TROUBLESHOOTING

The following trouble chart is useful in isolating the more common troubles. Remember that common circuitry is connected to perform several of the dif-

ferent operations of the Radio-Intercom system. Therefore, one source of trouble may appear in several of the different operations.

TROUBLE CHART

TROUBLE	SUGGESTED CHECK POINTS
System "dead." Tubes do not light.	Make sure power is being applied. Check switch on Master Volume control (R7). Check all tubes for open filaments.
System "dead" all tubes light.	Check tubes (V3, V4, V5) and their associated circuitry. Check voltage and resistance readings as per schematic (Fig. 19). Check for open Volume control (R7) and open output transformer (T2). Replace defective components.
Tubes light, but radio reception is "dead." All other operations normal.	Check tubes (V1) and (V2). Check voltage and resistance readings associated with V1 and V2 as per schematic (Fig. 19). Check Radio/Intercom—Phono/Intercom switch (M2). Replace defective components. Check antenna connection.
Tubes light, radio and phono operations normal, but intercom operations are "dead."	Check tube (V3). Check voltage and resistance readings associated with V3B as per schematic (Fig. 19). Replace defective components.
Radio or phono reception normal at Remote speaker stations, but reception "dead" at Master station.	Check speaker (SP1) and its connections. Check Listen-Talk switch (M3) and Master Speaker switch (M4) for proper contact.
One or more Remote speaker stations inoperative in transmission and/or reception.	Check inoperative Remote station for defective wiring connections at both the Remote and Master stations. Check station selector switches (M5 through M12) of inoperative Remote stations for proper contact. Check Talk-Listen switches (M15 or M16) of inoperative Remote speakers for proper contact. Check for open Volume controls (R23) or open speakers (SP2, SP3, and SP4) of inoperative Remote speaker stations. Check resistor (R22) of inoperative Model 2006 Remote speaker stations.

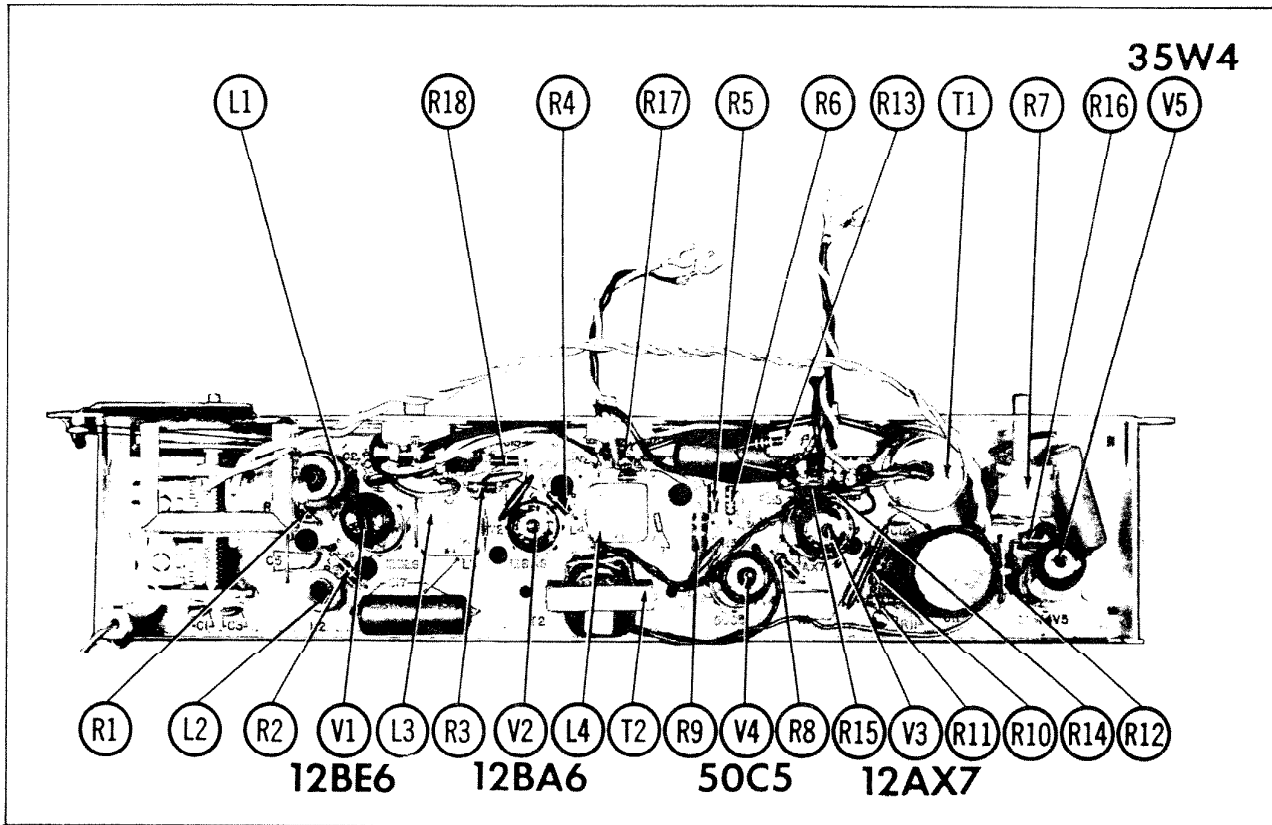


Fig. 3. Top view of master chassis.

