

# SAMS PHOTOFACT



## AUTO RADIO SERIES

AR-229  
**229**  
NOVEMBER, 1976



### CONTENTS

#### AMERICAN MOTORS

Mctador (76)  
2AM1606  
2AM1607  
5AM1608  
5AM1609  
5JC1602  
Pacer (76)  
2AM1607  
5AM1609  
Jeep (76)  
5JC1602

#### BUICK

Skyhawk (76)  
61HFM3

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Monza, Vega (76)  
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#### UNIVERSAL

Automatic  
RALLY 500  
Channel Master  
6348  
Lear Jet  
A-10  
Panasonic  
CQ-742EU  
Pioneer  
TP-800E

**HOWARD W. SAMS & CO., INC.** Indianapolis, Indiana

World Radio History

2

\$3.50

\$4.40 IN CANADA

Cat. No. AR-229

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# SAMS PHOTOFACT<sup>®</sup>

## AUTO RADIO SERIES

VOLUME

**229**

by the

*Howard W. Sams.*

ENGINEERING STAFF



**HOWARD W. SAMS & CO., INC.**

INDIANAPOLIS, INDIANA

**FIRST EDITION  
FIRST PRINTING—NOVEMBER, 1976**

**PHOTOFACT®  
AUTO RADIO SERIES  
VOLUME 229**

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Library of Congress Catalog Card Number: 49-11493



**AUTO RADIO SERIES**

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## **GENERAL SERVICING INFORMATION**

The following information applies to all tape units in this volume, and should be followed before any adjustments are made or trouble diagnosis is attempted. Any exceptions or additions will be found in the detailed servicing procedures for each tape unit.

### **POWER SOURCES**

Many tape units require full supply voltage for proper operation. Be sure the supply voltage is maintained at the rated value under load while making adjustments.

### **CLEANING**

All head faces should be cleaned with head cleaner or methyl alcohol to remove dust and accumulated oxide. (An applicator may be fashioned from absorbent cotton.) Do not use a screwdriver or any metallic object near the head faces.

*CAUTION: Avoid getting head cleaner on any plastic surface.*

Clean capstans, pressure rollers, and tape guides with alcohol using a soft lint-free cloth. Also use alcohol to remove oil and grease from drive belts and other driving surfaces.

### **LUBRICATING**

Clean all surfaces before lubricating. Apply a few drops of #20 machine oil to all bearings and rotating bushings. Apply a thin film of light, nonhardening grease to all cam surfaces and pawls, if they have been factory lubricated. Always wipe excess oil or grease from parts that have been lubricated.

*CAUTION: Oil and grease must be kept off all driving surfaces as well as any parts which may transfer oil or grease to them.*

### **DEMAGNETIZING**

Heads require demagnetizing at regular intervals to maintain high-frequency response, dynamic range, and low distortion. (Follow instructions included with the demagnetizing unit.) After demagnetizing the heads, keep all screwdrivers and other metallic objects away from the head faces. Tape guides may also require occasional demagnetizing.

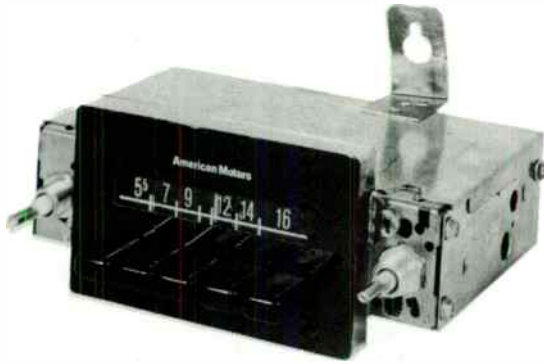
*IMPORTANT: Be sure to demagnetize the heads after making resistance measurements in the head circuits.*

### **CARTRIDGES**

Many problems associated with tape units result from defective cartridges. Always try a cartridge known to be good before attempting repairs.



For Supplier Address See PHOTOFACT Index



MODEL 2AM1607(3691020)

- MODELS 2AM1606(3691024) (76 Matador)  
 2AM1607(3691020) (76 Matador, Pacer)  
 5AM1608(3691025) (76 Matador)  
 5AM1609(3691021) (76 Matador, Pacer)  
 5JC1602(5355092) (76 Jeep)

AMERICAN MOTORS 1976 SERIES

## ALIGNMENT INSTRUCTIONS

Check for specified source voltage.

Use only enough generator output to provide a usable indication.

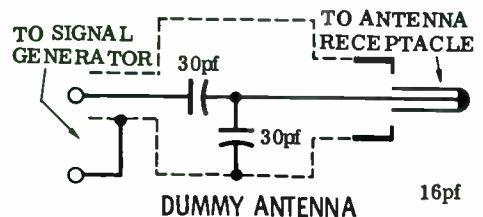
Suggested Alignment Tools: GC ELECTRONICS  
 C1, C6 ..... 8290, 8868, 9087  
 T1, T2 ..... 9296, 9297, 9300

### PUSH-BUTTON ADJUSTMENT

1. Pull button out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

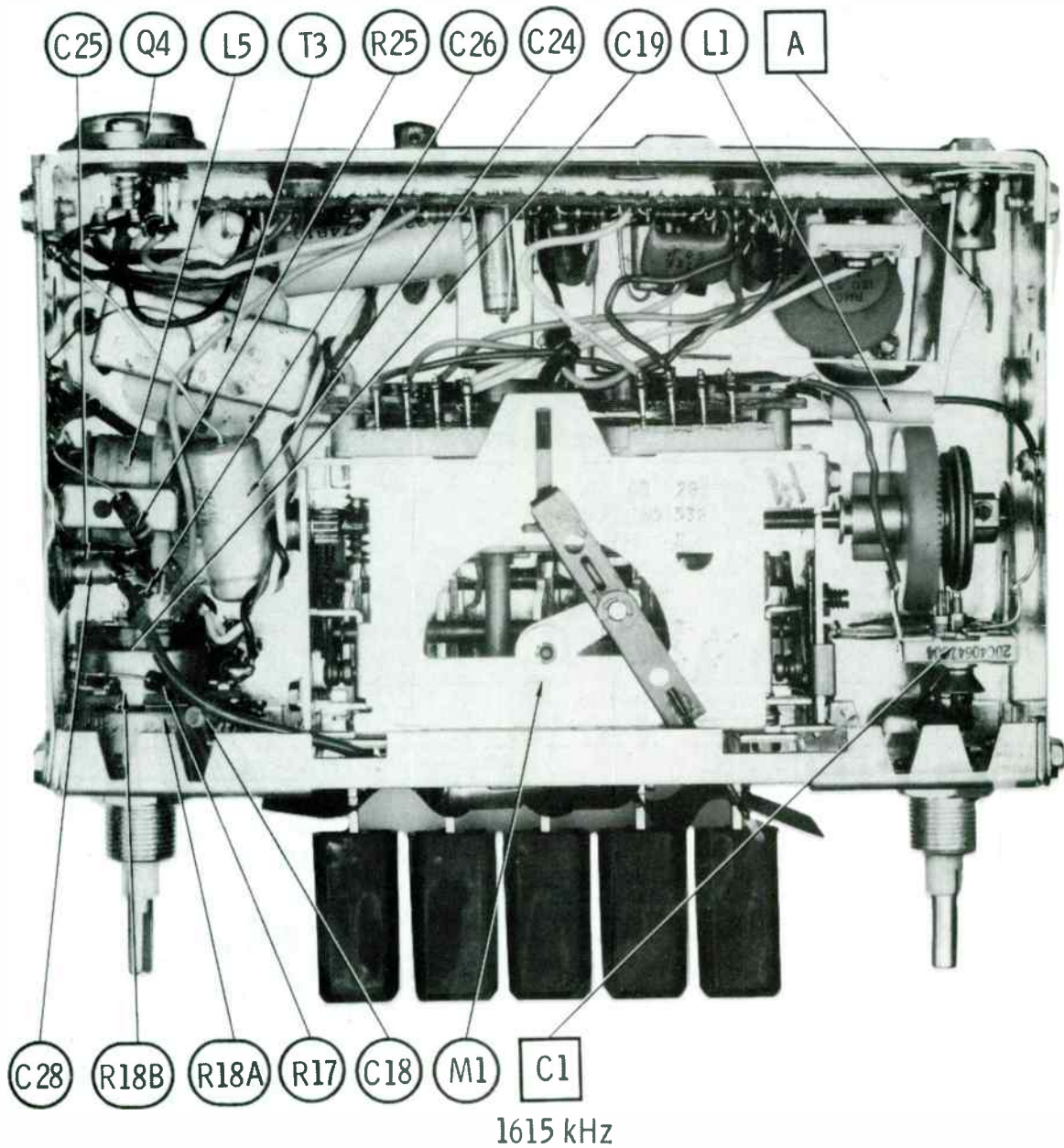
GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
High side thru .1uF to point A, low side to ground.	262kHz 400-Hz mod.	High freq. end stop.	Output meter across voice coil.	T2,T1	Adjust for maximum.
Thru dummy antenna to antenna input.	1615kHz	"	"	6B,6A,C1	"
Tuner alignment is not necessary unless associated components have been disturbed. If necessary, back tuning cores L2, L3, L4 out of coils but not out of forms. Repeat step 2.					
Thru dummy antenna to antenna input.	1000kHz	Tune to signal	Output meter across voice coil.	L4,L3,L2	Adjust for maximum. Repeat alignment until no further improvement is noted.

With radio installed in car and antenna extended to desired height, tune in a weak station near 1400kHz and adjust C1 for maximum output. Antenna adjustment C1 is located behind tuning and dummy knobs.



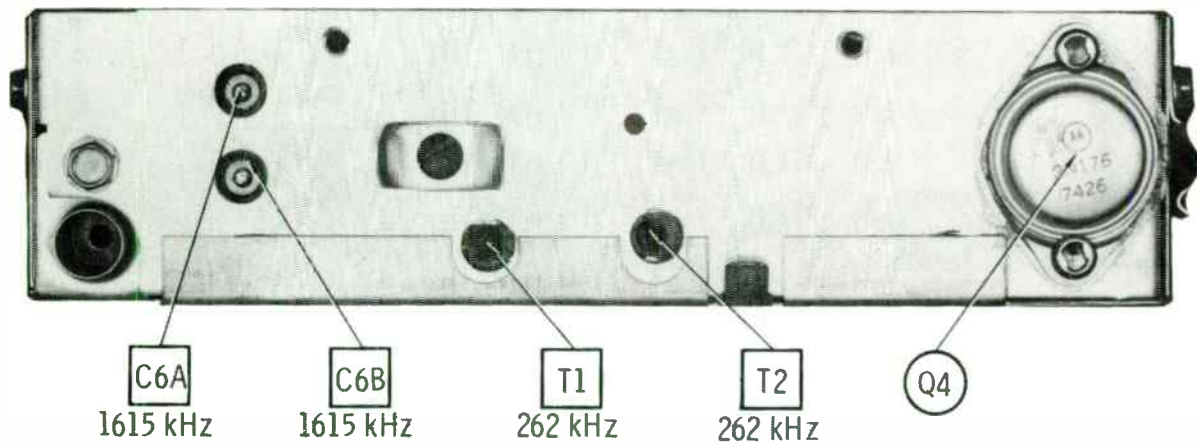
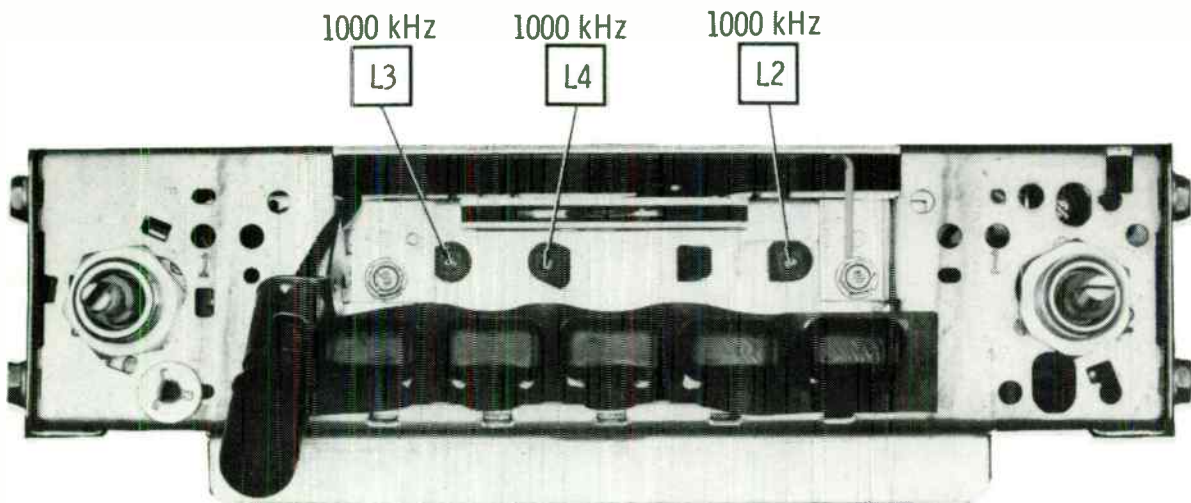
**HOWARD W. SAMS & CO., INC.** Indianapolis, Indiana 46208

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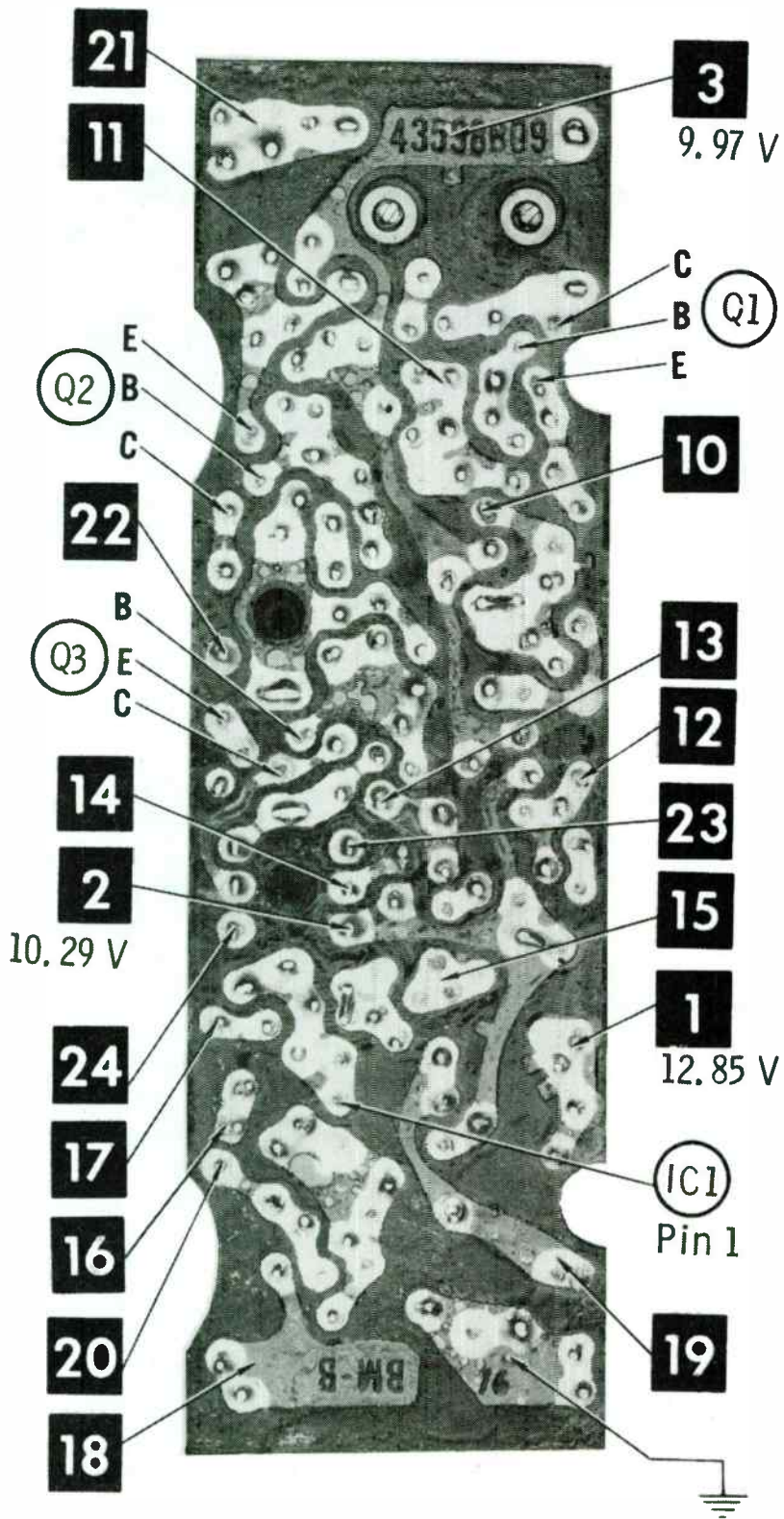


CHASSIS-TOP VIEW

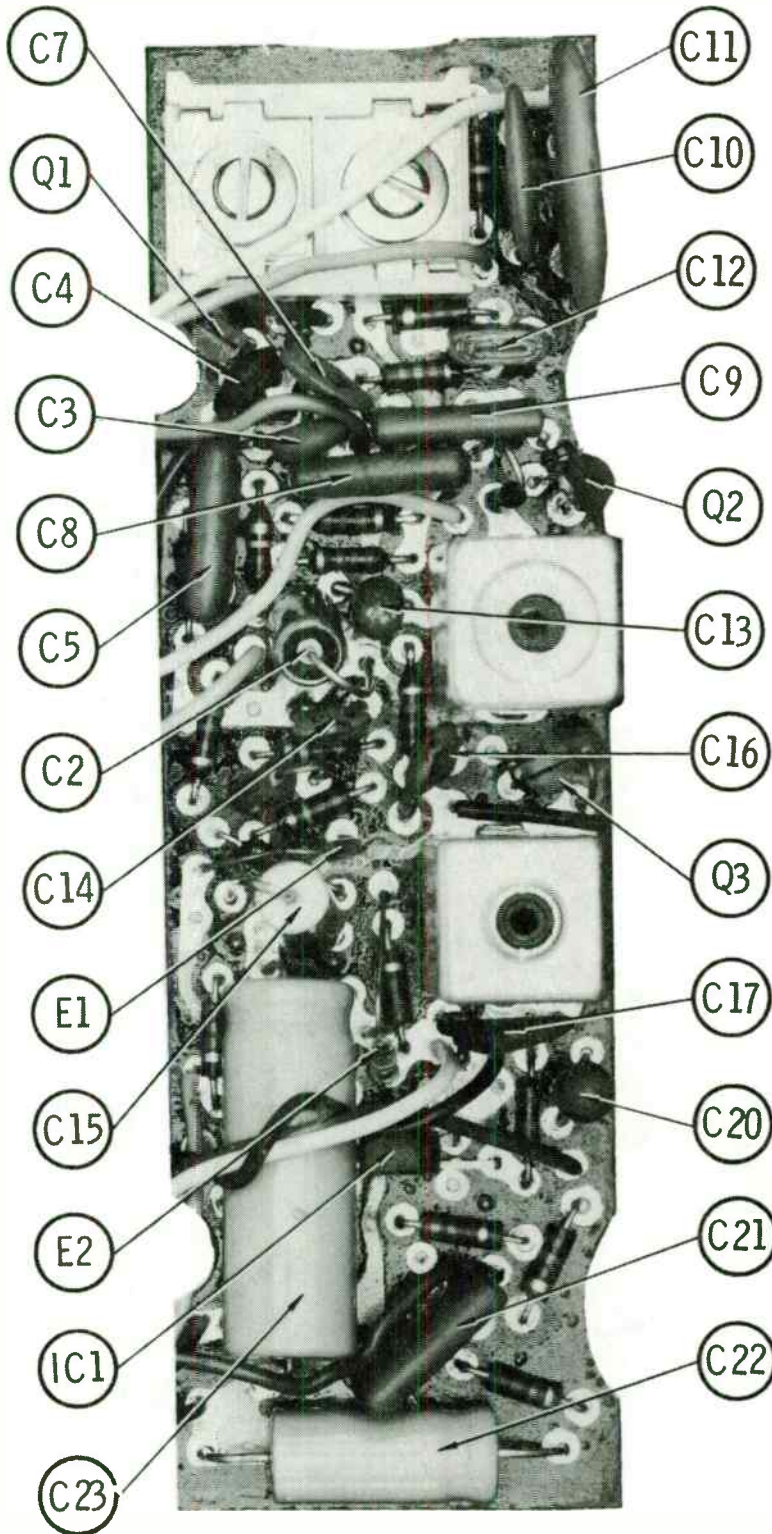




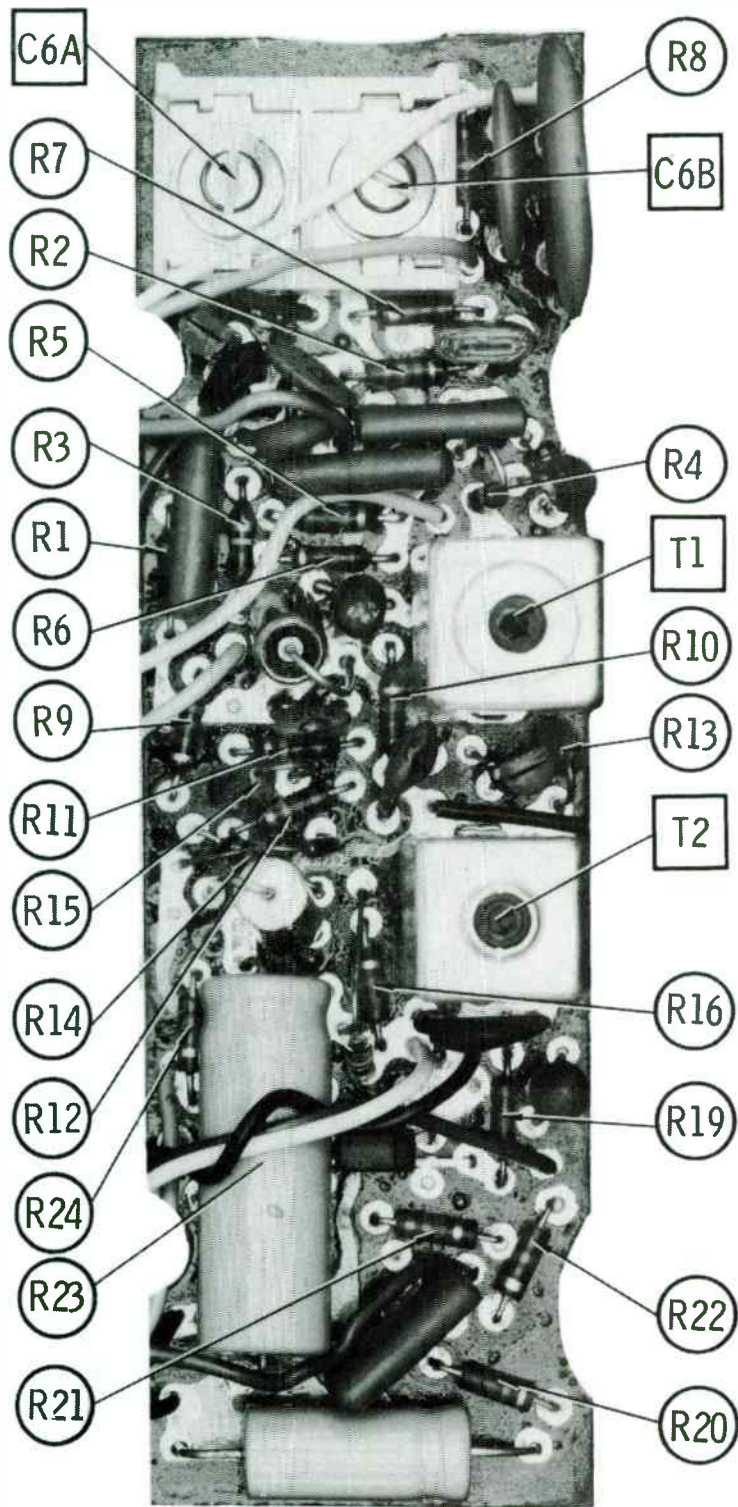
CHASSIS-FRONT AND REAR VIEWS



MAIN BOARD



MAIN BOARD



MAIN BOARD

# PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.

Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

## SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	IR WORKMAN PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
E1	DHD800	48-134816	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
E2	1N139	48-137495	1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
IC1	MFC4050	51-10534A03								ECG755
Q1	25B2	48-137351	GE-20	TR-24	PTC121	HEPS0014	RE 10	SK3018	RT-107	ECG108
Q2	25A2	48-137350	GE-20	TR-24	PTC121	HEPS0014	RE 10	SK3018	RT-107	ECG108
Q3	548	48-134809	GE-20	TR-24	PTC121	HEPS0014	RE 10	SK3018	RT-107	ECG108
Q4	2N176	48-134747	GE-16	TR-01	PTC105	HEPG6018	RE 7		RT-124	ECG104
	P4V-1/P6E	48-137501(1)								

(1) Used in some versions.

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	47 10V	23-42674B23	WBR50-25	TT10X50A	TVA-1129.94
C13	1 15V	23-43280A17		TDC105M035EL	SD35-19
C15	10 16V	23-42674B31	WBR10-25	TT15X10	TVA-1145
C18	1 15V	23-43280A14		TDC104M050EL	SD50-R109
C19	1 15V	23-43280A01		TDC105M035EL	SD35-19
C20	2 10V	23-43280A02		TDC225M035FL	SD35-2R29
C22	100 10V	23-42674B38	WBR100-16	MTA100E10	TVA-1130
C23	400 16V	23-42674810	WBR500-16	TT15X400	TVA-1161.5
C24	680 16V	23-41928A43 (2)	WBR500-16	TT15X600	TVA-1162.2
	1800 16V	23-42674821 (2)			

(2) Used in some versions.

## CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	30-220	20-40647C04	DTN-33	N33	CN7433	10TCU-Q33
C3	33 N750 10%		DD-331	GP330	GP333	10TS-T33
C4	330 10%				M192P4729R8	192P4729R8
C5	.0047 10%	8-41719B09				
C6A	30-140	20-42280B06				
C6B	90-210	(1)				
C7	82 N750 5%			WMF1S1	CN7482	10TCU-Q82
C8	.01				EWFA1110	1PB-S10
C9	.0047 10%	8-41719B09			M192P4729R8	192P4729R8
C10	120 NPO 5%		DTZ-120		CN0312	10TCC-T12
C11	220 N150 5%	21-180D05			*	10TCP-T22
C12	.0082 10%			WMF1D82	EWFA282	1PB-D82
C14	800 10%		DD-821	GP620	GP382	10TS-T82
C16	220 10%		DD-221		GP322	10TS-T22
C17	.005		DC-502	MGP005	TA250	TG-D50
C21	.01			WMF1S1	EWFA1110	1PB-S10
C25	.001	21-560232				
C26		64-561876				
C27	.022	8-42208B09 (2)				
C28	.001	21-560232 (3)				
C29		64-41668A13 (4)				

\* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

(1) Part of C6A.

(2) Used in some versions.

(3) Used in Models 2AM1606/1607, 5AM1608/1609.

(4) Used in Models 5AM1608/1609.

## CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA				
			MFR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
R18a	Tone	20K	18C41803C08P				
b	Volume/Switch	10K Tap @ 5000					
R26	Fader	30 2W	18-42081C02 (18)				

(18) Used in Models 1608 and 1609 only.

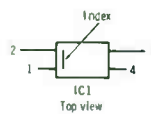
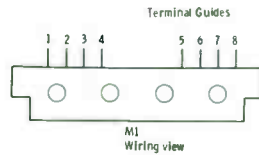
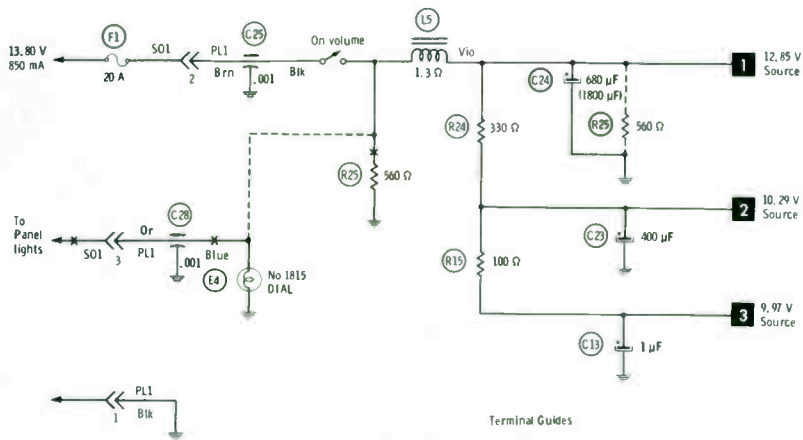
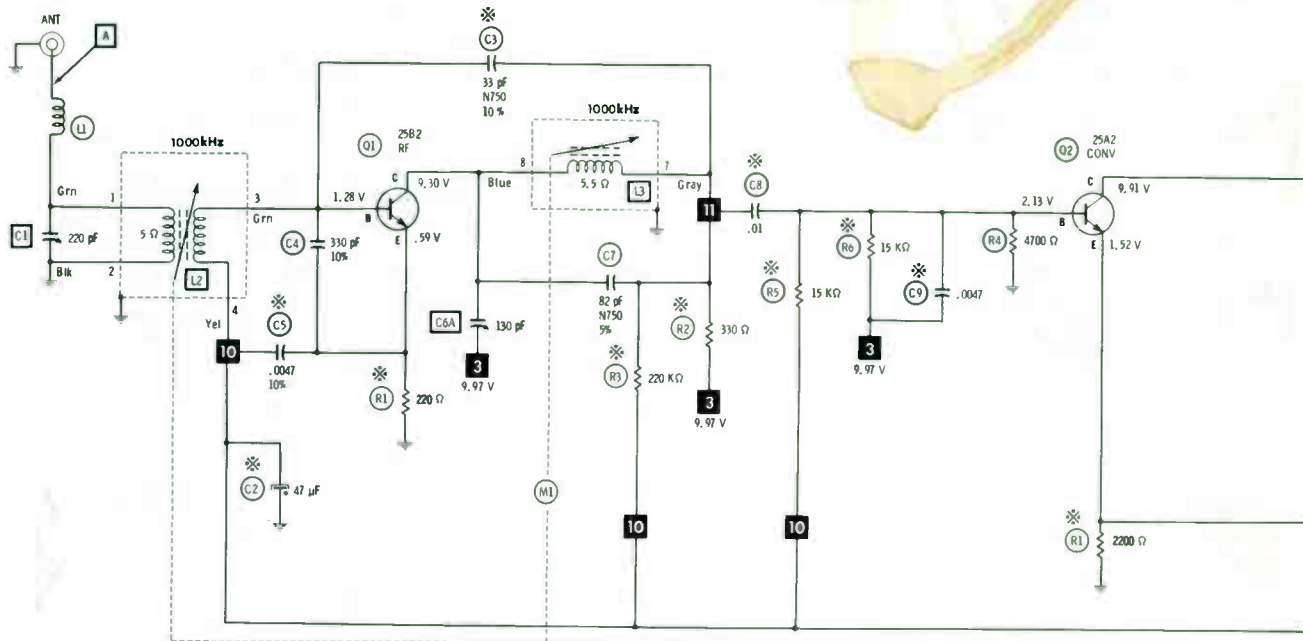
## COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	Antenna Choke	24-40788A12 (1)		4604	
	Antenna Choke	24-40788A04 (2)		4604	
L2	Antenna	(3)			
L3	RF	(3)			
L4	Oscillator	(3)			
T1	IF (455kHz)	24-40310B13			
T2	IF (455kHz)	24-40310B14			

(1) Used in Models 2AM1606, 2AM1607, 2AM1608, 2AM1609.

(2) Used in Model 5JC1602.

(3) Part of M1.

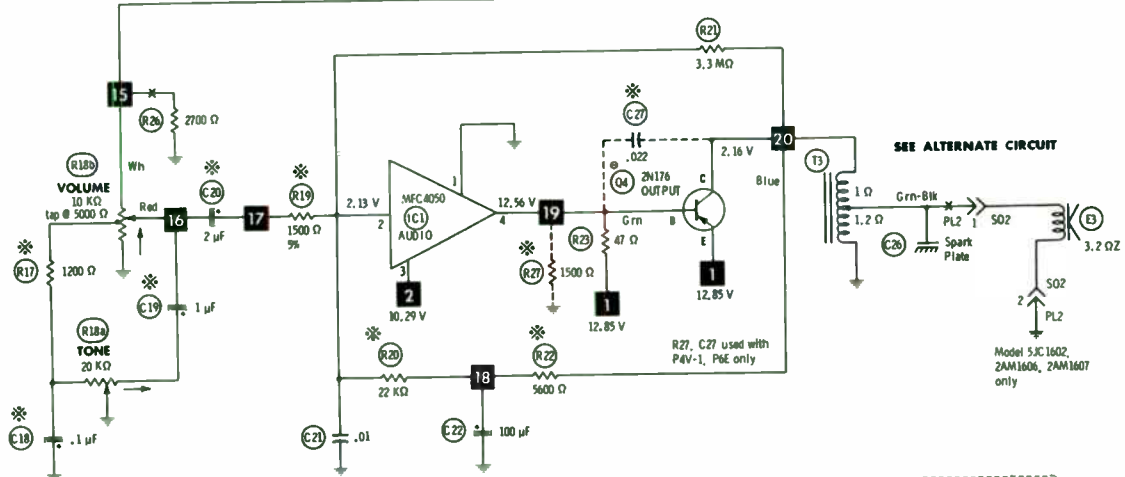
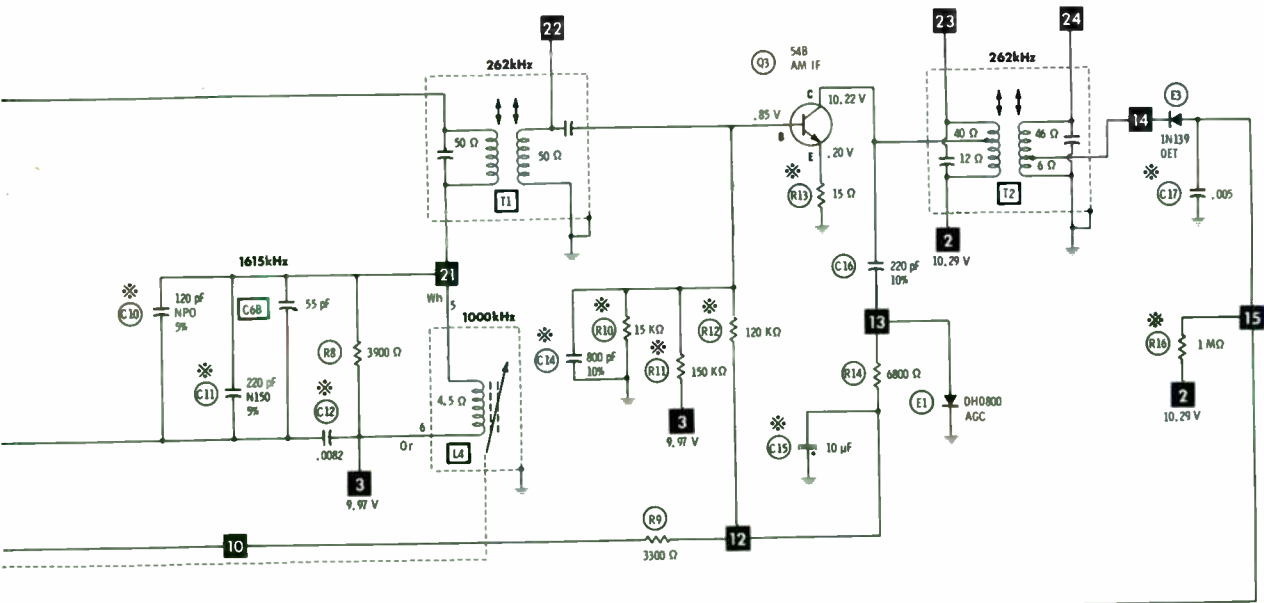


- ✱ Circuitry not used in some versions
- Circuitry used in some versions
- ⊙ See parts list
- ✱ Nominal value
- ⊕ Ground
- ⊞ Chassis
- ▽ Common tie point

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
WITH **CIRCUITRACE**

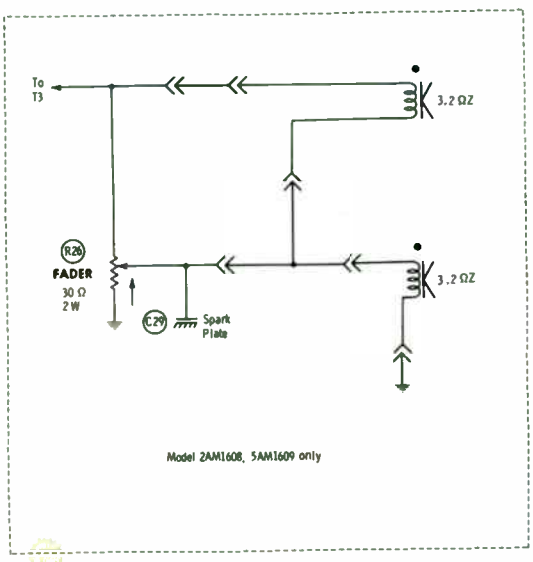
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Supply voltage maintained as shown at input.  
Voltages measured with digital meter, no signal.  
Controls adjusted for normal operation.  
Arrow at control indicates direction of advance.  
Terminal identification may not be found on unit.  
Resistors are 1/2W or less, 5% unless noted.  
Value in ( ) used in some versions.



SEE ALTERNATE CIRCUIT

Model 5JC160Z,  
2AM1606, 2AM1607  
only



## PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS® for the most up-to-date replacement.

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
L5	850mA	1.3	8mH	25-41894B33			

### TRANSFORMER (Audio Output)

ITEM No.	IMPEDANCE	REPLACEMENT DATA			NOTES
	PRI.	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T3	10.4 Tap @ 3.2	25-41448C23			

### SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
E3	5" X 7" PM, 3.2 Ohms 4" X 10" PM, 3.2 Ohms 4" X 10" PM, 3.2 Ohms	50-40029C05 50-43933C01 50-40629E01		Used with Model 5JC1602. Used with Model 5AM1608. Used with Model 5AM1609.

### FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA							
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.	
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	
F1	20A		In Fuse Block	SFE20		307020			

### MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1	Tuner Assembly	77-41900C43	AS283 (Used in Models 2AM1606/1607)
	Tuner Assembly	77-41900C42	AS274 (Used in Model 5JC1602)
	Tuner Assembly	77-41900C46	AS285 (Used in Models 5AM1608/1609)
	Coil Assembly	1-41800C67	
	Core	76-40553B26	AM Ant. & RF (Used in Models 2AM1606/1607, 5AM1608, 5AM1609)
	Core	76-40553B26	AM Ant. (Used in Model 5JC1602)
	Core	76-40553B25	AM RF (Used in Model 5JC1602)
	Core	76-40553B08	AM Osc.
	Cable (Connector Assy.)	30-40381F02	(Used in Models 2AM1607, 5AM1609)
	Cable (Connector Assy.)	30-40532E02	(Used in Model 5JC1602)
	Cable (Connector Assy.)	30-40688C06	(Used in Models 2AM1606, 5AM1608)
	Cable (Connector Assy.)	30-40352F01	Speaker (Used in Models 2AM1606/1607)
	Cable (Connector Assy.)	30-43189B04	Speaker (Used in Model 5JC1602)
	Cable (Connector Assy.)	30-40397F01	Speaker (Used in Model 2AM1606)
	Cable (Connector Assy.)	30-44533A15	Speaker (Used in Models 5AM1608/1609)
	Printed Circuit Board	84-43598B09	Less Components

### CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Escutcheon (1)	13-40289E01	Knob, Tuning (1)	36-40570E02
Dial Scale (1)	34-42329C05	Knob, Tuning (3)	36-40412E02
Dial Scale (2)	61-43062C07	Knob, Volume (1)	36-40570E01
Dial Pointer (1)	52-40281C15	Knob, Volume (3)	36-40412E01
Dial Pointer (2)	52-40281C23	Knob, Tone (1)	36-40039B01
Pushbutton, Tuning (1)	38-42185B01	Knob, Tone & Fader (3)	36-43939C01
Pushbutton, Tuning (2)	38-42185B02	Knob, Tone & Fader (4)	36-40244E01

(1) Used in Model 5JC1602.

(2) Used in Models 2AM1606/1607, 5AM1608/1609.

(3) Used in Models 5AM1608/1609.

(4) Used in Model 5AM1609.

### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire .....	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable .....	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap .....	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)
Ignition Noise Suppression .....	Use BELDEN No. 7300-Series Spark-Plug Sets





For Supplier Address See PHOTOFACT Index



MODEL RALLY 500

## ADJUSTMENTS

ADJUST	REMARKS
Head Azimuth	Play a test cartridge and adjust B1 for maximum on an AC VTVM across output.
Head Height	Play a test cartridge, follow instructions with cartridge, and adjust B2 for proper response.

AUTOMATIC MODEL RALLY 500

## TROUBLE CHART

SYMPTOM	REMARKS
Capstan does not rotate.	Belt (23) dirty, worn, or broken. Assembly (26) binding. Motor defective or not supplied with power.
Track-shift mechanism inoperative	Switch (SW4) dirty. Cam (10) binding or worn. Pawl (18) worn. Assembly (8) binding. Solenoid (M3) defective or not supplied with power. Cartridge defective.
Wow or flutter	Belt (23) dirty or worn. Capstan dirty or binding. Cartridge defective. Motor defective.
Sound weak or distorted	Head dirty, misaligned, or defective. Cartridge defective. Amplifiers defective.
Tape is pulled from cartridge.	Cartridge defective. Capstan dirty or scored.

**HOWARD W. SAMS & CO., INC.** Indianapolis, Indiana 46206

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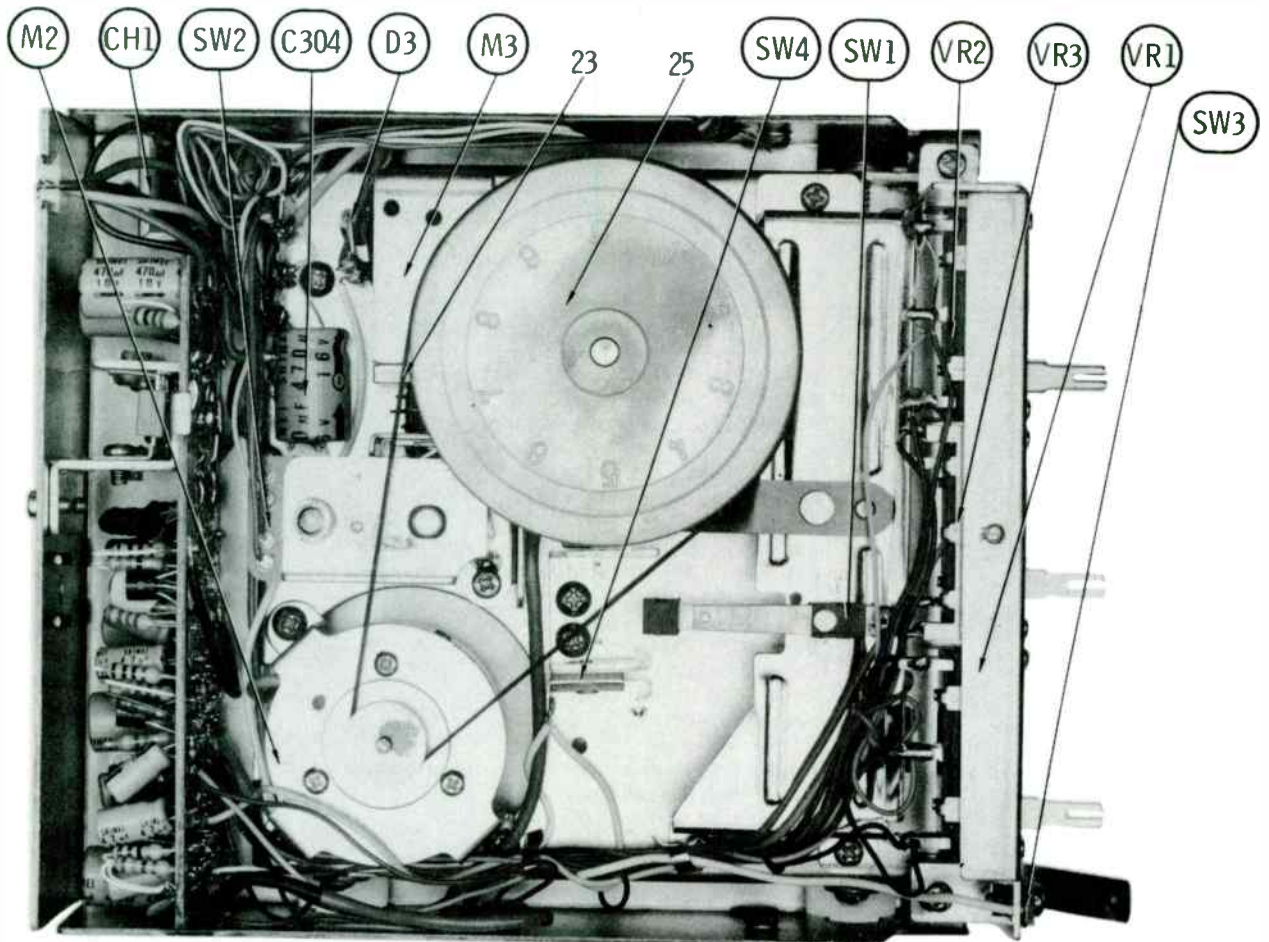
## MECHANICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
5	5	Head Shifting Assembly	21	21	Solenoid Spring
6	6	Cam Tension Spring	23*	23*	Flywheel Drive Belt*
8	8	Head Lifting Spring	25	25	Flywheel
10	10	Track Changing Cam	26	26	Flywheel Housing (Assembly)
11	11	Azimuth Adjustment Spring	31	31	Cartridge Detent Arm
12	12	Head Clamp	35	35	Pressure Roller
18	18	Pawl	36	36	Detent Spring

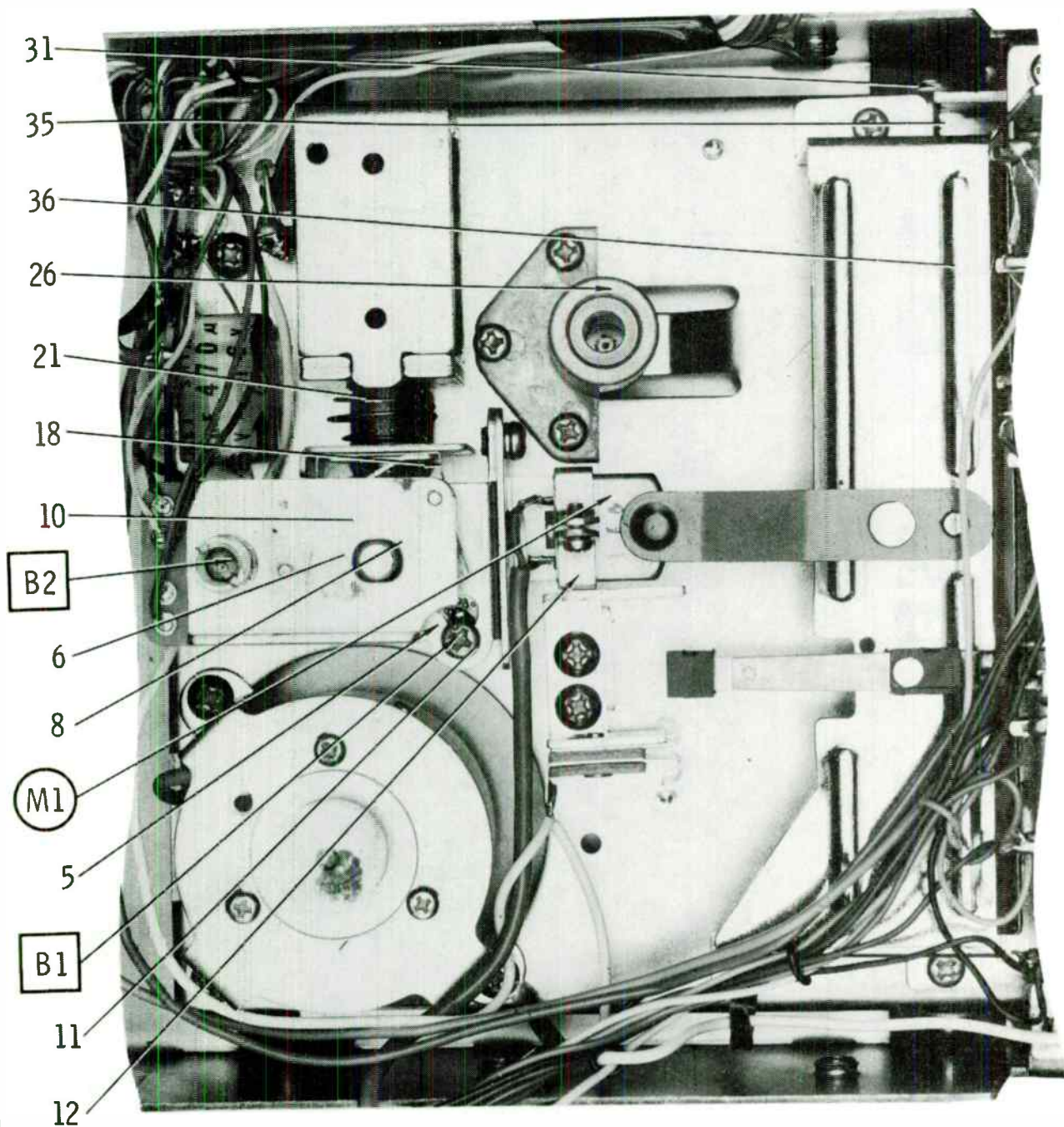
\* Flywheel Drive Belt: E-V/GAME Replacement Number 1407-71  
 WALSCO Replacement Number 1424-21

### CLEANING LUBRICATING HEAD DEMAGNETIZING

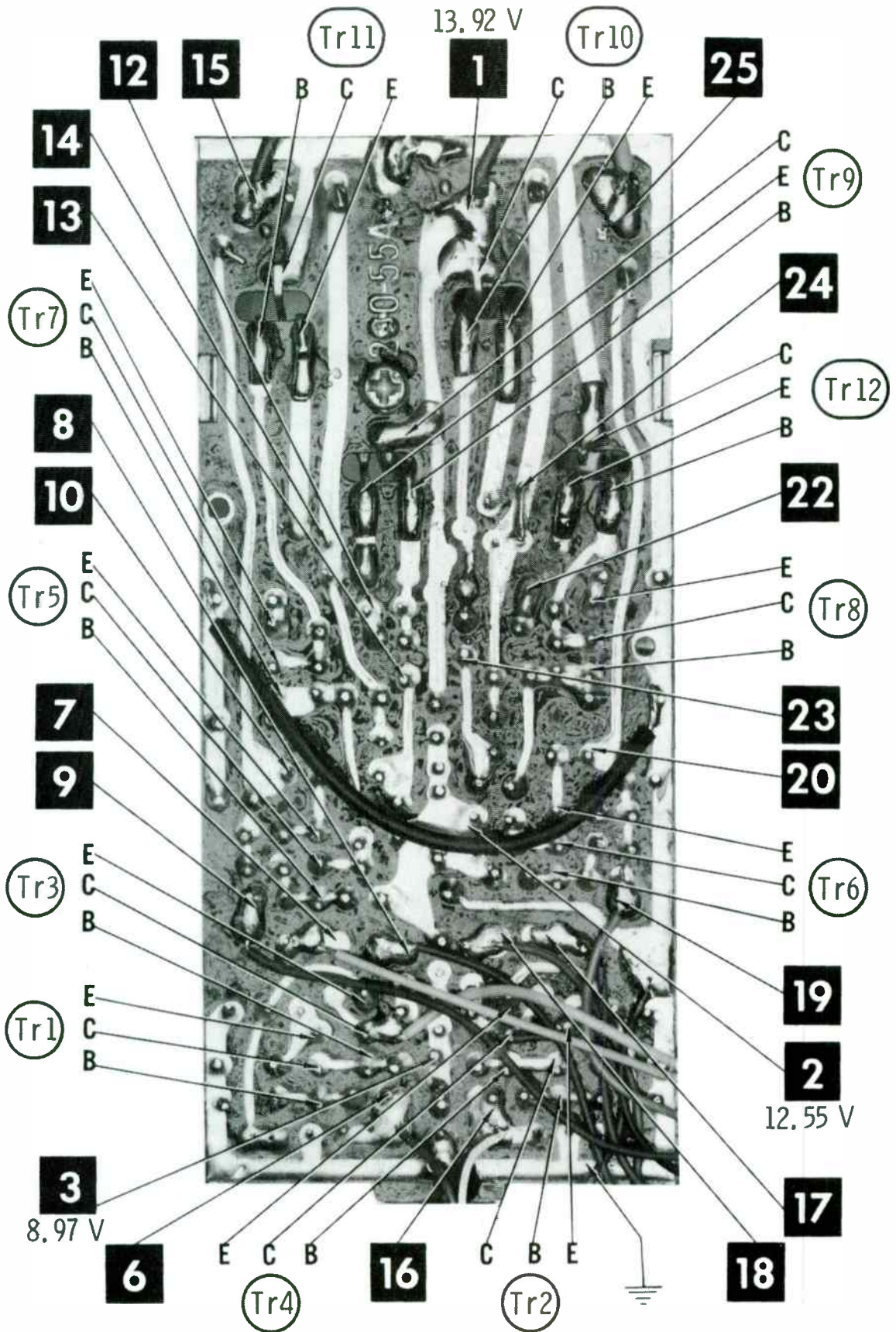
Refer to  
 "General Servicing Information"  
 on page 4.



