

# SERVICE MANUAL SUPPLEMENT

## NUTONE MODEL IMA-203 – IMA-226

### REVISED CIRCUIT AND PARTS LIST



MODEL IMA-203



MODEL IMA-226

REFER TO BASIC SERVICE MANUAL  
FOR RF-IF ALIGNMENT AND SERVICE  
OF SECURITY CIRCUIT WHEN APPLICABLE.

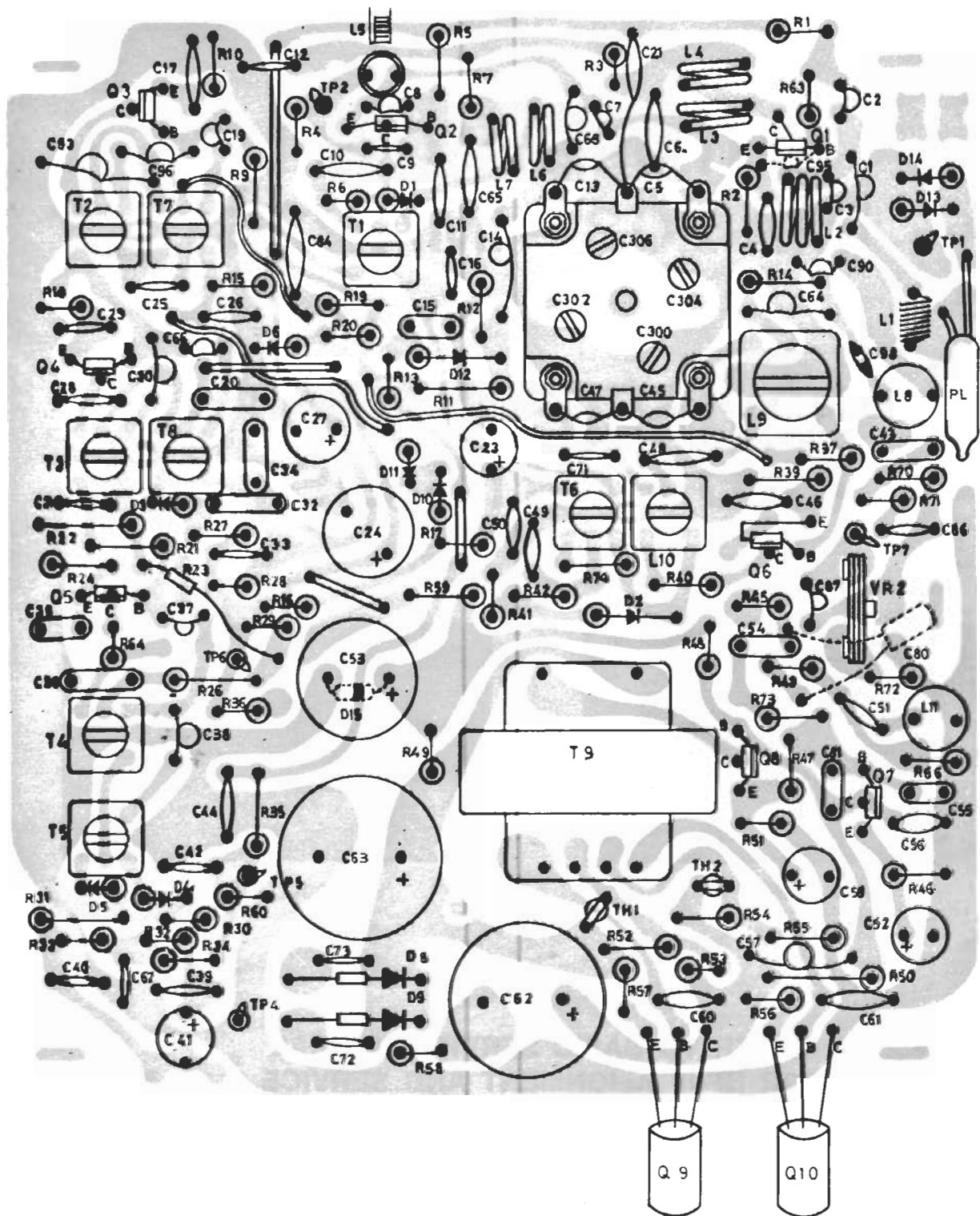
**NuTone** Housing Products

**Scovill**

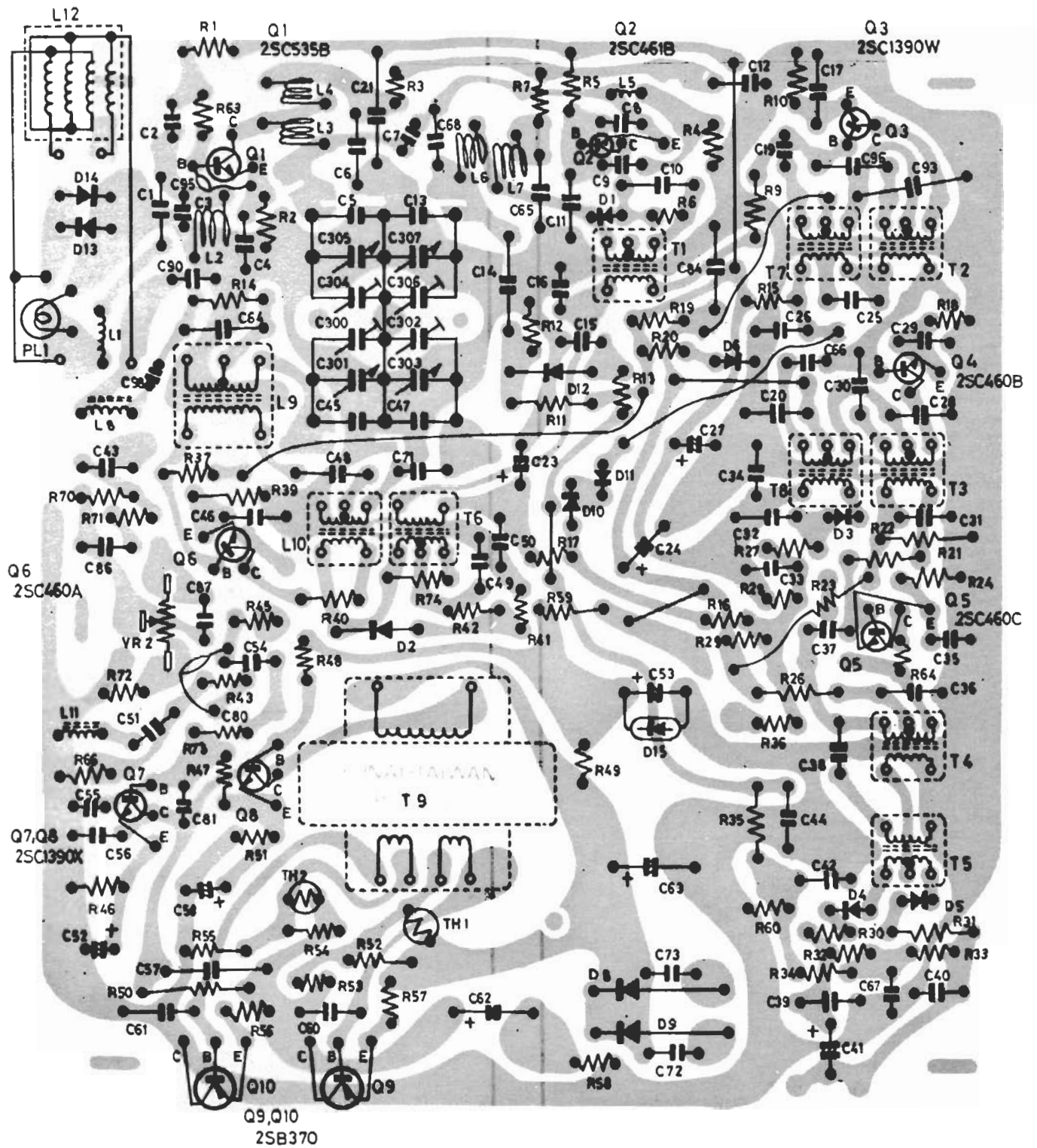
MADISON & RED BANK ROADS

CINCINNATI, OHIO 45227

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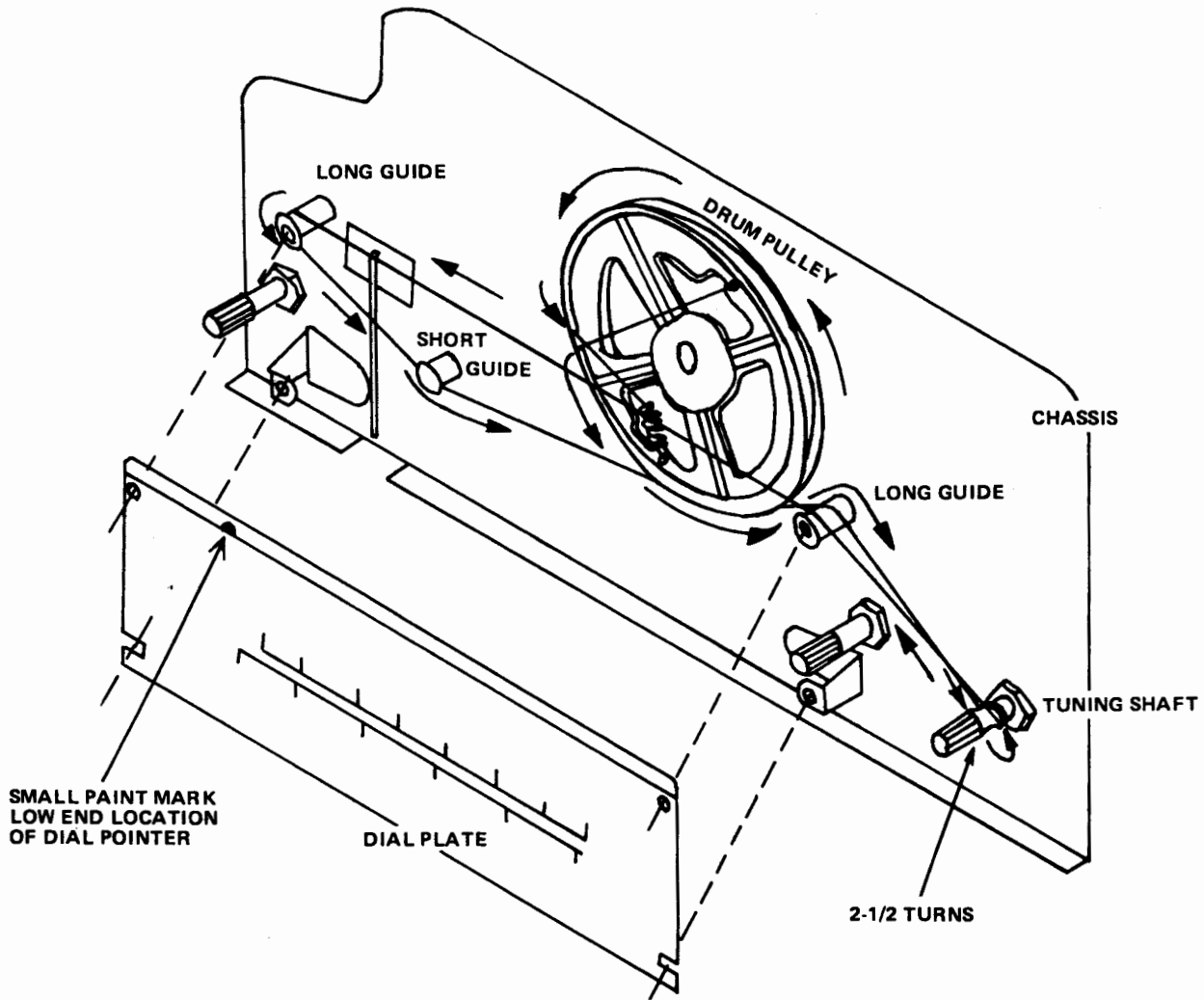