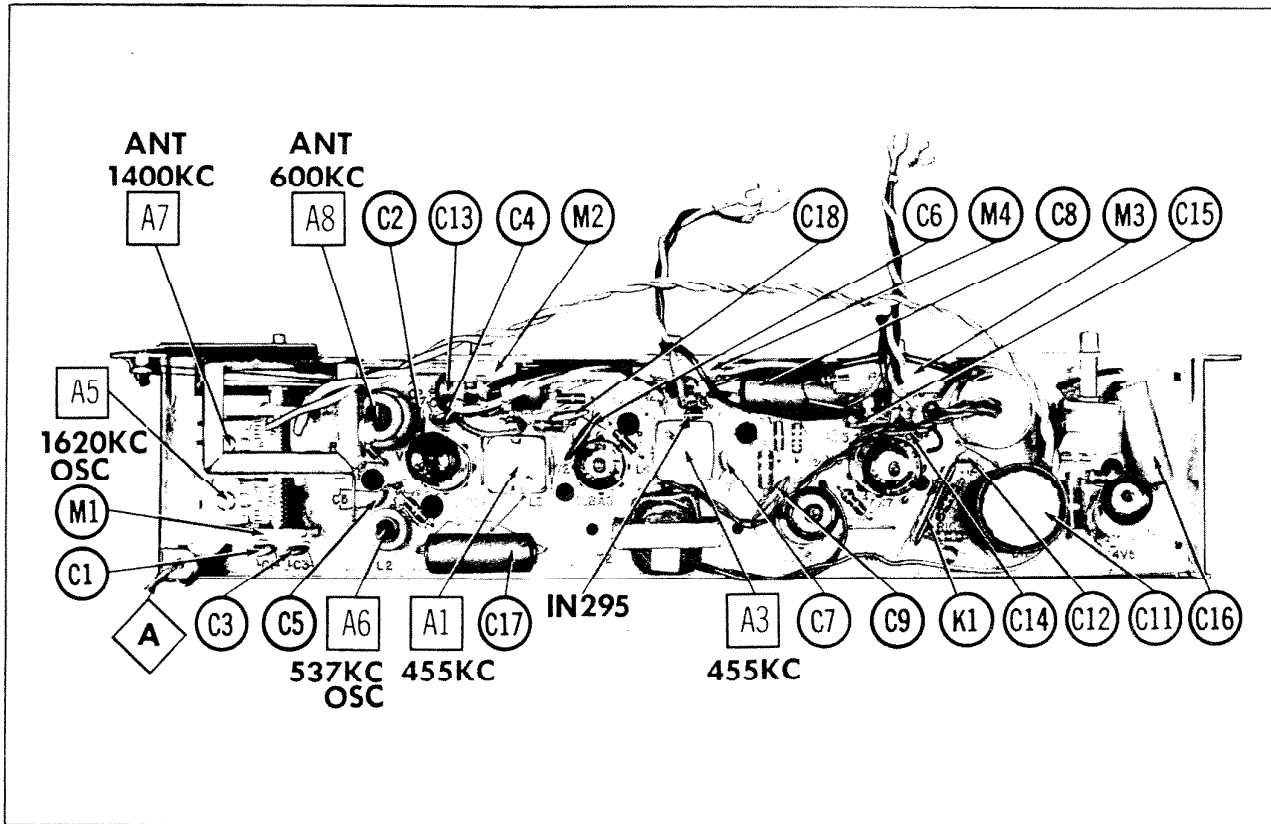


Fig. 4. Top view of master chassis.

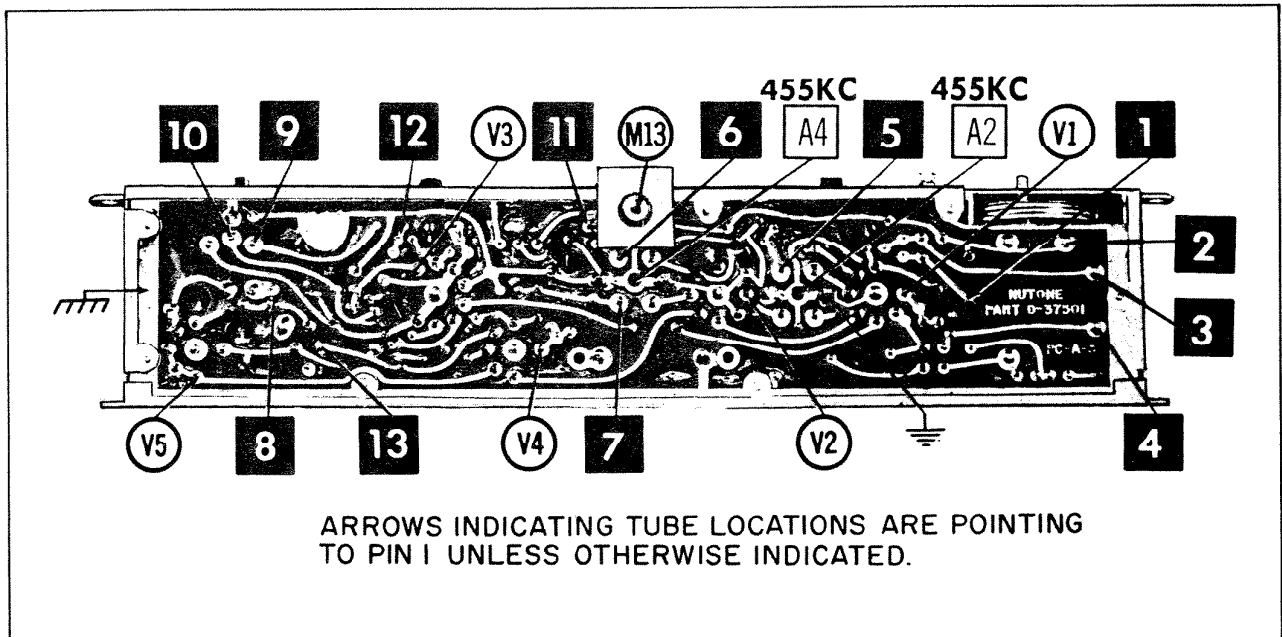


Fig. 5. Bottom view of master chassis printed board, with location of printed circuit points as shown on schematic in Fig. 19.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Prealignment Instructions

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 and Radio/Intercom—Phono/Intercom switch in Radio/Intercom position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

I. F. Alignment

Dummy Antenna	Sig. Gen. Coupling	Sig. Gen. Frequency	Radio Dial Setting	Connect VTVM	Adjust	Remarks
1. .01 mfd	High side to pin 1 (grid) of 12BA6 (V2). Low side to chassis.	455KC (400 cycle Mod.)	Tuning gang fully open.	DC probe to high side of R7, Com. to B-.	A1 (top) & A2 (bottom).	Adjust for maximum deflection. Use lowest signal not more than 10db above background noise.
2. .01 mfd	High side to pin 7 (grid) of 12BE6 (V1). Low side to chassis.	455KC (400 cycle Mod.)	Tuning gang set at MID scale.	DC probe to high side of R7, Com. to B-.	A3 (top) & A4 (bottom).	Adjust for maximum deflection. Do not repeat step 1.

R. F. Alignment

3. 50 mmf	High side to ant. terminal (point A). Low side to chassis.	1620KC (400 cycle Mod.)	Tuning gang fully open.	DC probe to high side of R7, Com. to B-.	A5 Trimmer	Adjust for maximum deflection.
4. 50 mmf	High side to ant. terminal (point A). Low side to chassis.	537KC (400 cycle Mod.)	Tuning gang fully closed.	DC probe to high side of R7, Com. to B-.	A6	Adjust for maximum deflection. Repeat steps 3 & 4.
5. 50 mmf	High side to ant. terminal (point A). Low side to chassis.	1400KC (400 cycle Mod.)	1400KC	DC probe to high side of R7, Com. to B-.	A7 Trimmer	Adjust for maximum deflection.
6. 50 mmf	High side to ant. terminal (point A). Low side to chassis.	600KC (400 cycle Mod.)	600KC	DC probe to high side of R7, Com. to B-.	A8	Adjust for maximum deflection. Correct adjustment of L1 occurs at peak with slug farthest out. Repeat steps 5 and 6.

INSTALLATION INSTRUCTIONS

REMOTE SPEAKER STATIONS

General

The following four models of remote speakers can be used in conjunction with the Nutone AM-Radio and Intercom system provided the necessary and proper rough-in frames have been previously installed.

1. Model 2025—4-inch standard speaker (Fig. 6)
2. Model 2026—5-inch full-range speaker (Fig. 6)
3. Model 2020—8-inch hi-fidelity speaker (Fig. 11)
4. Model 2006—3½-inch speaker, outside door remote (Fig. 7)

The connections for eight remote speaker stations are provided on the printed-circuit terminal board at the master station. The same or any combination of the above speaker models can be connected to one or more of the eight different sets of terminals to comprise the desired number of remote stations. It is possible to use more than eight remote speakers (within limits) by connecting extra speakers to occupied sets of terminals.

Model 2025 and 2026 speakers are used in inside remote-station installations and are mounted to the same type of rough-in frame.

The Model 2020 speaker may be used in both inside or outside remote-station installations. An inside installation of the Model 2020 speaker differs from that of an outside installation due to differences in construction of the required rough-in frames. The rough-in frame for inside installations allows the speaker frame to mount flush against the wall (Fig. 10). The rough-in frame for outside installations protrudes from the wall (Fig. 12). With this type of rough-in frame construction, the seal around the speaker plate is secured to all four sides of the rough-in frame, thus providing the speaker and its associated components protection from the weather.

