

 **SAMS**
PHOTOFACT[®]

AUTO RADIO
SERIES



AR-232
232
JANUARY, 1977



C O N T E N T S

BOMAN ASTROSONIX
BM-1120

CLARION
RE-342A

MEDALLION
65-489

MOTOROLA
TF852AX

PANASONIC
CQ-999EU

\$3.50
\$4.40 IN CANADA
Cat. No. AR-232



SAMS PHOTOFACT[®]

AUTO RADIO SERIES



VOLUME
232



by the *Howard W. Sams* **ENGINEERING STAFF**



HOWARD W. SAMS & CO., INC.
INDIANAPOLIS INDIANA

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FIRST PRINTING—JANUARY, 1977**

**PHOTOFACT®
AUTO RADIO SERIES
VOLUME 232**

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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.



PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index



MODEL BM-1120

BOMAN ASTROSONIX MODEL BM-1120

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 (SW5) dirty. Cam (3) binding or worn. Pawl (4) worn. Assembly (6) binding. Solenoid (M3) 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.

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

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6AL963

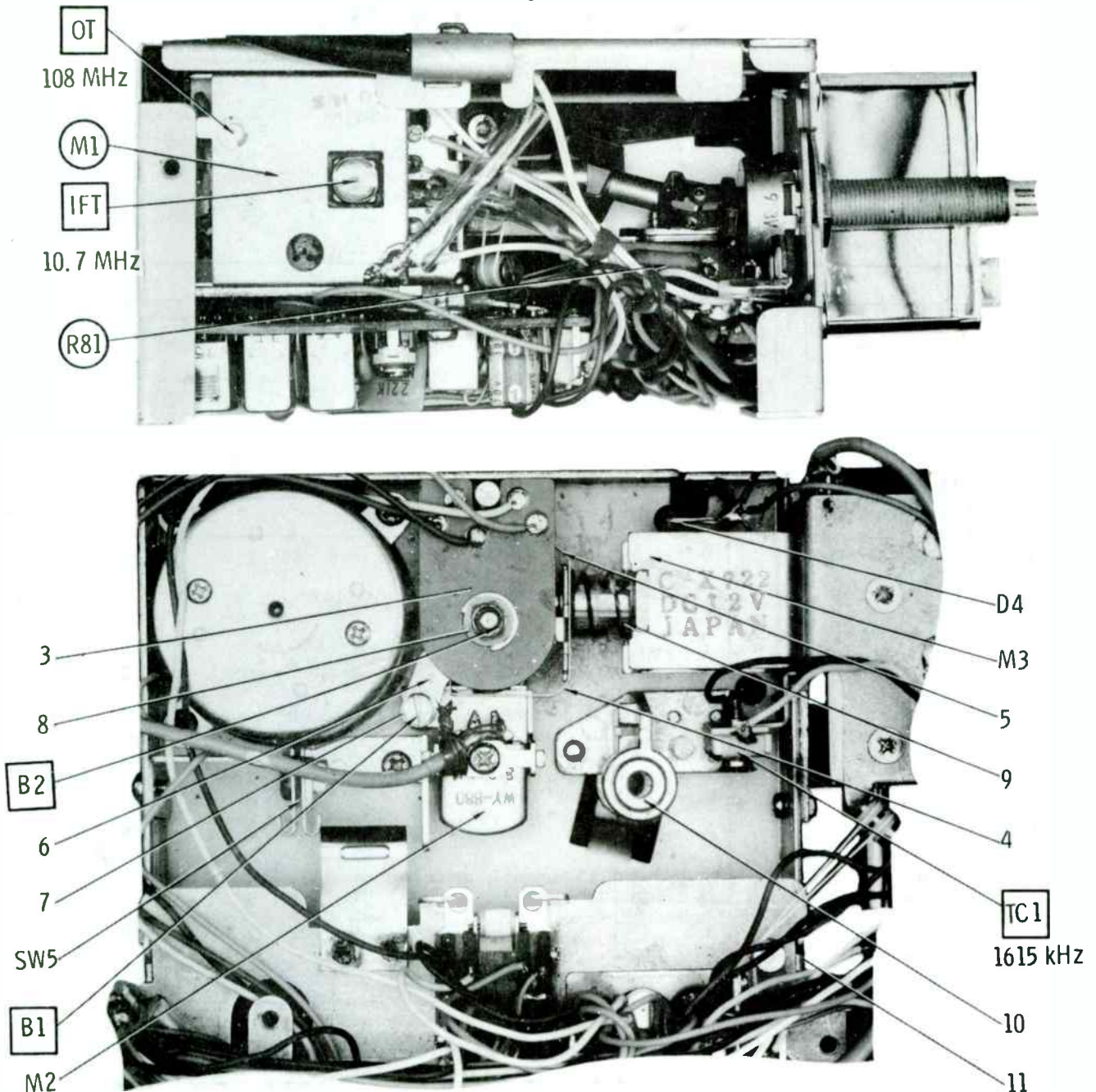
MECHANICAL PARTS LIST

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

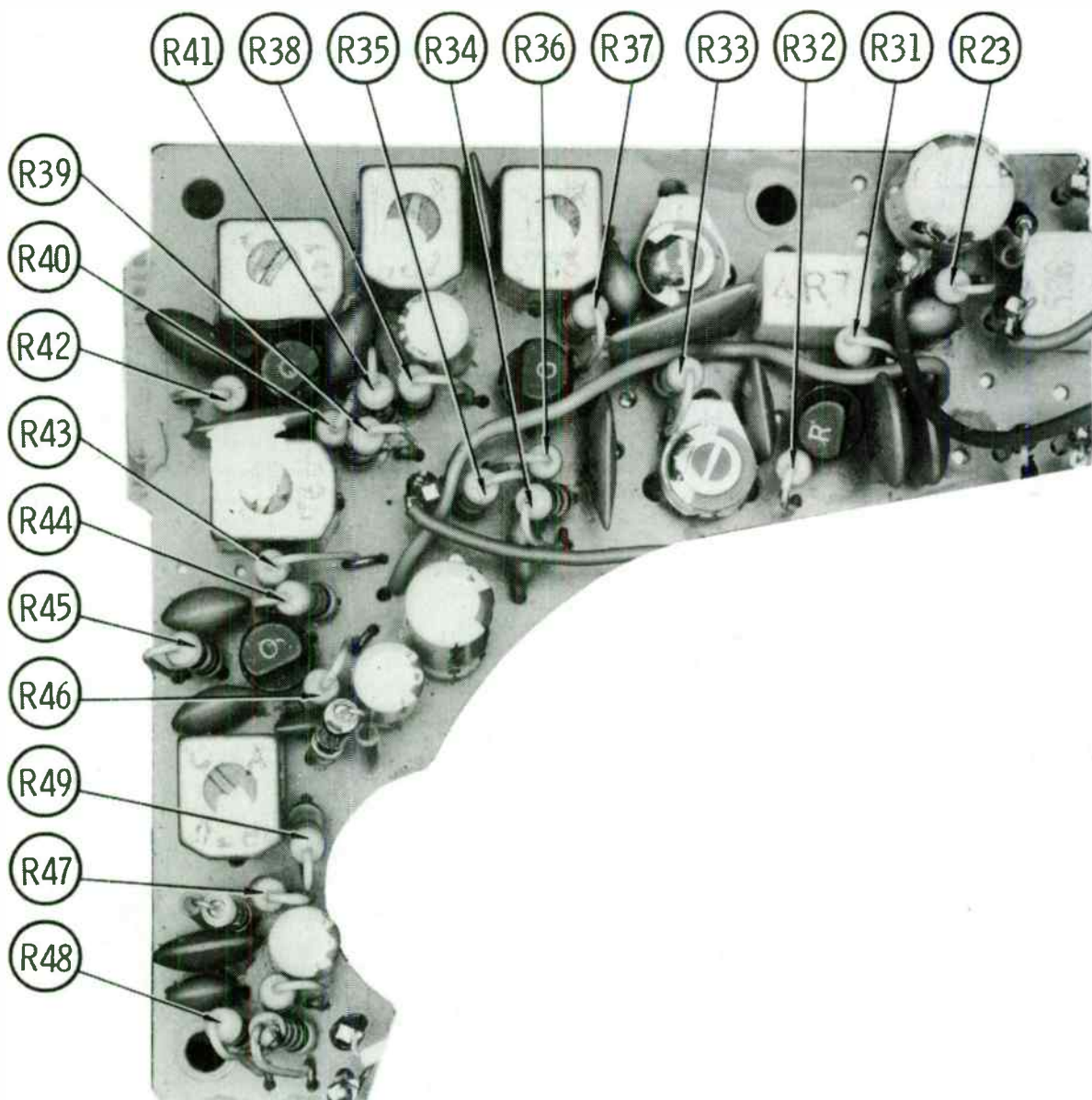
* Flywheel Drive Belt: E-V/GAME Replacement Number 1407-76.
WALSCO Replacement Number 1424-14.

CLEANING LUBRICATING HEAD DEMAGNETIZING

Refer to
"General Servicing Information"
on page 4.



TAPE DECK-TOP AND RIGHT VIEW



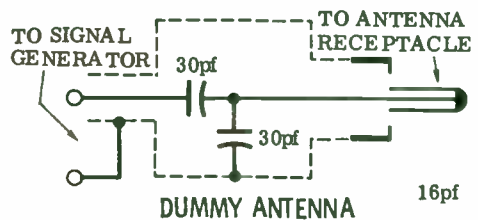
AM BOARD

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

GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
High side thru .1uF to point Ant Input low side to ground.	455kHz 400-Hz mod.	High freq. end stop.	Output meter across voice coil.	T5, T4, T3, T2	Adjust for maximum.
Thru dummy antenna to antenna input.	1615kHz	"	"	TC3, TC2, TC1	"
Tuner alignment is not necessary unless associated components have been disturbed. If necessary, back tuning cores out of coils but not out of forms. Repeat step 2.					
Thru dummy antenna to antenna input.	600kHz	Tune to signal	Output meter across voice coil.	T1	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 TC1 for maximum output. Antenna adjustment TC1 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 TP1, common to ground.	(1) T6, IFT	Adjust for maximum.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

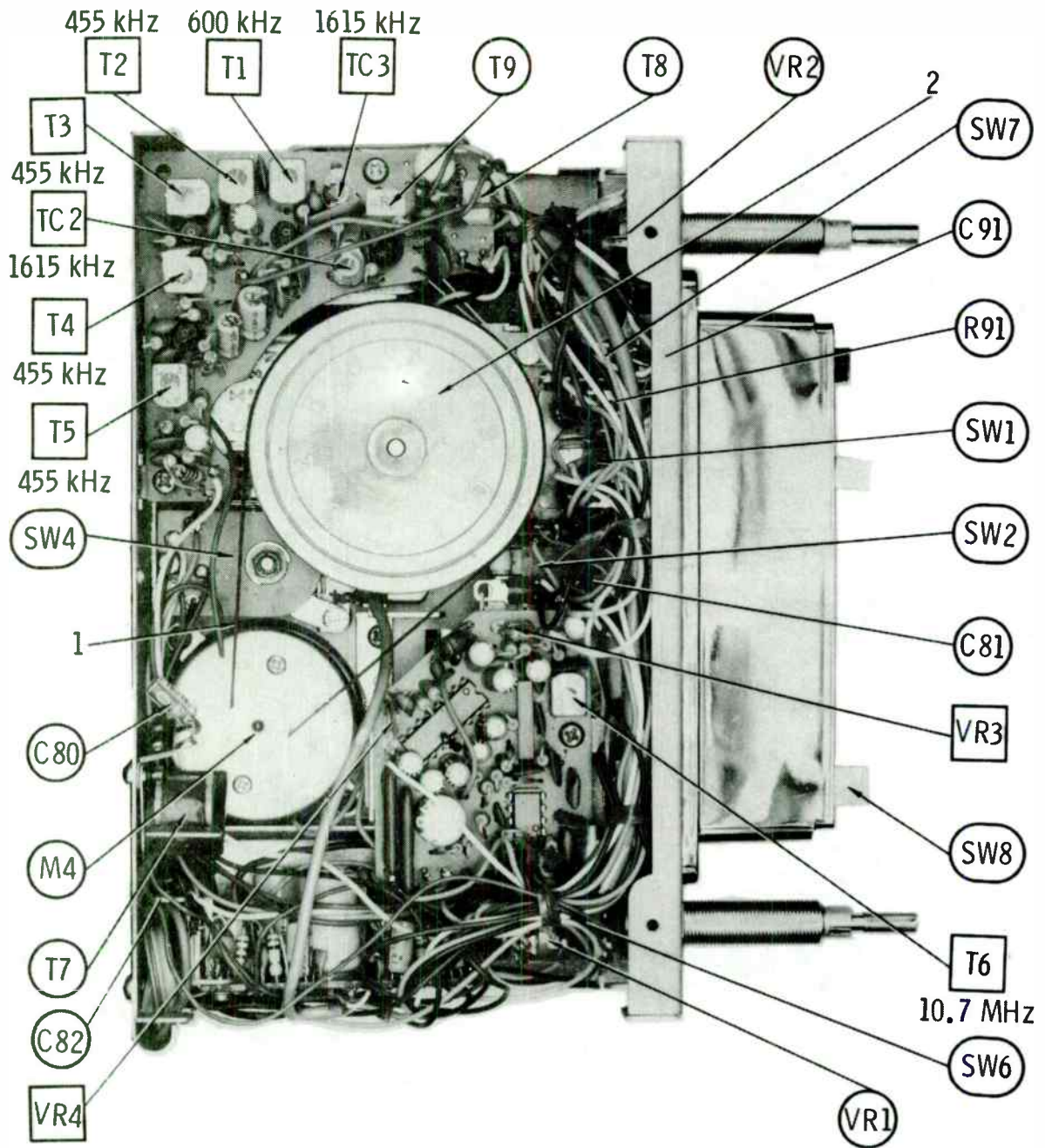
Connect generator across antenna terminals with 120-ohm carbon resistor in series with each lead. Adjustment of coils by bending should not be attempted unless the coil is deformed or replaced.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
108MHz Unmodulated	High Freq End Stop	DC probe of VTVM to TP1, common to ground.	OT,	Adjust for maximum.

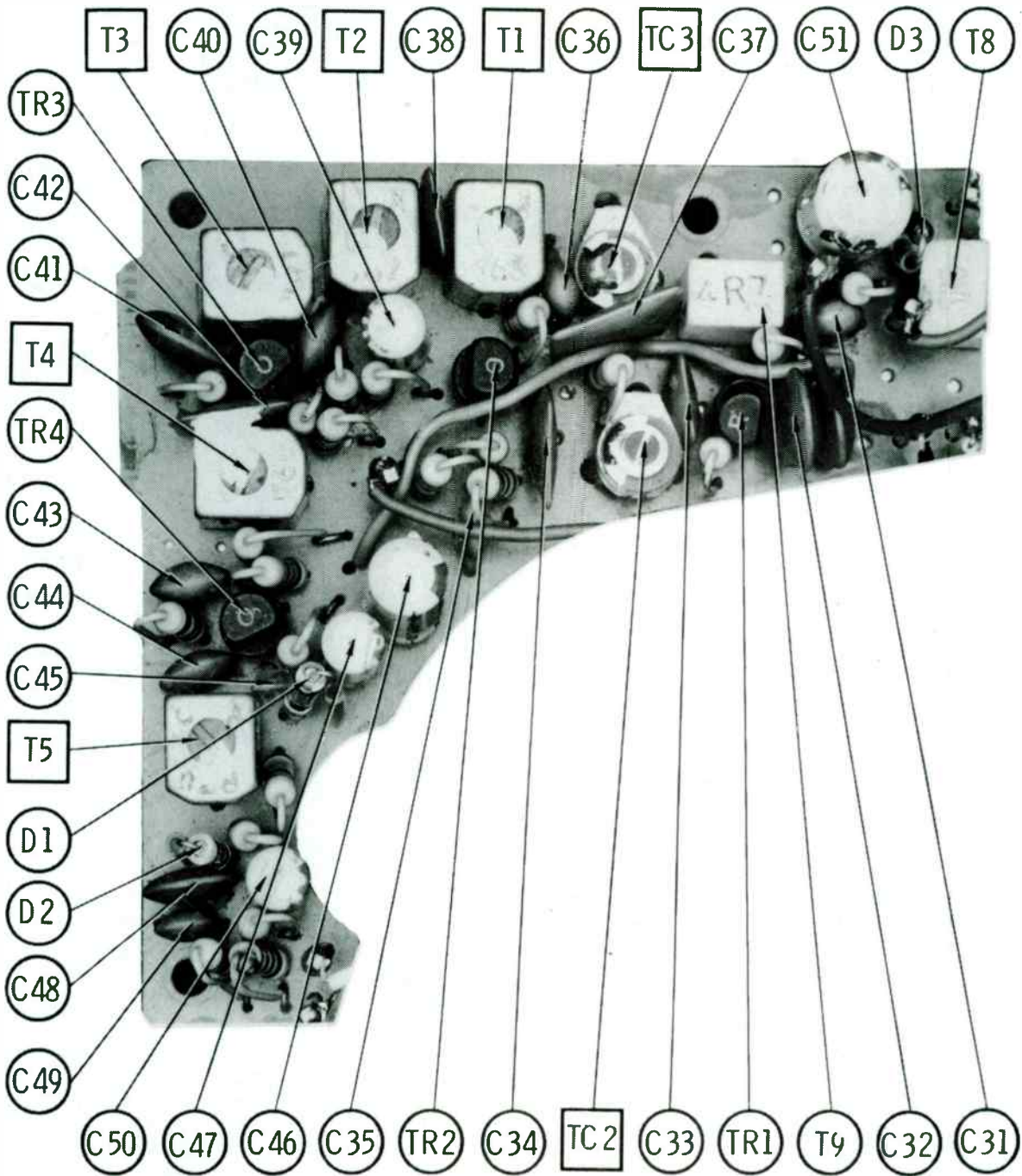
(1) Before adjusting, vary generator frequency slightly. Maximum output indicates exact IF.

FM STEREO MULTIPLEX ALIGNMENT

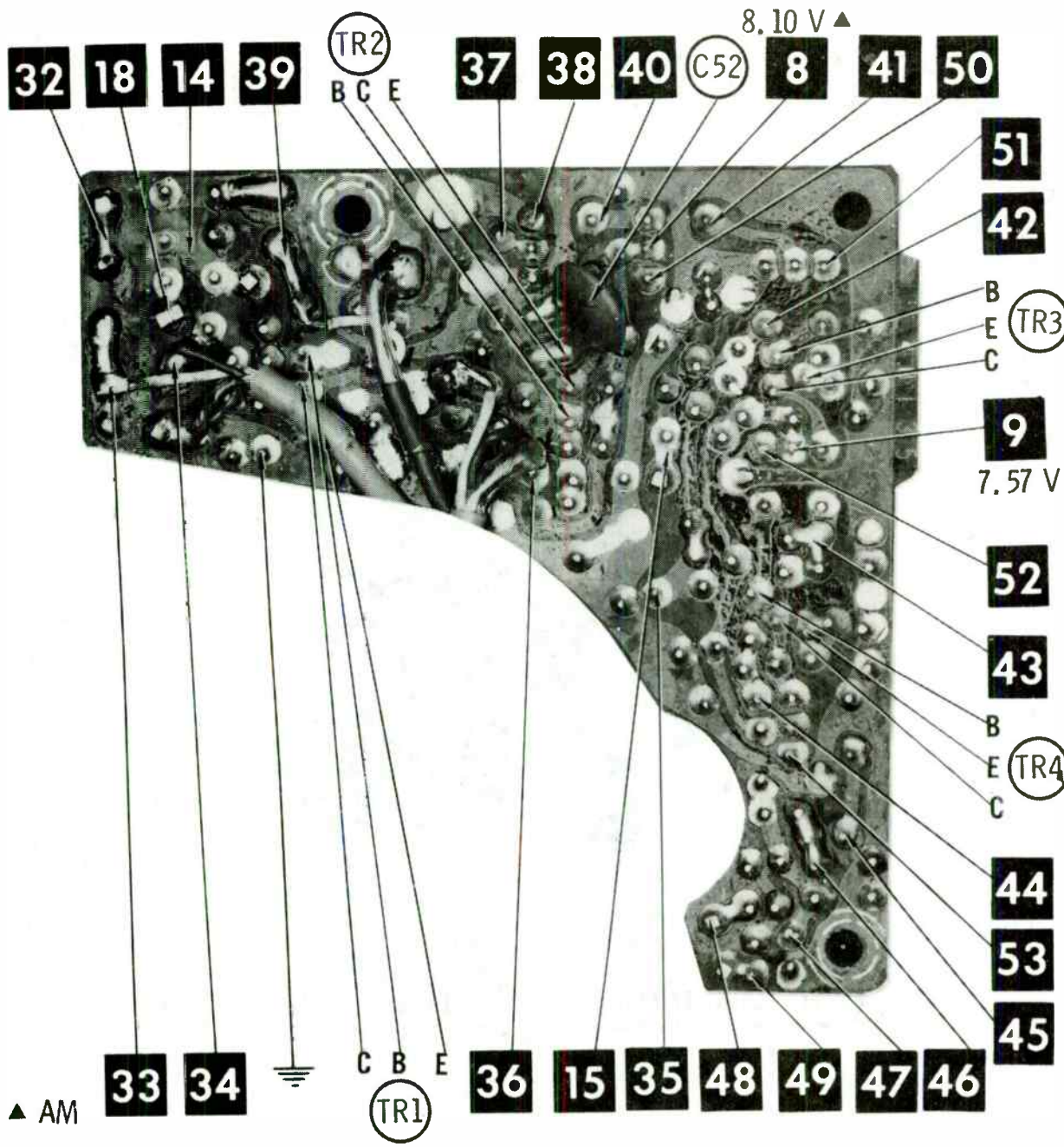
Ground TP1. Connect Freq. Counter to TP2. Adjust VR4 for 19kHz \pm 20Hz.



BOMAN ASTROSNIX MODEL BM-1120

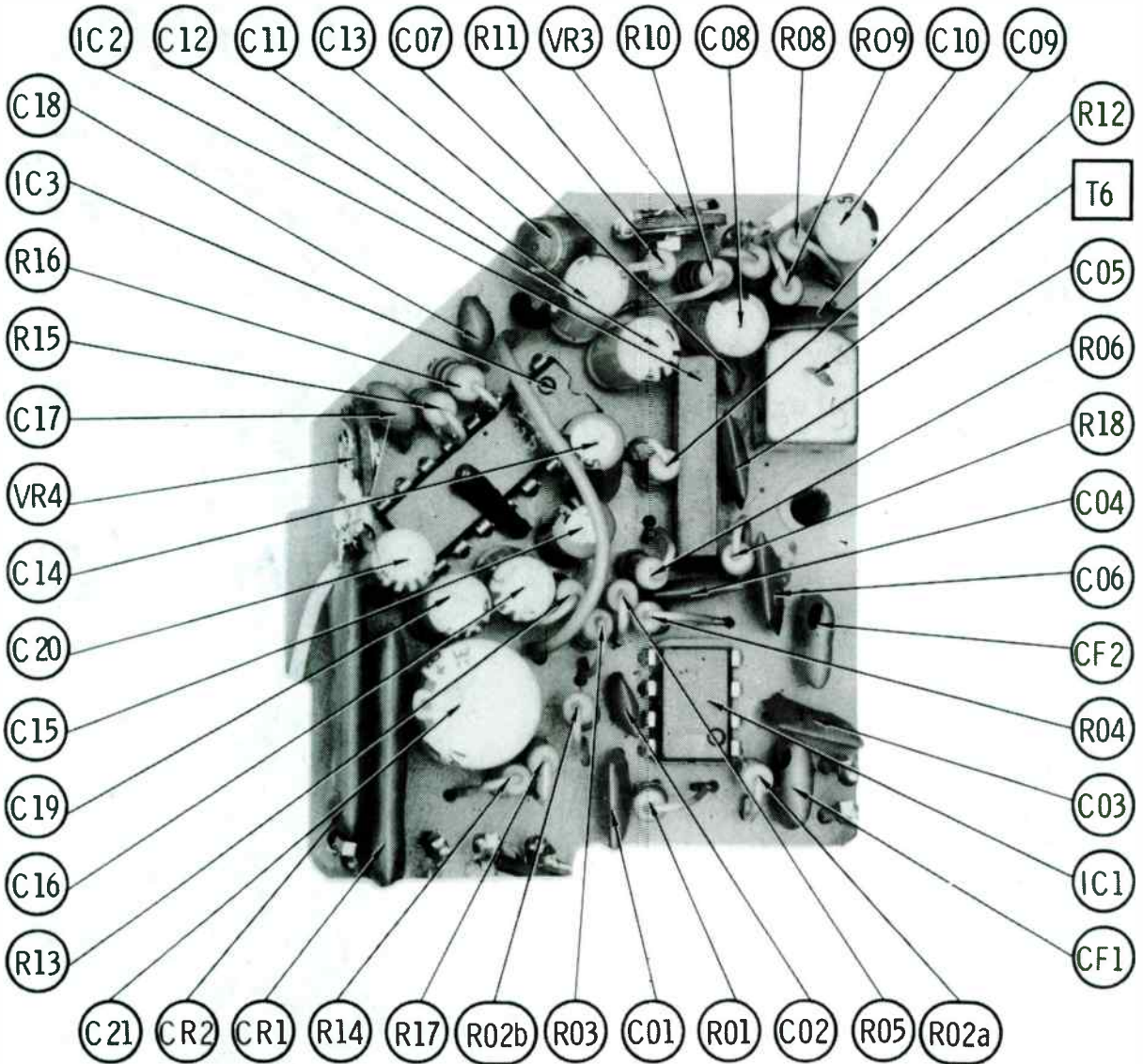


AM BOARD

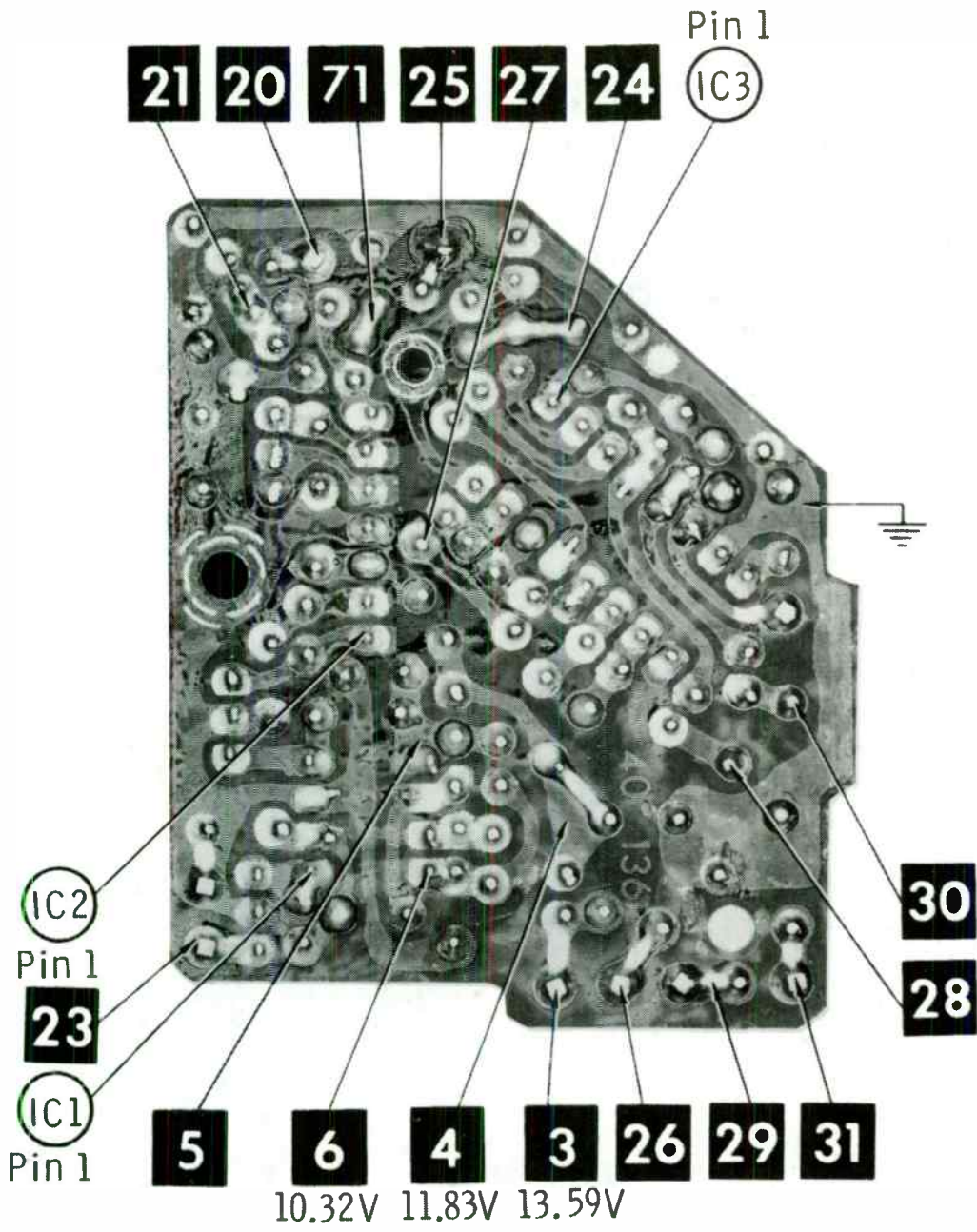


BOMAN ASTROSONIX MODEL BM-1120

AM BOARD

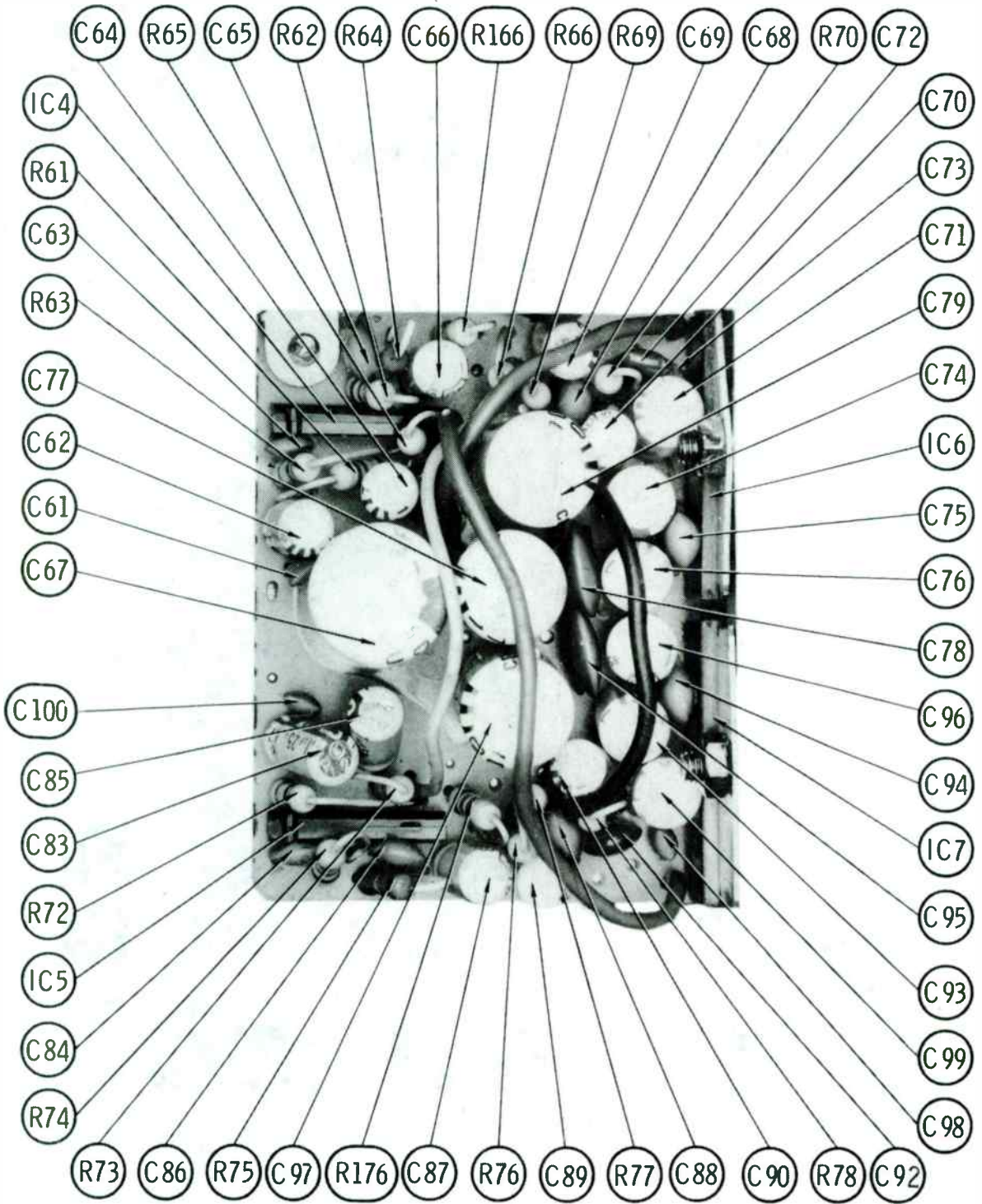


FM/MPX BOARD

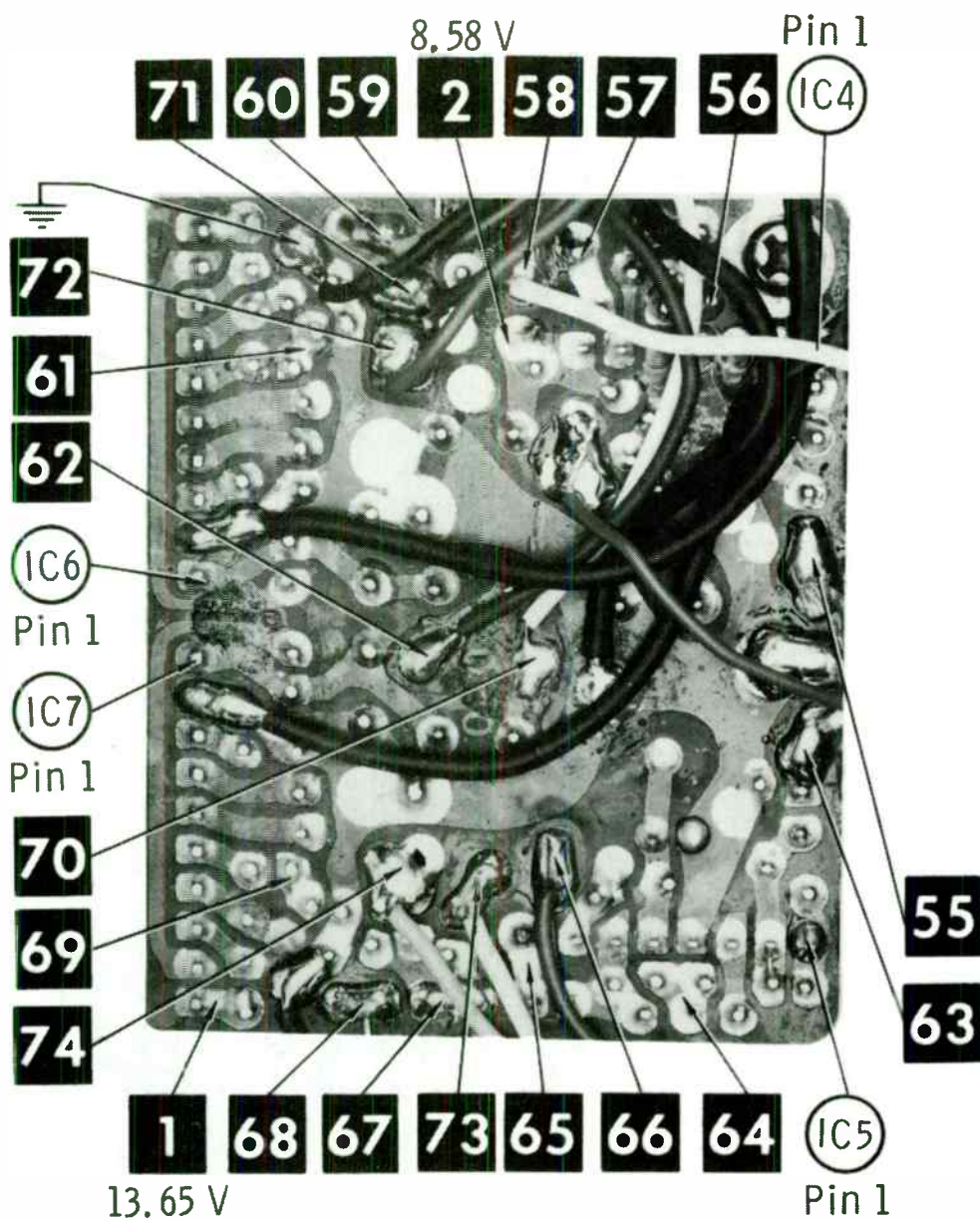


ROMAN ASTROSONIX MODEL BM-1120

FM/MPX BOARD



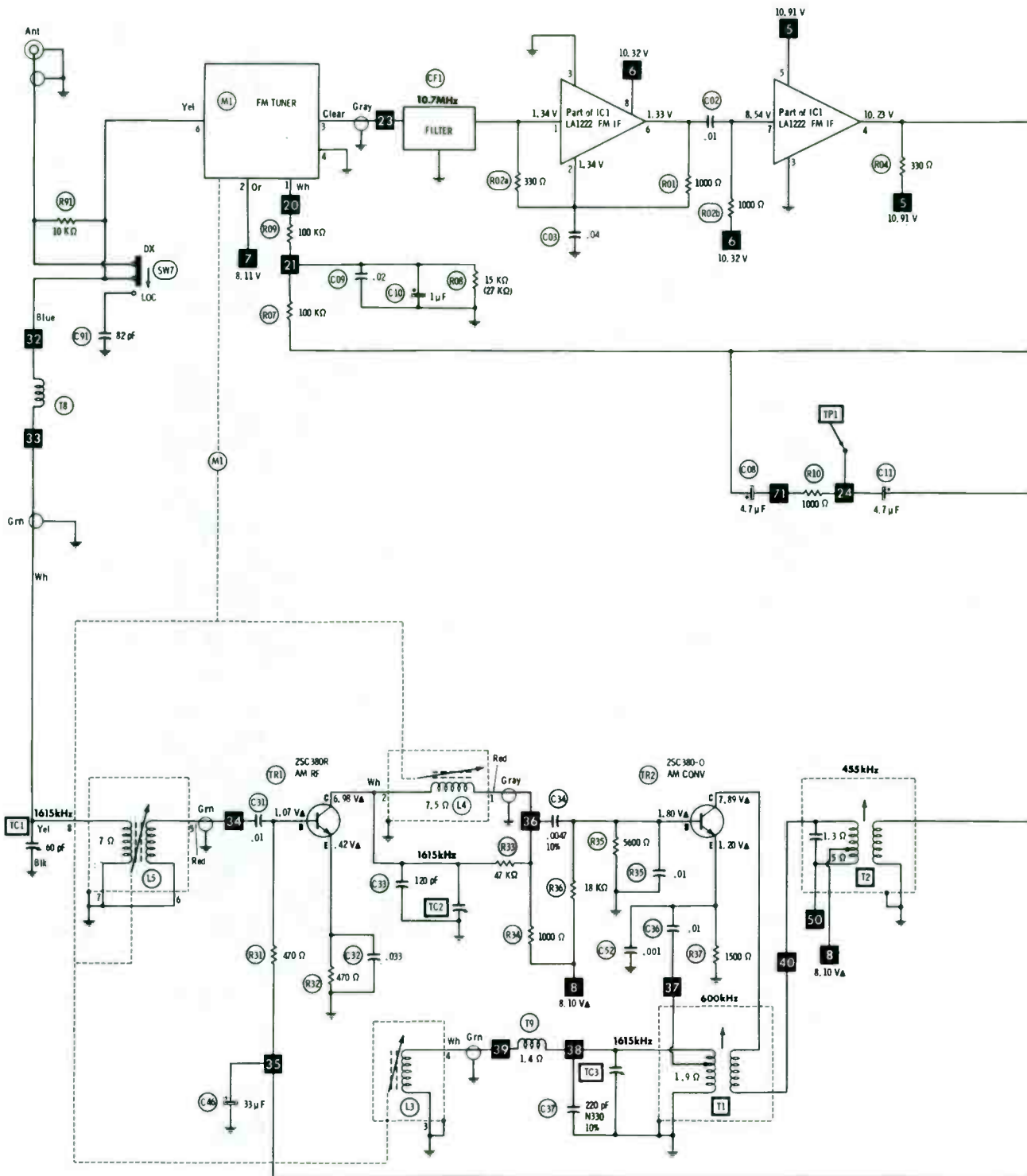
AUDIO BOARD



BOMAN ASTROSONIX MODEL BM-1120

AUDIO BOARD

NOTE: DEMAGNETIZE HEADS AFTER SERVICING



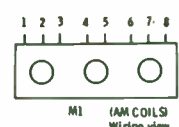
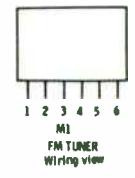
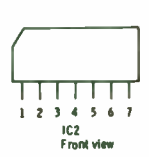
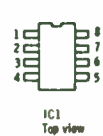
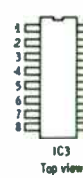
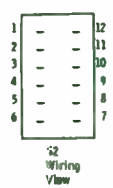
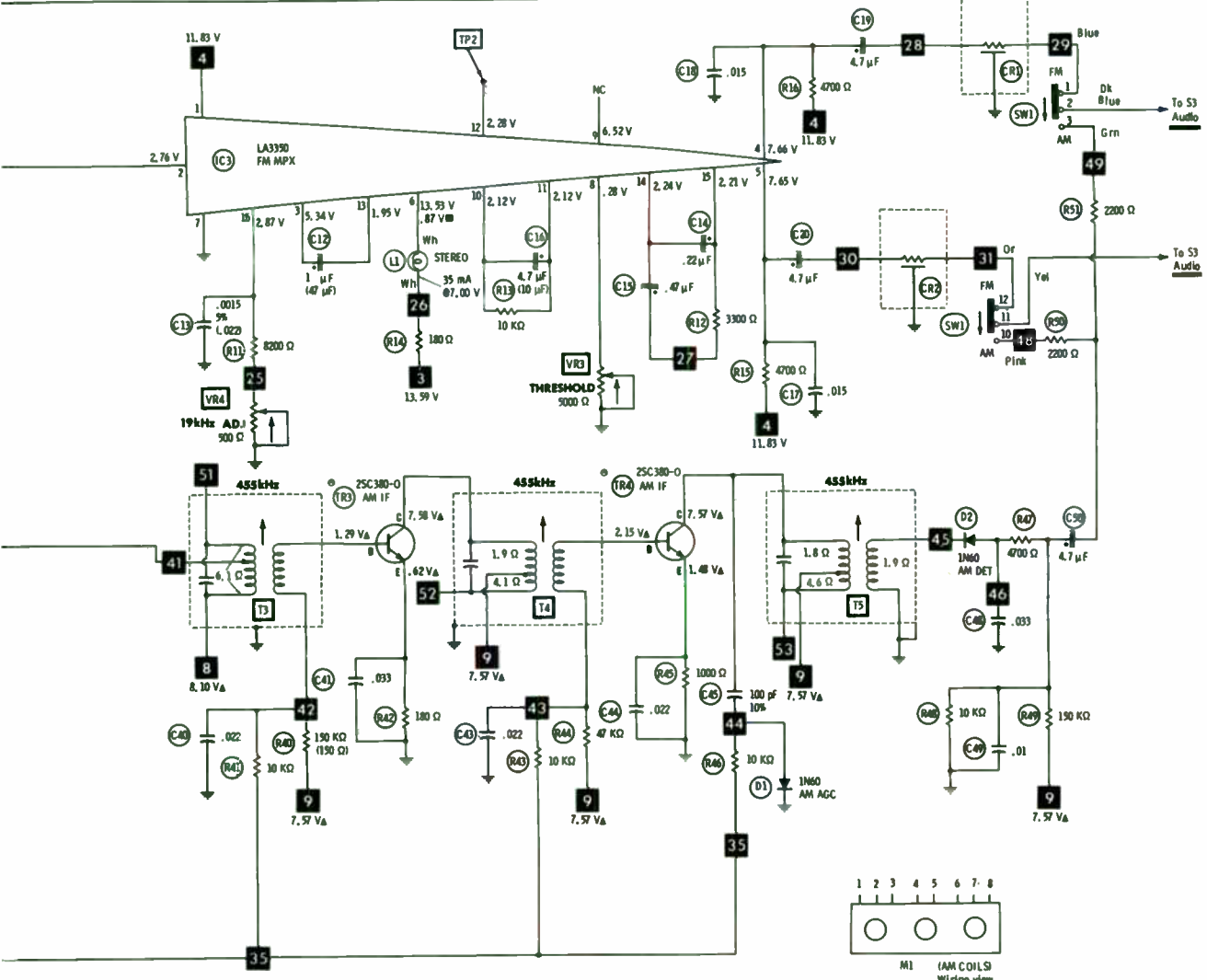
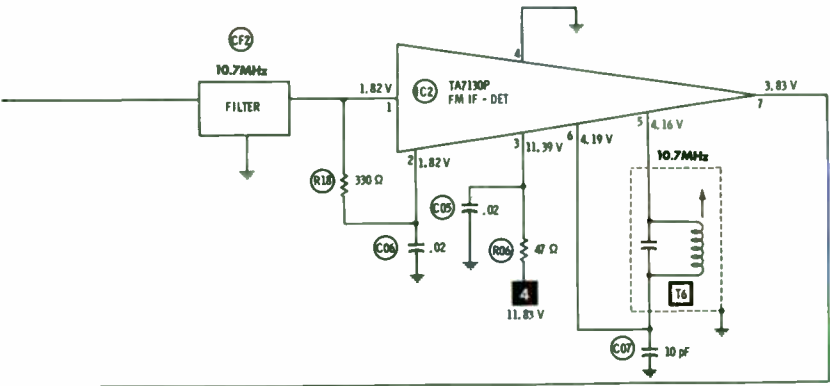
- *— Circuitry not used in some versions
- - - Circuitry used in some versions
- See parts list
- ⊛ Nominal value
- ⊕ Ground
- ⏏ Chassis
- ∇ Common tie point

Measurements with switching as shown unless noted:
 ■ FM Stereo signal ♦ Tape play ▲ 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.