TUNER/AMPLIFIER PC BOARD COMPONENT LAYOUT (Top View)

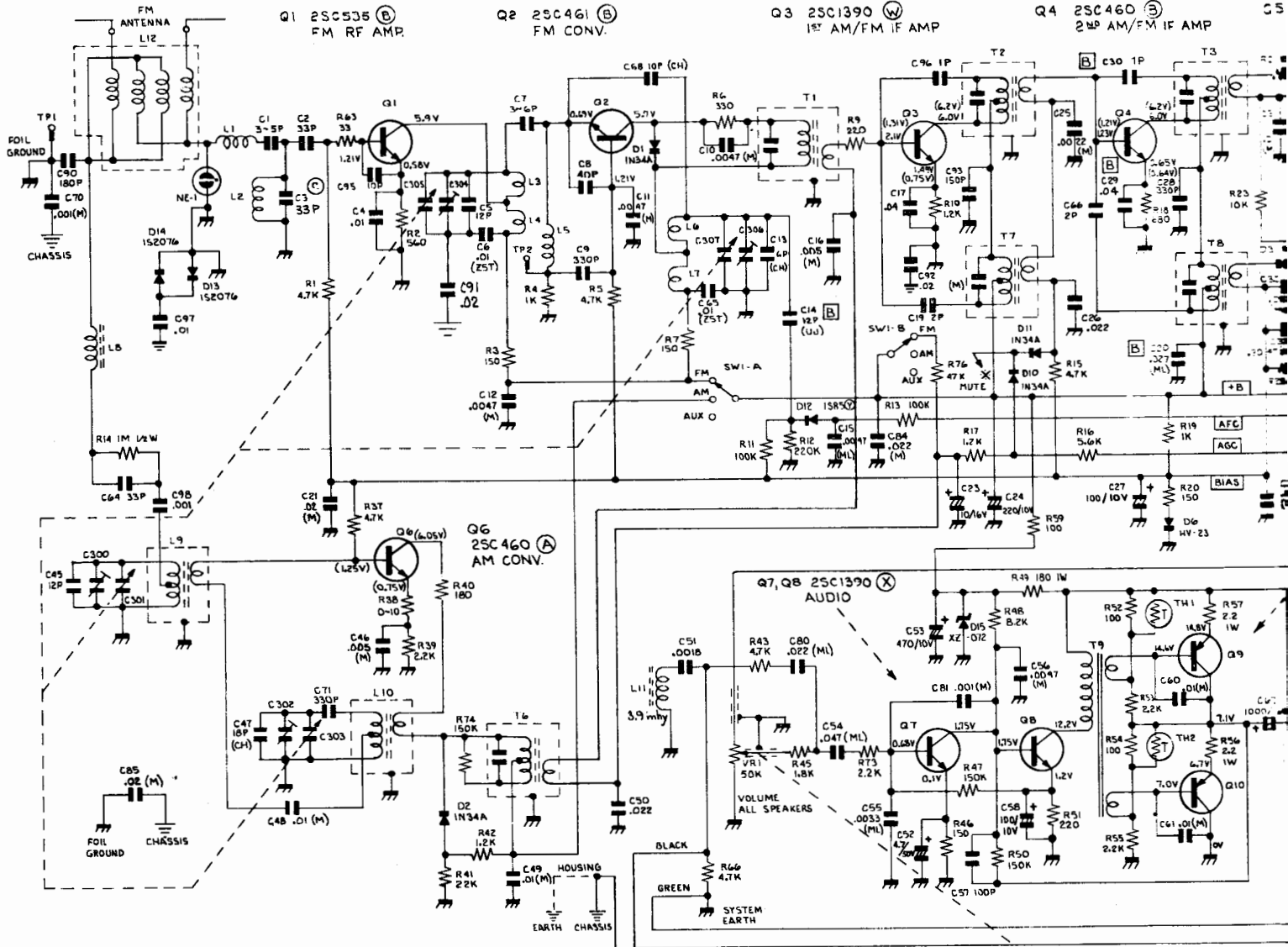


TUNER/AMPLIFIER PC BOARD FOIL PATTERN (Bottom View)  
 (Components As Viewed Thru The Board)

CLOCKWISE ROTATION OF TUNING SHAFT = CLOCKWISE ROTATION OF DRUM PULLEY