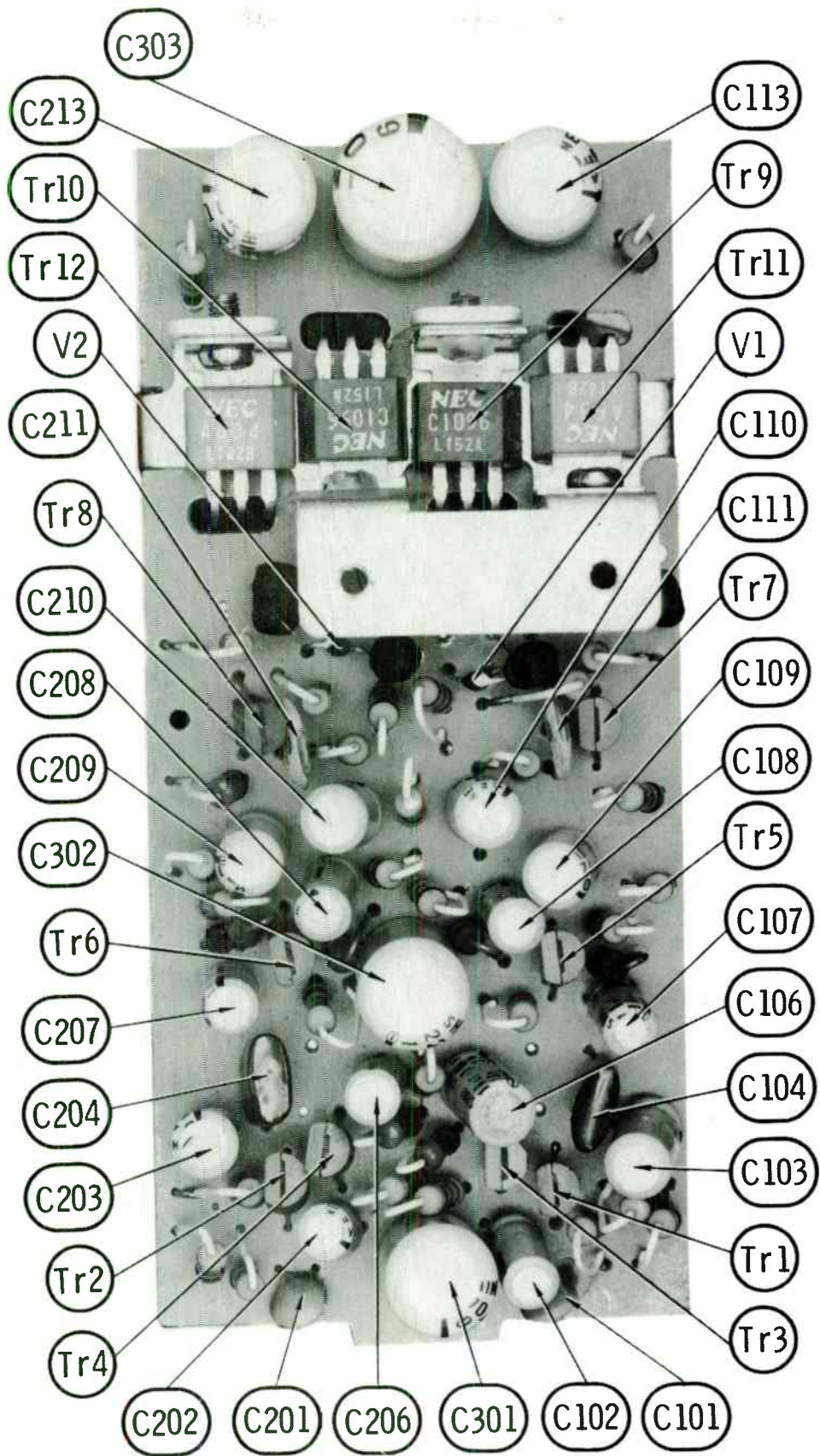
CHASSIS-TOP VIEW



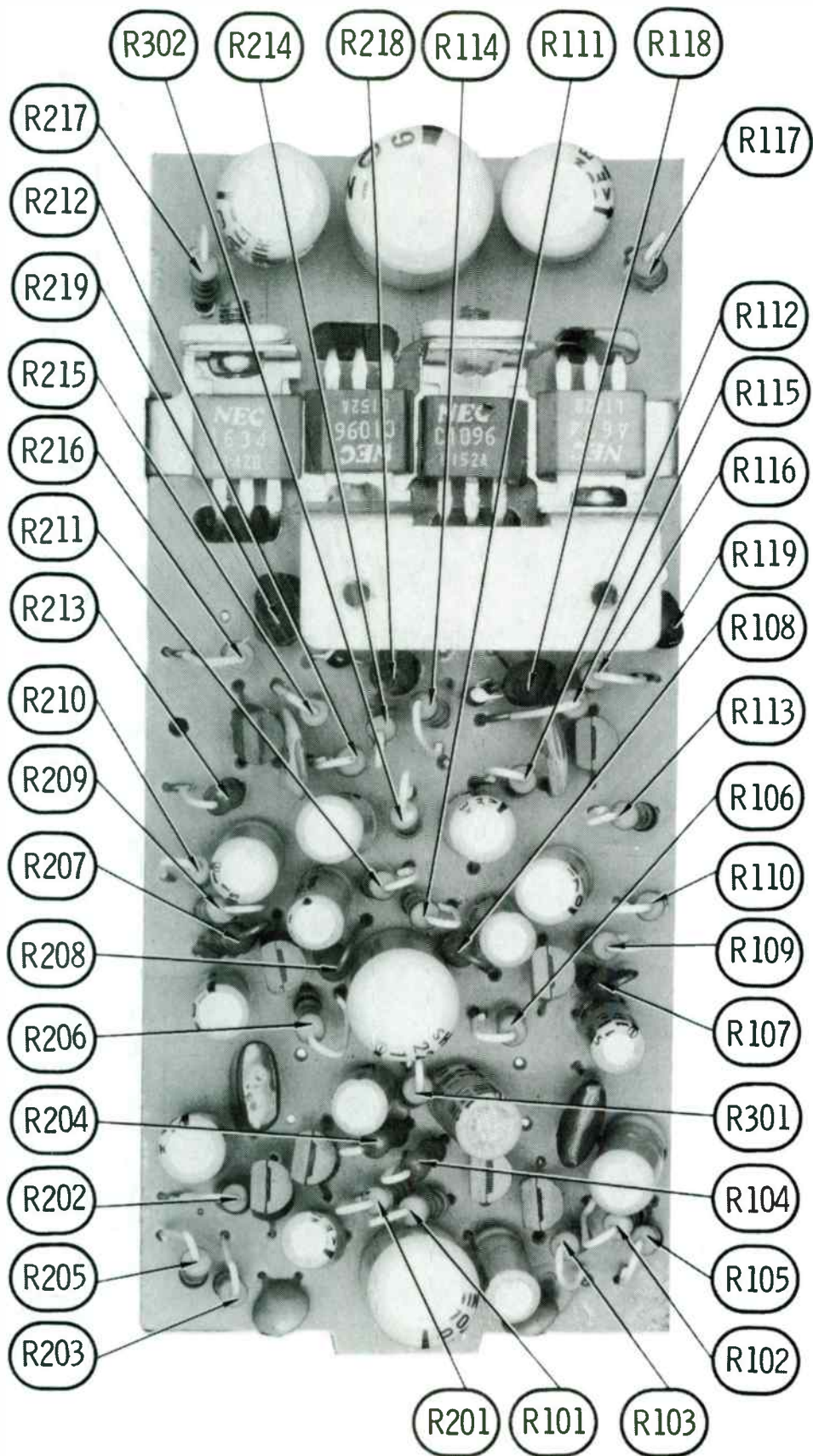
TAPE DECK-TOP VIEW



MAIN BOARD



MAIN BOARD



MAIN BOARD

# PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

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Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

## SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	IR WORKMAN PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
D3	F14A		GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
TR1	25C900		GE-62	(IR)25C644	PTC139	HEPS0015	RE 192	SK3124	RT-107A	ECG199
TR2	25C900		GE-62	(IR)25C644	PTC139	HEPS0015	RE 192	SK3124	RT-107A	ECG199
TR3	25C945L		GE-210	(IR)25C945	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
TR4	25C945L		GE-210	(IR)25C945	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
TR5	25C945L		GE-210	(IR)25C945	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
TR6	25C945L		GE-210	(IR)25C945	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
TR7	25C945L		GE-210	(IR)25C945	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
TR8	25C945L		GE-210	(IR)25C945	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
TR9	25C1096		GE-28	TR-55	PTC110		RE 42	SK3192		ECG186
TR10	25C1096 (5)		GE-28	TR-55	PTC110		RE 42	SK3192		ECG186
TR11	25A634 (5)		GE-29	TR-56	PTC111		RE 43	SK3193		ECG187
TR12	25A634 (5)		GE-29	TR-56	PTC111		RE 43	SK3193		ECG187
V1	MV-1				PTC301					
V2	MV-1				PTC301					

(5) Half of complementary pair.

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C102	10 16V		PC10-25	VTT10A25	EV-1222
C103	47 10V		PC50-16	VTT47D16	EV-1226
C106	10 16V		PC10-25	VTT10A25	EV-1222
C107	10 16V		PC10-25	VTT10A25	EV-1222
C108	10 16V		PC10-25	VTT10A25	EV-1222
C109	47 10V		PC50-16	VTT47D16	EV-1226
C110	47 10V		PC50-16	VTT47D16	EV-1226
C113	470 10V		PC500-16	VTT470J16	EV-1150
C202	10 16V		PC10-25	VTT10A25	EV-1222
C203	47 10V		PC50-16	VTT47D16	EV-1226
C206	10 16V		PC10-25	VTT10A25	EV-1222
C207	10 16V		PC10-25	VTT10A25	EV-1222
C208	10 16V		PC10-25	VTT10A25	EV-1222
C209	47 10V		PC50-16	VTT47D16	EV-1226
C210	47 10V		PC50-16	VTT47D16	EV-1226
C213	470 10V		PC500-16	VTT470J16	EV-1150
C301	470 10V		PC500-16	VTT470J16	EV-1150
C302	220 16V		PC250-25	VTT220G16	EV-1240
C303	470 16V		PC500-16	VTT470J16	EV-1250
C304	470 16V		PC500-16	VTT470J16	EV-1250

## CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C101	.001		DD-102	GP1000	GP210	2SS-D10
C104	.04			DPMS6S39	PVC6139	6PS-S39
C111	200 H750		DTN-200			10TCU-T20
C201	.001		DD-102	GP1000	GP210	2SS-D10
C204	.04			DPMS6S39	PVC6139	6PS-S39
C211	200 H750		DTN-200			10TCU-T20

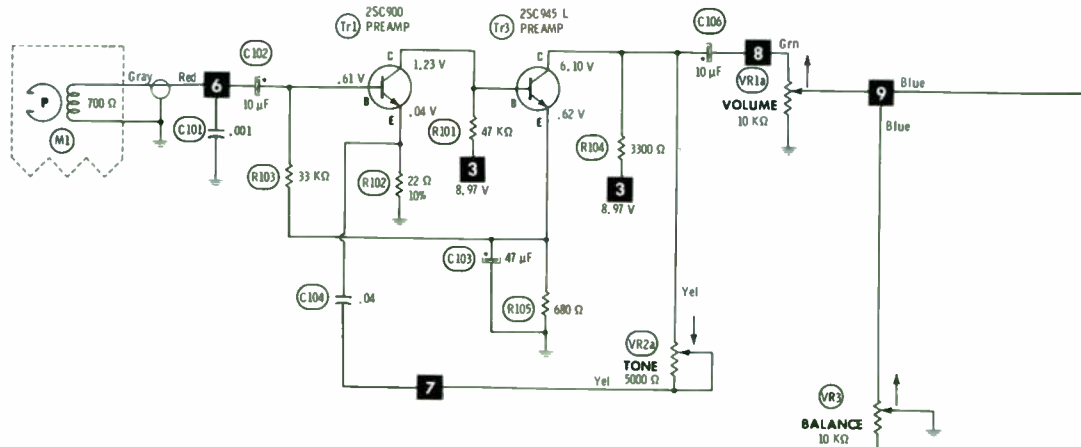
## CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA				
			MFR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
VR1a	Volume-Left	10K	54				
b	Volume-Right	10K					
VR2a	Tone-Left	5000	56				
b	Tone-Right	5000					
VR3	Balance	10K	55				

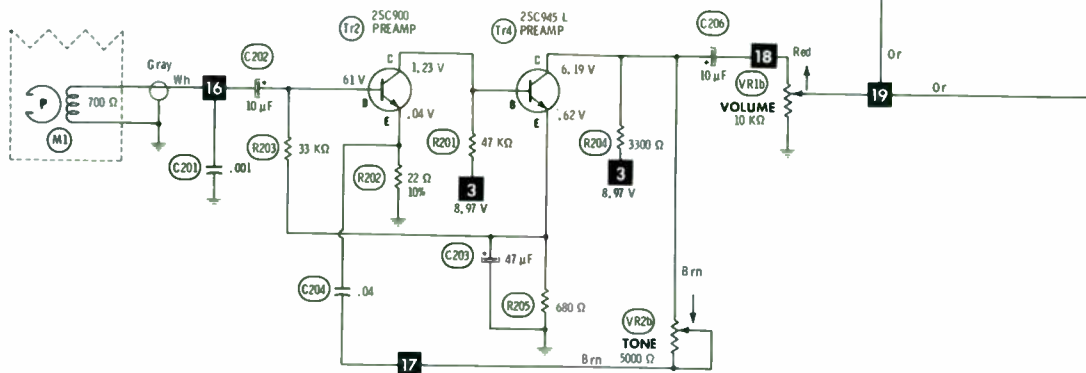
AUTOMATIC MODEL RALLY 500

**NOTE: DEMAGNETIZE HEADS AFTER SERVICING**

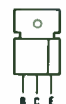
**LEFT CHANNEL**



**RIGHT CHANNEL**



TR1 thru TR8  
Bottom view



TR9 thru TR12  
Side view

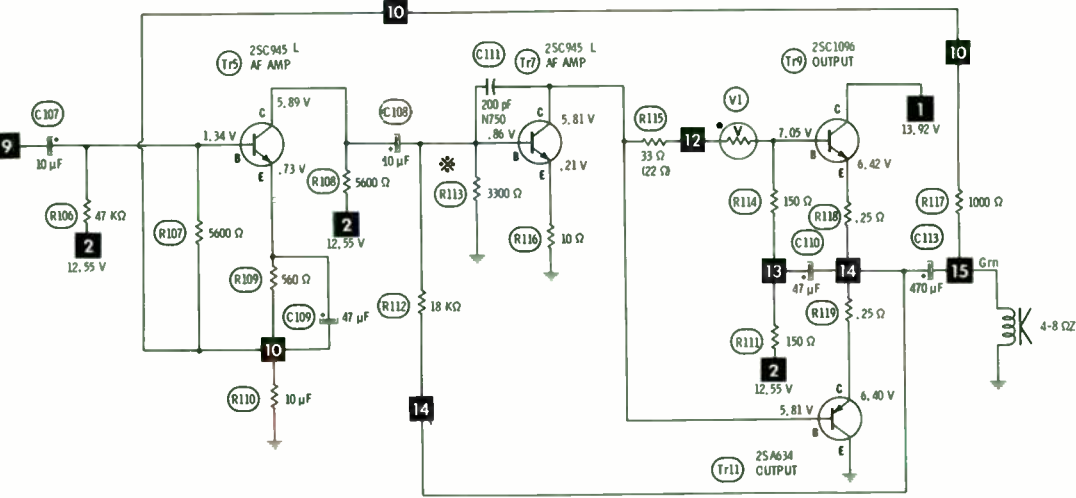
- X— Circuitry not used in same versions
  - - - Circuitry used in same versions
  - ⊙ See parts list
  - ⊛ Nominal value
  - ⊕ Ground
  - ⏏ Chassis
  - ▽ Common tie point
- Measurements with switching as shown unless noted:  
 Supply voltage maintained as shown at input.  
 Voltages measured with digital meter, no signal.  
 Controls adjusted for normal operation.  
 Arrow at control indicates direction of advance.  
 Terminal identification may not be found on unit.  
 Resistors are 1/2W or less, 5% unless noted.  
 Value in ( ) used in some versions.

A PHOTOFACIT STANDARD NOTATION SCHEMATIC  
 WITH **CIRCUITRACE**

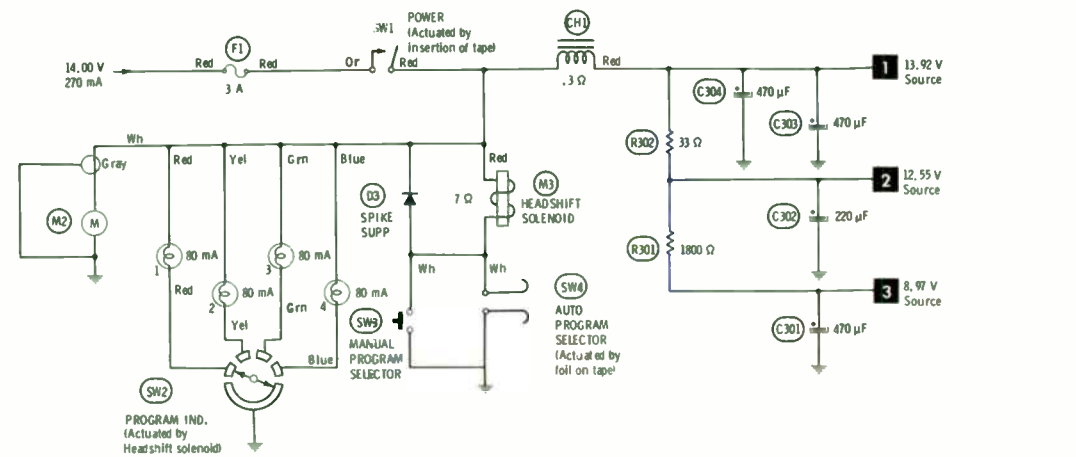
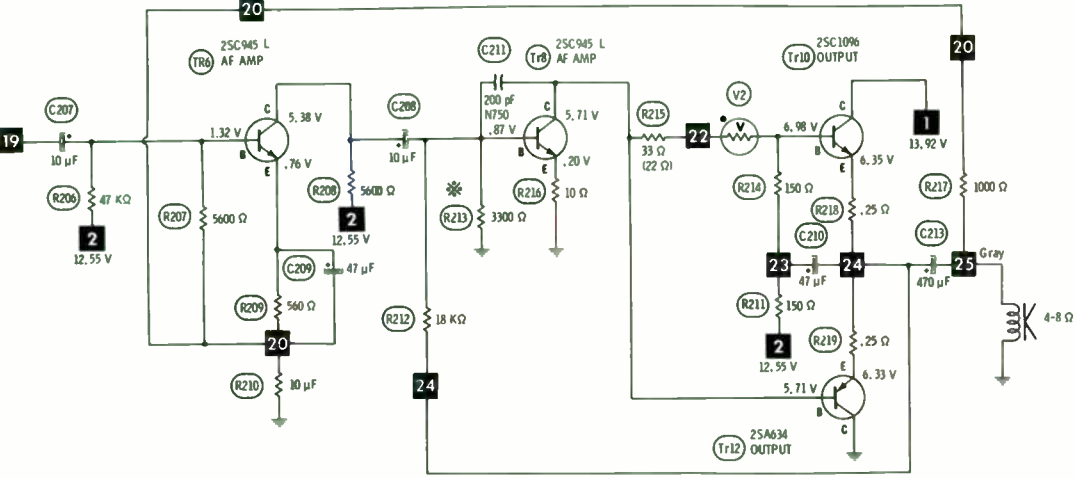
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LEFT CHANNEL



RIGHT CHANNEL



## PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.

Have your local distributor check Sams COUNTER FACTS® for the most up-to-date replacement.

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFR. PART No.	THORDARSON PART No.	TRIAD PART No.	
CH1	120mA	.3	1.3mH	72			

### FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	3A			AGC3	HDJ	312003	150145	FG3-2

### MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M1	Tape Head	16	8-Track Stereo Play Tape Transport (2000 rpm @ 14V) Head Shift Power (On/Off) Program Indicator Manual Program Selector Automatic Program Selector
M2	Motor	49	
M3	Solenoid	22	
SW1	Switch	39	
SW2	Switch	3	
SW3	Switch	7	
SW4	Switch	29	

### CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Escutcheon	65	Tape Door	78
Control Trim Plate	66	Tape Door Shaft	79
Knob, Volume, Balance & Tone	67	Tape Door Shaft Spring	76
Knob, Selector	64		

### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in 12 Colors
	8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire .....	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable .....	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap .....	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)
Ignition Noise Suppression .....	Use BELDEN No. 7300-Series Spark-Plug Sets



# PHOTOFACT® with

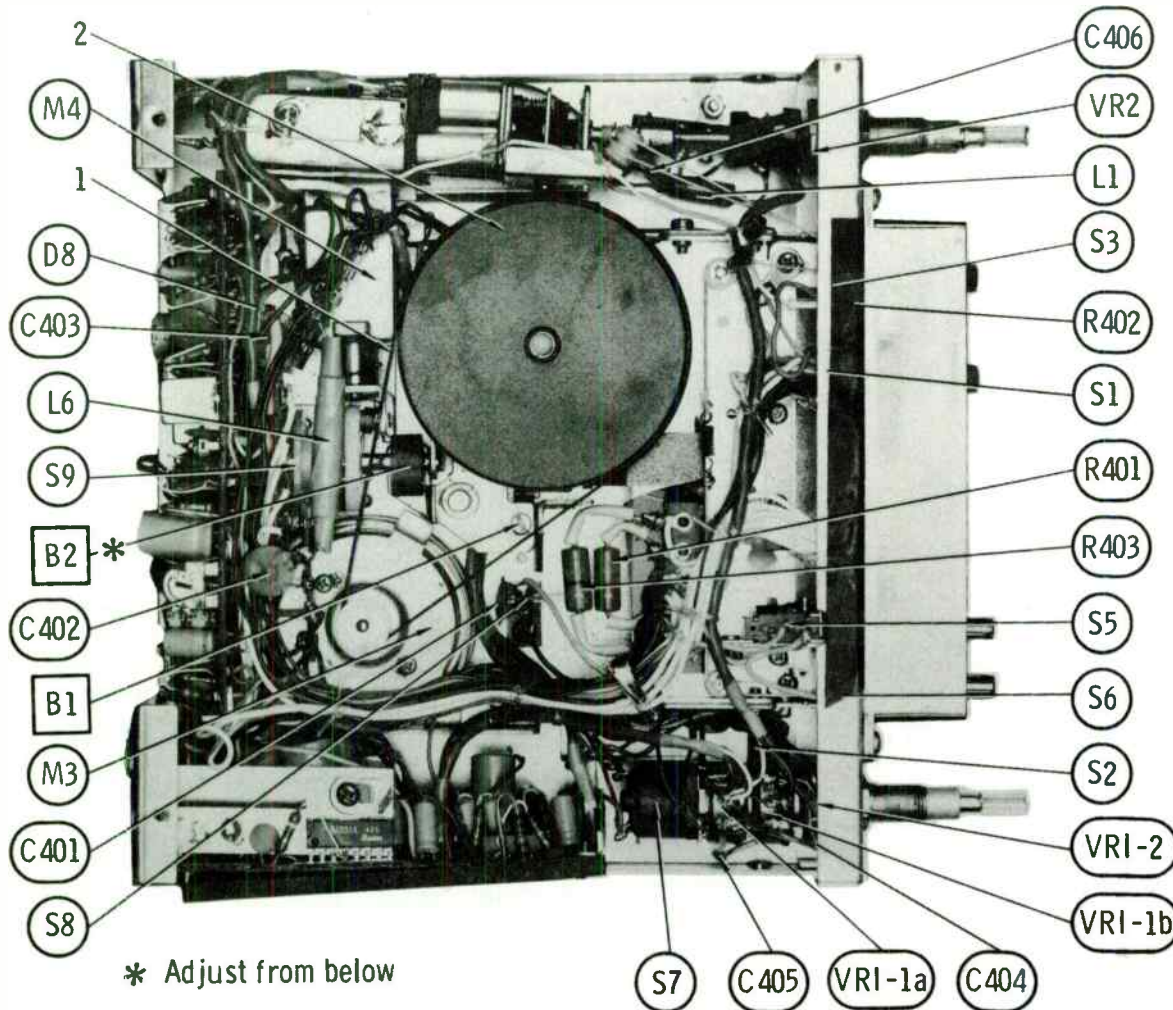
# CIRCUITRACE®

For Supplier Address See PHOTOFACT Index



MODEL 6348

CHANNEL MASTER MODEL 6348



OVERALL

**HOWARD W. SAMS & CO., INC.** Indianapolis, Indiana 46206

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Printed in U. S. of America 6AL945

## ADJUSTMENTS

ADJUST	REMARKS
Head Azimuth	Play a test cartridge and adjust B1 for maximum on an AC VTVM across output.
Head Height	
	Play a test cartridge, follow instructions with cartridge, and adjust B2 for proper response.

## TROUBLE CHART

SYMPTOM	REMARKS
Capstan does not rotate.	Belt (1) dirty, worn, or broken. Assembly (10) binding. Motor defective or not supplied with power.
Track-shift mechanism inoperative	Switch (S8) dirty. Cam (3) binding or worn. Pawl (4) worn. Assembly (6) binding. Solenoid (M4) defective or not supplied with power. Cartridge defective. Spring (8, 11, 12) weak or out of place.
Wow or flutter	Belt (1) dirty or worn. Capstan dirty or binding. Cartridge defective. Motor defective.
Sound weak or distorted	Head dirty, misaligned, or defective. Cartridge defective. Amplifiers defective.
Tape is pulled from cartridge.	Cartridge defective. Capstan dirty or scored.

## MECHANICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1*		Flywheel Drive Belt*	8		Head Shifting Spring
2		Flywheel Assembly	9		Motor Pulley
3		Track Changing Cam	10		Capstan Bearing Assembly
4		Pawl	11		Pawl Spring
5		Track Change Driving Cam	12		Solenoid Spring
6		Head Shifting Assembly	13		Cartridge Detent Arm
7		Azimuth Spring			(Assembly)

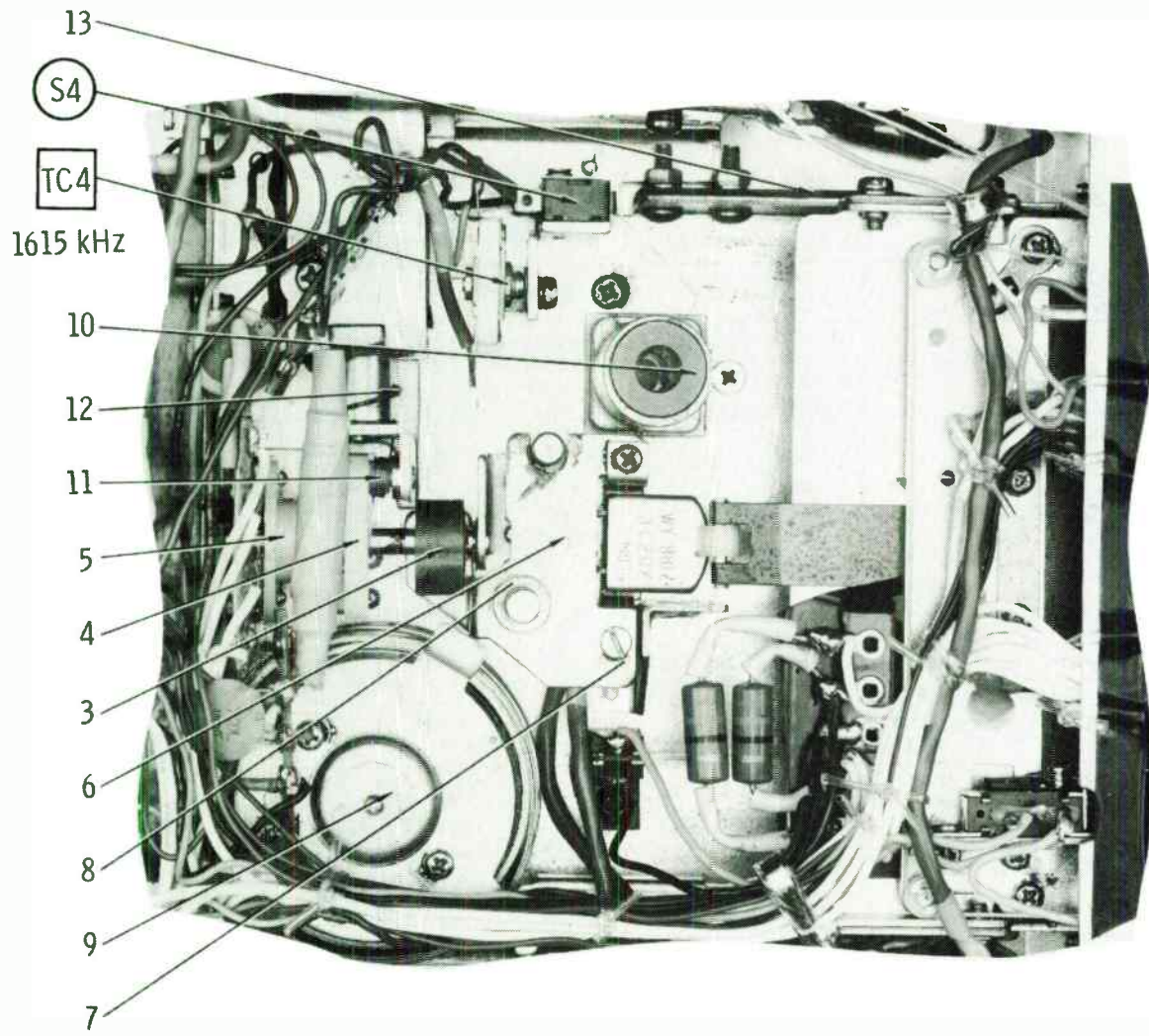
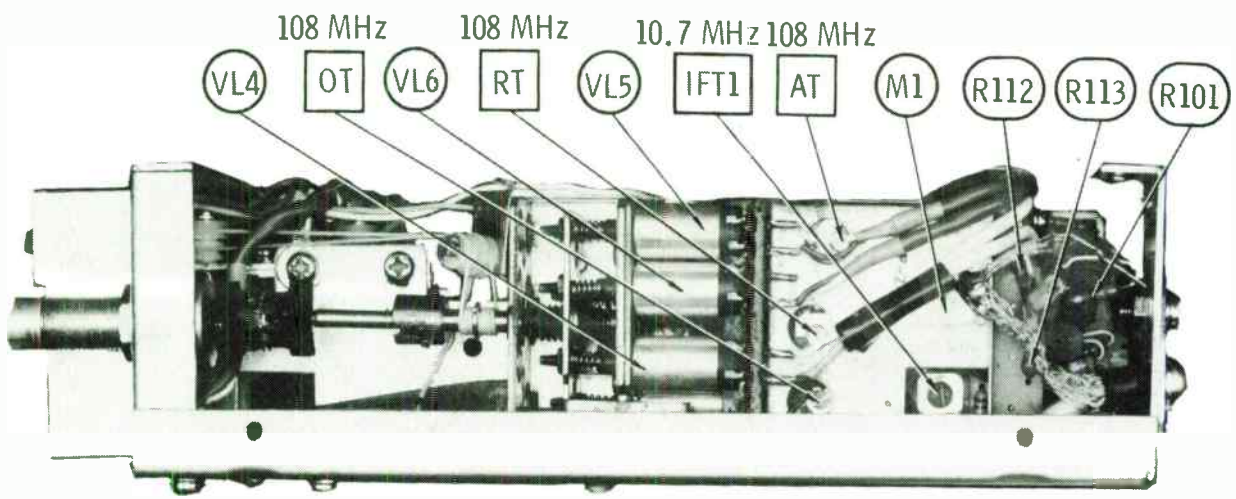
\* Flywheel Drive Belt: WALSCO Replacement Number 1424-15.

## CLEANING

## LUBRICATING

## HEAD DEMAGNETIZING

Refer to "General Servicing Information" on page 4.

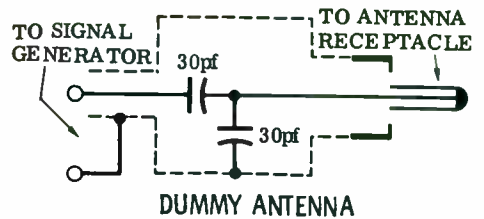


CHASSIS-TOP AND SIDE

## ALIGNMENT INSTRUCTIONS

Check for specified source voltage. Use only enough generator output to provide a usable indication. Suggested Alignment Tools: GC ELECTRONICS ALL ..... 8290, 8868, 9087					<b>PUSH-BUTTON ADJUSTMENT</b> 1. Pull button out. 2. Tune manually to desired station. 3. Press button in firmly. 4. Repeat for remaining buttons.
GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
High side thru .1uF to ant. input, low side to ground.	455kHz 400-Hz mod.	High freq. end stop.	Output meter across voice coil.	CF3, IFT4	Adjust for maximum.
Thru dummy antenna to antenna input.	1615kHz	"	"	TC4, TC5, TC6	"
Thru dummy antenna to antenna input.	600kHz	Tune to signal	Output meter across voice coil.	IFT5	Adjust for maximum. Repeat alignment until no further improvement is noted.

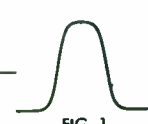
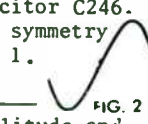
With radio installed in car and antenna extended 36", tune in a weak station near 1400kHz and adjust TC4 for maximum output. Antenna adjustment is located inside tape door, right rear corner.



### FM IF ALIGNMENT USING AM SIGNAL GENERATOR—SELECTOR IN FM POSITION

High side of generator thru .001uF to ant. input, low side to ground.				
GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MHz Unmodulated	Point of non-interference	DC probe of VTVM to junction of D3 & R234, common to ground.	(1) IFT1, IFT2	Adjust for maximum.
"	"	DC probe of VTVM to TP1, common to ground.	IFT3	Adjust for zero reading. A positive or negative reading will be obtained on either side of correct setting.

### FM IF ALIGNMENT USING FM SIGNAL GENERATOR—SELECTOR IN FM POSITION

High side of generator thru .001uF to ant. input, low side to ground. Use 60-hertz, frequency-modulated signal, 450kHz sweep. Use 60-hertz sawtooth voltage in scope for horizontal deflection.				
GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MHz 450kHz Sweep	Point of non-interference	Vert input of scope to junction of D3 & R234, low side to ground.	(1) IFT1, IFT2	Disconnect stabilizing capacitor C246. Adjust for maximum gain and symmetry of response similar to Fig. 1. Reconnect C246.  <p style="text-align: right; margin-right: 20px;">FIG. 1</p>
"	"	Vert input of scope to TP1, low side to ground.	IFT3	Adjust IFT3 for maximum amplitude and straightness of line similar to Fig. 2. Readjust IFT2.  <p style="text-align: right; margin-right: 20px;">FIG. 2</p>

(1) Before adjusting, vary generator frequency slightly. Maximum output indicates exact IF.

**FM RF ALIGNMENT—SELECTOR IN FM POSITION**

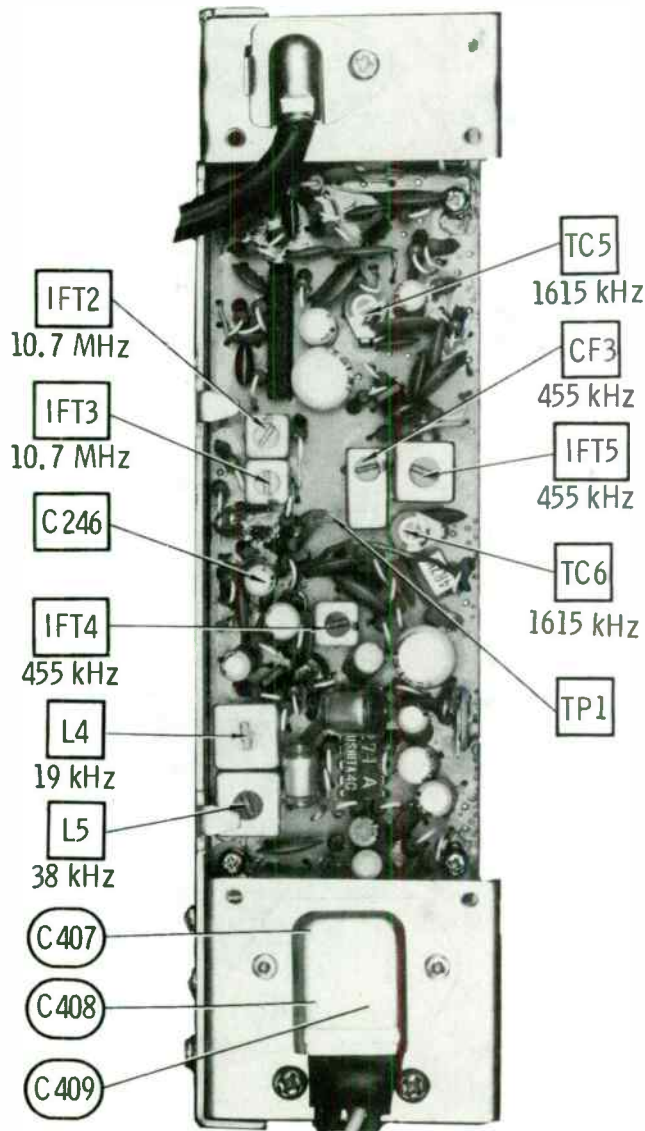
Connect generator across antenna terminals with 120-ohm carbon resistor in series with each lead. Adjustment of coils by bending should not be attempted unless the coil is deformed or replaced.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
108MHz Unmodulated	High freq End stop	DC probe of VTVM to junction of D3 & R234, common to ground.	AT,OT,RT	Adjust for maximum.
Unmodulated		"		Adjust for maximum. Repeat FM RF steps until no further improvement is noted.

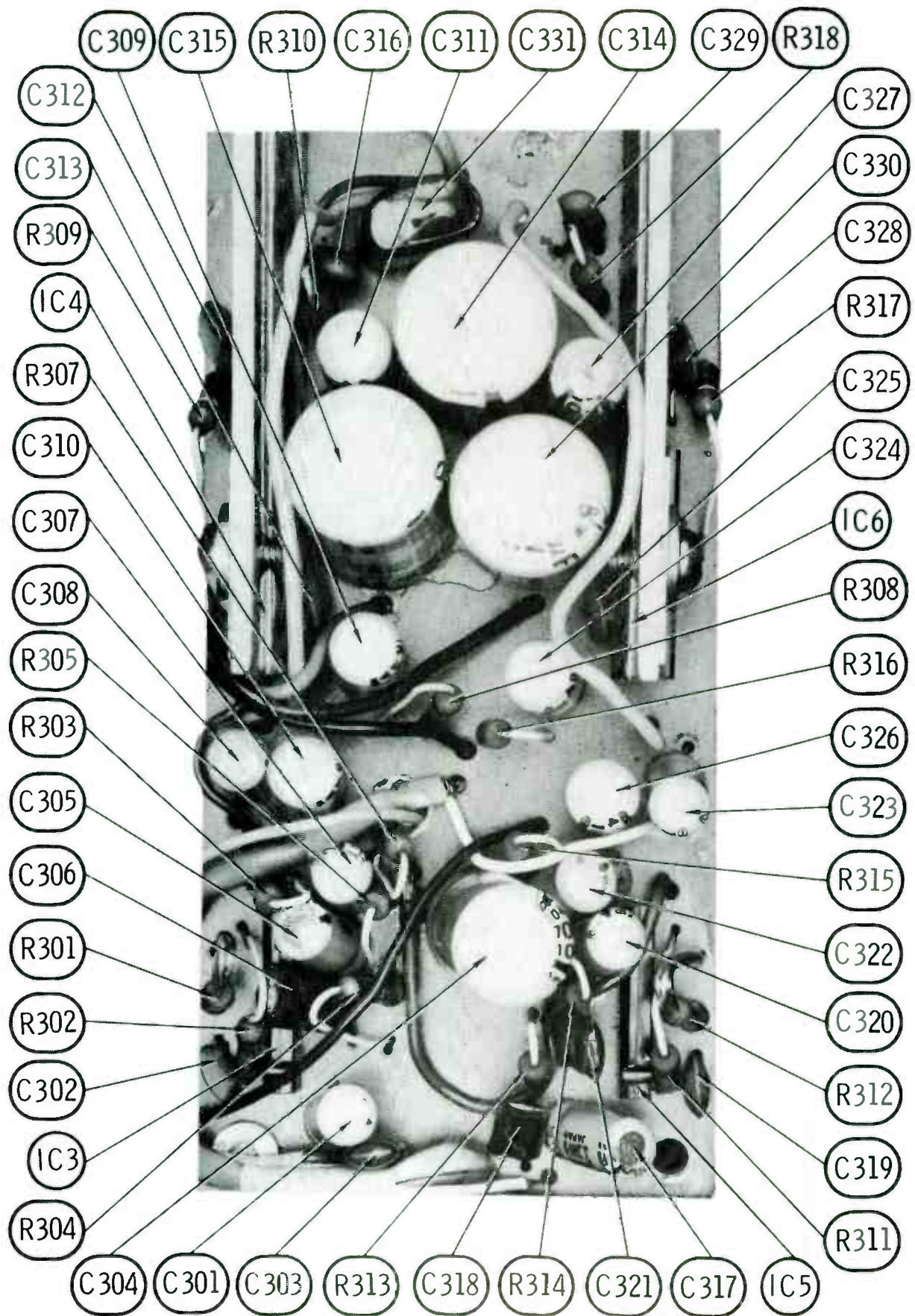
**FM STEREO MULTIPLEX ALIGNMENT USING FM STEREO SIGNAL GENERATOR (± .0001% ACCURACY)**

High side of generator thru 47K to ant. input, low side to ground.

GENERATOR FREQUENCY	INDICATOR	ADJUST	REMARKS
Modulated Left Channel	Vert input of scope to junction of R248 & C238, low side to ground.	L4,L5,VR3	Adjust for MINIMUM. This step should require only slight adjustment.
Modulated Right Channel	Vert input of scope to junction of R249 & C239, low side to ground.		Check for MINIMUM. If necessary, make compromise adjustment of L4, L5, VR3.