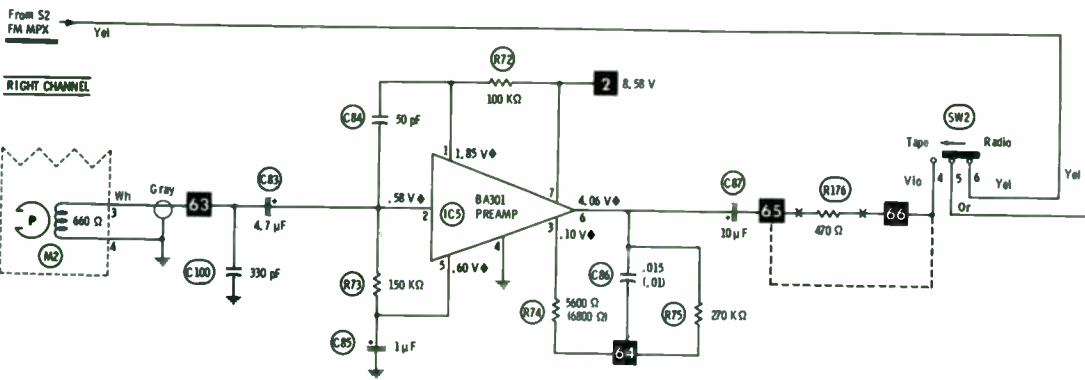
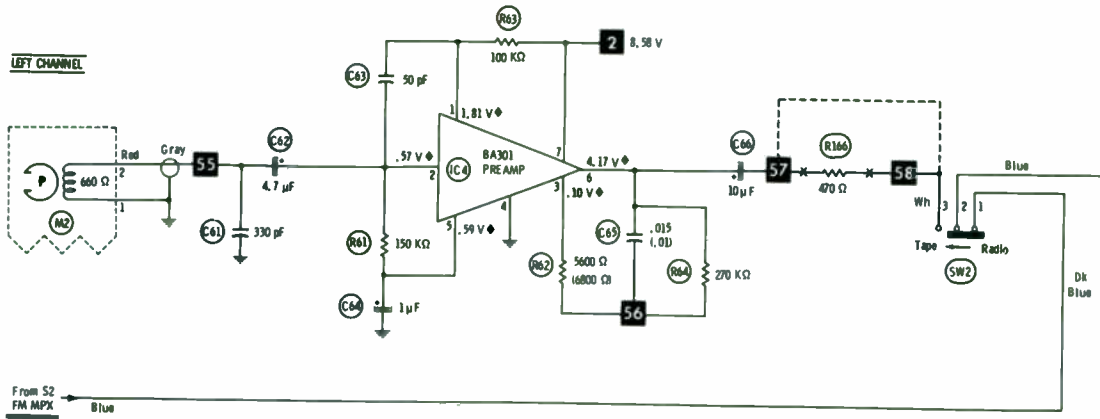
A PHOTOFACT STANDARD NOTATION SCHEMATIC
 WITH **CIRCUITRACE**

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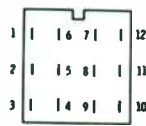


Terminal Guides

NOTE: DEMAGNETIZE HEADS AFTER SERVICING



Terminal Guides



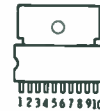
SW2
Wiring view



SW1
Wiring view



M2
Wiring view



IC6, IC7
Front view



IC4, IC5
Front view

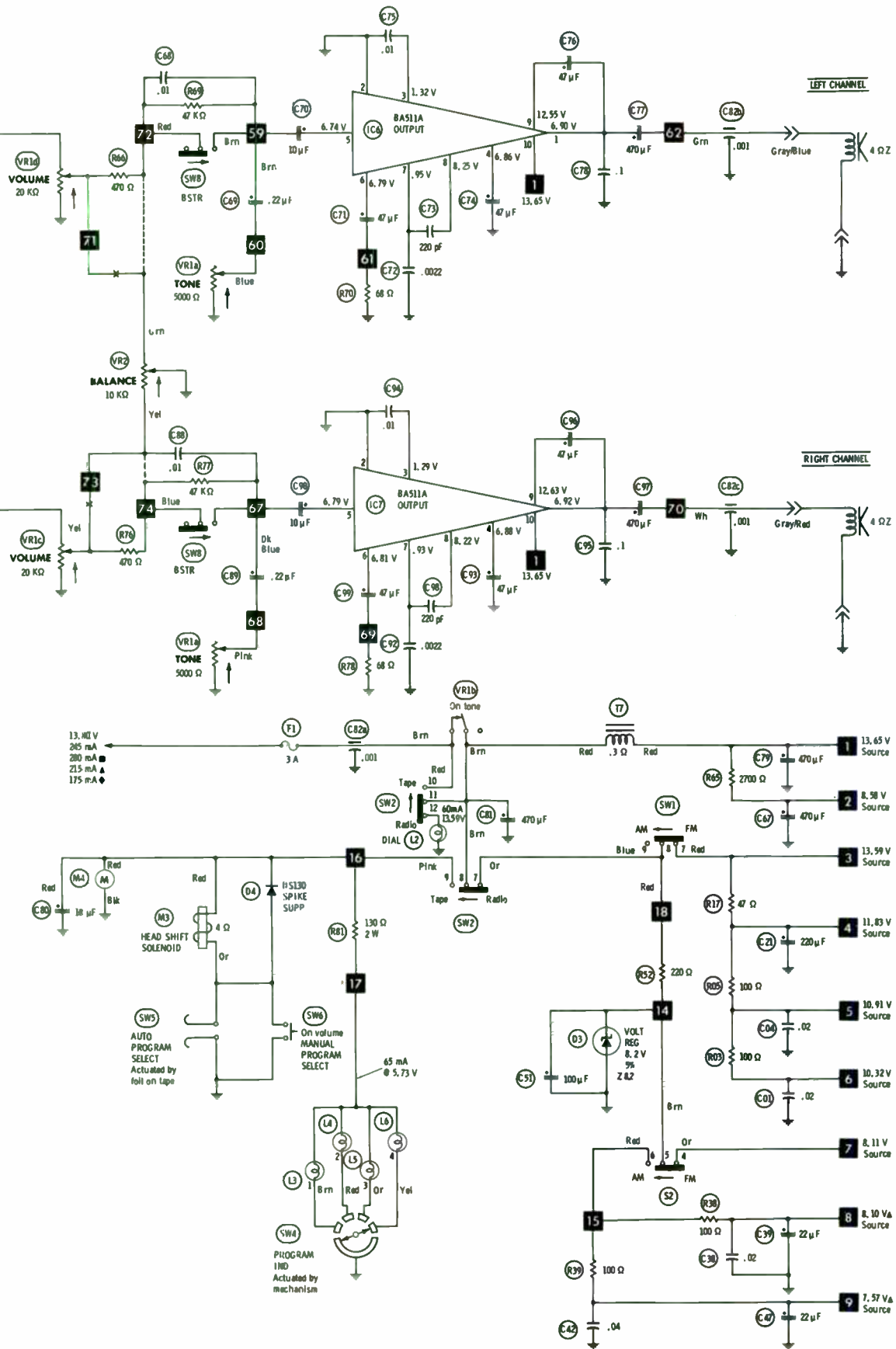
- Circuitry not used in some versions
- - - Circuitry used in some versions
- ⊙ See parts list
- ⊛ Nominal value
- ⊕ Ground
- ⊞ Chassis
- ∇ Common tie point

A PHOTOFAC STANDARD NOTATION SCHEMATIC
WITH **CIRCUITRACE**

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Measurements with switching as shown unless noted:
■ FM Stereo signal ♦ Tape play ▲ 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.



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.
D1	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D2	1N60		1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D3	ZB.2		GEZD-8.2		ZM8.2B		RE 112		RT-257	ECG5016
D4	DS130		GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
IC1	LA1222									
IC2	TA7130P									
IC3	LA3350									
IC4	BA301									ECG1135
IC5	BA301									ECG1135
IC6	BA511A									
IC7	BA511A									
TR1	2SC380R		GE-61	(IR)2SC380A	PTC136	HEPS0016	RE 9	SK3018	RT-107A	ECG107
TR2	2SC380-0		GE-61	(IR)2SC380A	PTC136	HEPS0016	RE 9	SK3018	RT-107A	ECG107
TR3	2SC380-0		GE-61	(IR)2SC380A	PTC136	HEPS0016	RE 9	SK3018	RT-107A	ECG107
	2SC372(1)		GE-61	(IR)2SC372	PTC121	HEPS0015	RE 13	SK3122	RT-308	ECG123A
TR4	2SC380-0		GE-61	(IR)2SC380A	PTC136	HEPS0016	RE 9	SK3018	RT-107A	ECG107
	2SC372(1)		GE-61	(IR)2SC372	PTC121	HEPS0015	RE 13	SK3122	RT-308	ECG123A

(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.
C8	4.7 25V		PC5-50	VTT4R7A50	EV-1319
C10	1 50V			VTT1B63	EV-1615
C11	4.7 25V		PC5-50	VTT4R7A50	EV-1319
C12	1 50V			VTT1B63	EV-1615
C14	.22 50V			TDC224M050EL	SD50-R229
C15	.47 50V			VTR47B63	EV-1610
C16	4.7 25V		PC5-50	VTT4R7A50	EV-1319
C19	4.7 25V		PC5-50	VTT4R7A50	EV-1319
C20	4.7 25V		PC5-50	VTT4R7A50	EV-1319
C21	220 16V		PC250-25	VTT220G16	EV-1240
C39	22 10V			VTT22A16	EV-1224
C46	33 6.3V		PC30-25	VTT33A10	EV-1125
C47	22 10V			VTT22A16	EV-1224
C50	4.7 25V		PC5-50	VTT4R7A50	EV-1319
C51	100 10V		PC100-10	VTT100E10	EV-1130
C62	4.7 25V		PC5-50	VTT4R7A50	EV-1319
C64	1 50V			VTT1B63	EV-1615
C66	10 16V			VTT10A25	EV-1222
C67	470 16V		PC500-16	VTT470J16	EV-1250
C69	.22 50V			TDC224M050EL	SD50-R229
C70	10 16V			VTT10A25	EV-1222
C71	47 10V		PC50-16	VTT47D16	EV-1226
C74	47 10V		PC50-16	VTT47D16	EV-1226
C76	47 10V		PC50-16	VTT47D16	EV-1226
C77	470 10V		PC500-16	VTT470J16	EV-1150
C79	470 10V		PC500-16	VTT470J16	EV-1150
C80	10 16V			VTT10A25	EV-1222
C81	470 16V		PC500-16	VTT470J16	EV-1250
C83	4.7 25V		PC5-50	VTT4R7A50	EV-1319
C85	1 50V			VTT1B63	EV-1615
C87	10 16V			VTT10A25	EV-1222
C89	.22 50V			TDC224M050EL	SD50-R229
C90	10 16V			VTT10A25	EV-1222
C93	47 10V		PC50-16	VTT47D16	EV-1226
C96	47 10V		PC50-16	VTT47D16	EV-1226
C97	470 10V		PC500-16	VTT470J16	EV-1150
C99	47 10V		PC50-16	VTT47D16	EV-1226

CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C01	.02		UK50-223		MAG5012	
C02	.01 16V		UK16-103		MAG1611	HY-420
C03	.02		UK50-223		MAG5012	
C04	.02		UK50-223		MAG5012	
C05	.02		UK50-223		MAG5012	
C06	.02		UK50-223		MAG5012	
C07	10			CD15CD100J03		MMA-100
C09	.02		UK50-223		MAG5012	
C13	.0015 5%			CD19FD152J03	SX215	MNC-152

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.
C17	.015 16V				MAG25115	HY-720
C18	.015 16V				MAG25115	HY-720
C31	.01 16V		UK16-103		MAG1611	HY-420
C32	.033 16V		UK16-333		MAG16133	HY-630
C33	120			CD15FD121J03	SX312	MWA-121
C34	.0047 10%				M192P4729RB	192P4729RB
C35	.01 16V		UK16-103		MAG1611	HY-420
C36	.01 16V		UK16-103		MAG1611	HY-420
C37	220 N330 10%				*	10TCS-T22
C38	.02		UK50-223		MAG5012	
C40	.022 16V		UK16-223			HY-625
C41	.033 16V		UK16-333			HY-630
C42	.04				MAG16133	192P3939RB
C43	.022 16V		UK16-223		M192P3939RB	HY-625
C44	.022 16V		UK16-223			HY-625
C45	100		DD-101	GP100	GP310	10TS-T10
C48	.033 16V		UK16-333		MAG16133	HY-630
C49	.01 16V		UK16-103		MAG1611	HY-420
C52	.001		DD-102G	GP1000	GP210	5GA-D10
C61	330		DD-331	GP330	GP333	10TS-T33
C63	50			CD15ED510J03		MWA-510
C65	.015 16V				MAG25115	HY-720
C68	.01		UK16-103		MAG1611	HY-420
C72	.0022				M192P2229RB	192P2229RB
C73	220				SX322	
C75	.01		UK16-103		MAG1611	HY-420
C78	.1 12V		UK12-104		MAG1201	HY-360
C82A	.001					
B	.001					
C	.001					
C84	50			CD15ED510J03		MWA-510
C86	.015 16V				MAG25115	HY-720
C88	.01 16V		UK16-103		MAG1611	HY-420
C91	82		DD-820		GP482	10TS-Q82
C92	.0022				M192P2229RB	192P2229RB
C94	.01 16V		UK16-103		MAG1611	HY-420
C95	.1 12V		UK12-104		MAG1201	HY-360
C98	220				SX322	
C100	330		DD-331	GP330	GP333	10TS-T33
TC1						
TC2						
TC3						

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

BOMAN ASTROSONIX MODEL BM-1120

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.
VR1a	Tone-Left	5000	C-X-696-1(5)				
b	Tone-Right/Power Switch	5000					
c	Volume-Left	20K					
d	Volume-Right/Prog. Selector Switch	20K					
VR2	Balance	10K	C-X-754-1(5)				
VR3	Threshold	500					
VR4	19kHz	5000					

(5) Number on unit.

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L3	AM Osc.	(1)			(1) Part of M1. (2) Number on unit.
L4	AM RF	(1)			
L5	AM Ant.	(1)			
T1	Osc. Tuning		CX763 (2)		
T2	IF (455kHz)		CX762 (2)		
T3	IF (455kHz)		CX761 (2)		
T4	IF (455kHz)		CX760 (2)		
T5	IF (455kHz)		CX728 (2)		
T6	IF (10.7MHz)		CX764 (2)		
T8	AM Ant. Choke		5R6 (2)		
T9	Image Trap		4R7 (2)		

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.	
T7	100mA	.31	1.25mH	CX4751 (1)			(1) Number on unit.

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	155020	FG3-2

MISCELLANEOUS

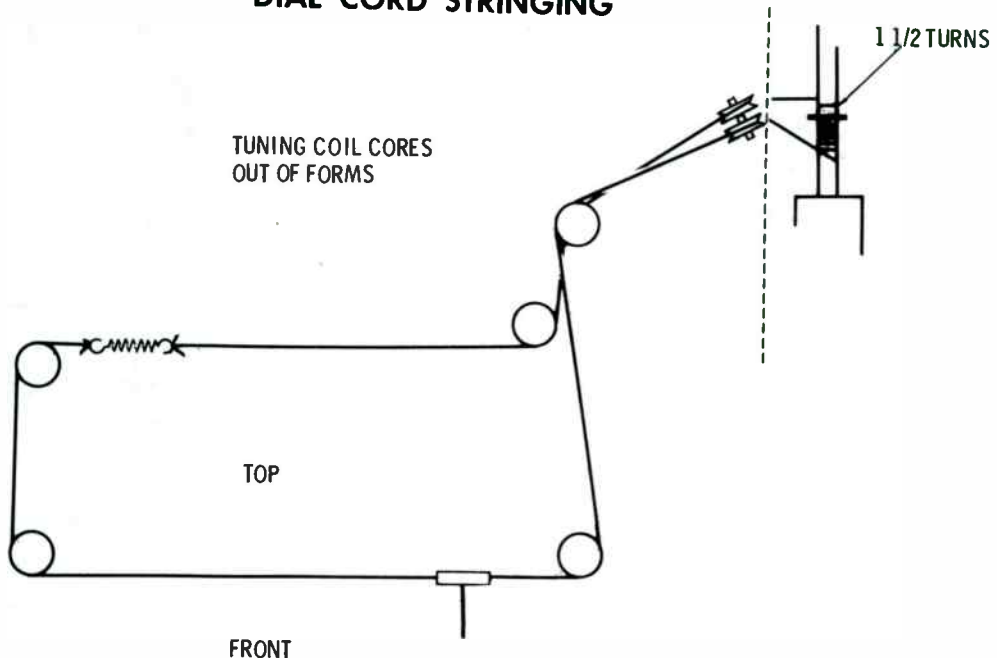
ITEM No.	PART NAME	PART No.	NOTES
CF1	Ceramic Filter	(1)	SFE 10.7mA
CF2	Ceramic Filter	(1)	SFE 10.7mA
CR1	Network		De-emphasis
CR2	Network		De-emphasis
M1	Tuner Assembly		FM
H2	Tape Head		8 Track Stereo Play
H3	Solenoid		Head Shift
M4	Motor		Tape Transport (2500 rpm @ 13.67 Volts)
S1	Switch		FM/AM
S2	Switch		Radio/Tape
S4	Switch		Channel Indicator
S5	Switch		Auto Program Select
S6	Switch		Manual Program Select
S7	Switch		Loc/DX

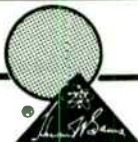
(1) When replacing, CF1 and CF2 should also be replaced.

WIRING DATA

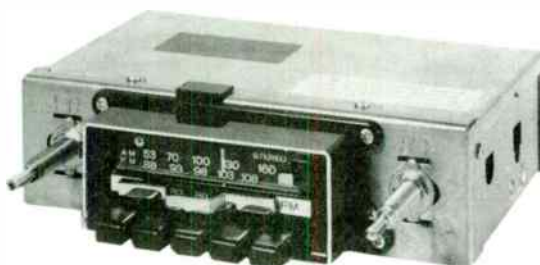
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 13 Colors 8524 (Stranded) Available in 13 Colors
Shielded Hook-up Wire	Use BELDEN No. 8401 or 8421
Rear Seat Speaker Extension Cable	Use BELDEN No. 8782 (Stranded) Coded Parallel Leads
Bonding Strap	Use BELDEN No. 8661 (3/8 In.) or 8670 (3/4 In.)

DIAL CORD STRINGING





For Supplier Address See PHOTOFACT Index



MODEL RE-342A

ALIGNMENT INSTRUCTIONS

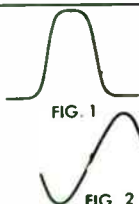
Check for specified source voltage.

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools:

GC ELECTRONICS

ALL 8290, 8868, 9087



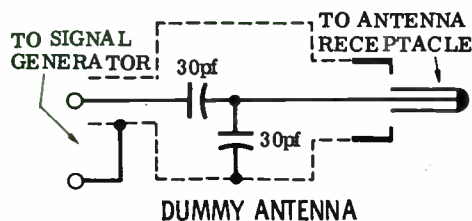
PUSH-BUTTON ADJUSTMENT

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

Connect low sides of generator and indicator to ground unless specified otherwise.

GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
High side thru .1uF to ant. input.	262kHz 400-Hz mod.	High freq. end stop.	Output meter across voice coil.	IFT4, IFT5	Adjust for maximum.
Thru dummy antenna to antenna input.	1615kHz	"	"	TC5B, TC5A, TC4	"

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



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

High side of generator thru .001uF to antenna 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 TP3, common to ground.	(1) IFT3(Pri.), IFT1	Adjust for maximum.
"	"	DC probe of VTVM to TP3, common to ground.	IFT3(Sec.)	Adjust for zero reading. A positive or negative reading will be obtained on either side of correct setting.

CLARION MODEL RE-342A

ALIGNMENT INSTRUCTIONS (Continued)

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

High side of generator thru .001uF to antenna 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
"	"	Vert input of scope to TP3, low side to ground.	(1) IFT3(Pri.), IFT1, IFT3(Sec.)	Adjust IFT3(Sec.) for maximum amplitude and straightness of line similar to Fig. 2. Adjust IFT3(Pri.), IFT1.

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

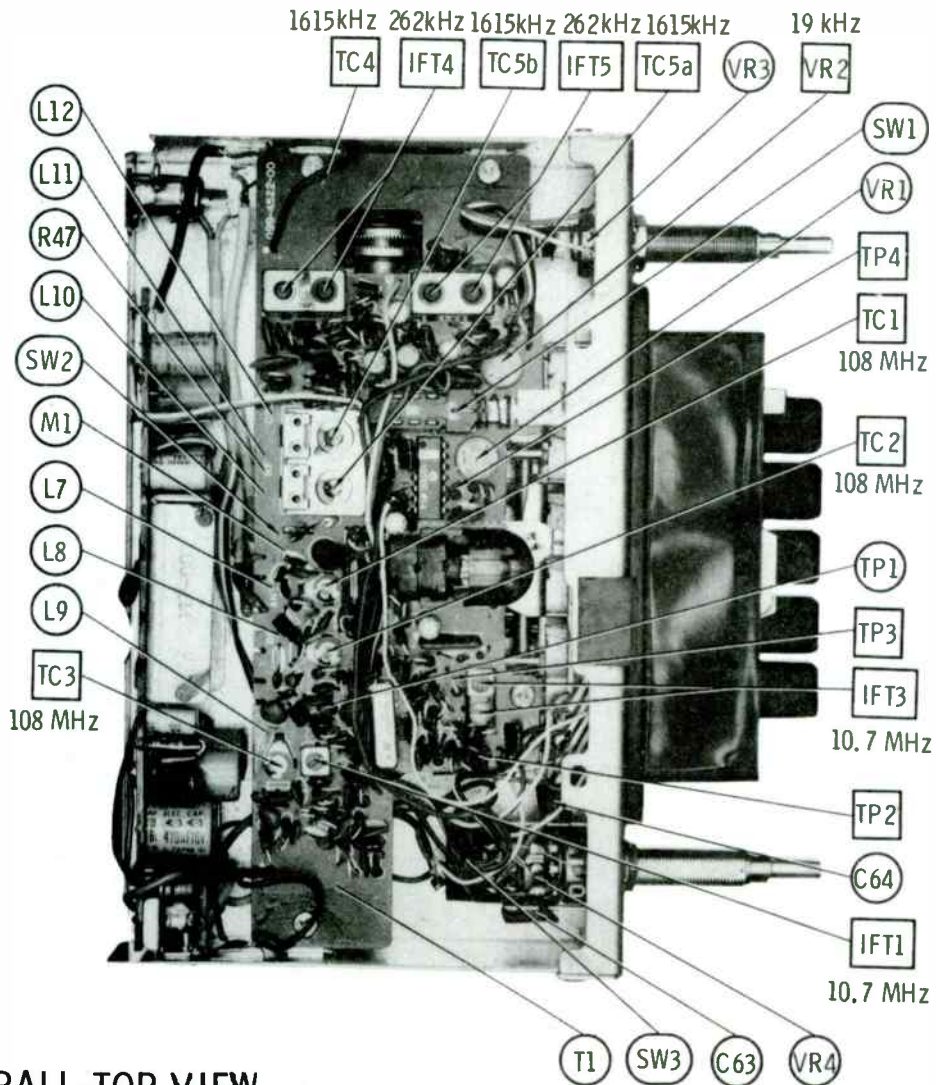
FM RF ALIGNMENT—SELECTOR IN FM POSITION

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.

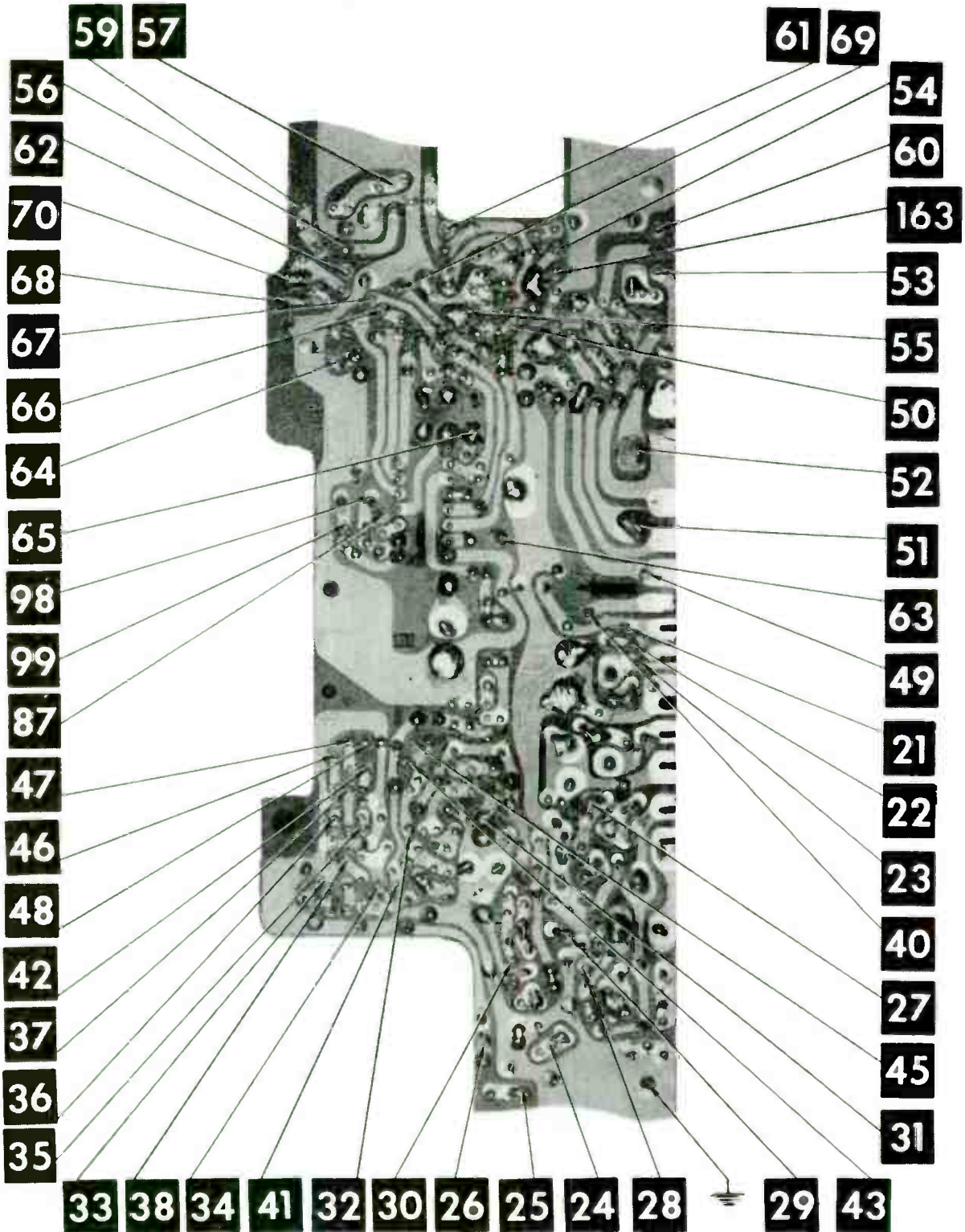
GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
108MHz Unmodulated	High Freq End Stop	DC probe of VTVM to TP2, common to ground.	TC3,TC2,TC1	Adjust for maximum.

FM STEREO MULTIPLEX ALIGNMENT

Ground TP3. Connect freq counter to TP4. Adjust VR2 for 19kHz +20Hz.