The Model 2006 speaker is designed for use in outside door-remote installations. A gold anodized frame finish and a seal around the speaker provide protection from the weather.

Installing Model 2006, 2025, and 2026 Remote Speakers

1. Connect the three-conductor wire in wall frame to the terminal strip on back of speaker as shown by instruction label on speaker magnet frame (Fig. 8).
2. Align mounting holes of speaker unit with holes in rough-in frame. Fasten in place with screws provided as shown by arrows in Figs. 6 and 7.

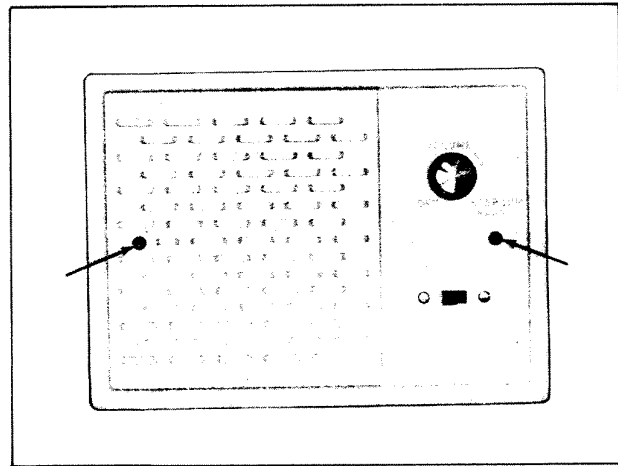


Fig. 6. Model 2025 and 2026 inside remote speaker station.

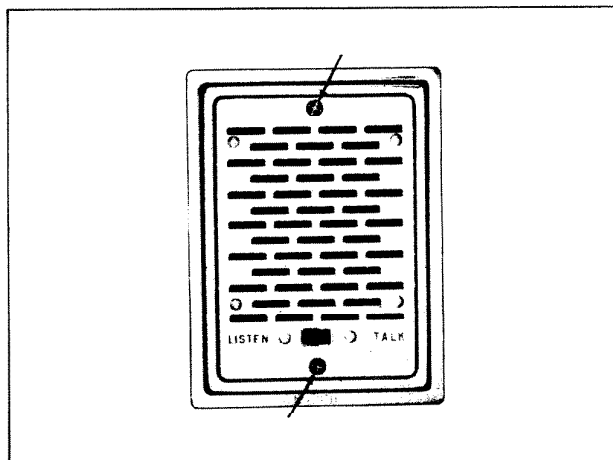


Fig. 7. Model 2006 outside door remote speaker station.

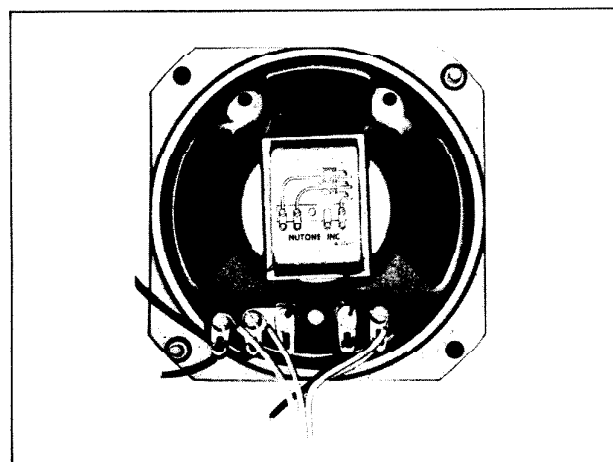


Fig. 8. Speaker connections for Models 2006, 2025, and 2026 remote stations.

**Inside Installation of Model 2020
Remote Speaker**

1. Remove and discard four nuts from mounting screws (Fig. 9) which secure the finished frame to the speaker plate (see instruction label on finished frame). Remove the four mounting screws and frame from the speaker plate.
2. Two slots are provided in the back edge of the speaker guard plate. Position these slots over studs on the rough-in frame and lock in place by sliding speaker unit to the left. This supports the speaker while both hands are left free to make connections to the speaker terminals on the speaker guard plate (Fig. 10).
3. Connect the three-conductor wire in wall frame to the speaker terminals on the speaker guard plate as follows (Fig. 10):
 - a. Silver wire to terminal labeled silver
 - b. Center wire to terminal labeled center
 - c. Copper wire to terminal labeled copper.
4. Remove speaker unit from studs on rough-in frame. Align holes in the finished frame and speaker plate with the holes in the rough-in frame. Fasten speaker unit in place with four mounting screws previously removed under Step 1 above and shown by arrows in Fig. 11.

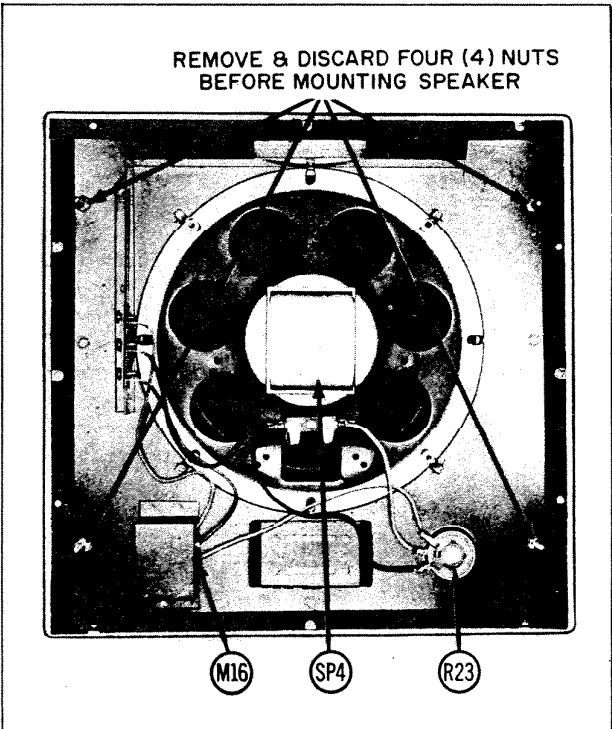


Fig. 9. Rear view of Model 2020 remote speaker station.

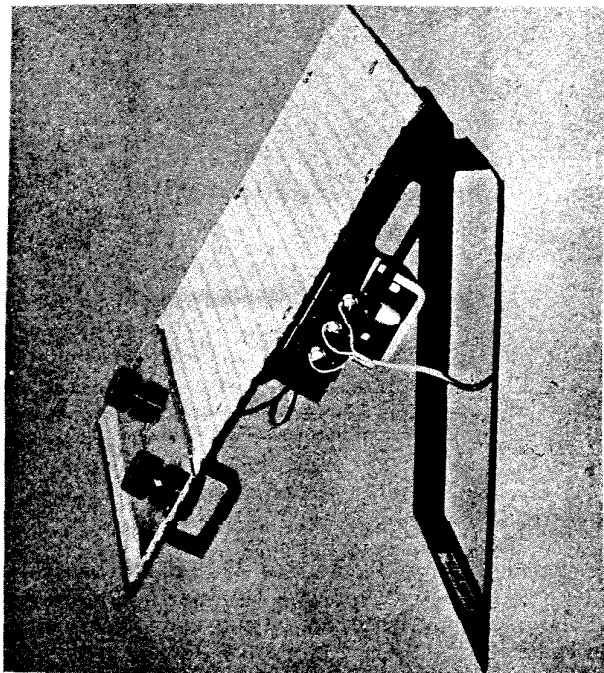


Fig. 10. Inside installation of Model 2020 remote speaker station.