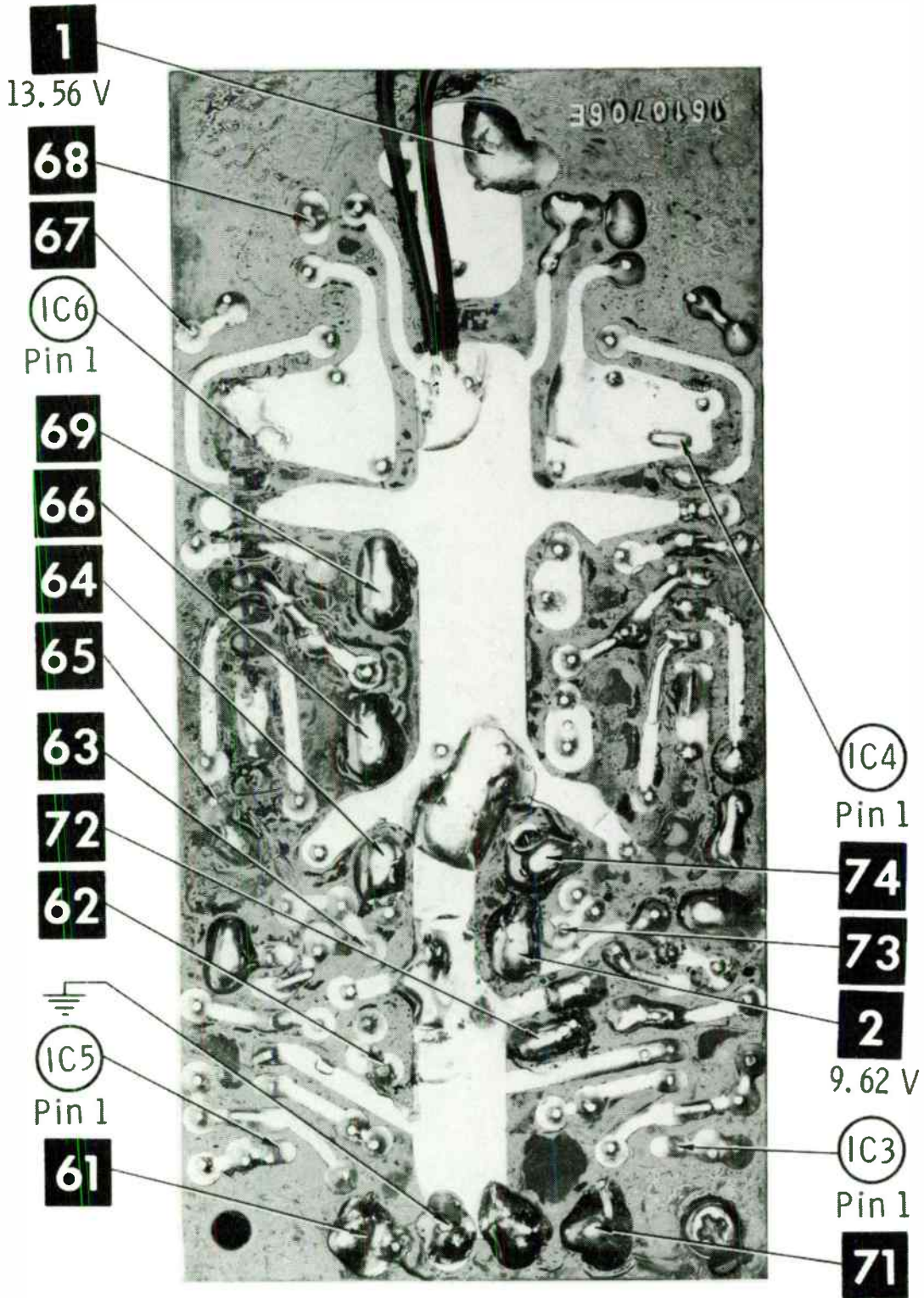


CHANNEL MASTER MODEL 6348

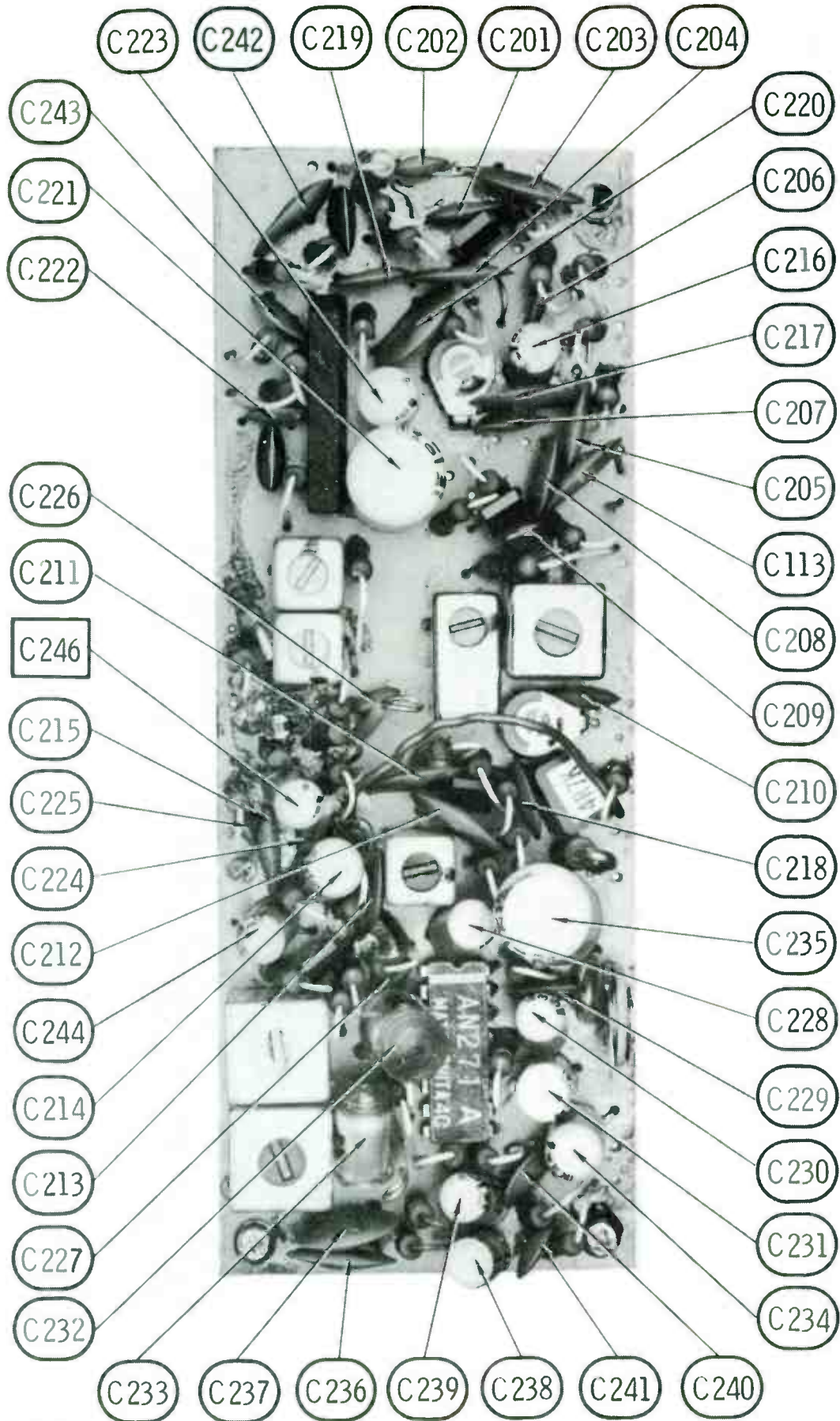


AUDIO BOARD

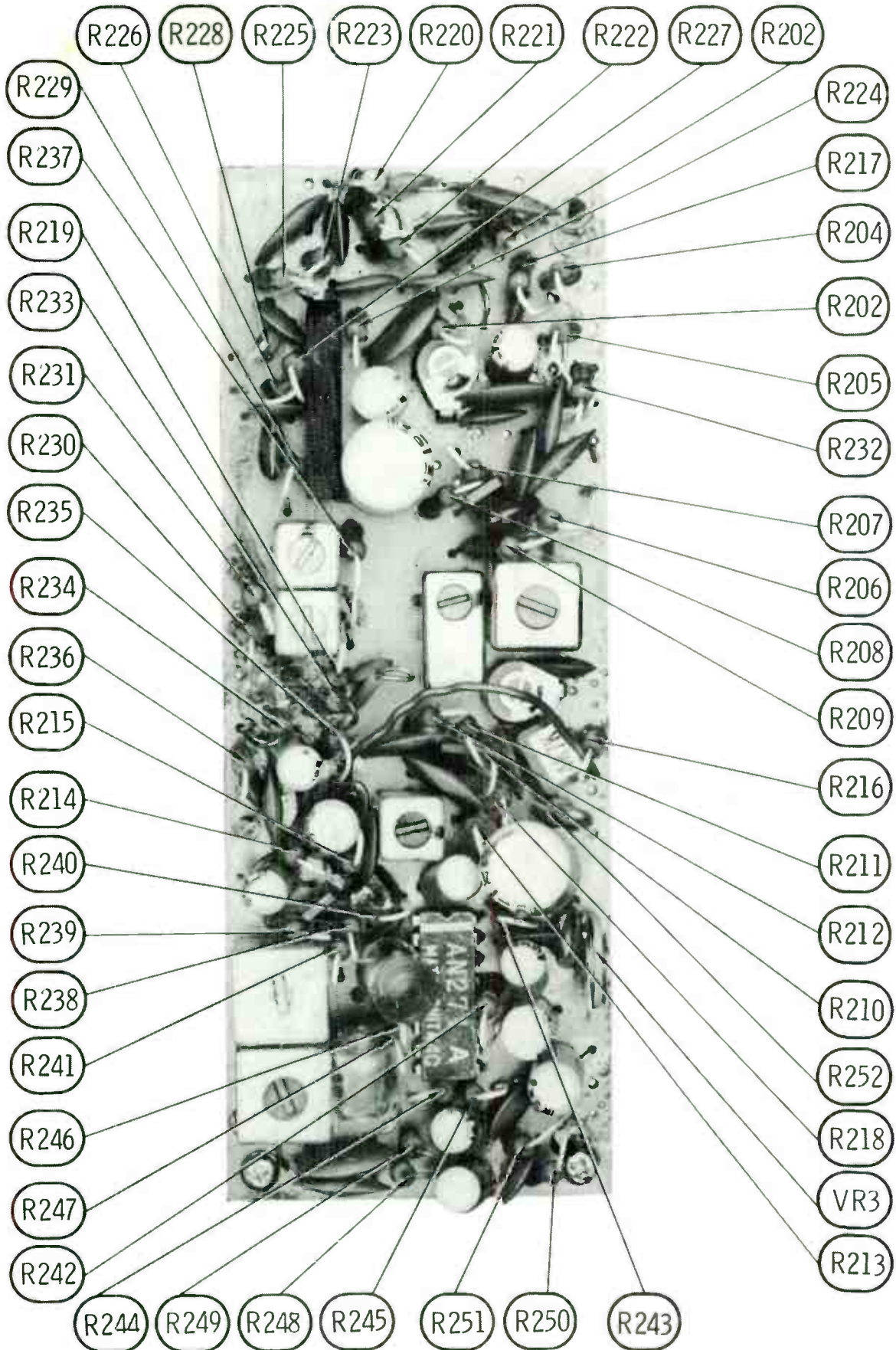




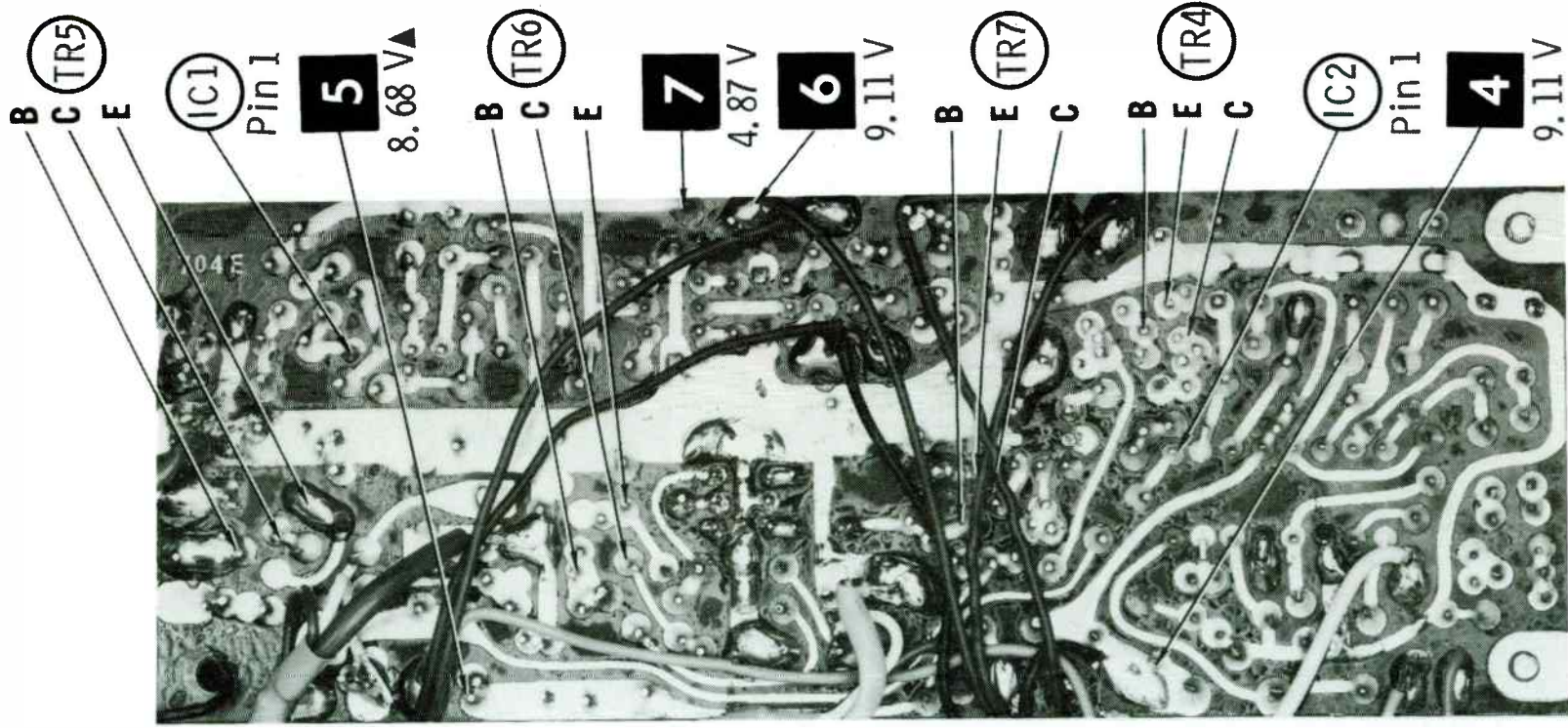
AUDIO BOARD



MAIN BOARD

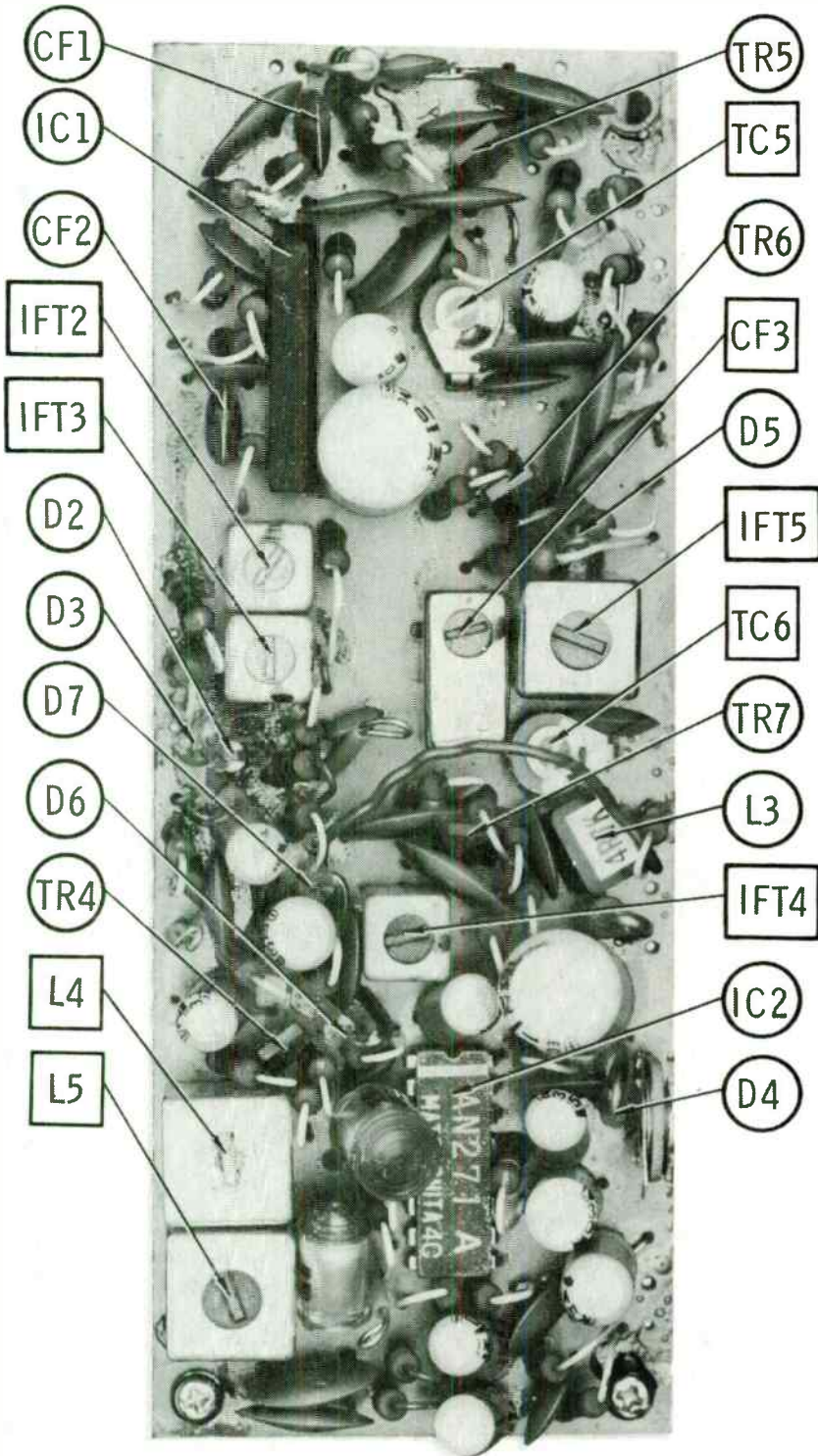


MAIN BOARD

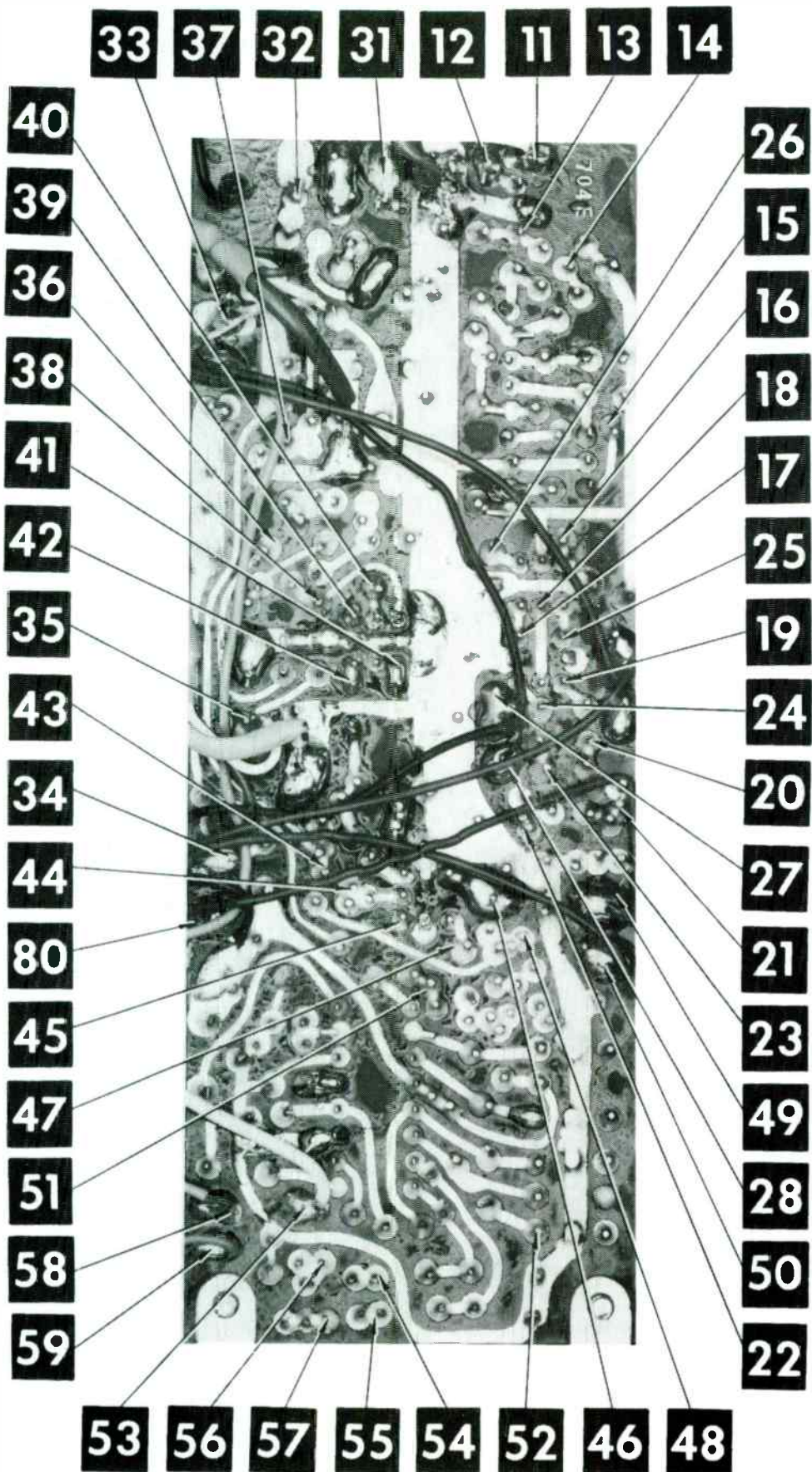


▲ AM

MAIN BOARD



MAIN BOARD



MAIN BOARD

# PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.  
Have your local distributor check Sams COUNTER FACTS® for the most up-to-date replacement.

## SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA										
			GENERAL ELECTRIC PART No.	IR WORKMAN PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.			
D2	20A90		1N34AS(7)	1N34A (7)	PTC207M(6)	HEPR9134(7)	RE 86(6)	SK3087(7)	RT-200(7)	ECG110(6)			
D3	20A90			GEZD-9.1 1N34AS 1N34AS GE-504A GEIC-61 GE-61 GE-61 GE-61 GE-61	1N34A 1N34A 5A4D	ZB9.1B		RE 114		RT-240	ECG139		
D4	BZ090							PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
D5	0A90							PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
D6	0A90							PTC301					
D7	KB296							PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D8	SR1K2												
IC1	AN353A												
IC2	AN271A,B												ECG1135
IC3	BA301												ECG1135
IC4	BA501A												ECG108
IC5	BA301												ECG108
IC6	BA501A												ECG108
TR4	2SC460B						(1R)2SC460B	PTC136	HEPS0014	RE 9	SK3124	RT-134	ECG108
TR5	2SC460B						(1R)2SC460B	PTC136	HEPS0014	RE 9	SK3124	RT-134	ECG108
TR6	2SC460B						(1R)2SC460B	PTC136	HEPS0014	RE 9	SK3124	RT-134	ECG108
TR7	2SC460B						(1R)2SC460B	PTC136	HEPS0014	RE 9	SK3124	RT-134	ECG108

(6) Matched pair.

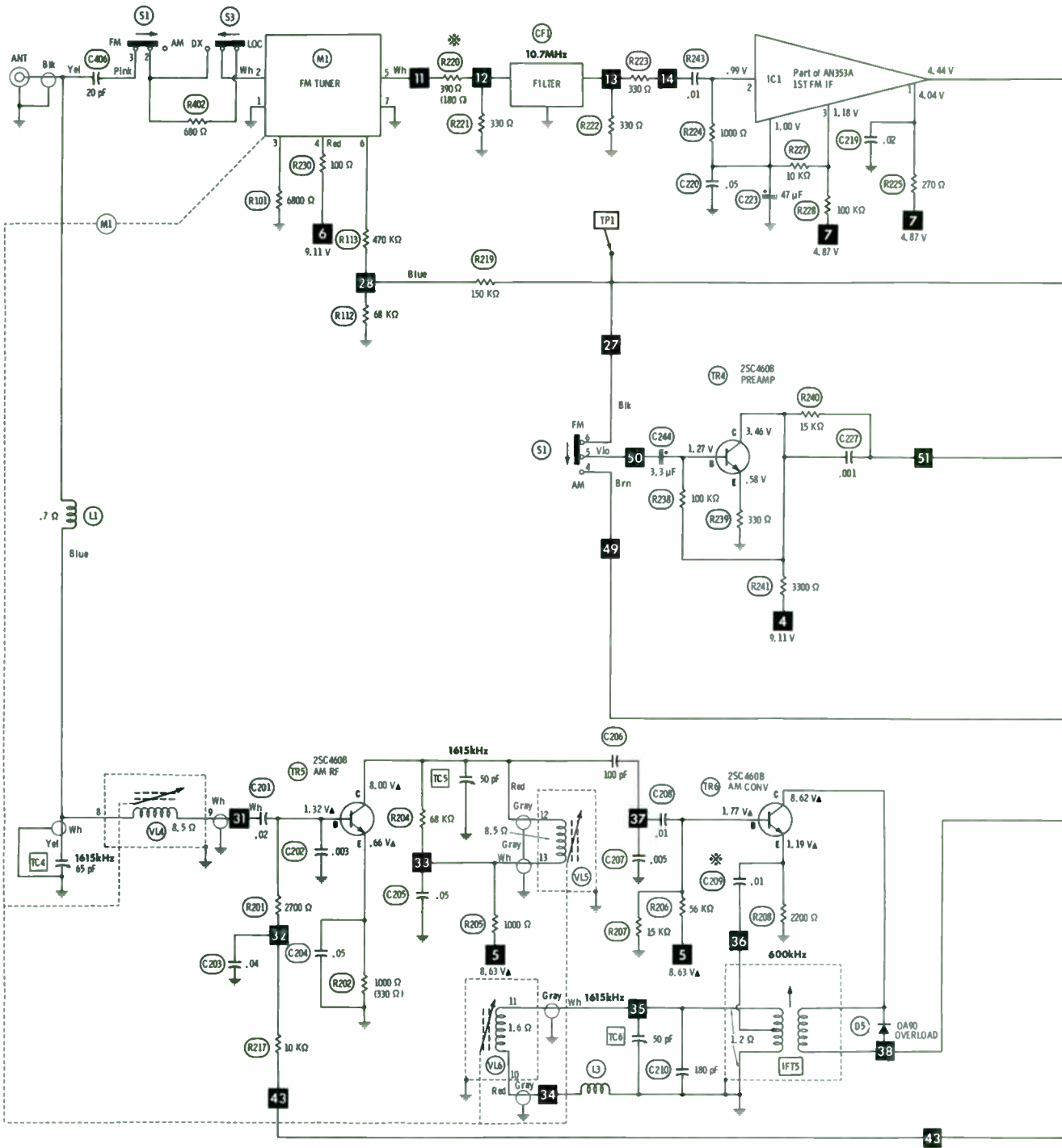
(7) Two required - select matched pair.

CHANNEL MASTER MODEL 6348

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C214	33 10V		PC30-25	VTT33A10	EV-1125
C216	10 10V		PC10-25	VTT10A25	EV-1222
C221	220 10V		PC250-10	VTT220F10	EV-1140
C223	47 10V		PC50-16	VTT47D16	EV-1226
C228	10 10V		PC10-25	VTT10A25	EV-1222
C230	3.3 25V		PC5-50	VTT3R3A50	EV-1318
C231	33 10V		PC30-25	VTT33A10	EV-1125
C234	33 10V		PC30-25	VTT33A10	EV-1125
C235	220 10V		PC250-10	VTT220F10	EV-1140
C238	10 10V		PC10-25	VTT10A25	EV-1222
C239	10 10V		PC10-25	VTT10A25	EV-1222
C244	3.3 25V		PC5-50	VTT3R3A50	EV-1318
C246	10 10V		PC10-25	VTT10A25	EV-1222
C301	3.3 25V		PC5-50	VTT3R3A50	EV-1318
C304	470 10V		PC500-16	VTT470J16	EV-1150
C305	10 16V		PC10-25	VTT10A25	EV-1222
C307	3.3 25V		PC5-50	VTT3R3A50	EV-1318
C308	10 16V		PC10-25	VTT10A25	EV-1222
C309	47 10V		PC50-16	VTT47D16	EV-1226
C310	47 10V		PC50-16	VTT47D16	EV-1226
C311	47 10V		PC50-16	VTT47D16	EV-1226
C314	1000 16V		PC1000-16	VTT1000L16	EV-1260
C315	1000 10V				EV-1160
C317	3.3 25V		PC5-50	VTT3R3A50	EV-1318
C320	10 10V		PC10-25	VTT10A25	EV-1222
C322	3.3 25V		PC5-50	VTT3R3A50	EV-1318
C323	10 10V		PC10-25	VTT10A25	EV-1222
C324	47 10V		PC50-16	VTT47D16	EV-1226
C326	47 10V		PC50-16	VTT47D16	EV-1226
C327	47 10V		PC50-16	VTT47D16	EV-1226
C330	1000 10V				EV-1160
C403	220 16V		PC250-25	VTT220G16	EV-1240

**NOTE: DEMAGNETIZE HEADS AFTER SERVICING**



- ✱ Circuitry not used in some versions
- Circuitry used in some versions
- ⊕ See ports list
- ✱ Nominal value
- ⊕ Ground
- /// Chassis
- ▽ Common tie point

Measurements with switching as shown unless noted:

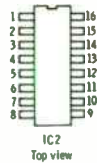
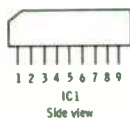
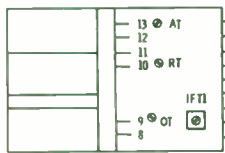
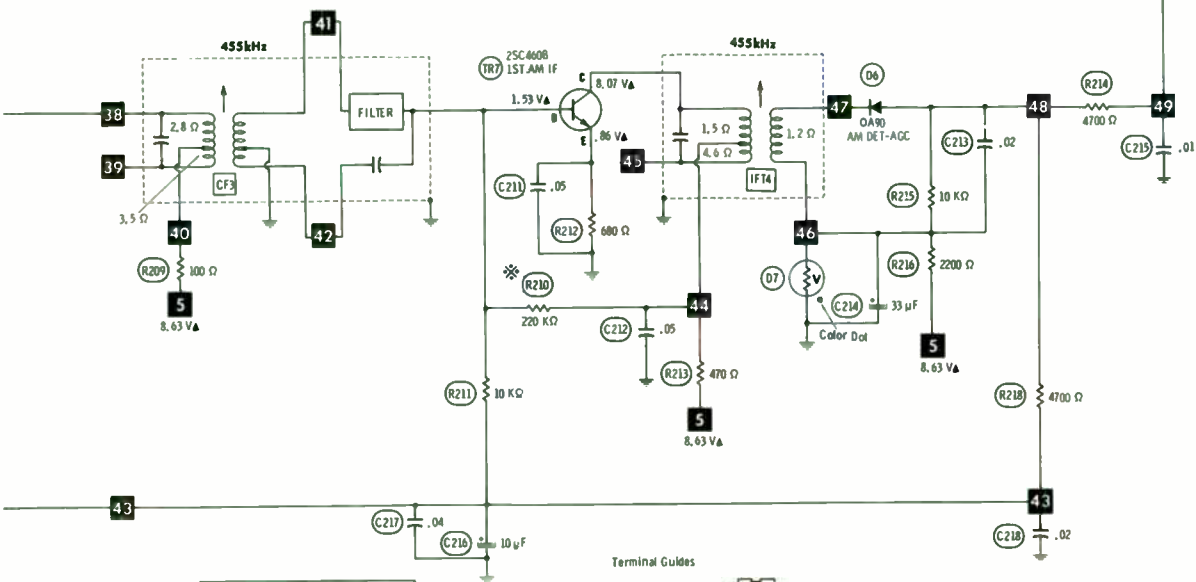
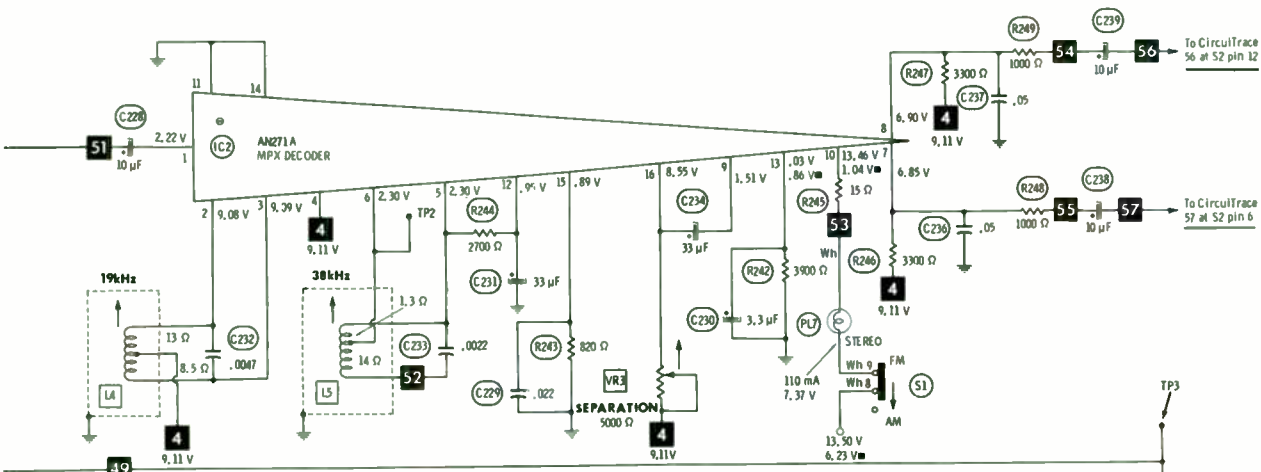
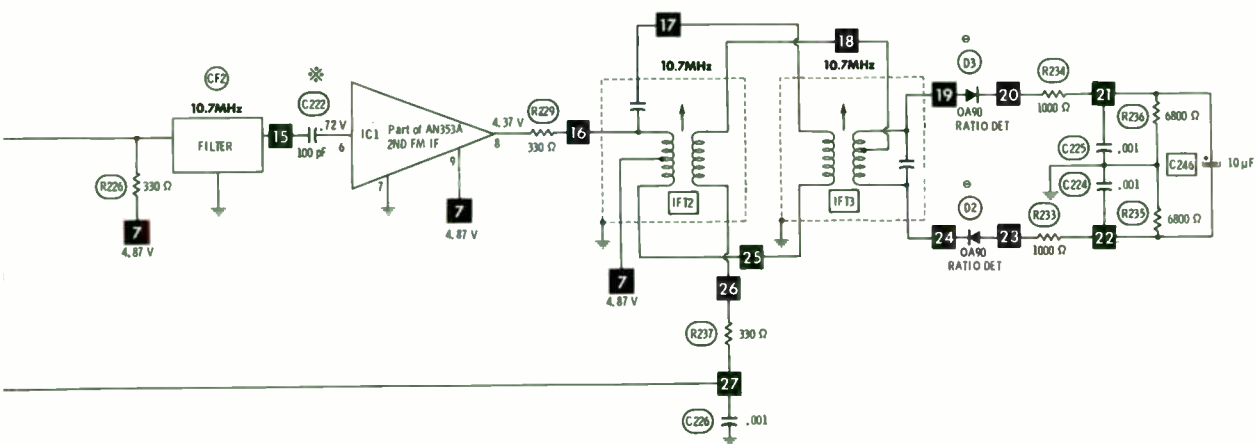
- FM Stereo signal    ▲ AM
- ◆ Tape play

Supply voltage maintained as shown at input.  
 Voltages measured with digital meter, no signal.  
 Controls adjusted for normal operation.  
 Arrow at control indicates direction of advance.  
 Terminal identification may not be found on unit.  
 Resistors are 1/2W or less, 5% unless noted.  
 Value in ( ) used in some versions.

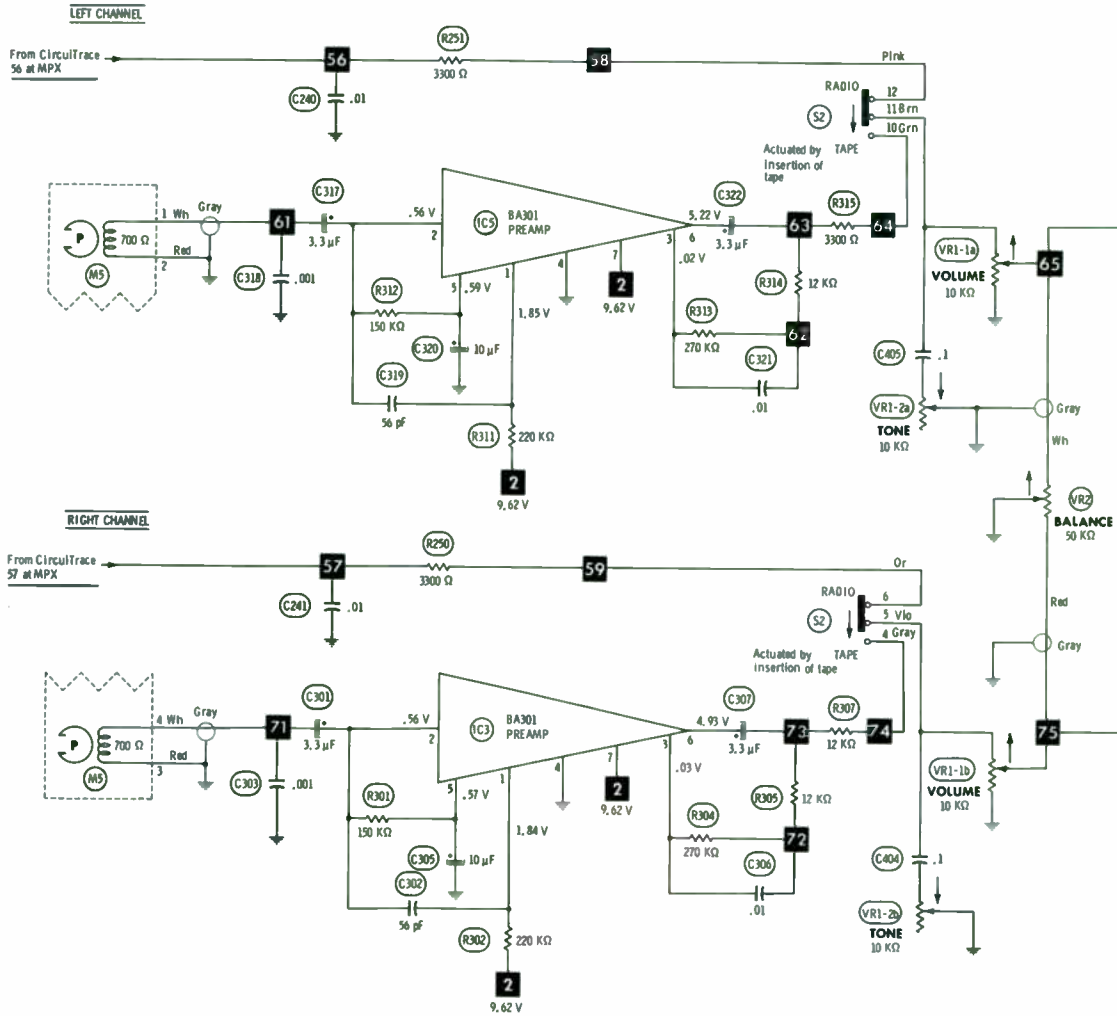
A PHOTOFACIT STANDARD NOTATION SCHEMATIC  
 WITH **CIRCUITRACE**

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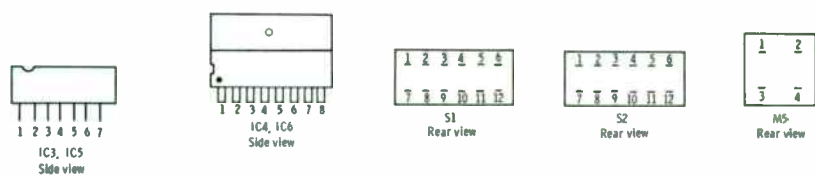




**NOTE: DEMAGNETIZE HEADS AFTER SERVICING**



**Terminal Guides**



- ✖ Circuitry not used in some versions
- Circuitry used in some versions
- ⊙ See ports list
- ⊛ Nominal value
- ⊕ Ground
- ⊞ Chassis
- ▽ Common tie point

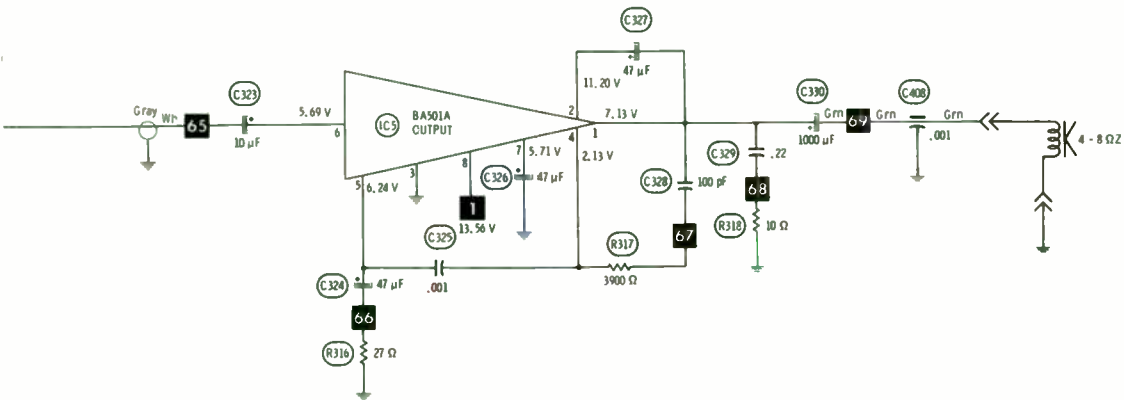
Measurements with switching as shown unless noted:  
 ■ FM Stereo signal    ▲ AM  
 ◆ Tape play

Supply voltage maintained as shown at input.  
 Voltages measured with digital meter, no signal.  
 Controls adjusted for normal operation.  
 Arrow at control indicates direction of advance.  
 Terminal identification may not be found on unit.  
 Resistors are 1/2W or less, 5% unless noted.  
 Value in ( ) used in some versions.

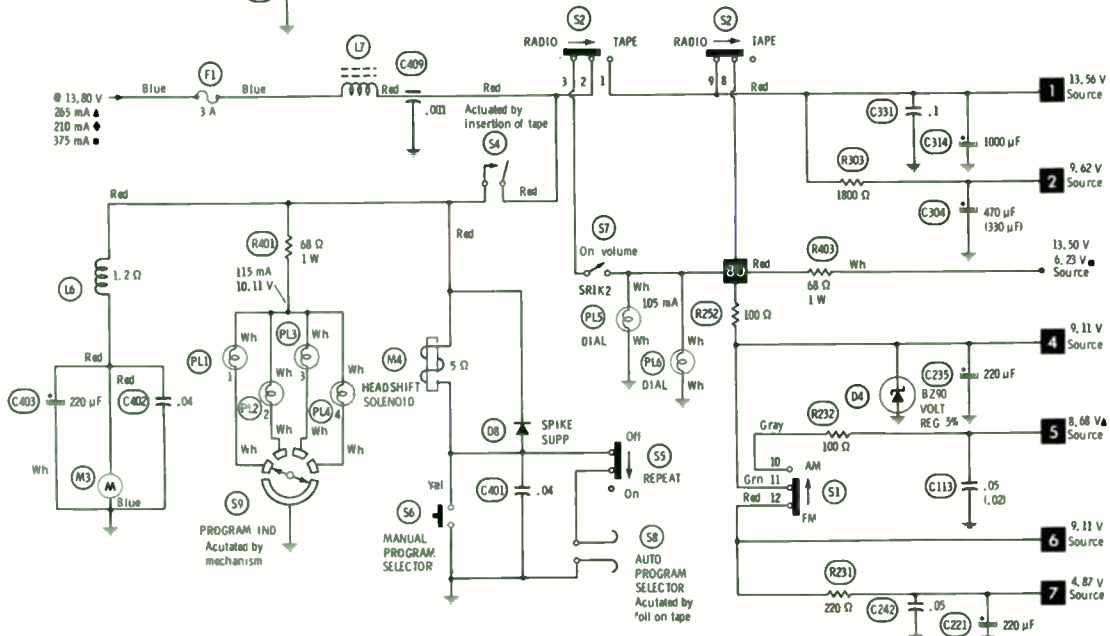
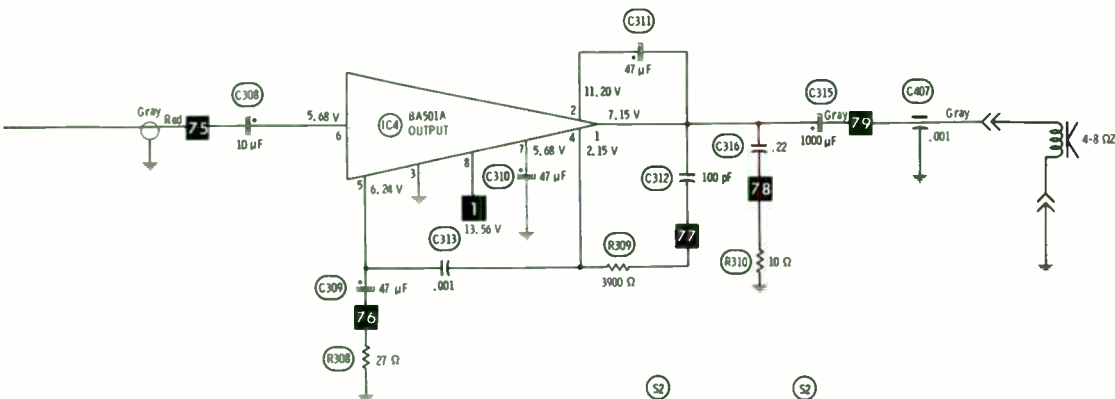
A PHOTOFAC STANDARD NOTATION SCHEMATIC  
 WITH **CIRCUITRACE**

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LEFT CHANNEL



RIGHT CHANNEL



## PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

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Have your local distributor check Sams COUNTER FACTS® for the most up-to-date replacement.

### CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C113	.05		DC-503	MGP05	TA150	TG-S50
C201	.02		DC-203	MGP02	TA120	TG-S20
C202	.003		DD-302		GP230	5GA-D30
C203	.04		UK25-503		MAG2515	HY-735
C204	.05		DC-503	MGP05	TA150	TG-S50
C205	.05		DC-503	MGP05	TA150	TG-S50
C206	100		DD-101	GP100	GP310	10TS-T10
C207	.005		DC-502	MGP005	TA250	TG-D50
C208	.01		UK50-103		MAG5011	
C209	.01		UK50-103		MAG5011	
C210	180		DD-181		GP318	10TS-T18
C211	.05		DC-503	MGP05	TA150	TG-S50
C212	.05		DC-503	MGP05	TA150	TG-S50
C213	.02		DC-203	MGP02	TA120	TG-S20
C215	.01		UK50-103		MAG5011	
C217	.04		UK25-503		MAG2515	HY-735
C218	.02		DC-203	MGP02	TA120	TG-S20
C219	.02		DC-203	MGP02	TA120	TG-S20
C220	.05		DC-503	MGP05	TA150	TG-S50
C222	100		DD-101	GP100	GP310	10TS-T10
C224	.001		DD-102G	GP1000	GP210	5GA-D10
C225	.001		DD-102G	GP1000	GP210	5GA-D10
C226	.001		DD-102G	GP1000	GP210	5GA-D10
C227	.001		DD-102G	GP1000	GP210	5GA-D10
C229	.022		DC-203	MGP02	TA120	TG-S20
C232	.0047					
C233	.0022					
C236	.05		DC-503	MGP05	TA150	TG-S50
C237	.05		DC-503	MGP05	TA150	TG-S50
C240	.01		UK50-103		MAG5011	
C241	.01		UK50-103		MAG5011	
C242	.05		DC-503	MGP05	TA150	TG-S50
C243	.01		UK50-103		MAG5011	
C302	56		DD-560		GP456	10TS-Q56
C303	.001		DC-103	MGP01	TA110	TG-S10
C306	.01		UK50-103		MAG5011	
C312	100		DD-101	GP100	GP310	10TS-T10
C313	.001		DC-103	MGP01	TA110	TG-S10
C316	.22					
C318	.001		DC-103	MGP01	TA110	TG-S10
C319	56		DD-560		GP456	10TS-Q56
C321	.01		UK50-103		MAG5011	
C325	.001		DC-103	MGP01	TA110	TG-S10
C328	100		DD-101	GP100	GP310	10TS-T10
C329	.22					
C331	.1			WMF05P1	EWFO5010	431P1049R5
C401	.04		UK25-503		MAG2515	HY-735
C402	.04		UK25-503		MAG2515	HY-735
C404	.1					
C405	.1					
C406	20		DTZ-20	NP020	CN0420	10TCC-Q20
C407	.001					
C408	.001					
C409	.001					
TC4	65					
TC5	50					
TC6	50					

### CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA				
			MFR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
VR1-1a	Volume-Left	10K	139N474 (18)				
VR1-1b	Volume-Right/Switch	10K					
VR1-2a	Tone-Left	10K					
VR1-2b	Tone-Right	10K	5390005	T-5000 (2)	C-502 (2)	MTC53L1 (2)	X201R502B (2)
VR2	Balance	50K					
VR3	Separation	5000					

(2) Cut off one of the end terminals and bend to fit PC board.

(18) Includes VR1-1a, VR1-1b, VR1-2a, VR1-2b.

## PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

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### COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
CF3	IF (455kHz)				Green Pink Blue Black Red
IFT2	Ratio Det (Pri.)				
IFT3	Ratio Det (Sec.)				
IFT4	IF (455kHz)				
IFT5	AM Osc				
L1	AM Ant Choke				
L3	Image Trap				
L4	19kHz				
L5	38kHz				
L6	RF Choke				
L7	RF Choke				
VL4	AM Ant	(1)			
VL5	AM RF	(1)			
VL6	AM Osc Tuning	(1)			

(1) Part of M1 (Tuner).

### FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	2A 3A (1)			AGC-2 AGC-3	H0J HDJ	312002 312003	150145 150145	FG2-2 FG3-2

(1) Used in some versions.

### MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CF1	Filter	(1)	Ceramic, 10.7MHz Ceramic, 10.7MHz AM/FM Tape Transport (2000 rpm @ 13.50V) Headshift 8-Track Stereo Play
CF2	Filter	(1)	
M1	Tuner		
M3	Motor		
M4	Solenoid		
M5	Tape Head		

## PARTS LIST AND DESCRIPTION (CONTINUED)

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### MISCELLANEOUS (cont)

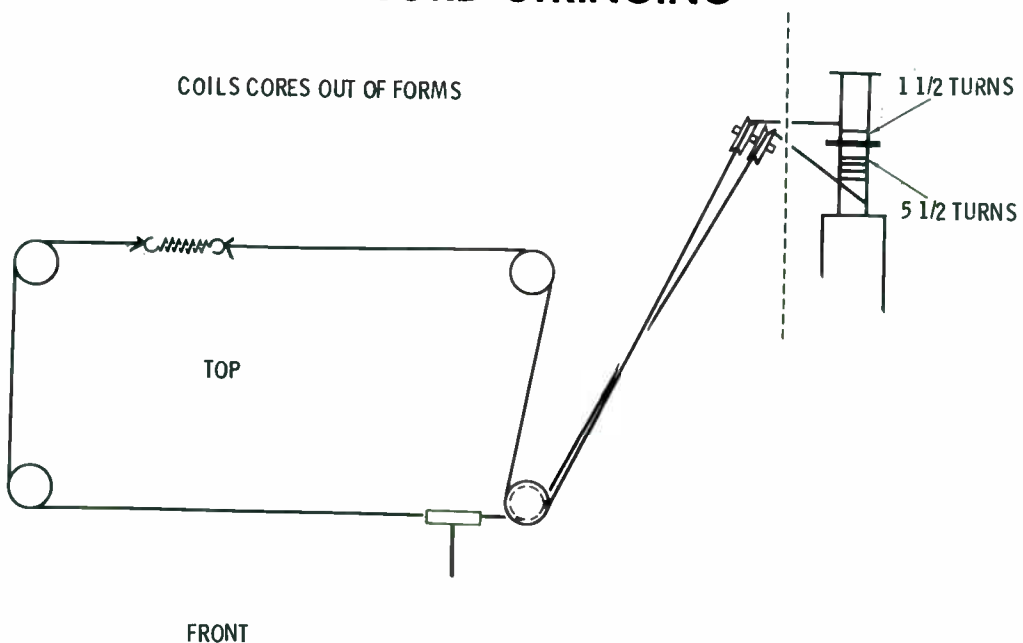
ITEM No.	PART NAME	PART No.	NOTES
S1	Switch		AM/FM
S2	Switch		Radio/Tape
S3	Switch		Loc/Dist
S4	Switch		Tape Power
S5	Switch		Repeat
S6	Switch		Manual Program Selector
S7	Switch		Radio Power
S8	Switch		Auto Program Selector
S9	Switch		Program Indicator

(1) When replacing, CF1 and CF2 should also be replaced.

### WIRING DATA

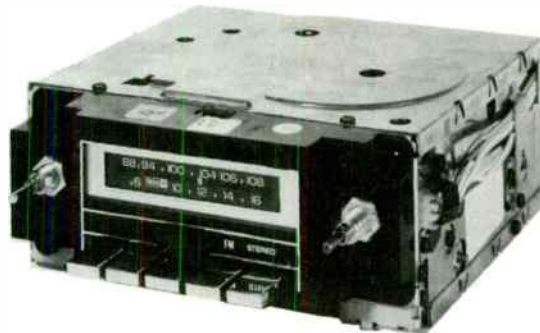
General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire .....	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable .....	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap .....	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)
Ignition Noise Suppression .....	Use BELDEN No. 7300-Series Spark-Plug Sets

## DIAL CORD STRINGING





For Supplier Address See PHOTOFACT Index



MODEL 61HFM3(7895851-1)  
 (76 Buick Skyhawk)  
 (76 Chev Monza, Vega)  
 (76 Olds Starfire)  
 (76 Pont Astre)

## ALIGNMENT INSTRUCTIONS

Check for specified source voltage  
 Use only enough generator output  
 to provide a usable indication.

Suggested Alignment Tools: GC ELECTRONICS:  
 T1,T4,T5,T6.....9296,9297,9300  
 C2,C3,C4,C5,C6.....8290,8868,9087

### PUSH-BUTTON ADJUSTMENT

1. Pull button out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
High side thru .1uF. to Ant Input low side to ground.	262kHz 400-Hz mod.	High freq. end stop.	Output meter across voice coil.	T6,T5	Adjust for maximum.
Check setting of oscillator coil core L1C Rear of core should be 1 3/8" from mounting end of coil form.					
High side thru 82pf to antenna input, low side to ground.	1615kHz	High freq. end stop.	Output meter across voice coil.	C6,C5, C4	Adjust for maximum.
"	600kHz	600-kHz signal	"	L1B,L1A	Adjust for maximum. Repeat alignment.
With radio installed in car and antenna extended 36 ", tune in a weak station near 1400kHz and adjust C4 for maximum output. Antenna adjustment C4 is located behind tuning and fader knobs.					

GENERAL MOTORS MODEL 61HFM3

### FM ALIGNMENT

IMPORTANT: FIRST MAKE CERTAIN A.M. IS OPERATING PROPERLY; THE A.M. OSCILLATOR CONTROLS FM TUNING.

HI-END  
STOP

ADJUST CALIBRATE (R80) TO OBTAIN  
7.3 VOLTS PIN 9 OF U8.

### FM IF ALIGNMENT USING AM SIGNAL GENERATOR—SELECTOR IN FM POSITION

High side of generator thru .001uF to Pin 8 of U2, low side to ground.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MHz Unmodulated	Point of non-interference	DC probe of VTVM to Pin 6 of U3 common to ground.	(1) T4,TI	Adjust for maximum.

(1) Before adjusting, vary generator frequency slightly. Maximum output indicates exact IF.

**HOWARD W. SAMS & CO., INC.** Indianapolis, Indiana 46206

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## ALIGNMENT INSTRUCTIONS (Continued)

### FM RF ALIGNMENT—SELECTOR IN FM POSITION

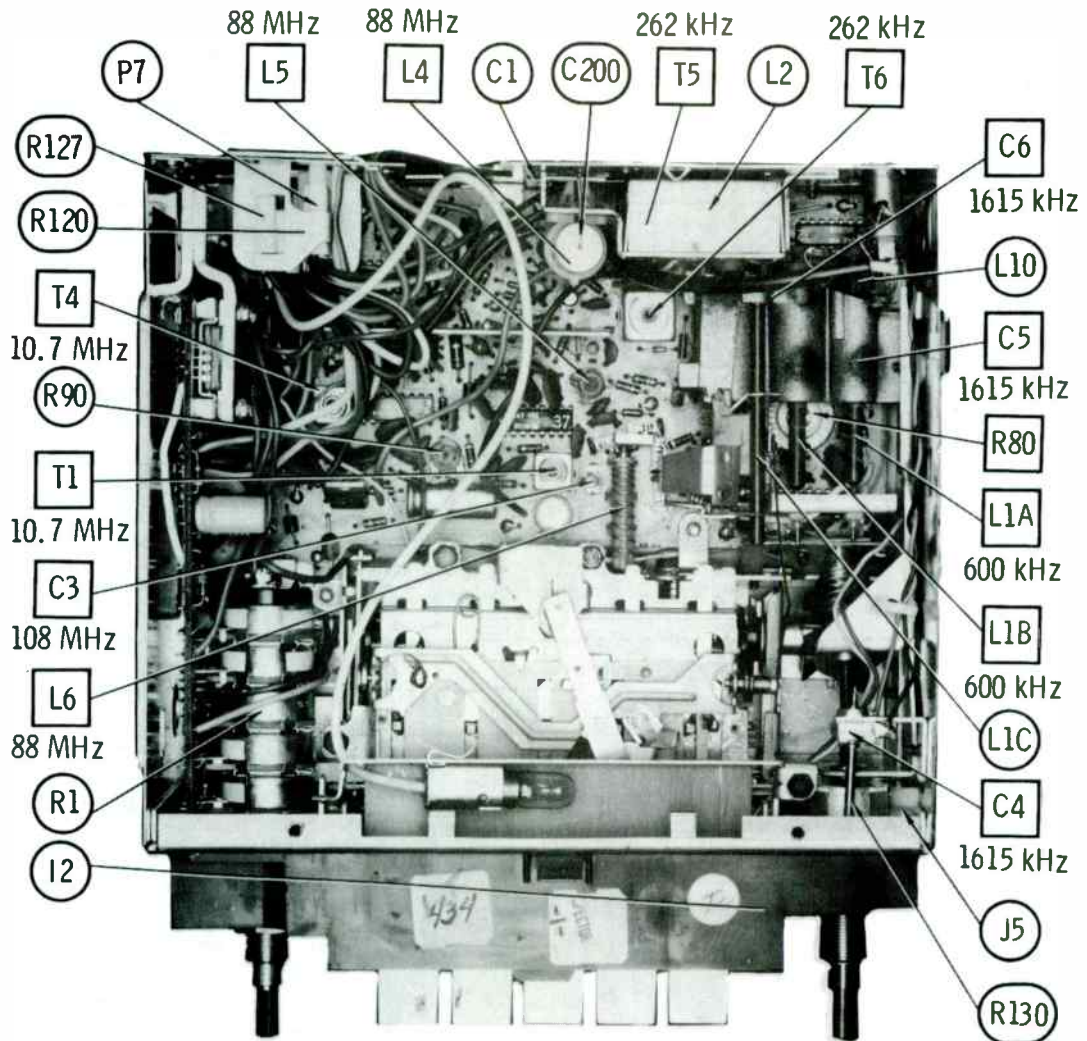
Connect generator across antenna terminals with 120-ohm carbon resistor in series with each lead. Adjustment of coils by bending should not be attempted unless the coil is deformed or replaced.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
88MHz Unmodulated	Low freq end.	DC probe of VTVM to Pin 6 of U3 common to ground.	L6, L5, L4	Adjust for maximum.
108MHz Unmodulated	Tune to signal	"	C3	Adjust for maximum. Repeat FM RF steps until no further improvement is noted.

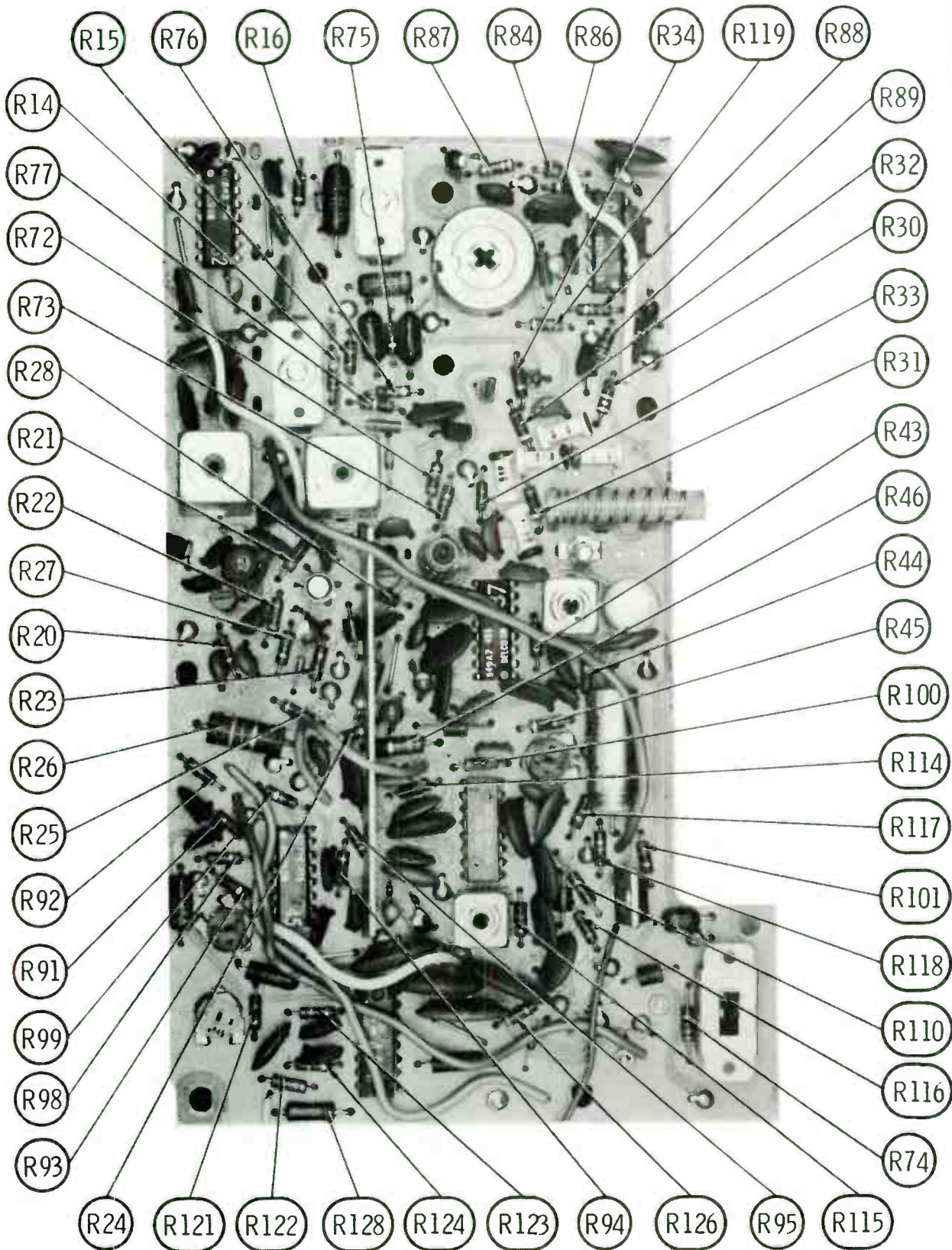
### FM STEREO MULTIPLEX ALIGNMENT

With weak stereo signal adjust R127 for Stereo Light.