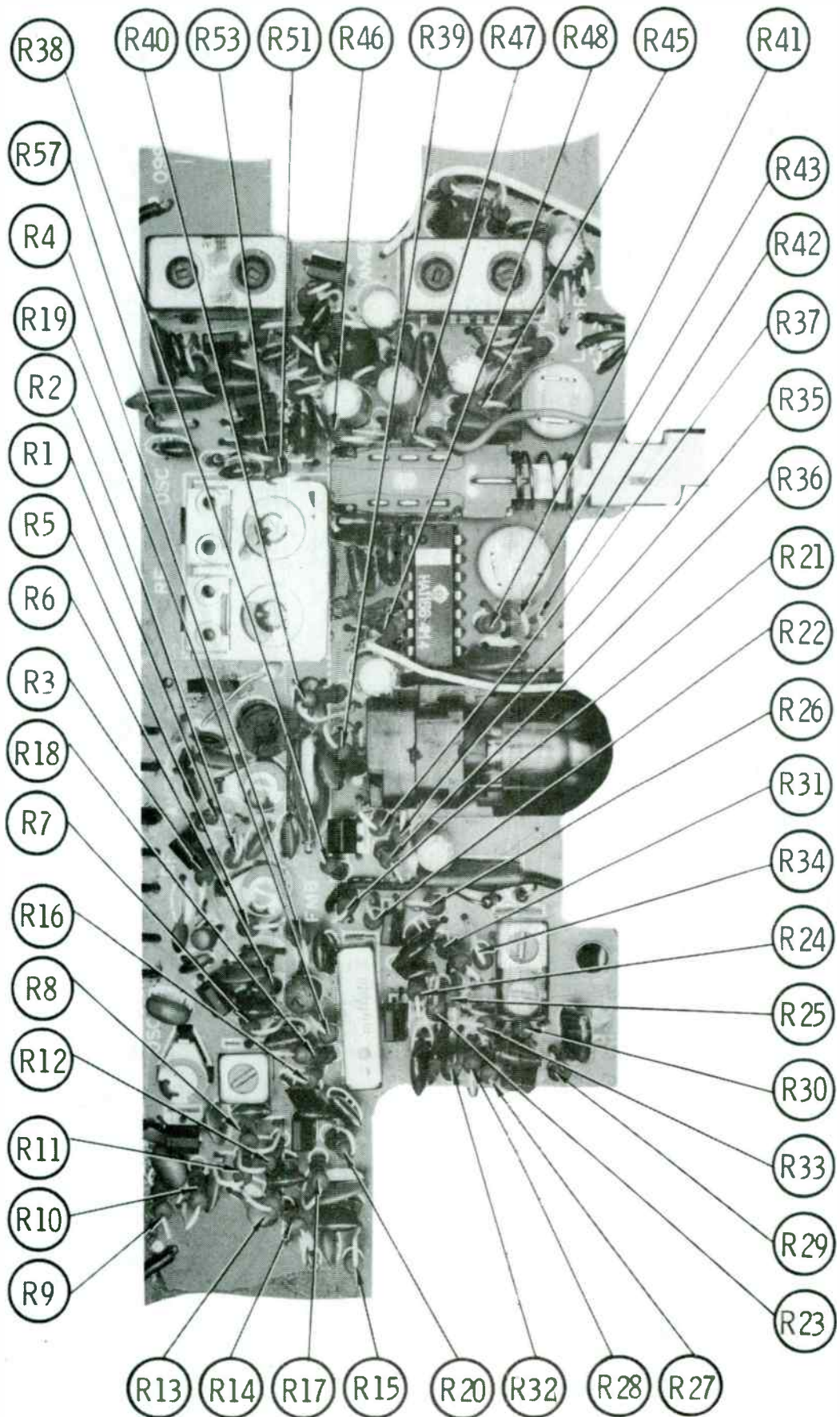


OVERALL-TOP VIEW

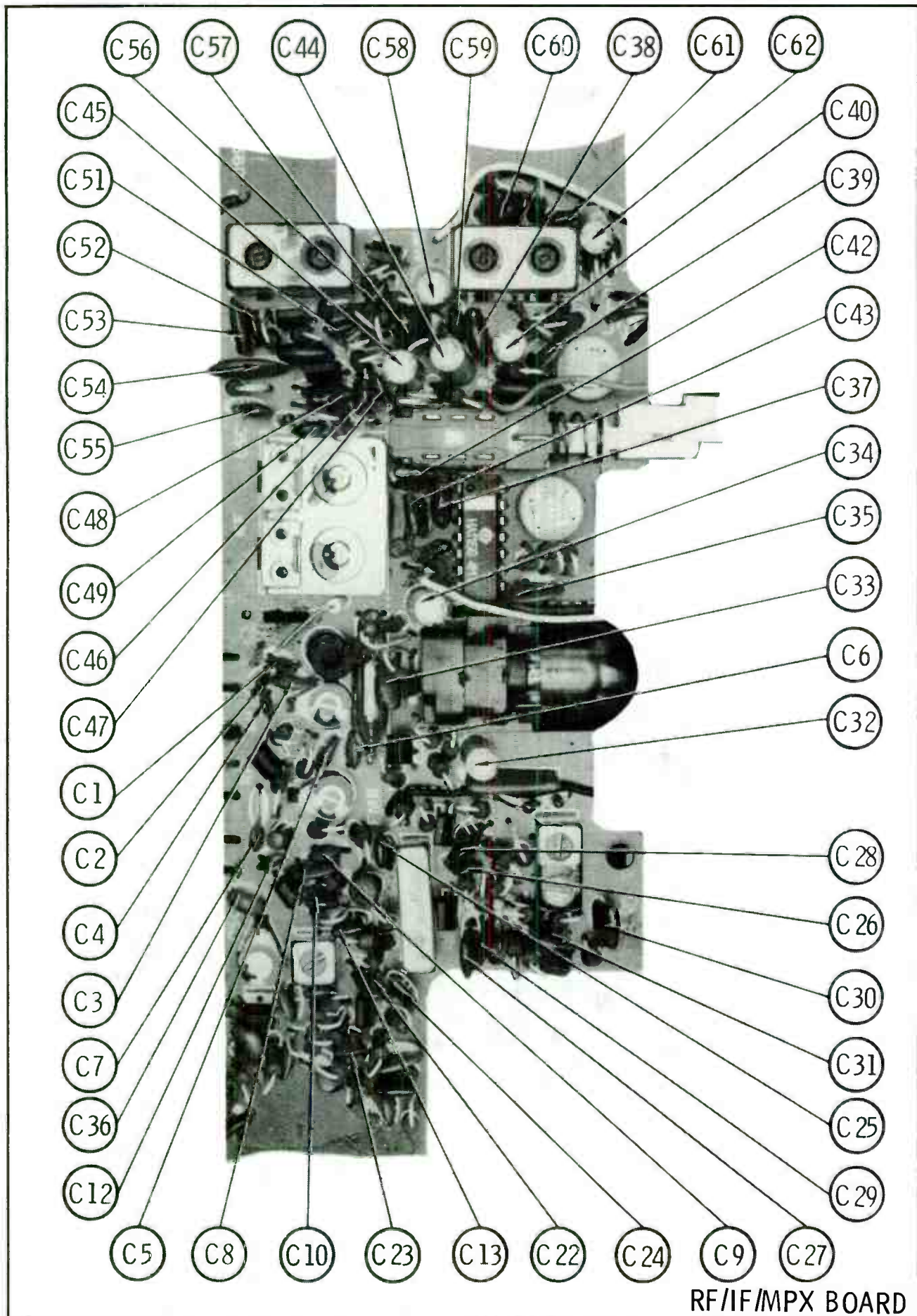


CLARION MODEL RE-342A

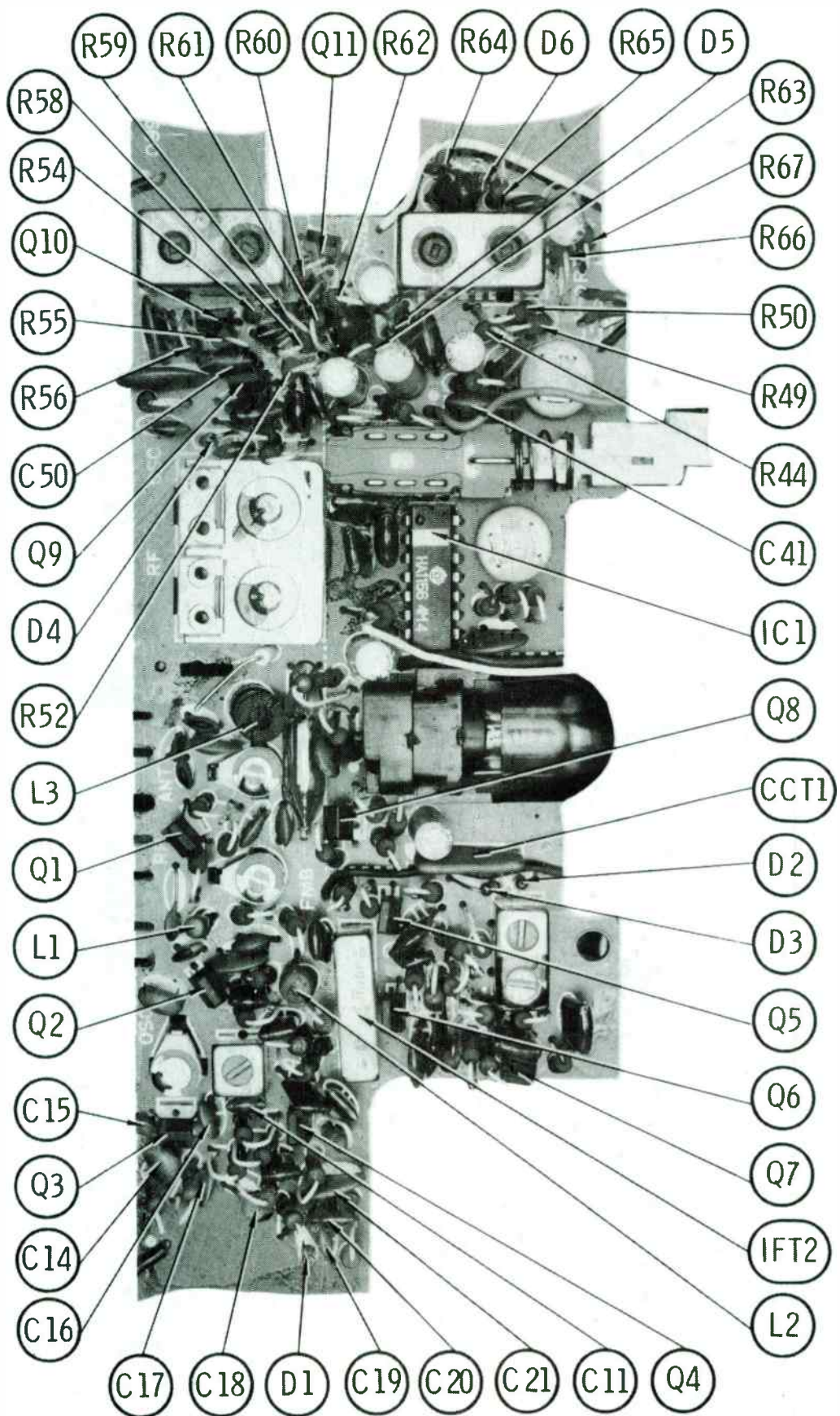
RF/IF/MPX BOARD



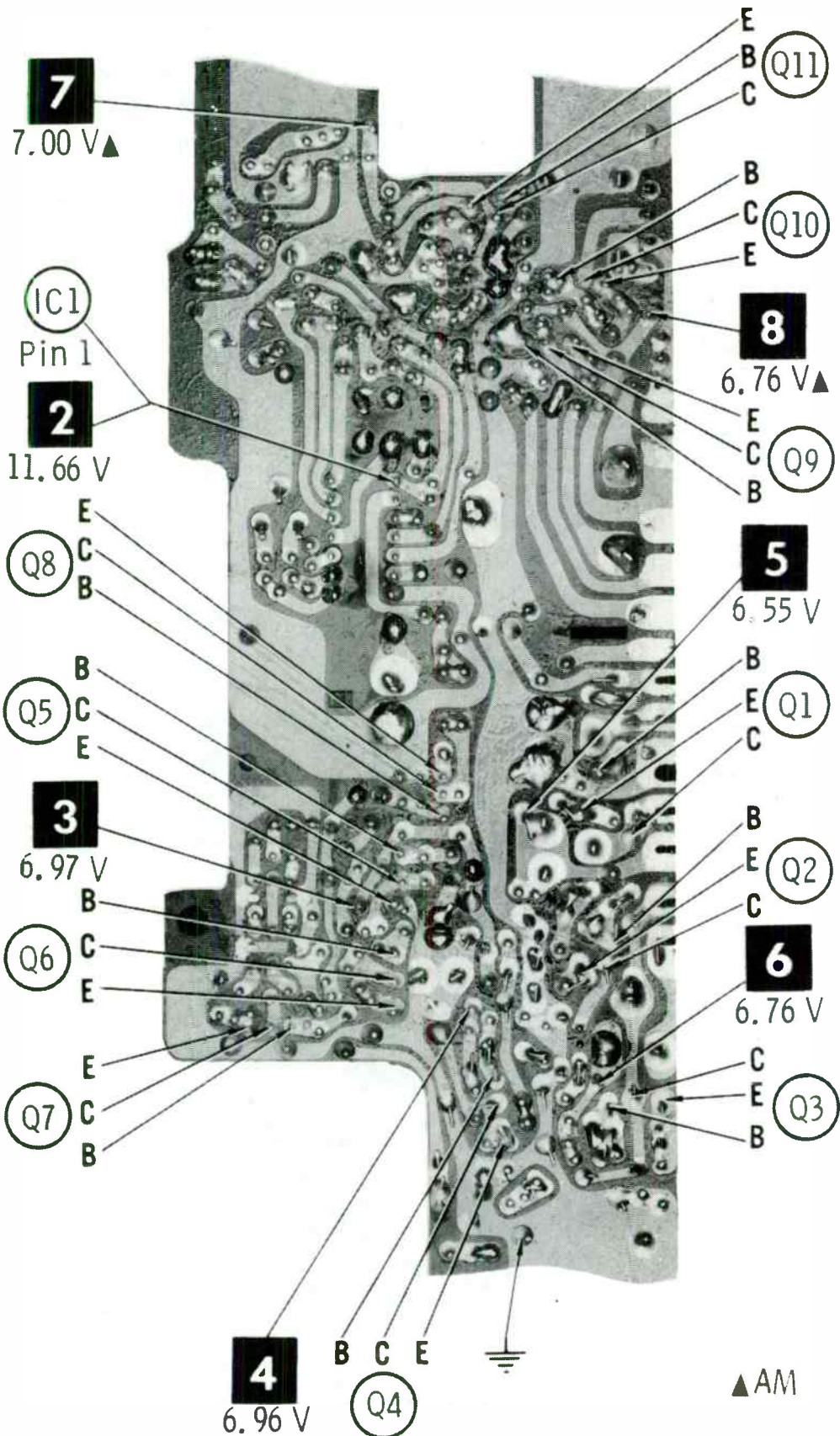
RF/IF/MPX BOARD



RF/IF/MPX BOARD

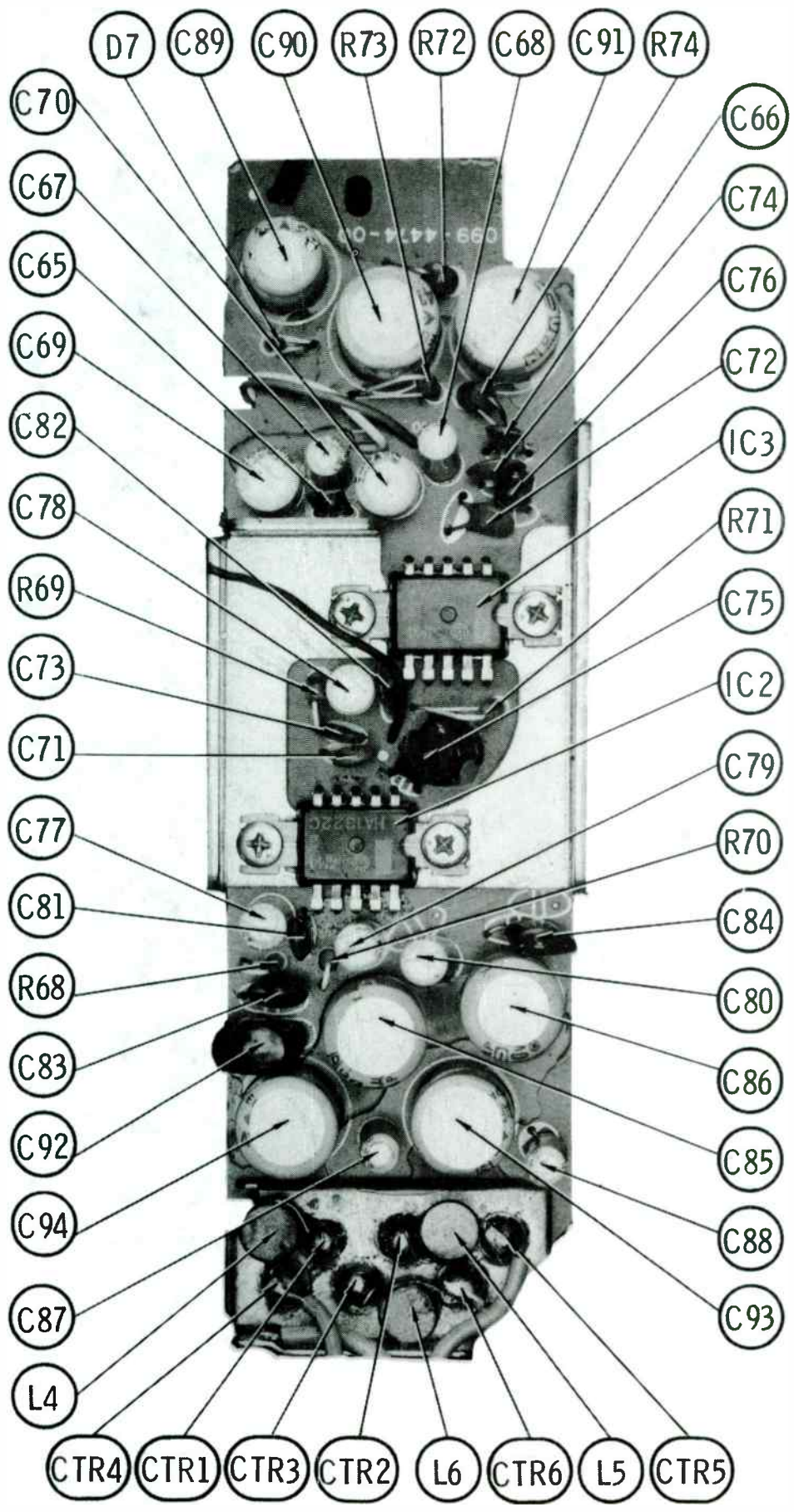


RF/IF/MPX BOARD

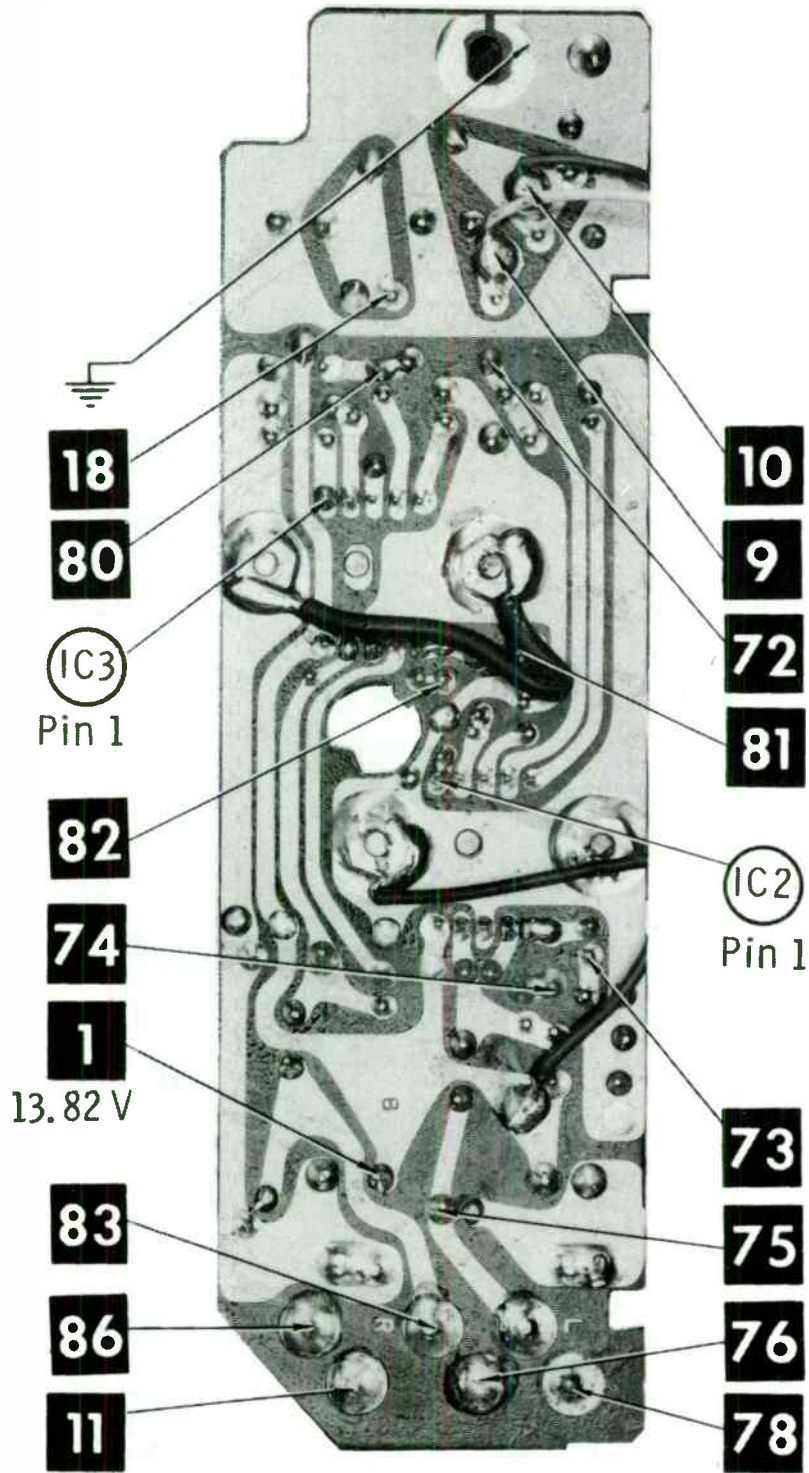


CLARION MODEL RE-342A

RF/IF/MPX BOARD

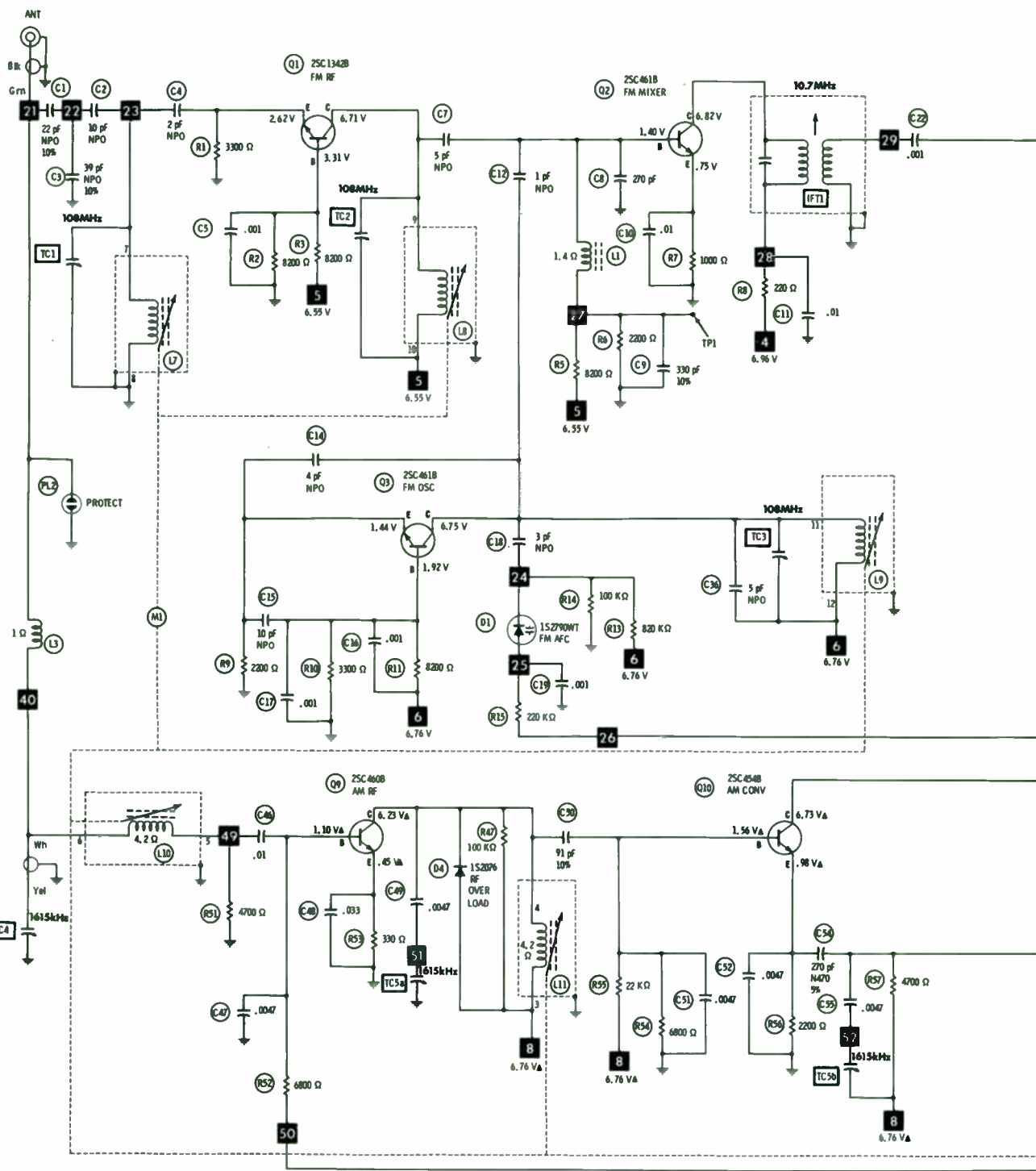


AUDIO BOARD



CLARION MODEL RE-342A

AUDIO BOARD

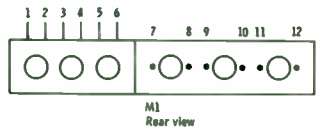
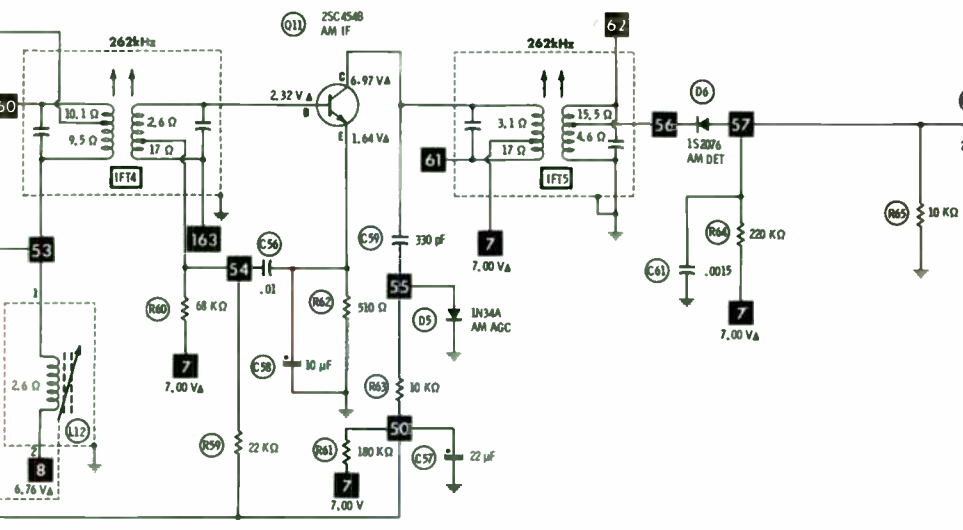
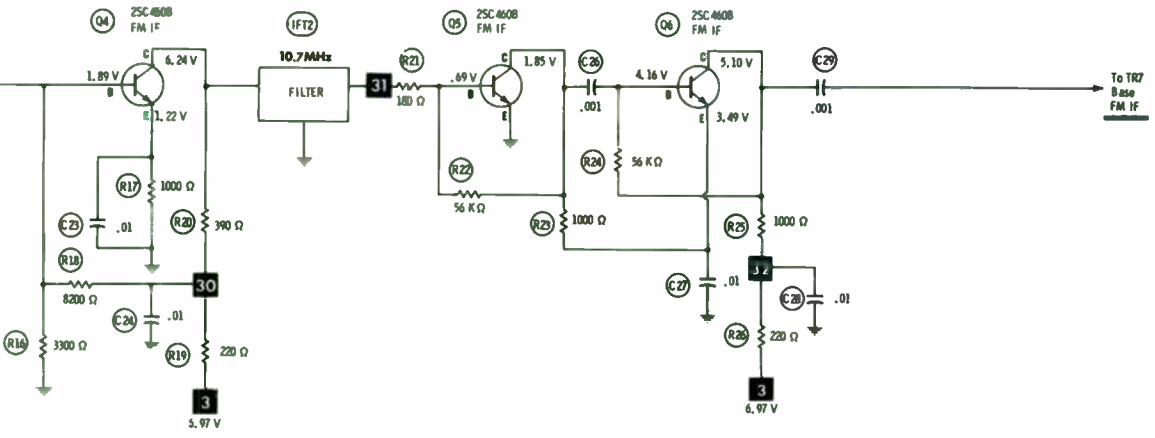


- *— Circuitry not used in some versions
- - - Circuitry used in some versions
- ⊙ See ports list
- ⊛ Nominal value
- ⊕ Ground
- ⌈ Chassis
- ▽ Common tie point

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

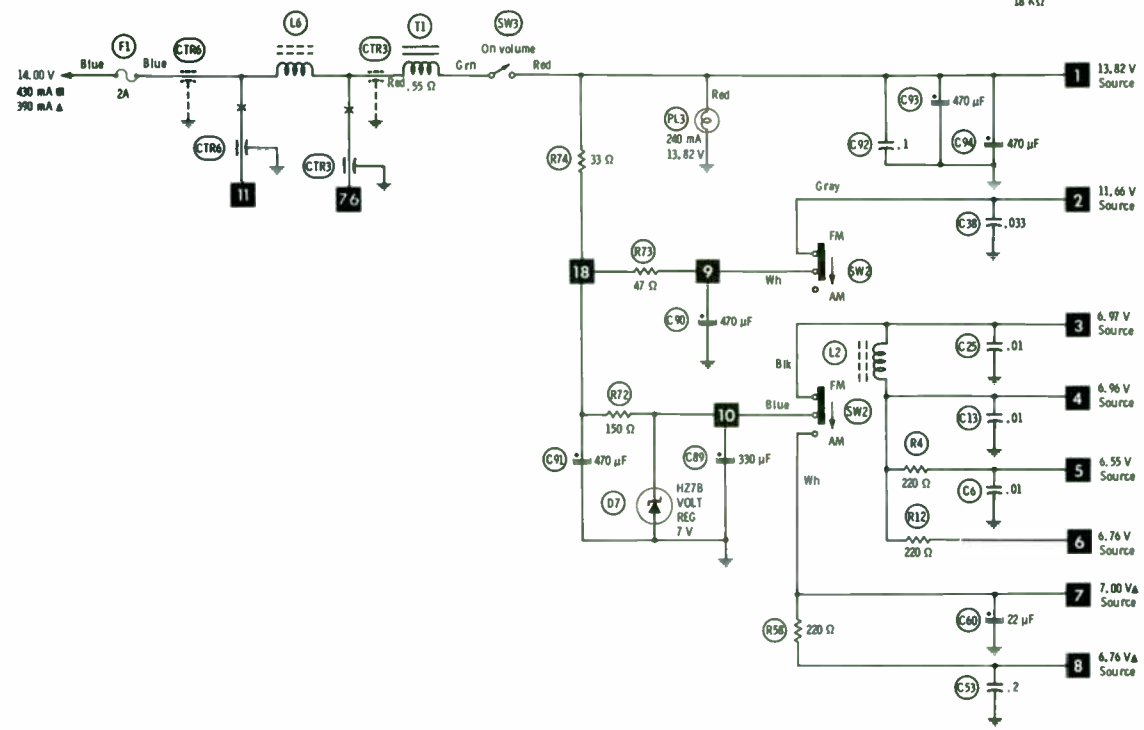
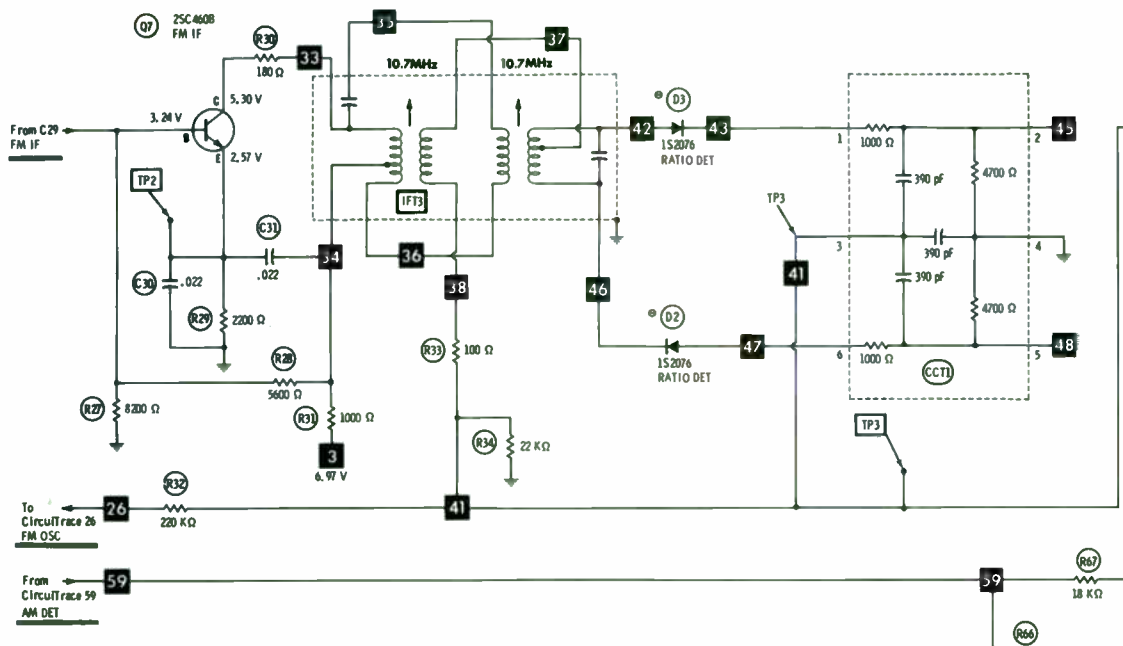
Supply voltage maintained as shown of input.
 Voltages measured with digital meter, no signal.
 Controls adjusted for normal operation.
 Arrow of control indicates direction of advance.
 Terminal identification may not be found on unit.
 Resistors are 1/2W or less, 5% unless noted.
 Value in () used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

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

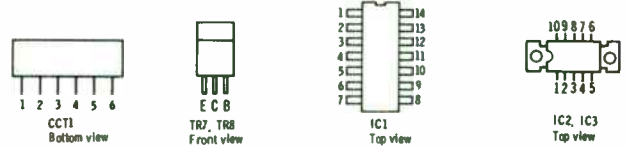
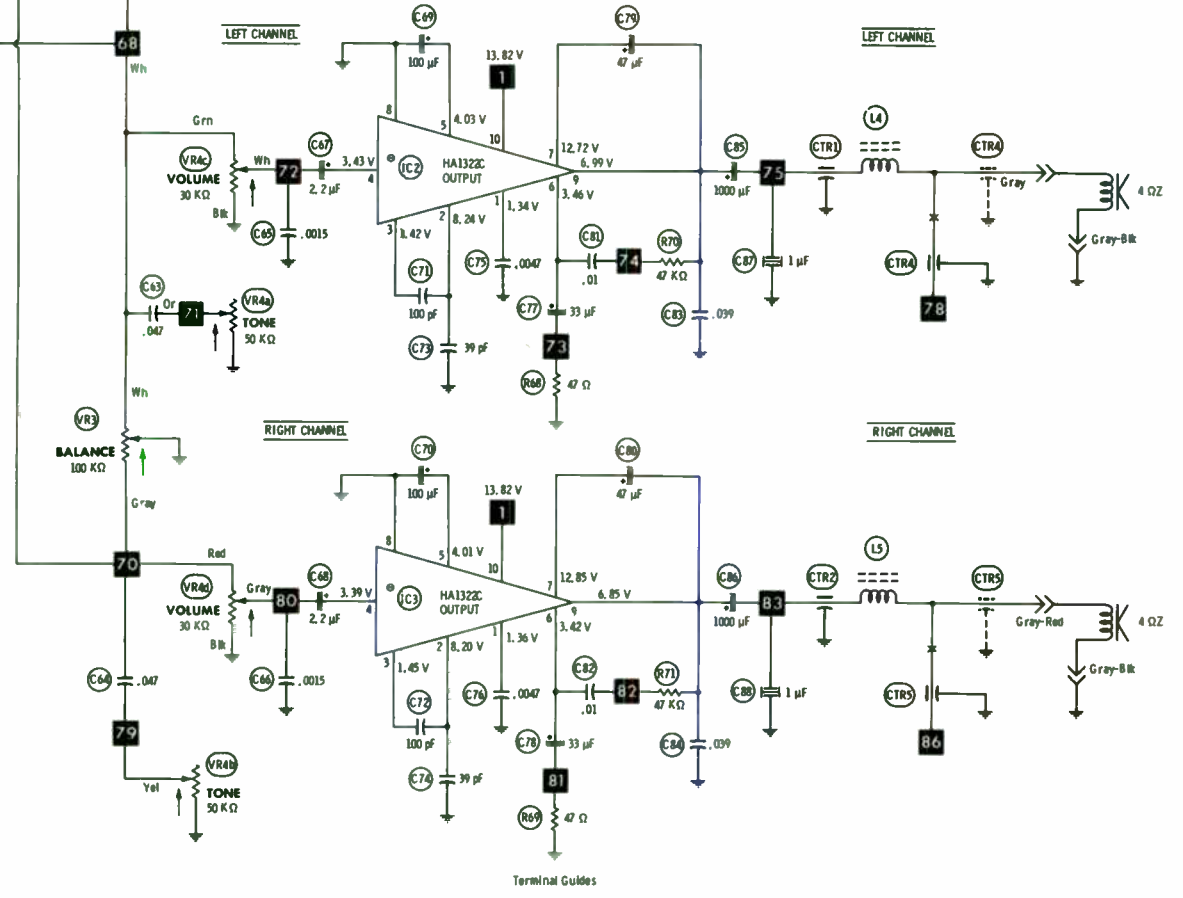
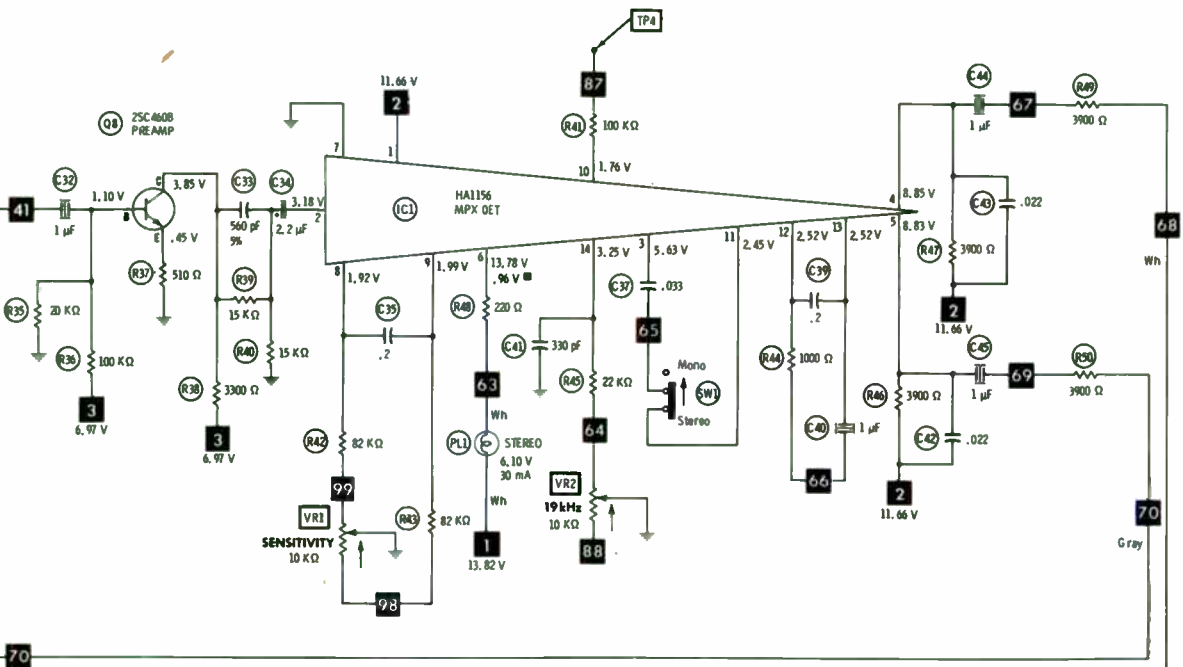




✖ Circuitry not used in some versions
 - - - Circuitry used in some versions
 ⊙ See parts list
 * Nominal value
 ⊕ Ground
 ~ Chassis
 ▽ Common tie point
 A PHOTOFACT STANDARD NOTATION SCHEMATIC
 WITH **CIRCUITRACE**
 © Howard W. Sams & Co., Inc. 1977

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.



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.
D1	1S2790MT	001-0130-00	GE-90	0201		HEPR2503	RE 195	SK3126	RT-262	ECG178MP(6)
D2	1S2076	001-0020-00	GE-300(7)	0200MP(6)	PTC214M(6)	HEPRO602(7)	RE 52(7)	SK3100(7)	RT-21B(7)	
D3	1S2076	001-0020-00								
D4	1S2076	001-0020-00	GE-300	0200	PTC214	HEPRO602	RE 52	SK3100	RT-21B	
D5	1S2076	001-0020-00	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-21B	
D6	1S2076	001-0020-00	GE-300	0200	PTC214	HEPRO602	RE 52	SK3100	RT-21B	
D7	HZ7B	001-0099-01								
IC1	HA1156	051-0050-00, 01	GEIC-35		PTC735		RE 334-IC	SK3160		
IC2	HA1322C	051-0036-01								
		051-0036-02 (1)								
IC3	HA1322C	051-0036-01								
		051-0036-02 (1)								
Q1	2SC1342B		GE-61	TR-24	PTC136	HEPS0014	RE 9	SK3018	RT-108A	ECG229
Q2	2SC461B		GE-61	(IR)2SC403A	PTC121	HEPS0014	RE 10	SK3018	RT-107A	ECG108
Q3	2SC461B		GE-61	(IR)2SC403A	PTC121	HEPS0014	RE 10	SK3018	RT-107A	ECG108
Q4	2SC460B		GE-61	(IR)2SC460B	PTC136	HEPS0014	RE 9	SK3018	RT-134	ECG107
Q5	2SC460B		GE-61	(IR)2SC460B	PTC136	HEPS0014	RE 9	SK3018	RT-134	ECG107
Q6	2SC460B		GE-61	(IR)2SC460B	PTC136	HEPS0014	RE 9	SK3018	RT-134	ECG107
Q7	2SC460B		GE-61	(IR)2SC460B	PTC136	HEPS0014	RE 9	SK3018	RT-134	ECG107
Q8	2SC460B		GE-61	(IR)2SC460B	PTC136	HEPS0014	RE 9	SK3018	RT-134	ECG107
Q9	2SC460B		GE-61	(IR)2SC460B	PTC136	HEPS0014	RE 9	SK3018	RT-134	ECG107
Q10	2SC454B		GE-210	(IR)2SC454B	PTC115	HEPS0015	RE 10	SK3018	RT-187	ECG108
Q11	2SC454B		GE-210	(IR)2SC454B	PTC115	HEPS0015	RE 10	SK3018	RT-187	ECG108

- (1) Used in some versions.
- (6) Matched pair.
- (7) Two required - select matched pair.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C32	1 50V NP			TCN501A	
C34	2.2 50V		PC2-100	VTT2R2A50	EV-1517
C40	1 50V NP			TCN501A	
C44	1 50V NP			TCN501A	
C45	1 50V NP			TCN501A	
C57	22 10V			TDC226M035GL	SD10-229
C58	10 16V		PC10-25	VTT10A25	EV-1222
C60	22 10V			TDC226M035GL	SD10-229
C62	2.2 50V		PC2-100	VTT2R2A50	EV-1517
C67	2.2 50V		PC2-100	VTT2R2A50	EV-1517
C68	2.2 50V		PC2-100	VTT2R2A50	EV-1517
C69	100 10V		PC100-10	VTT100E10	EV-1130
C70	100 10V		PC100-10	VTT100E10	EV-1130
C77	33 10V		PC30-25	VTT33A10	EV-1125
C78	33 10V		PC30-25	VTT33A10	EV-1125
C79	47 10V		PC50-16	VTT47D16	EV-1226
C80	47 10V		PC50-16	VTT47D16	EV-1226
C85	1000 10V				
C86	1000 10V				
C87	1 50V NP			TCN501A	
C88	1 50V NP			TCN501A	
C89	330 10V		PC300-10	VTT330G10	EV-1145
C90	470 16V		PC500-16	VTT47GJ16	EV-1250
C91	470 16V		PC500-16	VTT47GJ16	EV-1250
C93	470 16V		PC500-16	VTT47GJ16	EV-1250
C94	470 16V		PC500-16	VTT47GJ16	EV-1250

CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	22 NPO 10%		DTZ-22	NP022	CN0422	10TCC-Q22
C2	10		DTZ-10	NP010	CN0410	10TCC-Q10
C3	39 NPO 10%				CN0439	10TCC-Q39
C4	2 NPO		DTZ-2R2	NP02P2	CN0522	10TCC-V22
C5	.001		DD-102G	GP1000	GP210	5GA-D10
C6	.01		UK50-103		MAG5011	
C7	5 NPO		DTZ-4R7	NP04P7	CN0547	10TCC-V47
C8	27				CN0427	10TCC-Q27
C9	330 10%		DD-331	GP330	GP333	10TS-T33
C10	.01		UK50-103		MAG5011	
C11	.01		UK50-103		MAG5011	
C12	1 NPO				CN0510	10TCC-V10
C13	.01		UK50-103		MAG5011	
C14	4 NPO		DTZ-4R7	NP04P7	CN0547	10TCC-V47
C15	10 NPO		DTZ-10	NP010	CN0410	10TCC-Q10
C16	.001		DD-102G	GP1000	GP210	5GA-D10
C17	.001		DD-102G	GP1000	GP210	5GA-D10
C18	3 NPO		DTZ-3R3	NP03P3	CN0533	10TCC-V33

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.
C19	.001		DD-102G	GP1000	GP210	5GA-D10
C20	.022				M192P2239R8	192P2239R8
C21	.2 12V		UK12-204		MAG12022	HY-370
C22	.001		DD-102G	GP1000	GP210	5GA-D10
C23	.01		UK50-103		MAG5011	
C24	.01		UK50-103		MAG5011	
C25	.01		UK50-103		MAG5011	
C26	.001		DD-102G	GP1000	GP210	5GA-D10
C27	.01		UK50-103		MAG5011	
C28	.01		UK50-103		MAG5011	
C29	.001		DD-102G	GP1000	GP210	5GA-D10
C30	.022				M192P2239R8	192P2239R8
C31	.022				M192P2239R8	192P2239R8
C33	560 5%		DD-561		GP356	10TS-T56
C35	.2 12V		UK12-204		MAG12022	HY-370
C36	5 NPO		DTZ-4R7	NP04P7	CN0547	10TCC-V47
C37	.033				M192P3339R8	192P3339R8
C38	.033				M192P3339R8	192P3339R8
C39	.2 12V		UK12-204		MAG12022	HY-370
C41	330		DD-331	GP330	GP333	10TS-T33
C42	.022				M192P2239R8	192P2239R8
C43	.022				M192P2239R8	192P2239R8
C46	.01		UK50-103		MAG5011	
C47	.0047				M192P4729R8	192P4729R8
C48	.033				M192P3339R8	192P3339R8
C49	.0047				M192P4729R8	192P4729R8
C50	91 10%			CD15FD0910J03	SX491	MWA-910
C51	.0047				M192P4729R8	192P4729R8
C52	.0047				M192P4729R8	192P4729R8
C53	.2 12V		UK12-204		MAG12022	HY-370
C54	270 N470 5%				*	10TCT-T27
C55	.0047				M192P4729R8	192P4729R8
C56	.01		UK50-103		MAG5011	
C59	330		DD-331	GP330	GP333	10TS-T33
C61	.0015			DPMS6D15	EW6215	6PS-D15
C63	.047				EW1A147	1PB-S47
C64	.047				EW1A147	1PB-S47
C65	.0015			DPMS6D15	EW6215	6PS-D15
C66	.0015			DPMS6D15	EW6215	6PS-D15
C71	100		DD-101	GP100	GP310	10TS-T10
C72	100		DD-101	GP100	GP310	10TS-T10
C73	39					
C74	39					
C75	.0047				M192P4729R8	192P4729R8
C76	.0047				M192P4729R8	192P4729R8
C81	.01		UK50-103		MAG5011	
C82	.01		UK50-103		MAG5011	
C83	.039				M192P3939R8	192P3939R8
C84	.039				M192P3939R8	192P3939R8
C92	.1			WMF05P1	EWF05010	431P1049R5
CTR1		040-0080-01				
CTR2		040-0080-01				
CTR3		040-0080-01				
CTR4		040-0080-01				
CTR5		040-0080-01				
CTR6		040-0080-01				
TC1		004-1496-00				
TC2		004-1496-00				
TC3		004-1502-00				
TC4		004-1489-00				
TC5a		(1)				
TC5b		(1)				

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

(1) Part of Dual Trimmer Part No. 004-1441-00.

CLARION MODEL RE-342A

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	Sensitivity	100K					
VR2	19kHz	10K					
VR3	Balance	100K	012-3478-00				
VR4a	Tone-Left	50K	3478-00 (5)				
			012-3478-00				
b	Tone-Right	50K	3411-00 (5)				
c	Volume-Left	30K					
d	Volume-Right/ Power Switch	30K					

(5) Number on unit.

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
IFT1	IF (10.7MHz)	005-0698-00			(1) Part of M1 (Tuner)
IFT3	Ratio Detector	005-0684-02			
IFT4	IF (262kHz)	005-0660-00			
IFT5	IF (262kHz)	005-0560-00			

PARTS LIST AND DESCRIPTION (CONTINUED)

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

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COILS (RF-IF) (cont)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	10.7MHz Trap	010-1570-00			(1) Part of M1 (Tuning coil assembly)
L2	RF Choke (2.2uH)	010-1180-00			
L3	AM Ant Choke	010-0930-00			
L4	RF Choke	010-1686-00			
L5	RF Choke	010-1686-00			
L6	RF Choke	010-1686-00			
L7	FM Ant	(1)			
L8	FM RF	(1)			
L9	FM Osc	(1)			
L10	AM Ant	(1)			
L11	AM RF	(1)			
L12	AM Osc	(1)			

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.	
T1	430mA	.55	5.45mH	009-0181-00			

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			AGC2	HDJ	312002	150145	FG2-2	

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CCT1	Network	050-0010-01	Ratio Detector (86RD0218)
I FT2	Filter	005-0706-00	Ceramic 10.7MHz (Red Dot)
M1	Tuning Coil Assembly	937-0148-29	AM/FM
SW1	Switch	013-3149-00	Mono/Stereo
SW2	Switch	013-3251-00	AM/FM
SW3	Switch		Power (On Volume)

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 65-489



MEDALLION MODEL 65-489

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 3/4 oz. No adjustment provided.
Fast Forward Torque	Nominal value 1 1/4 oz. No adjustment provided.
Rewind Torque	Nominal value 1 1/4 oz. No adjustment provided.
Pressure Roller Pressure	Nominal value 18 oz. No adjustment provided.
Head Azimuth	Connect AC meter across left (right) output; play an azimuth test tape and adjust B1 for maximum output. Reverse direction of play and adjust B1 as needed for best compromise of output.

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

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6AH953

TROUBLE CHART

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

SYMPTOM	REMARKS
Take-up erratic or inoperative in Play	Spindle (62A) dirty, worn or binding. Pulley (32A,33B-Play Left,33A-Play Right) dirty or binding. Spring (14A,32C,201) weak or out of place. Belt (35,36) dirty, worn or broken. Frame (32B) binding. Clutch (32F) dirty or worn.
Take-up erratic or inoperative in Fast Wind Left.	Spindle (62A) dirty, worn or binding. Idler (12D) dirty, worn or binding. Spring (13B) weak or out of place.
Take-up erratic or inoperative in Fast Wind Right.	Spindle (62B) dirty, worn or binding. Idler (12C) dirty, worn or binding. Spring (13A) weak or out of place.
Reversing erratic or inoperative.	Spring (39,74) weak or out of place. Lever (77) binding. Solenoid (M2) defective or not supplied with power.
Capstan does not rotate	Belt (90) dirty, worn or broken. Flywheel binding. Motor defective or not supplied with power.
Wow or flutter	Roller (57,58) dirty or worn. Belt (90) dirty or worn. Bearing (12H,12J) binding. Cassette defective. Motor defective. Excessive take-up torque. Spring (24) weak.

MECHANICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
12A	(1)	Brake Plate	32F	(4)	Felt Clutch
12B	(1)	Brake Spring	33	65-199142	Reel Driving Pulley
12C	(1)	Fast Wind Right Idler	34	65-199139	Reel Driving Idler
12D	(1)	Fast Wind Left Idler	35	65-198028	Reel Driving Belt
12E	(1)	Fast Wind Right Latch	36*	65-198027*	Clutch Belt*
12F	(1)	Fast Wind Left Latch	38	65-199138	Direction Cam
12G	(1)	Interlock Link	38A	(2)	Direction Cam Roller
12H	(1)	Left Capstan Bearing	39	65-152215	Direction Cam Spring
12J	(1)	Right Capstan Bearing	40	65-155104	Toggle Link
13	65-152094	Fast Wind Idler Spring (2 used)	41	65-199121	Head Bracket
14	65-152090	Toggle/Latch Spring (2 used)	42	65-155322	Switch Link
15	65-152231	Fast Wind Lever Spring(2 used)	44	65-152216	Azimuth Spring
16	65-152098	Stop/Eject Return Spring	57	65-199123	Left Pinch Roller
17	65-155356	Head Chassis	58	65-199124	Right Pinch Roller
20	65-151372	3mm Steel Ball (3 used)	59	65-152238	Left Pinch Roller Spring
21	65-155349	Spring Plate	60	65-152239	Right Pinch Roller Spring
24	65-152091	Main Spring	62	65-199125	Reel Assembly (Spindle)(2 used)
26	65-158268	Right Cassette Holder Lock	74	65-152096	Solenoid Spring
27	65-158267	Left Cassette Holder Lock	77	65-155347	Direction Change Solenoid Lever
28	65-152100	Right Cassette Holder Lock	80	65-158297	Head Chassis Lock
		Spring	81	65-152240	Head Chassis Lock Spring
29	65-152099	Left Cassette Holder Lock	85	65-199144	Motor Pulley
		Spring	87	65-199127	Flywheel (2 used)
31	65-155354	Middle Reel Plate (Assembly)	90*	65-198011*	Flywheel Driving Belt*
32A	65-199141	Clutch Pulley (Assembly)	92	65-158273	Cassette Holder
32B	(4)	Clutch Pulley Frame	93	65-152241	Cassette Holder Spring
32C	(4)	Clutch Spring	104	65-158299	Lock Support
32D	(4)	Clutch Take-up Drive Pulley (Idler)	176	65-158307	Lock Support Bracket
			201	(3)	Middle Reel Plate Spring

* Clutch Belt - E-V/GAME Replacement Number 1425-06.

WALSCO Replacement Number 1425-06.

* Flywheel Driving Belt - E-V/GAME Replacement Number 1425-12.

WALSCO Replacement Number 1425-12.

(1) Part of Chassis. No part number available.

(2) Part of Cam (38).

(3) Part of Assembly (31).

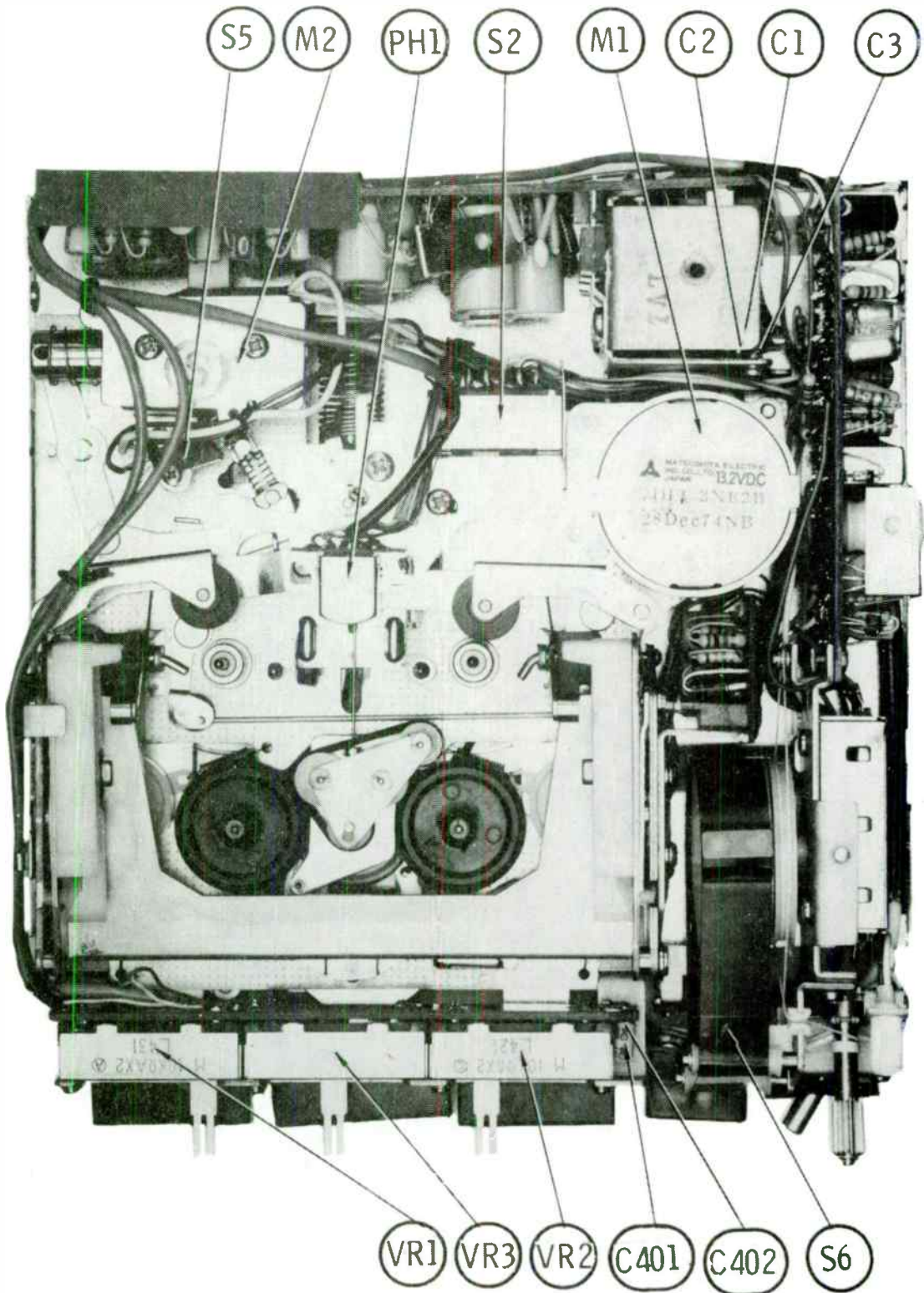
(4) Part of Assembly (32A).