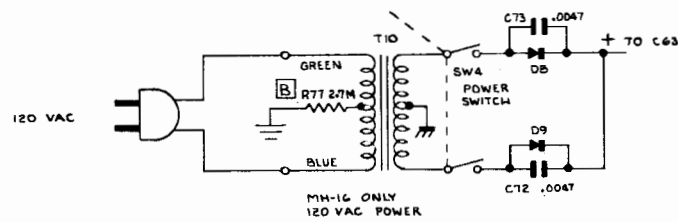
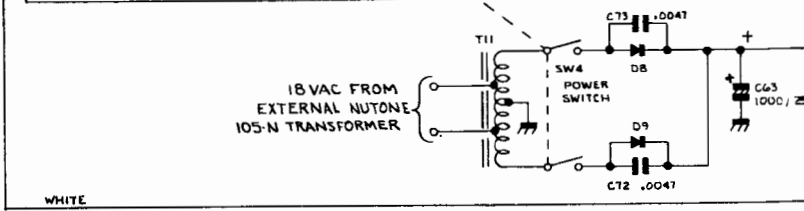


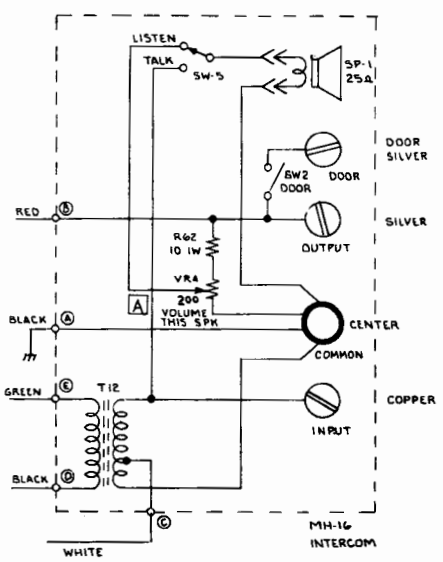
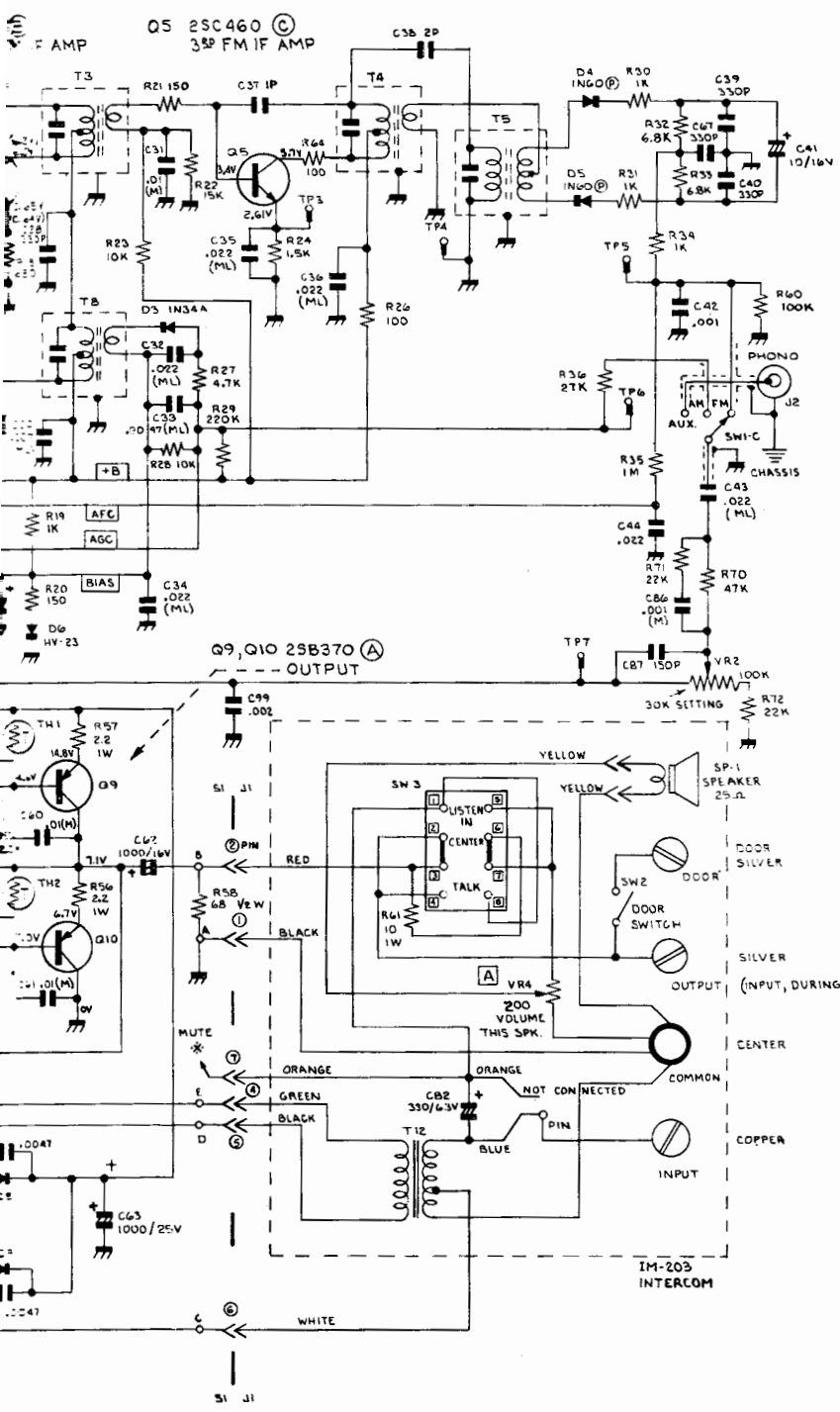
IMA-203 MASTER UNIT DIAL CORD INSTALLATION