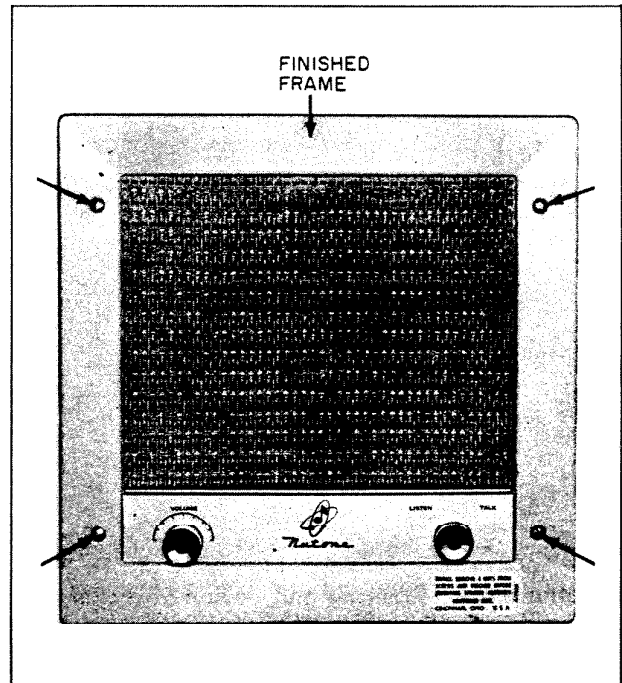


Fig. 11. Model 2020 inside remote speaker station with finished frame attached.

Outside Installation of Model 2020 Remote Speaker

1. Remove and discard four nuts from mounting screws (Fig. 9) which secure the finished frame to the speaker plate (see instruction label on finished frame.). Remove the four mounting screws and frame from the speaker plate.
2. Connect the three-conductor wire in wall frame to the speaker terminals on the speaker guard plate as follows (Fig. 12):
 - a. Silver wire to terminal labeled silver
 - b. Center wire to terminal labeled center
 - c. Copper wire to terminal labeled copper.
3. Mount the speaker plate to the rough-in frame with the twelve screws provided as shown by arrows in Fig. 13. *All screws must be used to prevent speaker rattle.*
4. Align holes in the finished frame with the holes in the rough-in frame. Fasten frame in place with four mounting screws previously removed under Step 1 above and shown by arrows in Fig. 14.

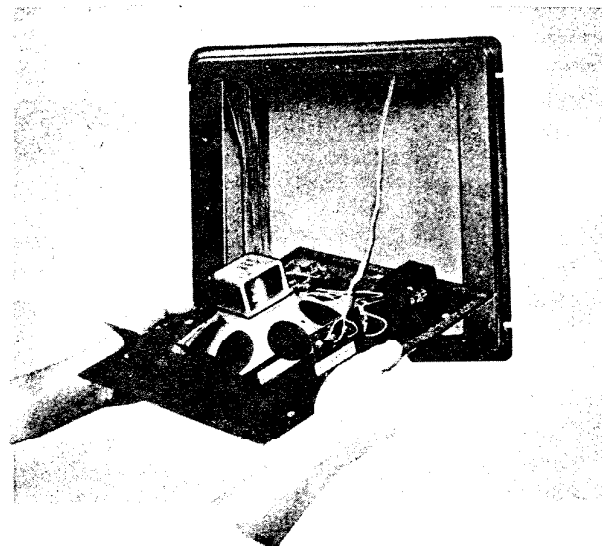


Fig. 12. Outside installation of Model 2020 remote speaker station.

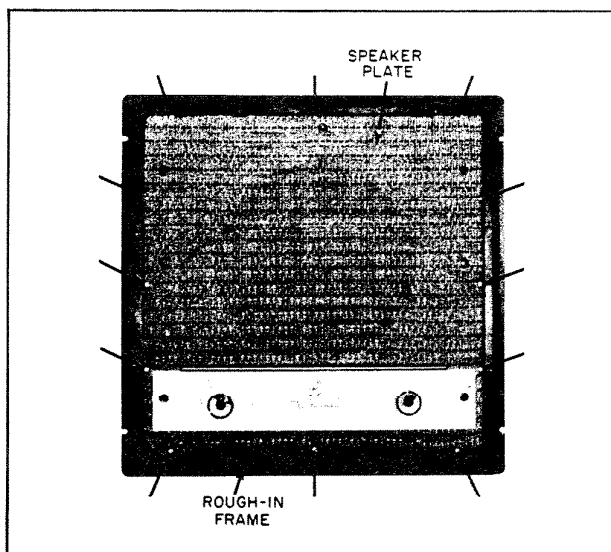


Fig. 13. Speaker plate and rough-in frame assembly of outside-installed Model 2020 remote speaker station.

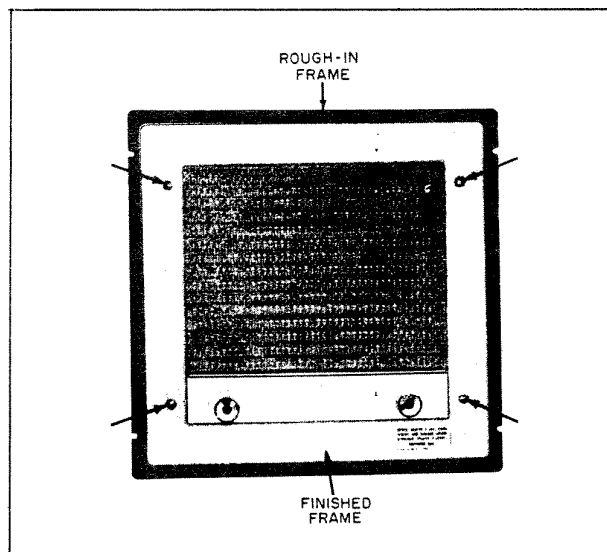


Fig. 14. Finished frame assembly of outside-installed Model 2020 remote speaker station.

MASTER STATION

Installation of Mounting and Support Brackets

Install mounting and support brackets to rough-in box with screws provided (Fig. 15). Make sure that center stabs of mounting brackets are flush with finished wall surface. Position the support brackets beneath stabs in back face of rough-in box. Bend stabs downward after installing support brackets.

Mounting Master Station to Support Brackets

Two mounting tabs are provided on each side of the Master unit chassis. Insert the bottom tabs into slots in support brackets. Place upper tabs in

V-shaped slots on front edge of support brackets (Fig. 15). The unit is now self-supporting, allowing freedom of both hands for wiring and/or servicing procedures.

Connecting Remote Stations to Master Station

Connect the three-conductor wire from the remote speakers to the screw terminals on the printed-circuit terminal board as follows (also see instruction label on inner side of front panel:

- a. Silver wire to numbered terminal (Fig. 2).
- b. Center wire to terminal marked center (Fig. 2)
- c. Copper wire to terminal marked copper (Fig. 2)

When more than eight remotes are used, connect the extra speaker wires to any set of occupied screw terminals on the terminal board.

NOTE: Each remote must be independently wired to the master station to prevent feedback (high-pitched squeal). Do not jumper between remotes.