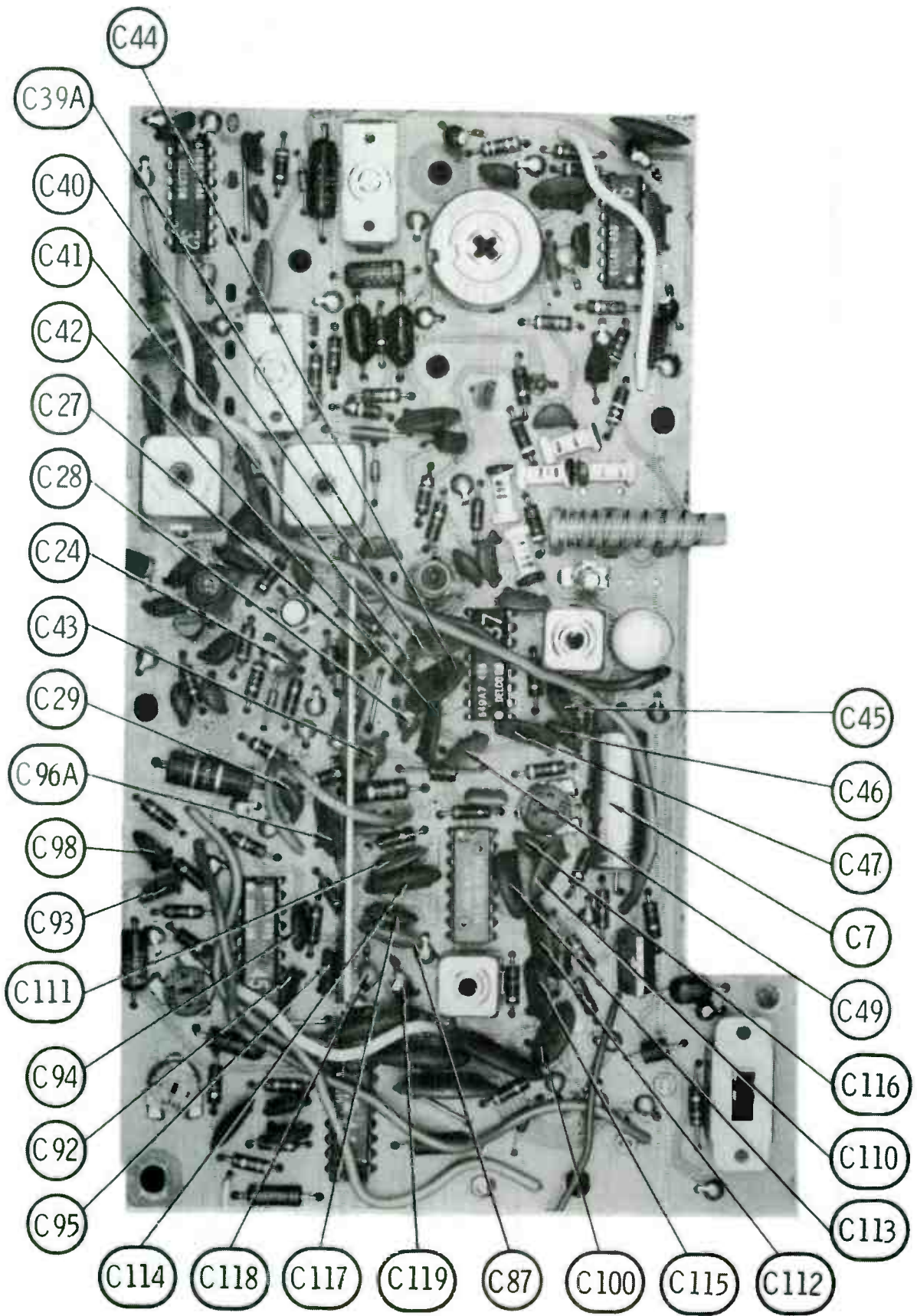
With strong stereo signal, adjust R127 and R120 for Maximum separation.



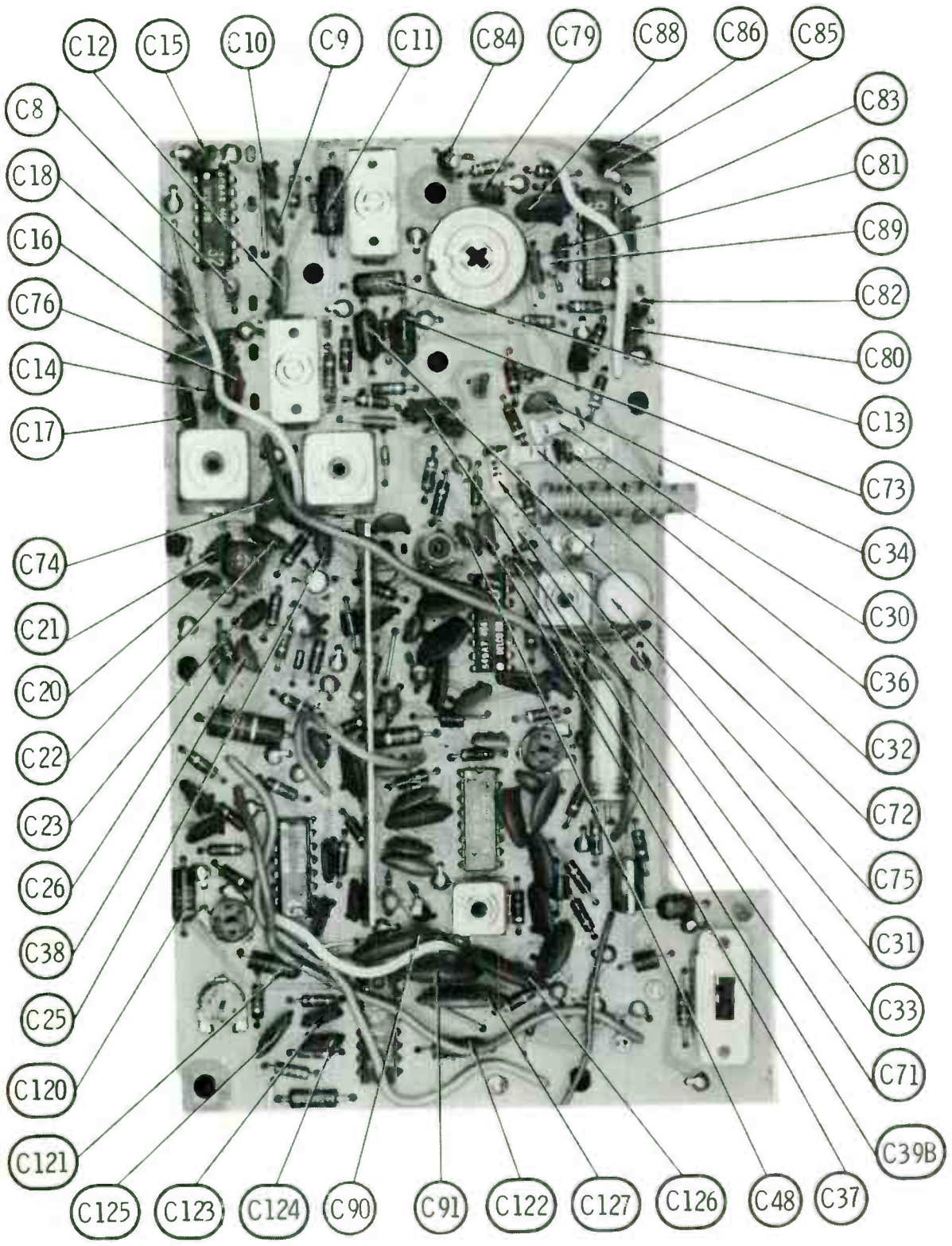




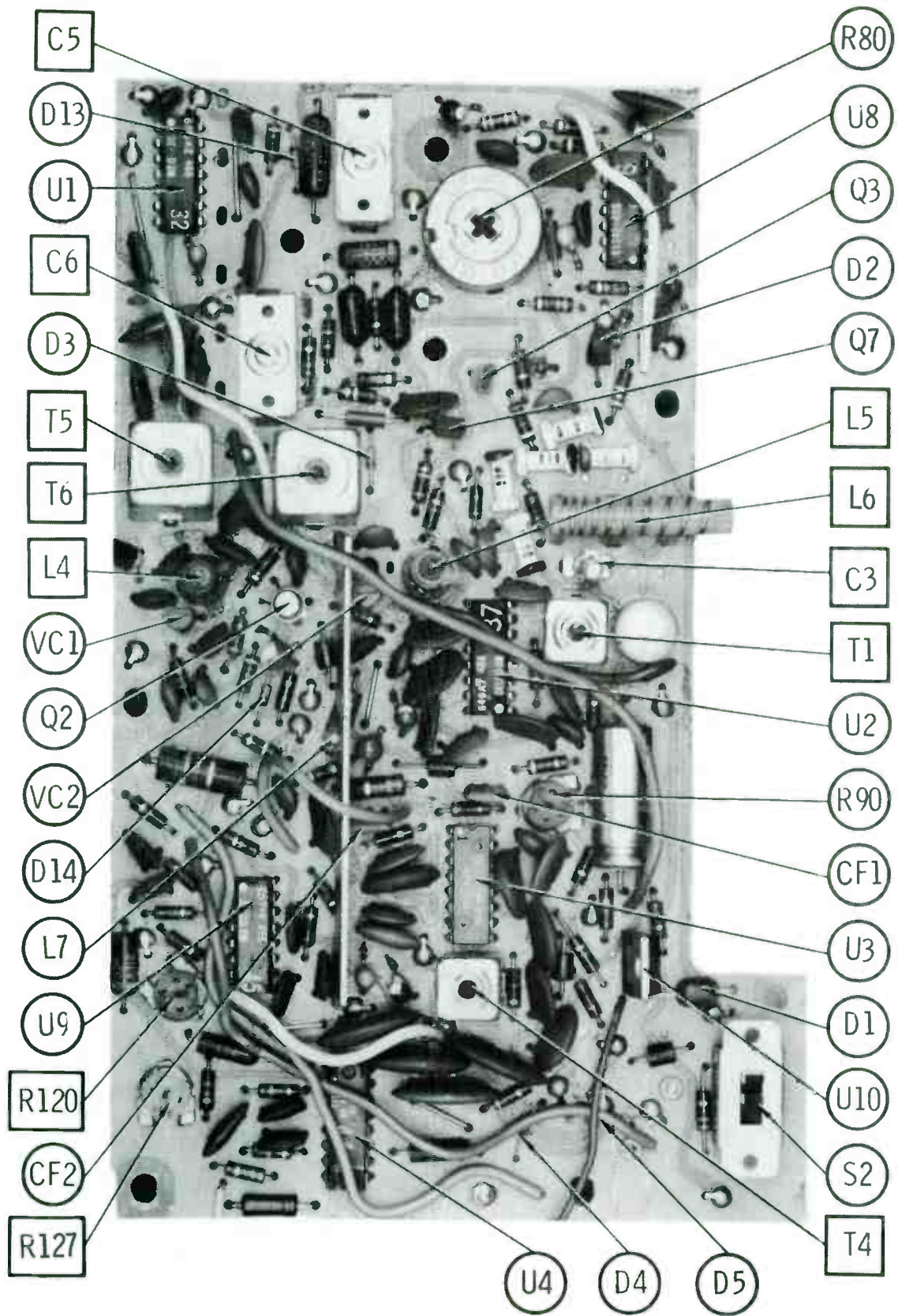
MAIN BOARD



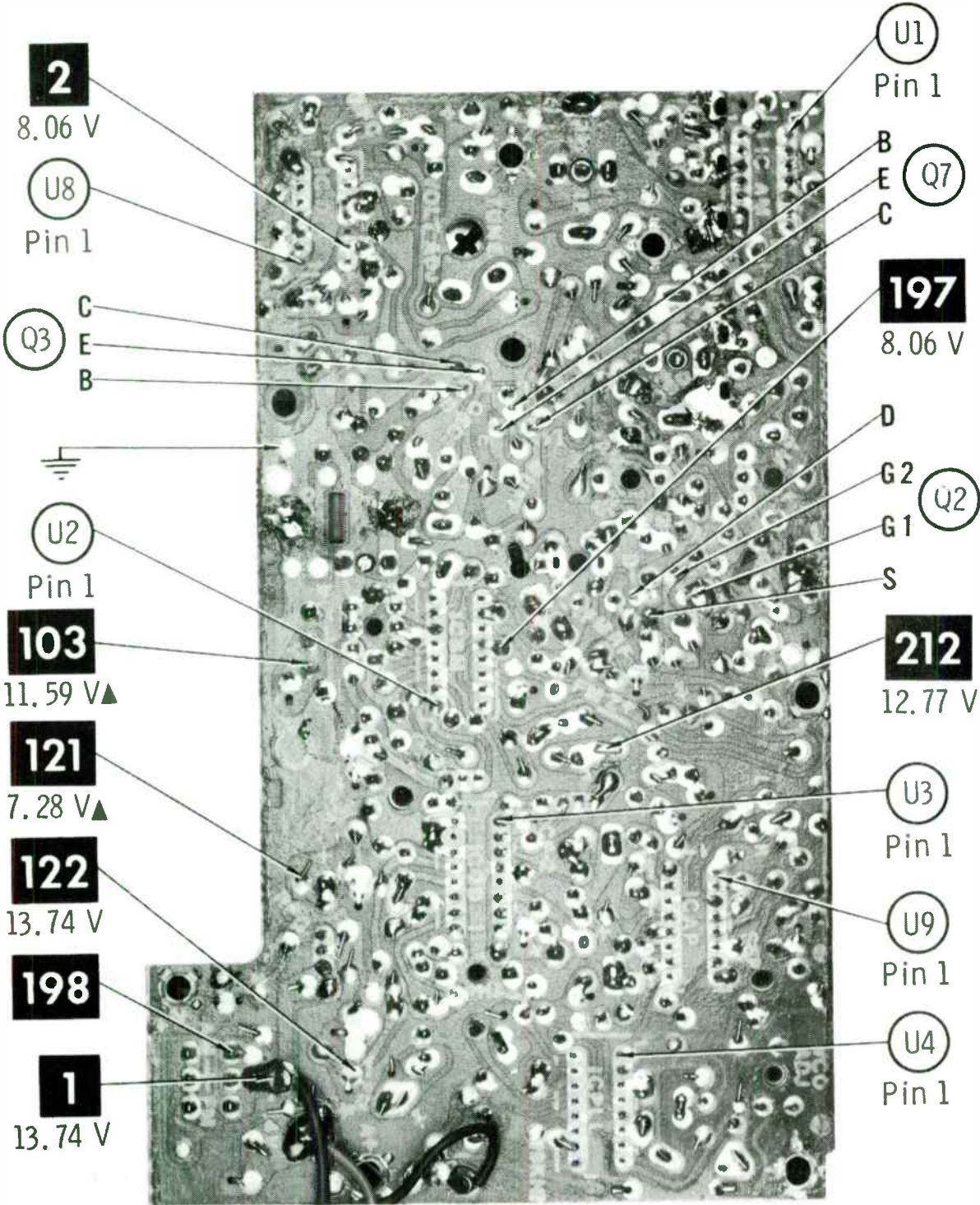
MAIN BOARD



MAIN BOARD



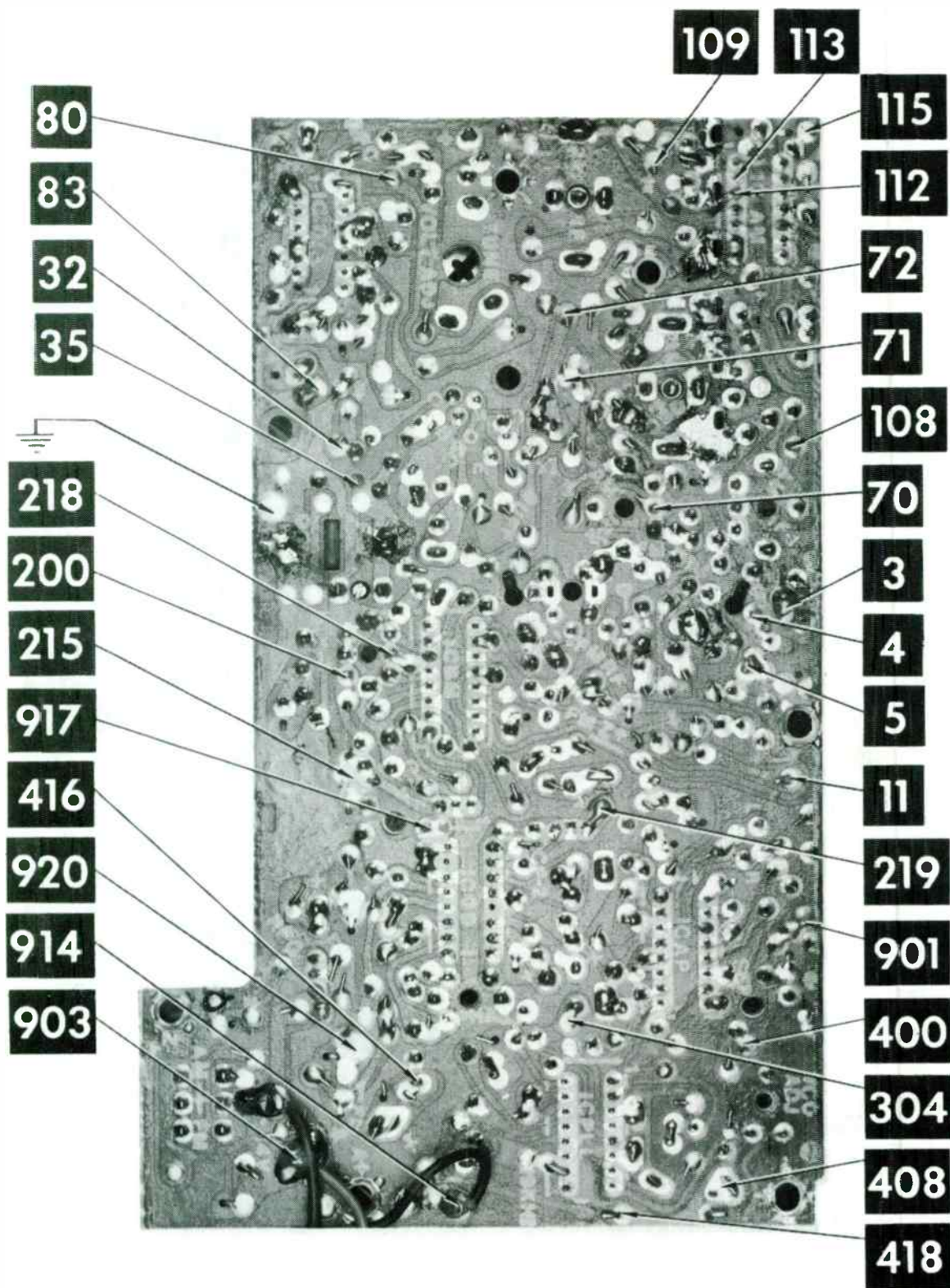
MAIN BOARD



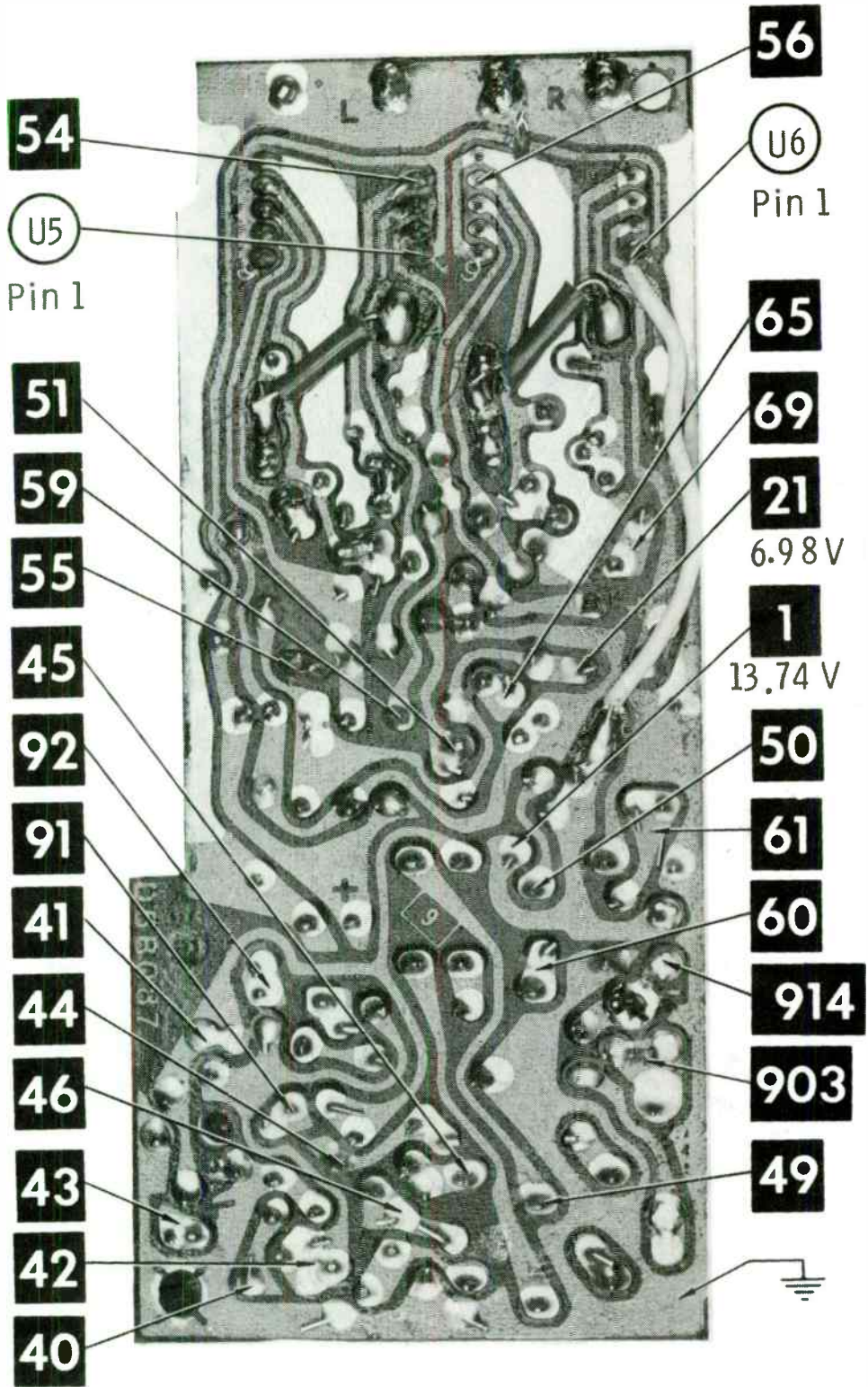
GENERAL MOTORS MODEL 61HFM3

▲AM

MAIN BOARD

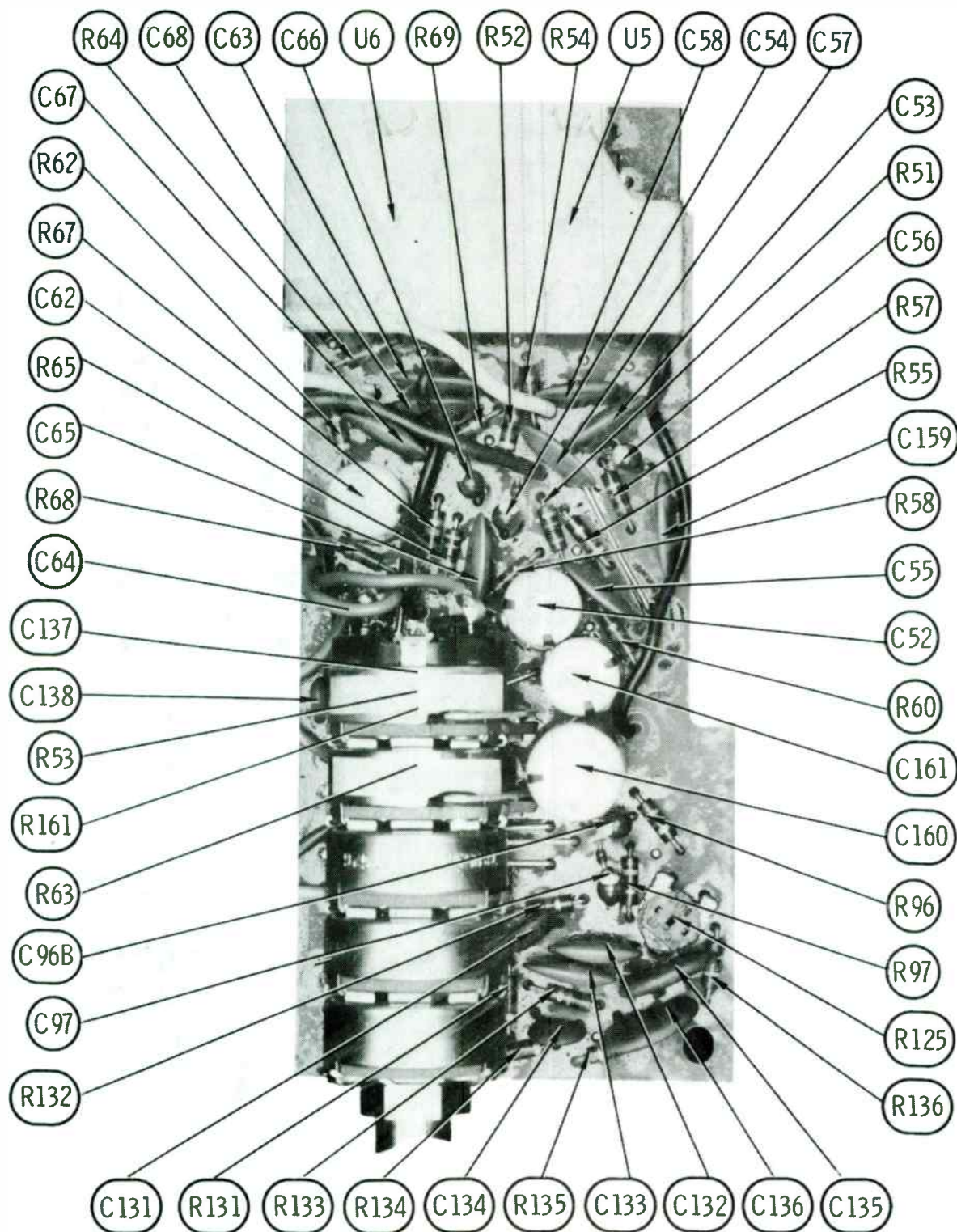


MAIN BOARD



GENERAL MOTORS MODEL 61HFM3

AUDIO BOARD



AUDIO BOARD



# PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

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## SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	IR WORKMAN PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
D1	DS-79		GE-504A	5A4D	PTC201	HEPROD52	RE 49	SK3030	RT-213	ECG116
D2	DS-55		GE-90	D201		HEPR2503	RE 195	SK3126	RT-262	
D3	DS-97		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D4	DS-97		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D5	DS-97		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D13	DS-31		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D14	DS-31		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
	DS-97 (1)		GE-300	D200	PTC214	HEPR06D2	RE 52	SK3100	RT-218	ECG177
I2	DS410									
Q2	DS-105		GE-FET-4		PTC181	HEPF2004	RE 199	SK3050	RT-181	ECG222
Q3	DS-94		GE-210	TR-21	PTC115	HEPS0015	RE 13	SK3124	RT-108A	ECG123A
Q7	DS-66		GE-17	TR-21	PTC121	HEPS0011	RE 13	SK3124	RT-172	ECG123A
U1	DM-32		GEIC-24		PTC734				TVCM-19	ECG744
U2	DM-37									
U3	DM-51				PTC767			SK3147	TVCM-39	ECG788
U4	DM-44		GEIC-32		PTC729		RE 317-IC		TVCM-29	ECG743
U5	DM-59									
U6	DM-59									
U8	DM-56									
U9	DM-45									
U10	DM-33									
VC-1	DS-190									
VC-2	DS-190									

## ELECTROLYTIC CAPACITORS

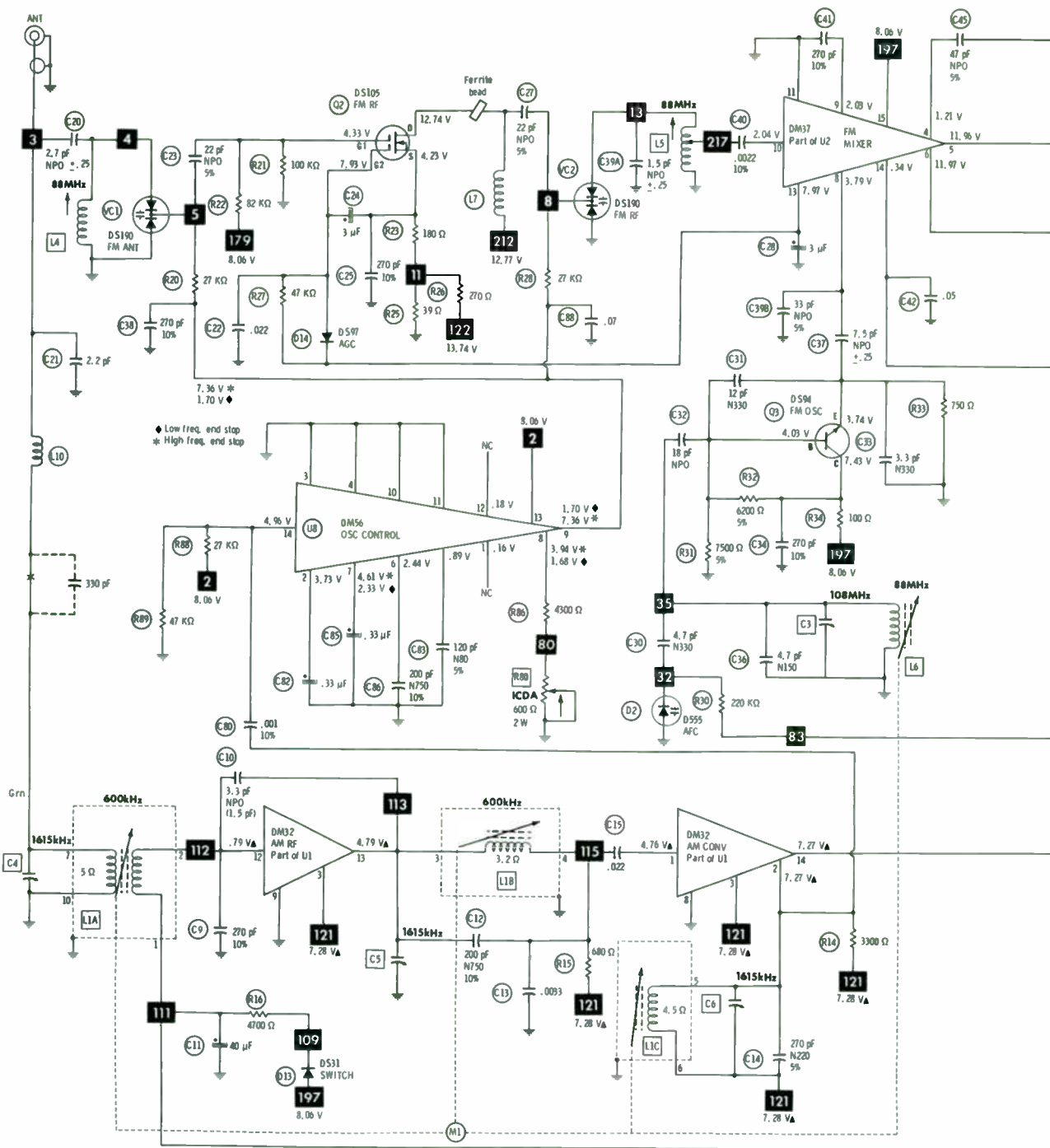
ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA		
			CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	250 16V	7936628	WBR250-16	MTA250F15	TVA-1161
C8	3 10V	7296348		TDC335M015EL	SD15-3R39
C11	40 6V	7298555		TAC476M006P04	SD6-479
C24	3 35V	7936359		TDC335M035FL	SD35-3R39
C28	3 10V			TDC335M015EL	SD15-3R39
C43	3 35V	7936359		TDC335M035FL	SD35-3R39
C52	100 16V NP	9349947		TCN425A	TVAN-1207.1
C54	1 10V	7936365		TDC105M035EL	SD35-19
C56	1 10V	7936365		TDC105M035EL	SD35-19
C59	3 35V	7936359 (1)		TDC335M035FL	SD35-3R39
C61	100 16V NP	9349947 (1)		TCN425A	TVAN-1207.1
C62	100 16V NP	9349947		TCN425A	TVAN-1207.1
C64	1 10V	7930782		TAC105M020P02	SD35-19
C66	1 10V	7936365		TDC105M035EL	SD35-19
C69	3 35V	7936359 (1)		TDC335M035FL	SD35-3R39
C75	40 16V NP	9340269		TDC334M050EL	SD50-R339
C82	.33 35V	7936748		TDC334M050EL	SD50-R339
C84	.33 35V	7936748		TDC334M050EL	SD50-R339
C85	.33 35V	7936748		TDC106M035FL	SD35-109
C89	10 16V	7936360		TDC105M035EL	SD35-19
C96B	1 10V	7936365		TDC105M035EL	SD35-19
C97	1 10V	7936365		TDC105M035EL	SD35-19
C118	3 10V	7296348		TDC335M015EL	SD15-3R39
C119	1 10V	7936365		TDC105M035EL	SD35-19
C121	2 10V	7313127		TAC225M010P02	SD25-2R29
C122	2 10V	7313127		TAC225M010P02	SD25-2R29
C160	900 16V NP	7898283		TCN425A	TVAN-1207.1
C161	100 16V NP			TC1501C	TVA-1163
C200	1000 16V	9341267	WBR1000-16		

(1) Used in some versions.

## CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CENTRALLAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C1		9348419				
C3		9349556				
C4		7936524				
C5		7311368				
C6						
C9	270 10%		DU-271	GP270	GP327	10TS-T27
C10	3.3 NPO		DTZ-3R3	NP03P3	CH0533	10TCC-V33
C12	200 N750 10%		DTN-200			10TCU-T20
C13	.0033		DD-332	GP3300	GP233	56A-D33
C14	270 N220 5%	7896854			*	10TCR-T27

GENERAL MOTORS MODEL 61HFM3



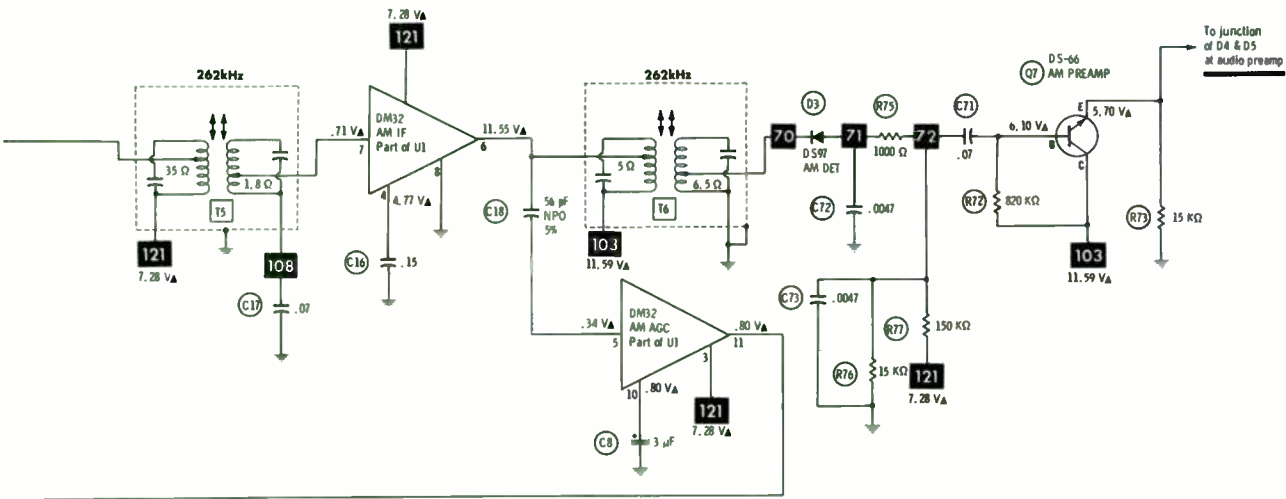
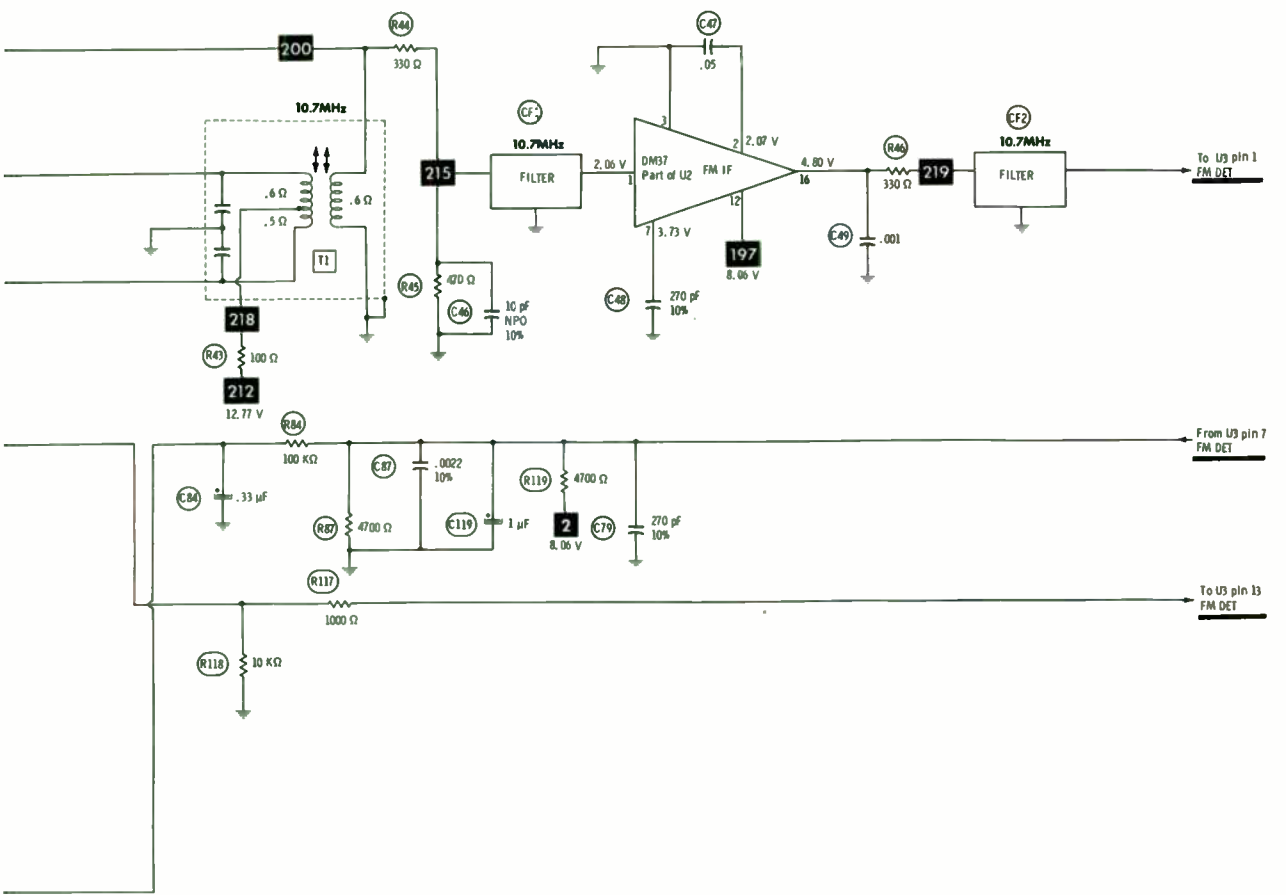
◆ Low freq. end stop  
 \* High freq. end stop

- ✖ Circuitry not used in some versions
- - - Circuitry used in some versions
- See parts list
- ⊛ Nominal value
- ⊕ Ground
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- ▽ Common tie point

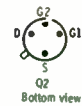
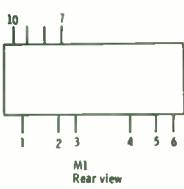
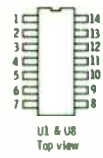
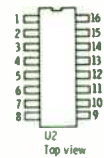
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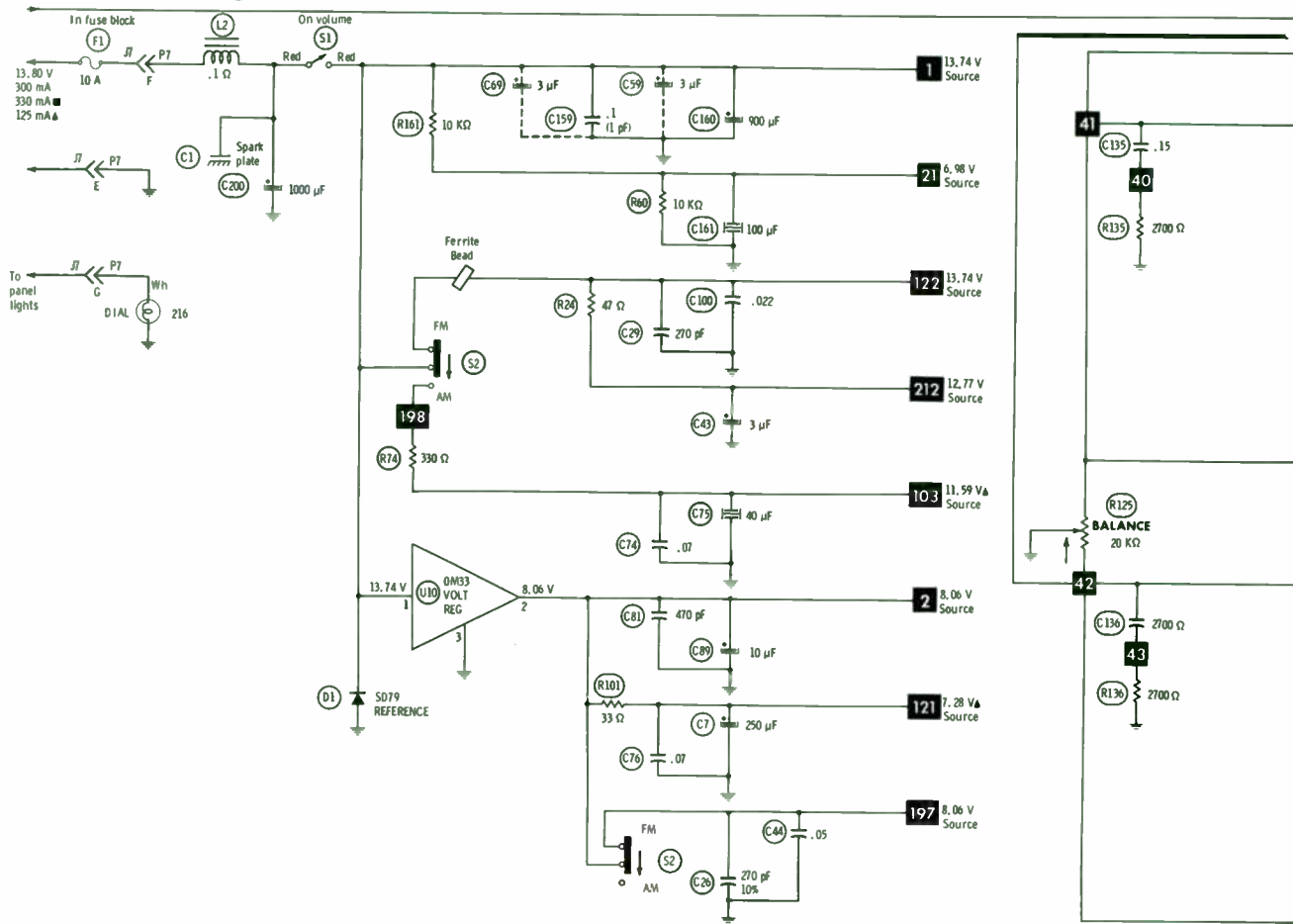
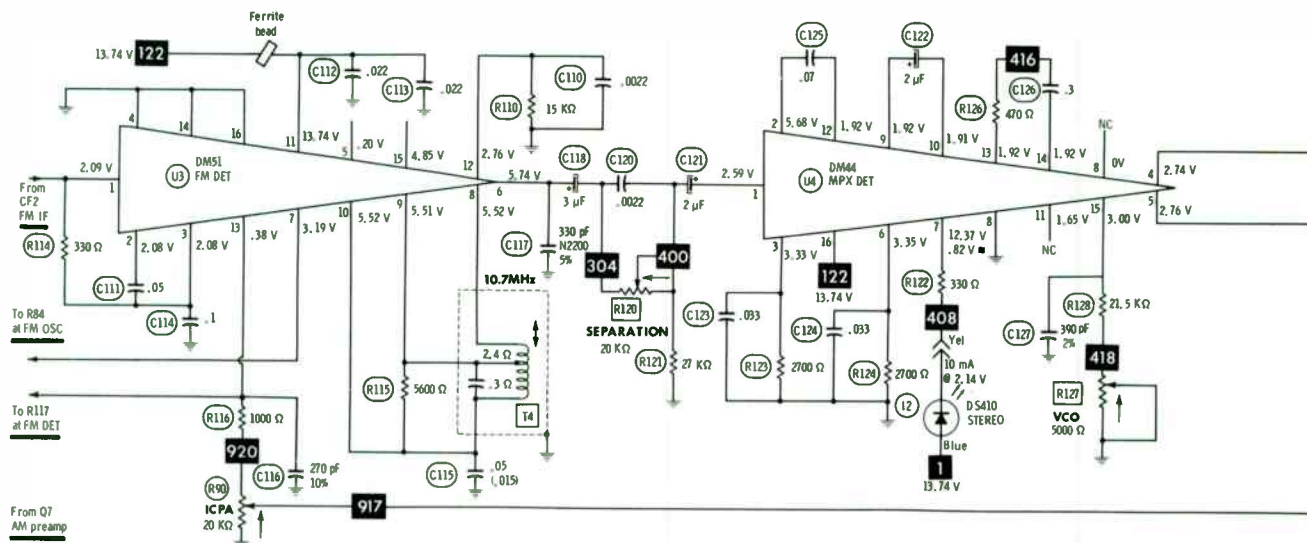
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 Voltages measured with digital meter, no signal.  
 Controls adjusted for normal operation.  
 Arrow at control indicates direction of advance.  
 Terminal identification may not be found on unit.  
 Resistors are 1/2W or less, 5% unless noted.  
 Value in ( ) used in some versions.

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
 WITH **CIRCUITRACE**  
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Terminal Guides





- Circuitry not used in some versions
- - - Circuitry used in some versions
- ⊙ See parts list
- ⊛ Nominal value
- ⊕ Ground
- ⊞ Chassis
- ∇ Common tie point

Measurements with switching as shown unless noted:  
 ■ FM Stereo signal    ▲ AM

Supply voltage maintained as shown at input.  
 Voltages measured with digital meter, no signal.  
 Controls adjusted for normal operation.  
 Arrow of control indicates direction of advance.  
 Terminal identification may not be found on unit.  
 Resistors are 1/2W or less, 5% unless noted.  
 Value in ( ) used in some versions.

A PHOTOFACIT STANDARD NOTATION SCHEMATIC  
 WITH **CIRCUITRACE™**  
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# PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.

Have your local distributor check Sams COUNTER FACTS for the most up-to-date replacement.

## CAPACITORS (cont)

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C15	.022 16V		UK16-223			
C16	.15 16V		UK16-154			HY-625
C17	.07 16V		UK16-683			HY-665
C18	56 NPO 5%				MAG1618	HY-640
C20	2.7 NPO				CN0456	10TCC-Q56
C21	2.2					
C22	.022 16V		DTZ-2R2	NP02P2	CN0522	1DTCC-V22
C23	22 NPO 5%		UK16-223			HY-625
C25	270 10%		DTZ-22	NP022	CN0422	1DTCC-Q22
C26	270 10%		DD-271	GP270	GP327	10TS-T27
C27	22 NPO 5%		DD-271	GP270	GP327	10TS-T27
C29	270 10%		DTZ-22	NP022	CN0422	1DTCC-Q22
C30	4.7 N33D		DD-271	GP270	GP327	10TS-T27
C31	12 N33D	934154D			*	10TCS-V47
C32	18 NPO 7897740	7897766			*	10TCS-Q12
C33	3.3 N33D	7897740			CN0418	10TCC-Q18
C34	270 10%	9341429			*	10TCS-V33
C36	4.7 N150		DD-271	GP270	GP327	10TS-T27
C37	7.5 NPO	7897765			*	10TCP-V47
C38	270 10%					
C39A	1.5 NPO		DD-271	GP270	GP327	10TS-T27
C39B	33 NPO 5%		DTZ-1R5	NP01P5	CN0515	1DTCC-V15
C40	.0022 10%		DTZ-33	NP033	CN0433	10TCC-Q33
C41	270 10%				GP222	10TS-D22
C42	.05 16V		DD-271	GP270	GP327	10TS-T27
C44	.05 16V		UK16-503		MAG1615	HY-635
C45	47 NPO 5%		UK16-503		MAG1615	HY-635
C46	10 NPO 10%		DTZ-47	NP047	CN0447	10TCC-Q47
C47	.05 16V		DTZ-10	NP01D	CN0410	10TCC-Q10
C48	270 10%		UK16-503		MAG1615	HY-635
C49	.001		DD-271	GP270	GP327	10TS-T27
C53	.1 16V		DD-102G	GP1000	GP210	5GA-D10
C55	.1 16V		UK16-104		MAG1601	HY-650
C57	.1 16V		UK16-104		MAG1601	HY-650
C58	.1 16V		UK16-104		MAG1601	HY-650
C63	.1 16V		UK16-104		MAG1601	HY-650
C65	.1 16V		UK16-104		MAG1601	HY-650
C67	.1 16V		UK16-104		MAG1601	HY-650
C68	.1 16V		UK16-104		MAG1601	HY-650
C71	.07 16V		UK16-683		MAG1618	HY-640
C72	.0047		DD-472	GP4700	GP247	5GA-D47
C73	.0047		DD-472	GP4700	GP247	5GA-D47
C74	.022 16V		UK16-223			HY-625
C76	.07 16V		UK16-683		MAG1618	HY-640
C79	270 10%		DD-271	GP270	GP327	10TS-T27
C8D	.001 10%		DD-102		GP210	10TS-D10
C81	470		DD-471	GP470	GP347	10TS-T47
C83	120 N80 5%					1DTCN-T12
C86	200 N750 10%	7296137	DTN-200			10TCU-T20
C87	.0022 10%				GP222	10TS-D22
C88	.07 16V		UK16-683		MAG1618	HY-640
C90	.3 10V				MAG12033	HY-375
C91	.3 10V				MAG12033	HY-375
C92	.033 16V		UK16-333		MAG16133	HY-630
C93	.033 16V		UK16-333		MAG16133	HY-630
C94	.033 16V		UK16-333		MAG16133	HY-630
C95	.033 16V		UK16-333		MAG16133	HY-630
C96A	.05 16V		UK16-503		MAG1615	HY-635
C98	.033 16V		UK16-333		MAG16133	HY-630
C100	.022	7895980	DC-253	MGP025	TA125	TG-S25
C110	.0022 10%				GP222	10TS-D22
C111	.05 16V		UK16-503		MAG1615	HY-635
C112	.022	7895980	DC-253	MGP025	TA125	TG-S25
C113	.022	7895980	DC-253	MGP025	TA125	TG-S25
C114	.1 16V		UK16-104		MAG1601	HY-650
C115	.05 16V		UK16-503		MAG1615	HY-635
C116	270 10%		DD-271	GP270	GP327	10TS-T27
C117	330 N2200 5%				*	10TCY-T33
C120	.0022		DD-222		GP222	5GA-D22
C123	.033 16V		UK16-333		MAG16133	HY-630
C124	.033 16V		UK16-333		MAG16133	HY-630
C125	.07 16V		UK16-683		MAG1618	HY-640
C126	.3 10V				MAG12033	HY-375
C127	390 N220 2%					
C131	.033 16V	9341036	UK16-333		MAG16133	HY-630
C132	.1 16V		UK16-104		MAG1601	HY-650
C133	.1 16V		UK16-104		MAG1601	HY-650
C134	.033 16V		UK16-333		MAG16133	HY-630
C135	.15 12V				MAG12015	HY-365
C136	.15 12V				MAG12015	HY-365
C137	.01		DC-103	MGP01	TA110	TG-S10
C138	.01		DC-103	MGP01	TA110	TG-S10
C159	.1		DC-104	MGP1	TA010	TG-P10

\* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

## PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.  
Have your local distributor check Sams COUNTER FACTS® for the most up-to-date replacement.

### CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
R1a	Tone (Right)	40K	7895320				
b	Tone (Left)	40K					
c	Dummy Not Used						
d	Volume (Left)	20K Tap @ 10K					
e	Volume (Right)/ Switch	20K Tap @ 10K					
R80	ICDA Calibration	600 2 Watt	9348417	WF-600 or V-600	39-500	MR600F	112-600
R90	Processor Adj.	20K	9349022				
R120	Separation	20K	9349022				
R125	Balance	20K	9349022				
R127	VCO Adjust	5000	9349445				
R130a	Fader (Left)	125 2 Watt	9348389				
b	Fader (Right)	125 2 Watt					

### COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1A	AM Antenna	(1)			(1) Part of M1 (AM Tuner)
B	AM RF	(1)			
C	AM Osc	(1)			
L4	FM Antenna	9348413			
L5	FM RF	9348414			
L6	FM Osc	(1)			
L7	RF Choke	7934553			
L10	AM Antenna Choke				
T1	FM IF (10.7MHz)	9346544			
T4	Quadrature	9346543			
T5	AM IF (262kHz)	9349015			
T6	AM IF (262kHz)	9349372			

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
L2	330mA	.1	300uH	7302543			

### SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP1	4" X 10" PM 10 Ohms	7930571		
SP2	4" X 10" PM 10 Ohms	7930571		
SP3	6" X 9" PM 10 Ohms	9348870		
SP4	4" X 10" PM 10 Ohms	9349690		
	6" X 9" PM 10 Ohms	9348870		
	4" X 10" PM 10 Ohms	9349690		

GENERAL MOTORS MODEL 61HFMS

## PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.

Have your local distributor check Sams COUNTER FACTS<sup>®</sup> for the most up-to-date replacement.

### FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F1	10Amp		In Fuse Block	AGC-10		312010		

### MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CF1	Filter	1223695 (1)	Ceramic, 10.7MHz (Orange Dot)
CF2	Filter	1223695 (1)	Ceramic, 10.7MHz (Orange Dot)
J5	Connector Assembly	1223668	Fader
M1	Tuning Coil Assembly	7898352	AM Tuning Coils
	AM Tuning Cores	7288147	Antenna, RF, Osc
	FM Tuning Core	7897881	Dsc
P7	Connector Assembly	7896393	Power, Speaker
S1	Switch		Power (On Volume Cont.)
S2	Switch	7898278	AM/FM

(1) When replacing, CF1 and CF2 should also be replaced.

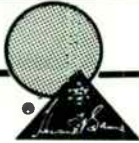
### CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Escutcheon Assembly (Includes Dial Scale & Pointer)	9347870	Knob, AM-FM	7897818
		Pushbutton, Tuning (5 Used)	9349753

### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in 12 Colors
	8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire .....	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable .....	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap .....	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)
Ignition Noise Suppression .....	Use BELDEN No. 7300-Series Spark-Plug Sets





**PHOTOFACT<sup>®</sup> with**

**CIRCUITRACE<sup>®</sup>**

For Supplier Address See PHOTOFACT Index



MODEL A-10

LEAR JET MODEL A-10

**ADJUSTMENTS**

ADJUST	REMARKS
Head Azimuth	Play a test cartridge and adjust B1 for maximum on an AC VTVM across output.
Head Height	Play a test cartridge, follow instructions with cartridge, and adjust B2 for proper response.

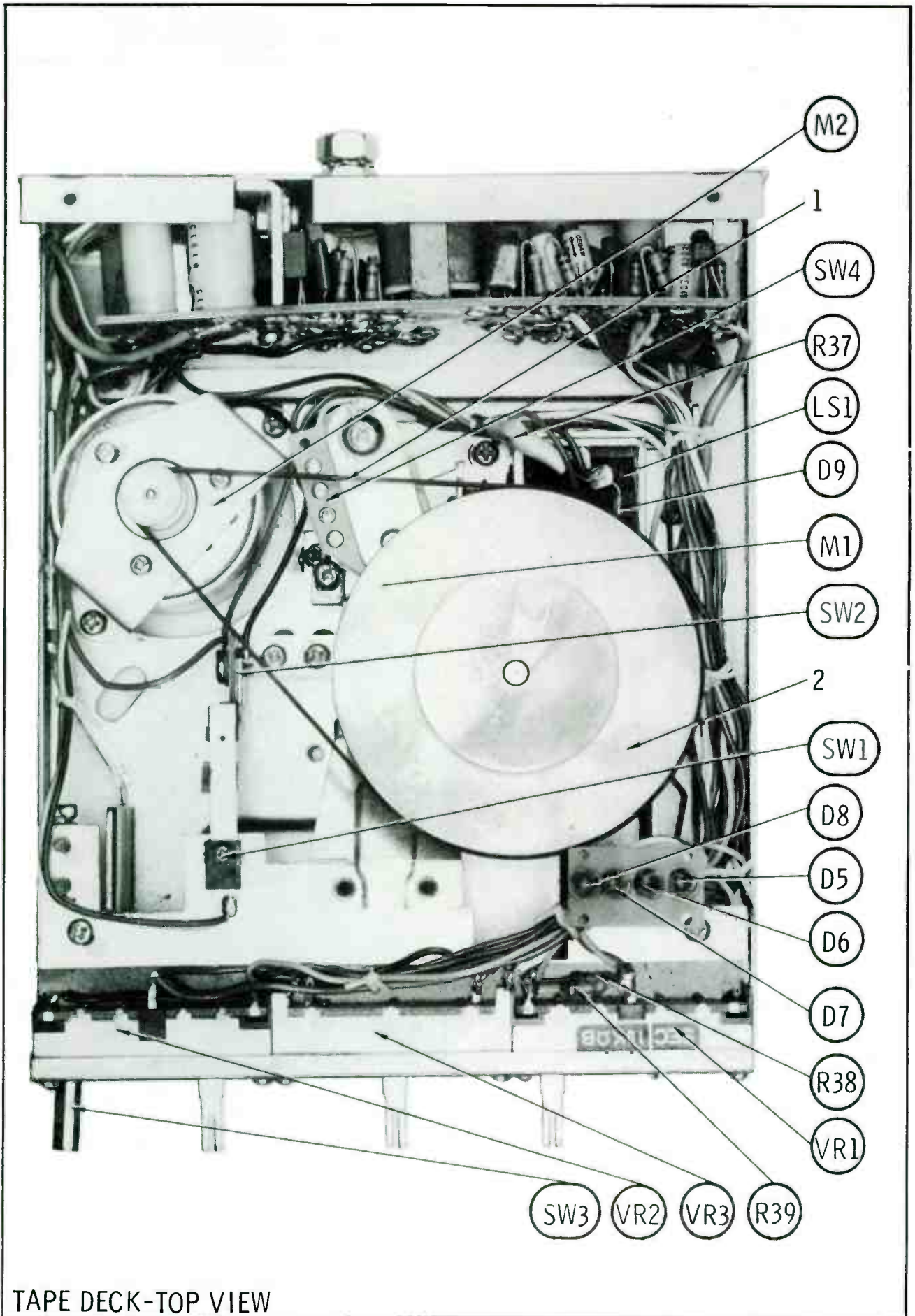
**MECHANICAL PARTS LIST**

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1*	*	Flywheel Drive Belt*	6		Head Shifting Assembly
2		Flywheel	7		Azimuth Spring
3		Track Changing Cam	8		Head Lifting Spring
4		Pawl	9		Motor Pulley
5		Solenoid Spring	10		Flywheel Housing Assembly
			11		Cartridge Detent Arm

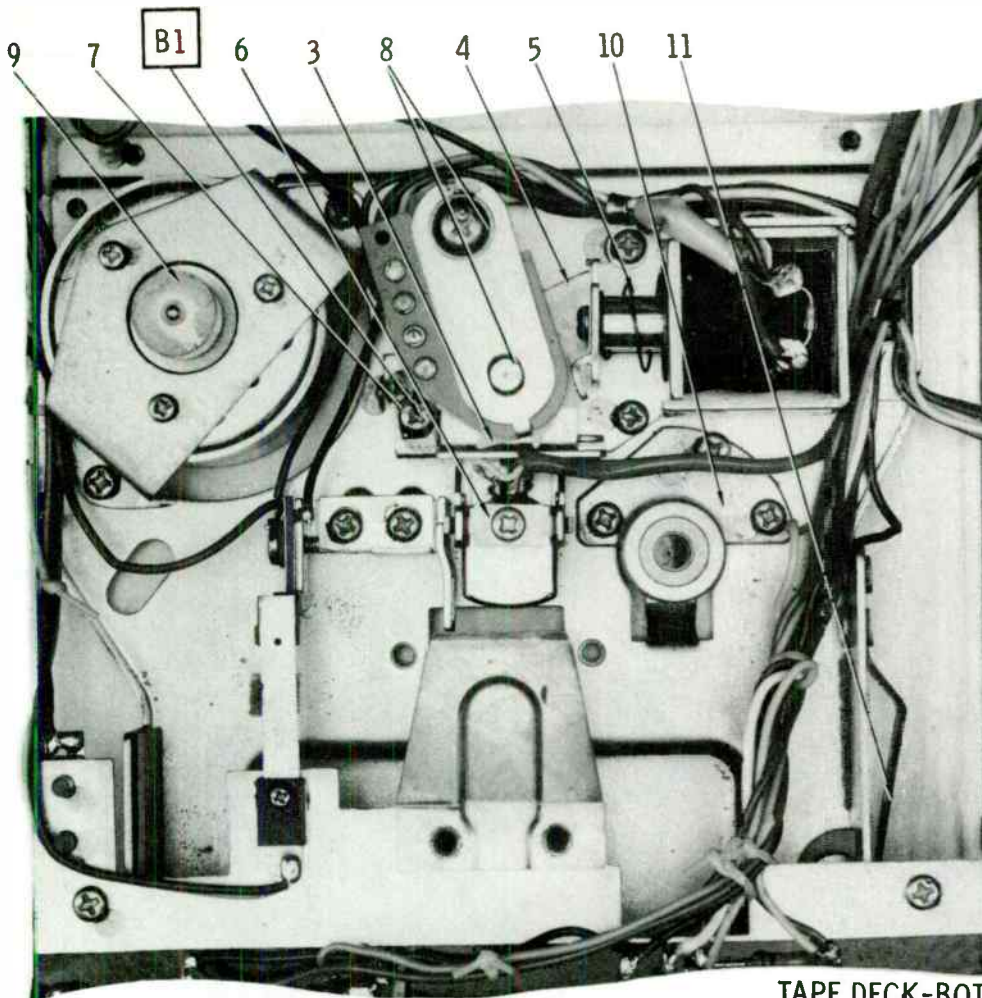
\* Flywheel Drive Belt: E-V/GAME Replacement Number 1407-71.  
 WALSCO Replacement Number 1424-21.

**HOWARD W. SAMS & CO., INC.** Indianapolis, Indiana 46206

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TAPE DECK-TOP VIEW



TAPE DECK-BOTTOM VIEW

LEAR JET MODEL A-10

**TROUBLE CHART**

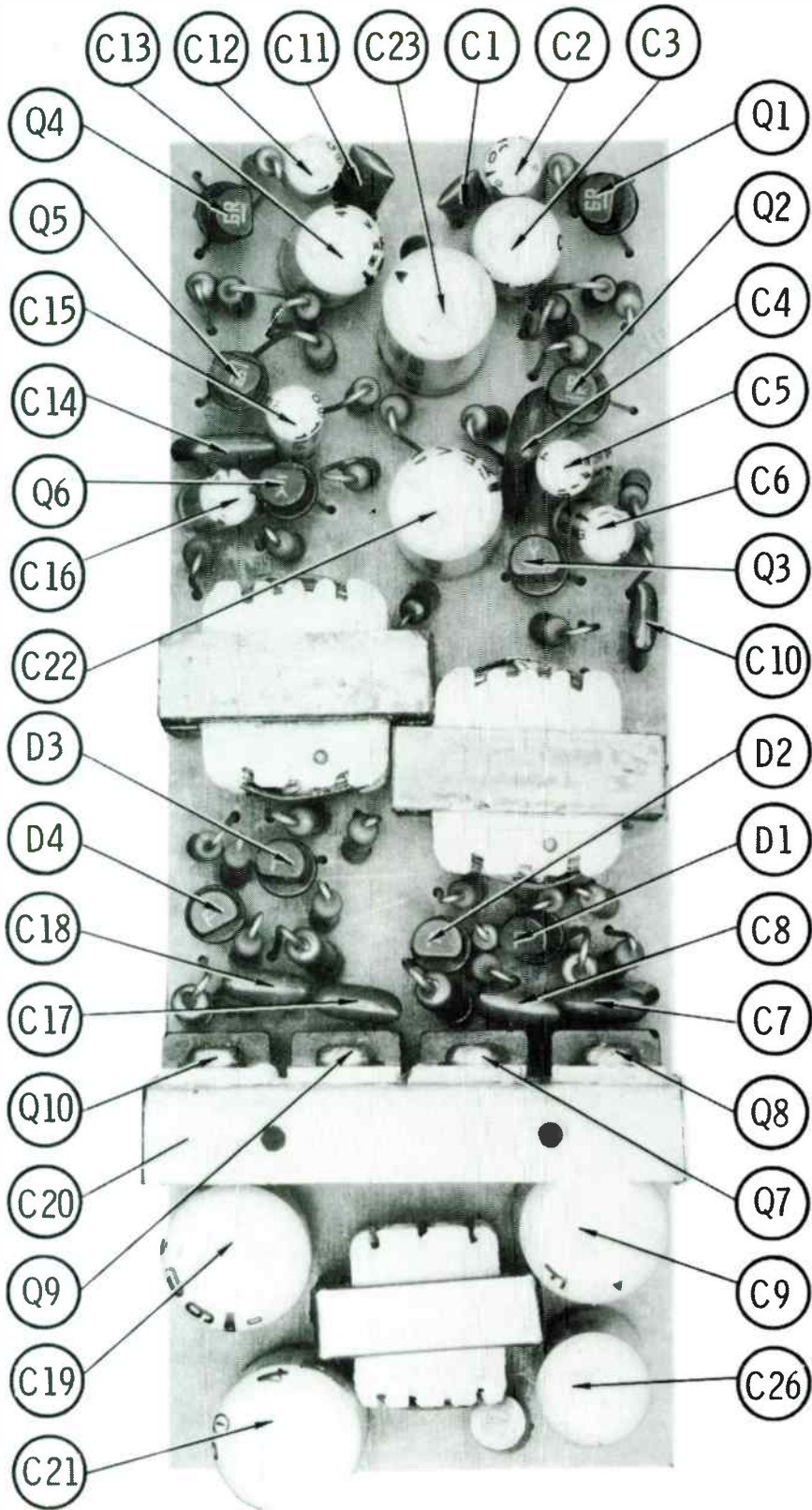
SYMPTOM	REMARKS
Capstan does not rotate.	Belt (1) dirty, worn, or broken. Assembly (10) binding. Motor defective or not supplied with power.
Track-shift mechanism inoperative	Switch (SW2) dirty. Cam (3) binding or worn. Pawl (4) worn. Assembly (6) binding. Solenoid (LS1) defective or not supplied with power. Cartridge defective.
Wow or flutter	Belt (1) dirty or worn. Capstan dirty or binding. Cartridge defective. Motor defective.
Sound weak or distorted	Head dirty, misaligned, or defective. Cartridge defective. Amplifiers defective.
Tape is pulled from cartridge.	Cartridge defective. Capstan dirty or scored.

**CLEANING**

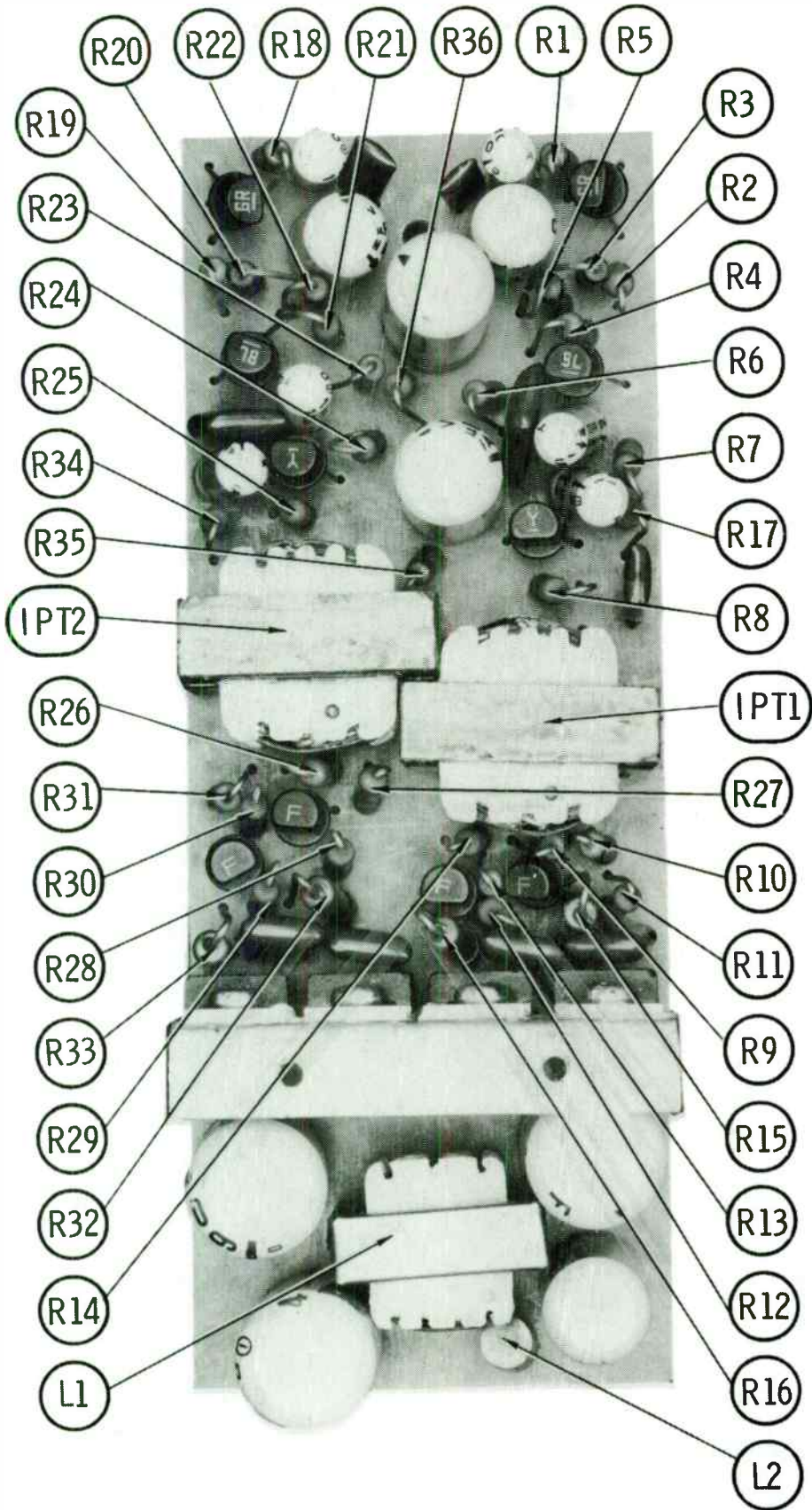
**LUBRICATING**

**HEAD DEMAGNETIZING**

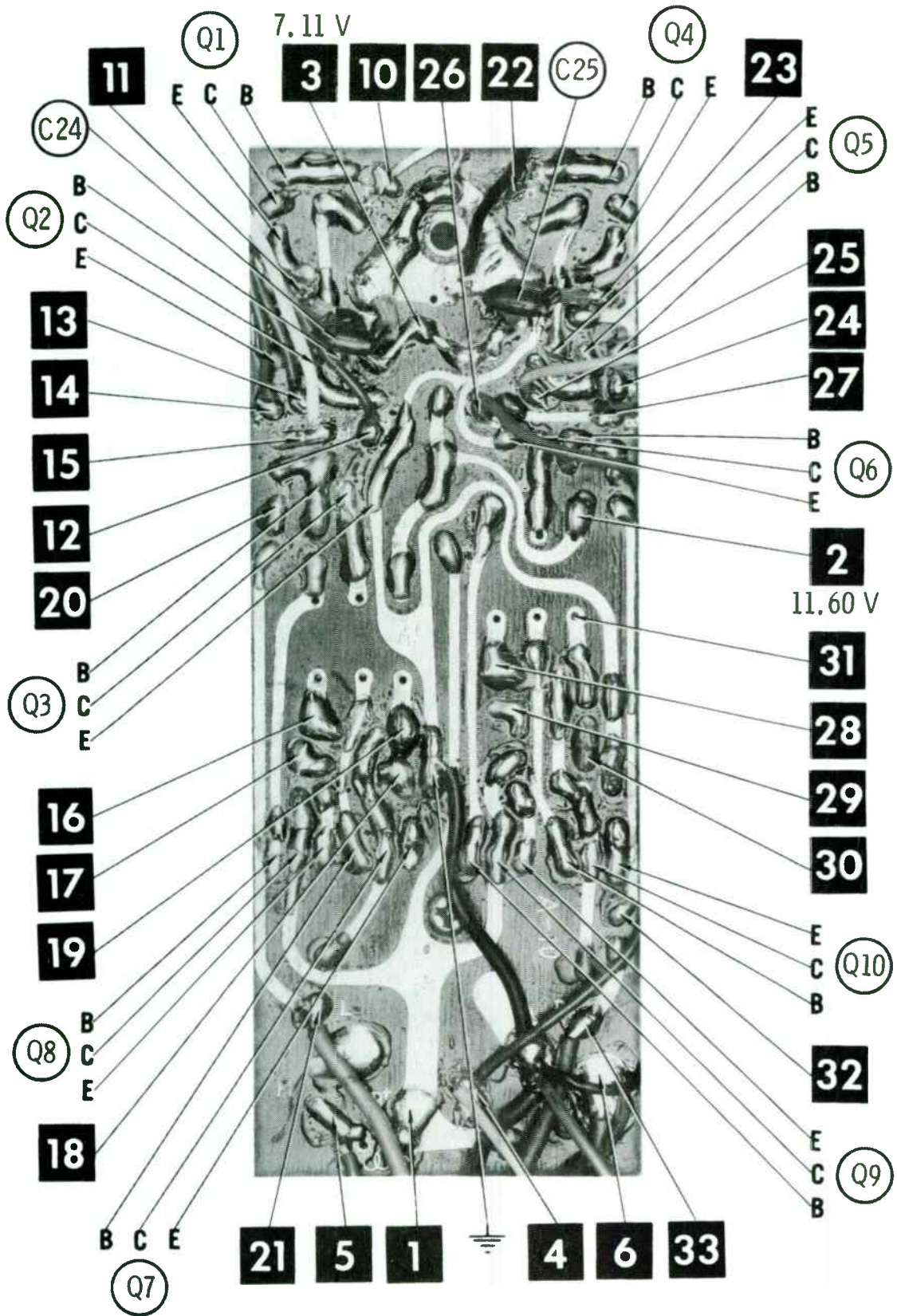
Refer to "General Servicing Information" on page 4.



PRINTED BOARD



PRINTED BOARD



PRINTED BOARD

# PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.

Have your local distributor check Sams COUNTER FACTS® for the most up-to-date replacement.

## SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA								
			GENERAL ELECTRIC PART No.	IR WORKMAN PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.	
D1 D2 D3 D4 D5 D6 D7 D8 D9											
Q1	2SC732GR 2SC900	753-8400-230 (1)	GE-504A GE-62 GE-62	5A4D TR-51 (IR)2SC644	PTC201 PTC139 PTC139	HEPRO052 HEPS0015 HEPS0015	RE 49 RE 192 RE 192	SK3030 SK3124 SK3124	RT-213 RT-172 RT-108A	ECG116 ECG199 ECG199	
Q2	2SC7338L 2SC7338L 2SC945	(1) 753-8500-380 (1)	GE-62 GE-212	(IR)2SC373 (IR)2SC945	PTC139 PTC121	HEPS0025 HEPS0015	RE 192 RE 192	SK3124 SK3124	RT-187 RT-107A	ECG199 ECG199	
Q3	2SC735Y 2SC945	753-8500-380 (1)	GE-210 GE-212	TR-21 (IR)2SC945	PTC123 PTC121	HEPS0014 HEPS0015	RE 192	SK3122 SK3124	RT-172 RT-107A	ECG289 ECG199	
Q4	2SC732GR 2SC900	753-8400-230 (1)	GE-62 GE-62	TR-51 (IR)2SC644	PTC139 PTC139	HEPS0015 HEPS0015	RE 192 RE 192	SK3124 SK3124	RT-172 RT-108A	ECG199 ECG199	
Q5	2SC7338L 2SC945	753-8500-380 (1)	GE-62 GE-212	(IR)2SC373 (IR)2SC945	PTC139 PTC121	HEPS0025 HEPS0015	RE 192 RE 192	SK3124 SK3124	RT-187 RT-107A	ECG199 ECG199	
Q6	2SC735Y 2SC945	753-8500-230 (1)	GE-210 GE-210	TR-21 TR-21	PTC123 PTC123	HEPS0014 HEPS0014		SK3122 SK3122	RT-172 RT-172	ECG289 ECG289	
Q7	2SC1173 2SC1096	853-0301-096 (1)	GE-215 GE-28	TR-55	PTC110 PTC110	HEPS5000	RE 201 RE 42	SK3054 SK3054	RT-197 RT-197	ECG236 ECG186A	
Q8	2SC1173 2SC1096	853-0301-096 (1)	GE-215 GE-28	TR-55	PTC110 PTC110	HEPS5000	RE 201 RE 42	SK3054 SK3054	RT-197 RT-197	ECG236 ECG186A	
Q9	2SC1173 2SC1096	853-0301-096 (1)	GE-215 GE-28	TR-55	PTC110 PTC110	HEPS5000	RE 201 RE 42	SK3054 SK3054	RT-197 RT-197	ECG236 ECG186A	
Q10	2SC1173 2SC1096	853-0301-096 (1)	GE-215 GE-28	TR-55	PTC110 PTC110	HEPS5000	RE 201 RE 42	SK3054 SK3054	RT-197 RT-197	ECG236 ECG186A	

(1) Used in some versions.

LEAR JET MODEL A-10

## ELECTROLYTIC CAPACITORS

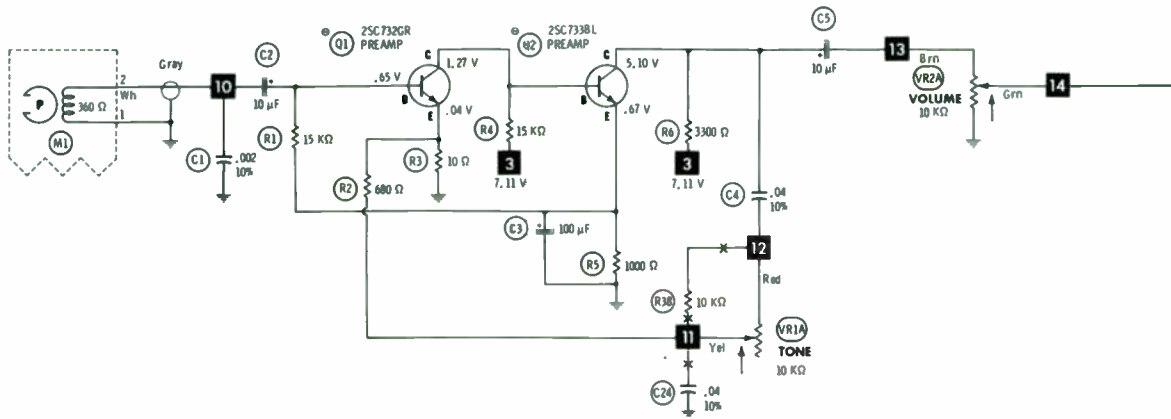
ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	10 10V		PC10-25	VTT10A25	EV-1222
C3	100 10V		PC100-10	VTT100E10	EV-1130
C5	10 10V		PC10-25	VTT10A25	EV-1222
C6	10 10V		PC10-25	VTT10A25	EV-1222
C9	470 16V		PC500-16	VTT470J16	EV-1250
C12	10 10V		PC10-25	VTT10A25	EV-1222
C13	100 10V		PC100-10	VTT100E10	EV-1130
C15	10 10V		PC10-25	VTT10A25	EV-1222
C16	10 10V		PC10-25	VTT10A25	EV-1222
C19	470 16V		PC500-16	VTT470J16	EV-1250
C21	470 16V		PC500-16	VTT470J16	EV-1250
C22	220 16V		PC250-25	VTT220G16	EV-1240
C23	220 16V		PC250-25	VTT220G16	EV-1240
C26	220 16V		PC250-25	VTT220G16	EV-1240

## CAPACITORS

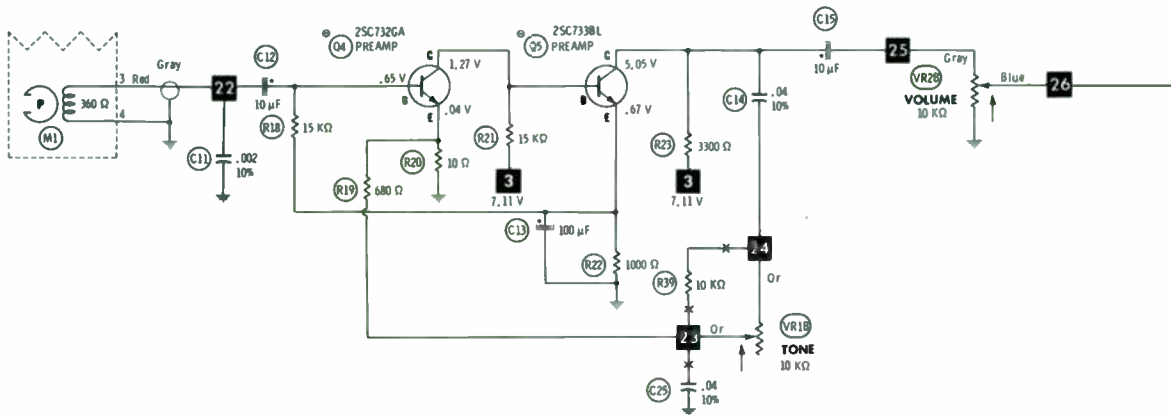
ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	.002 10%				M192P2229R8	192P2229R8
C4	.04 10%				M192P3939R8	192P3939R8
C7	.04 10%				M192P3939R8	192P3939R8
C8	.04 10%				M192P3939R8	192P3939R8
C10	.022 10%				M192P2239R8	192P2239R8
C11	.002 10%				M192P2229R8	192P2229R8
C14	.04 10%				M192P3939R8	192P3939R8
C17	.04 10%				M192P3939R8	192P3939R8
C18	.04 10%				M192P3939R8	192P3939R8
C20	.022 10%				M192P2239R8	192P2239R8
C24	.04 10%				M192P3939R8	192P3939R8
C25	.04 10%				M192P3939R8	192P3939R8

**NOTE: DEMAGNETIZE HEADS AFTER SERVICING**

**LEFT CHANNEL**



**RIGHT CHANNEL**



**Terminal Guides**



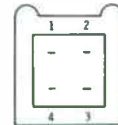
Q1 thru Q6  
Bottom view



Q7 thru Q10  
Front view



M1  
Rear view



S01  
Wiring view

— Circuitry not used in some versions

- - - Circuitry used in some versions

⊙ See parts list

⊛ Nominal value

⊕ Ground

⌚ Chassis

∇ Common tie point

Measurements with switching as shown unless noted:

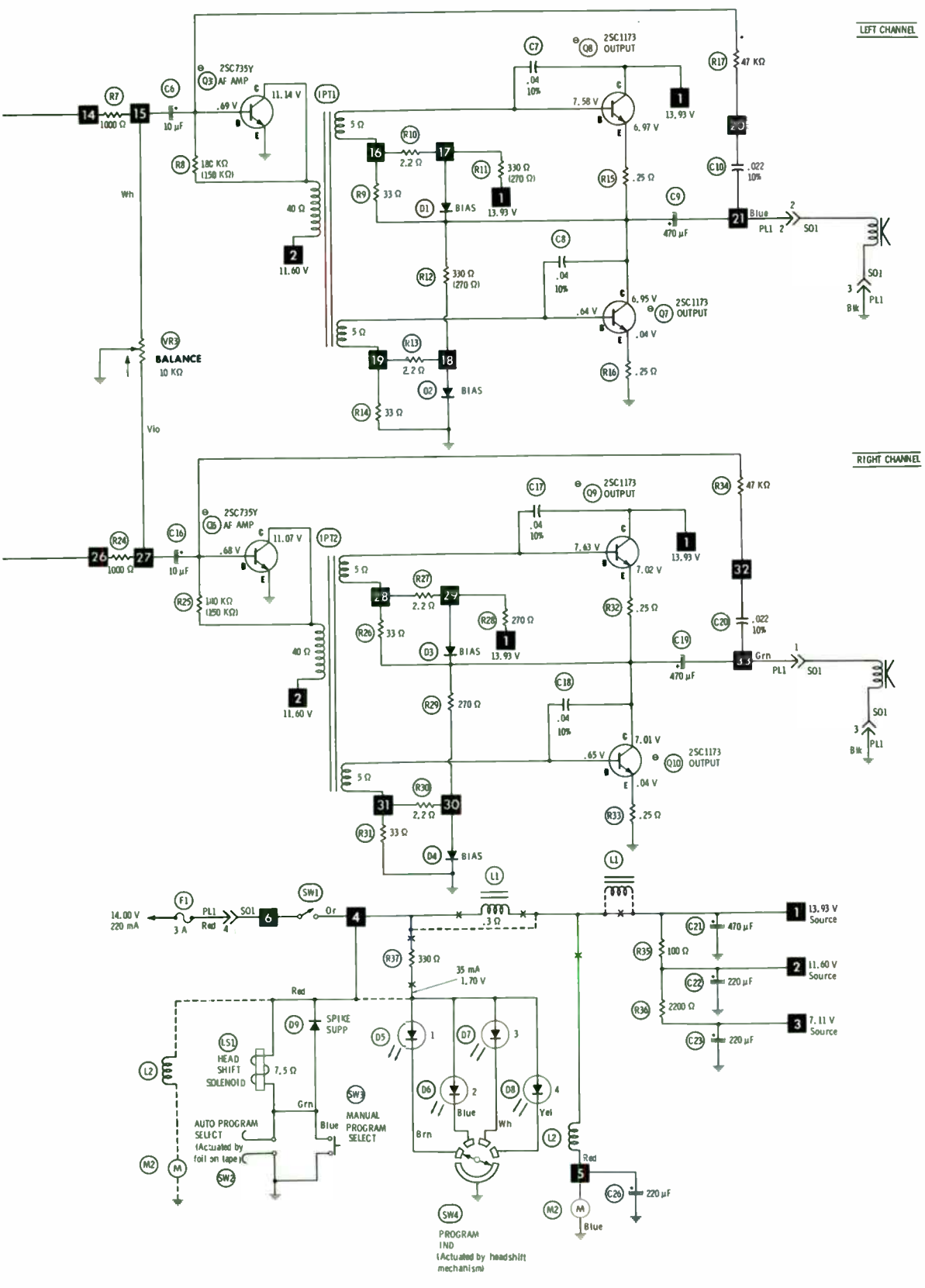
■ FM Stereo signal    ▲ AM

Supply voltage maintained as shown at input.  
 Voltages measured with digital meter, no signal.  
 Controls adjusted for normal operation.  
 Arrow at control indicates direction of advance.  
 Terminal identification may not be found on unit.  
 Resistors are 1/2W or less, 5% unless noted.  
 Value in ( ) used in some versions.

A PHOTOFACIT STANDARD NOTATION SCHEMATIC  
 WITH CIRCUITRACE™

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## PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.  
Have your local distributor check Sams COUNTER FACTS® for the most up-to-date replacement.

### CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
VR1A	Tone (Left)	10K					
VR1B	Tone (Right)	10K					
VR2A	Volume (Left)	10K					
VR2B	Volume (Right)	10K					
VR3	Balance	10K					

### COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L2	RF Choke (100uH)			5250	

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
L1	220mA	.3	1.2mH				

### TRANSFORMER (Driver)

ITEM No.	TURNS RATIO			REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.	THORDARSON PART No.	TRIAD PART No.	
ITP1	4	1	1				
ITP2	4	1	1				

### FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA							
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.	
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	
F1	3 Amp			AGC3	HDJ	312003	150145	F63-2	

### MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
LS1	Solenoid		Head Shift 8 Track Stereo Play Tape Transport (2600 rpm @ 13.9v) Power Auto Program Selector Manual Program Selector Program Indicator
M1	Tape Head		
M2	Motor		
SW1	Switch		
SW2	Switch		
SW3	Switch		
SW4	Switch		

### WIRING DATA

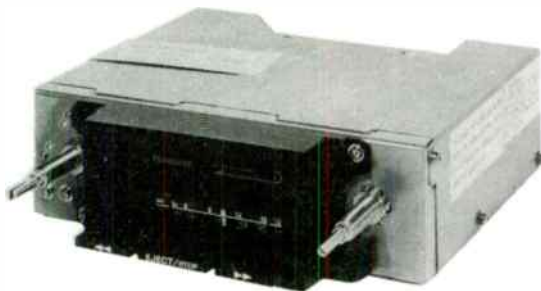
General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire .....	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable .....	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap .....	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)
Ignition Noise Suppression .....	Use BELDEN No. 7300-Series Spark-Plug Sets



# PHOTOFACT<sup>®</sup> with

# CIRCUITRACE<sup>®</sup>

For Supplier Address See PHOTOFACT Index



MODEL CQ-742EU

PANASONIC MODEL CQ-742EU

## SEQUENCE OF OPERATION

### PLAY LEFT (FROM STOP-PLAY LEFT)

Pressing a cassette into Holder (M240) causes Locks (M210 & M211) to release Holder (M240). Holder (M240), pulled by Springs (M241A & M241B), lowers the cassette onto Spindles (M232A, M232B), actuates Switch (SW7), and causes Lock (M215) to release Lever (M514). Lever (M514) allows Plates (M223A, M223B), moved by Spring (M275), to actuate Switch (SW2) and to move the head and Assembly (M220) forward. Assembly (M220) presses Roller (M236) against the left capstan and causes Spring (M242K) to pivot Arm (M242A). Arm (M242A) presses Pulley (M242E) against Spindle (M232A).

The motor -- through Belt (M245), Flywheel (M244B), Belt (M242J), Pulley (M242B), Clutch (M242L), Pulley (M242D), Belt (M242H) and Pulley (M242E) -- drives Spindle (M232A).

### PLAY RIGHT (FROM PLAY LEFT)

Actuation of Solenoid (M201) by automatic circuitry or Switch (SW3), pivots Lever (M501) to slide Lever (M502). Lever (M502), pressed by Spring (M222), pivots Assembly (M220), locked by Link (M221) and Spring (M205A) to release Roller (M236). Roller (M236), pivoted by Spring (M238), moves from the left capstan. Assembly (M220) also actuates Switch (SW4) and causes Spring (M242K) to pivot Arm (M242A). Arm (M242A) presses Pulley (M242F) against Spindle (M232B).

Assembly (M220) presses Roller (M237) against the right capstan.

The motor -- through Belt (M245), Flywheel (M244B), Belt (M242J), Pulley (M242B), Clutch (M242L), Pulley (M242D), Belt (M242H) and Pulley (M242F) -- drives Spindle (M232B).

NOTE: Play Left from Play Right is similar to Play Right from Play Left, reversing Rollers (M236 & M237), Springs (M238 & M239), left capstan & right capstan, Pulley (M242F & M242E) and Spindles (M232B & M232A).

### FAST WIND LEFT (FROM PLAY LEFT)

Pressing the Fast Wind Left button moves Lever (M509), locked by Detent (M505) and Spring (M205B), to release Assembly (M503) and pivot Lever (M514). Lever (M514) slides Plates (M223A, M223B) to actuate Switch (SW2) and move the head from the tape and cause Assembly (M220) to release Roller (M236). Roller (M236), pivoted by Spring (M238), moves from the left capstan.

Assembly (M503), pulled by Spring (M207A), presses against Flywheel (M244A) and Spindle (M232A).

Plate (M223B) moves Assembly (M220) from Spring (M242K) and causes Spring (M242K) to pivot Arm (M242A), moving Pulley (M242E) from Spindle (M232A).

The motor -- through Belt (M245), Flywheel (M244A) and Assembly (M503) -- drives Spindle (M232A).

NOTE: Fast Wind Left from Play Right is similar to Fast Wind Left from Play Left, substituting Roller (M237) for (M236), Spring (M239) for (M238) and right capstan for left capstan.

### FAST WIND RIGHT (FROM PLAY LEFT)

Pressing the Fast Wind Right button moves Lever (M513), locked by Detent (M506) and Spring (M205B), to release Assembly (M504) and pivot Lever (M514). Lever (M514) slides Plates (M223A, M223B) to actuate Switch (SW2), and move the head from the tape and cause Assembly (M220) to release Roller (M236). Roller (M236), pivoted by Spring (M238), moves from the left capstan.

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## SEQUENCE OF OPERATION (Continued)

Assembly (M504), pulled by Spring (M207B), presses against Flywheel (M244B) and Spindle (M232A).

Plate (M223B) moves Assembly (M220) from Spring (M242K) and causes Spring (M242K) to pivot Arm (M242A), moving Pulley (M242E) from Spindle (M232A).

The motor -- through Belt (M245), Flywheel (M244B) and Assembly (M504) -- drives Spindle (M232B).

NOTE: Fast Wind Right from Play Right is similar to Fast Wind Right from Play Left, substituting Roller (M237) for (M236), Spring (M239) for (M238) and right capstan for left capstan.

### STOP/EJECT

(Resume Play From Fast Wind Right)

Pressing the Eject/Stop button moves Lever (M512) to pivot Lever (M511). Lever (M511) causes Plate (M510) to pivot Detent (M505). Detent (M505) causes Link (M507) to pivot Detent (M506) releasing Lever (M513). Springs

(M208B, M275) reverse Fast Wind Right From Play Left (Right) sequence.

(Resume Play From Fast Wind Left)

Pressing the Eject/Stop button moves Lever (M512) to pivot Lever (M511). Lever (M511) causes Plate (M510) to pivot Detent (M505). Detent (M505) releases Lever (M509) to allow Springs (M208A, M275) to reverse Fast Wind Left From Play Left (Right) sequence.

(Stop-Eject)

Pressing the Eject/Stop button moves Lever (M512) to pivot Lever (M511). Lever (M511) moves Lever (M514), locked by Lock (M215) and Spring (M219), to move Plates (M223A, M223B). Plates (M223A, M223B) actuate Switch (SW2) and moves the head from tape and Assembly (M220) from Rollers (M236, M237). Rollers (M236, M237), pivoted by Springs (M238, M239), move from the capstans.

Lever (M511) also pivots Holder (M240) to raise the cassette and allow Locks (M210, M211), moved by Springs (M212, M213), to eject the cassette.

## ADJUSTMENTS

IMPORTANT: Before making any adjustments, refer to "General Servicing Information" on page 4.

1. All voltage measurements referred to in this chart are made at a tape speed of 1 7/8 ips with a digital meter.
2. All torque measurements are made at a tape speed of 1 7/8 ips with a spring scale applied to a point 1 inch from spindle center.
3. All pressure measurements are made by using a spring scale to determine that point at which pressure is just removed.

ADJUST	REMARKS
Play Take-up Torque	Nominal value 1/4 oz. No adjustment provided.
Fast Wind Torque	Nominal value 1/2 oz. No adjustment provided.
Pressure Roller Pressure	Nominal value 15 oz. No adjustment provided.
Head Azimuth	Connect meter across left (right) output; play an azimuth-test tape and adjust B1 for maximum output.

## TROUBLE CHART

IMPORTANT: Before consulting this chart, refer to "General Servicing Information" on page 4.

SYMPTOM	REMARKS
Take-up erratic or inoperative in Play Left	Spindle (M232A) dirty, worn or binding. Belt (M242H, M242J) dirty or worn. Clutch (M242L) dirty or worn. Spring (M205A, M242C, M242K) weak or out of place. Pulley (M242B, M242E) dirty, worn or binding. Arm (M242A) binding.
Take-up erratic or inoperative in Play Right	Spindle (M232B) dirty, worn or binding. Belt (M242H, M242J) dirty or worn. Clutch (M242L) dirty or worn. Spring (M205A, M242C, M242K) weak or out of place. Pulley (M242B, M242F) dirty, worn or binding. Arm (M242A) binding.
Fast Wind Left erratic or inoperative.	Spindle (M232A) dirty, worn or binding. Assembly (M503) dirty, worn or binding. Spring (M205B, M207A) weak or out of place. Flywheel (M244A) dirty or worn.
Fast Wind Right erratic or inoperative	Spindle (M232B) dirty, worn or binding. Assembly (M504) dirty, worn or binding. Spring (M205B, M207B) weak or out of place. Flywheel (M244B) dirty or worn.

## TROUBLE CHART (Continued)

IMPORTANT: Before consulting this chart, refer to "General Servicing Information" on page 4.

SYMPTOM	REMARKS
Capstans do not rotate	Belt (M245) dirty, worn or broken Flywheels binding. Motor not supplied with power.
Tape rides up and down between capstan and pressure roller	Capstan bent Roller (M236, M237) worn. Excessive take-up torque.
Wow or flutter	Roller (M236, M237) dirty, worn or binding. Spring (M205A, M275) weak. Assembly (M220) worn. Bearing (M515A, M515B) binding. Cassette defective. Motor defective. Excessive take-up torque.

### MECHANICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
M204	YEFX005061	Brake Spring	M241	YEFX005063	Cassette Holder Spring (2 used)
M205	YEFX005062	Compression Coil Toggle Spring (2 used)	M242	YASFX010007	Clutch Pulley Assembly
M207	YEFX005079	Fast Wind Spring (2 used)	M242A	(1)	Clutch Pulley Arm
M208	YEFX005080	Fast Wind Lever Return Spring (2 used)	M242B	(1)	Clutch Drive Pulley
M209	YEFX005076	Stop/Eject Lever Spring	M242C	(1)	Clutch Spring
M210	YASFX029034	Left Cassette Holder Lock (Assembly)	M242D	(1)	Take-up Drive Pulley
M211	YASFX029033	Right Cassette Holder Lock (Assembly)	M242E	(1)	Left Take-up Pulley
M212	YEFX005074	Left Cassette Holder Lock Spring	M242F	(1)	Right Take-up Pulley
M213	YEFX005075	Right Cassette Holder Lock Spring	M242G	(1)	Idler Pulley
M215	YAFX049029	Head Chassis Lock	M242H	(1)	Take-up Belt
M218	YEFX005072	Solenoid Spring	M242J*	(1)*	Clutch Drive Belt*
M219	YEFX005073	Head Chassis Lock Spring	M242K	(1)	Clutch Pulley Assembly Spring
M220	YASFX036022	Direction Rocker Assembly	M242L	(1)	Felt Clutch
M221	YEFX046007	Toggle Link	M243	YEFX005081	Cassette Guide Spring
M222	YEFX005071	Rocker Return Spring	M244	YAFX013020	Flywheel (2 used)
M223	YASFX036021	Head Chassis Plate (Assembly)	M245*	YEFRO3001*	Flywheel Drive Belt*
M224	YAFX099005	3mm Ball (4 used)	M246	YAFX019011	Thrust Sheet (2 used)
M229	YEFX005069	Head Adjustment Spring	M275	YEFX005070	Head Chassis Spring
M232*	YEFX209106*	Reel A Assembly (Spindle) (2 used)*	M501	(2)	Solenoid Lever
M233	YEFX005099	Left Back Tension Spring	M502	(2)	Reversing Lever
M234	YEFX005098	Right Back Tension Spring	M503	(2)	Left Fast Wind Pulley (Ass'y)
M236*	YASFX018014*	Left Pinch Roller Assembly*	M504	(2)	Right Fast Wind Pulley (Ass'y)
M237*	YASFX018013*	Right Pinch Roller Assembly*	M505	(2)	Left Fast Wind Detent
M238	YEFX005064	Left Pinch Roller Spring	M506	(2)	Right Fast Wind Detent
M239	YEFX005065	Right Pinch Roller Spring	M507	(2)	Fast Wind Detent Link
M240	YEP1FX011	Cassette Holder (Assembly)	M508	(2)	Brake Plate
			M509	(2)	Left Fast Wind Lever
			M510	(2)	Fast Wind Release Plate
			M511	(2)	Cassette Holder Lift Lever
			M512	(2)	Stop/Eject Lever
			M513	(2)	Right Fast Wind Lever
			M514	(2)	Head Chassis Lever
			M515	(2)	Capstan Bearing (2 used)

(1) Part of Assembly (M242).

(2) Part of Chassis Assembly, Part Number YASFA01012.

- \* Reel A Assembly Tire - E-V/GAME Replacement Number 1425-13.  
WALSCO Replacement Number 1425-13.
- \* Left Pinch Roller - E-V/GAME Replacement Number 1407-179.  
WALSCO Replacement Number 1499-70.
- \* Right Pinch Roller - E-V/GAME Replacement Number 1407-179.  
WALSCO Replacement Number 1499-70.
- \* Clutch Drive Belt - E-V/GAME Replacement Number 1425-06.  
WALSCO Replacement Number 1425-06.
- \* Flywheel Drive Belt - E-V/GAME Replacement Number 1425-12.  
WALSCO Replacement Number 1425-12.