**NOTES:**

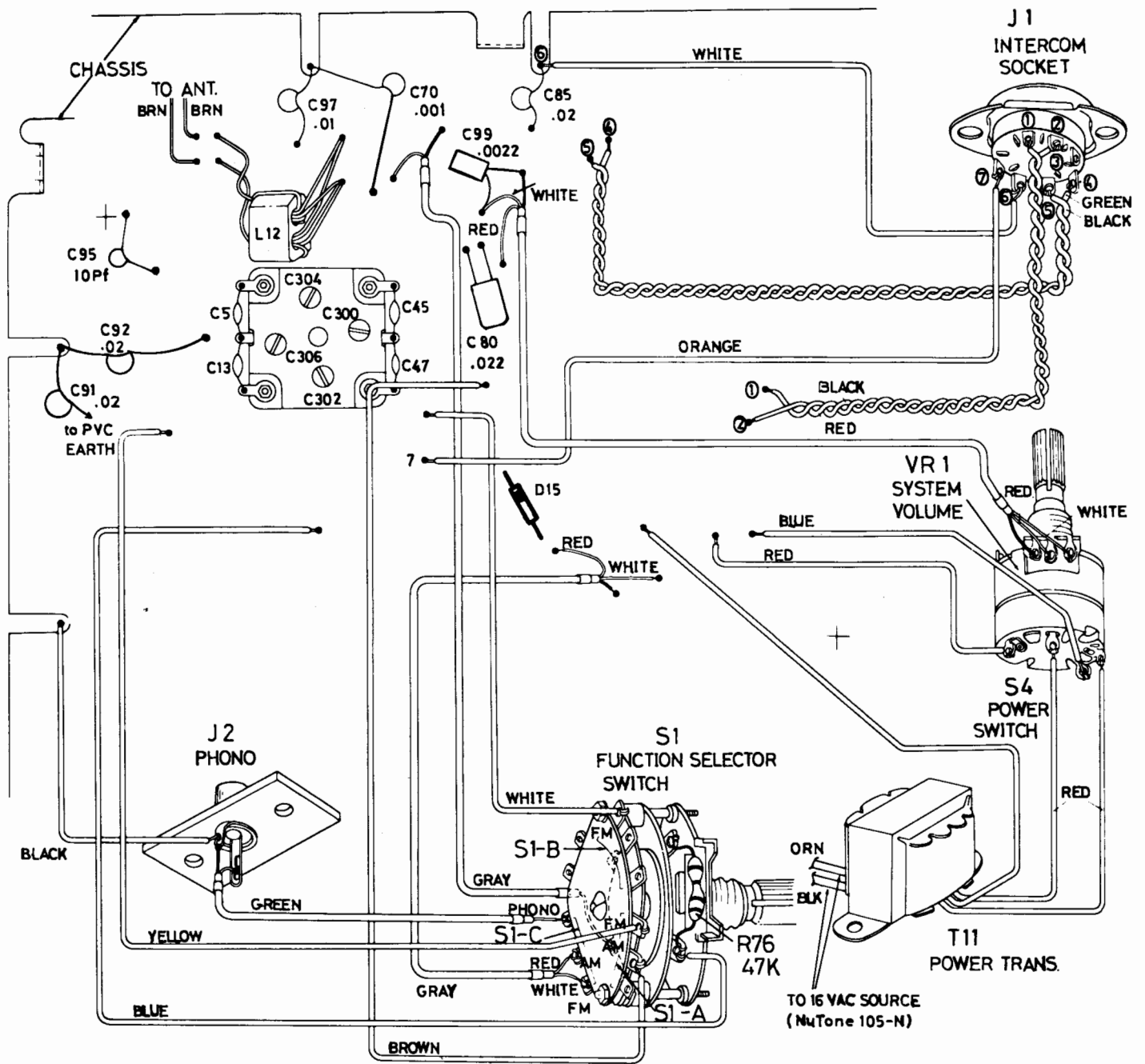
1. INTERMEDIATE FREQUENCY (IF): AM = 455KHz  
FM = 10.7 MHz
2. ALL RESISTORS ARE 1/4 WATT, 10%, UNLESS NOTED.
3. MOST CAPACITORS ARE IN MICRO-FARADS (MF) EXCEPT THOSE SHOWN "P" ARE PICO-FARADS (PMF).
4. ELECTROLYTICS SHOWN  $\text{---} \text{---} \text{---}$  ARE MARKED WITH CAPACITANCE/AND RATED VOLTAGE; SUCH AS 100C/25V.
5. FM TWIN-LEAD ACTS AS AN ANTENNA.
6. TRANSISTOR VOLTAGES ARE POSITIVE TO CHASSIS (ZERO SIGNAL) AND ARE MEASURED WITH VTVM WITH 120V AC LINE (SEE NOTE 7 & 8).
7. ON FM SCHEMATIC CERTAIN TRANSISTOR VOLTAGES ARE IN PARENTHESES, DESIGNATING (AM) VOLTAGE.
8. IM-203 AND IM-226 MODELS USE EXTERNAL NUTONE 105-N 16V AC TRANSFORMER-SUPPLY. "MH" MODELS ARE DIRECT 120V AC LINE-POWERED.
9. SELECTOR SWITCH POSITIONS ARE; AUXILIARY, AM, AND FM (SWITCH IS SHOWN IN FM POSITION).
10. INPUT TRANSFORMER (T12) MUST BE CONNECTED PER LEAD COLOR SHOWN; AND SERIES RESONANT TRAP L11-C51 IS REQUIRED PART OF CHASSIS CIRCUIT. INTERCOM HAS HEAD-START.
11. NORMAL SETTING OF VR2 IS 30K  $\pm$ 10% BETWEEN TP7 AND WIPER FOR NORMAL RADIO/INTERCOM LEVEL.
12. ON IM-203 AND IM-226, SHORTING ORANGE (MUTING) TO GROUND WILL MUTE RADIO; THEN RADIO COMES ON AS GROUND IS LIFTED (REF MUTING DIODES D10, D11).
13. IM-226 RADIO SCHEMATIC IS SIMILAR TO IM-203 EXCEPT DELETE R66 AND USE INTERCOM SCHEMATIC DWG. D-46565
14. MH16 IS 120V AC, HAS NO PHONO-JACK (J2), NO MUTING DIODES (D10, D11) AND HAS SIMPLE-INTERCOM (SHOWN AT RIGHT).