Connecting Electronic Chime to Master Station

If a Nutone electronic chime is to be used with the system, connect the *two-conductor* wire in wall box to the center and copper screw terminals only on printed-circuit board (Fig. 2).

NOTE: The two-conductor chime wire can be connected to the center and copper screw terminals of any switch terminal set being occupied by a remote speaker.

Antenna Connection

Connect the blue wire in wall box to blue antenna lead on master station chassis with the wire nut supplied (Fig. 15). Do not use the brown twin lead (twin lead used for FM reception only).

Final Installation

Check wiring to make sure all leads have been connected. Push excess wire back up into the wall to prevent possible dislodgement of tubes on chassis when unit is fastened in place. Slide master unit into wall box.

IMPORTANT: Make sure AC plug on adjustable bracket lines up and engages power receptacle in wall box (Fig. 15). If AC plug on chassis prohibits master unit from being pushed completely into wall box, or if AC plug does not make good contact with power receptacle, adjust bracket as required.

Fasten front panel to mounting brackets with two screws provided as shown by arrows in Fig. 1.

NOTE: Make sure front panel is flush to finished wall.

Perform "Check-Out Procedure" on page 2.

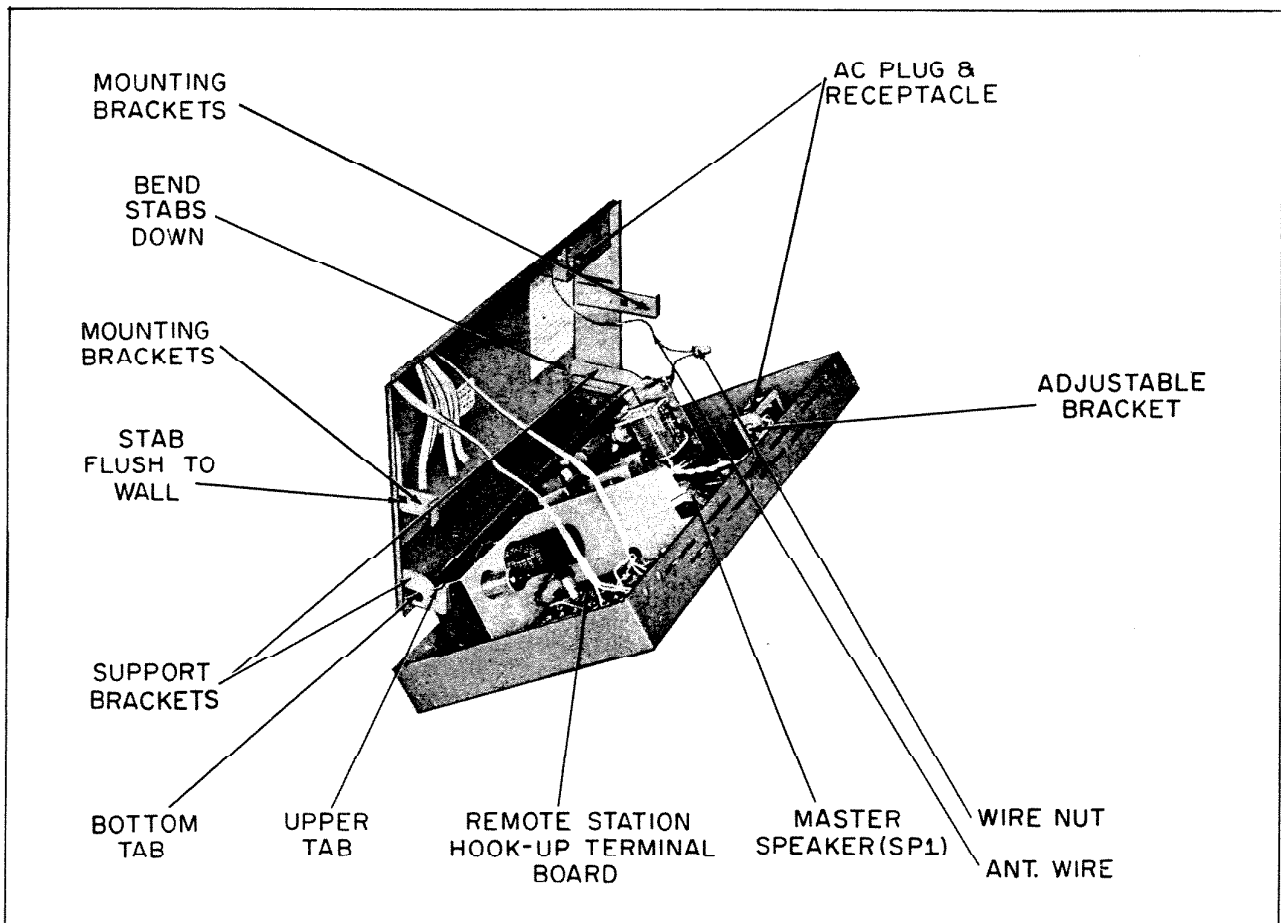


Fig. 15. Installing Master station.

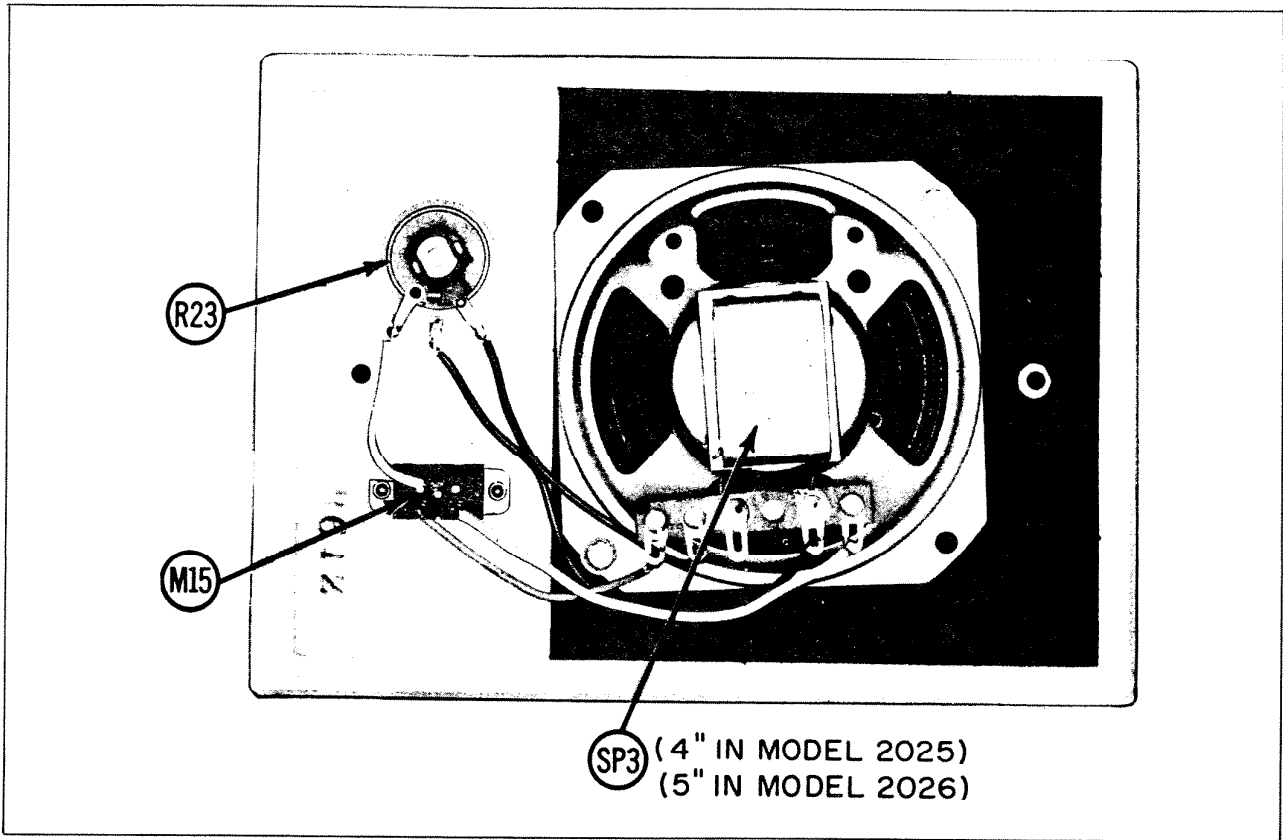


Fig. 16. Rear view of Model 2025 remote speaker.