CLEANING

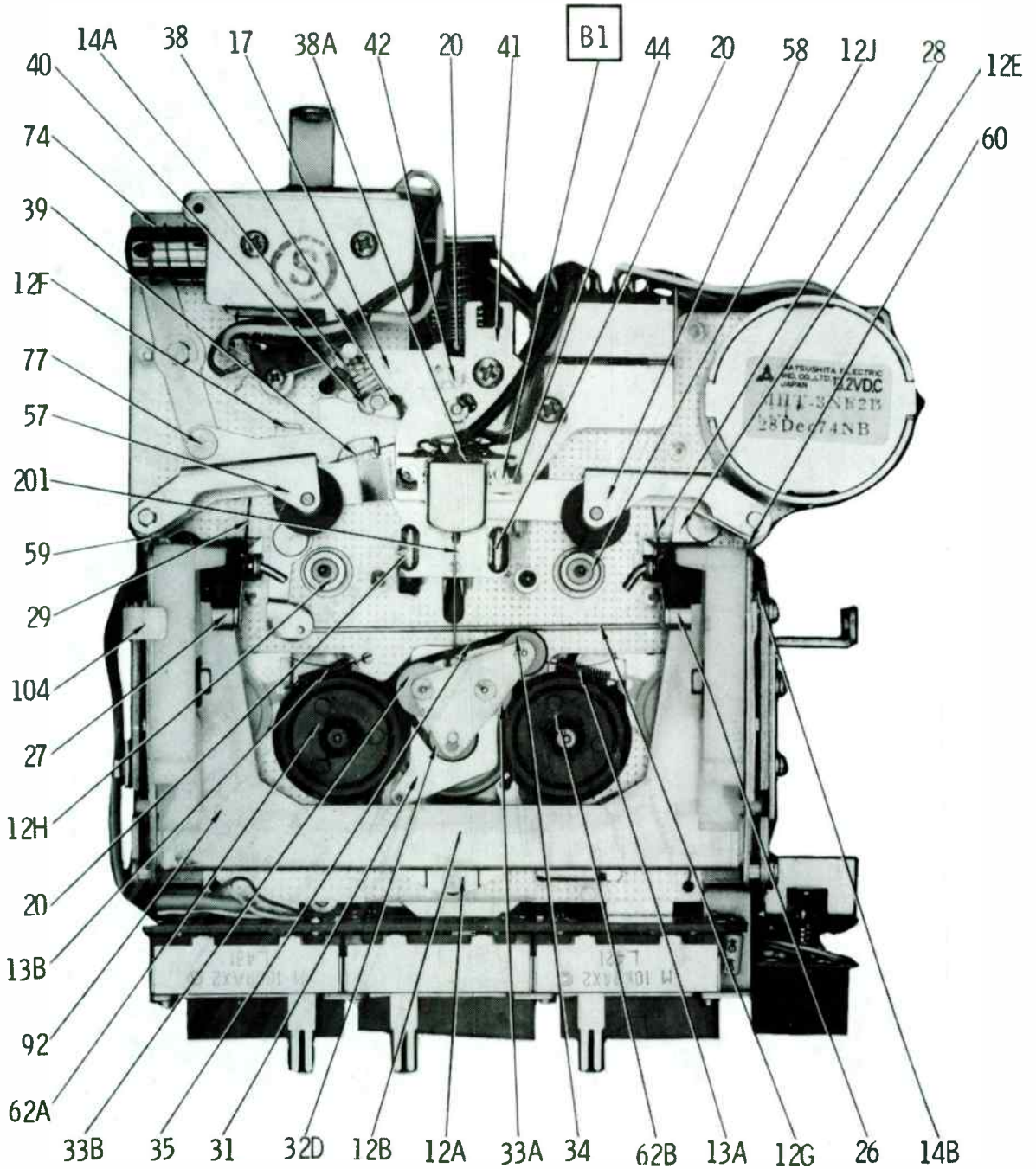
LUBRICATING

HEAD DEMAGNETIZING

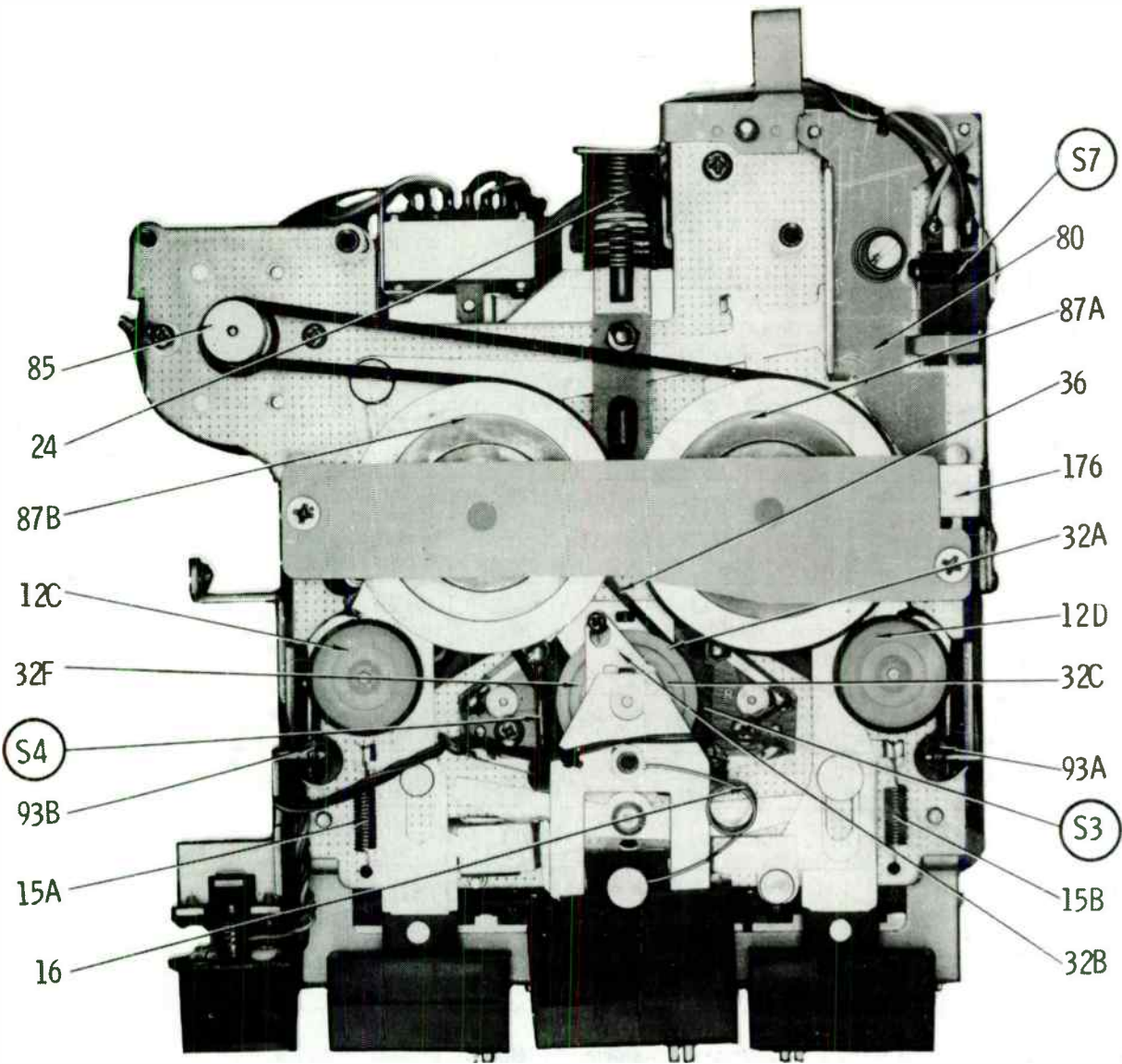
Refer to "General Servicing Information" on page 4.



TAPE DECK-TOP VIEW



TAPE DECK-TOP VIEW



TAPE DECK-BOTTOM 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.

Connect low sides of generator and indicator to ground unless otherwise specified.

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

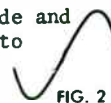
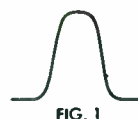
High side of generator thru .001uF to ant input.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MHz Unmodulated	Point of non-interference	DC probe of VTVM to junction of D101 & R112	(1) T1,IFT	Adjust for maximum.
"	"	DC probe of VTVM to Pin 3 of IC102.	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 ant input.
 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 D101 & R112	(1) T1,IFT	Disconnect stabilizing capacitor C115. Adjust for maximum gain and symmetry of response similar to Fig. 1. Reconnect C115.
"	"	Vert input of scope to Pin 3 of IC102.	T2	Adjust T2 for maximum amplitude and straightness of line similar to Fig. 2. Readjust T1.



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

FM RF ALIGNMENT—SELECTOR IN FM POSITION

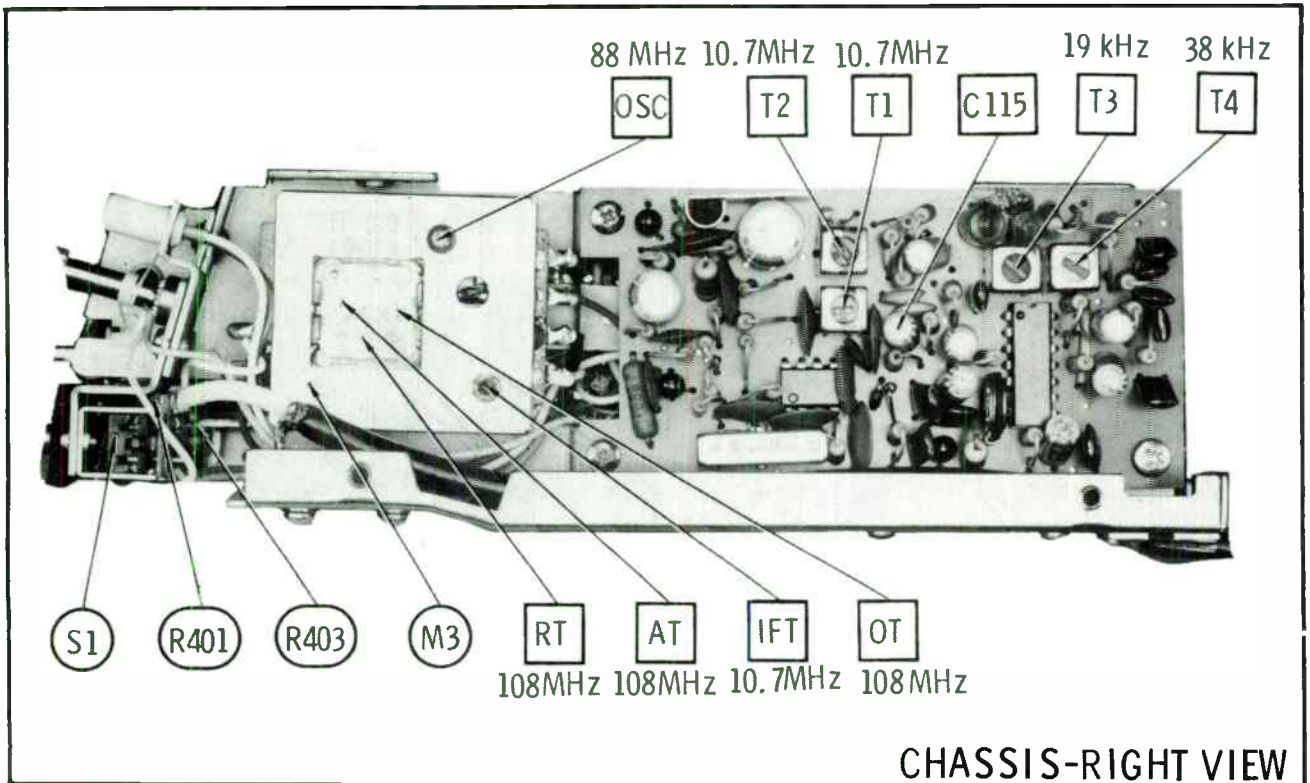
Connect generator across antenna terminals with 120-ohm carbon resistor in series with each lead. Adjustment of coils by bending should not be attempted unless the coil is deformed or replaced.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
88MHz Unmodulated	Low Freq End Stop	DC probe of VTVM to junction of D101 & R112	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.

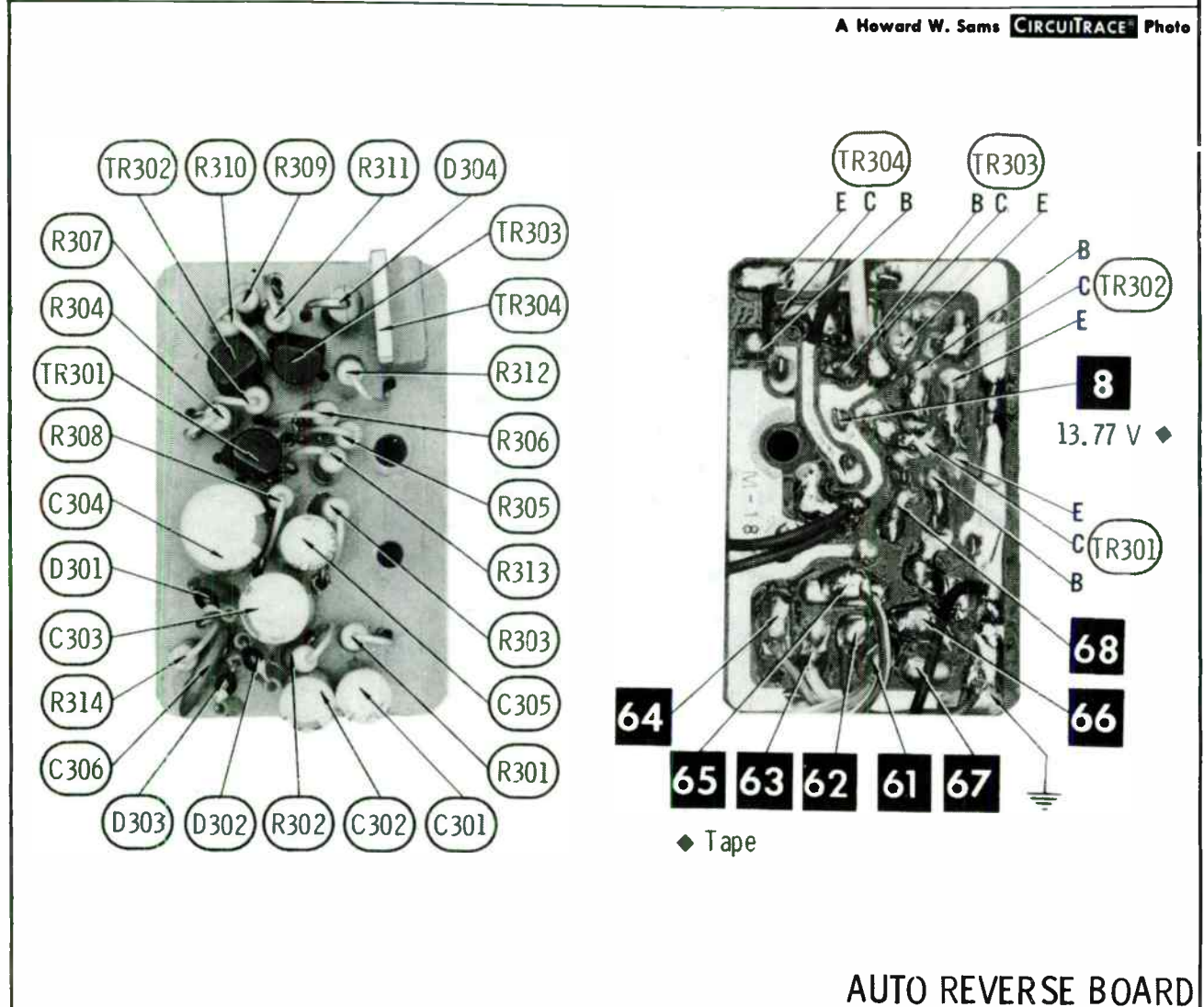
FM STEREO MULTIPLEX ALIGNMENT USING FM STEREO SIGNAL GENERATOR (± .0001% ACCURACY)

High side of generator thru 47K to ant input.

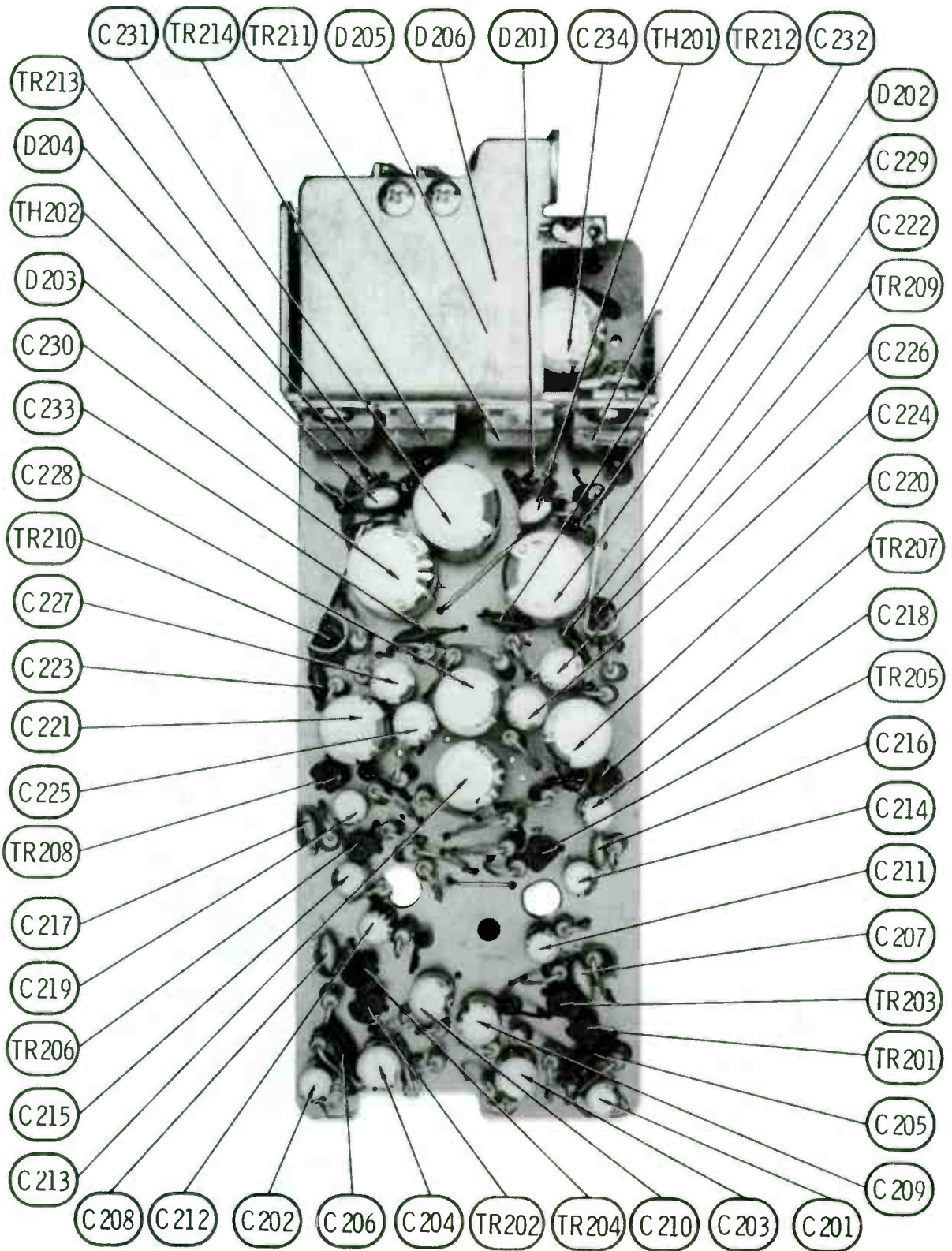
GENERATOR FREQUENCY	INDICATOR	ADJUST	REMARKS
Modulated Left Channel	Vert input of scope to Pin 12 of IC102.	T3,T4,R122	Adjust for MINIMUM. This step should require only slight adjustment.
Modulated Right Channel	Vert input of scope to Pin 11 of IC102.		Check for MINIMUM. If necessary, make compromise adjustment of T3,T4,R122.