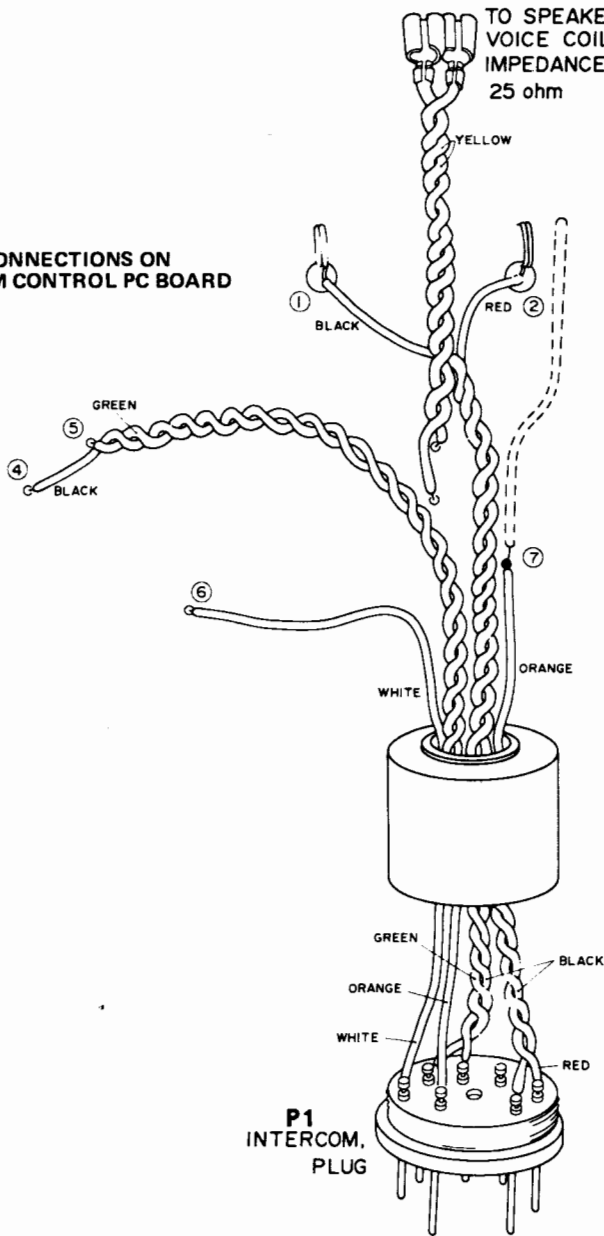
LAST COMPONENT USED					
R	C	D	M	T	SW
76	99	17	3	14	8