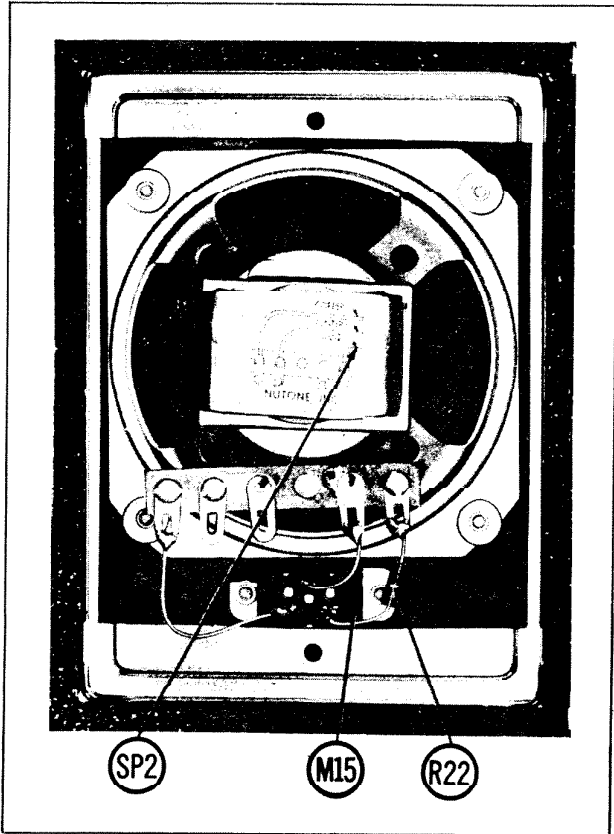


Fig. 17. Rear view of Model 2006 remote speaker.

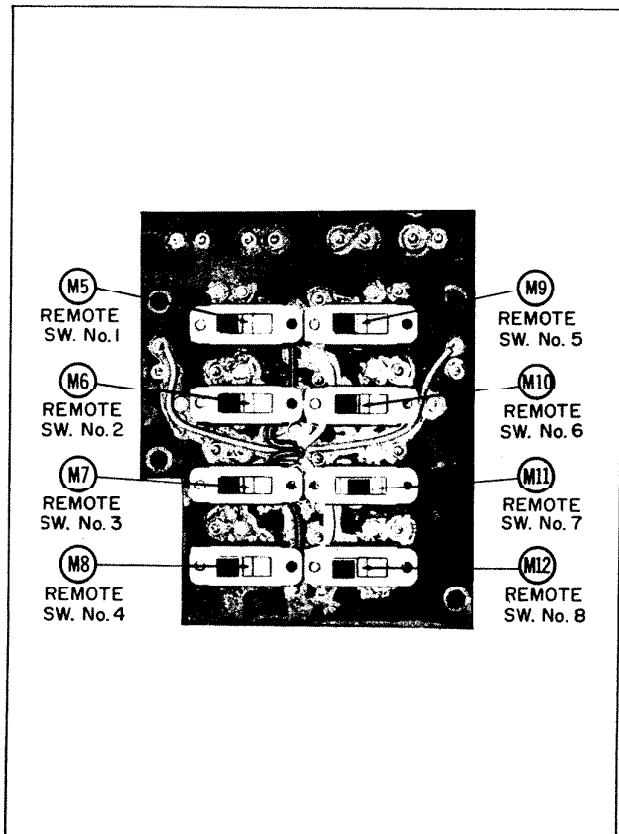
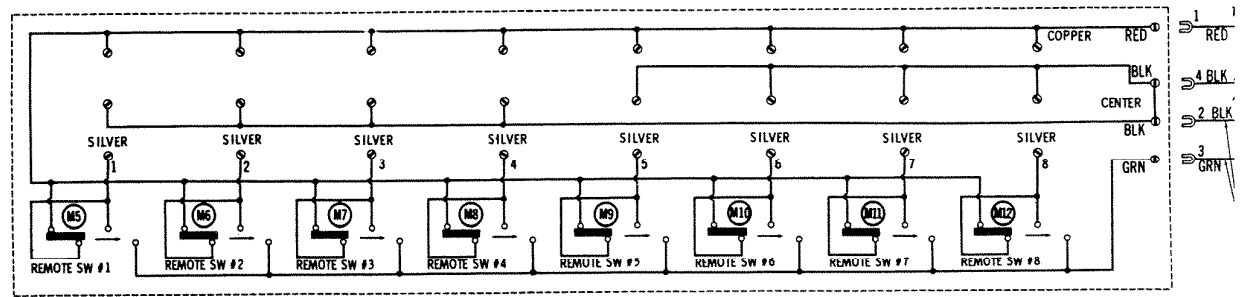
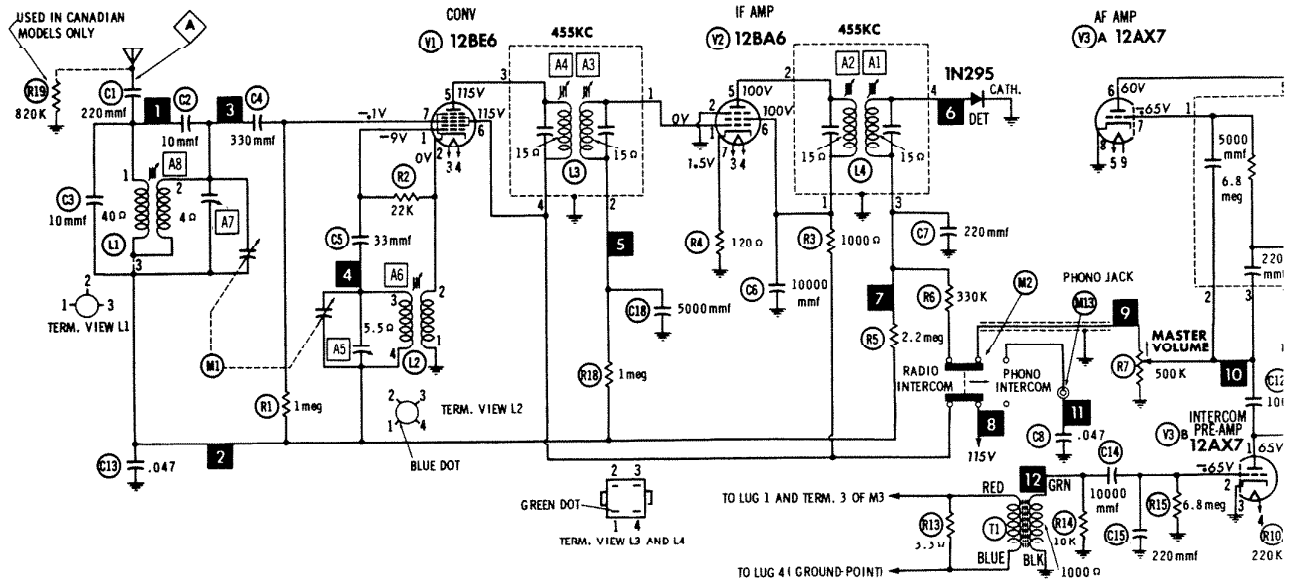


Fig. 18. Top view of printed circuit terminal board.