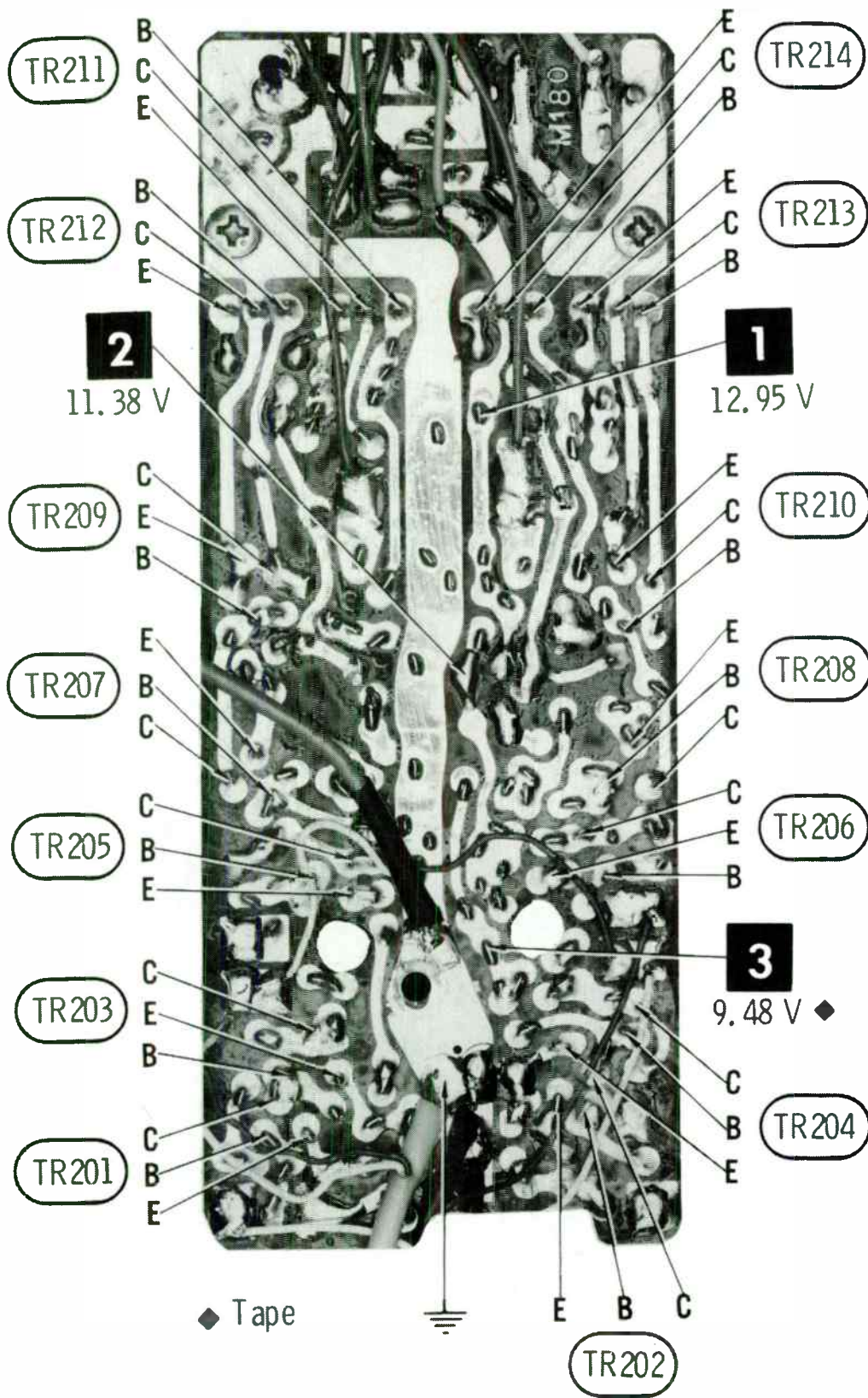
A Howard W. Sams **CIRCUITRACE** Photo



MEDALLION MODEL 65-489

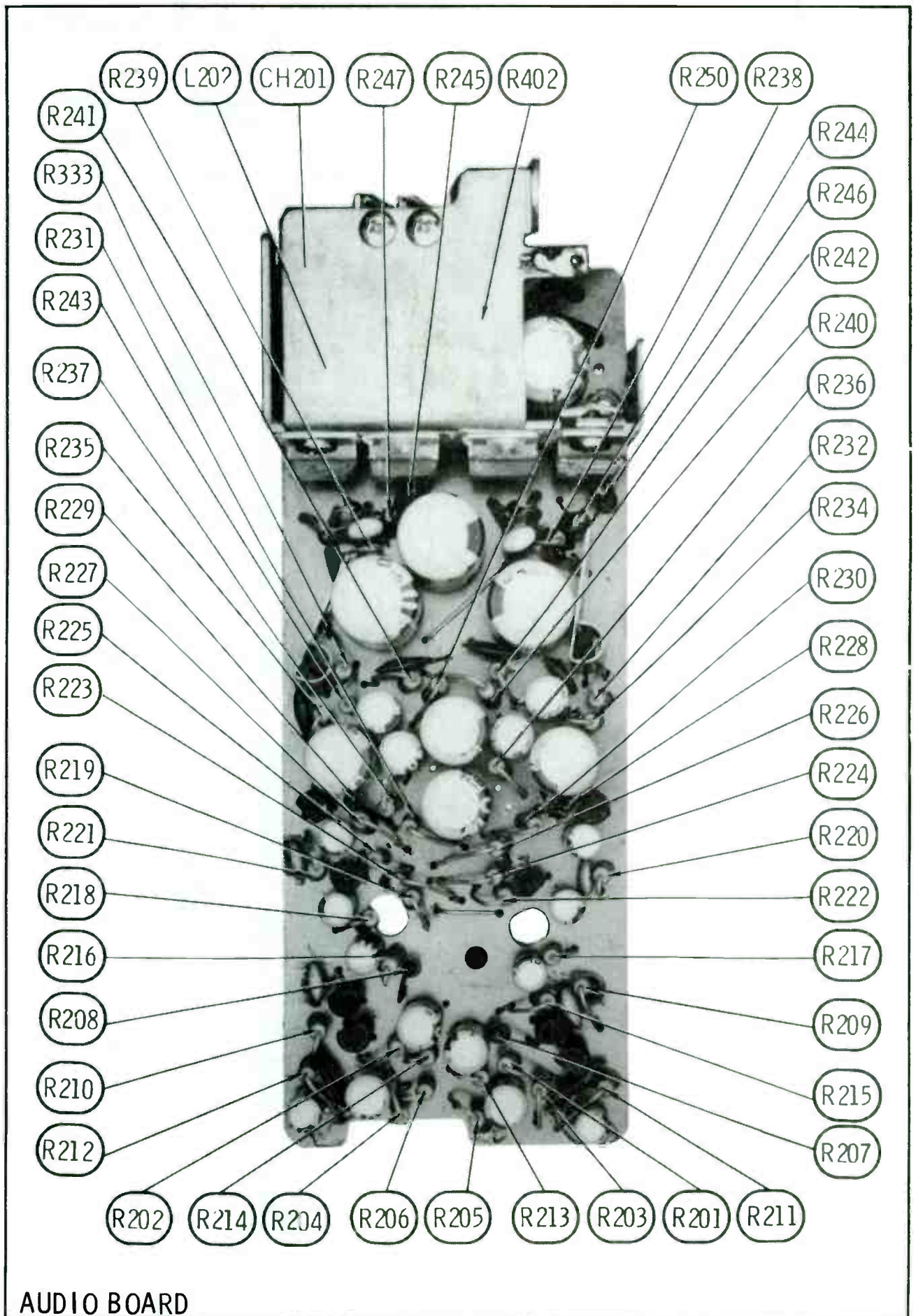


AUDIO BOARD

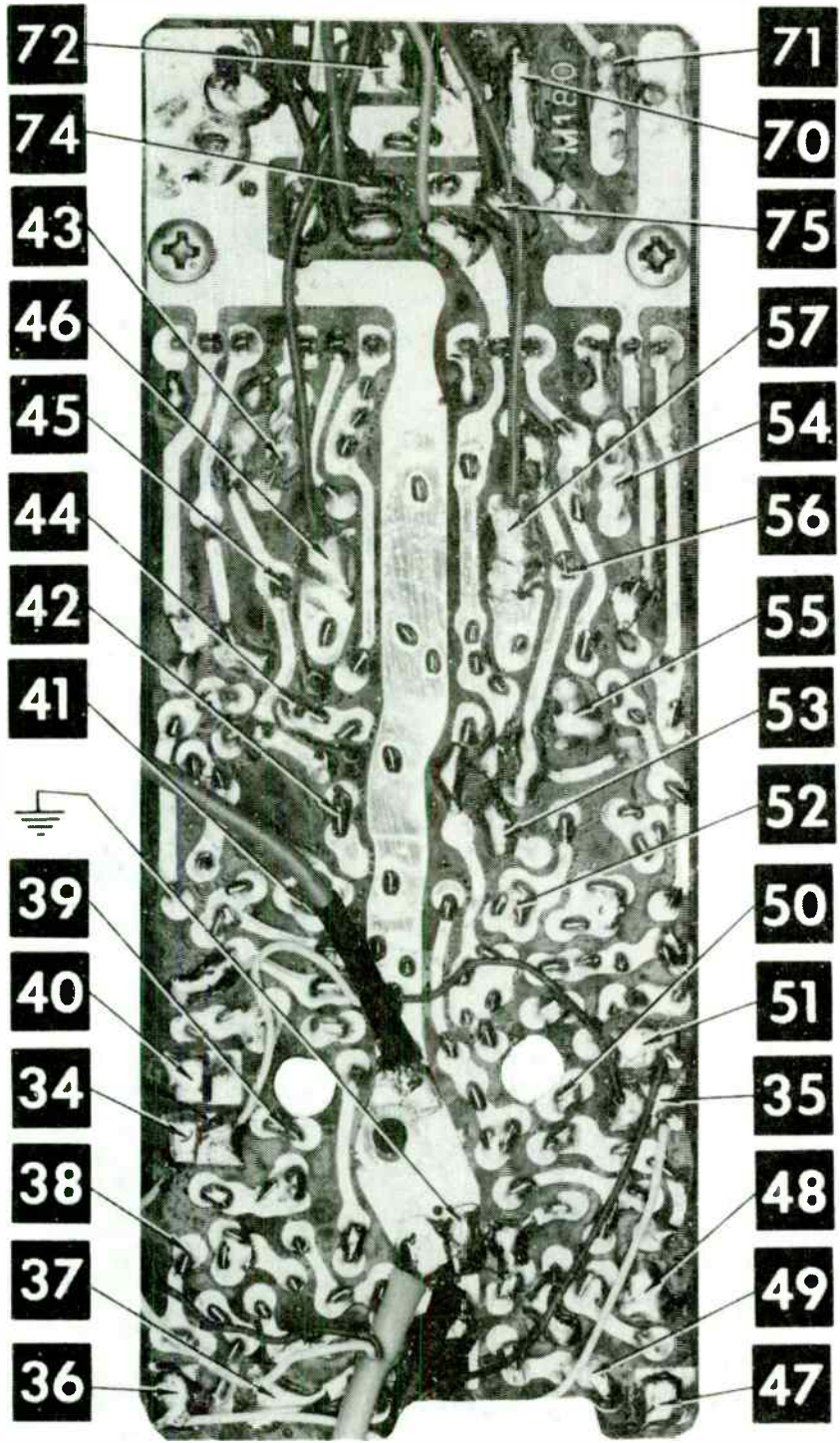


MEDALLION MODEL 65-489

AUDIO BOARD

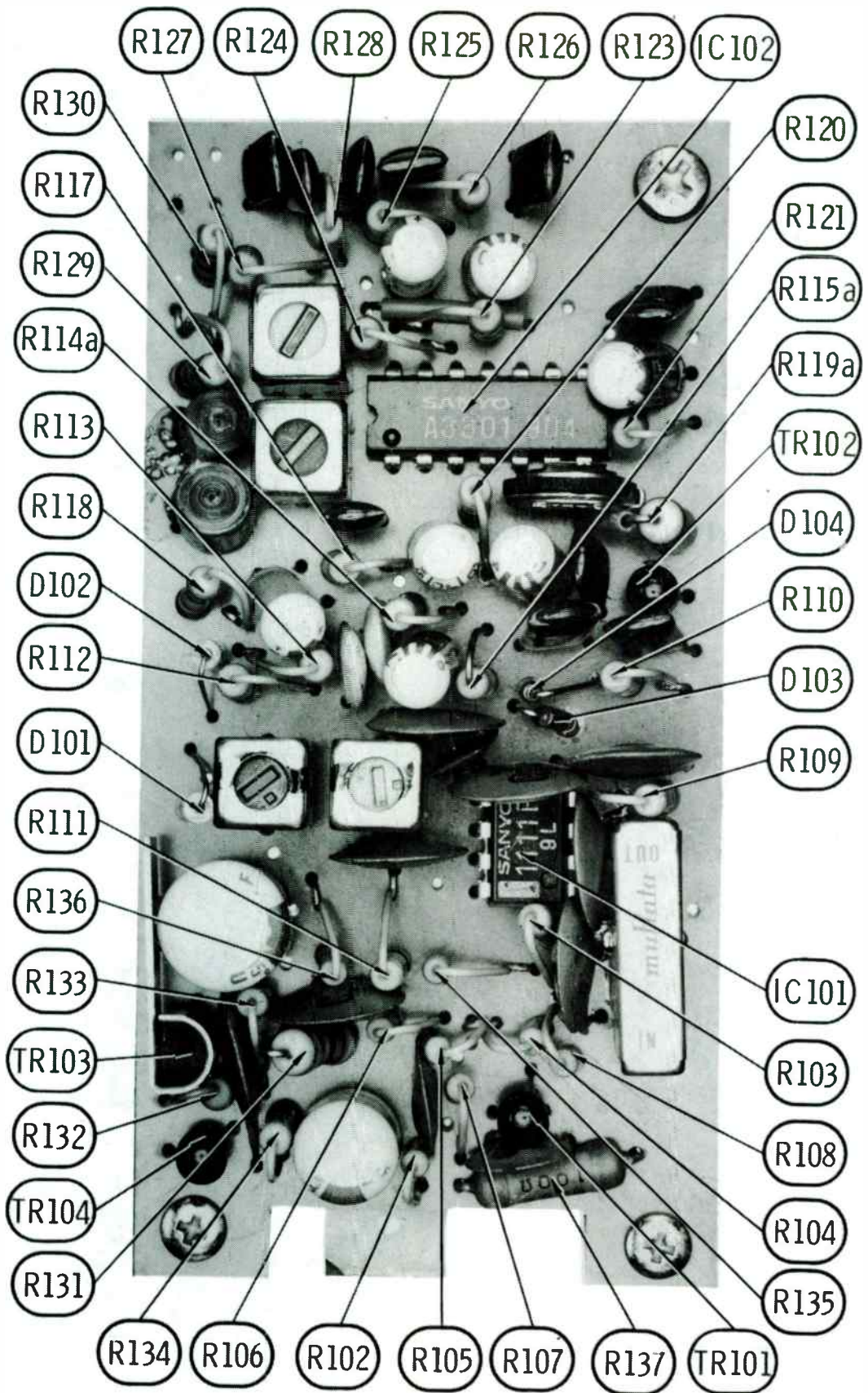


AUDIO BOARD

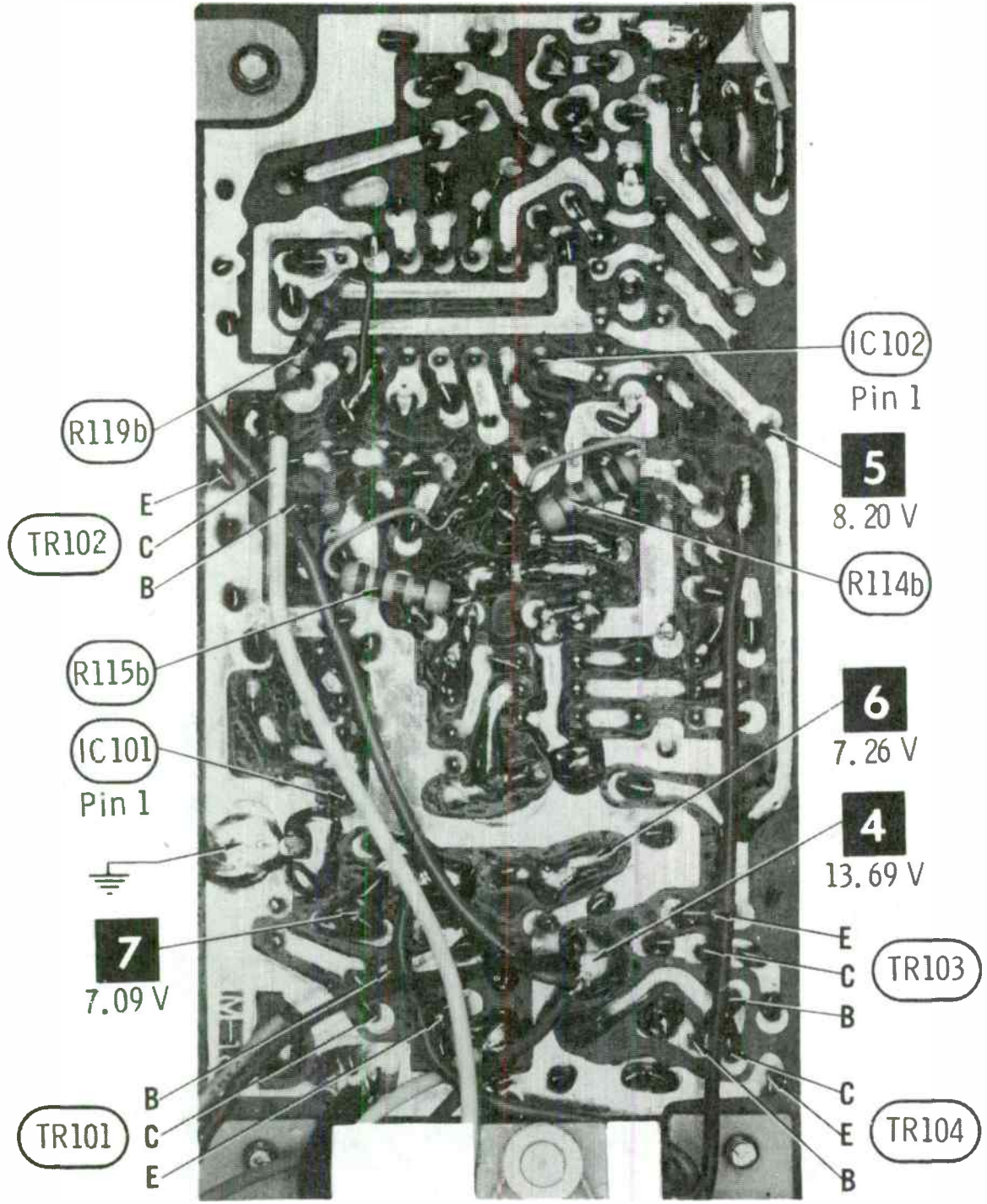


MEDALLION MODEL 65-489

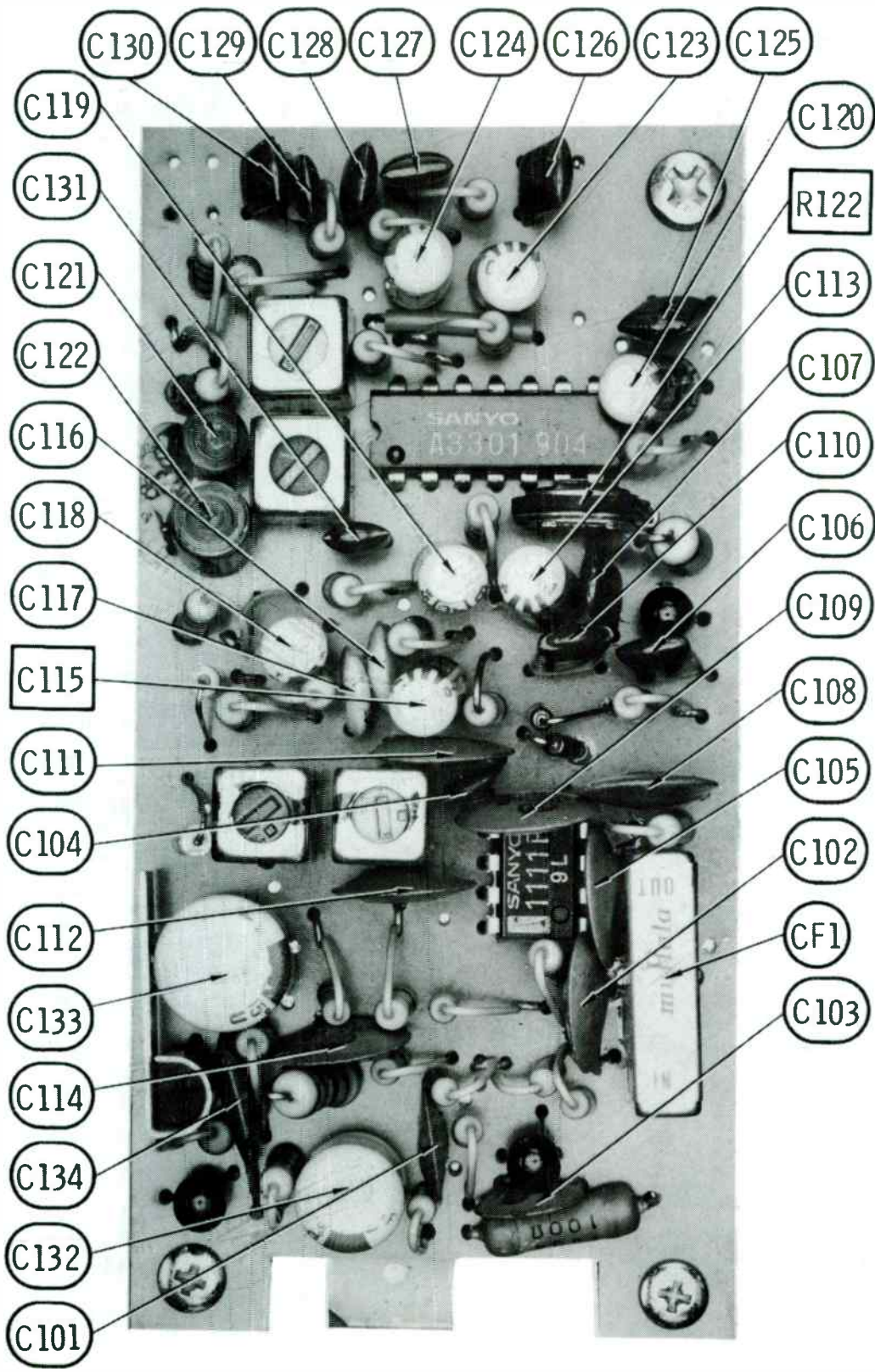
AUDIO BOARD



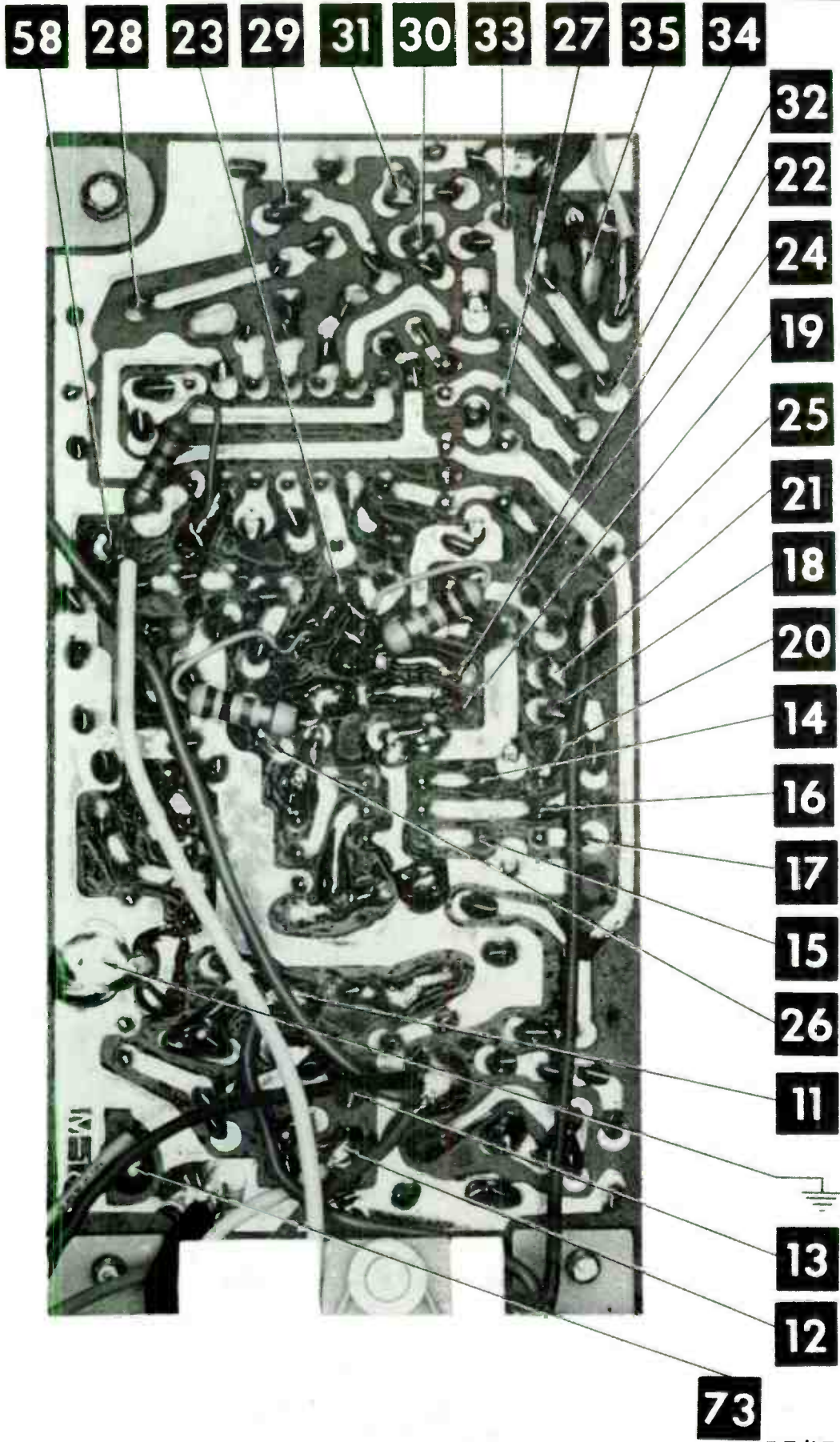
RF/IF BOARD



RF/IF BOARD



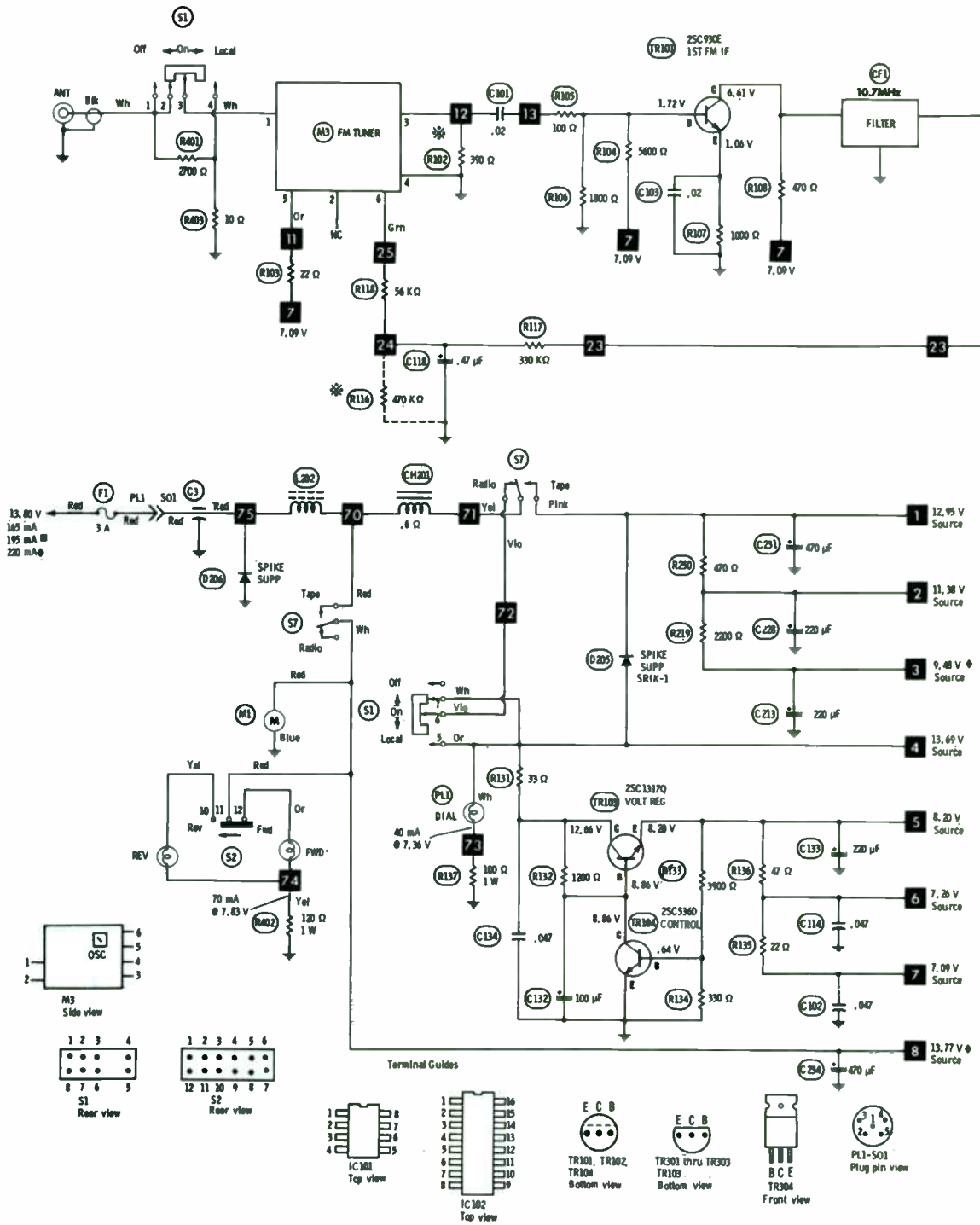
RF/IF BOARD



MEDALLION MODEL 65-489

RF/IF BOARD

NOTE: DEMAGNETIZE HEADS AFTER SERVICING

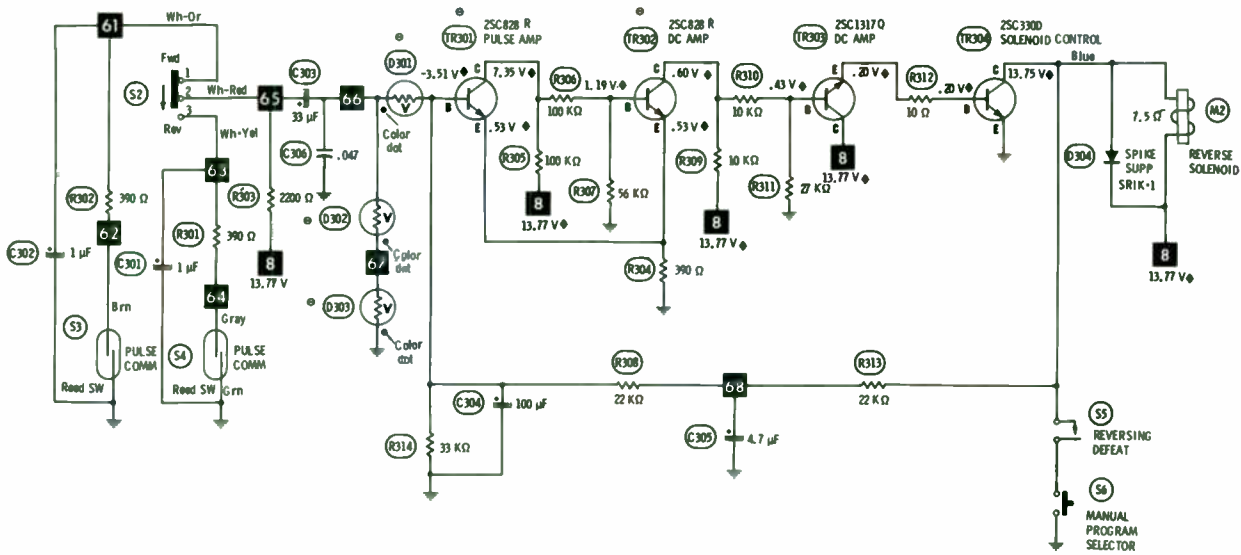
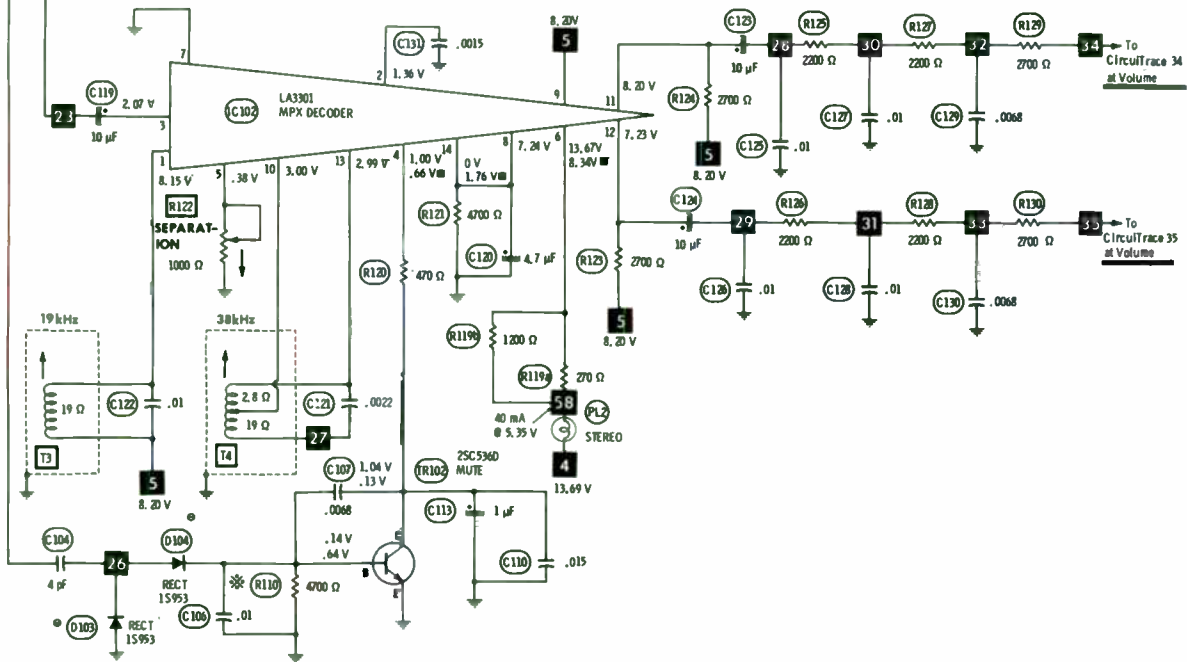
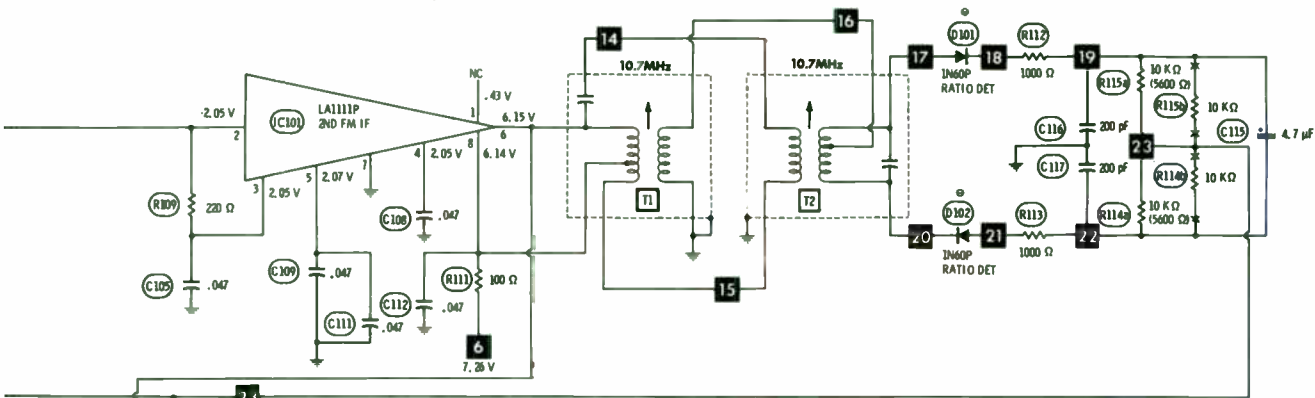


- Circuitry not used in some versions
- - - Circuitry used in some versions
- ⊙ See parts list
- ⊛ Nominal value
- ⊕ Ground
- ⊞ Chassis
- ∇ Common tie point

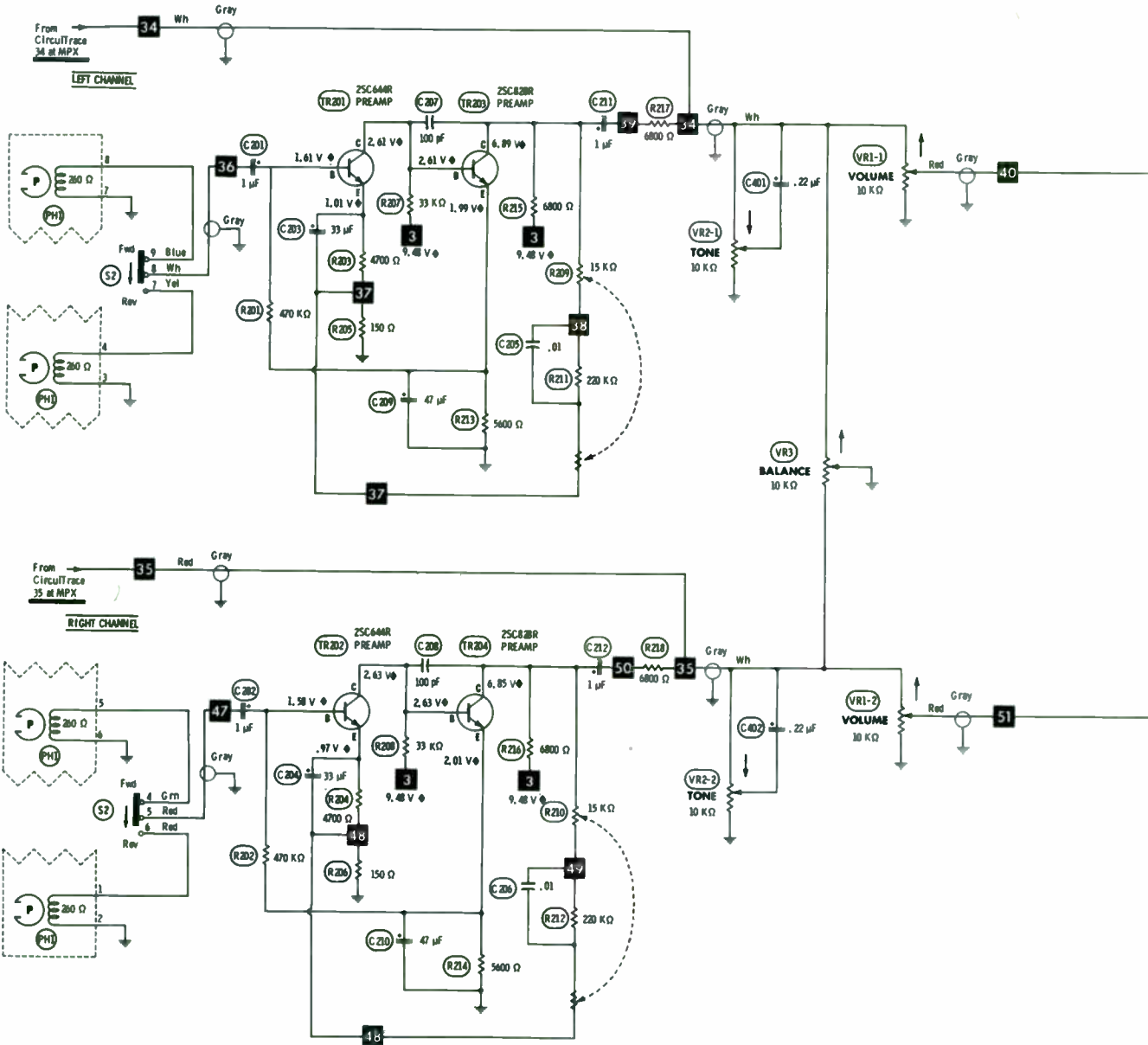
Measurements with switching as shown unless noted:
 ■ FM Stereo signal

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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NOTE: DEMAGNETIZE HEADS AFTER SERVICING



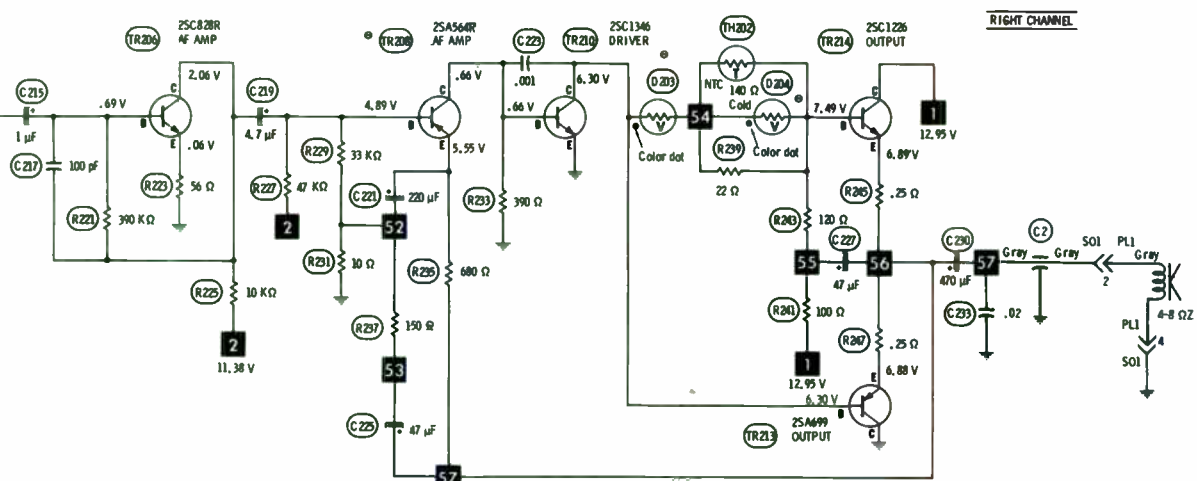
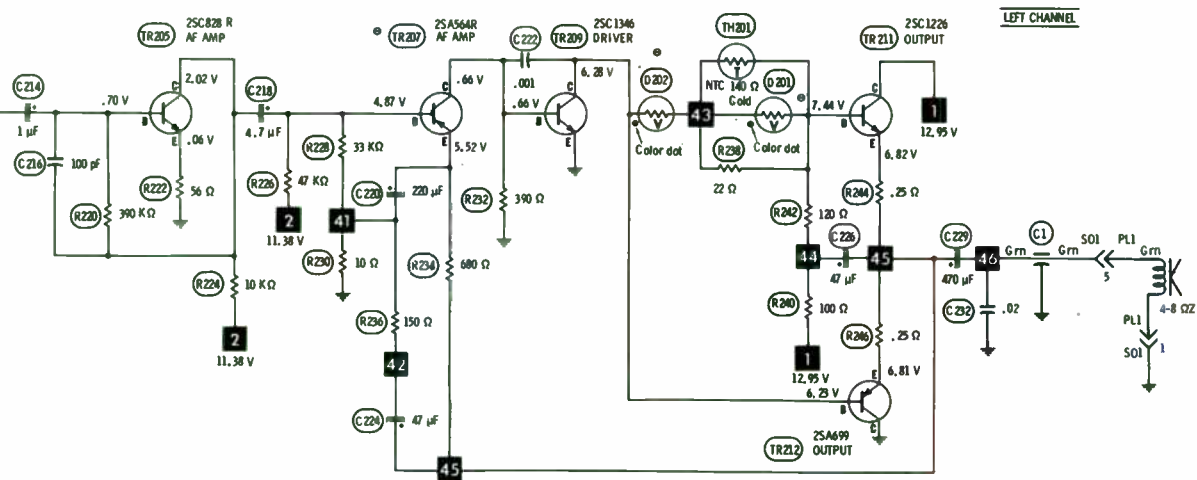
- * Circuitry not used in some versions
- - - Circuitry used in some versions
- ⊙ See parts list
- * Nominal value
- ⊕ Ground
- ⌚ Chassis
- ∇ Common tie point

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

Supply voltage maintained as shown at input.
 Voltages measured with digital meter, no signal.
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 Value in () used in some versions.

A PHOTOFAC STANDARD NOTATION SCHEMATIC
 WITH **CIRCUITRACE**

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Terminal Guides



PH1
Rear view



S1
Rear view



TR201 thru TR210
Bottom view



TR211 thru TR214
Front view



PL1-SO1
Plug pin view

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.
D101	1N60P	09-306019	1N60(7)	1N60 (7)	PTC206M(6)	HEPR9135(7)	RE 86(6)	SK3088(7)	RT-263(7)	ECG110(6)
D102	1N60P	09-306019								
D103	1S953	09-306313	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
	1S1588	09-306135(1)	GE-300	0200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D104	1S953	09-306313	GE-300	0200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
	1S1588	09-306135(1)	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D201	KB-165	09-307085			PTC301					
	MA-26	09-307037(1)			PTC301					
D202	KB-165	09-307085			PTC301					
	MA-26	09-307037(1)			PTC301					
O203	KB-165	09-307085			PTC301					
	MA-26	09-307037(1)			PTC301					
D204	KB-165	09-307085			PTC301					
	NA-26	09-307037(1)			PTC301					
D205	SRIK-1	09-306245	GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D206	SRIK-1	09-306245	GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D301	KB-165	09-307085			PTC301					
	MA-26	09-307037(1)			PTC301					
O302	KB-165	09-307085			PTC301					
	MA-26	09-307037(1)			PTC301					
D303	KB-165	09-307085			PTC301					
	MA-26	09-307037(1)			PTC301					
D304	SRIK-1	09-306245	GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
IC101	LA1111P	09-308050	GE1C-69							
IC102	LA3301	09-308034	GE1C-38		PTC721	HEPC6094P	RE 326-IC		TYCM-6	ECG1006
TR101	2SC930E	09-302037	GE-60	(IR)2SC772	PTC132	HEPS0016	RE 9	SK3039	RT-308	ECG229
TR102	2SC536D	09-302053	GE-212	(IR)2SC536	PTC121	HEPS0016	RE 192	SK3124	RT-107A	ECG199
TR103	2SC1317Q	09-302173	GE-210	(IR)2SC838	PTC178	HEPS0015	RE 13	SK3024	RT-107A	ECG289
	2SC1346	09-302226(1)	GE-63	TR-51	PTC123	HEPS3013	RE 13	SK3020	RT-100	ECG123A
TR104	2SC536D	09-302053	GE-212	(IR)2SC536	PTC121	HEPS0016	RE 192	SK3124	RT-107A	ECG199
TR201	2SC644R	09-302085	GE-62	(IR)2SC644	PTC139	HEPS0024	RE 192	SK3124	RT-172	ECG199
TR202	2SC644R	09-302085	GE-62	(IR)2SC644	PTC139	HEPS0024	RE 192	SK3124	RT-172	ECG199
TR203	2SC828R	09-302038	GE-61	(IR)2SC828A	PTC121	HEPS0015	RE 192	SK3122	RT-302	ECG199
TR204	2SC828R	09-302038	GE-61	(IR)2SC828A	PTC121	HEPS0015	RE 192	SK3122	RT-302	ECG199
TR205	2SC828R	09-302038	GE-61	(IR)2SC828A	PTC121	HEPS0015	RE 192	SK3122	RT-302	ECG199
TR206	2SC828R	09-302038	GE-61	(IR)2SC828A	PTC121	HEPS0015	RE 192	SK3122	RT-302	ECG199
TR207	2SA564R	09-300036	GE-65	(IR)2SA564A	PTC103	HEPS0019	RE 26	SK3114	RT-303	ECG234
	2SA719	09-300070(1)	GE-21	TR-28	PTC103	HEPS0012	RE 26	SK3114	RT-126A	ECG159
TR208	2SA564R	09-300036	GE-65	(IR)2SA564A	PTC103	HEPS0019	RE 26	SK3114	RT-303	ECG234
	2SA719	09-300070(1)	GE-21	TR-28	PTC103	HEPS0012	RE 26	SK3114	RT-126A	ECG159
TR209	2SC1346	09-302226	GE-63	TR-51	PTC123	HEPS3013	RE 13	SK3020	RT-100	ECG123A
TR210	2SC1346	09-302226	GE-63	TR-51	PTC123	HEPS3013	RE 13	SK3020	RT-100	ECG123A
TR211	2SC1226	09-302123(5)	GE-28	TR-55	PTC110	HEPS5027	RE 42	SK3054	RT-167	ECG186A
TR212	2SA699	09-300073(5)	GE-29	TR-56	PTC111	HEPS5028	RE 43	SK3083	RT-167	ECG187
TR213	2SA699	09-300073(5)	GE-29	TR-56	PTC111	HEPS5028	RE 43	SK3083	RT-167	ECG187
TR214	2SC1226	09-302123(5)	GE-28	TR-55	PTC110	HEPS5027	RE 42	SK3054	RT-167	ECG186A
TR301	2SC828R	09-302038	GE-61	(IR)2SC828A	PTC121	HEPS0015	RE 192	SK3122	RT-302	ECG199
	2SC945	09-302125(1)	GE-212	(IR)2SC945	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
	2SC536	09-302053(1)	GE-210	(IR)2SC536	PTC121	HEPS0016	RE 192	SK3124	RT-107A	ECG199
TR302	2SC828R	09-302038	GE-61	(IR)2SC828A	PTC121	HEPS0015	RE 192	SK3122	RT-302	ECG199
	2SC945	09-302125(1)	GE-212	(IR)2SC945	PTC121	HEPS0015	RE 192	SK3124	RT-107A	ECG199
	2SC536	09-302053(1)	GE-210	(IR)2SC536	PTC121	HEPS0016	RE 192	SK3124	RT-107A	ECG199
TR303	2SC1317Q	09-302173	GE-212	(IR)2SC838	PTC178	HEPS0015	RE 13	SK3024	RT-107A	ECG289
	2SC1318	09-302222(1)	GE-210	TR-21	PTC178	HEPS0015	RE 17	SK3122	RT-302	ECG128
TR304	2SD330D	09-303032	GE-66	TR-76	PTC167	HEPS5027	RE 21	SK3054	RT-154	ECG152
	2SD389	09-303033(1)	GE-66	TR-76	PTC154	HEPS5000	RE 21	SK3054	RT-197	ECG152

- (1) Used in some versions.
- (5) Half of complementary pair.
- (6) Matched pair.
- (7) Two required - select matched pair.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C113	1 50V	77-333105	PC1-50	YTT1863	EV-1615
C115	4.7 25V	77-339475	PC5-50	YTT4R7A50	EV-1319
C118	.47 50V	77-333473	PC1-50	YTT4R7B63	EV-1610
C119	10 16V	77-336106	PC10-25	YTT10A25	EV-1222
C120	4.7 25V	77-339475	PC5-50	YTT4R7A50	EV-1319
C123	10 16V	77-336106	PC10-25	YTT10A25	EV-1222
C124	10 16V	77-336106	PC10-25	YTT10A25	EV-1222
C132	100 10V	77-336107	PC100-10	YTT100E10	EV-1130
C133	220 16V	77-337227	PC250-25	YTT220G16	EV-1240
C201	1 50V	77-333105	PC1-50	YTT1863	EV-1615
C202	1 50V	77-333105	PC1-50	YTT1863	EV-1615
C203	33 6.3V	77-332336	PC30-25	YTT33A10	EV-1125
C204	33 6.3V	77-332336	PC30-25	YTT33A10	EV-1125
C209	47 10V	77-336476	PC50-16	YTT47D16	EV-1226
C210	47 10V	77-336476	PC50-16	YTT47D16	EV-1226
C211	1 50V	77-333105	PC1-50	YTT1863	EV-1615
C212	1 50V	77-333105	PC1-50	YTT1863	EV-1615
C213	220 16V	77-337227	PC250-25	YTT220G16	EV-1240
C214	1 50V	77-333105	PC1-50	YTT1863	EV-1615
C215	1 50V	77-333105	PC1-50	YTT1863	EV-1615
C218	4.7 25V	77-339475	PC5-50	YTT4R7A50	EV-1319
C219	4.7 25V	77-339475	PC5-50	YTT4R7A50	EV-1319
C220	220 16V	77-337227	PC250-25	YTT220G16	EV-1240
C221	220 16V	77-337227	PC250-25	YTT220G16	EV-1240

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.
C224	47 10V	77-336476	PC50-16	VTT47D16	EV-1226
C225	47 10V	77-336476	PC50-16	VTT47D16	EV-1226
C226	47 10V	77-336476	PC50-16	VTT47D16	EV-1226
C227	47 10V	77-336476	PC50-16	VTT47D16	EV-1226
C228	220 16V	77-337227	PC250-25	VTT220G16	EV-1240
C229	470 16V	77-337477	PC500-16	VTT470J16	EV-1250
C230	470 16V	77-337477	PC500-16	VTT470J16	EV-1250
C231	470 16V	77-337477	PC500-16	VTT470J16	EV-1250
C234	470 16V	77-337477	PC500-16	VTT470J16	EV-1250
C301	1 50V	77-333105	PC1-50	VTT1B63	EV-1615
C302	1 50V	77-333105	PC1-50	VTT1B63	EV-1615
C303	33 16V	77-337336	PC30-25	VTT33D25	EV-1325
C304	100 10V	77-336107	PC100-10	VTT100E10	EV-1130
C305	1.7 25V	77-339475	PC5-50	VTT47A50	EV-1319
C401	.22 25V	77-339224		TDC224M050EL	SD50-R229
C402	.22 25V	77-339224		TDC224M050EL	SD50-R229

CAPACITORS

ITEM No.	RATING	MFGR. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C1						
C2						
C3						
C101	.02		UK50-223		MAG5012	
C102	.047		UK50-503		MAG5015	
C103	.02		UK50-223		MAG5012	
C104	.047	78-551409		CD15CD050D03		MWA-050
C105	.047		UK50-503		MAG5015	
C106	.01			WMF1S1	EWFA110	1PB-S10
C107	.0068			WMF1D68	EWFA268	1PB-D68
C108	.047		UK50-503		MAG5015	
C109	.047		UK50-503		MAG5015	
C110	.015	78-651153			M192P1539R8	192P1539R8
C111	.047		UK50-503		MAG5015	
C112	.047		UK50-503		MAG5015	
C114	.047		UK50-503		MAG5015	
C116	200		DD-201	GP200	GP320	10TS-T20
C117	200		DD-201	GP200	GP320	10TS-T20
C121	.0022	78-351222			M192P2229R8	192P2229R8
C122	.01			WMF1S1	EWFA110	1PB-S10
C125	.01			WMF1S1	EWFA110	1PB-S10
C126	.01			WMF1S1	EWFA110	1PB-S10
C127	.01			WMF1S1	EWFA110	1PB-S10
C128	.01			WMF1S1	EWFA110	1PB-S10
C129	.0068			WMF1D68	EWFA268	1PB-D68
C130	.0068			WMF1D68	EWFA268	1PB-D68
C131	.0015			DPMS6D15	EW6215	6PS-D15
C134	.047		UK50-503		MAG5015	
C205	.01		UK50-103		MAG5011	
C206	.01		UK50-103		MAG5011	
C207	100		DD-101	GP100	GP310	10TS-T10
C208	100		DD-101	GP100	GP310	10TS-T10
C216	100		DD-101	GP100	GP310	10TS-T10
C217	100		DD-101	GP100	GP310	10TS-T10
C222	.001		DD-102G	GP1000	GP210	56A-D10
C223	.001		DD-102G	GP1000	GP210	56A-D10
C232	.02 25V	78-121203	UK50-223		MAG5012	
C233	.02 25V	78-121203	UK50-223		MAG5012	
C306	.047 25V		UK25-503		MAG2515	HY-735

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.
VR1-1	Volume-Left	10K	65-160052				
VR1-2	Volume-Right	10K					
VR2-1	Tone-Left	10K	65-160053				
VR2-2	Tone-Right	10K					
VR3	Balance	10K	65-162028				

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFGR. PART No.			WORKMAN PART No.	MFGR. PART No.
TH201	140 NTC Cold		09-307062 or 09-307096	TH202	140 NTC Cold		09-307062 or 09-307096

MEDALLION MODEL 65-489

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.	
L202	RF Choke	65-178066			
T1	IF (10.7MHz)	65-093026			
T2	IF (10.7MHz)	65-093027			
T3	19kHz	65-094043			
T4	38kHz	65-094044			

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000~)	MFRG. PART No.	THORDARSON PART No.	TRIAD PART No.	
CH201	220mA	.6	3.0mH	65-178062			

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			AGC-3	HDJ	312003	155020		

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CF-1	Ceramic Filter	65-179020	(SPW 10.7mA)
PH-1	Tape Head	65-193010	4 Track/Stereo Play
M1	Motor	65-190026	Tape Transport (2400 rpm @ 13.78 Volts)
M2	Solenoid	65-105025	Reversing
M3	Tuner Assembly	65-078034	FM
S1	Switch	65-183062	Power/Local
S2	Switch	65-183052	Fwd./Reverse
S3	Switch	65-183053	Pulse Commutator
S4	Switch	65-183053	Pulse Commutator
S5	Switch	65-183059	Reverse Defeat
S6	Bracket	65-158300	Switch Support
S7	Shaft	65-156225	Program Select
	Switch		Radio/Tape

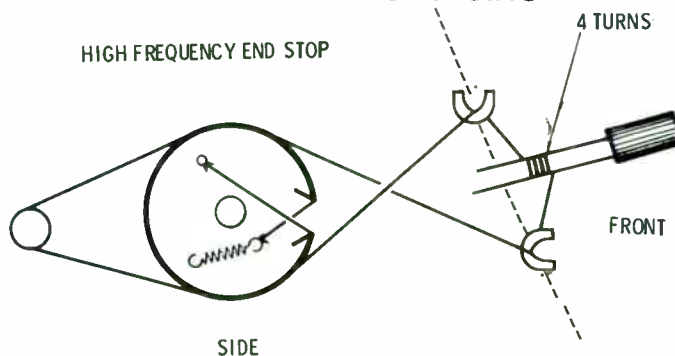
CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Escutcheon		Plate, Fast Forward	65-020253
Scale, Dial	65-150144	Plate, Eject Knob	65-020254
Pulley, Dial Scale	65-150141	Knob, Program Select	65-113023
Door, Tape	65-018036	Knob, Tuning	65-110067
Spring, Tape Door	65-152244	Knob, Control	65-110068
Shaft, Tape Door	65-156230		

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 13 Colors 8524 (Stranded) Available in 13 Colors
Shielded Hook-up Wire	Use BELDEN No. 8401 or 8421
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.)

DIAL CORD STRINGING





PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index



MODEL TF852AX

MOTOROLA MODEL TF852AX

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 (28) dirty, worn, or broken. Assembly (24) binding. Motor defective or not supplied with power.
Track-shift mechanism inoperative	Switch (E152) dirty. Cam (39) binding or worn. Pawls (35A) and (35B) worn. Spring (35C) weak or broken. Arms (18A) and (18B) binding. Solenoid (E151) defective or not supplied with power. Cartridge defective.
Wow or flutter	Belt (28) 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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6AL964

MECHANICAL PARTS LIST

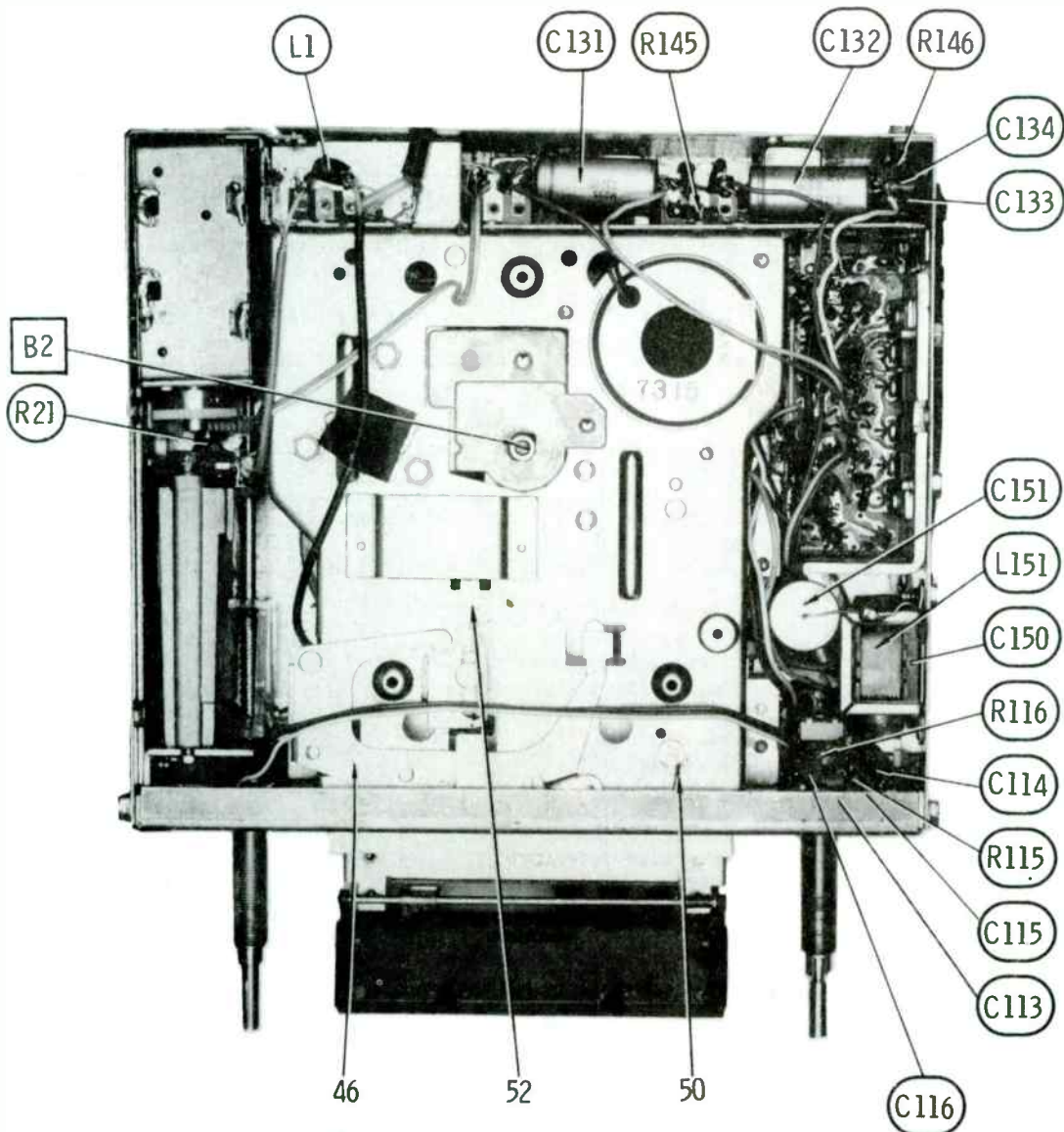
REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
12	7B41491G01	Head Shifting Assembly	34	46A41494G01	Tape Scrapper
15	41A41505G01	Azimuth Spring	35	1V43500G99	Plunger Assembly
17	41A40883G01	Head Return Springs (2 used)	35A	(1)	Pull Pawl
18A	45A41460G01	Upper Radius Arm	35B	(1)	Push Pawl
18B	45A41460G01	Lower Radius Arm	35C	(1)	Pawl Spring
21	1V41700G14	Flywheel	39	45B43845G01	Track Changing Cam
24	1V41220G29	Flywheel Housing Assembly	46	1V41220G38	Cartridge Detent Arm
26	41A41452G01	Solenoid Spring	50	41B42071B01	Cartridge Detent Spring
27	1V43800G99	Head Shifting Mounting Plate	52	7A43648G01	Cartridge Slide
28*	42B42683B03*	Flywheel Drive Belt*			

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

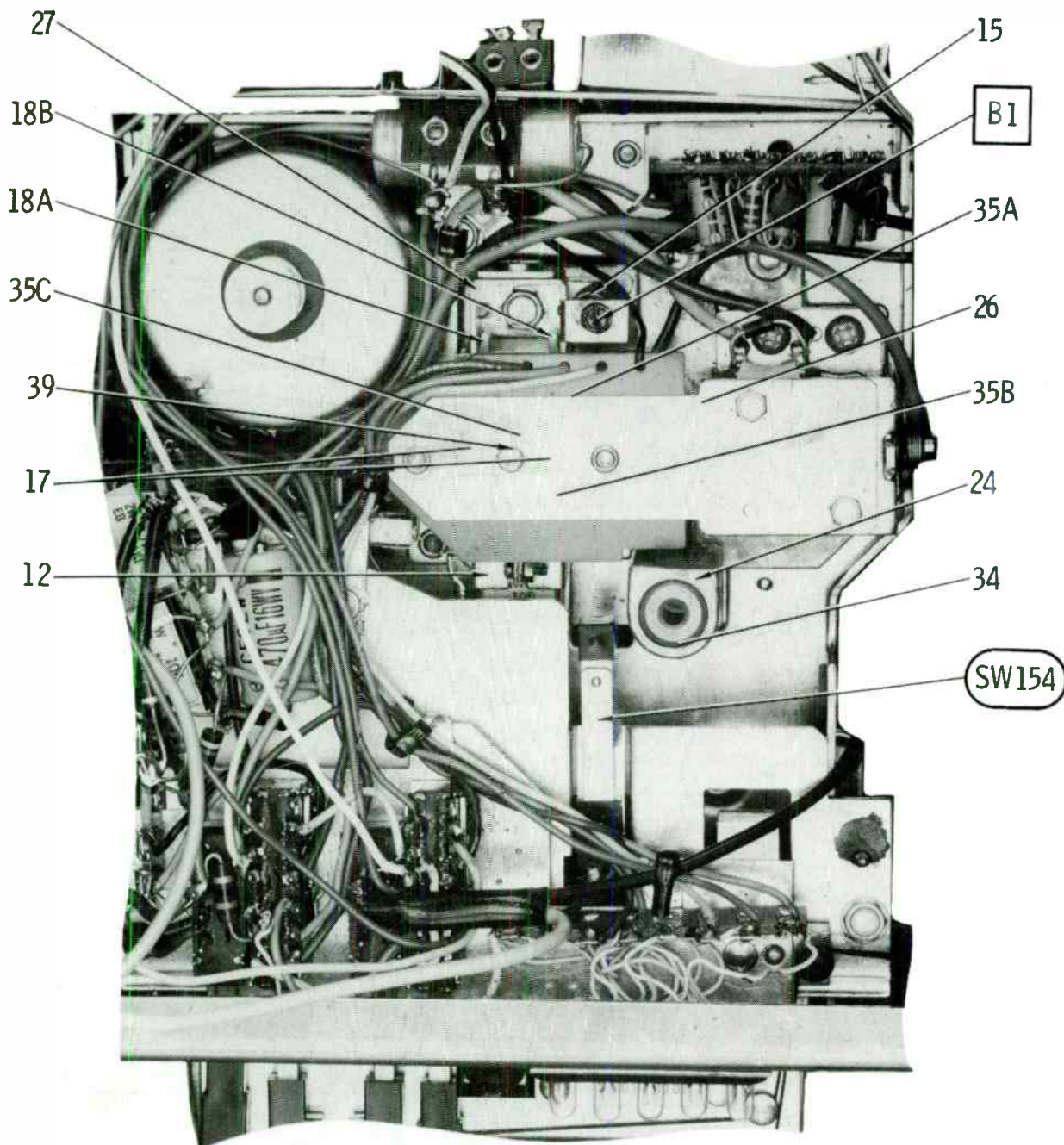
(1)Part of Plunger & Ratchet Assembly, Part #1V43500G99.