MODEL IMA-203 MODEL IMA-226 SCHEMATIC



IMA-203 CHASSIS WIRING DIAGRAM  
 (Showing Capacitors On Bottom Of PC Board)

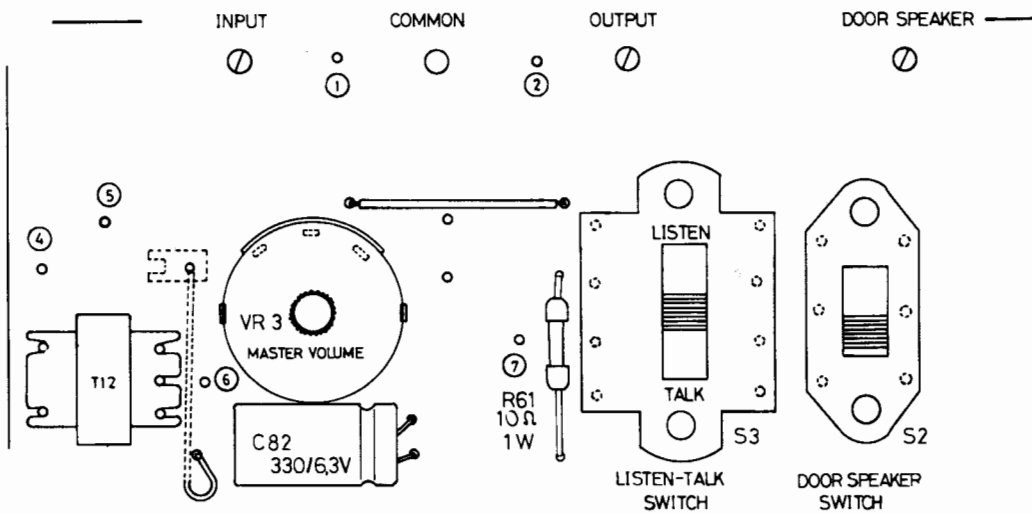
**WIRING CONNECTIONS ON INTERCOM CONTROL PC BOARD**



ORANGE - NOT CONNECTED  
THIS ORANGE WIRE OMITTED  
ON LATER PRODUCTION UNITS

**P1  
INTERCOM,  
PLUG**

**INTERCONNECTING PLUG (P1)  
AND WIRE ASSEMBLY**



**FRONT VIEW (Component Side) INTERCOM CONTROL PC BOARD**



Schematic Symbol	NuTone Part No.	Description
	38734-000	AM/FM Chassis
<b>CAPACITORS</b>		
C1, C7	60258-103	3pf @ 50V Ceramic
C2, C64	60258-116	33pf @ 50V Ceramic
C3	60258-117	27pf @ 50V Ceramic
C4, C97	60258-119	.01mfd @ 50V Ceramic
C5, C45	60258-120	12pf @ 50V Ceramic
C6, C65	60258-139	.01mfd @ 50V Ceramic
C8	5423A	40pf @ 50V Ceramic
C9, C28, C39, C40, C67, C71	60258-133	330pf @ 50V Ceramic
C10, C11, C12, C-16, C46, C56	60528-118	.0047 mfd @ 50V Ceramic
C13	60528-131	6pf @ 50V Ceramic
C14	5424A	12pf @ 50V Ceramic
C15, C33	60262-102	.0047mfd Mylar
C17, C29	5425A	.04mfd Ceramic
C19, C38, C66	60258-123	2pf @ 50V Ceramic
C20	5426A	.027mfd Mylar
C21	5427A	.02mfd Ceramic
C23, C41	60263-114	10mfd @ 10V Electrolytic
C24	60263-111	220mfd @ 10V Electrolytic
C25, C51	60258-122	.0022mfd @ 50V Ceramic
C26, C44, C50	60261-101	.022mfd @ 50V Ceramic
C27, C58	60263-109	100mfd @ 6.3V Electrolytic
C28, C39, C40, C67, C71	60258-133	330pf @ 50V Ceramic
C30, C37, C96	5428A	1pf Ceramic
C31, C48, C49, C60, C61	60258-125	.01mfd @ 50V Ceramic
C32, C34, C35, C36, C43, C80	60262-104	.022mfd @ 50V Mylar
C42	5429A	.001mfd Ceramic
C47	60258-138	18pf @ 50V Ceramic
C52	5430A	4.7mfd Electrolytic
C53	60263-112	.470mfd @ 10V Electrolytic
C54	60262-103	.047mfd @ 50V Mylar
C55	60262-105	.0033mfd @ 50V Mylar
C57	60258-137	100pf @ 50V Ceramic
C62	60263-113	1000mfd @ 16V Electrolytic
C63	60263-115	1000mfd @ 25V Electrolytic
C65	60258-139	.01mfd @ 30V Ceramic
C68	60258-132	10pf @ 50V Ceramic
C70, C86	60258-128	.001 @ 50V Ceramic
C72, C73	60258-126	.0047mfd @ 50V Ceramic
C81	60262-106	.001mfd @ 50V Mylar
C82	60263-108	330mfd @ 6.3V Mylar
C84	60258-127	.022mfd @ 50V Ceramic
C85, C91, C92	5431A	.02mfd Ceramic
C87, C93	60258-135	150pf @ 50V Ceramic
C90	60258-136	180pf @ 50V Ceramic
C95	60258-130	10pf @ 50V Ceramic
C300-307	5039A	AM/FM Variable Tuning Capacitor