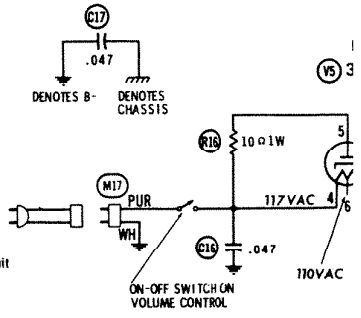
REMOTE STATION SWITCHES (M5-M12) ARE SHOWN IN THE EXTREME LEFT POSITION (LISTEN)

SWITCH SEQUENCE.

1. EXTREME LEFT POSITION—LISTEN
2. CENTER POSITION—OFF
3. EXTREME RIGHT POSITION—RADIO INTERCOM

SCHEMATIC NOTES

1. All measurements taken with Radio/Intercom-Phono/Intercom switch (M2) in Radio-Intercom position.
2. DC voltage measurements taken with VTVM. AC voltages measured at 5000 ohms per volt with VOM.
3. Measured values are from tube socket pin to common negative.
4. Line voltage maintained at 117 volts AC for voltage readings.
5. Nominal tolerance on component values makes possible a variation of $\pm 15\%$ in voltage and resistance readings.
6. Resistance measurements taken with VOM.
7. DC coil resistance under one ohm not shown on schematic diagram.
8. Master Volume control at maximum, no signal applied for voltage measurements.
9. Arrows on controls indicate clockwise rotation (control viewed from shaft end).
10. Numbers assigned to coils, switch contacts, terminal lugs, etc. are used to facilitate circuit tracing, and may not necessarily be found on the unit.

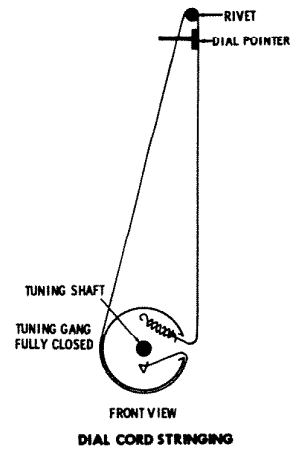
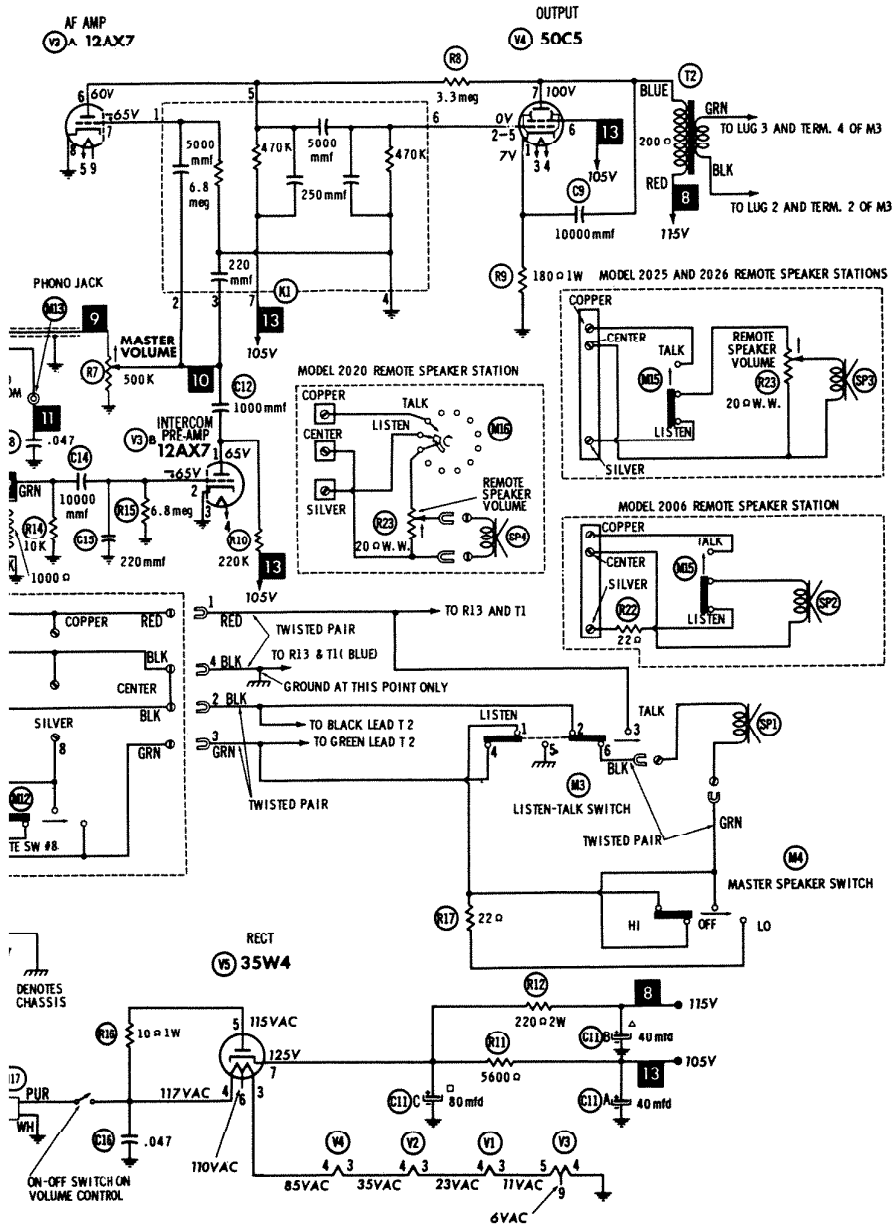


RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
V1	12BE6	22K	.3Ω	20Ω	30Ω	†220Ω
V2	12BA6	3.2 meg	0Ω	30Ω	35Ω	†1200Ω
V3	12AX7	†220K	6.8 meg	0Ω	0Ω	20Ω
V4	50C5	180Ω	470K	35Ω	70Ω	470K
V5	35W4	NC	NC	70Ω	100Ω	110Ω

All measurements taken with M2 in radio-intercom position.
 † Measured from Pin 7 of V5.
 ● Measurement will vary depending upon condition of electrolytic.
 NC = No connection.

Fig. 19. Master station schema



STANCE READINGS

Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
30Ω	†220Ω	†220Ω	3.2 meg		
35Ω	†1200Ω	†1200Ω	120Ω		
0Ω	20Ω	†370K	6.8 meg	0Ω	14Ω
70Ω	470K	†5600Ω	†420Ω		
100Ω	110Ω	100Ω	●		

lytic.

Master station schematic.

PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
		TUBES			COMPONENT COMBINATIONS
V1		12BE6, Converter	K1	B-37502	Audio Couplate—220 mmf, (2) 5000 mmf, (2) 250 mmf, (2) 470K Ω , 6.8 meg.
V2		12BA6, IF Amplifier			
V3		12AX7, AF Amp., Intercom Preamp.			
V4		50C5, Output			TRANSFORMERS
V5		35W4, Rectifier	T1	B-30513	Input Transformer
		CAPACITORS	T2	B-30512	Output Transformer
C1		220 mmf @ 1000V, GMV, Ceramic Disc			COILS
C2		10 mmf @ 1000V, $\pm 10\%$, NPO, Ce- ramic Disc	L1	B-30024	Antenna
C3		10 mmf @ 1000V, $\pm 10\%$, NPO, Ce- ramic Disc	L2	B-30025	Oscillator Coil
C4		330 mmf @ 1400V, GMV, Ceramic Disc	L3	C-30511	Input IF
C5		33 mmf @ 1000V, $\pm 10\%$, N2200, Ce- ramic Disc	L4	C-30511	Output IF
C6		10,000 mmf @ 1000V, GMV, Ceramic Disc			SPEAKERS
C7		220 mmf @ 1000V, GMV, Ceramic Disc	SP1	B-36025	5" (3.2 Ω), Master Station
C8		.047 mfd @ 600V, $\pm 20\%$, Tubular	SP2	B-36003	3½" (3.2 Ω), Model 2006
C9		10,000 mmf @ 1000V, GMV, Ceramic Disc	SP3	B-36030	4" (3.2 Ω), Model 2025
C11A	B-35021	40 mfd @ 150V, Electrolytic	SP4	B-36031	5" (3.2 Ω), Model 2026
B		40 mfd @ 150V, Electrolytic		C-36008	8" (3.2 Ω), Model 2020
C		80 mfd @ 150V, Electrolytic			MISCELLANEOUS
C12		1000 mmf @ 1000V, GMV, Ceramic Disc	M1	C-35022	Tuning Gang, 2 Section
C13		.047 mfd @ 600V, $\pm 20\%$, Tubular	M2	A-31023	Phono/Intercom—Radio/Intercom Switch; DPDT Slide Type
C14		10,000 mmf @ 1000V, GMV, Ceramic Disc	M3	A-34515	Master Station Talk-Listen Switch; DPDT Slide Type, Spring Return
C15		220 mmf @ 1000V, GMV, Ceramic Disc	M4	A-34503	Master Speaker Switch; Single Pole, 3-Position, Slide Type
C16		.047 mfd @ 600V, $\pm 20\%$, Tubular	M5	A-34503	Remote Station Selector Switch #1; Single Pole, 3-Position, Slide Type
C17		.047 mfd @ 600V, $\pm 20\%$, Tubular	M6	A-34503	Remote Station Selector Switch #2; Single Pole, 3-Position, Slide Type
C18		5000 mmf, 1000V, GMV, Ceramic Disc	M7	A-34503	Remote Station Selector Switch #3; Single Pole, 3-Position, Slide Type
		RESISTORS	M8	A-34503	Remote Station Selector Switch #4; Single Pole, 3-Position, Slide Type
R1		1 meg, ½ Watt, $\pm 10\%$, Carbon	M9	A-34503	Remote Station Selector Switch #5; Single Pole, 3-Position, Slide Type
R2		22K Ω , ½ Watt, $\pm 10\%$, Carbon	M10	A-34503	Remote Station Selector Switch #6; Single Pole, 3-Position, Slide Type
R3		1000 Ω , ½ Watt, $\pm 10\%$, Carbon	M11	A-34503	Remote Station Selector Switch #7; Single Pole, 3-Position, Slide Type
R4		120 Ω , ½ Watt, $\pm 10\%$, Carbon	M12	A-34503	Remote Station Selector Switch #8; Single Pole, 3-Position, Slide Type
R5		2.2 meg, ½ Watt, $\pm 10\%$, Carbon	M13	A-31105	Phono Jack
R6		330K Ω , ½ Watt, $\pm 10\%$, Carbon	M14	D-40018	Printed Circuit Terminal Board As- sembly (Completely wired and sol- dered including selector switches M5 thru M12)
R7	B-34010	500K Ω , Carbon, Master Volume Con- trol and Off-On Switch			Remote Speaker Talk-Listen Switch (Used in Speaker Models 2006, 2025 and 2026); SPDT Slide Type, Spring Return
R8		3.3 meg, ½ Watt, $\pm 10\%$, Carbon	M15	A-34500	Remote Speaker Talk-Listen Switch (Used in Speaker Model 2020); SPDT Rotary, Wafer Type, Spring Return
R9		180 Ω , 1 Watt, $\pm 10\%$, Carbon			Recessed Plug
R10		220K Ω , ½ Watt, $\pm 10\%$, Carbon			Detector, 1N295
R11		5600 Ω , ½ Watt, $\pm 10\%$, Carbon	M16	A-34511	Printed Circuit Board Assembly (Completely wired and soldered including all Board Mounted com- ponents)
R12		220 Ω , 2 Watt, $\pm 10\%$, Carbon			
R13		3.3 Ω , ½ Watt, $\pm 10\%$, Carbon			
R14		10K Ω , ½ Watt, $\pm 10\%$, Carbon			
R15		6.8 meg, ½ Watt, $\pm 10\%$, Carbon			
R16		10 Ω , 1 Watt, $\pm 10\%$, Carbon			
R17		22 Ω , ½ Watt, $\pm 10\%$, Carbon	M17	A-31026	
R18		1 meg, ½ Watt, $\pm 10\%$, Carbon		A-36508	
R19		820K Ω , ½ Watt, $\pm 10\%$, Carbon (Used in Canadian Models only)		40050	
R22		22 Ω , ½ Watt, $\pm 10\%$, Carbon			
R23	B-34000	20 Ω , Wirewound, Remote Speaker Volume Control			

PARTS LIST—(cont'd)

<i>Ref. No.</i>	<i>Part No.</i>	<i>Description</i>	<i>Ref. No.</i>	<i>Part No.</i>	<i>Description</i>
MISCELLANEOUS—(cont'd)			MISCELLANEOUS—(cont'd)		
D-40010-89		Front Panel Assembly. (Master Unit, Model 2031)	C-37018		Grille (Master Unit, Models 2053 and 2054)
D-4001-12		Front Panel Assembly. (Master Unit, Model 2032)	A-31119		Dial Pointer
D-40013-14		Front Panel Assembly. (Master Unit, Model 2053)	A-31126		Knob, Tuning (Master Unit, Models 2031 and 2054)
D-40013-22		Front Panel Assembly. (Master Unit, Model 2054)	A-31137		Knob, Volume (Master Unit, Models 2031 and 2054)
C-32041		Front Panel Inlay (Master Unit, Model 2053)	A-31125		Knob, Tuning (Master Unit, Model 2032 & 2053)
C-32042		Front Panel Inlay (Master Unit, Model 2054)	A-31136		Knob, Volume (Master Unit, Model 2032 & 2053)
			A-37023		Nameplate (Master Unit, Model 2031)
			A-37022		Nameplate (Master Unit, Model 2032)

NuTone Housing Products

Madison & Red Bank Roads, Cincinnati, Ohio 45227

Form No. 37079
Printed in U.S.A. 5-77 - H1