CLEANING LUBRICATING HEAD DEMAGNETIZING

Refer to
"General Servicing Information"
on page 4.



CHASSIS-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

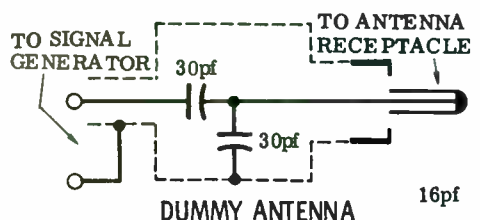
PUSH-BUTTON ADJUSTMENT

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

Connect low sides of generator and indicator to ground unless specified otherwise.

GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
High side thru .1uF to point Ant Input low side to ground.	262kHz 400-Hz mod.	High freq. end stop.	Output meter across voice coil.	T22 a,T22b T21a, T21b	Adjust for maximum.
Thru dummy antenna to antenna input.	1615kHz	"	"	TR23 TR22 TR21	"
Tuner alignment is not necessary unless associated components have been disturbed. If necessary, back tuning cores L21,L22,L23 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.	L23,L22, L21	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 TR21 for maximum output. Antenna adjustment TR21 is located inside tape door left rear corner.



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

High side of generator thru .001uF to Ant Input.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MHz Unmodulated	Point of non-interference	DC probe of VTVM to junction of R91 & C92.	L61,T1	Adjust for maximum.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

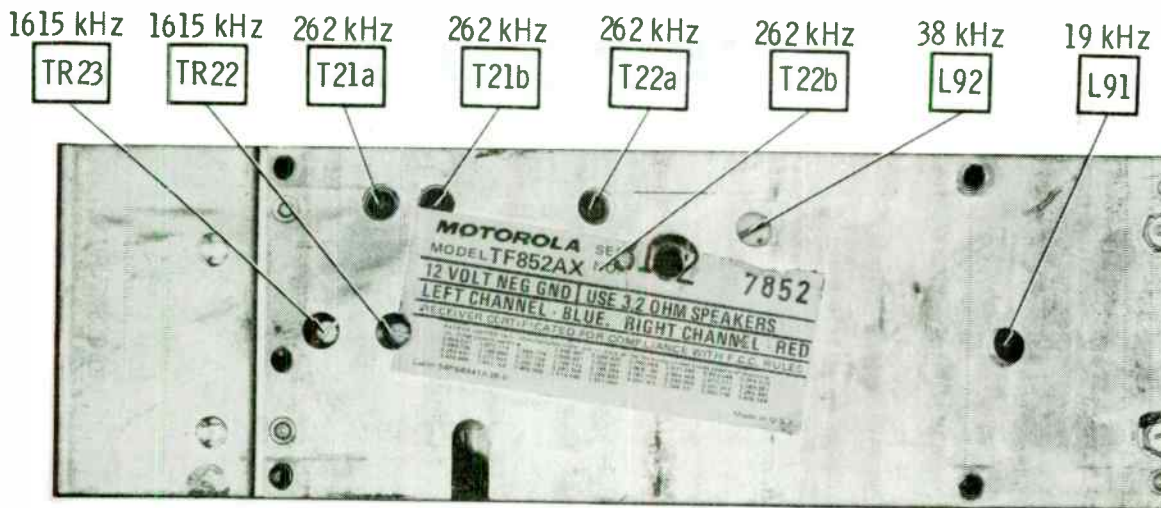
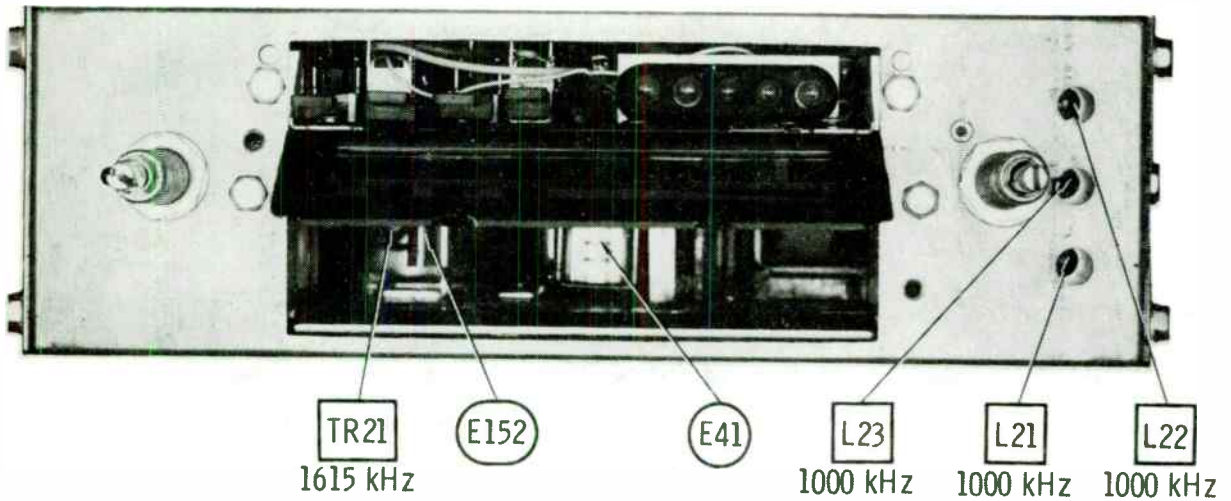
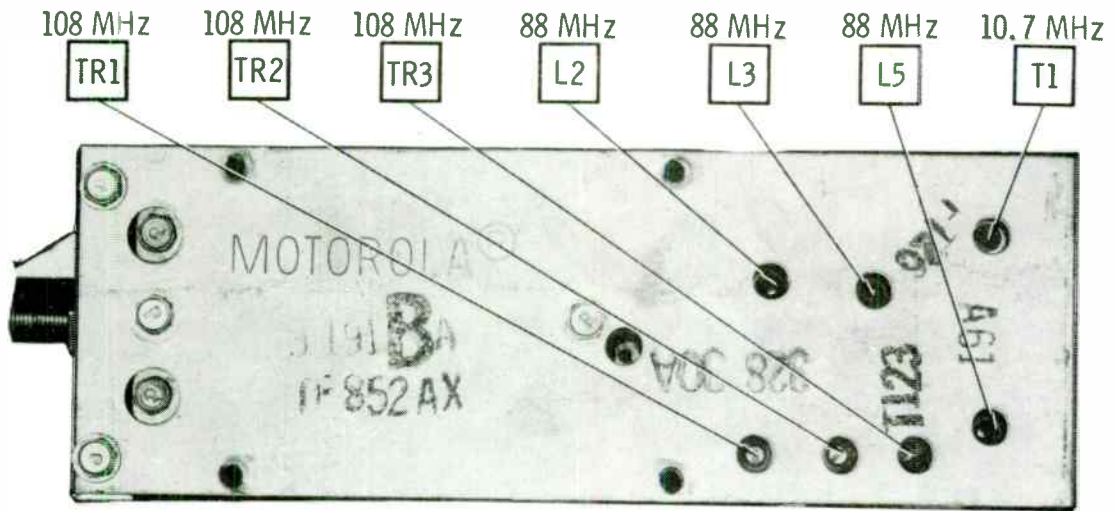
Connect generator across antenna terminals with 120-ohm carbon resistor in series with each lead. Adjustment of coils by bending should not be attempted unless the coil is deformed or replaced.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
88MHz Unmodulated	Low Freq End Stop	DC probe of VTVM to junction of R91 & C92	L5,L3,L2	Adjust for maximum.
108MHz Unmodulated	High Freq End Stop	"	TR3,TR2,TR1	Adjust for maximum. Repeat FM RF steps until no further improvement is noted.

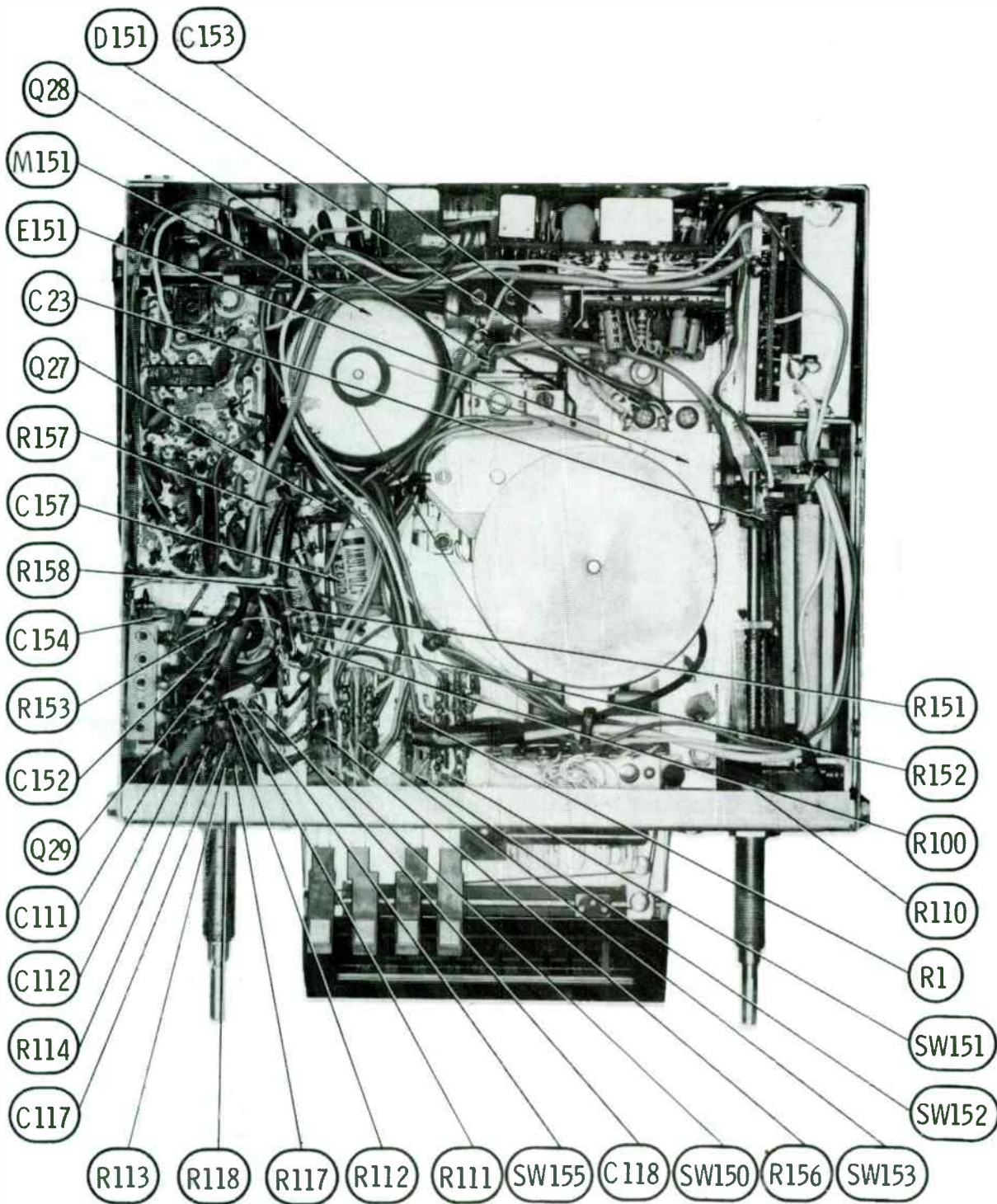
FM STEREO MULTIPLEX ALIGNMENT USING FM STEREO SIGNAL GENERATOR (± .0001% ACCURACY)

High side of generator thru 47K to Ant Input.

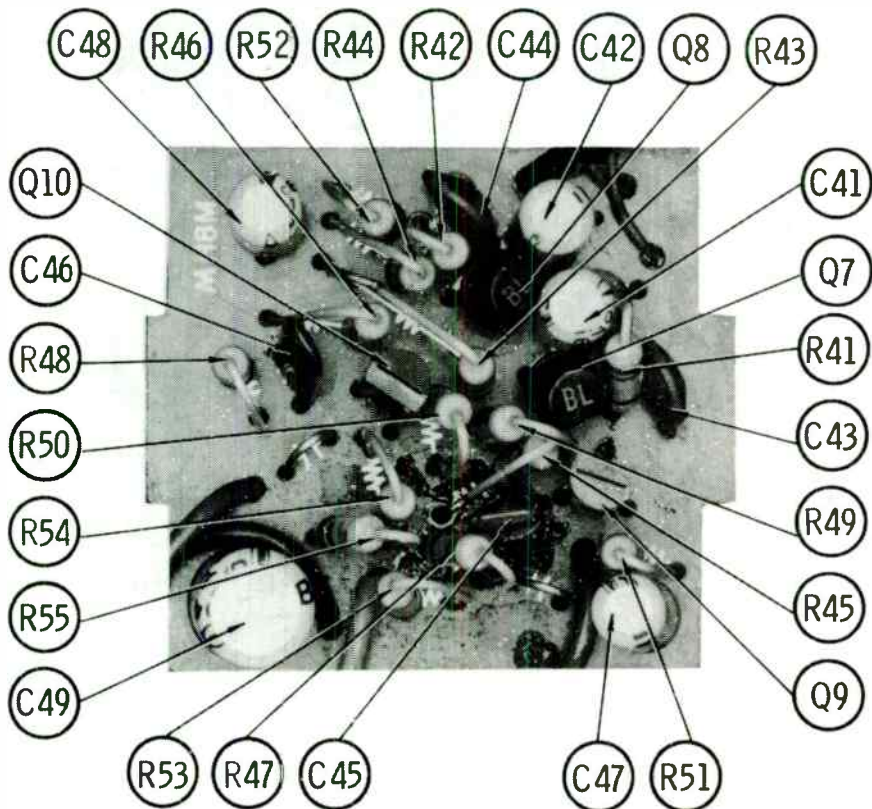
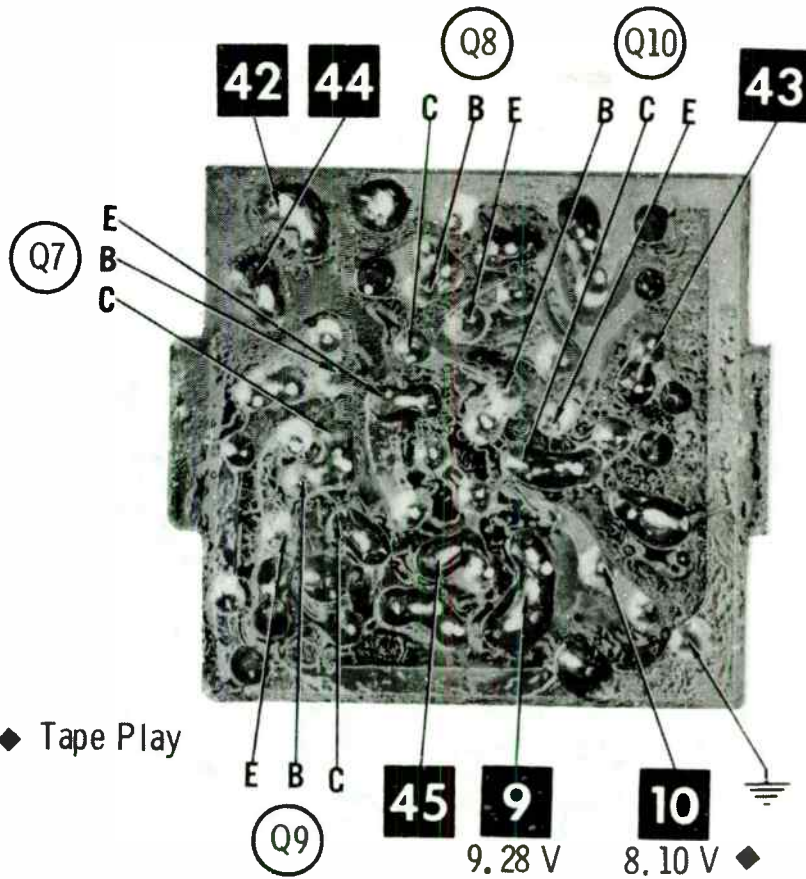
GENERATOR FREQUENCY	INDICATOR	ADJUST	REMARKS
Modulated Left Channel	Vert input of scope to Pin 11 of IC2	L91,L92	Adjust for MINIMUM. This step should require only slight adjustment.
Modulated Right Channel	Vert input of scope to Pin 12 of IC2		Check for MINIMUM. If necessary, make compromise adjustment of L91,L92.