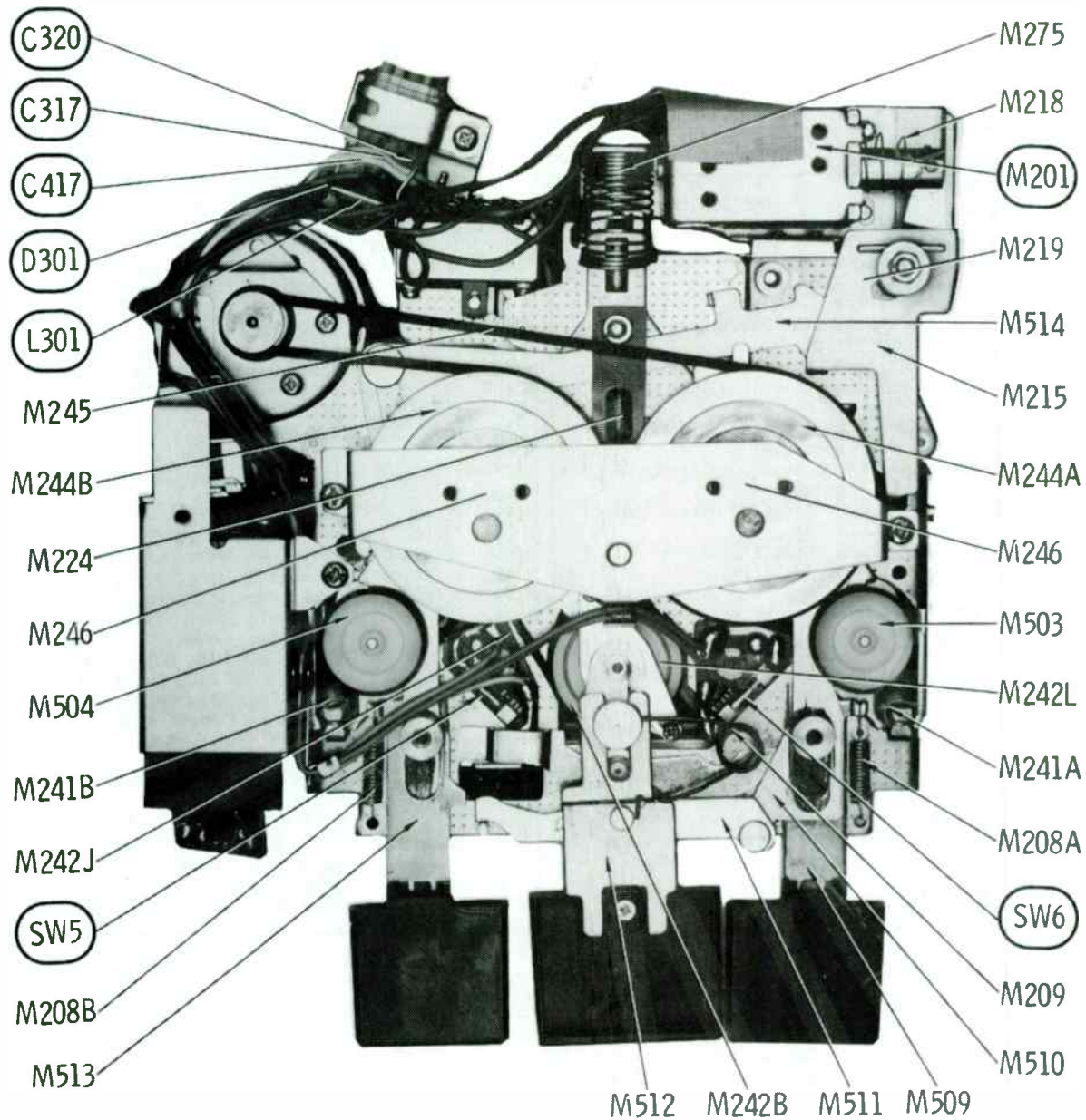
### CLEANING

### LUBRICATING

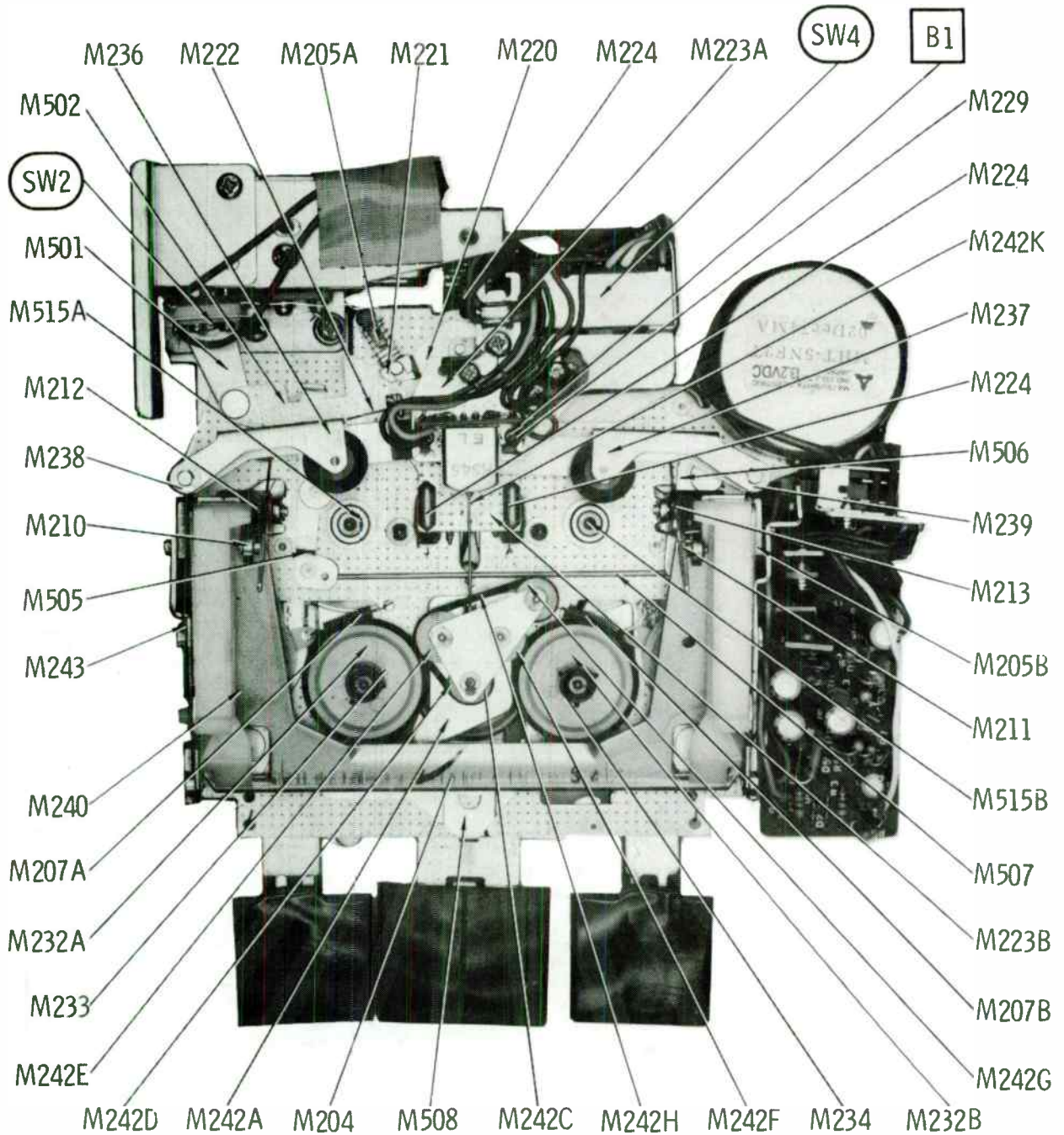
### HEAD DEMAGNETIZING

Refer to "General Servicing Information" on page 4.

PANASONIC MODEL CG-742EU



TAPE DECK-BOTTOM VIEW



TAPE DECK-TOP VIEW

## ALIGNMENT INSTRUCTIONS

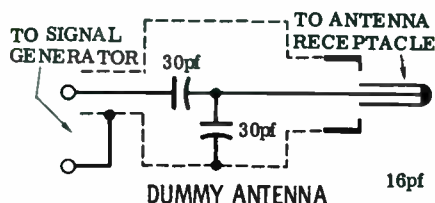
Check for specified source voltage.  
 Use only enough generator output  
 to provide a usable indication.  
 Suggested Alignment Tools: GC ELECTRONICS  
 ALL ..... 8290, 8868, 9087

### PUSH-BUTTON ADJUSTMENT

1. Pull button out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.


GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
High side thru .1uF to ant. input, low side to ground.	455kHz 400-Hz mod.	High freq. end stop.	Output meter across voice coil.	T208, T207, T206, T205	Adjust for maximum.
Thru dummy antenna to antenna input.	1615kHz	"	"	C240, C236, C229	"
Thru dummy antenna to antenna input.	600kHz	Tune to signal	Output meter across voice coil.	T204	Adjust for maximum. Repeat alignment until no further improvement is noted.

With radio installed in car and antenna extended 36", tune in a weak station near 1400kHz and adjust C229 for maximum output. Antenna adjustment C229 is located behind escutcheon pop-out plug at low end of dial scale.



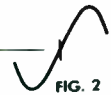
### FM IF ALIGNMENT USING AM SIGNAL GENERATOR—SELECTOR IN FM POSITION

High side of generator thru .001uF to ant. input, low side to ground.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MHz Unmodulated	Point of non-interference	DC probe of VTVM to positive side of C211, common to ground.	(1) T201(Pri.), IFT	Adjust for maximum.  FIG. 1
"	"	DC probe of VTVM to junction of R204 & R206, common to ground.	T201(Sec.)	Adjust for zero reading. A positive or negative reading will be obtained on either side of correct setting.

### FM IF ALIGNMENT USING FM SIGNAL GENERATOR—SELECTOR IN FM POSITION

High side of generator thru .001uF to ant. input, low side to ground.  
 Use 60-hertz, frequency-modulated signal, 450kHz sweep.  
 Use 60-hertz sawtooth voltage in scope for horizontal deflection.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MHz 450kHz Sweep	Point of non-interference	Vert input of scope to positive side of C211, low side to ground.	(1) T201(Pri.), IFT	Disconnect stabilizing capacitor C211. Adjust for maximum gain and symmetry of response similar to Fig. 1. Reconnect C211.  FIG. 2
"	"	Vert input of scope to junction of R204 & R206, low side to ground.	T201(Sec.)	Adjust T201(Sec.) for maximum amplitude and straightness of line similar to Fig. 2. Readjust T201(Pri.).

(1) Before adjusting, vary generator frequency slightly. Maximum output indicates exact IF.

### FM RF ALIGNMENT—SELECTOR IN FM POSITION

Connect generator across antenna terminals with 120-ohm carbon resistor in series with each lead. Adjustment of coils by bending should not be attempted unless the coil is deformed or replaced.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
88MHz Unmodulated	Low Freq. End Stop.	DC probe of VTVM to positive side of C211, common to ground.	OSC	Adjust for maximum.
108MHz Unmodulated	High Freq. End Stop.	"	OT,RT,AT	Adjust for maximum. Repeat FM RF steps until no further improvement is noted.

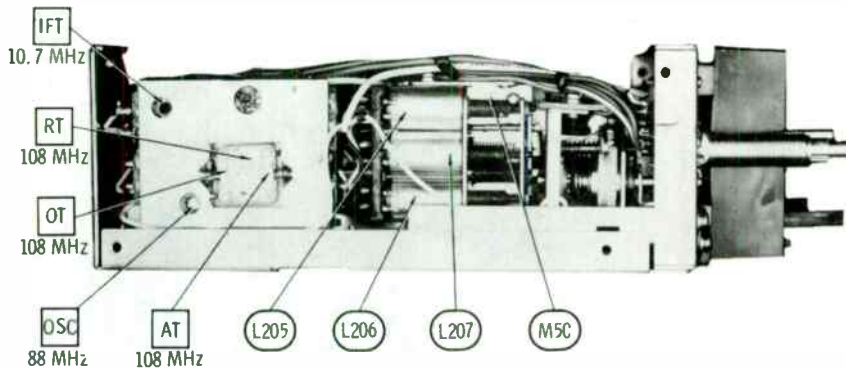


## ALIGNMENT INSTRUCTIONS (Continued)

### FM STEREO MULTIPLEX ALIGNMENT USING FM STEREO SIGNAL GENERATOR (± .0001% ACCURACY)

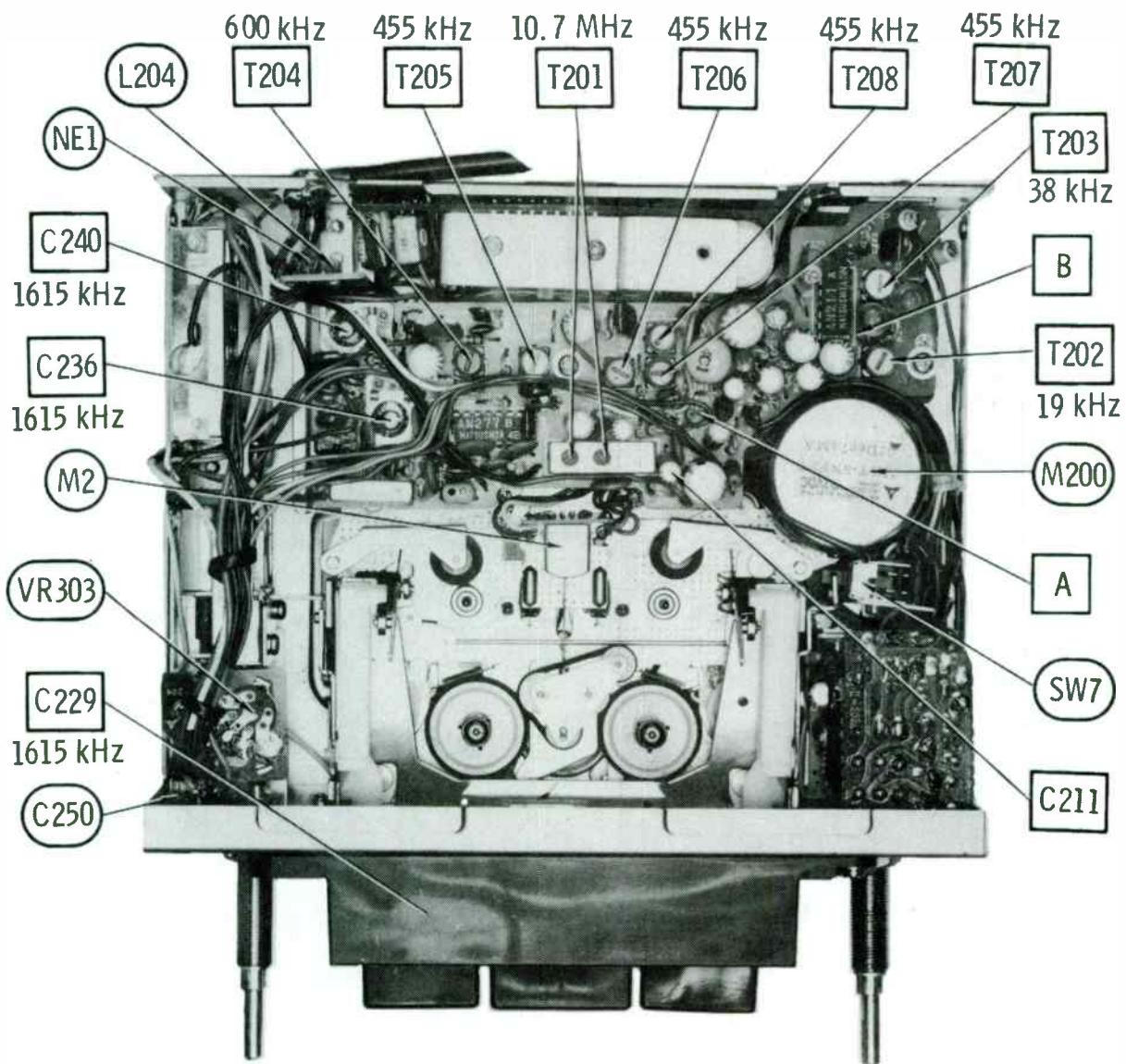
High side of generator thru 47K to ant. input, low side to ground.

GENERATOR FREQUENCY	INDICATOR	ADJUST	REMARKS
Modulated Left Channel	Vert input of scope to junction of C227 & SW7, low side to ground.	T202, T203, VR201	Adjust for MINIMUM. This step should require only slight adjustment.
Modulated Right Channel	Vert input of scope to junction of C220 & SW7, low side to ground.		Check for MINIMUM. If necessary, make compromise adjustment of T202, T203, VR201.

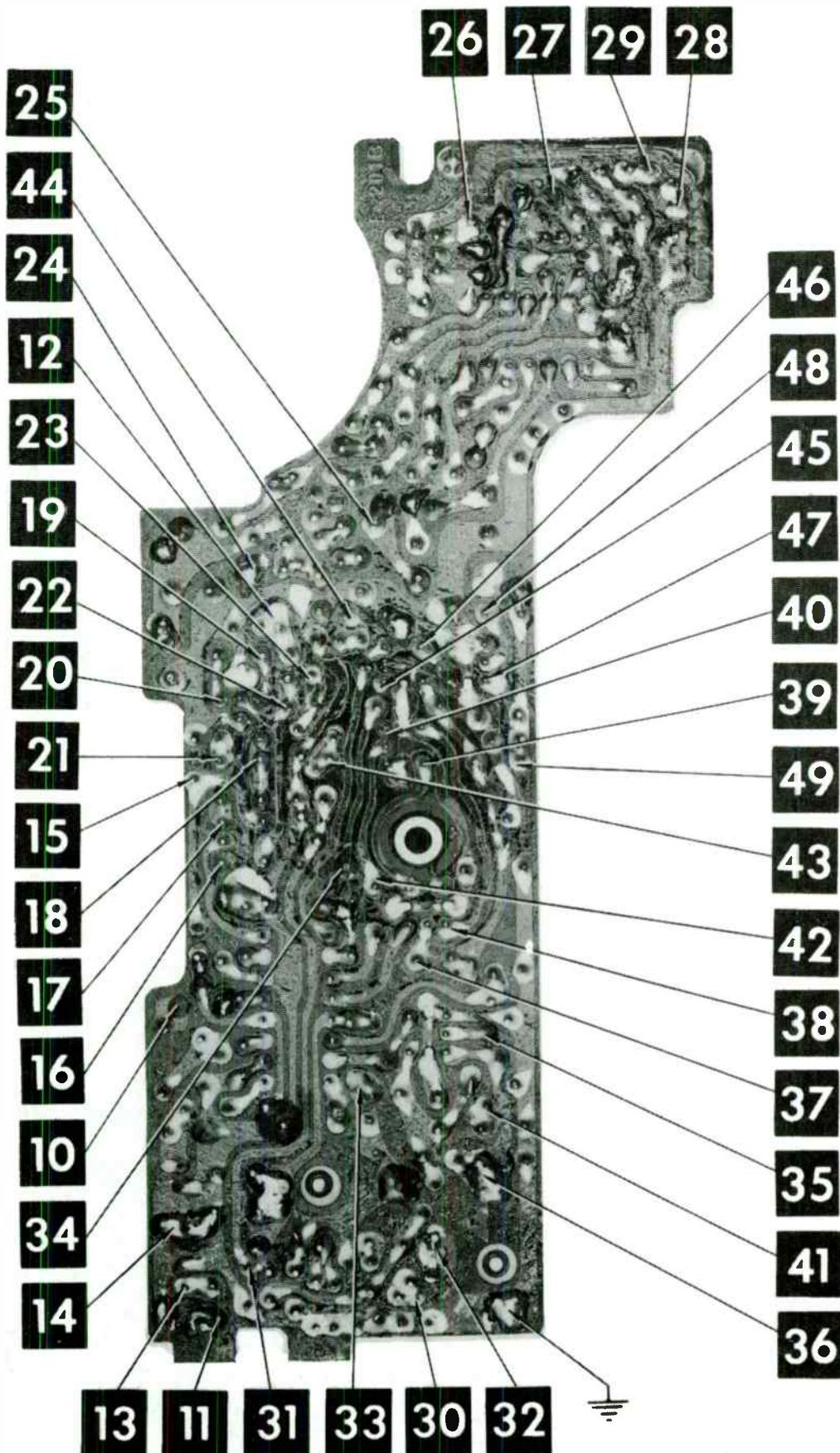


PANASONIC MODEL CG-742EU

CHASSIS-SIDE VIEW

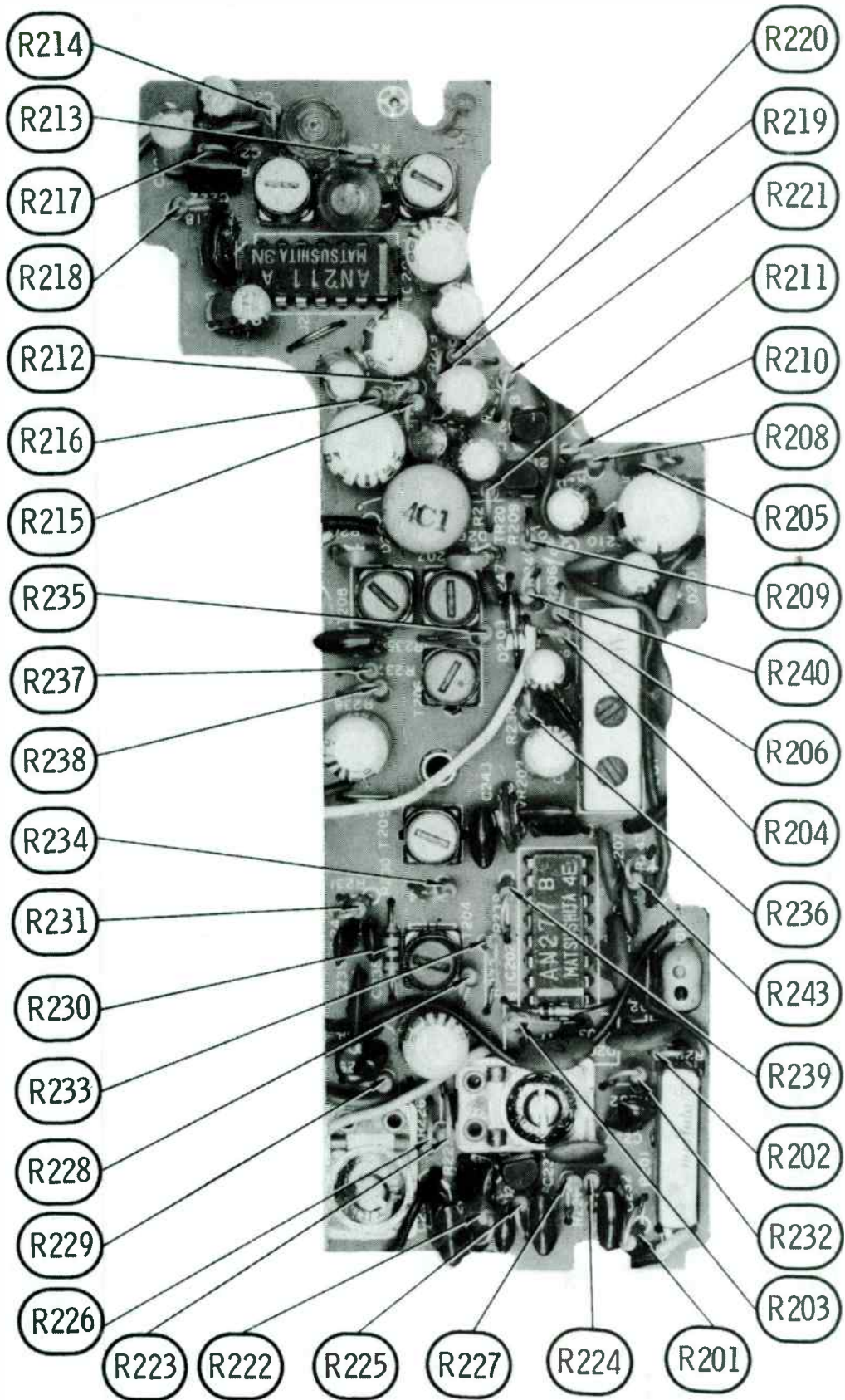


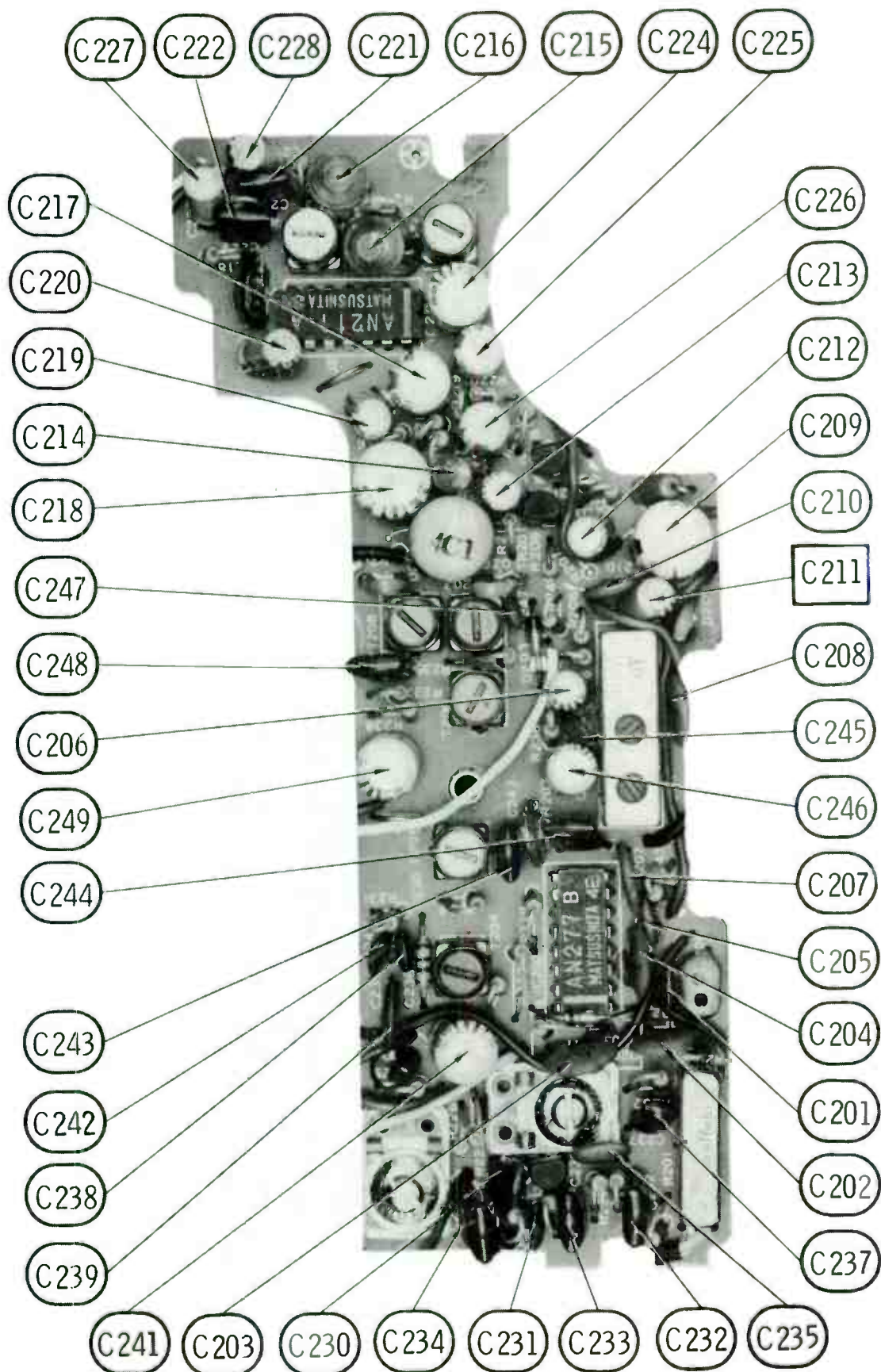
CHASSIS-TOP VIEW

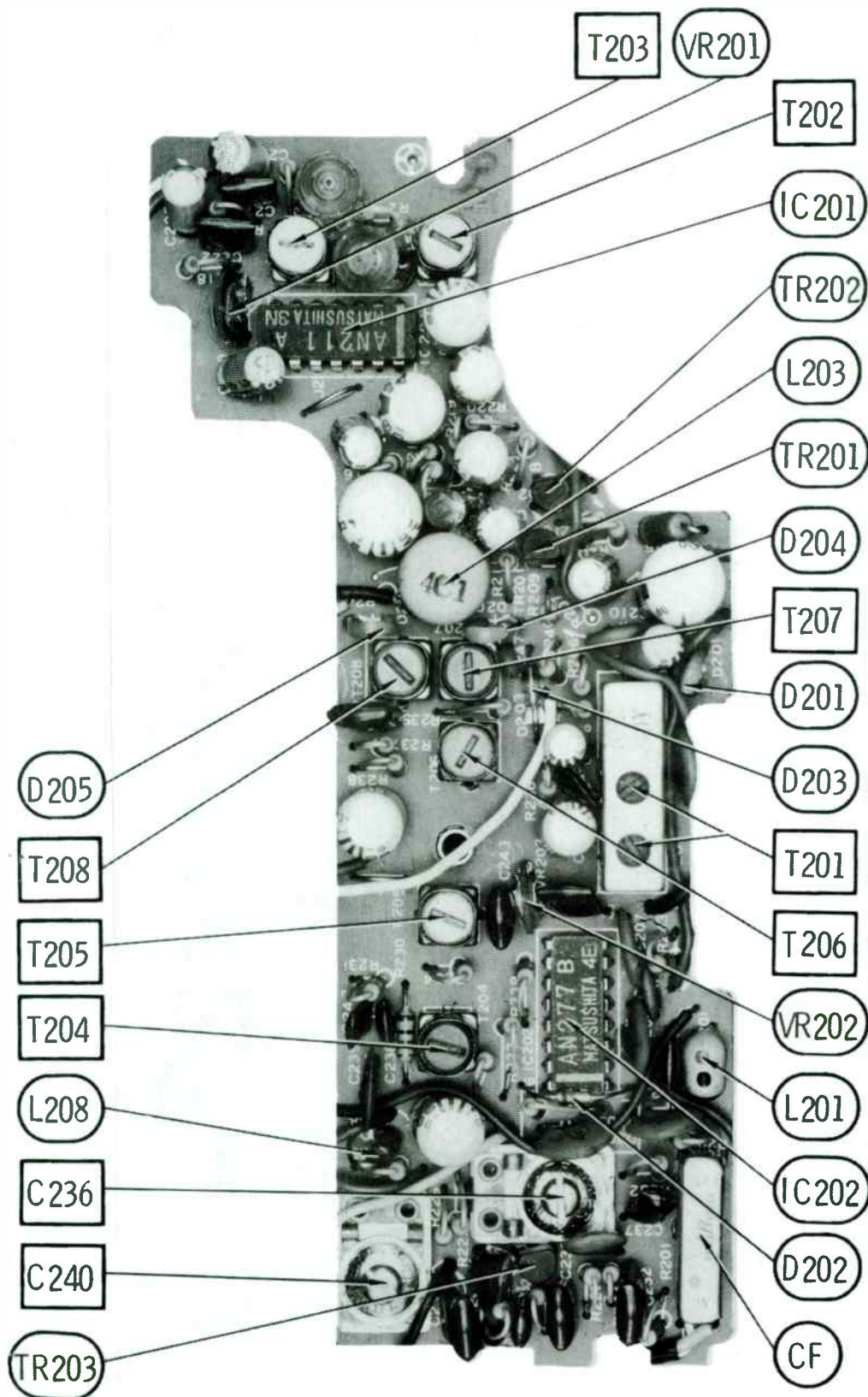


PANASONIC MODEL CG-742EU

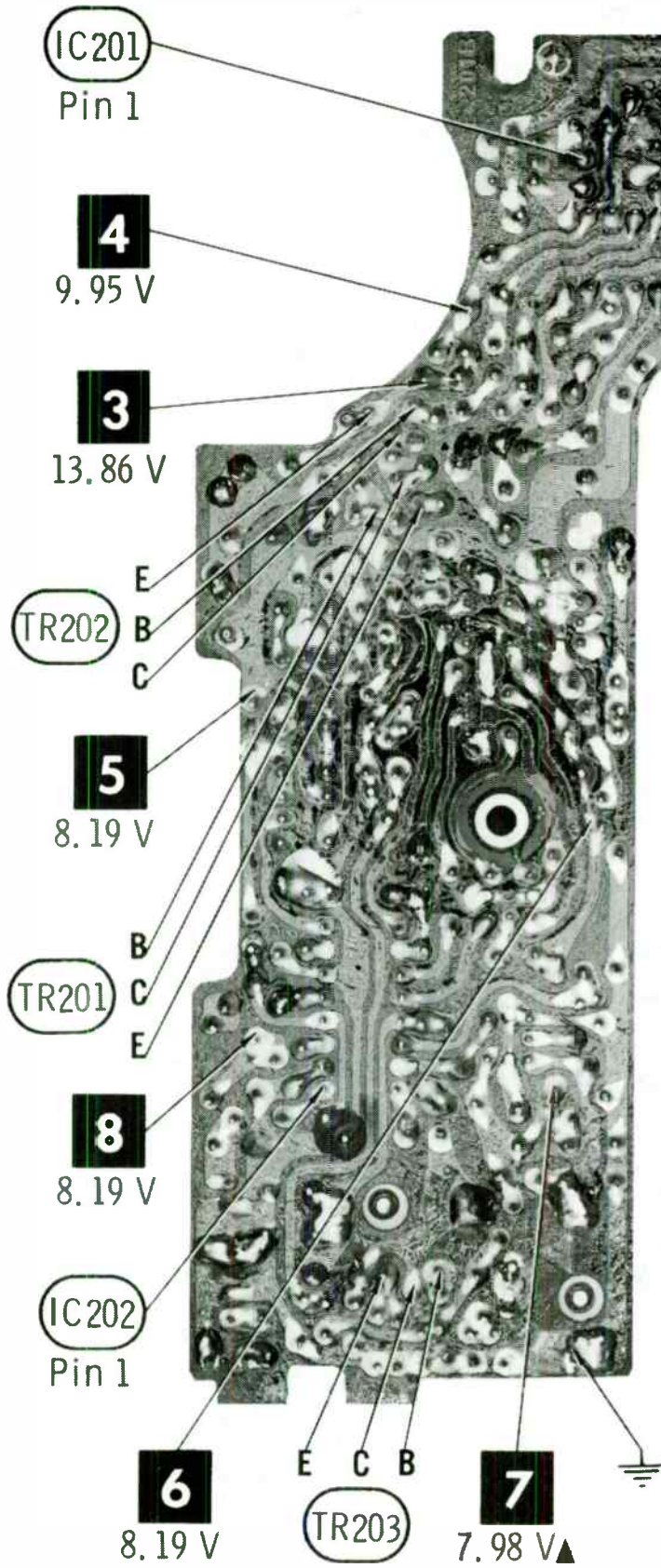
MAIN BOARD







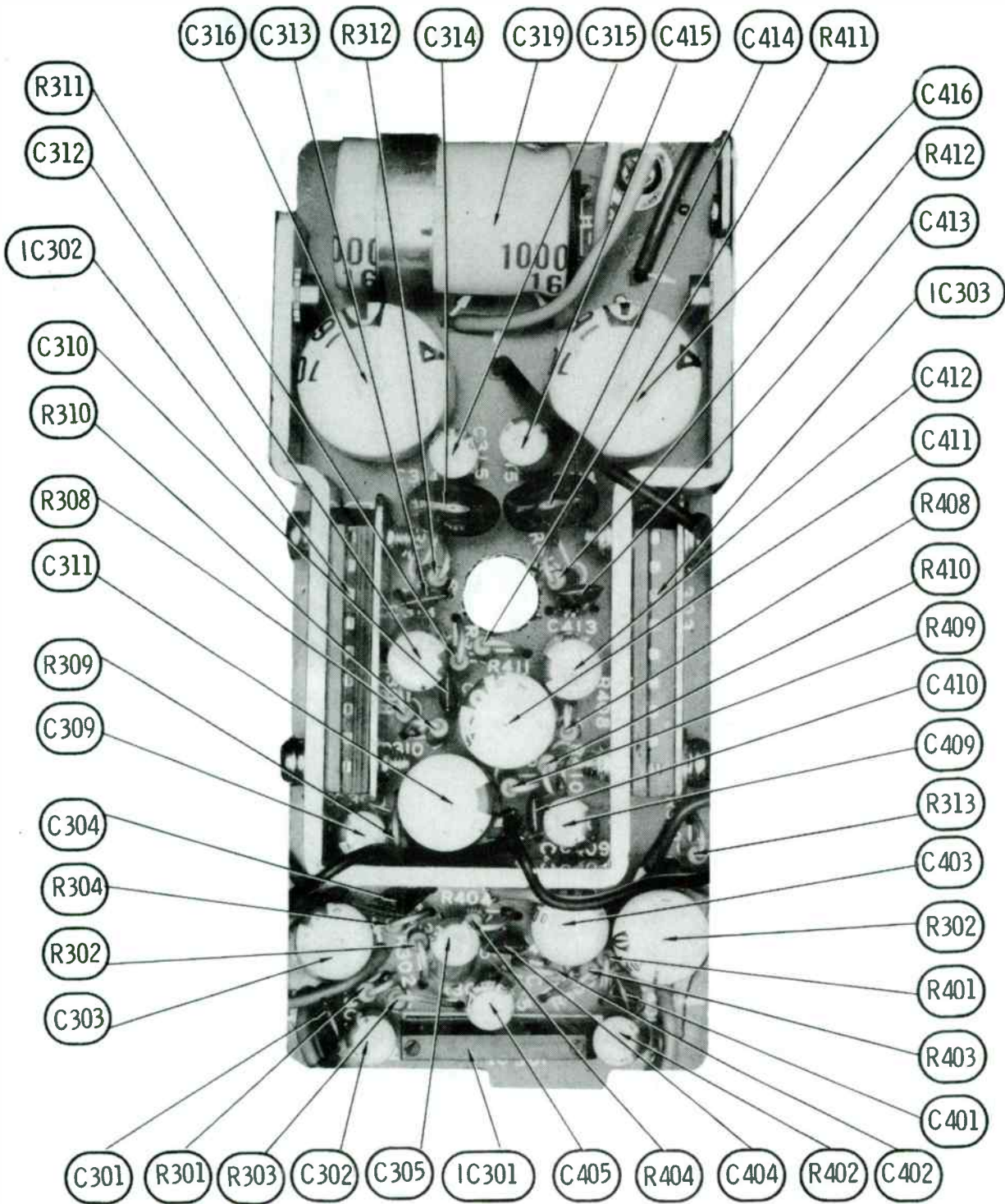
MAIN BOARD



▲ AM  
■ FM STEREO

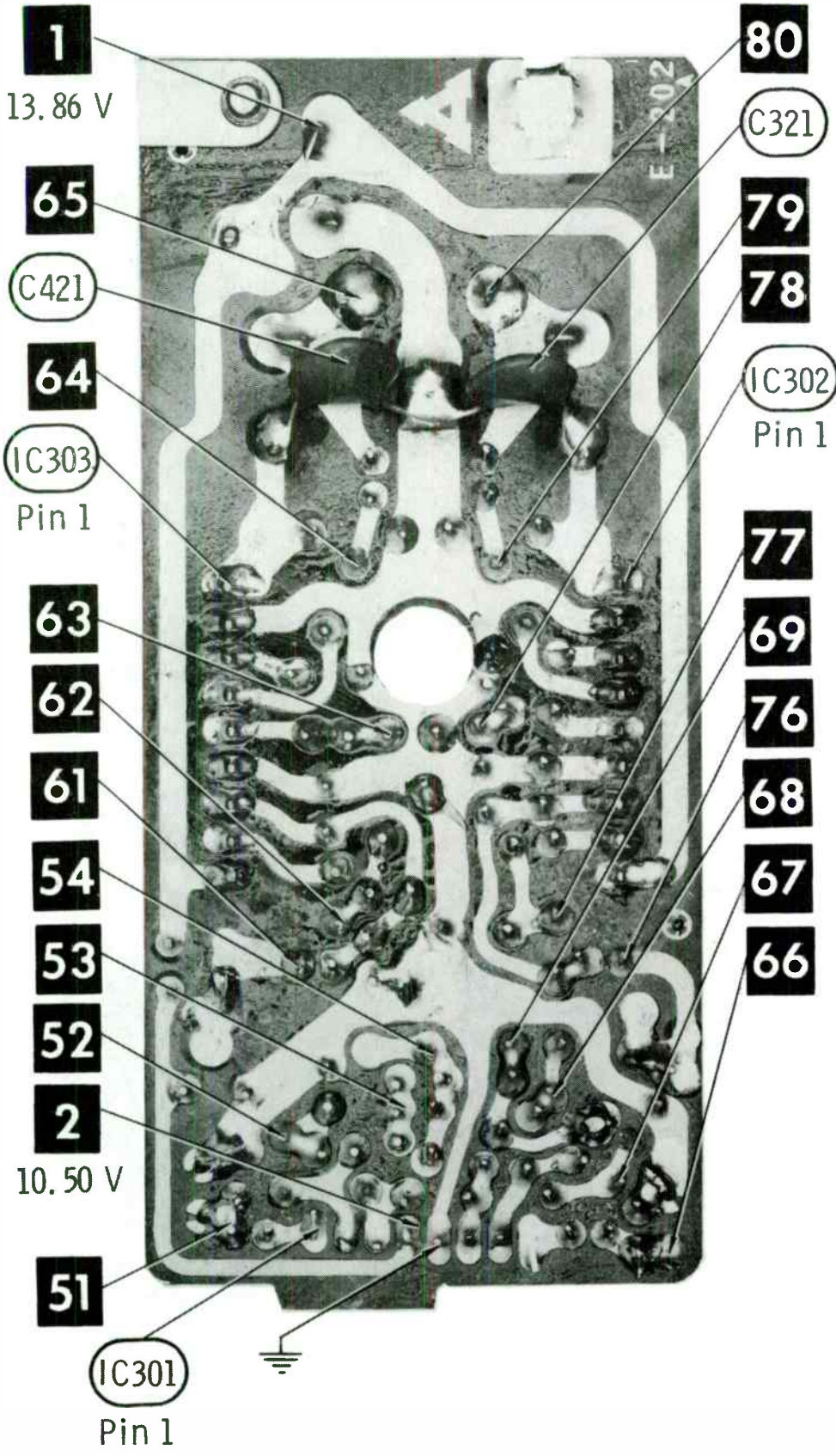
MAIN BOARD

PANASONIC MODEL CG-742EU



**AUDIO BOARD**

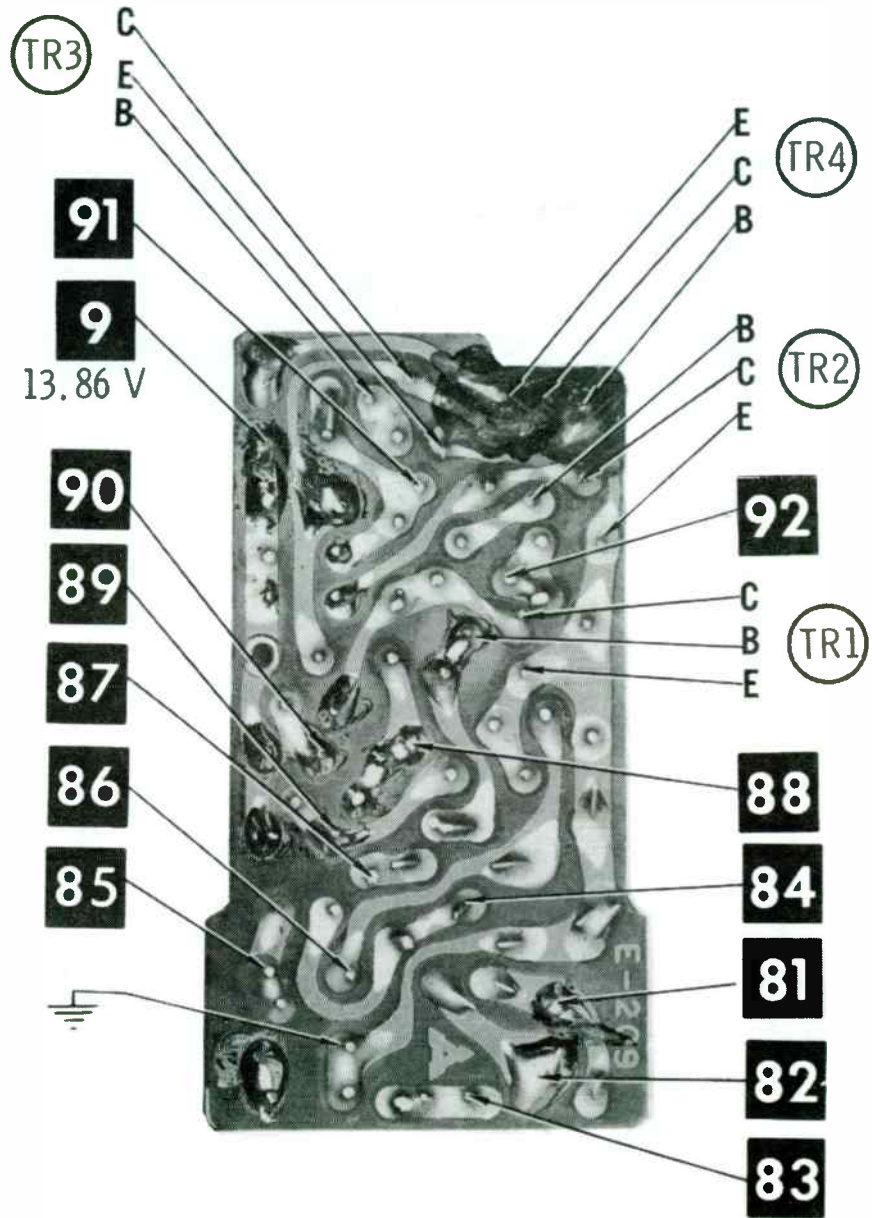
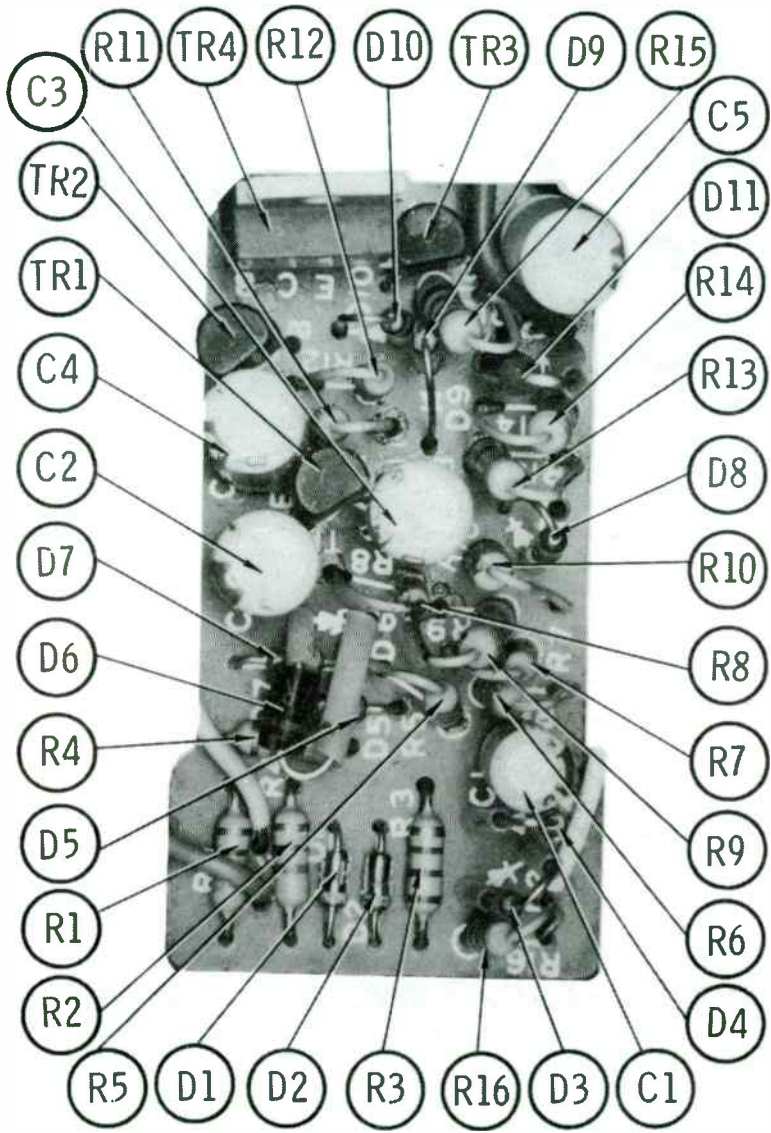




PANASONIC MODEL CG-742EU

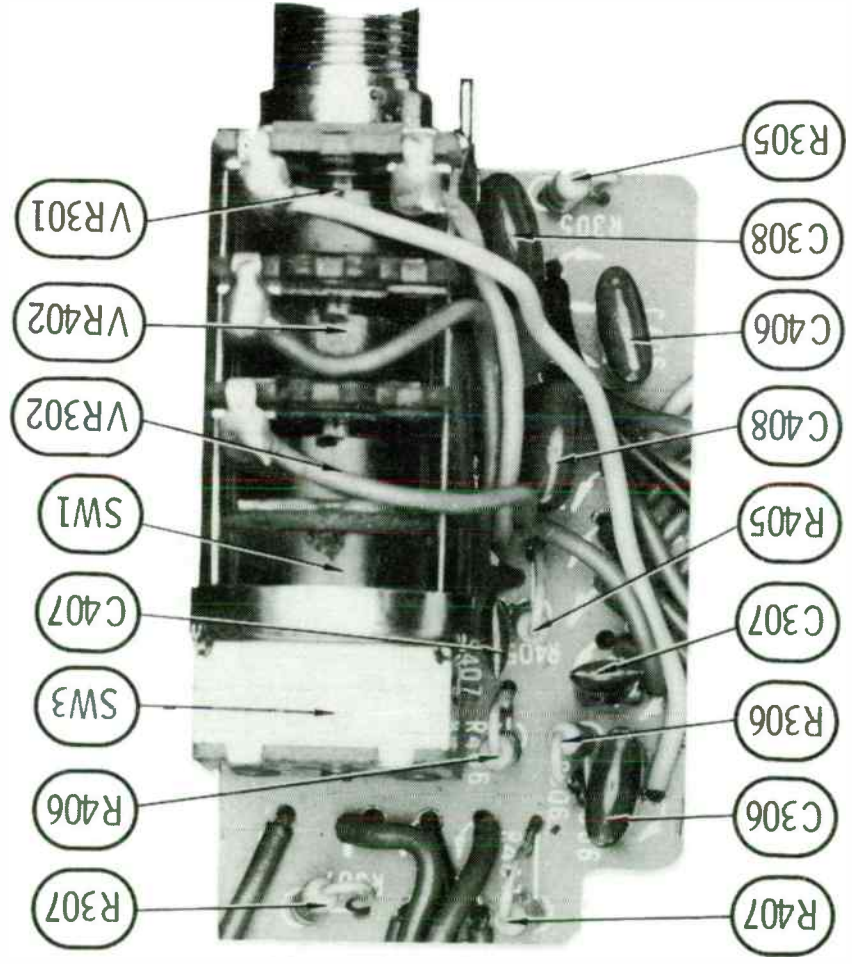
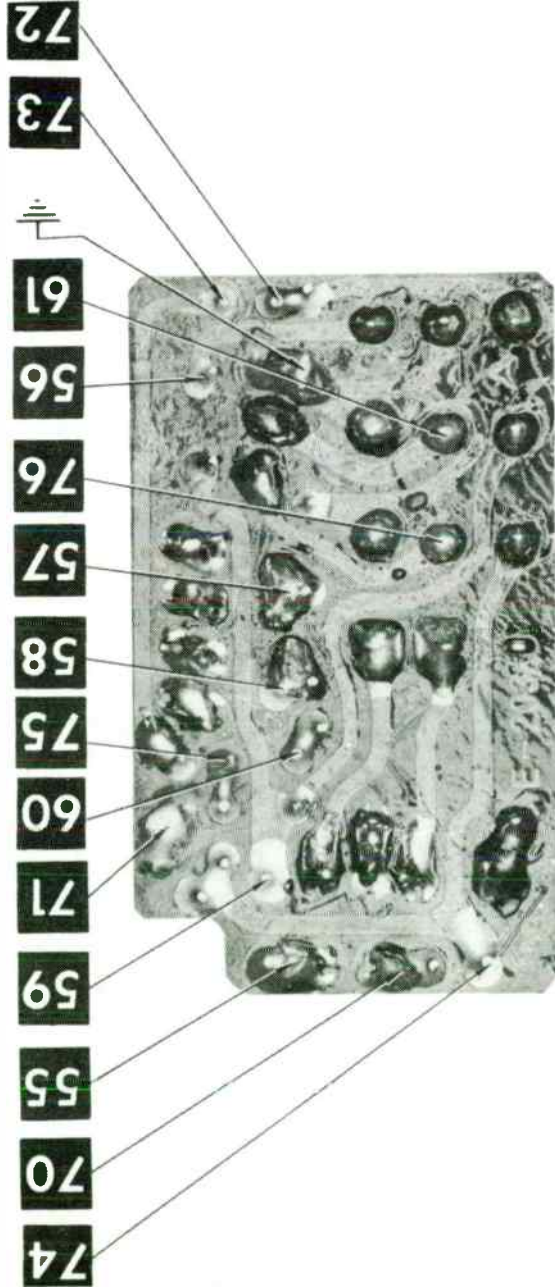
AUDIO BOARD

AUTOMATIC REVERSE BOARD



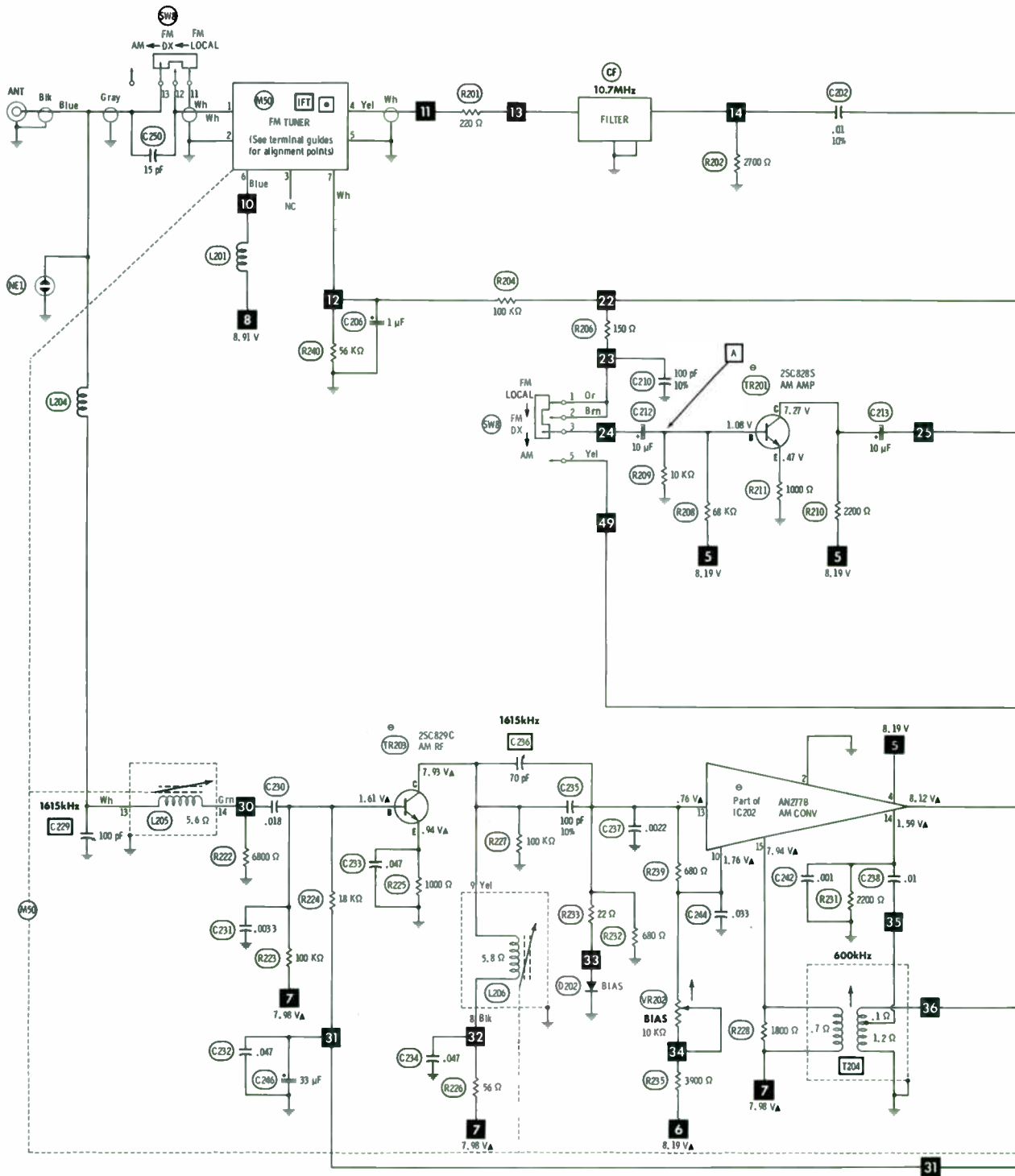
A Howard W. Sams CIRCUITRACE Photo

PANASONIC MODEL CQ-742EU



CONTROL BOARD

**NOTE: DEMAGNETIZE HEADS AFTER SERVICING**



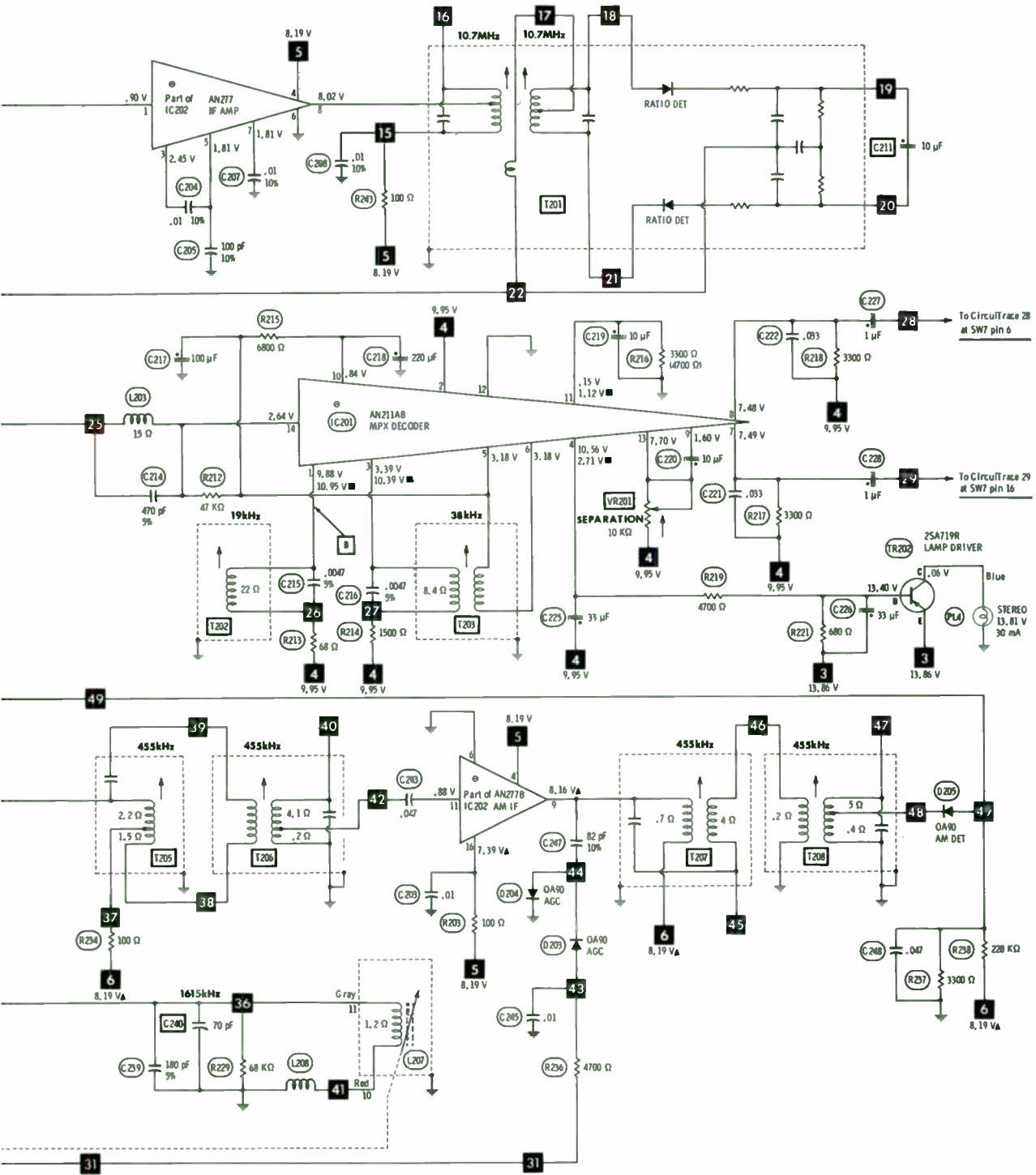
- Circuitry not used in some versions
- - - Circuitry used in some versions
- ⊙ See parts list
- \* Nominal value
- ⊥ Ground
- ~ Chassis
- ∇ Common tie point

Measurements with switching as shown unless noted:  
 ■ FM Stereo signal    ▲ AM  
 ◆ Tape play

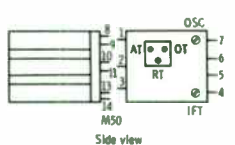
Supply voltage maintained as shown at input.  
 Voltages measured with digital meter, no signal.  
 Controls adjusted for normal operation.  
 Arrow at control indicates direction of advance.  
 Terminal identification may not be found on unit.  
 Resistors are 1/2W or less, 5% unless noted.  
 Value in ( ) used in some versions.