Schematic Symbol	NuTone Part No.	Description
<b>RESISTORS</b>		
R1, R5, R15, R27, R37, R43	60256-472	4.7K Ohms
R2	60256-561	560 Ohms
R3, R7, R20, R21, R46	60256-151	150 Ohms
R4, R19, R30, R31, R34	60256-102	1K Ohms
R6	60256-331	330 Ohms
R9, R51	60256-221	220 Ohms
R10, R17, R42	60256-122	1.2K Ohms
R11, R13, R60	60256-104	100K Ohms
R12, R29	60256-224	220K Ohms
R14, R35	5040A-105	1 Meg Ohm
R16	60256-562	5.6K Ohms
R18	60256-681	680 Ohms
R22	60256-153	15K Ohms
R23	60257-103	10K Ohms
R24	60257-152	1.5K Ohms
R26, R52, R54, R59, R64	60256-101	100 Ohms
R28	60256-103	10K Ohms
R32, R33	60256-682	6.8K Ohms
R36	60256-273	27K Ohms
R39, R53, R55, R73	60256-222	2.2K Ohms
R40	60256-181	180 Ohms
R41, R71, R72	60256-223	22K Ohms
R45	60256-182	1.8K Ohms
R47, R50, R74	60256-154	150K Ohms
R48	60256-822	8.2K Ohms
R49	5041A-181	180 Ohms 1 Watt
R56, R57	5041A-222	2.2 Ohms
R58	5042A-680	68 Ohms
R61	5067A-103	10K Ohms
R63	60256-330	33 Ohms
R66	60256-472	4.7K Ohms
R70, R76	60257-473	47K Ohms
VR 11/SW4	60247	50K Ohms Potentiometer
VR2	5043A	100K Ohms Potentiometer
VR4	34059	200 Ohms Potentiometer
<b>TRANSISTORS</b>		
Q1	5010A	FM RF Amplifier — 2SC535(B)
Q2	5011A	FM Converter — 2SC461(B)
Q3	5012A	1st IF Amplifier — 2SC1390(W)
Q4	5013A	2nd IF Amplifier — 2SC460(B)
Q5	5014A	3rd IF Amplifier — 2SC460(C)
Q6	5015A	AM Converter — 2SC460(A)
Q7	5016A	Audio Amplifier — 2SC1390(X)
Q8	5016A	Audio Driver — 2SC1390(X)
<b>DIODES</b>		
D1	60280	FM Overload — 1N34A
D2	60280	AM Overload — 1N34A
D3	60280	AM Detector — 1N34A
D6	5017A	Bias Stabilizer — HV-23G
D10, D11	60280	Muting — 1N34A
D12	5019A	FM AFC — 1SB5
D15	5021A	Voltage Regulator — 7.2V-XZ-072

Schematic Symbol	NuTone Part No.	Description
<b>COILS</b>		
L1	5022A	FM Antenna
L2	5023A	FM Antenna
L5	5068A	FM Emitter Choke
L8	5026A	Choke
L9	60230	AM Antenna
L10	5027A	AM Oscillator
L11	60235	Trap
L12	5028A	FM Antenna
<b>MATCHED SETS</b>		
Q9, Q10	60278	Audio Output Transistors
D4, D5	60279	FM Detector Diodes
D8, D9	5018A	Rectifier — Power
D13, D14	5020A	Protector Diode
TH1, TH2	5037A	Thermister Output Transistor
L3, L4	5024A	FM RF Coil
L6, L7	5025A	FM Oscillator Coil
<b>SWITCHES</b>		
SW1	5436A	Function Selector
SW2	34615	Door Speaker
SW3	34617	Listen-Talk — 3 Position
SW5	34616	Listen-Talk — 2 Position

Schematic Symbol	NuTone Part No.	Description
<b>TRANSFORMERS</b>		
T1	5029A	1st FM IF
T2	5029A	2nd FM IF
T3	5029A	3rd FM IF
T4	5030A	4th FM IF
T5	5031A	FM Discriminator
T6	5032A	1st AM IF
T7	5033A	2nd AM IF
T8	5034A	3rd AM IF
T9	60243	Driver
T11	5035A	Power
T12	5036A	Intercom Input
<b>MISCELLANEOUS</b>		
	5432A	Dial Cord Guide — Long
	5433A	Dial Cord Guide — Short
	5439A	Neon Lamp — NE1
	5443A	Dial Pointer
	5444A	Dial Cord
	5445A	Dial Cord Spring
	5446A	Intercom P/C Board
	5448A	Intercom Socket
	5449A	Intercom Plug
	5450A	Phono Jack

**NuTone** Housing Products

Form FE-940-1 Printed in U.S.A. 2-77 HI

**Scovill**

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