CHASSIS-SIDE/FRONT/REAR VIEW

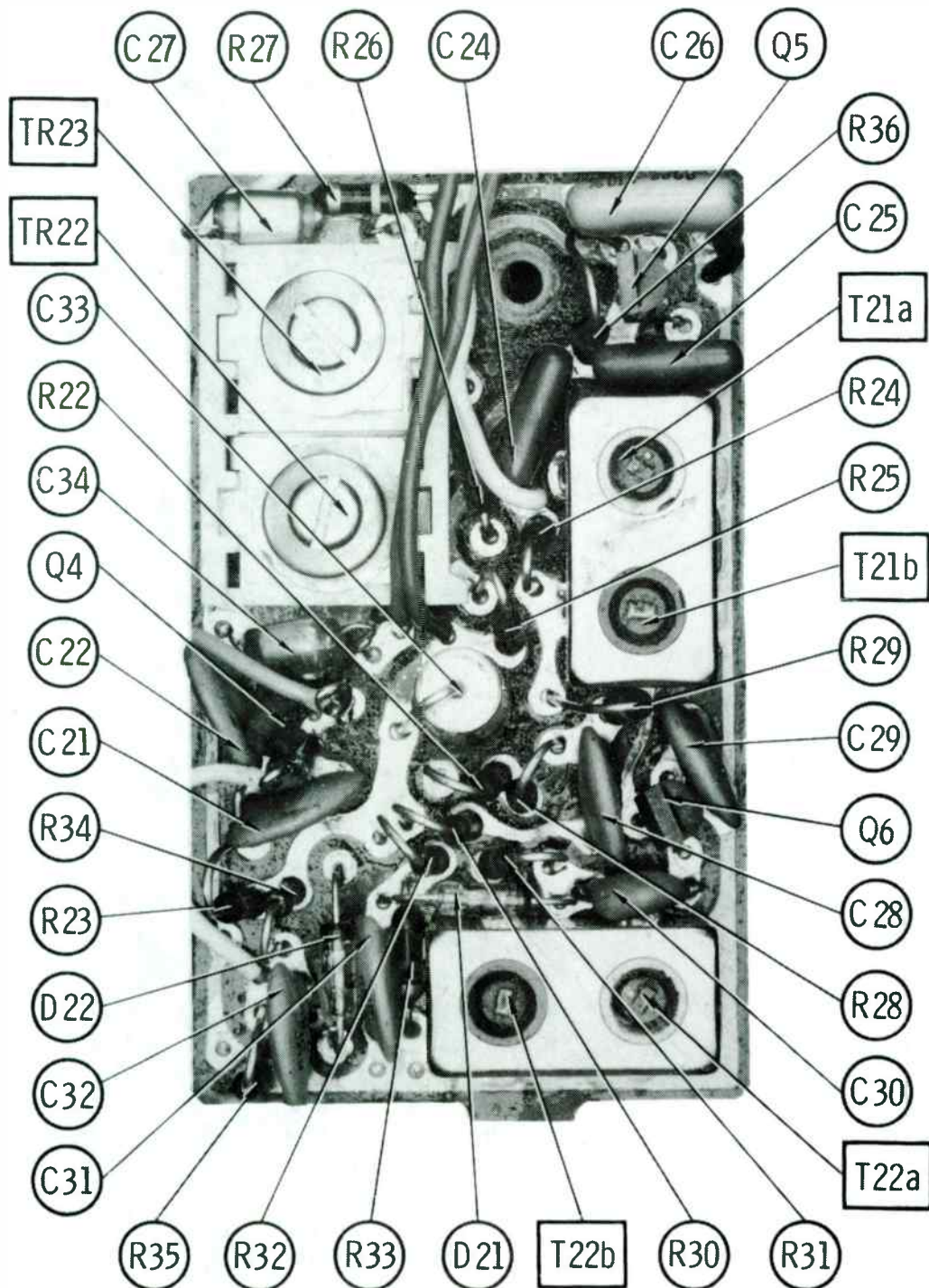


CHASSIS-TOP VIEW

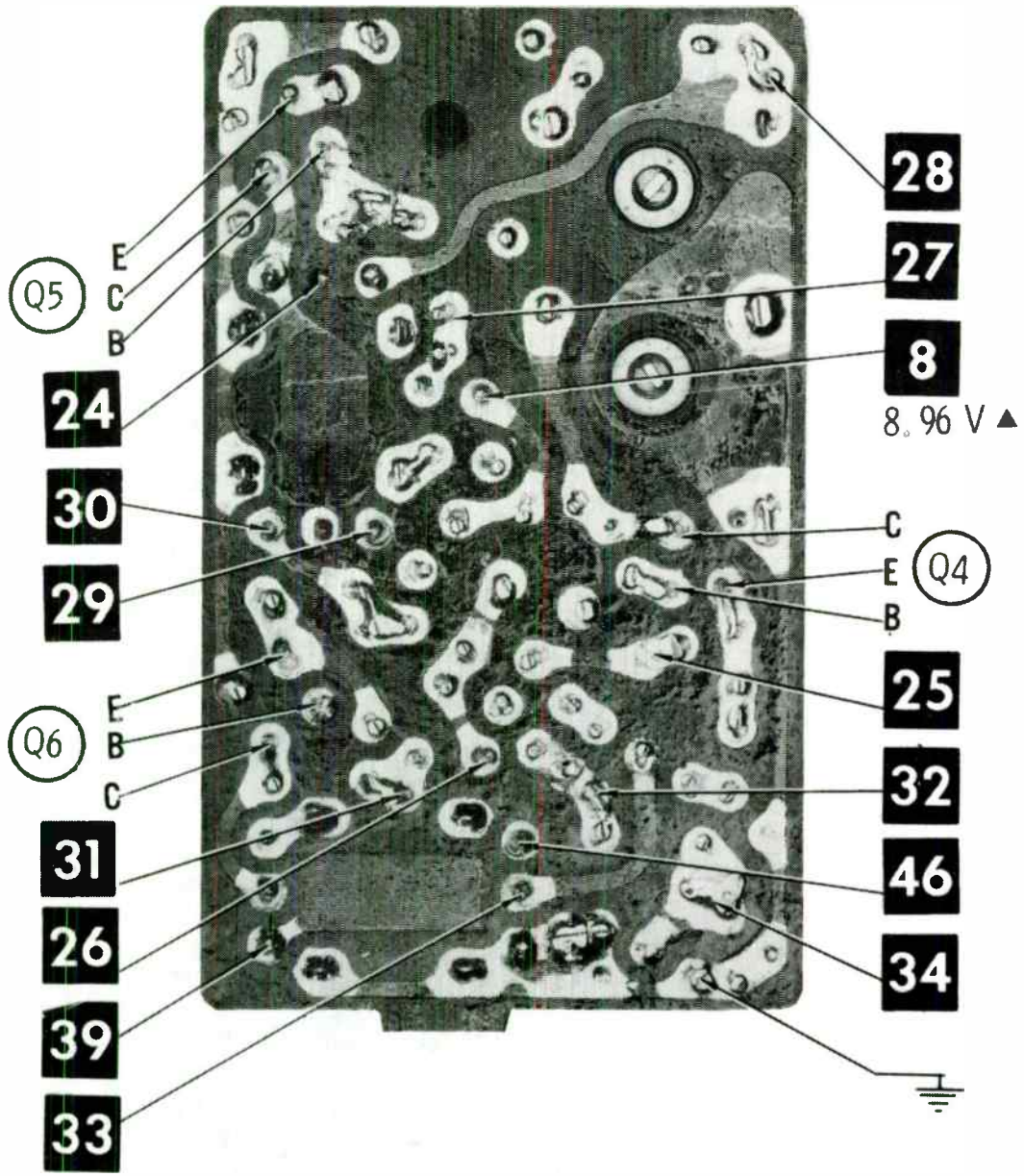


PREAMP BOARD

MOTOROLA MODEL TF852AX



AM BOARD

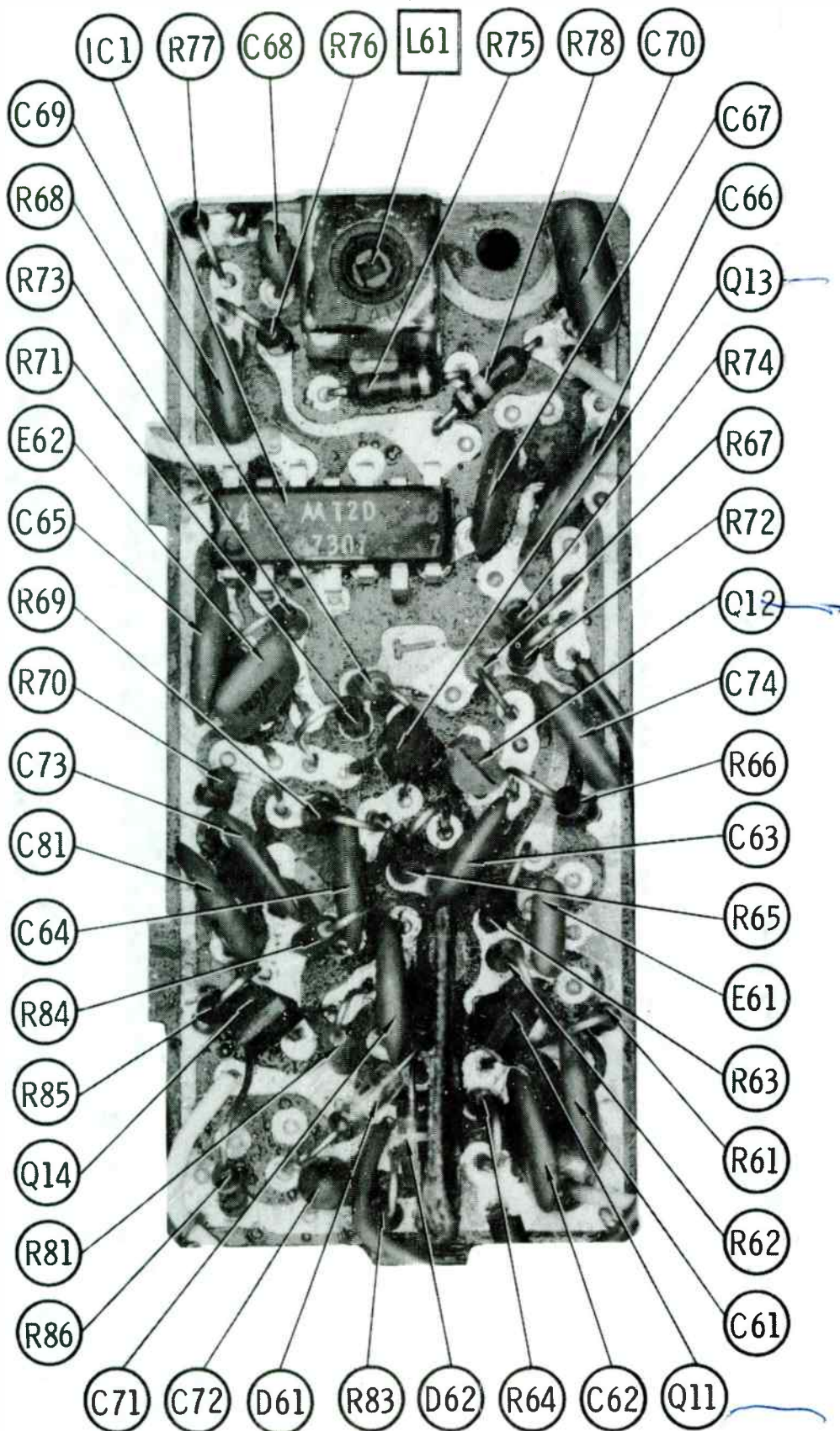


▲ AM

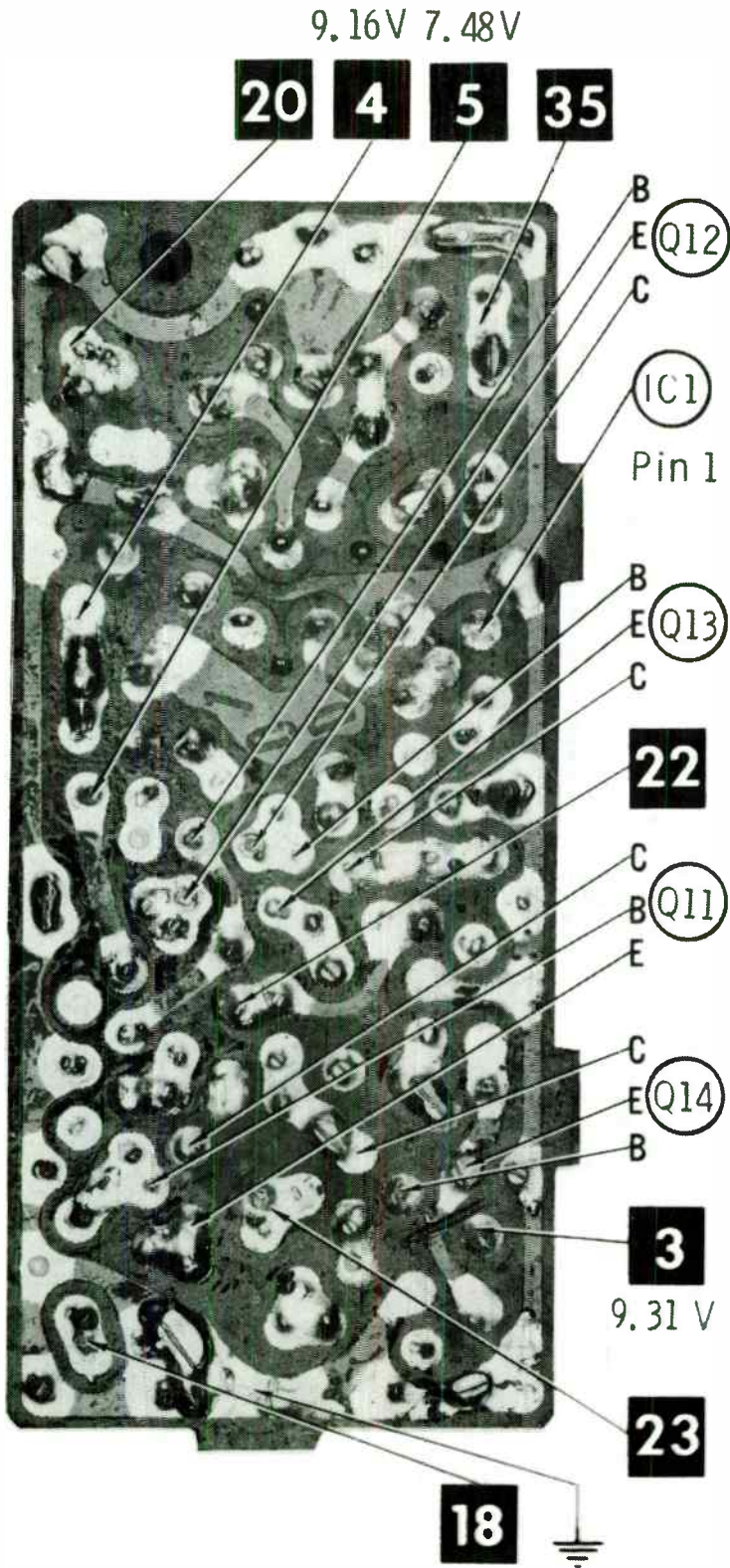
MOTOROLA MODEL TF852AX

AM BOARD

10.7MHz

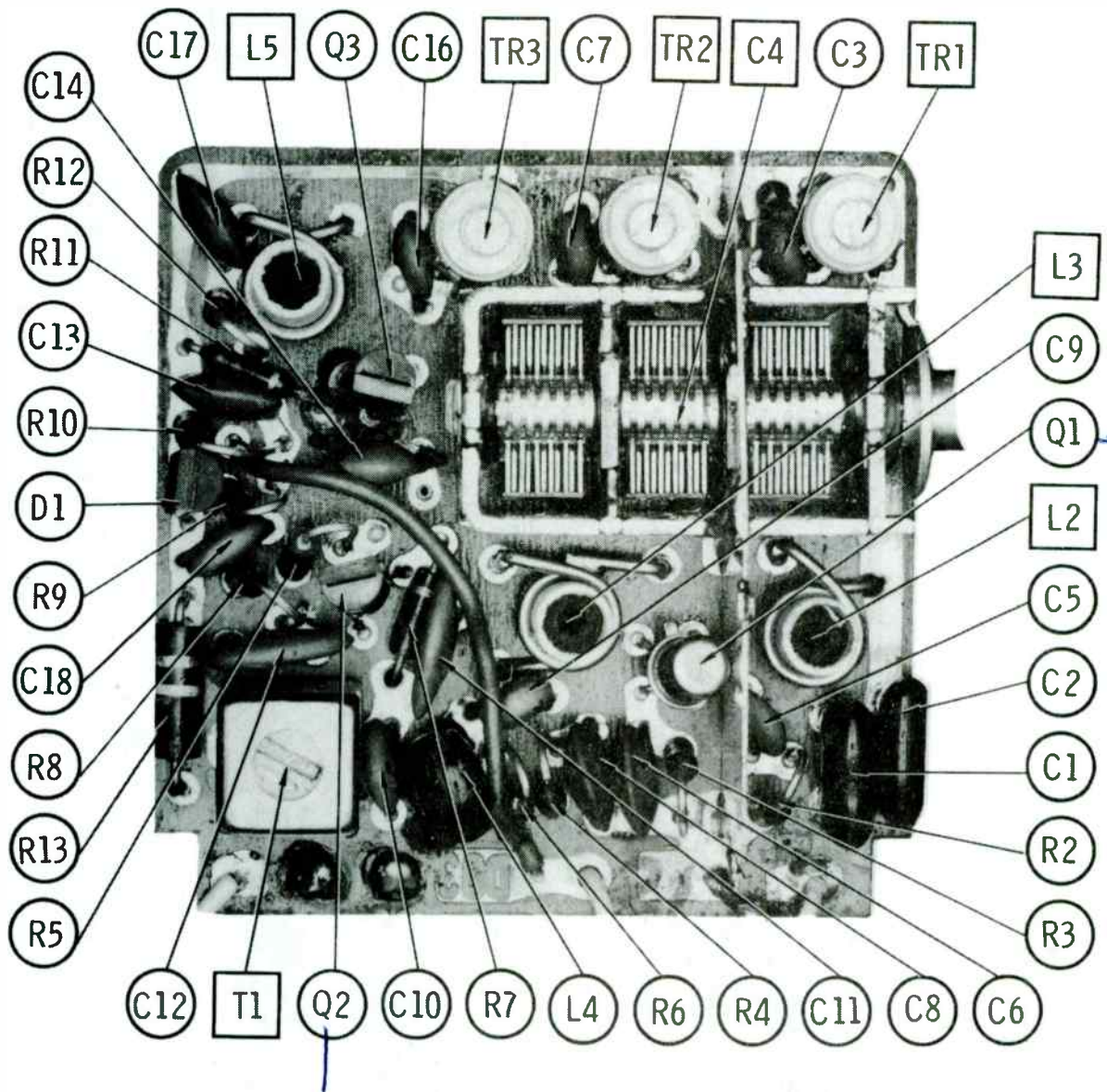


FM BOARD

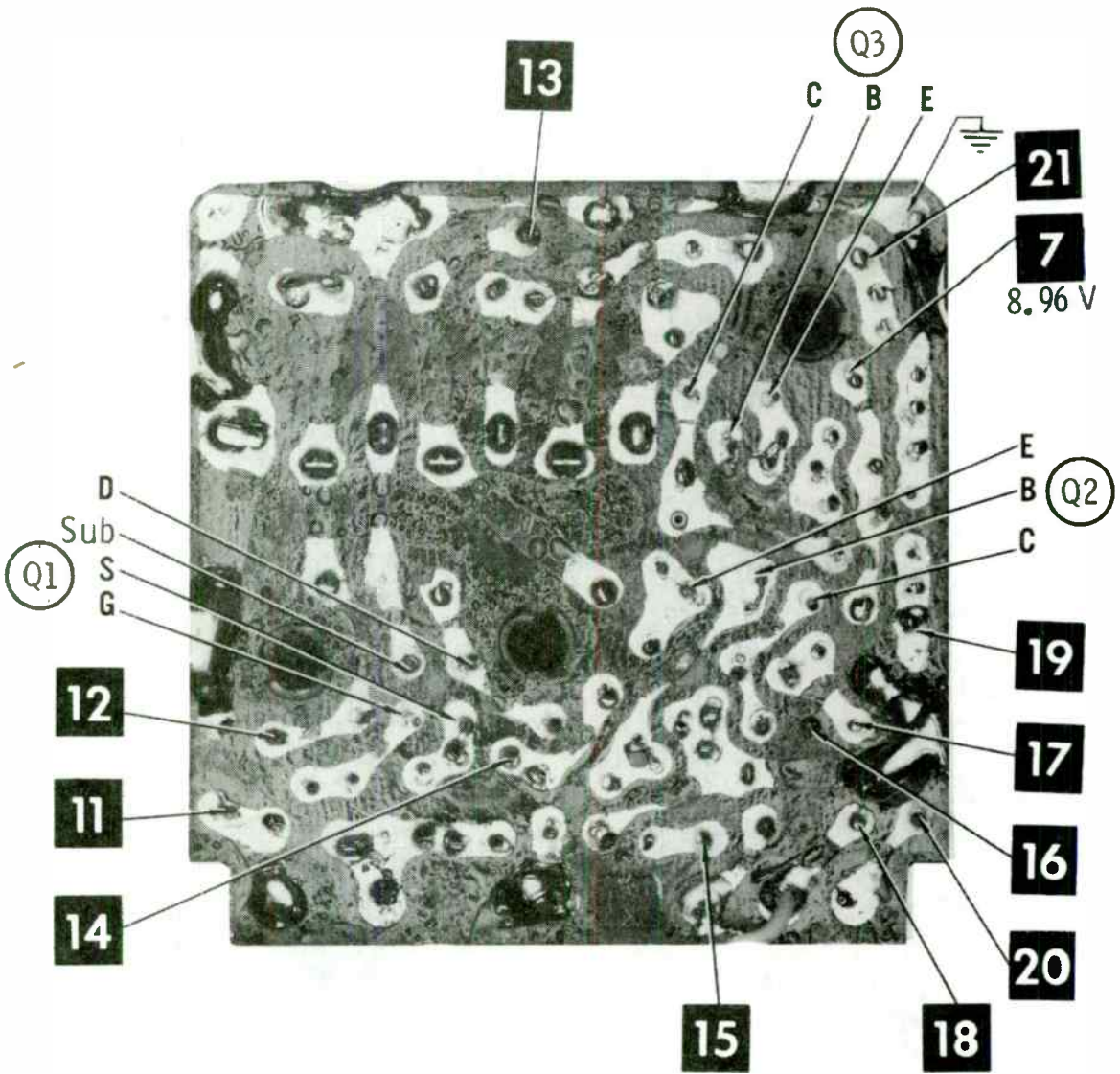


MOTOROLA MODEL T852AX

FM BOARD

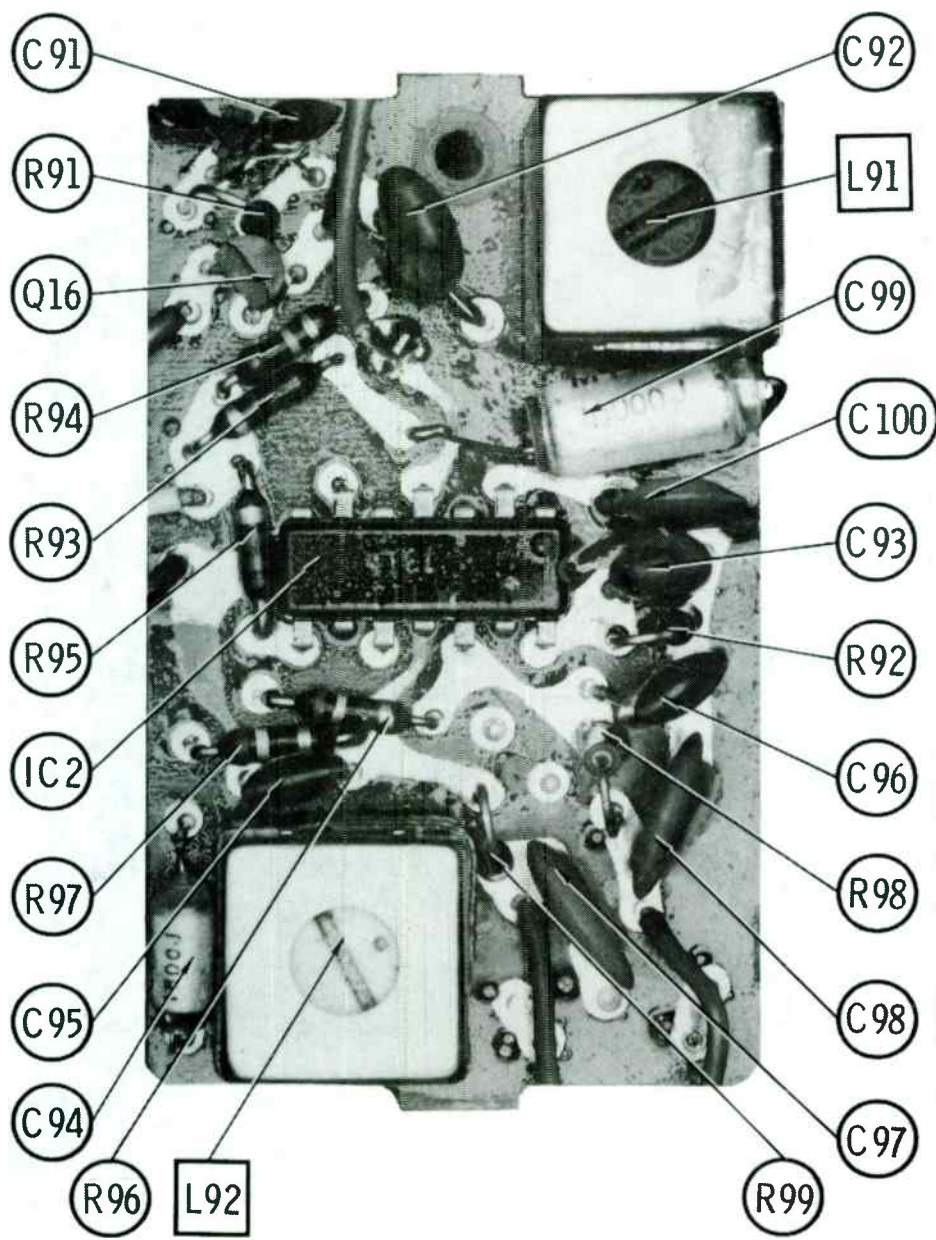


TUNER BOARD



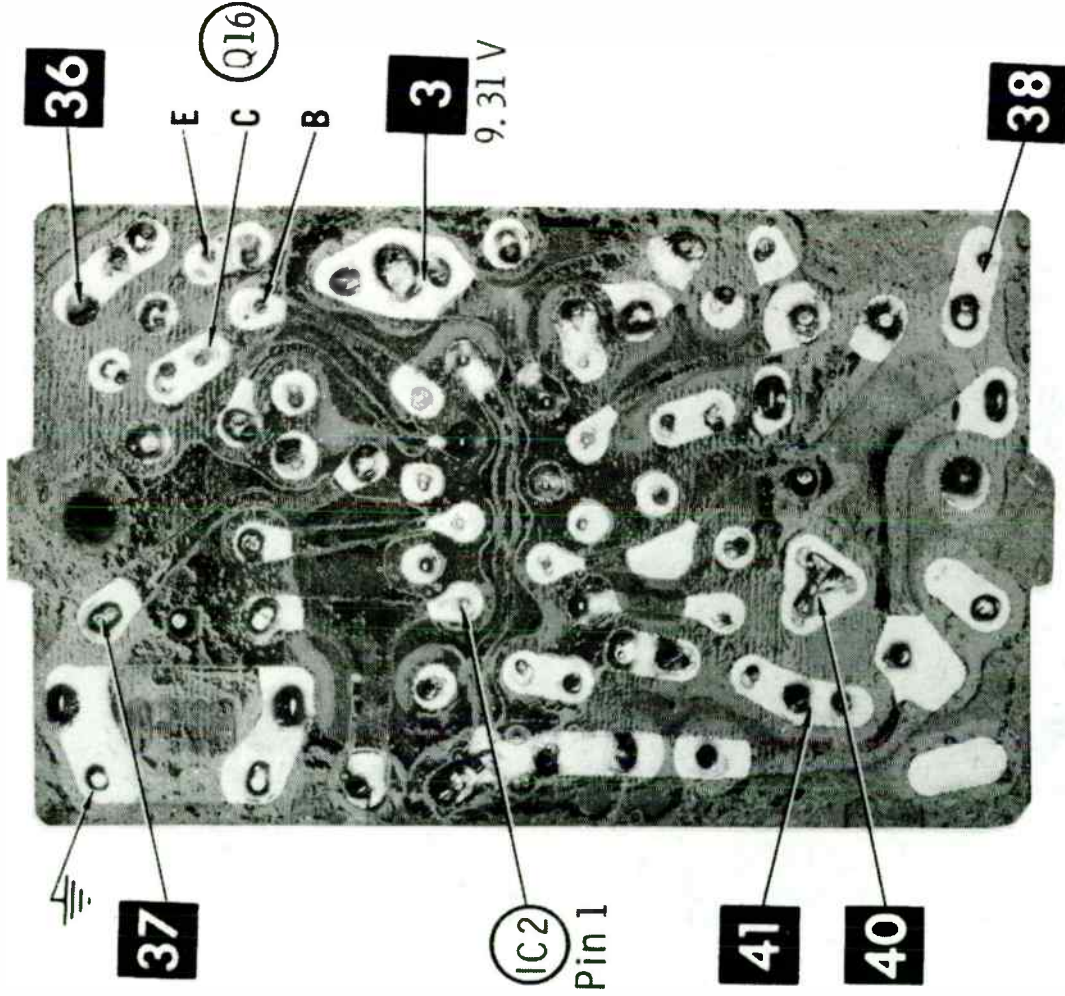
MOTOROLA MODEL TF852AX

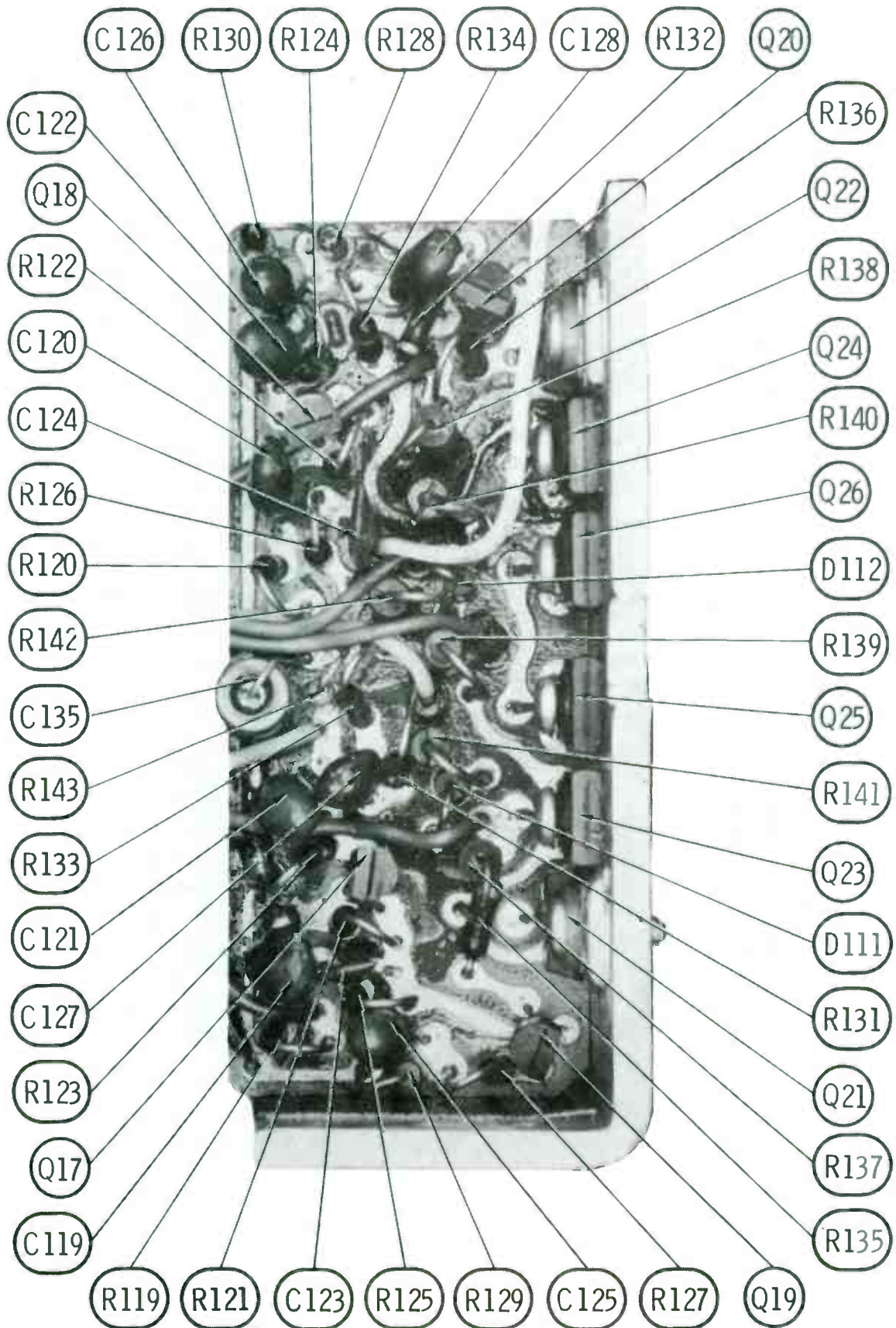
TUNER BOARD



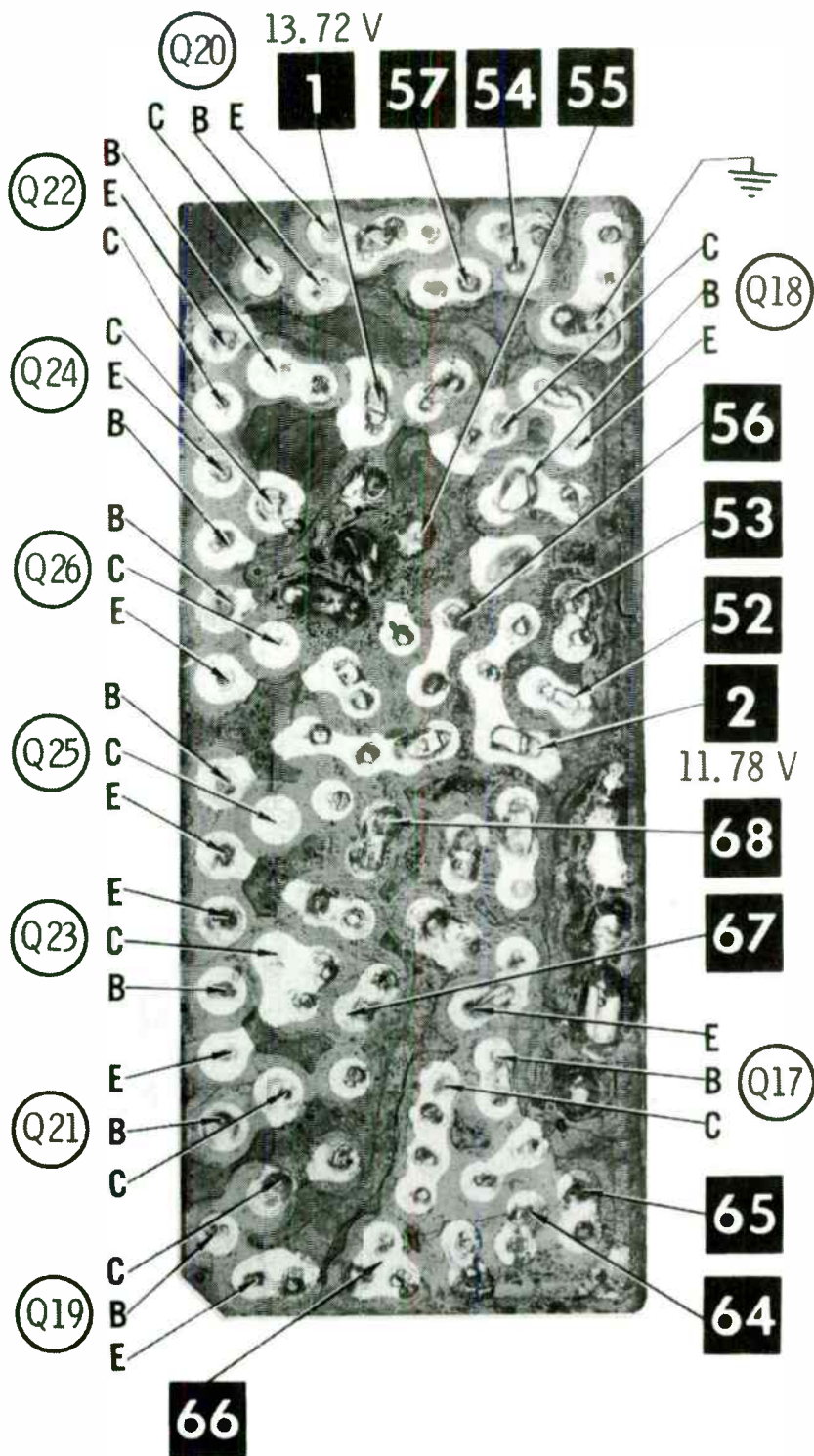
MPX BOARD

MOTOROLA MODEL TF852AX





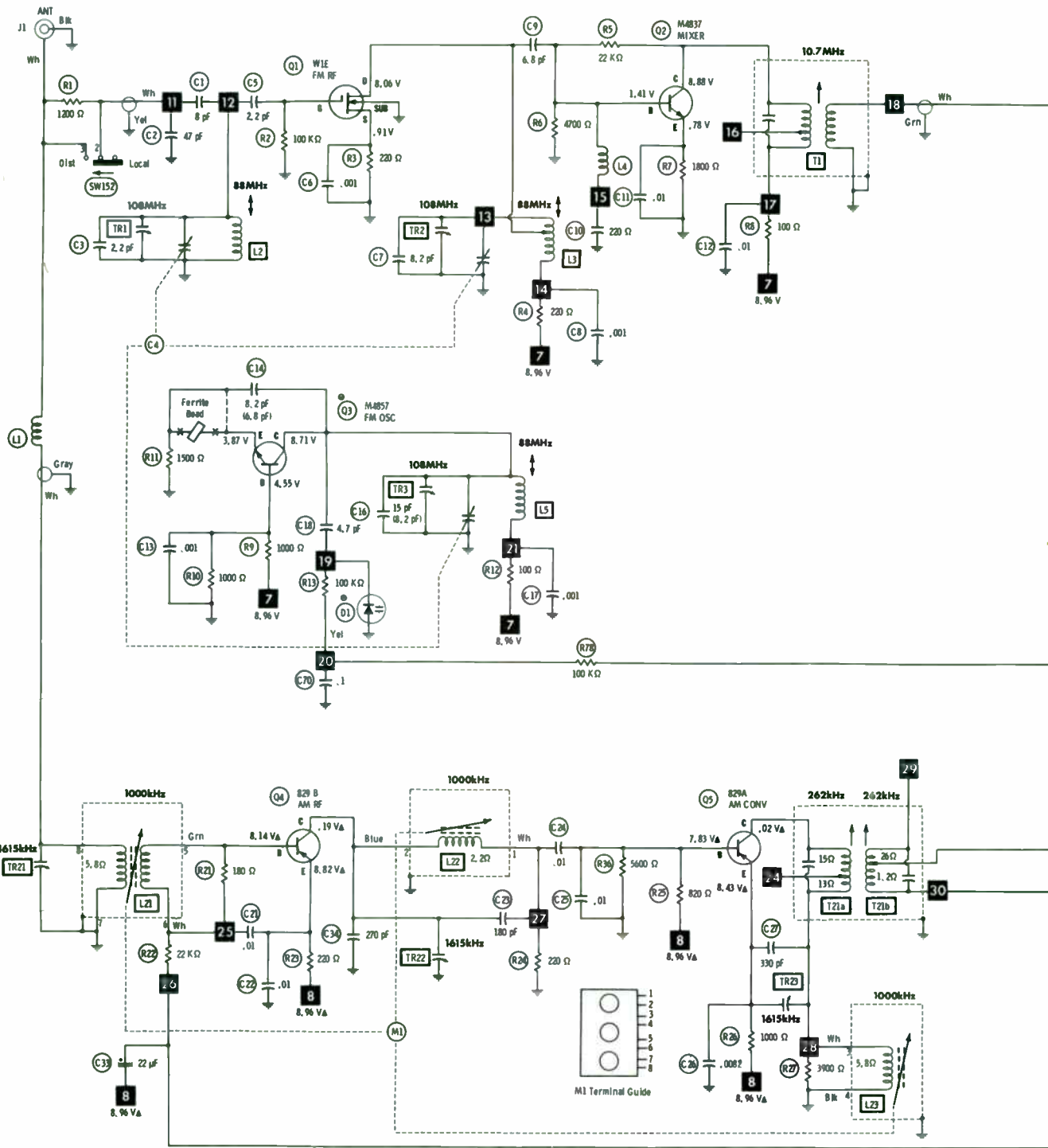
AUDIO BOARD



MOTOROLA MODEL TR852AX

AUDIO BOARD

NOTE: DEMAGNETIZE HEADS AFTER SERVICING

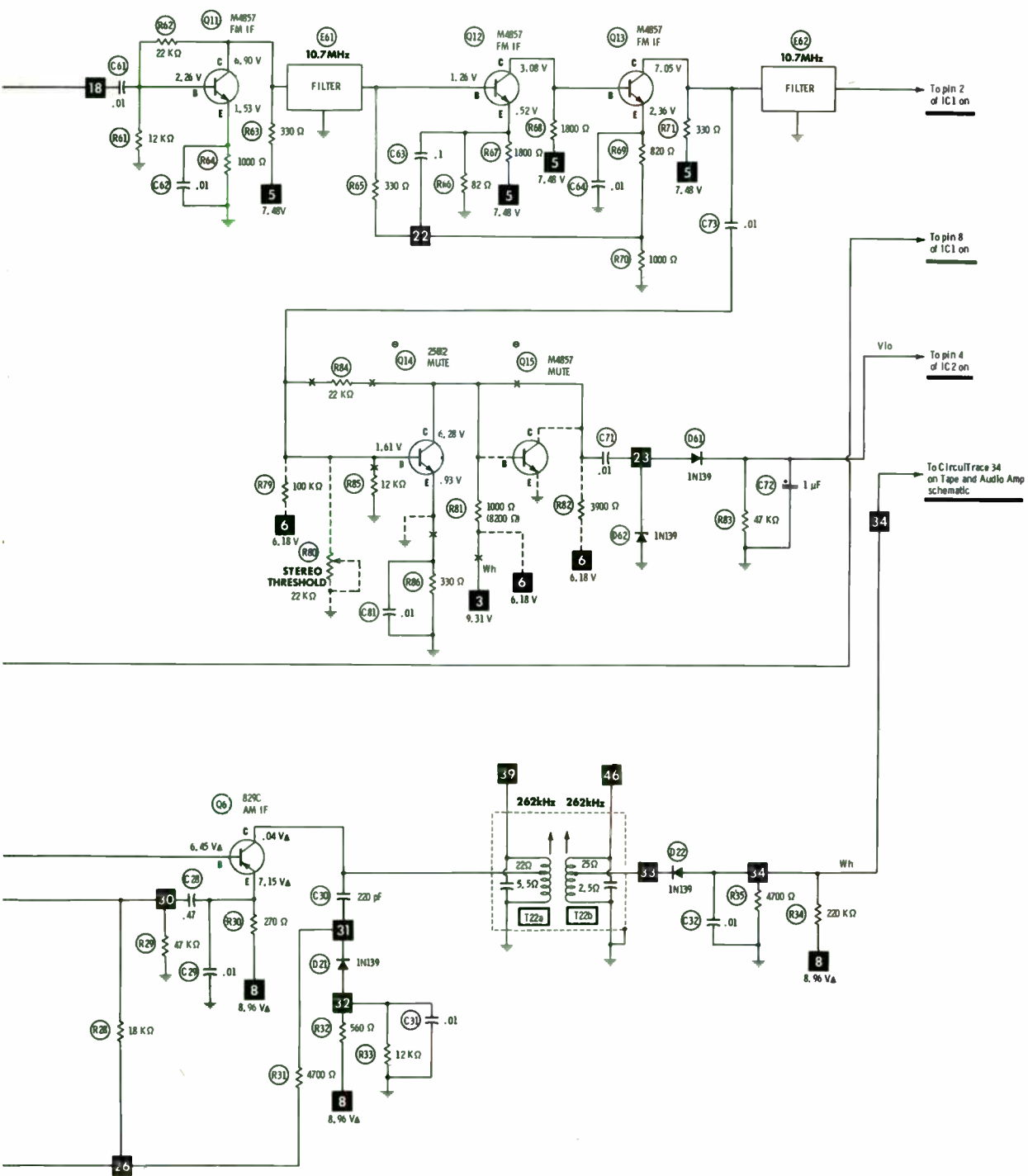


- /— Circuitry not used in some versions
- - - Circuitry used in some versions
- ⊙ See ports list
- ⊛ Nominal value
- ⊕ Ground

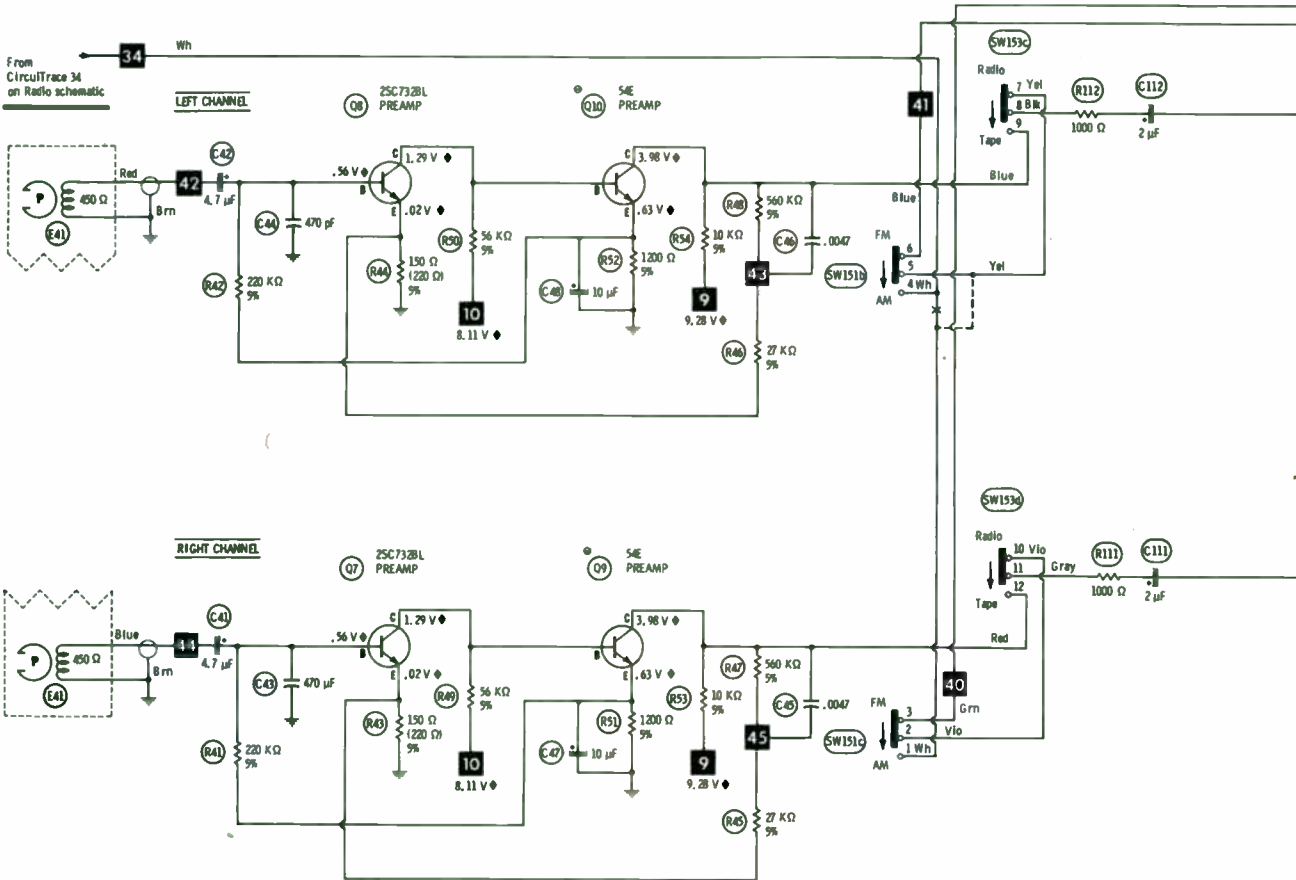
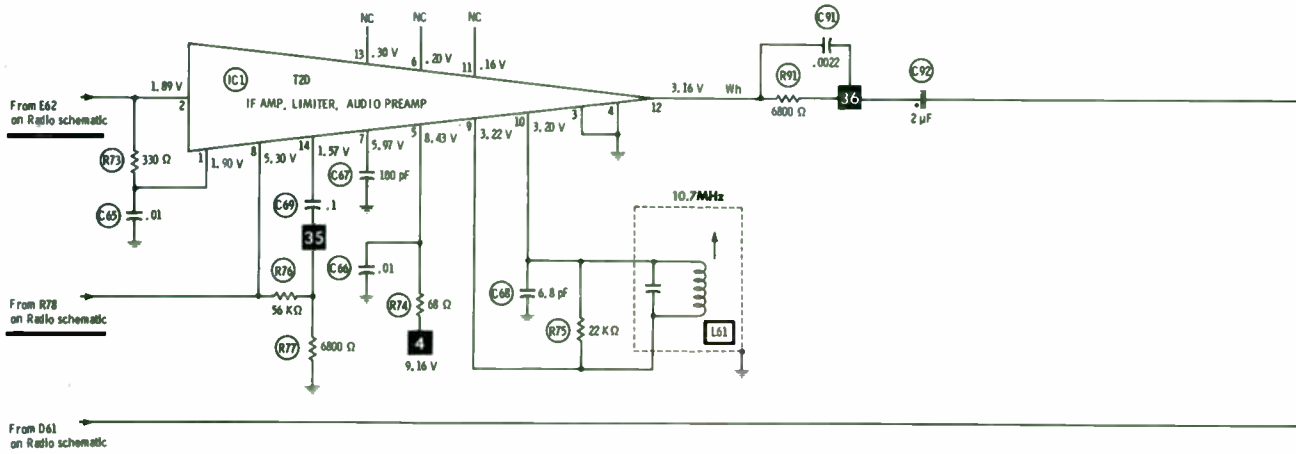
Measurements with switching as shown unless noted:
 ■ FM Stereo signal ♦ Tape play ▲ AM

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, 10% unless noted.
 Value in () used in some versions.

A PHOTOFACIT STANDARD NOTATION SCHEMATIC
 WITH **CIRCUITRACE**
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NOTE: DEMAGNETIZE HEADS AFTER SERVICING



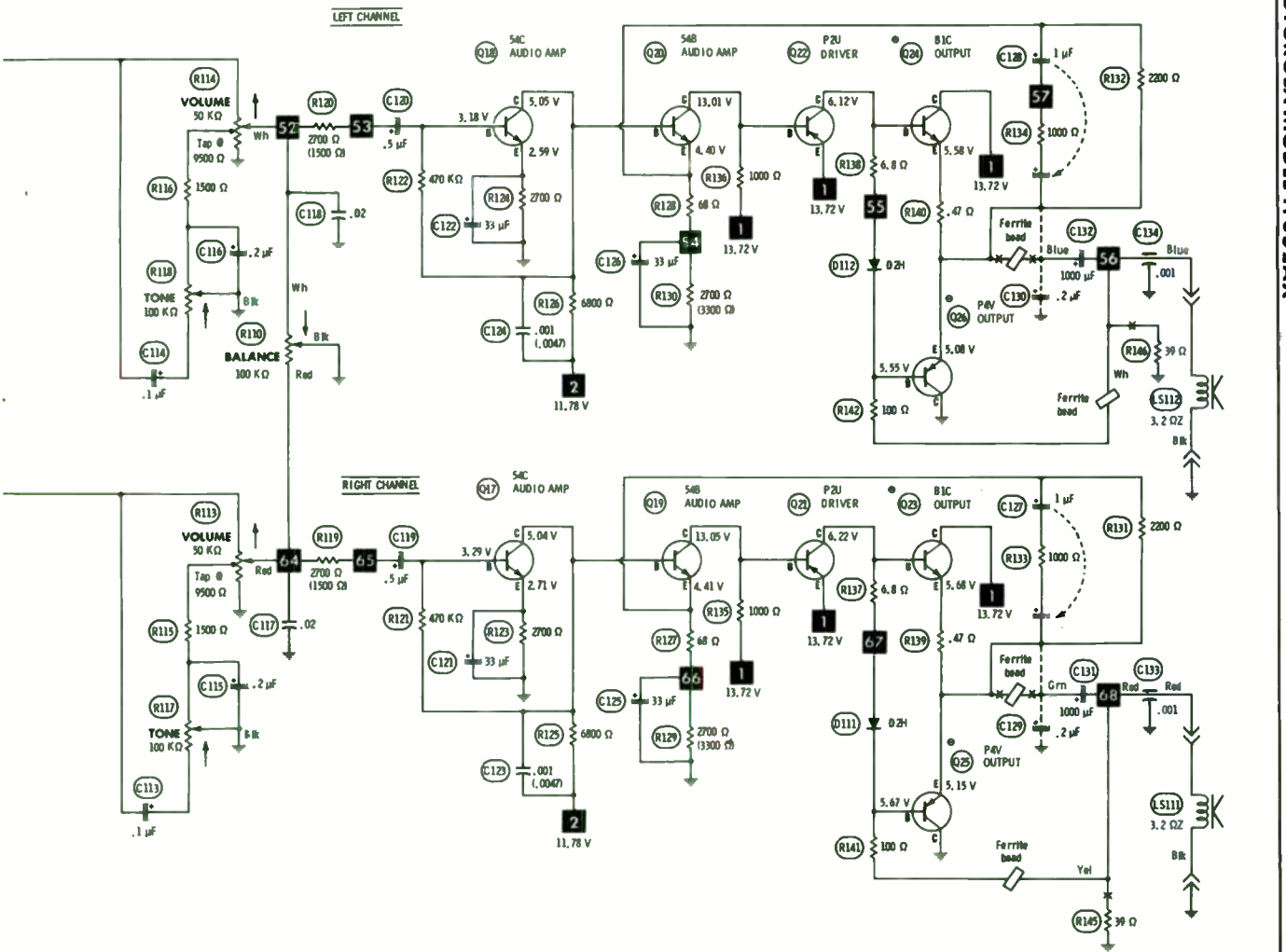
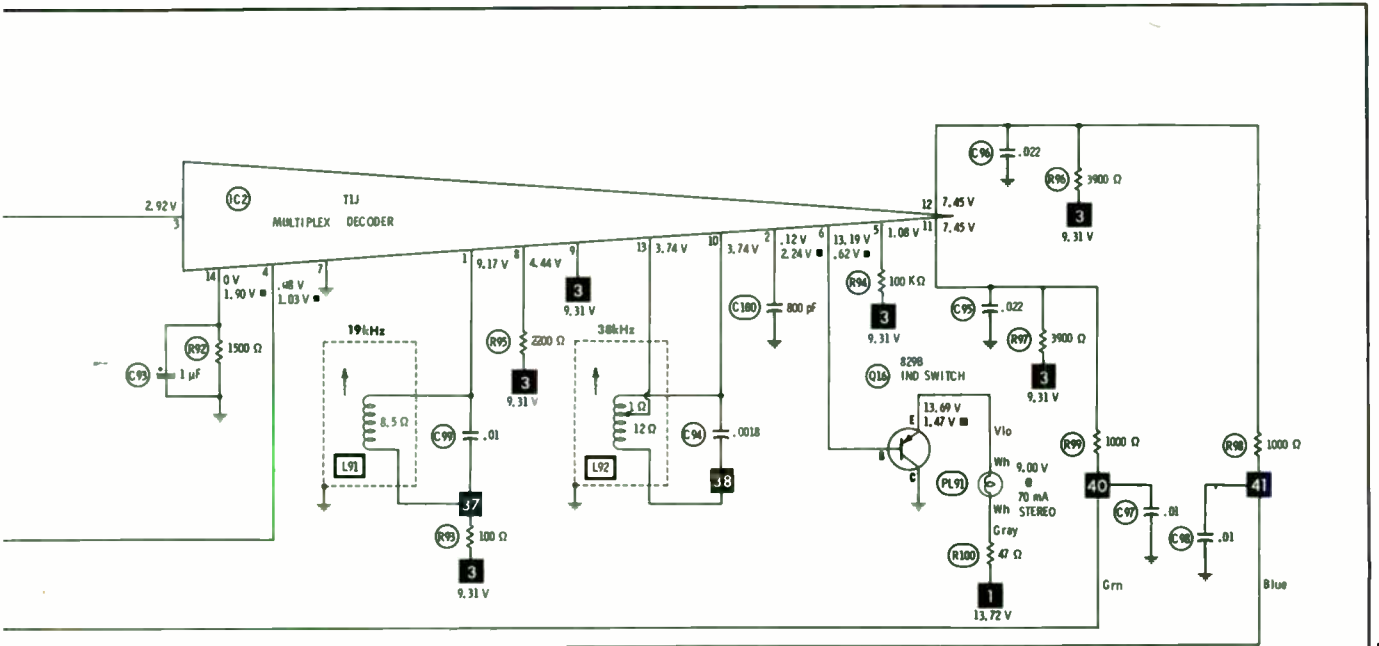
- C: Circuitry not used in some versions
- - - C: Circuitry used in some versions
- ⊙: See parts list
- *: Nominal value
- ⊕: Ground

Measurements with switching as shown unless noted:
 ♦ Tape play ▲ AM

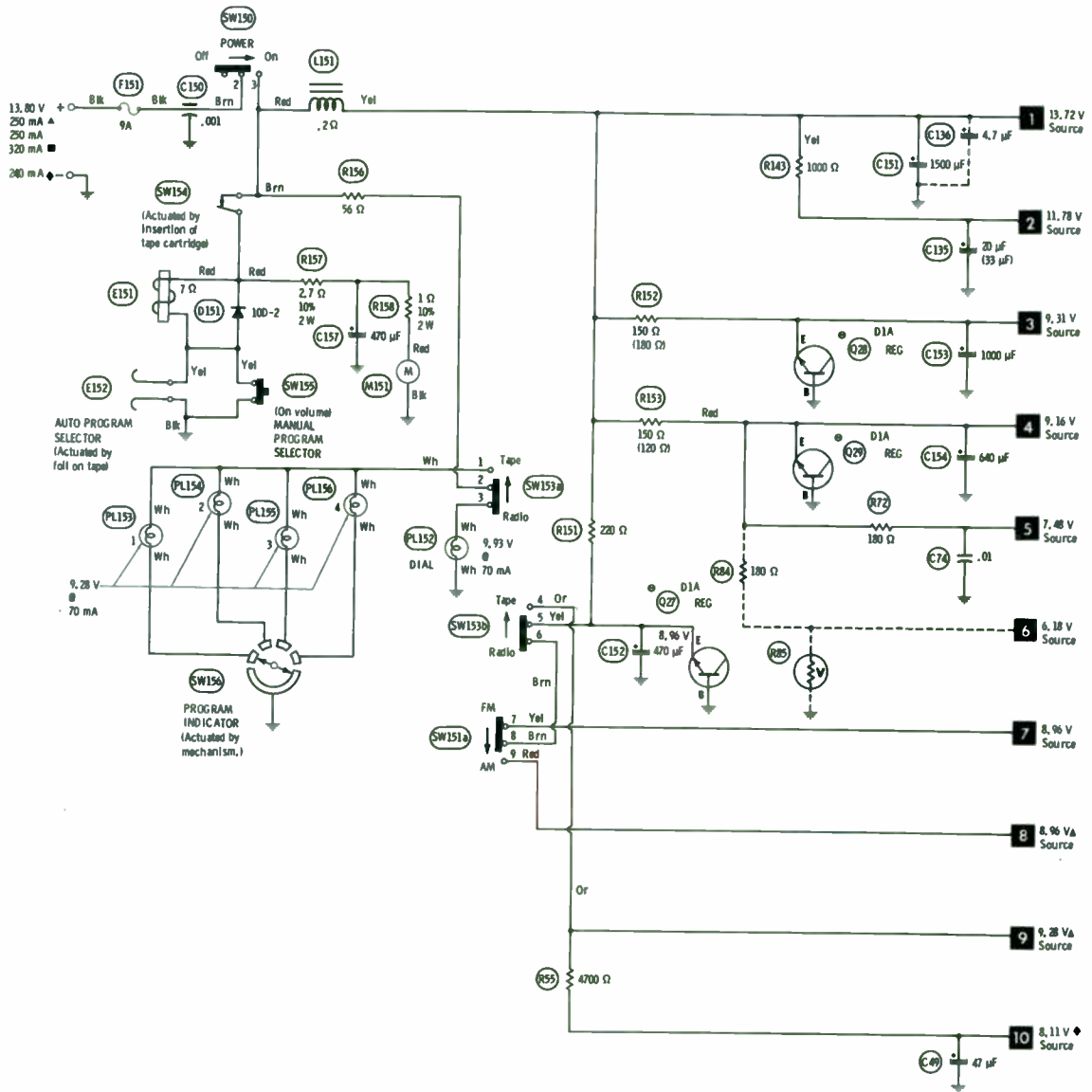
Supply voltage maintained as shown at input.
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 Terminal identification may not be found on unit.
 Resistors are 1/2W or less, 10% unless noted.
 Value in () used in some versions.

A PHOTOFAC STANDARD NOTATION SCHEMATIC
 WITH **CIRCUITRACE**

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NOTE: DEMAGNETIZE HEADS AFTER SERVICING



Terminal Guides

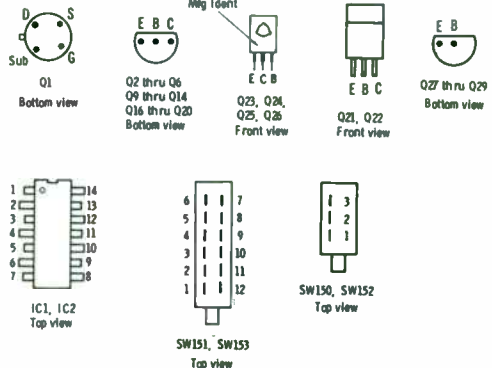
- ✖ Circuitry not used in some versions
- Circuitry used in some versions
- ⊙ See ports list
- ⊛ Nominal value
- ⊕ Ground

Measurements with switching as shown unless noted:
 ◆ Tape play ▲ AM

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A PHOTOFACIT STANDARD NOTATION SCHEMATIC
 WITH **CIRCUITRACE**

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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.
D1		48A40516C02	GE-90	D201		HEPR2503	RE 195	SK3126	RT-262	
O21	1N139	48C134587	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
O22	1N139	48C134587	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D61	1N139	48C134587	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D62	1N139	48C134587	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
D111	O2H	48S137029	GE-300	D200	PTC214	HEPR6002	RE 52	SK3100	RT-218	ECG177
D112	D2H	48S137029	GE-300	D200	PTC214	HEPR6002	RE 52	SK3100	RT-218	ECG177
D151	1002	48C40235602	GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
IC1	T2D	51S10594A01	GE1C-15		PTC723	HEPC6101P		SK3144	TVM-16	ECG723
IC2	T1J	51S10422A01	GE1C-8	IC511	PTC709	HEPC6094P	RE 319-IC	SK3159	TVM-6	ECG718
Q1	WIE	48S137070	GE-FET-2	FE-100	PTC161	HEPF0021	RE 45	SK3116	RT-175	ECG312
Q2	M4837	48S134837	GE-17	TR-21	PTC115	HEPS0020	RE 10	SK3018	RT-107	ECG108
Q3	M4857	48S134857	GE-20	TR-21	PTC115	HEPS0020	RE 10	SK3018	RT-108A	ECG108
	M4825	48S134825(1)	GE-11	TR-25	PTC136	HEPS0033	RE 9	SK3018	RT-108A	ECG107
Q4	8298	48S134831	GE-21	TR-30	PTC103	HEPS0019	RE 26	SK3114	RT-115	ECG159
Q5	829A	48S134830	GE-82	TR-30	PTC177	HEPS0019	RE 193	SK3138	RT-126A	ECG288
	829C	48S134831(10)	GE-21	TR-30	PTC103	HEPS0019	RE 26	SK3114	RT-115	ECG159
		48S134832	GE-21	TR-30	PTC103	HEPS0019	RE 26	SK3114	RT-115	ECG159
		48S134831(10)	GE-21	TR-30	PTC103	HEPS0019	RE 26	SK3114	RT-115	ECG159
Q7	25C732BL	48S40246G01	GE-62	(IR)25C373	PTC139	HEPS0024	RE 192		RT-304	ECG199
		48S134823(10)	GE-62	(IR)25C373	PTC139	HEPS0024	RE 192		RT-304	ECG199
Q8	25C732BL	48S40246G01	GE-62	(IR)25C373	PTC139	HEPS0024	RE 192		RT-304	ECG199
		48S134823(10)	GE-62	(IR)25C373	PTC139	HEPS0024	RE 192		RT-304	ECG199
Q9	54E	48S40247G01	GE-81	TR-24	PTC178	HEPS0015	RE 192	SK3137	RT-108A	ECG287
	25C733	48S40247G01	GE-62	(IR)25C372	PTC139	HEPS0025	RE 192	SK3122	RT-302	ECG199
		(1)								
		48S134846(10)	GE-81	TR-24	PTC178	HEPS0015	RE 192	SK3137	RT-108A	ECG287
Q10	54E	48S40247G01	GE-81	TR-24	PTC178	HEPS0015	RE 192	SK3137	RT-108A	ECG287
	25C733	48S40247G01	GE-62	(IR)25C372	PTC139	HEPS0025	RE 192	SK3122	RT-302	ECG199
		(1)								
		48S134846(10)	GE-81	TR-24	PTC178	HEPS0015	RE 192	SK3137	RT-108A	ECG287
Q11	M4857	48S134857	GE-20	TR-21	PTC115	HEPS0020	RE 10	SK3018	RT-108A	ECG108
Q12	M4857	48S134857	GE-20	TR-21	PTC115	HEPS0020	RE 10	SK3018	RT-108A	ECG108
Q13	M4857	48S134857	GE-20	TR-21	PTC115	HEPS0020	RE 10	SK3018	RT-108A	ECG108
Q14	25B2	48S134857	GE-20	TR-21	PTC136	HEPS0025	RE 10	SK3018	RT-107	ECG229
	M4857	48S134857(1)	GE-20	TR-21	PTC115	HEPS0020	RE 10	SK3018	RT-108A	ECG108
Q15	M4857	48S134857(1)	GE-20	TR-21	PTC115	HEPS0020	RE 10	SK3018	RT-108A	ECG108
Q16	8298	48S134831	GE-21	TR-31	PTC103	HEPS0019	RE 26	SK3114	RT-115	ECG159
Q17	54C	48S134810	GE-20	TR-21	PTC136	HEPS0016	RE 13	SK3124	RT-172	ECG123A
Q18	54C	48S134810	GE-20	TR-21	PTC136	HEPS0016	RE 13	SK3124	RT-172	ECG123A
Q19	548	48S134809	GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3124	RT-172	ECG123A
		48S134810(10)	GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3124	RT-172	ECG123A
Q20	548	48S134809	GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3124	RT-172	ECG123A
		48S134810(10)	GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3124	RT-172	ECG123A
Q21	P2U	48S137160	GE-84	TR-73	PTC160	HEPS3028	RE 76	SK3084	RT-185	ECG189
Q22	P2U	48S137160	GE-84	TR-73	PTC160	HEPS3028	RE 76	SK3084	RT-185	ECG189
Q23	81C(5)	48S137145(1)	GE-57		PTC163	HEPS5000	RE 40			ECG184
	A6C	48S137145(1)	GE-57		PTC163	HEPS5000	RE 40			ECG184
		(5)								
Q24	81C(5)	48S137145(1)	GE-57		PTC163	HEPS5000	RE 40			ECG184
	A6C	48S137145(1)	GE-57		PTC163	HEPS5000	RE 40			ECG184
		(5)								
Q25	P4V(5)	48S137331(1)	GE-58		PTC162	HEPS5006	RE 41			ECG185
	P4E	48S137331(1)	GE-58		PTC162	HEPS5006	RE 41			ECG185
		(5)								
Q26	P4V(5)	48S137331(1)	GE-58		PTC162	HEPS5006	RE 41			ECG185
	P4E	48S137331(1)	GE-58		PTC162	HEPS5006	RE 41			ECG185
		(5)								
Q27	D1A	48S134912	GEZD-8.2	Z1208	ZB8.2A	HEPZ0411	RE 112	SK3136	RT-257	ECG5072
Q28	D1A	48S134912	GEZD-8.2	Z1208	ZB8.2A	HEPZ0411	RE 112	SK3136	RT-257	ECG5072
Q29	D1A	48S134912	GEZD-8.2	Z1208	ZB8.2A	HEPZ0411	RE 112	SK3136	RT-257	ECG5072

- (1) Used in some versions.
- (5) Half of complementary pair. (Q23 and Q25; Q24 and Q26)
- (10) MFR suggest use of this part number when ordering.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C33	22 10V	23S187A20	PC25-25	VTT22A16	EV-1224
C41	4.7 16V	23C42170G03	PC5-50	VTT47A50	EV-1319
C42	4.7 16V	23C42170G03	PC5-50	VTT47A50	EV-1319
C47	10 16V	23C42170G07	PC10-25	VTT10A25	EV-1222
C48	10 16V	23C42170G07	PC10-25	VTT10A25	EV-1222
C49	47 16V	23C42170G12	WBR2000-16	MTA2500G10	TVA-1106.5
C72	1 6V	23C43280A36		TDC105M035EL	SD35-19
C92	2 10V	23C43280A10		TDC225M035FL	SD35-2R29
C93	1 10V	23C43280A01		TDC105M035EL	SD35-19
C111	2 10V	23C43280A12		TDC225M035FL	SD35-2R29
C112	2 10V	23C43280A12		TDC225M035FL	SD35-2R29
C113	.1 15V	23C43280A14		TDC104M050EL	SD50-R109
C114	.1 15V	23C43280A14		TDC104M050EL	SD50-R109
C115	.2 15V	23C43280A19		TDC224M050EL	SD50-R229
C116	.2 15V	23C43280A19		TDC224M050EL	SD50-R229
C119	.5 6V	23C43280A04		TDC474M050EL	SD50-R479
C120	.5 6V	23C43280A04		TDC474M050EL	SD50-R479
C121	33 10V	23C42582B01		TDC336M010FL	SD10-339
C122	33 10V	23C42582B01		TDC336M010FL	SD10-339
C125	33 10V	23C42582B01		TDC336M010FL	SD10-339
C126	33 10V	23C42582B01		TDC336M010FL	SD10-339

MOTOROLA MODEL TR852AX

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			
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C127	1 10V	23C43280A01		TDC105M035EL	SD35-19
C128	1 10V	23C43280A01		TDC105M035EL	SD35-19
C129	.2 15V	23C43280A19(1)		TDC224M050EL	SD50-R229
C130	.2 15V	23C43280A19(1)		TDC224M050EL	SD50-R229
C131	1000 10V	23C42674812	WBR1000-16	TC12100	TVA-1128
C132	1000 10V	23C42674812	WBR1000-16	TC12100	TVA-1128
C135	20 16V		WBR25-25	TT15X20A	TVA-1147
	33 10V	23C42582B01(1)		TDC336M010FL	SD10-339
C136	4.7 16V	23S10445A01(1)	WBR1500-16	TT15X1500A	TVA-1175.2
C151	1500 16V	23C42674813	WBR1500-16	TT15X1500A	TVA-1175.2
C152	470 16V	23S187A29	WBR500-16	TC1505C	TVA-1162
C153	1000 16V	23C41928A44	WBR1000-16	TC1501C	TVA-1163
C154	680 16V	23C41928A43	WBR500-16	TT15X600	TVA-1162.2
C157	470 16V	23C40134G31	WBR500-16	TC1505C	TVA-1162

(1) 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	8 10%	21C40367A18		CD15CD080003		MMA-D80
C2	47 10%			CD15E0470J03	SX447	MMA-470
C3	2.2 NPO 500V		DTZ-2R2	NP02P2	CN0522	10TCC-V22
C4		19C40059D01				
C5	2.2 NPO 500V		DTZ-2R2	NP02P2	CN0522	10TCC-V22
C6	.001 10%		DD-102		GP210	10TS-D10
C7	8.2 N750 10% 500V	21S138726				10TCU-V82
C8	.001 10%		DD-102		GP210	10TS-D10
C9	6.8 NPO 10%		DTZ-6R8	NP06P8	CN0568	10TCC-V68
C10	220 5% 500V	21S180B28				
C11	.01		DC-103	MGP01	TA110	TG-S10
C12	.01		DC-103	MGP01	TA110	TG-S10
C13	.001 10%		DD-102		GP210	10TS-D10
C14	8.2 +.5 500V	21S138382				
C16	15 N470 5% 500V	21S138386				
C17	.001 10%		DD-102		GP210	10TCT-Q15
C18	4.7 N150 ±.25	21D43539A70				10TS-D10
C21	.01		DC-103	MGP01	TA110	TG-S10
C22	.01		DC-103	MGP01	TA110	TG-S10
C23	180 N150 5% 125V			CD15FD181J03	SX318	MMA-181
C24	.01 10%			WMF1S1	EMF1A110	1PB-S10
C25	.01 10%			WMF1S1	EMF1A110	1PB-S10
C26	.0082 10% 250V			DPMS6D82	PVC6282	6PS-D82
C27	330 N150 5% 125V			CD15FD331J03	SX333	MMA-331
C28	.47 3V		UK12-474		MAG12047	HY-380
C29	.01		DC-103	MGP01	TA110	TG-S10
C30	220 10% 500V		DD-221		GP322	10TS-T22
C31	.01		DC-103	MGP01	TA110	TG-S10
C32	.01		DC-103	MGP01	TA110	TG-S10
C34	270 N150 5% 125V			CD15FD271J03	SX327	MMA-271
C43	470 10% 500V		DD-471	GP470	GP347	10TS-T47
C44	470 10% 500V		DD-471	GP470	GP347	10TS-T47
C45	.0047 10%	8C40135G03			M192P4729R8	192P4729R8
C46	.0047 10%	8C40135G03			M192P4729R8	192P4729R8
C61	.01		DC-103	MGP01	TA110	TG-S10
C62	.01		DC-103	MGP01	TA110	TG-S10
C63	.1 12V		UK12-104		MAG1201	HY-360
C64	.01		DC-103	MGP01	TA110	TG-S10
C65	.01		DC-103	MGP01	TA110	TG-S10
C66	.01		DC-103	MGP01	TA110	TG-S10
C67	100 N330 5%	21043539A59				10TCS-T10
C68	6.8 NPO 10% 500V		DTZ-6R8	NP06P8	CN0568	10TCC-V68
C69	.1		DC-104	MGP1	TA010	TG-P10
C70	.1			WMF05P1	EMF05010	431P1049R5
C71	.01		DC-103	MGP01	TA110	TG-S10
C73	.01		DC-103	MGP01	TA110	TG-S10
C74	.01		DC-103	MGP01	TA110	TG-S10
C91	.0022 10%				M192P2229R8	192P2229R8
C94	.0018 N150 5% 33V	8S10226A67		CD19FD182J03	SX218	MMA-182
C95	.02	8S10221A35	UK50-223		MAG5012	
C96	.02	8S10221A35	UK50-223		MAG5012	
C97	.01		DC-103	MGP01	TA110	TG-S10
C98	.01		DC-103	MGP01	TA110	TG-S10
C99	.01 N150 5% 33V					
C100	800 10% 500V		DD-821	GP820	GP382	10TS-T82
C117	.02	8C42208B11	UK50-223		MAG5012	
C118	.02	8C42208B11	UK50-223		MAG5012	
C123	.001			DPMS6D1	EMF1A210	1PB-D10
C124	.001			DPMS6D1	EMF1A210	1PB-D10
C133	.001	21A560232				
C134	.001	21A560232				
C150	.001	21A560232				
TR1	4.5-20	20B40429B03				
TR2	4.5-20	20B40429B03				
TR3	4.5-20	20B40429B03				
TR21	30-220	20C40177D01				
TR22	10-80	(1)				
TR23	65-200	(1)				

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

(1) Part of Dual Trimmer Assembly Part #20C64618A07.