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
 WITH **CIRCUITRACE™**

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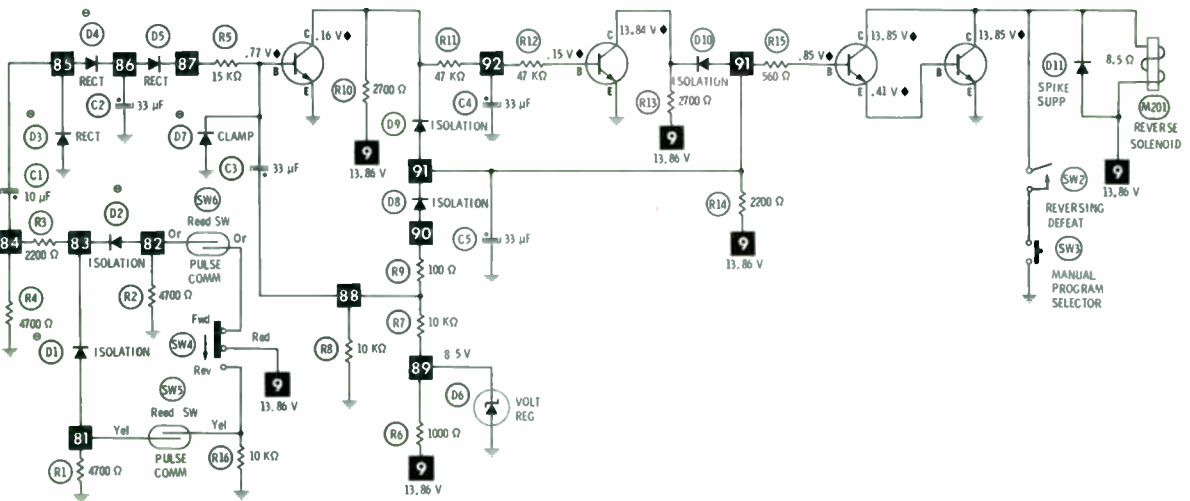
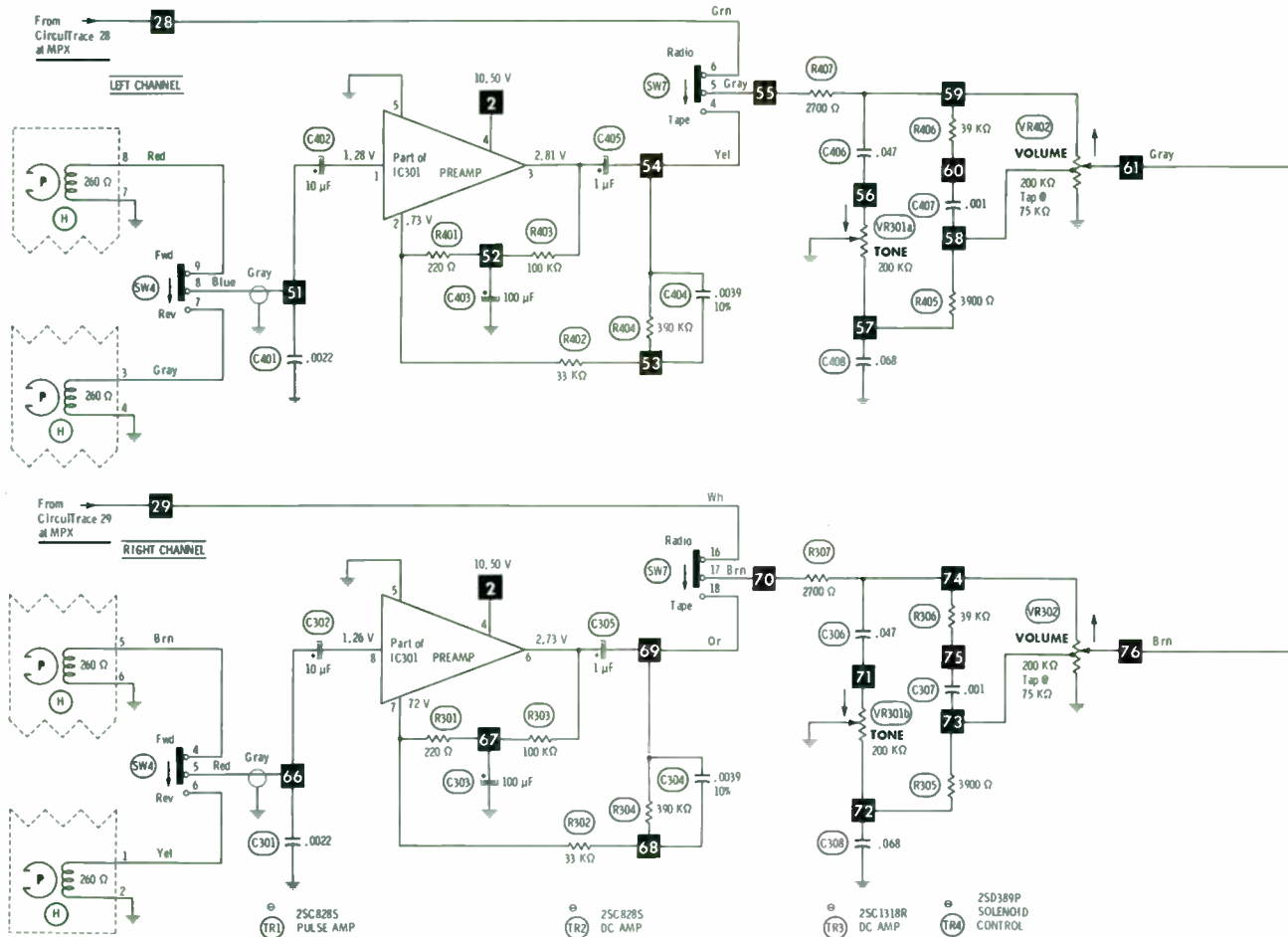


Terminal Guides



TR201 thru TR203 Bottom view

**NOTE: DEMAGNETIZE HEADS AFTER SERVICING**



- Circuitry not used in some versions
- - - Circuitry used in some versions
- ⊙ See parts list
- ⊛ Nominal value
- ⊕ Ground
- Chassis
- ▽ Common tie point

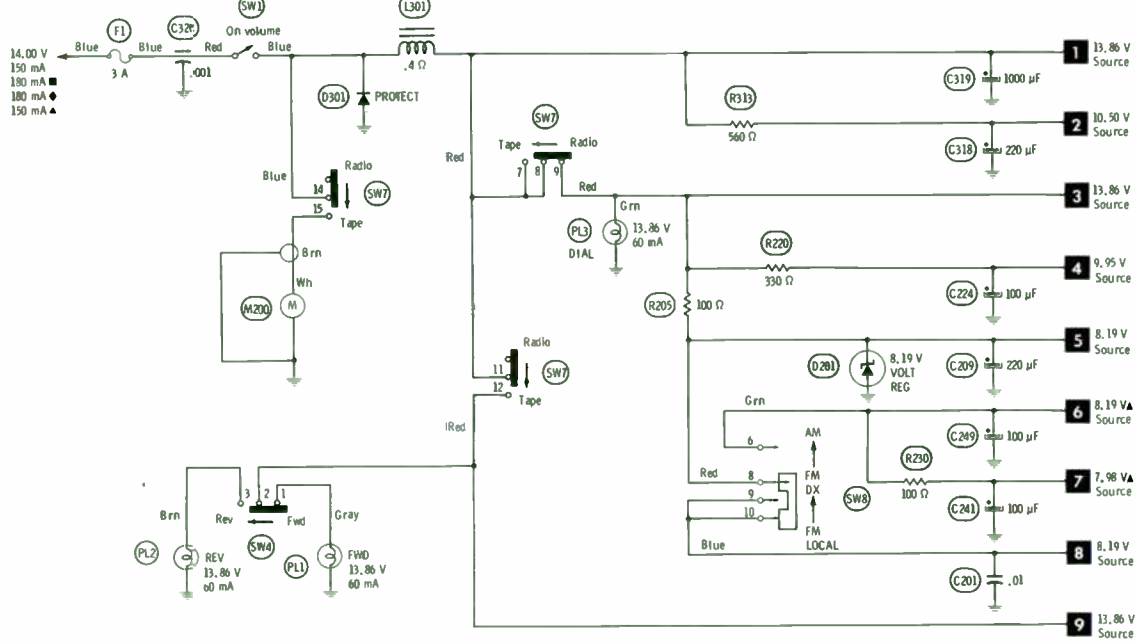
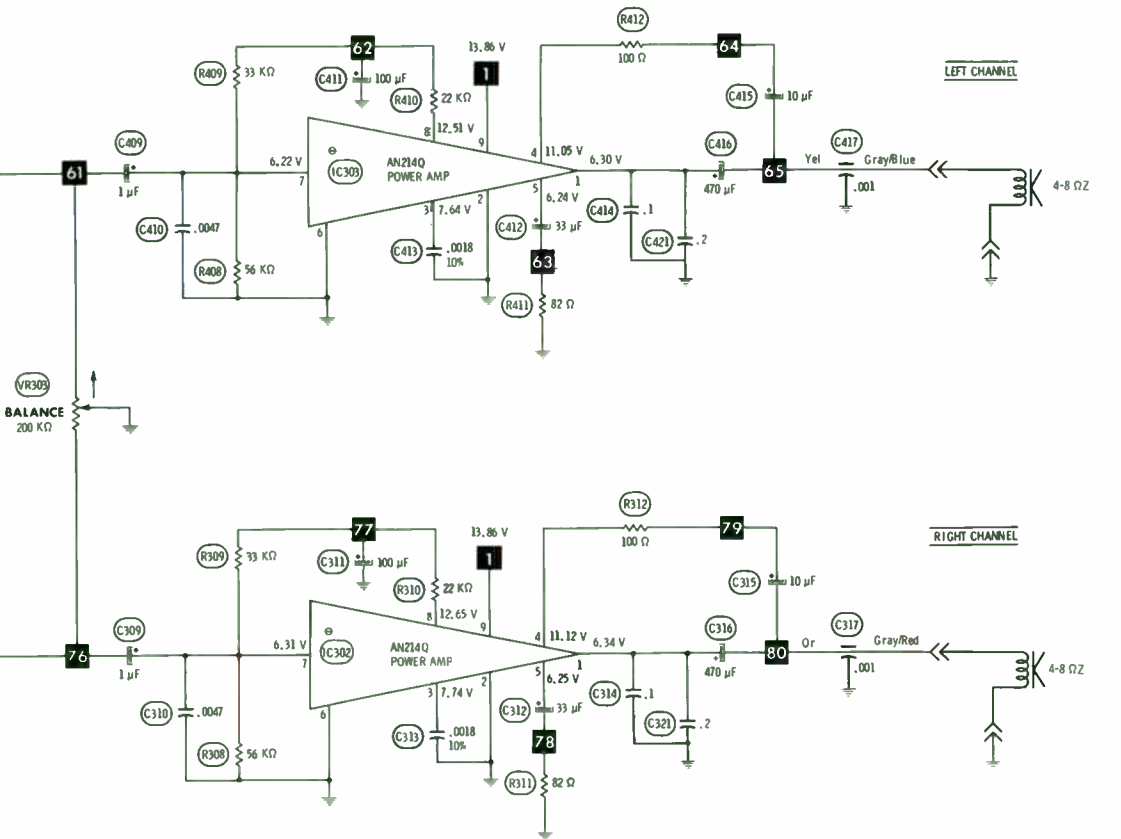
Measurements with switching as shown unless noted:

- FM Stereo signal    ▲ AM
- ◆ Tape play

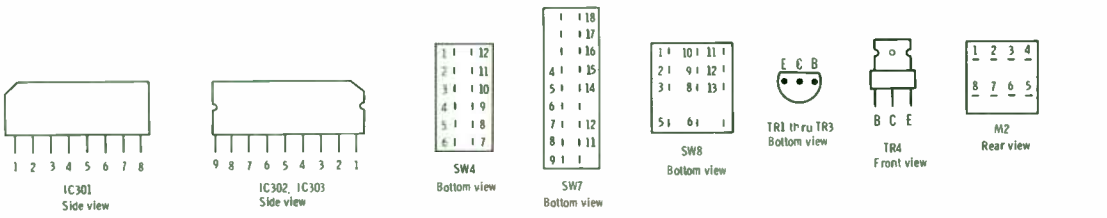
Supply voltage maintained as shown at input.  
 Voltages measured with digital meter, no signal.  
 Controls adjusted for normal operation.  
 Arrow at control indicates direction of advance.  
 Terminal identification may not be found on unit.  
 Resistors are 1/2W or less, 5% unless noted.  
 Value in ( ) used in some versions.

A PHOTOFACT STANDARD NOTATION SCHEMATIC  
 WITH **CIRCUITRACE**

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Terminal Guides



## PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.  
Have your local distributor check Sams COUNTER FACTS<sup>®</sup> for the most up-to-date replacement.

### SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	IR WORKMAN PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
D1		YAAD018	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D2		YAAD018	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D3		YAAD018	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D4		YAAD018	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D5		YAAD018	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D6		YAAD017								
D7		YAAD018	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D8		YAAD018	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D9		YAAD018	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D10		YAAD018	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
D11		YAAD004	GE-504A	5A4D	PTC2D1	HEPRO052	RE 49	SK3030	RT-213	ECG116
D201		YEAD010	GEZD-8.2		Z88.28		RE 112		RT-257	ECG5072
D202		YAAD010	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
O203	0A90		1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
D204	0A90		1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
D205	0A90		1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
O301		YBA0009	GE-504A	5A4D	PTC201	HEPRO052	RE 49	SK3030	RT-213	ECG1056
IC201	AN211A,8		GEIC-48							ECG1073
IC202	AN277B,A		GEIC-63							
IC301		YEAMM5152L								
IC302	AN214Q, P,R		GEIC-49		PTC757		RE 338-IC			ECG1058
IC303	AN214Q, P,R		GEIC-49		PTC757		RE 338-IC			ECG1058
TR1	2SC828S, R,T		GE-61	(1R)2SC828A	PTC132	HEPS0015	RE 192	SK3122	RT-302	ECG199
TR2	2SC828S, R,T		GE-61	(1R)2SC828A	PTC132	HEPS0015	RE 192	SK3122	RT-302	ECG199
TR3	2SC1318R, Q,S		GE-210	TR-21	PTC178	HEPS0015	RE 13	SK3122	RT-302	ECG128
TR4	2SD389P, O,Q		GE-66	TR-76	PTC154	HEPS5000	RE 21	SK3054	RT-197	ECG152
TR201	2SC828S, R,T		GE-61	(1R)2SC828A	PTC132	HEPS0015	RE 192	SK3122	RT-302	ECG199
TR202	2SA719R, P,Q,S		GE-21	TR-28	PTC103	HEPS0012	RE 26	SK3114	RT-126A	ECG159
TR203	2SC829C,8		GE-20	(1R)2SC380A	PTC121	HEPS0015	RE 9	SK3122	RT-308	ECG229

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA		
			CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	10 16V	ECEA16V10L			EV-1222
C2	33 10V	ECEA10V33L		VTT33A10	EV-1125
C3	33 10V	ECEA10V33L		VTT33A10	EV-1125
C4	33 10V	ECEA10V33L		VTT33A10	EV-1125
C5	33 10V	ECEA10V33L		VTT33A10	EV-1125
C206	1 50V	ECEA50V1L		VTT1863	EV-1615
C209	220 10V	ECEA10V220L	PC250-10	VTT220F10	EV-1140
C211	10 16V	ECEA16V10L			EV-1222
C212	10 16V	ECEA16V10L			EV-1222
C213	10 16V	ECEA16V10L			EV-1222
C217	100 6V	ECEA6V100L	PC100-10		EV-1030
C218	220 6V	ECEA6V220L	PC250-10	VTT220F10	EV-1140
C219	10 16V	ECEA16V10L			EV-1222
C220	10 16V	ECEA16V10L			EV-1222
C224	100 10V	ECEA10V100L	PC100-10	VTT100E10	EV-1130
C225	33 10V	ECEA10V33L		VTT33A10	EV-1125
C226	33 6V	ECEA6V33L		VTT33A10	EV-1125
C227	1 50V	ECEA50V1L		VTT1863	EV-1615
C228	1 50V	ECEA50V1L		VTT1863	EV-1615
C241	100 10V	ECEA10V100L	PC100-10	VTT100E10	EV-1130
C246	33 6V	ECEA6V33L		VTT33A10	EV-1125
C249	100 10V	ECEA10V100L	PC100-10	VTT100E10	EV-1130
C302	10 16V	ECEA16V10L			EV-1222
C303	100 6V	ECEA6V100L	PC100-10		EV-1030
C305	1 50V	ECEA50V1L		VTT1863	EV-1615
C309	1 50V	ECEA50V1L		VTT1863	EV-1615
C311	100 16V	ECEA16V100L	PC100-16	VTT100F16	EV-1230
C312	33 10V	ECEA10V33L		VTT33A10	EV-1125
C315	10 16V	ECEA16V10L			EV-1222
C316	470 16V	ECEA16V470W			
C318	220 10V	ECEA10V220L	PC250-10	VTT220F10	EV-1140
C319	1000 16V	ECEA16V1000L			
C402	10 16V	ECEA16V10L			EV-1222
C403	100 6V	ECEA6V100L	PC100-10		EV-1030
C405	1 50V	ECEA50V1L		VTT1863	EV-1615
C409	1 50V	ECEA50V1L		VTT1863	EV-1615
C411	100 16V	ECEA16V100L	PC100-16	VTT100F16	EV-1230
C412	33 10V	ECEA10V33L		VTT33A10	EV-1125
C415	10 16V	ECEA16V10L			EV-1222
C416	470 16V	ECEA16V470W			



# PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.  
Have your local distributor check Sams COUNTER FACTS<sup>SM</sup> for the most up-to-date replacement.

## CAPACITORS (cont)

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	.01	ECKD1H103PF	UK50-103		MAG5011	
C202	.01 10%	ECKD1H103PF				
C203	.01 10%	ECKD1H103PF				
C204	.01 10%	ECKD1H103PF				
C205	100 10%		DD-101	GP100	GP310	10TS-T10
C207	.01 10%	ECKD1H103PF				
C208	.01 10%	ECKD1H103PF				
C210	100 10%		DD-101	GP100	GP310	10TS-T10
C214	470 5%	ECQS1471JZ			SXM347	
C215	.0047 5%	ECQS1472JZ			SXM247	
C216	.0047 5%	ECQS1472JZ			SXM247	
C221	.033	YECQN05333M			M192P3339R8	192P3339R8
C222	.033	YECQN05333M			M192P3339R8	192P3339R8
C229	100 Nominal	YACTTC14J101				
C230	.018	YECQN05183M			M192P1839R8	192P1839R8
C231	.0033	YECQN05332M			M192P3329R8	192P3329R8
C232	.047	YECQN05473M				
C233	.047	YECQN05473M				
C234	.047	YECQN05473M				
C235	100 10%		DD-101	GP100	GP310	10TS-T10
C236	70 Nominal	YECTTT70				
C237	.0022	YECQN05222M			M192P2229R8	192P2229R8
C238	.01		UK50-103		MAG5011	
C239	180 5%	YECCD05181JS				
C240	70 Nominal	YECTTT70				
C242	.001	YECQN05102M			EWFTA210	
C243	.047	YECQN05473M				
C244	.033	YECQN05333M				
C245	.01		UK50-103		M192P3339R8	192P3339R8
C247	82 10%		OD-820		MAG5011	
C248	.047	YECQN05473M			GP482	10TS-Q82
C250	15 10%	YECCD05150K				
C301	.0022	YECQN05222M			M192P2229R8	192P2229R8
C304	.0039 10%	YECQN05392K			M192P3929R8	192P3929R8
C306	.047	YECQN05473M				
C307	.001	YECQN05102M				
C308	.068			WMF1S68	EWFTA210	1PB-S68
C310	.0047	YECQN05472M			EWFTA168	192P4729R8
C313	.0018 10%	YECQN05182K			M192P4729R8	
C314	.1			WMF05P1	EWFO5010	431P1049R5
C317	.001	YECCL510255				
C320	.001	YECCL510255				
C321	.2	YECDD12204M				
C401	.0022	YECQN05222M			M192P2229R8	192P2229R8
C404	.0039 10%	YECQN05392K			M192P3929R8	192P3929R8
C406	.047	YECQN05473M				
C407	.001	YECQN05102M				
C408	.068			WMF1S68	EWFTA210	1PB-S68
C410	.0047	YECQN05472M			EWFTA168	192P4729R8
C413	.0018 10%	YECQN05182K			M192P4729R8	
C414	.1			WMF05P1	EWFO5010	431P1049R5
C417	.001	YECCL510255				
C421	.2	YECDD12204M				

PANASONIC MODEL CG-742EU

## CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
VR201	Separation	10K	EVNJ0AA00B14	T-10K (2)	C-103 (2)	MTC14L1 (2)	X201R103B (2)
VR202	Bias	10K	EVNJ0AA00B14	T-10K (2)	C-103 (2)	MTC14L1 (2)	X201R103B (2)
VR301	Tone	200K	YEVK02FSTG25				
VR302	Tone	200K					
VR401	Volume	200K Tap @ 75K					
VR402	Volume/Switch-Power	200K Tap @ 75K					
VR303	Prog. Sel. Switch Balance	200K	EVLN66AT12G25				

(2) Cut off one of the end terminals and bend to fit PC board.

## COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L201	RF Choke (30uH)	YELQ09C006		74F335A1	
L203	SCA Trap (67MHz)	YELM14S904			
L204	AM Ant. Choke (8.2uH)	YELQ05C040			
L205	AM Ant.	(1)			
L206	AM RF	(1)			
L207	AM Osc. Tuning	(1)			
L208	Image Trap (5.6uH)	YELT06C003			
T201	Ratio Detector	EULBFD105A			
T202	19kHz	YELM07S912			
T203	38kHz	YELM07S911			
T204	Osc., AM	YELLO7S073			
T205	IF (455kHz)	YELIA07S7076A			
T206	IF (455kHz)	YELIA07S7077B			
T207	IF (455kHz)	YELIA07S7078C			
T208	IF (455kHz)	YELIA07S70790			

(1) Part of M50 (Tuner).

## PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.  
Have your local distributor check Sams COUNTER FACTS\* for the most up-to-date replacement.

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFG. PART No.	THORDARSON PART No.	TRIAD PART No.	
L301	180mA	.4	2mH	YETQ02DF012			

### FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA							
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.	
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	
F1	3A	YEF01001	YEAJ01078 (1)	AGC3	HDJ	312003	150145	F63-2	

(1) Includes leads.

### MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CF	Filter	YEIN05D5002D	Ceramic (10.7MHz)
H	Tape Head	YAAH545B	2 Channel-4 Track/Playback
M50	Tuner Assembly	YEAU01036 YEAU01033 YEAU01035	AM/FM AM FM
M200	Motor	YASAK01023	Tape Transport (2400 rpm @ 14.0 Volts)
M201	Solenoid	YAAK01021	Reverse
SW1	Switch		Power (On Volume)
SW2	Switch	YASA13003	Reverse Defeat
SW3	Switch		Program Select (On Volume)
SW4	Switch	YEAS07013	Reverse
SW5	Switch	YAAS16D01	Tape End
SW6	Switch	YAAS16001	Tape End
SW7	Switch	YEAS07016	Tape-Radio/Select
SW8	Switch	YEAS07017	FM-AM/Select
	Printed Circuit Board	E-201B (1)	AM/FM/MPX
	Printed Circuit Board	E-202A (1)	Audio Amp.
	Printed Circuit Board	E-209 (1)	Auto Reverse
	Printed Circuit Board	YEAP203	Volume/Tone-Control
	Printed Circuit Board	YEAP204	Balance
	Printed Circuit Board	YEAP205	Indicator
	Printed Circuit Board	YEAP206	Radio/Tape-Switch
	Printed Circuit Board	YEAP207	AM Ant. Choke
	Printed Circuit Board	YEAP208	Filter

(1) Number on unit.

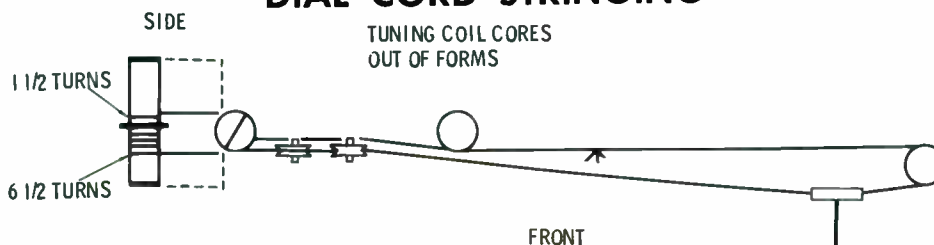
### CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

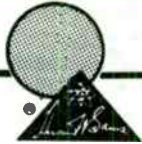
ITEM	PART No.	ITEM	PART No.
Escutcheon Assembly	YEF02095	Button, Eject	YEF013016
Dial Pointer	YEFH01097	Button, Fast Forward/Rewind	YEF013017
Tape Door	YEFX002013	Knob, AM-FM/Tone	YEF08024
Tape Door Shaft	YAFW01230	Knob, Volume/Balance/Tuning/Power	YEF07027
Tape Door Spring	YAFX011301		

### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire .....	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable .....	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap .....	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)
Ignition Noise Suppression .....	Use BELDEN No. 7300-Series Spark-Plug Sets

### DIAL CORD STRINGING





# PHOTOFACT<sup>®</sup> with

# CIRCUITRACE<sup>®</sup>

For Supplier Address See PHOTOFACT Index



MODEL TP-800E

PIONEER MODEL TP-800E

## ADJUSTMENTS

ADJUST	REMARKS
Head Azimuth	Play a test cartridge and adjust B1 for maximum on an AC VTVM across output.
Head Height	Play a test cartridge, follow instructions with cartridge, and adjust B2 for proper response.

## TROUBLE CHART

SYMPTOM	REMARKS
Capstan does not rotate.	Belt (23) dirty, worn, or broken. Assembly (20) binding. Motor defective or not supplied with power.
Track-shift mechanism inoperative	Switch (S7) dirty. Cam (30) binding or worn. Pawl (3) worn. Assembly (29) binding. Solenoid (S01) defective or not supplied with power. Cartridge defective.
Wow or flutter	Belt (23) dirty or worn. Capstan dirty or binding. Cartridge defective. Motor defective.
Sound weak or distorted	Head dirty, misaligned, or defective. Cartridge defective. Amplifiers defective.
Tape is pulled from cartridge.	Cartridge defective. Capstan dirty or scored.

**HOWARD W. SAMS & CO., INC.** Indianapolis, Indiana 46206

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## MECHANICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
3	CXA-707-0	Cam Ratchet Unit (Pawl)	28	CBH-008-A	Cam Spring
4	B33-736-0	Solenoid Spring	29	CNV-222-0	Head Base (Assembly)
8	CXA-023-0	Lock Plate Assembly	30	CNT-033-0	Cam
10	N92-609-0(1)	Cartridge Lock Roller	31	B71-673-A	Cross Talk Adjust Nut
13	CBH-007-A	Lock Plate Spring	32	CBH-010-0	Azimuth Spring
16	CLA-188-0	Motor Pulley	34	CNC-030-D	Head Holder
20	CNR-003-A	Flywheel Holder (Assembly)	56	CXA-720-0	Flywheel Pressure Bracket Assembly
22	CNR-002-0	Flywheel	57	B23-657-0(2)	Flywheel Spindle Bearing Disk
23	CNT-032-0	Belt			

\* Flywheel Drive Belt: E-V/GAME Replacement Number  
WALSCO Replacement Number

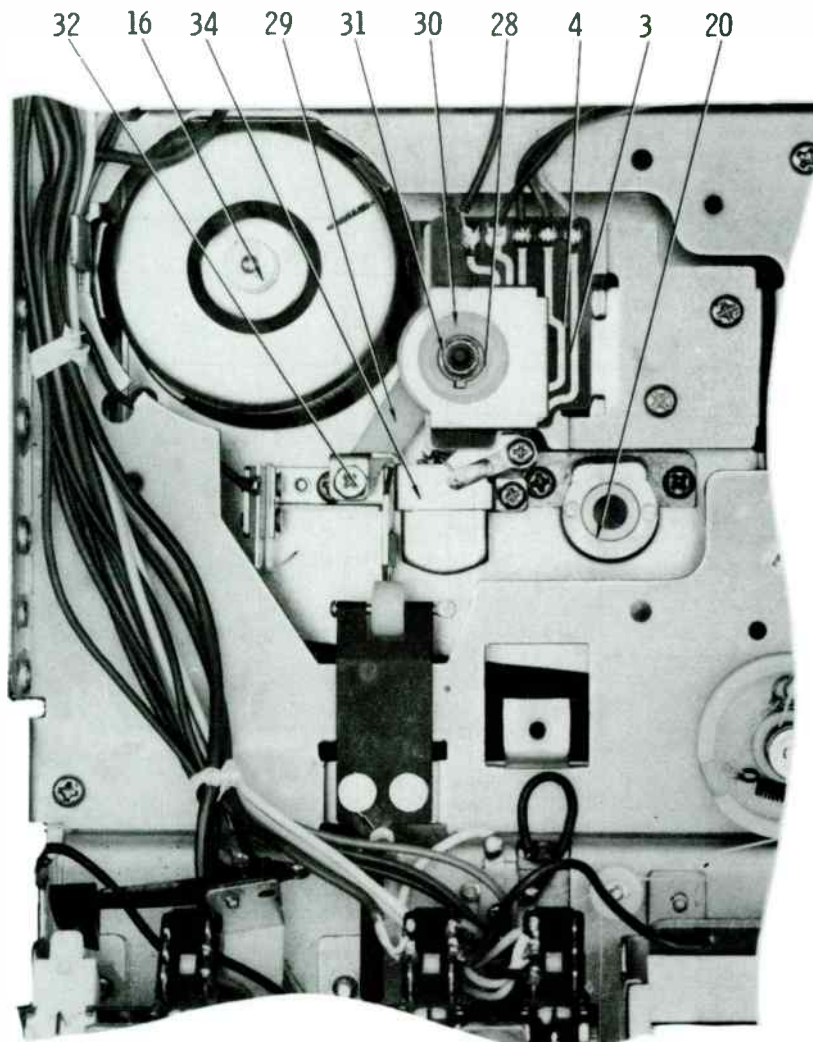
(1) Part of Assembly (8).  
(2) Part of Assembly (56).

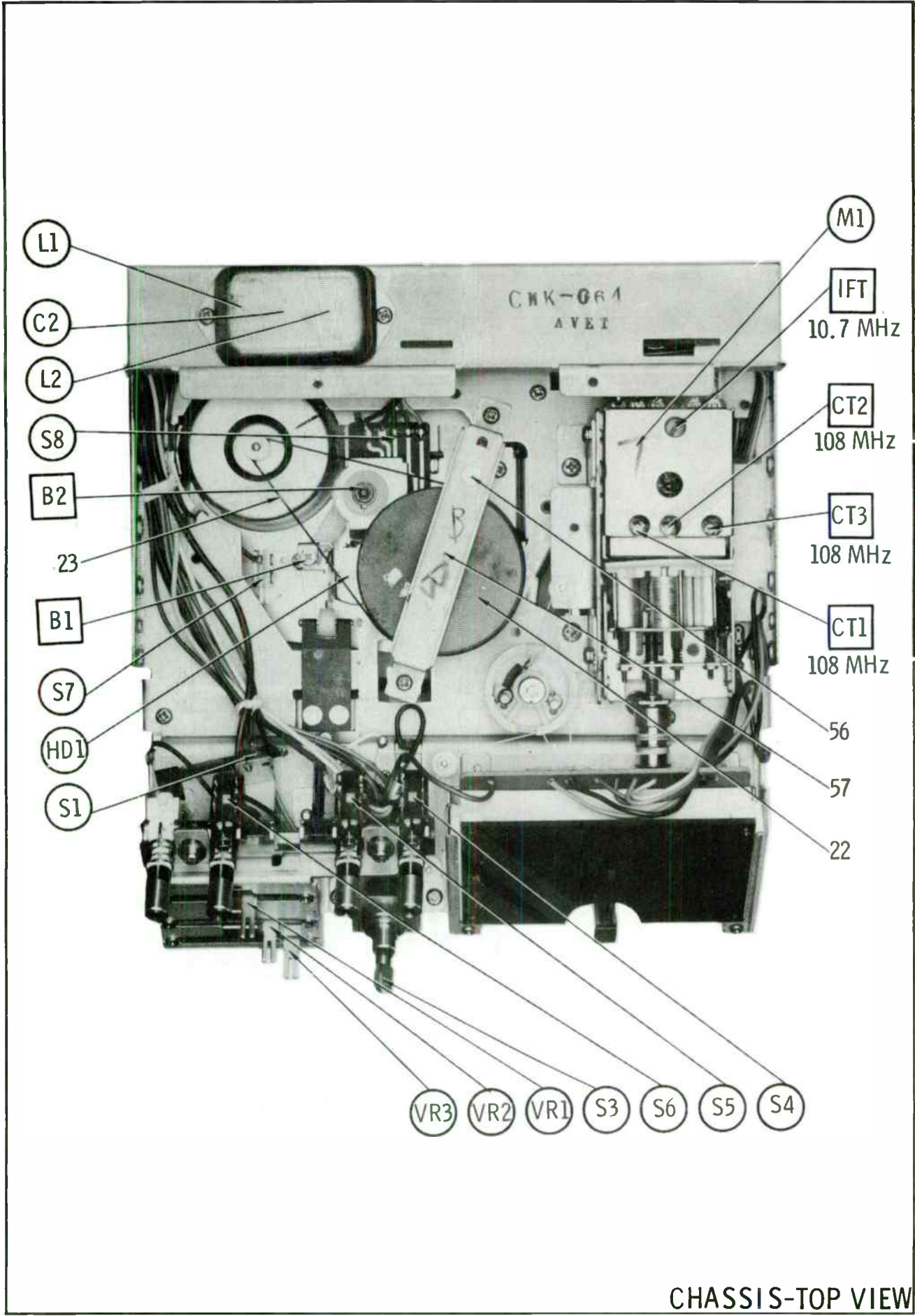
### CLEANING

### LUBRICATING

### HEAD DEMAGNETIZING

Refer to "General Servicing Information"  
on page 4.



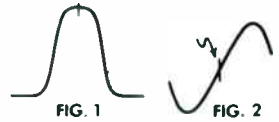


PIONEER MODEL TP-800E

CHASSIS-TOP VIEW

## ALIGNMENT INSTRUCTIONS

CAUTION: Use isolation transformer or observe polarity when connecting test equipment. Connect low sides of generator and indicator to ground unless specified otherwise. Maintain line voltage at 120V AC. Allow a 15-minute warm-up period. Use only enough generator output to obtain a suitable indication. Suggested alignment Tools: GC ELECTRONICS: ALL.....8290,8868,9087



### FM IF ALIGNMENT USING AM SIGNAL GENERATOR—SELECTOR IN FM POSITION

High side of generator thru .001uF to A, low side to ground.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MHz Unmodulated	Point of non-interference	DC probe of VTVM to junction of D4 & R13, common to ground.	(1) T1, IFT	Adjust for maximum.
"	"	DC probe of VTVM to TP2, common to ground.	T2	Adjust for zero reading. A positive or negative reading will be obtained on either side of correct setting.

### FM IF ALIGNMENT USING FM SIGNAL GENERATOR—SELECTOR IN FM POSITION

High side of generator thru .001uF to A, low side to ground.  
Use 60-hertz, frequency-modulated signal, 450kHz sweep.  
Use 60-hertz sawtooth voltage in scope for horizontal deflection.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MHz 450kHz Sweep	Point of non-interference	Vert input of scope to junction of D4 & R13, low side to ground.	(1) T1, IFT	Disconnect stabilizing capacitor C12. Adjust for maximum gain and symmetry of response similar to Fig. 1. Reconnect C12.
"	"	Vert input of scope to TP2, low side to ground.	T2	Adjust T2 for maximum amplitude and straightness of line similar to Fig. 2. Readjust T1.

### FM RF ALIGNMENT—SELECTOR IN FM POSITION

Connect generator across antenna terminals with 120-ohm carbon resistor in series with each lead. Adjustment of coils by bending should not be attempted unless the coil is deformed or replaced.

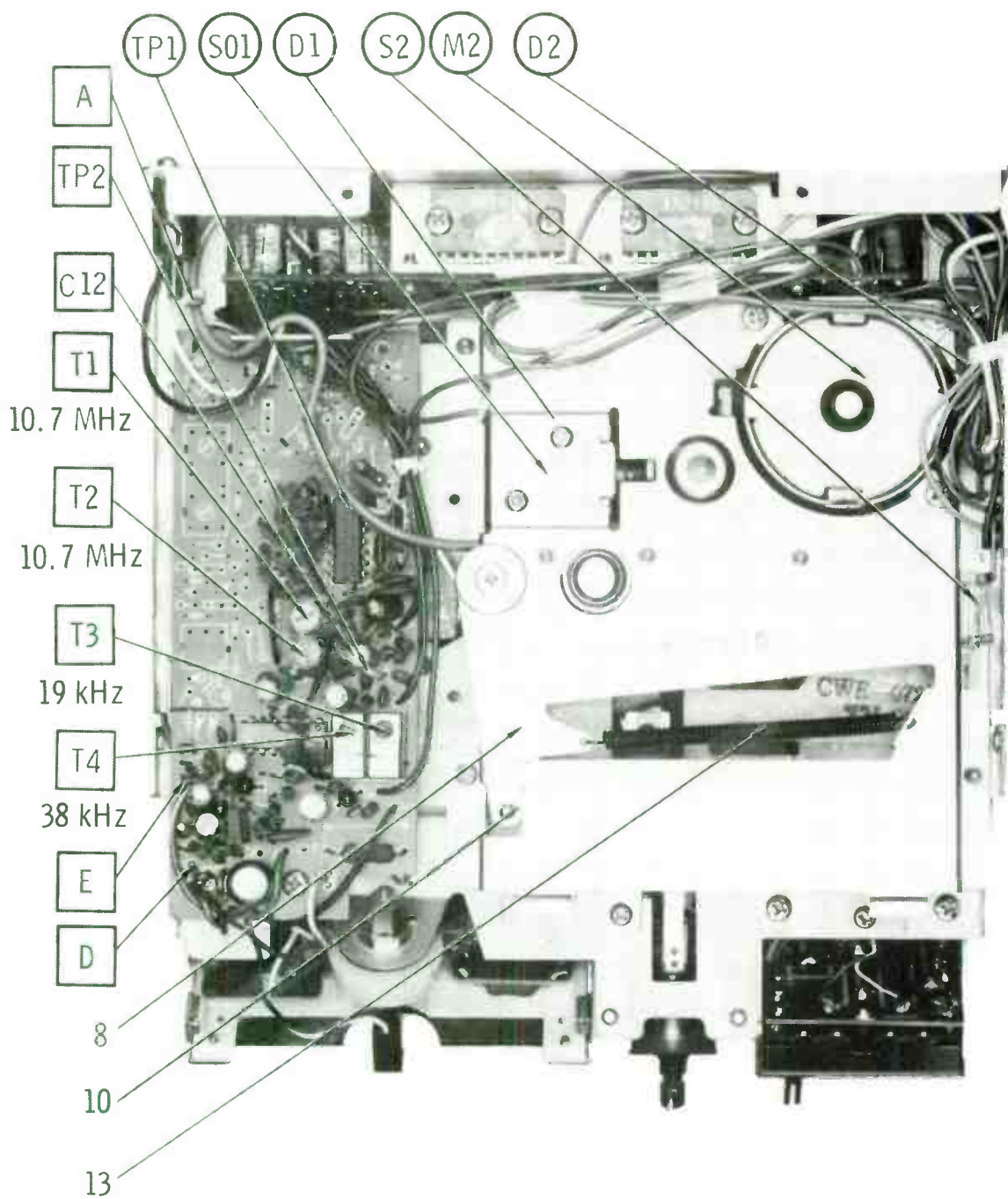
GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
108MHz Unmodulated	High freq. end	DC probe of VTVM to junction of D4 & R13, common to ground.	CT3, CT2, CT1	Adjust for maximum.

(1) Before adjusting, vary generator frequency slightly. Maximum output indicates exact IF.

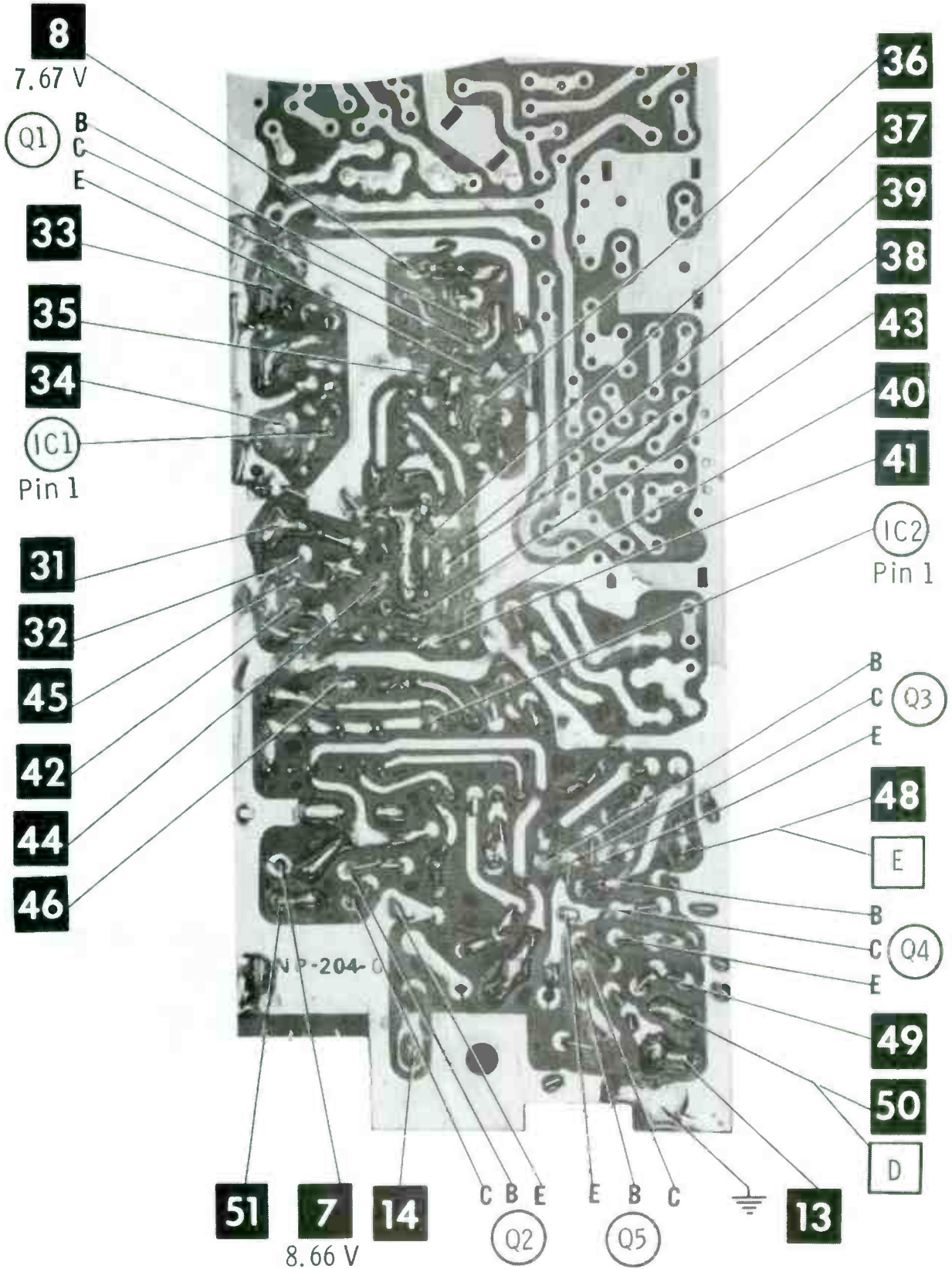
### FM STEREO MULTIPLEX ALIGNMENT USING FM STEREO SIGNAL GENERATOR (± .0001% ACCURACY)

High side of generator thru 47K to A, low side to ground.

GENERATOR FREQUENCY	INDICATOR	ADJUST	REMARKS
Modulated Left Channel	Vert input of scope to D, low side to ground.	T3, T4	Adjust for MINIMUM. This step should require only slight adjustment.
Modulated Right Channel	Vert input of scope to E, low side to ground.		Check for MINIMUM. If necessary, make compromise adjustment of T3, T4.

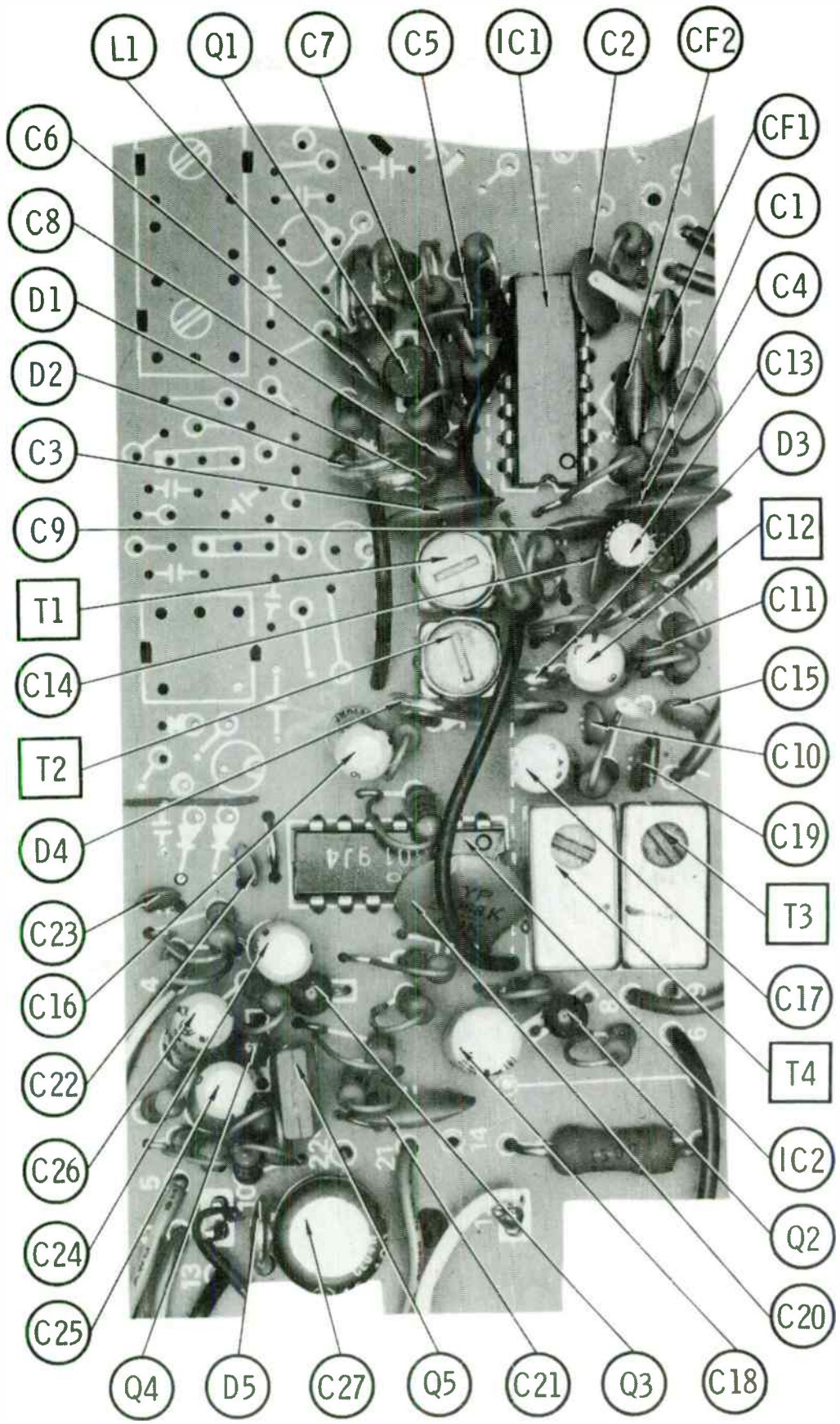


CHASSIS-BOTTOM VIEW

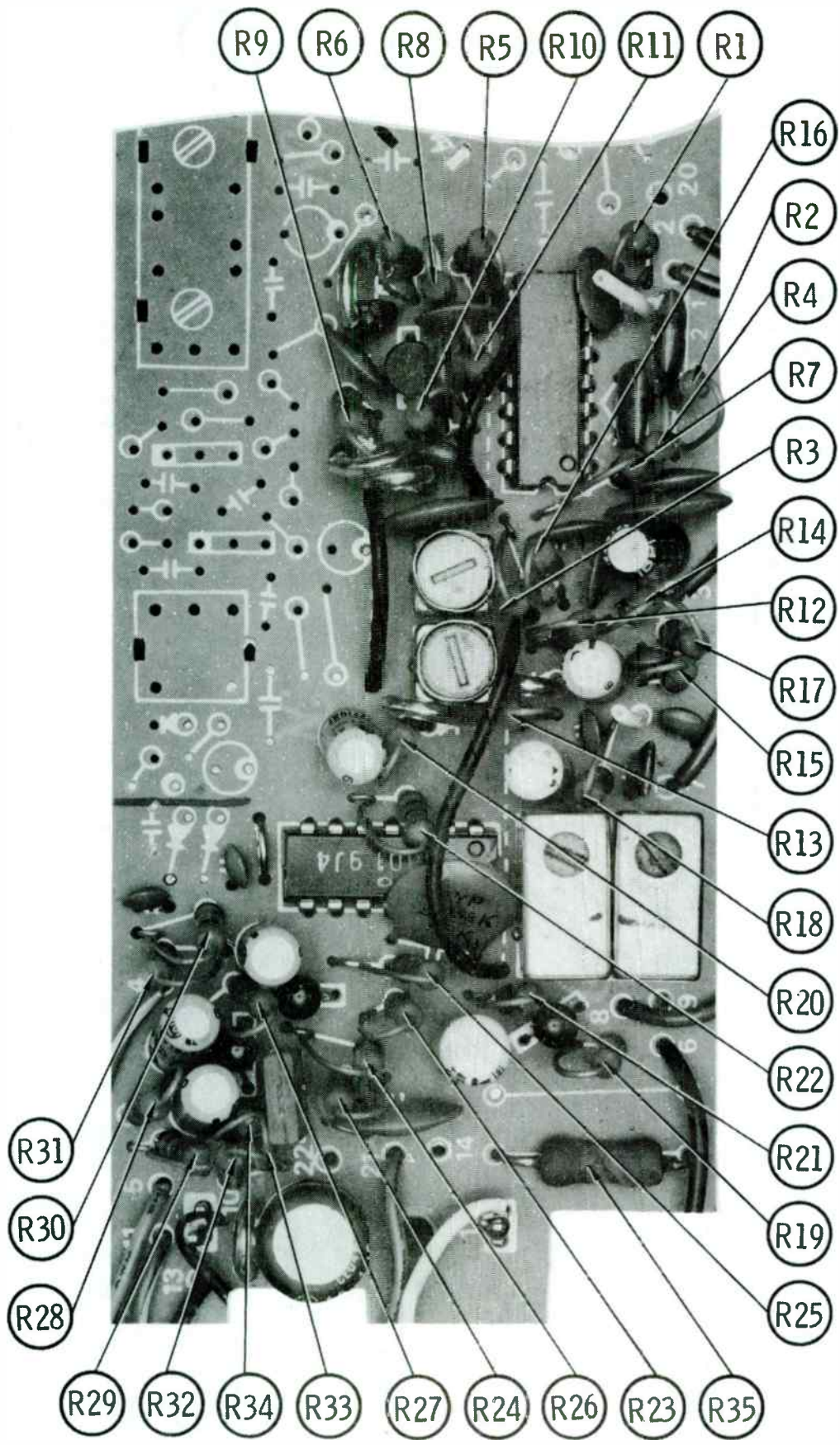


FM BOARD

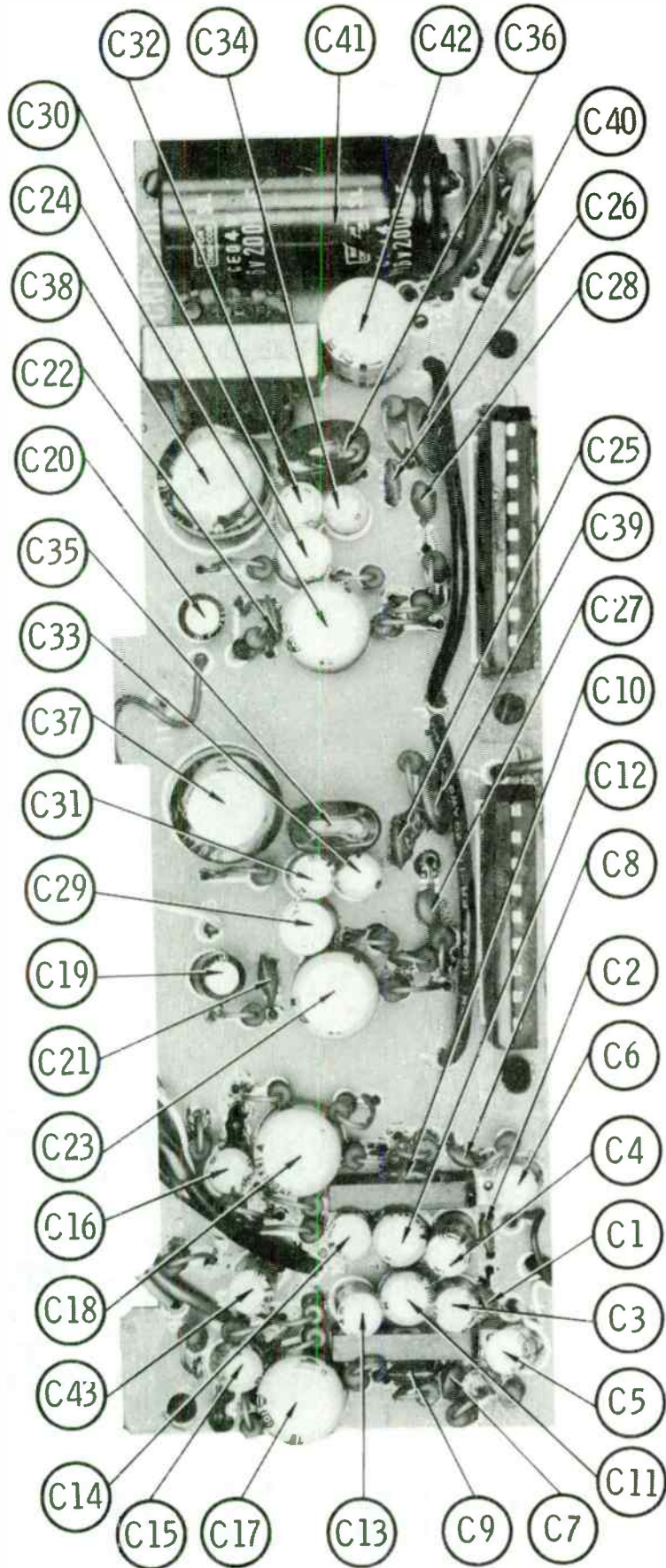




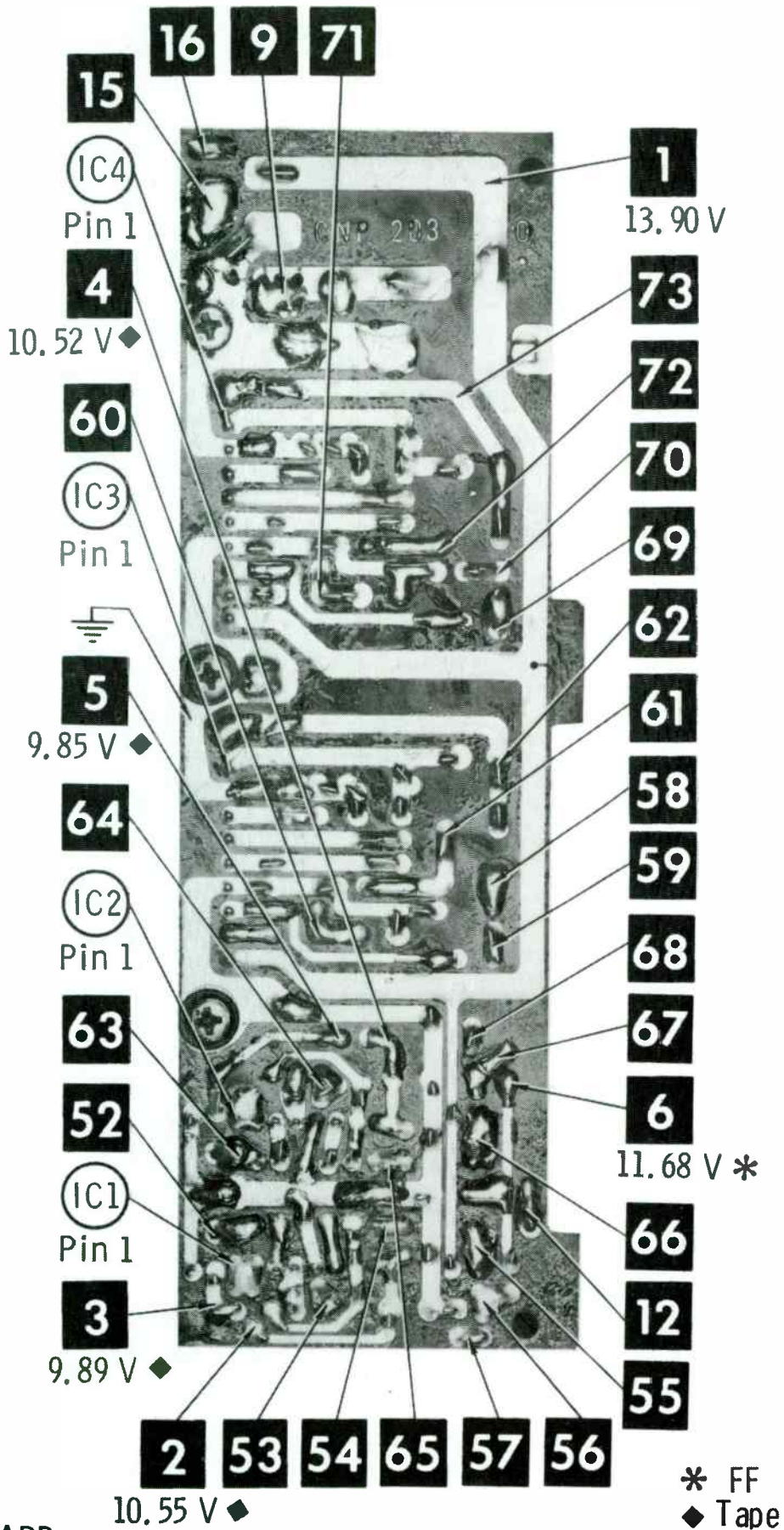
FM BOARD



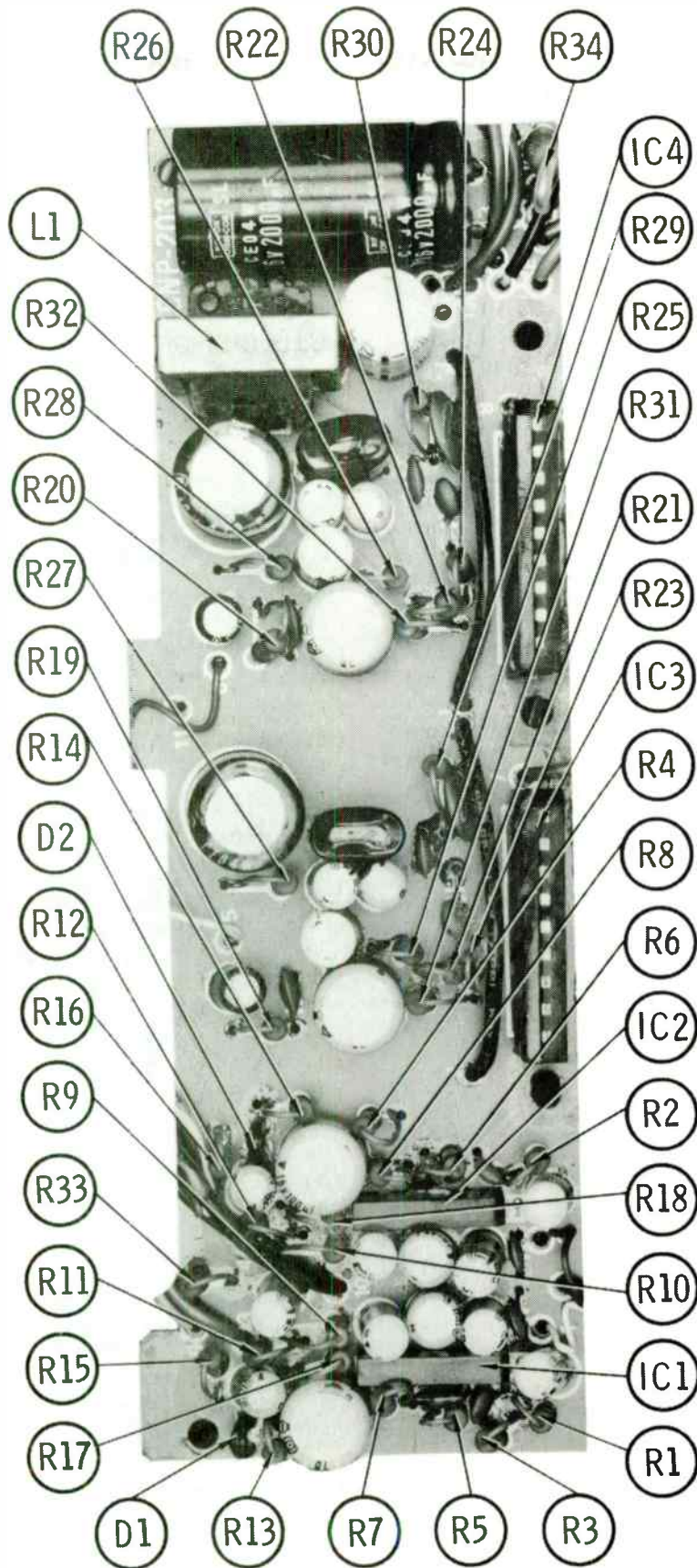
FM BOARD



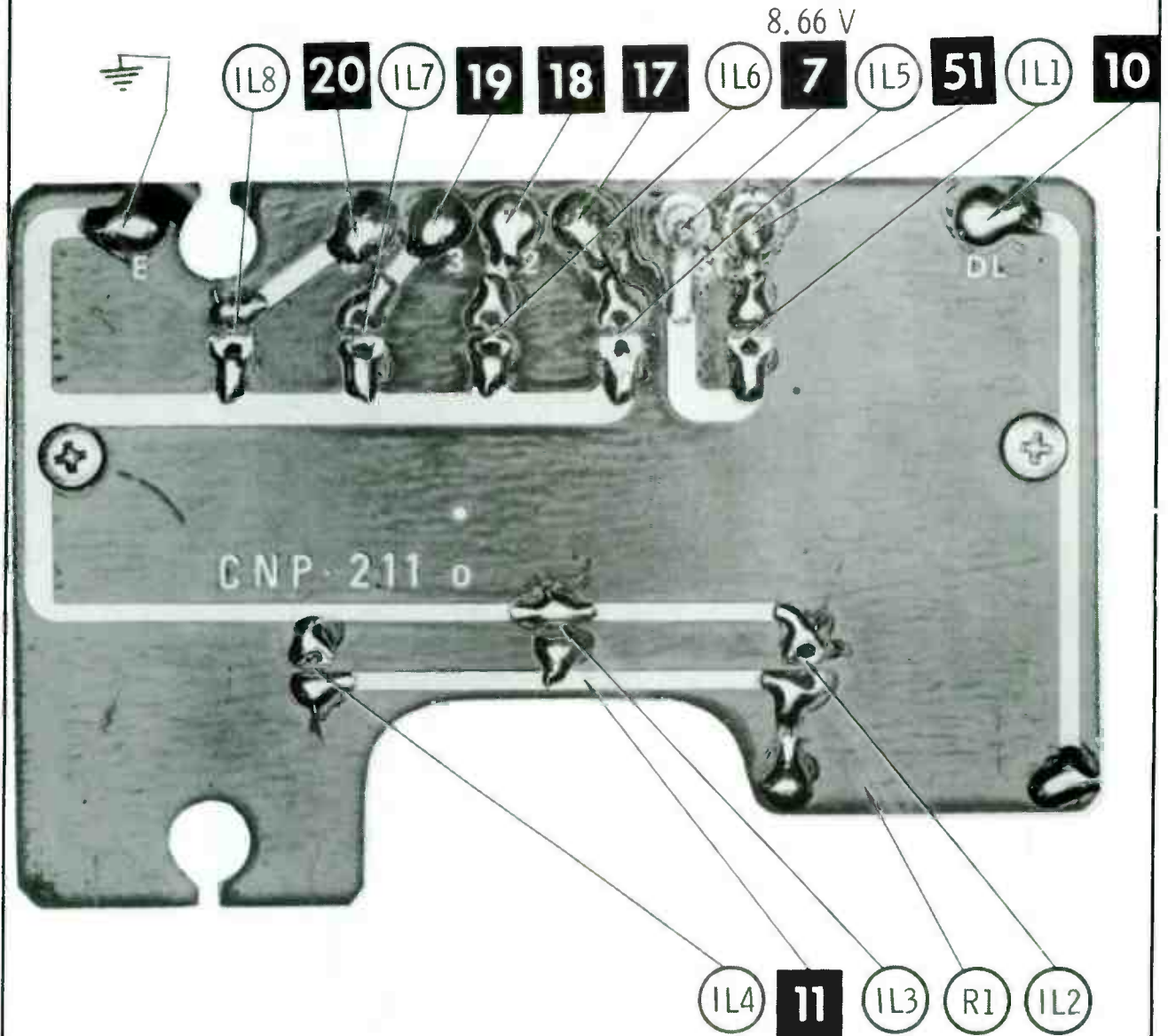
AUDIO BOARD



AUDIO BOARD



AUDIO BOARD



LAMP BOARD

# PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.

Have your local distributor check Sams COUNTER FACTS\* for the most up-to-date replacement.

## SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	IR WORKMAN PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
(AUDIO Board)										
D1	1S2144Z	G01-209-B	GE-504A	5A4D	PTC201	HEPRO052	RE 49	SK3030	RT-213	ECG116
D2	1S2144Z	G01-209-B	GE-504A	5A4D	PTC201	HEPRO052	RE 49	SK3030	RT-213	ECG116
IC1	HA1406	G09-017-A,B,C								
	TA7120	G09-008-B,C,D (1)					RE 340-M			ECG1087
IC2	HA1406	G09-017-A,B,C								
	TA7120	G09-008-B,C,D (1)					RE 340-M			ECG1087
IC3	AN214Q	G09-013-A	GEIC-49		PTC757		RE 338-IC			ECG1058
IC4	AN214Q	G09-013-A	GEIC-49		PTC757		RE 338-IC			ECG1058
(FM Board)										
D1	1S188	G00-004-A	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D2	1S188	G00-004-A	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D3	1S1555	G01-803-A	GE-300(7)	D200MP(6)	PTC214M(6)	HEPRO602(7)	RE 52(7)	SK3100(7)	RT-218(7)	ECG178MP(6)
D4	1S1555	G01-803-A								
D5	WZ090	G01-036-G	GEZD-9.1		ZB9.1B		RE 114		RT-240	ECG139
IC1	LA1201-B2	G09-015-B	GEIC-43				RE 335-IC			ECG1003
IC2	LA3301	G09-009-A	GEIC-38		PTC721	HEPC6094P	RE 326-IC		TVCM-6	ECG1006
Q1	2SC829A,B	G05-037-A,B	GE-20	(IR)2SC380A	PTC121	HEPS0015	RE 9	SK3122	RT-308	ECG229
Q2	2SC536E,D	G05-706-D,E	GE-212	(IR)2SC536	PTC101	HEPS0019	RE 192	SK3124	RT-107A	ECG199
	2SC828P,Q	G05-036-B,C,D,E(1)	GE-61	(IR)2SC828A	PTC132	HEPS0015	RE 192	SK3122	RT-302	ECG199
Q3	2SC536E,D	G05-706-D,E	GE-212	(IR)2SC536	PTC101	HEPS0019	RE 192	SK3124	RT-107A	ECG199
	2SC828P,Q	G05-036-B,C,D,E(1)	GE-61	(IR)2SC828A	PTC132	HEPS0015	RE 192	SK3122	RT-302	ECG199
Q4	2SC536E,D	G05-706-D,E	GE-212	(IR)2SC536	PTC101	HEPS0019	RE 192	SK3124	RT-107A	ECG199
	2SC828P,Q	G05-036-B,C,D,E(1)	GE-61	(IR)2SC828A	PTC132	HEPS0015	RE 192	SK3122	RT-302	ECG199
Q5	2SC1162B,C,D	G06-717-B,C,D	GE-57	TR-55	PTC163		RE 42		RT-162	ECG186A
POWER SUP										
D1	FR2-02	G00-535-B	GE-504A	5A4D	PTC201	HEPRO052	RE 49	SK3030	RT-213	ECG116
D2			GE-504A	5A4D	PTC201	HEPRO052	RE 49	SK3030	RT-213	ECG116

(1) Used in some versions.

(6) Matched pair.

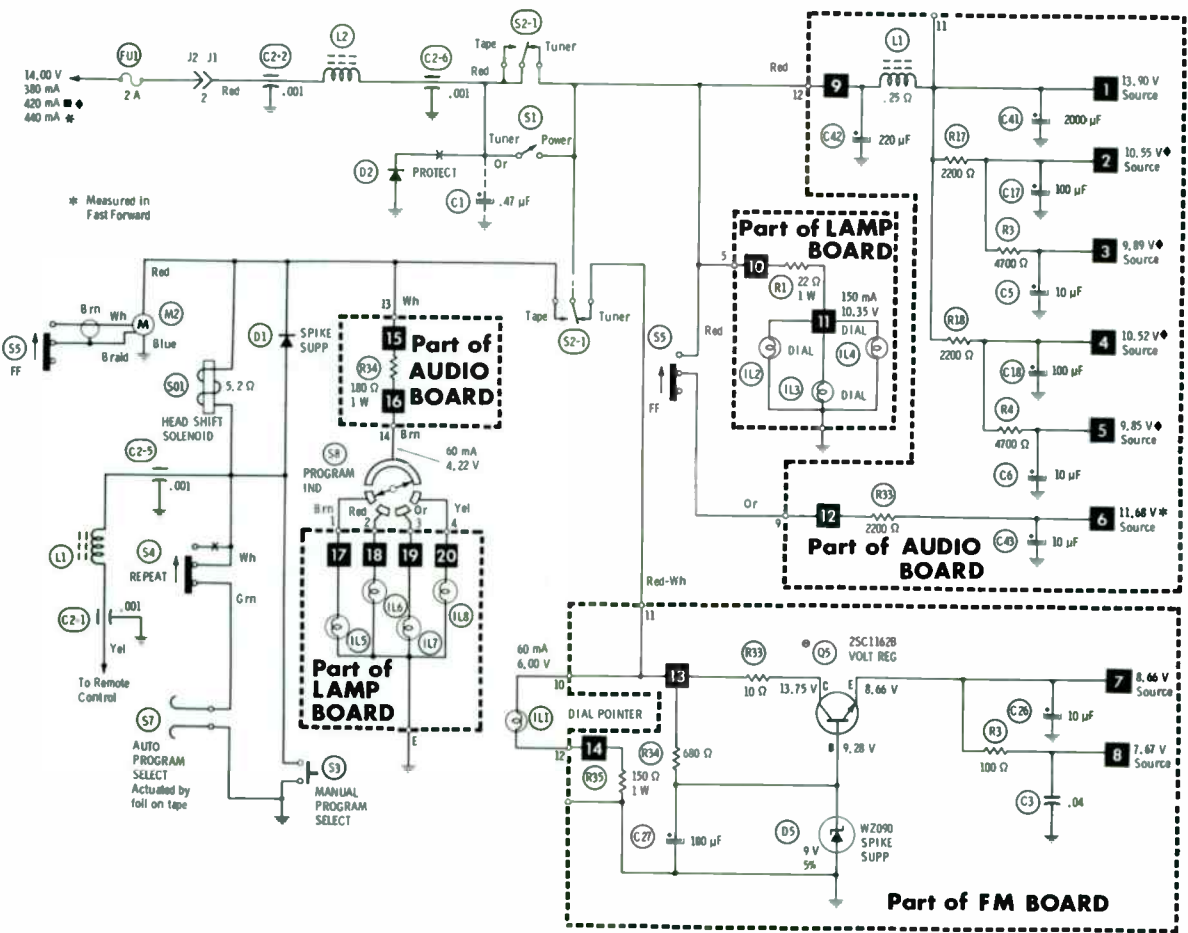
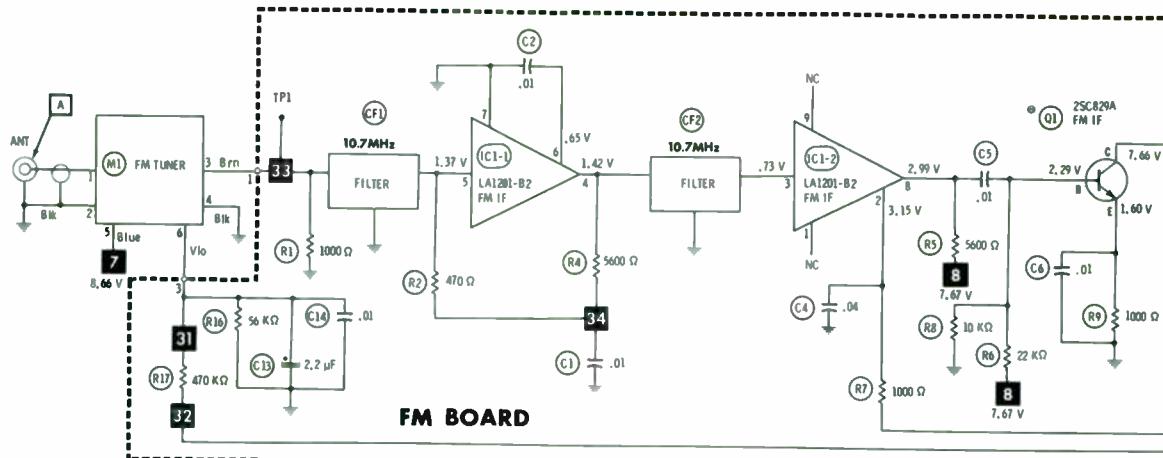
(7) Two required - select matched pair.

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA		
			CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
AUDIO BOARD					
C3	4.7 35V	C00-813-P	PC5-50	VTT4R7A50	EV-1519
C4	4.7 35V	C00-813-P	PC5-50	VTT4R7A50	EV-1519
C5	10 16V	C00-522-P	PC10-25	VTT10A25	EV-1222
C6	10 16V	C00-522-P	PC10-25	VTT10A25	EV-1222
C11	47 10V	C00-233-P	PC50-16	VTT47D16	EV-1226
C12	47 10V	C00-233-P	PC50-16	VTT47D16	EV-1226
C13	4.7 35V	C00-813-P	PC5-50	VTT4R7A50	EV-1519
C14	4.7 35V	C00-813-P	PC5-50	VTT4R7A50	EV-1519
C15	2.2 50V	C00-907-P	PC2-100	VTT2R2A50	EV-1517
C16	2.2 50V	C00-907-P	PC2-100	VTT2R2A50	EV-1517
C17	100 16V	C00-542-P	PC100-16	VTT100F16	EV-1230
C18	100 16V	C00-542-P	PC100-16	VTT100F16	EV-1230
C19	2.2 50V	C00-907-P	PC2-100	VTT2R2A50	EV-1517
C20	2.2 50V	C00-907-P	PC2-100	VTT2R2A50	EV-1517
C23	100 16V	C00-542-P	PC100-16	VTT100F16	EV-1230
C24	100 16V	C00-542-P	PC100-16	VTT100F16	EV-1230
C29	47 10V	C00-233-P	PC50-16	VTT47D16	EV-1226
C30	47 10V	C00-233-P	PC50-16	VTT47D16	EV-1226
C31	10 16V	C00-522-P	PC10-25	VTT10A25	EV-1222
C32	10 16V	C00-522-P	PC10-25	VTT10A25	EV-1222
C33	1 50V	C00-902-P	PC1-50	VTT1B63	EV-1615
C34	1 50V	C00-902-P	PC1-50	VTT1B63	EV-1615
C37	470 16V	C00-553-P			
C38	470 16V	C00-553-P			
C41	2000 16V	CCH-003-0			
C42	220 16V	C00-547-P	PC250-25	VTT220G16	EV-1240
C43	10 16V	C00-522-P	PC10-25	VTT10A25	EV-1222
FM BOARD					
C12	10 16V	C00-522-P	PC10-25	VTT10A25	EV-1222
C13	2.2 25V NP	C00-907-P (1)	PC2-100	VTT2R2A50	EV-1517
			PC10-25	VTT10A25	EV-1222
C16	10 16V	C00-522-P	PC2-100	VTT2R2A50	EV-1517
C17	2.2 50V	C00-907-P	PC2-100	VTT2R2A50	EV-1517
C18	4.7 50V	C00-913-P	PC5-50	VTT4R7A50	EV-1519

PIONEER MODEL TP-800E

**NOTE: DEMAGNETIZE HEADS AFTER SERVICING**



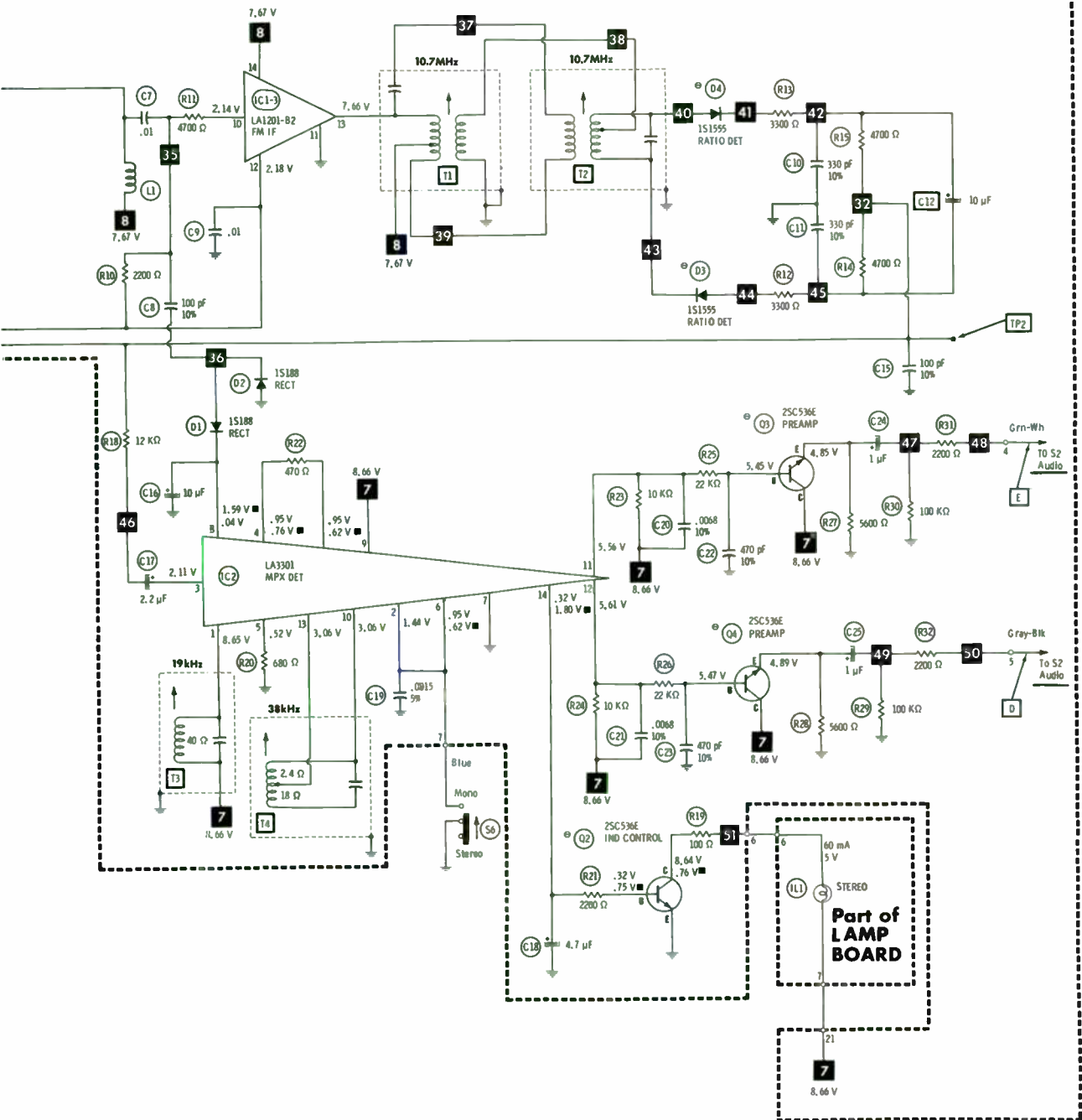
- Circuitry not used in some versions
- - - Circuitry used in some versions
- ⊙ See parts list
- \* Nominal value
- ⊕ Ground
- Chassis
- ∇ Common tie point

Measurements with switching as shown unless noted:  
 ■ FM Stereo signal  
 ◆ Tape play

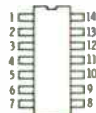
Supply voltage maintained as shown of input.  
 Voltages measured with digital meter, no signal.  
 Controls adjusted for normal operation.  
 Arrow of control indicates direction of advance.  
 Terminal identification may not be found on unit.  
 Resistors are 1/2W or less, 5% unless noted.  
 Value in ( ) used in some versions.

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
 WITH **CIRCUITRACE**  
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IC1, IC2  
Top view



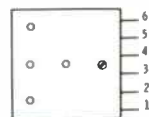
Q5  
Front view



Q2 thru Q4  
Bottom view



Q1  
Bottom view

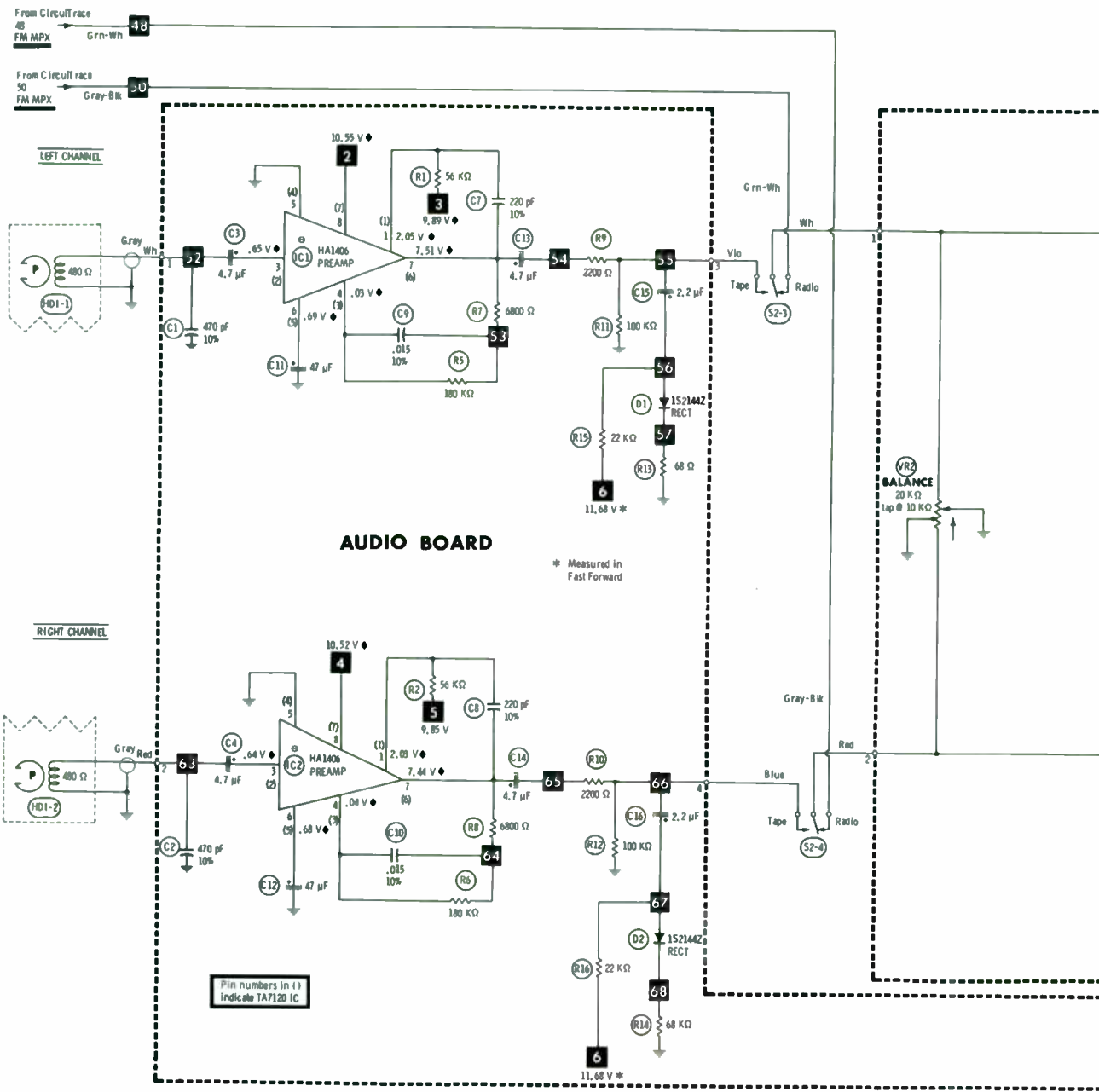


M1  
Front view



J1  
Wiring view

**NOTE: DEMAGNETIZE HEADS AFTER SERVICING**



\* Measured in Fast Forward

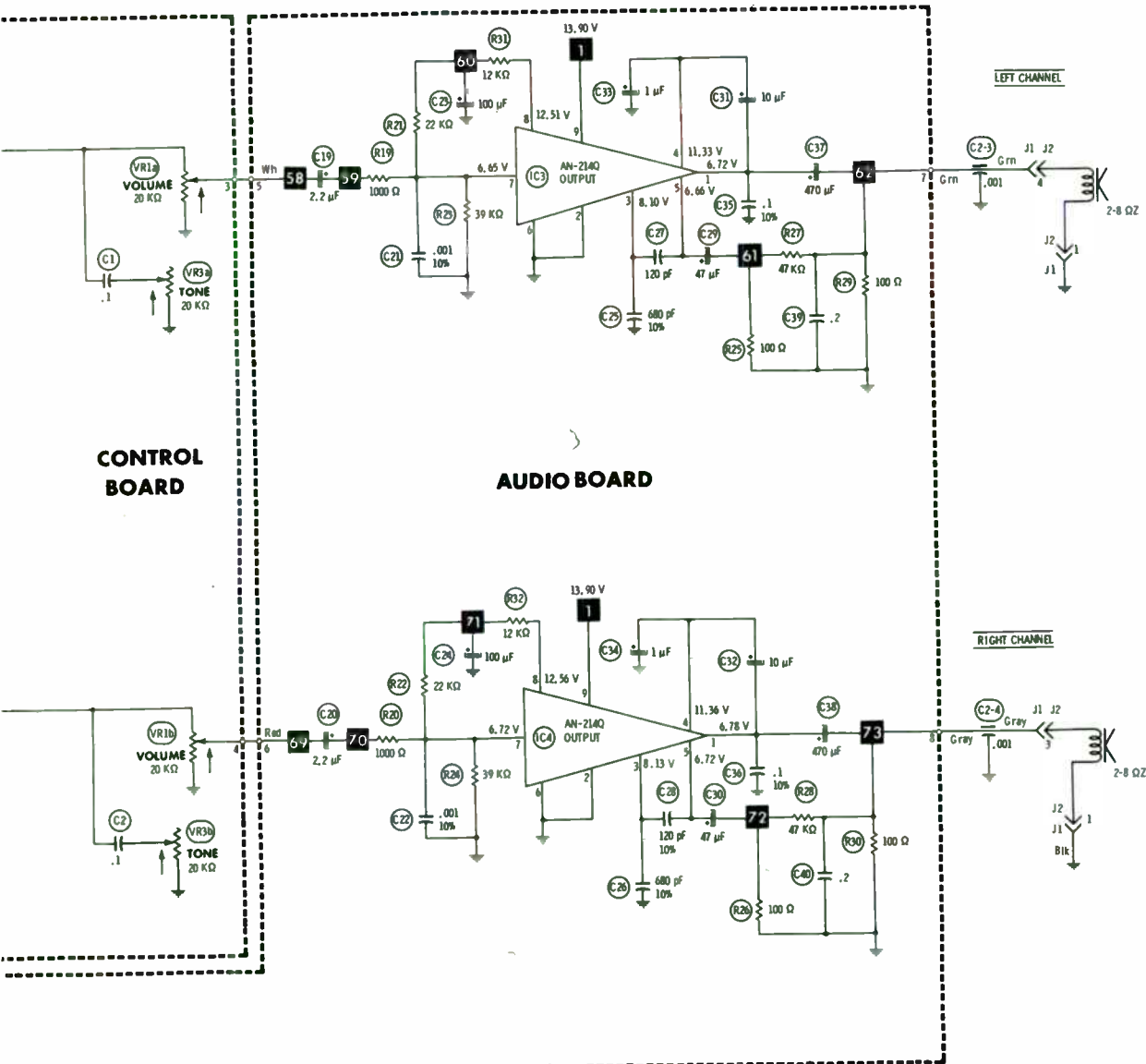
Pin numbers in ( ) indicate TA7120 IC

- ✱ Circuitry not used in some versions
- Circuitry used in some versions
- ⊙ See parts list
- ⊛ Nominal value
- ⊥ Ground
- ⊕ Chassis
- ▽ Common tie point

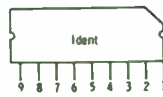
Measurements with switching as shown unless noted:  
 ■ FM Stereo signal  
 ◆ Tape play

Supply voltage maintained as shown at input.  
 Voltages measured with digital meter, no signal.  
 Controls adjusted for normal operation.  
 Arrow at control indicates direction of advance.  
 Terminal identification may not be found on unit.  
 Resistors are 1/2W or less, 5% unless noted.  
 Value in ( ) used in some versions.

A PHOTOFAC STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE  
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Terminal Guides



# PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.

Have your local distributor check Sams COUNTER FACTS® for the most up-to-date replacement.

## ELECTROLYTIC CAPACITORS (cont)

ITEM No.	RATING	REPLACEMENT DATA			
		MFGR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C24	1 50V	C00-902-P	PC1-50	VTT1B63	EV-1615
C25	1 50V	C00-902-P	PC1-50	VTT1B63	EV-1615
C26	10 16V	C00-522-P	PC10-25	VTT10A25	EV-1222
C27	100 16V	C00-542-P	PC100-16	VTT100F16	EV-1230
CHASSIS C1	.47 16V	C02-313-M (1)			

(1) Used in some versions.

## CAPACITORS

ITEM No.	RATING	MFGR. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
<b>AUDIO BOARD</b>						
C1	470 10%	C03-232-K C03-232-K	DD-471	GP470	GP347	10TS-T47
C2	470 10%		DD-471	GP470	GP347	10TS-T47
C7	220 10%		DD-221		GP322	10TS-T22
C8	220 10%		DD-221		GP322	10TS-T22
C9	.015 10%				EWF1A115	
C10	.015 10%				EWF1A115	
C21	.001 10%				SM210	
C22	.001 10%				SM210	
C25	680				GP368	10TS-T68
C26	680				GP368	10TS-T68
C27	120 10%			GP368	MMA-121	
C28	120 10%			SX312	MMA-121	
C35	.1 10%			CD15FD1 21J03	431P1049R5	
C36	.1 10%			CD15FD1 21J03	431P1049R5	
C39	.2 12V	CCG-006-0	UK16-204	WMF05P1	HY-470	
C40	.2 12V	CCG-006-0	UK16-204	WMF05P1	HY-470	
<b>FM BOARD</b>						
C1	.01	C03-206-J	DC-103	MGP01	TA110	TG-S10
C2	.01		DC-103	MGP01	TA110	TG-S10
C3	.04		UK50-473	MGP05	MAG5015	TG-S50
C4	.04		UK50-473	MGP05	MAG5015	TG-S50
C5	.01		DC-103	MGP01	TA110	TG-S10
C6	.01		DC-103	MGP01	TA110	TG-S10
C7	.01		DC-103	MGP01	TA110	TG-S10
C8	100pF 10%		DD-101	GP100	GP310	10TS-T10
C9	.01		DC-103	MGP01	TA110	TG-S10
C10	330pF 10%		DD-331	GP330	GP333	10TS-T33
C11	330pF 10%		DD-331	GP330	GP333	10TS-T33
C14	.01		DC-103	MGP01	TA110	TG-S10
C15	100pF 10%		DD-101	GP100	GP310	10TS-T10
C19	.0015 5%				SX215	
C20	.0068 10%				WMF1D68	1PB-068
C21	.0068 10%			WMF1D68	1PB-068	
C22	470 10%		DD-471	GP470	10TS-T47	
C23	470 10%		DD-471	GP470	10TS-T47	
<b>CONTROL BOARD</b>						
C1	.1	CCG-005-0	UK12-104		MAG1201	
C2	.1	CCG-005-0	UK12-104		MAG1201	
<b>CHASSIS</b>						
C2-1	.001	CCL-013-0				
C2-2	.001	CCL-013-0				
C2-3	.001	CCL-013-0				
C2-4	.001	CCL-013-0				
C2-5	.001	CCL-013-0				
C2-6	.001	CCL-013-0				

## CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
VR1a	Volume (Left)	20K	CCS-067-0				
b	Volume (Right)	20K					
VR2	Balance	20K tap @ 10K	CCS-069-0				
VR3a	Tone (Left)	20K	CCS-068-0				
b	Tone (Right)	20K					

## PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.

Have your local distributor check Sams COUNTER FACTS® for the most up-to-date replacement.

### COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
FM BOARD					
L1	RF Choke (15uH)	CTF-016-0			(Yellow) (Blue) (Gray) (Yellow)
T1	Ratio Det (Pri)	CTC-015-0			
T2	Ratio Det (Sec)	CTC-012-0			
T3	19kHz	CTM-001-A			
T4	38kHz	CTM-002-A			
CHASSIS					
L1	RF Choke (15uH)	CTF-003-0			
L2	RF Choke (15uH)	CTF-003-8			

### FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFR. PART No.	THORDARSON PART No.	TRIAD PART No.	
L1	200mA	.25	.5mH	CTF-002-00			On audio board.

### FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
FU1	2A	E21-005-0		AGC-2	HDJ	312002	150145	FG2-2

### MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CF1	Filter	CTF-027-0 (1)	Ceramic, 10.7MHz (Red dot)
CF2	Filter	CTF-027-0 (1)	
HD1	Tape Head	P52-601-B	8-Track Stereo Play
J1	Connector	CDE-028-A	Power/Speaker (Female)
J2	Connector	CDE-025-A	Power/Speaker (Male)
M1	Tuner Assembly	CWB-009-0	FM
M2	Motor	CXM-012-0	Tape Transport (3000 rpm @ 13.90V, 7500 rpm F.F.)
S01	Solenoid	CXP-008-0	Headshift
S1	Switch	S48-645-B	Tuner Power
S2	Switch	CWS-026-0	Radio/Tape
S3	Switch	CSN-017-0	Manual Program Selector
S4	Switch	CSG-031-0	Repeat
S5	Switch	CSG-031-0	Fast Forward
S6	Switch	CSG-031-0	Stereo/Mono
S7	Switch	CXA-004-0	Auto Program Selector (Part of Tape Guide Assembly)
S8	Switch	CXA-683-0	Program Indicator Printed Circuit Board Assembly
	Printed Circuit Board	CWE-070-0	FM
	Printed Circuit Board	CWK-062-0	Audio
	Printed Circuit Board	CNP-211-0	Lamp
	Printed Circuit Board	CNP-198-0	Control

(1) When replacing, CF1 and CF2 should also be replaced.

## PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS<sup>®</sup> for the most up-to-date replacement.

### CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Cabinet Top	CNB-171-0	Dial Scale	CAG-035-0
Cabinet Bottom	CNB-172-0	Dial Pointer Assembly	CXA-681-0
Escutcheon, Top	CXA-685-A	Button, Volume/Balance/Tone	CAC-070-0
Escutcheon, Bottom	CNS-128-0	Knob, Tuning	CAA-065-0
Tape Door	CAT-009-0	Button, Manual Program	CAA-066-0
Tape Door Shaft	CLA-278-0	Button, Radio/Stereo-Mono/Fast Forward/Repeat	CAA-067-0
Tape Door Spring	CBM-066-0		

### WIRING DATA

General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Shielded Hook-up Wire .....	Use BELDEN No. 8885
Rear Seat Speaker Extension Cable .....	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap .....	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)
Ignition Noise Suppression .....	Use BELDEN No. 7300-Series Spark-Plug Sets

### DIAL CORD STRINGING

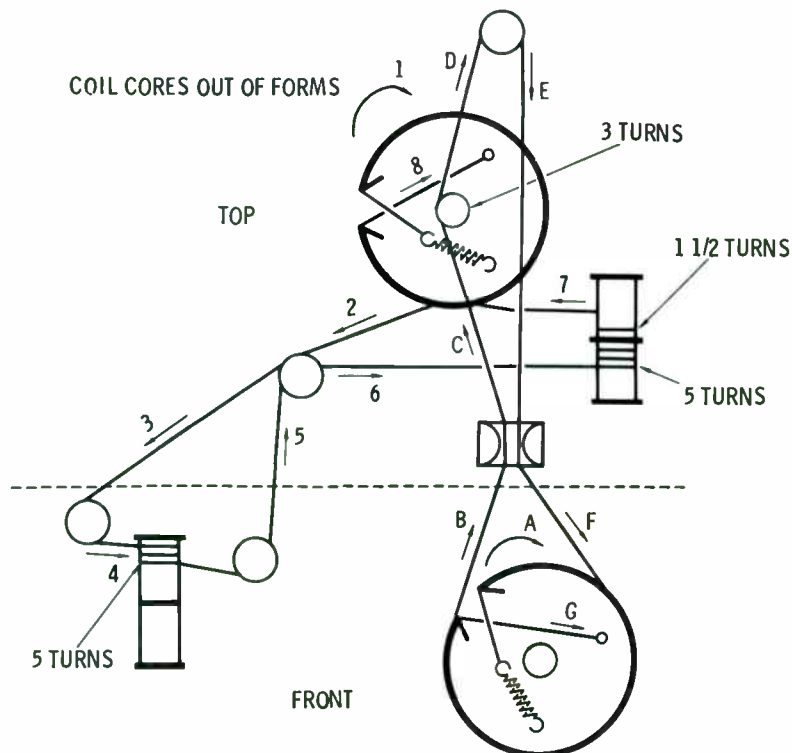


















Table with columns: MoPar (CONT.), VOL., MoPar (CONT.), VOL., MOTOROLA (CONT.), VOL., MOTOROLA (CONT.), VOL., MOTOROLA (CONT.), VOL., NASH (Also See American Motors), VOL. Contains lists of car models, parts numbers, and volumes for various manufacturers like Dodge, Chevy, Ford, and Nash.













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