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				
			MFR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
R80	Stereo Threshold	22K	18B40463C03 (6)	TSV-25K (2)	C-253 (2)	MTC24L1 (2)	X201R253B (2)
R110	Balance	100K	18C40162D01				
R113	Volume-Right	50K Tap @ 9500	18C40136D01				
R114	Volume-Left/Program Selector Switch	50K Tap @ 9500					
R117	Tone-Right	100K					
R118	Tone-Left	100K					

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

(6) Alternate part, may be used in some versions.

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L1	AM Ant Choke	24C64003B03		74F226AP	(1) Part of M1. (2) Number on unit.
L2	FM Antenna	24D4009E001			
L3	FM RF	24D4009E002			
L4	10.7MHz Trap	240640C3B04		4602	
L5	FM Oscillator				
L21	AM Antenna	(1)			
L22	AM RF	(1)			
L23	AM Oscillator	(1)			
L61	Quadrature	24C40250D01	24C40250D01 (2)		
L91	19kHz	24C63463A03	24C63463A03-K (2)	1361	
L92	38kHz	24C61108B01	24C61108B01-G (2)		
T1	IF (10.7MHz)	24C400E7001	24C400E7001-B (2)		
T21	IF (262kHz)	24C64670B01	24C64670B01-0 (2)		
T22	IF (262kHz)	24C64670B02	24C64670B02-0 (2)		

MOTOROLA MODEL TF852AX

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.	
L151	320mA	.2	2.5mH	25D64172A25	TR-153	TY16XT	

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFR. PART No.	QUAM PART No.	
LS111	5 3/4" PM 3.2 Ohm	50C40664C01		
LS112	5 3/4" PM 3.2 Ohm	50C40664C01		

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
F150	9A	65S16248	1V541705	SFE9	HDH	307009	150145	

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.

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
E41	Tape Head	59B40481G01	8-Track Stereo Play
E61,62	Filter	91P64978A64 (1)	Ceramic, Orange Dot (10.730MHz) Matched Pair
E151	Solenoid	24B40638G01	Headshift
E152	Switch	40B40409G03	Auto Program Selector
M1	Tuning Coil Assembly	77U41900C24	AM (MF238)
	Core	76C40706A10	AM Antenna/RF
	Core	76C40647A10	AM Oscillator
	Tuning Coils	1V42300C91	AM (Includes Mounting Plate)
	Tuner Assembly	77U40299002	FM
M151	Motor	59B41453G02	Tape Transport (3000 rpm @ 13.43V)
SW150	Switch	40B40149D01	Power
SW151	Switch	40B40150D01	Tape/Radio
SW152	Switch	40B40149D01	Loc/Dist
SW153	Switch	40B46150D01	AM/FM
SW154	Switch		Motor Power
SW155	Switch		Manual Program Selector (On Volume)
SW156	Switch	1V44400G82	Program Indicator
	Printed Circuit Board	84D40244D01	AM (Less Comp.)
	Printed Circuit Board	84D40139D03	FM (Less Comp.)
	Printed Circuit Board	84D40254D01	IF (Less Comp.)
	Printed Circuit Board	84C40137D01	MPX (Less Comp.)
	Printed Circuit Board	1V44400G83	Preamp
	Printed Circuit Board	84D40245D01	Audio (Less Comp.)
	Connector Assembly	30C41564G04	Tape Head
	Connector Assembly	30C64013B03	Speaker (Red-Blk)
	Connector Assembly	30C64013B04	Speaker (Blue-Blk)
	Connector Assembly	30B40134D01	Antenna

(1) When replacing, E61 and E62 should also be replaced.

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

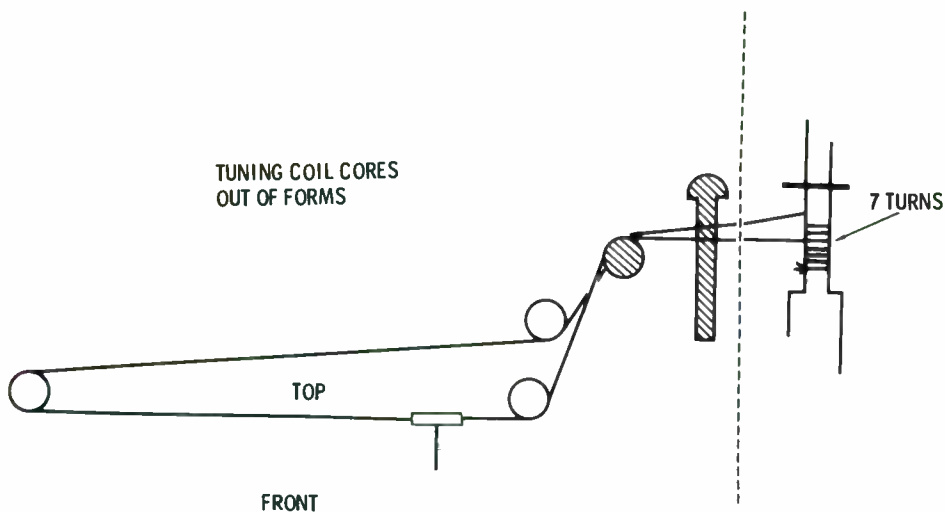
ITEM	PART No.	ITEM	PART No.
Escutcheon Assembly	13P64978A66	Knob, Tone/Balance	36C40173D01
Tape Door Assembly	15P64978A65	Dial Pointer	52B40240D01
Tape Door Shaft	47A40127D02	Button, Radio Power	38D40183D01
Tape Door Spring	41A43588A02	Button, Dist-Local	38D40183D02
Dial Scale	(1)	Button, Radio-Tape	38D40183D03
Knob, Tuning/Volume Program	36B40151D01	Button, AM-FM	38D40183D01

(1) Part of Tape Door Assembly

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 13 Colors 8524 (Stranded) Available in 13 Colors
Shielded Hook-up Wire	Use BELDEN No. 8401 or 8421
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.)

DIAL CORD STRINGING





PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index



MODEL CQ-999EU

PANASONIC MODEL CQ-999EU

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 (M232) dirty, worn, or broken. Assembly (M223) binding. Motor defective or not supplied with power.
Track-shift mechanism inoperative	Switch (SW3) dirty. Cam (M238) binding or worn. Pawls (M244) and (M245) worn. Spring (M240) weak or broken. Assembly (M242) binding. Solenoid (L1) defective or not supplied with power. Cartridge defective.
Wow or flutter	Belt (M232) 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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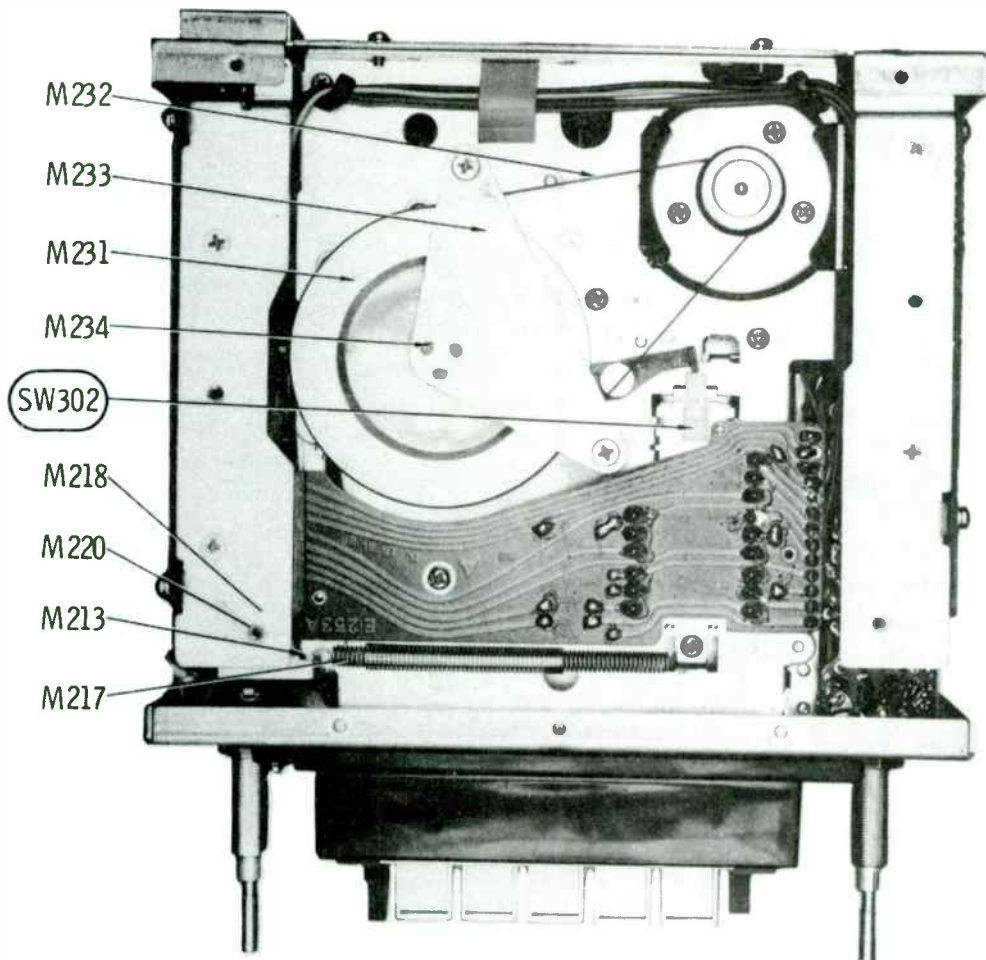
MECHANICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
M201	YEFX046050	Eject Lever	M234	YAFX019005	Thrust Bearing
M202	YAFX011278	Eject Lever Spring	M238	YAFX034015	Track Changing Cam
M213	YEFX046052	Cartridge Detent Arm	M240	YAFX011276	Pawl Spring
M217	YAFX011279	Detent Arm Spring	M241	YAFX011193	AZimuth Spring
M218	YASFX018015	Detent Roller Assembly	M242	YASFX036025	Head Shifting Assembly
M220	YAFX011272	Detent Roller Spring	M244	YAFX015008	Pull Pawl
M223	YEFX212103	Flywheel Bearing Assembly	M245	YAFX015009	Push Pawl
M225	YAF025010	Tape Scrapper	M246	YAFX029179	Head Clamp
M231	YEFX213106	Flywheel	M251	YEFX005117	Head Lifting Spring
M232*	YAFR01023*	Flywheel Drive Belt	M252	YAFX011275	Azimuth Tension Spring
M233	YAFX029143	Flywheel Retainer Bracket	M254	YAFX011277	Solenoid Spring

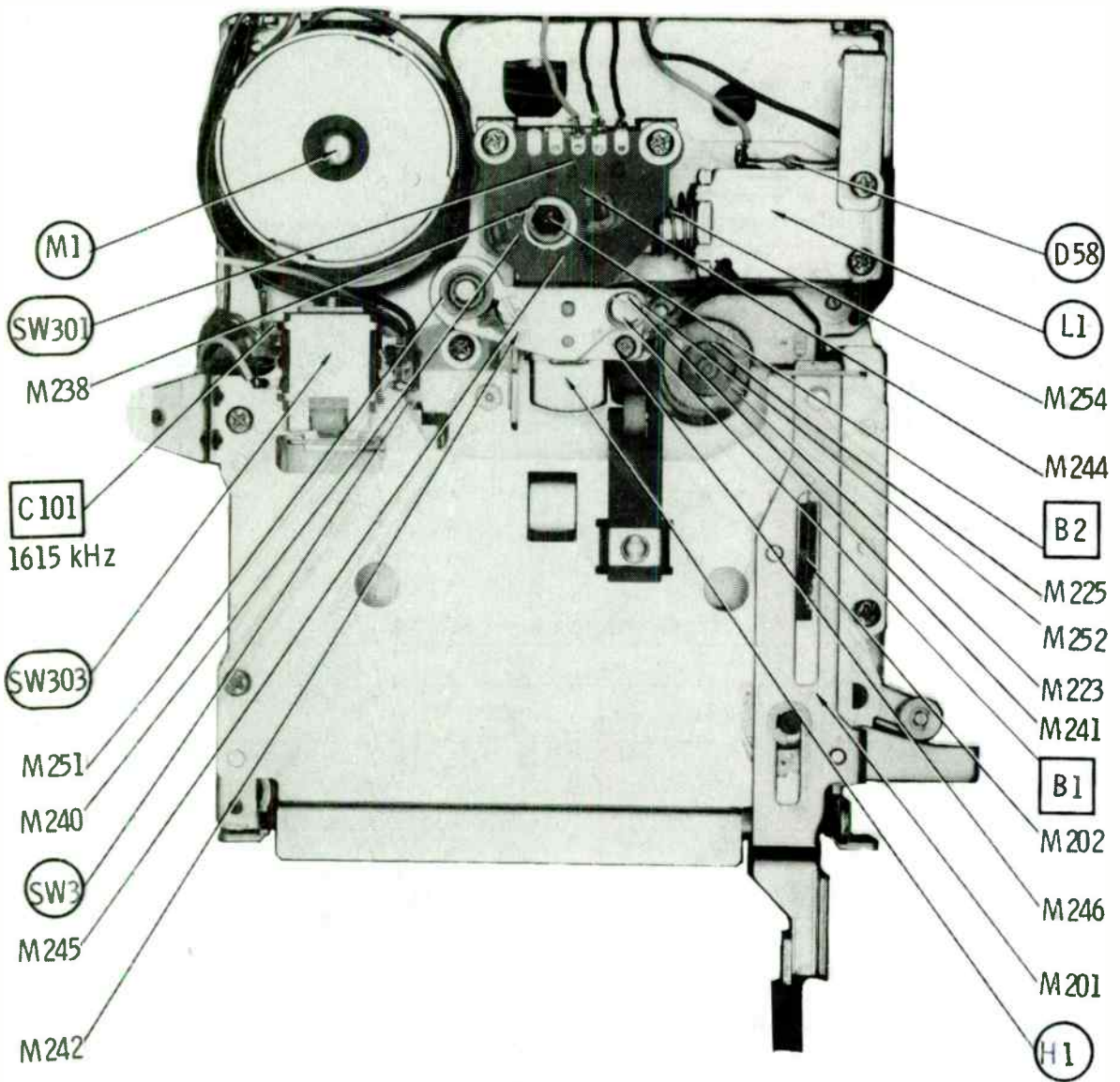
* Flywheel Drive Belt: E-V/GAME Replacement Number 1407-72.
WALSCO Replacement Number 1424-16.

CLEANING LUBRICATING HEAD DEMAGNETIZING

Refer to
"General Servicing Information"
on page 4.



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

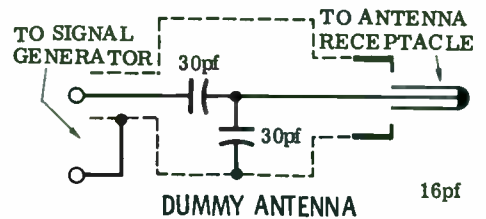
PUSH-BUTTON ADJUSTMENT

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

Connect low sides of generator and indicator to ground unless specified otherwise.

GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
High side thru .1uF to point Ant Input low side to ground.	450kHz 400-Hz mod.	High freq. end stop.	Output meter across voice coil.	IFT5, IFT4, IFT3, IFT2	Adjust for maximum.
Thru dummy antenna to antenna input.	1615kHz	"	"	C111 C109 C101	"
Tuner alignment is not necessary unless associated components have been disturbed. If necessary, back tuning cores out of coils but not out of forms. Repeat step 2.					
Thru dummy antenna to antenna input.	600kHz	Tune to signal	Output meter across voice coil.	L60	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 C101 for maximum output. Antenna adjustment C101 is located inside tape door right rear corner.



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

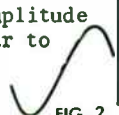
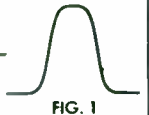
High side of generator thru .001uF to Ant Input.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MHz Unmodulated	Point of non-interference	DC probe of VTVM to + side of C100.	(1)T51 (Pri) IFT1	Adjust for maximum.
"	"	DC probe of VTVM to junction of R74 & C89.	T51 (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.
 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 + side of C100.	(1)T51 (Pri) IFT1	Disconnect stabilizing capacitor C100. Adjust for maximum gain and symmetry of response similar to Fig. 1. Reconnect C100.
"	"	Vert input of scope to junction R74 & C89.	T51 (Sec)	Adjust T51 (Sec) for maximum amplitude and straightness of line similar to Fig. 2. Readjust T51 (Pri).



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

ALIGNMENT INSTRUCTIONS (Continued)

FM RF ALIGNMENT—SELECTOR IN FM POSITION

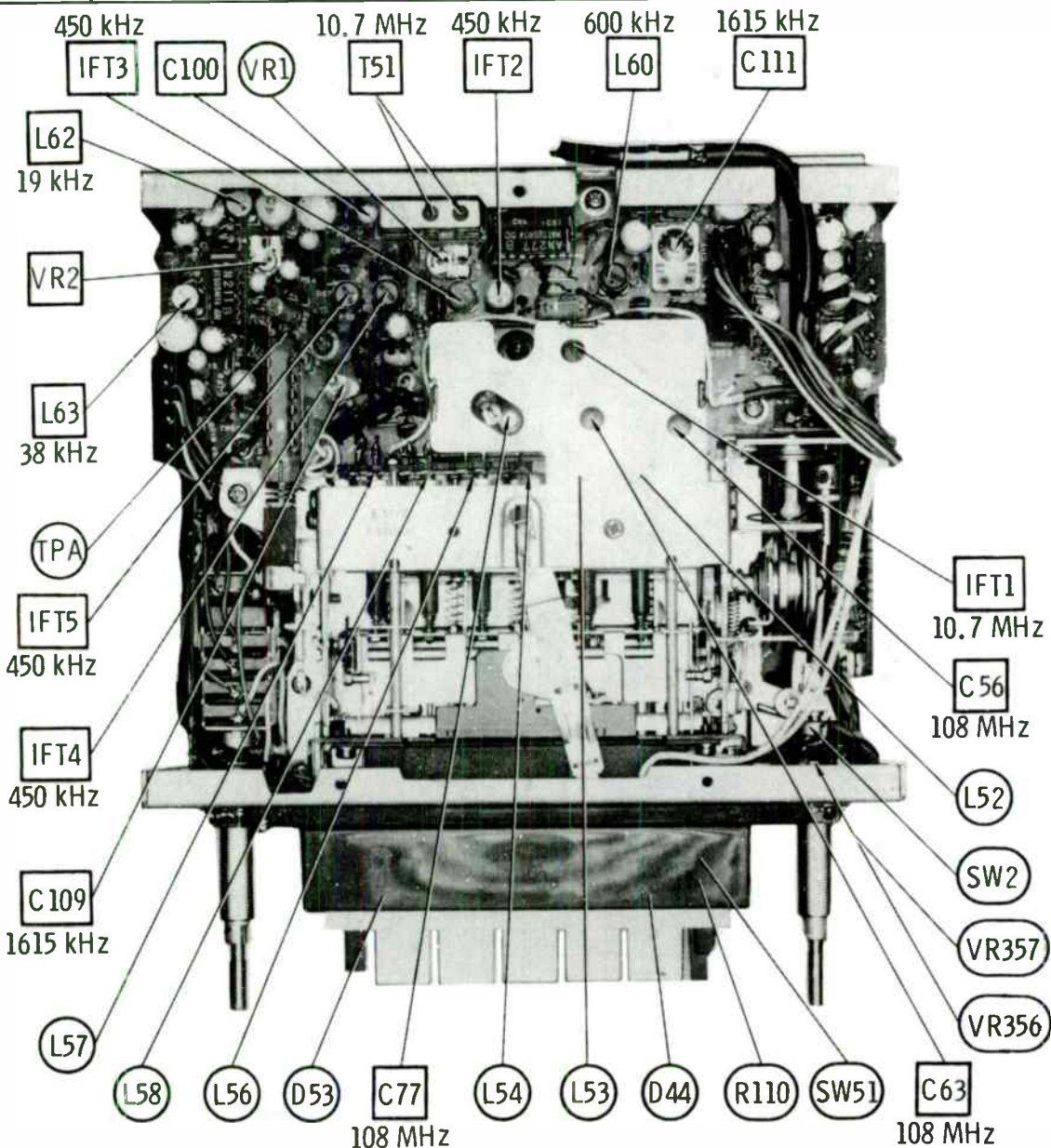
Connect generator across antenna terminals with 120-ohm carbon resistor in series with each lead. Adjustment of coils by bending should not be attempted unless the coil is deformed or replaced.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
108MHz Unmodulated	High Freq End Stop	DC probe of VTVM to + side of C100.	C63,C56, C77	Adjust for maximum.

FM STEREO MULTIPLEX ALIGNMENT USING FM STEREO SIGNAL GENERATOR ($\pm .0001\%$ ACCURACY)

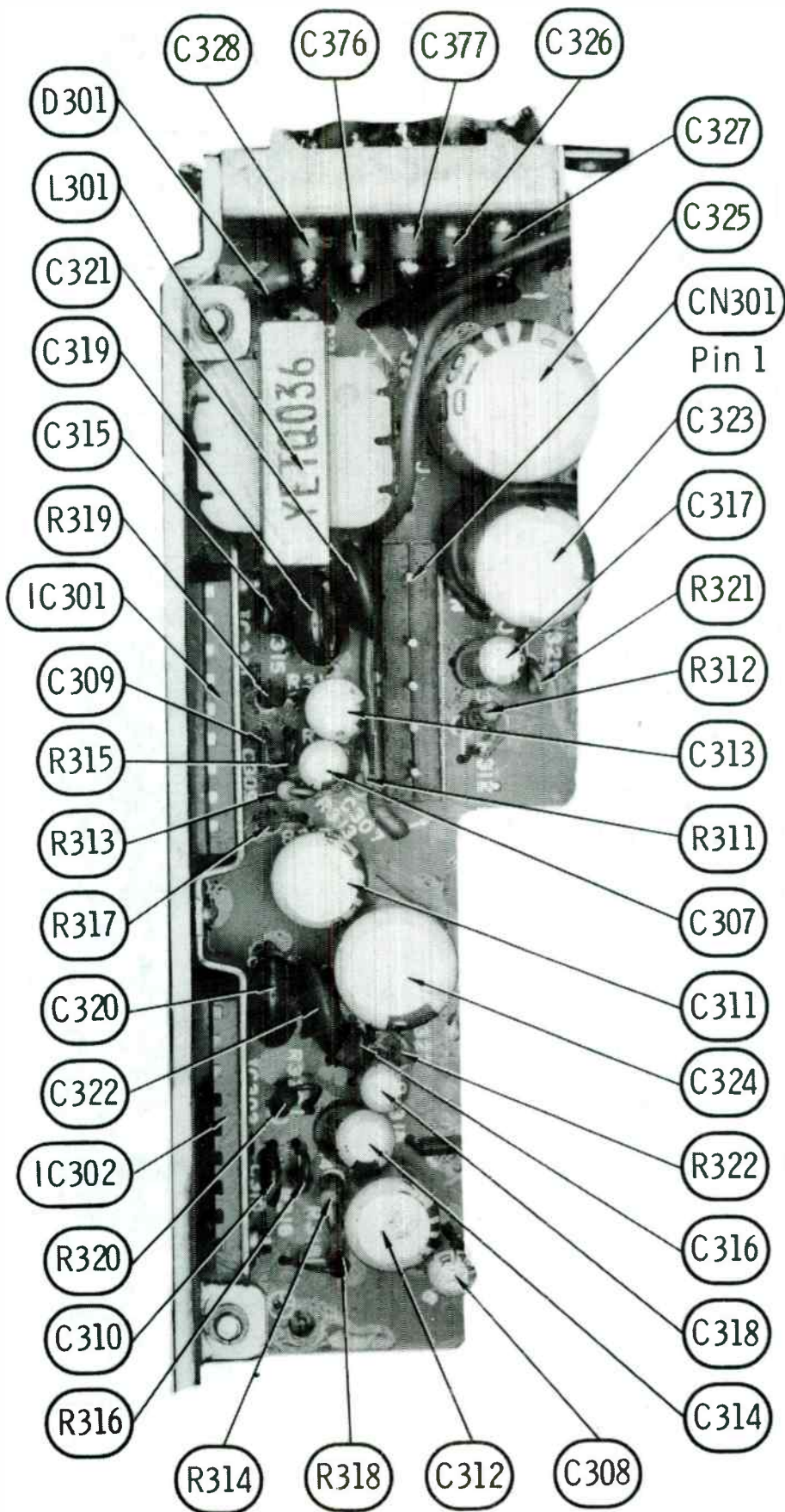
High side of generator thru 47K to Ant Input.

GENERATOR FREQUENCY	INDICATOR	ADJUST	REMARKS
Modulated Left Channel	Vert input of scope to Pin 7 of IC52.	L62,L63,VR2	Adjust for MINIMUM. This step should require only slight adjustment.
Modulated Right Channel	Vert input of scope to Pin 8 of IC52.		Check for MINIMUM. If necessary, make compromise adjustment of L62,L63,VR2.

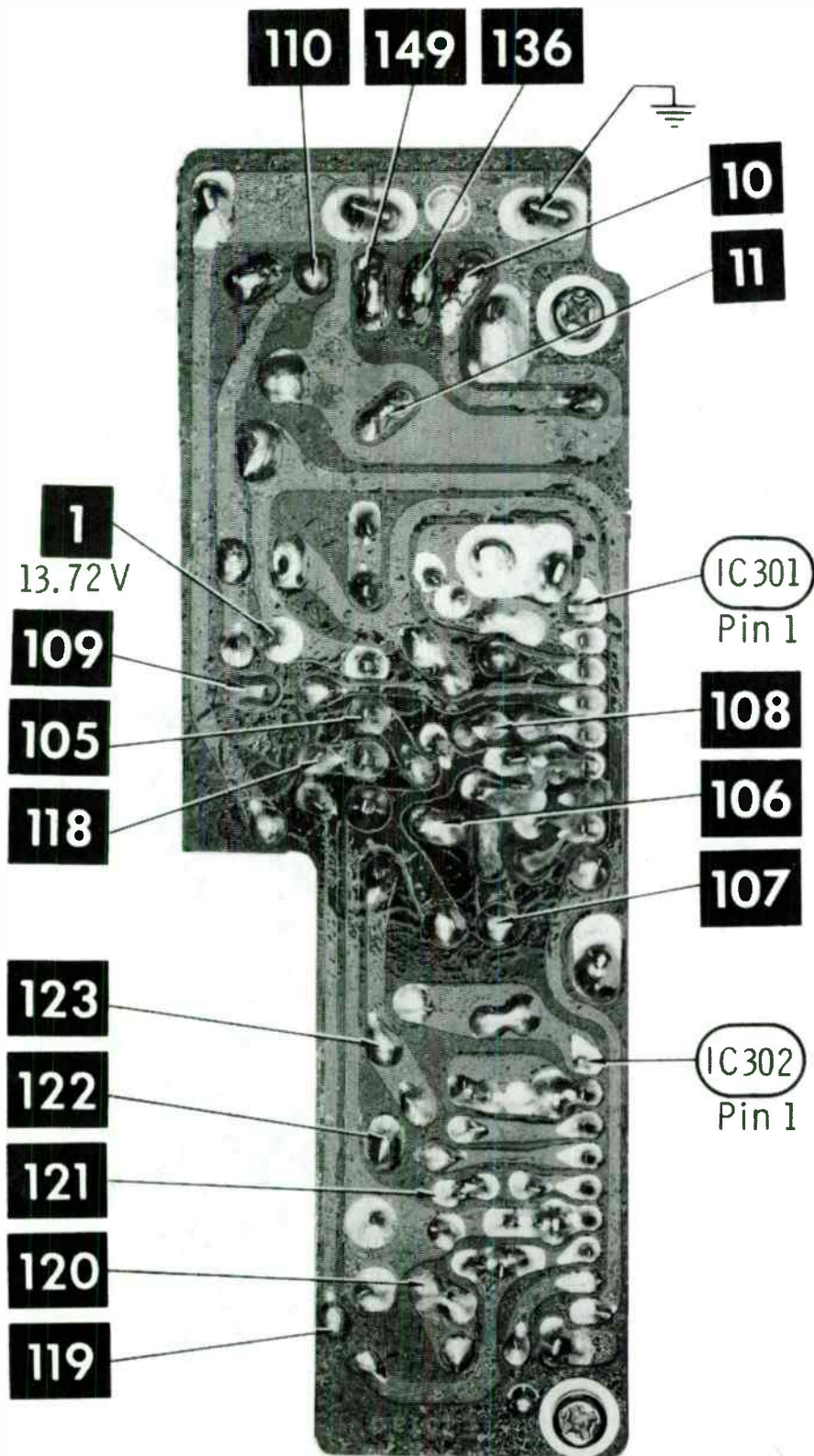


CHASSIS-BOTTOM VIEW

PANASONIC MODEL CQ-999EU

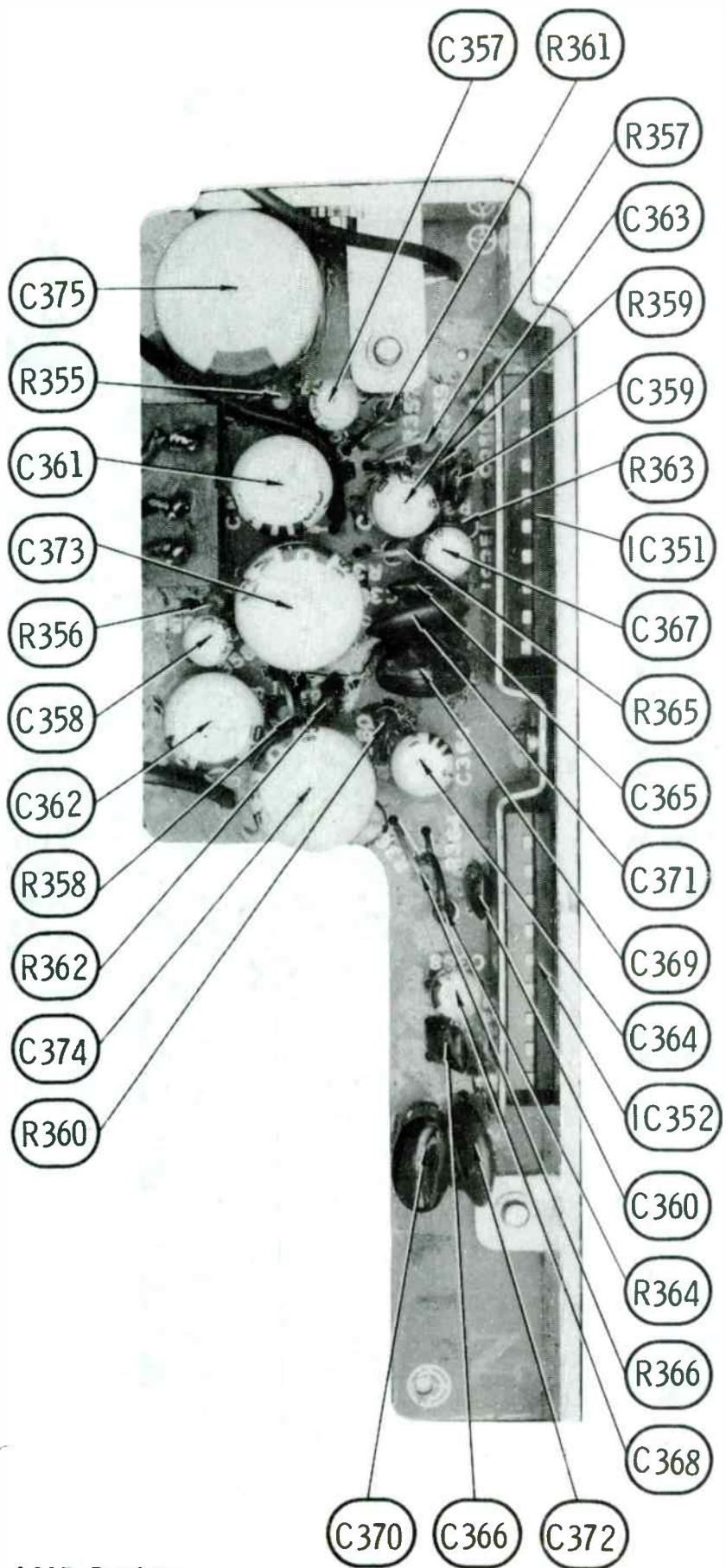


FRONT POWER AMP BOARD

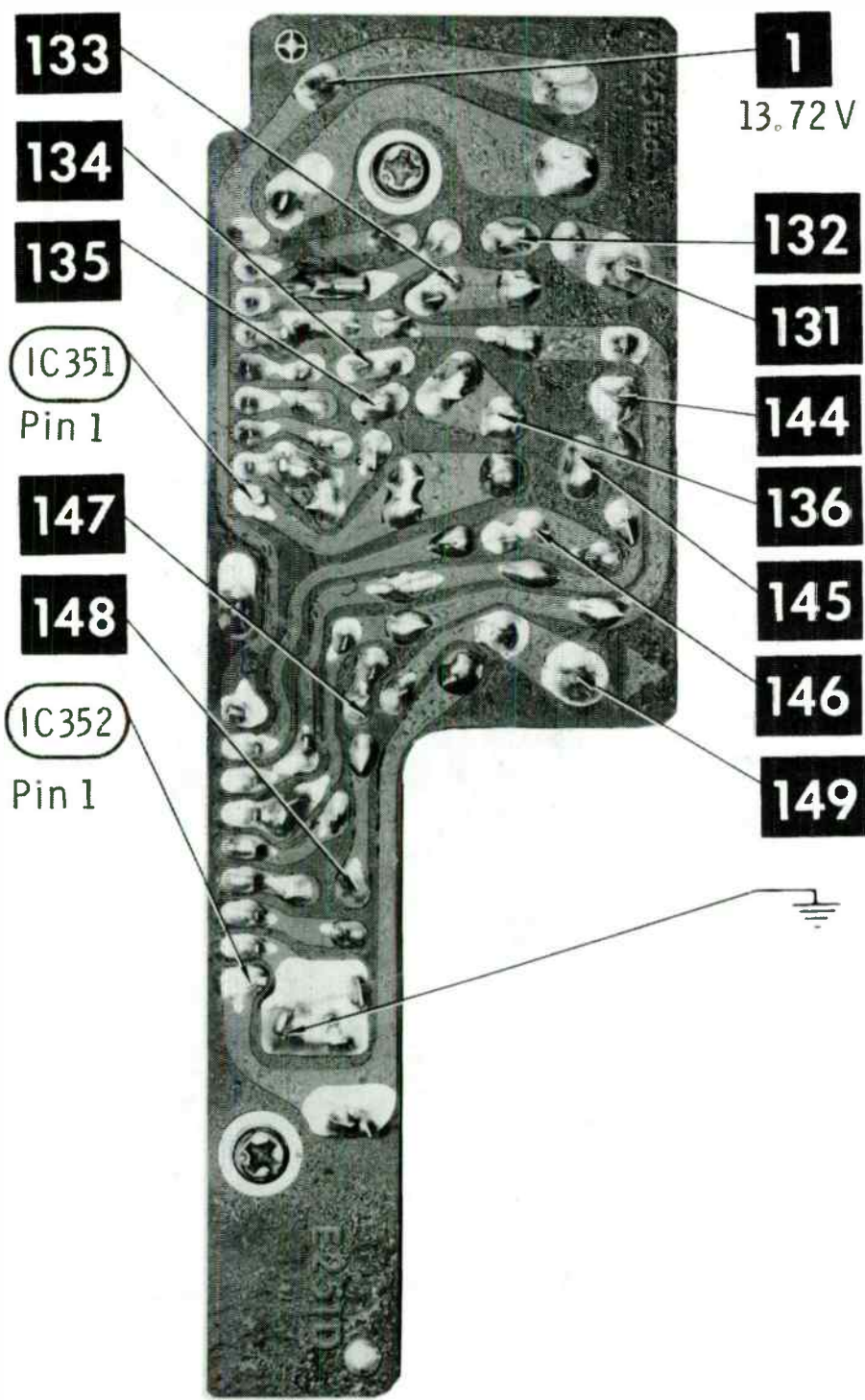


FRONT POWER AMP BOARD

PANASONIC MODEL CG-999EU

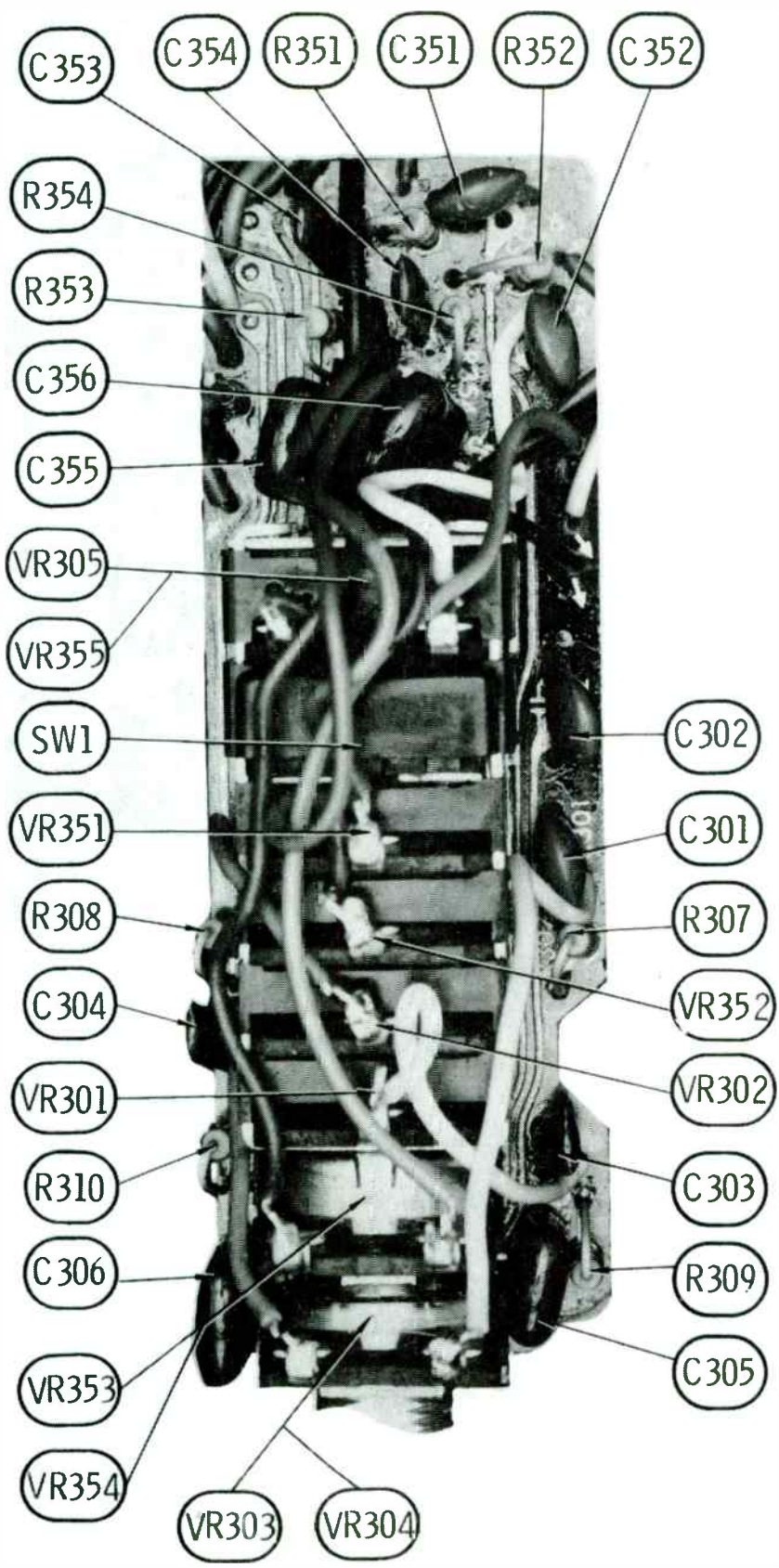


REAR POWER AMP BOARD

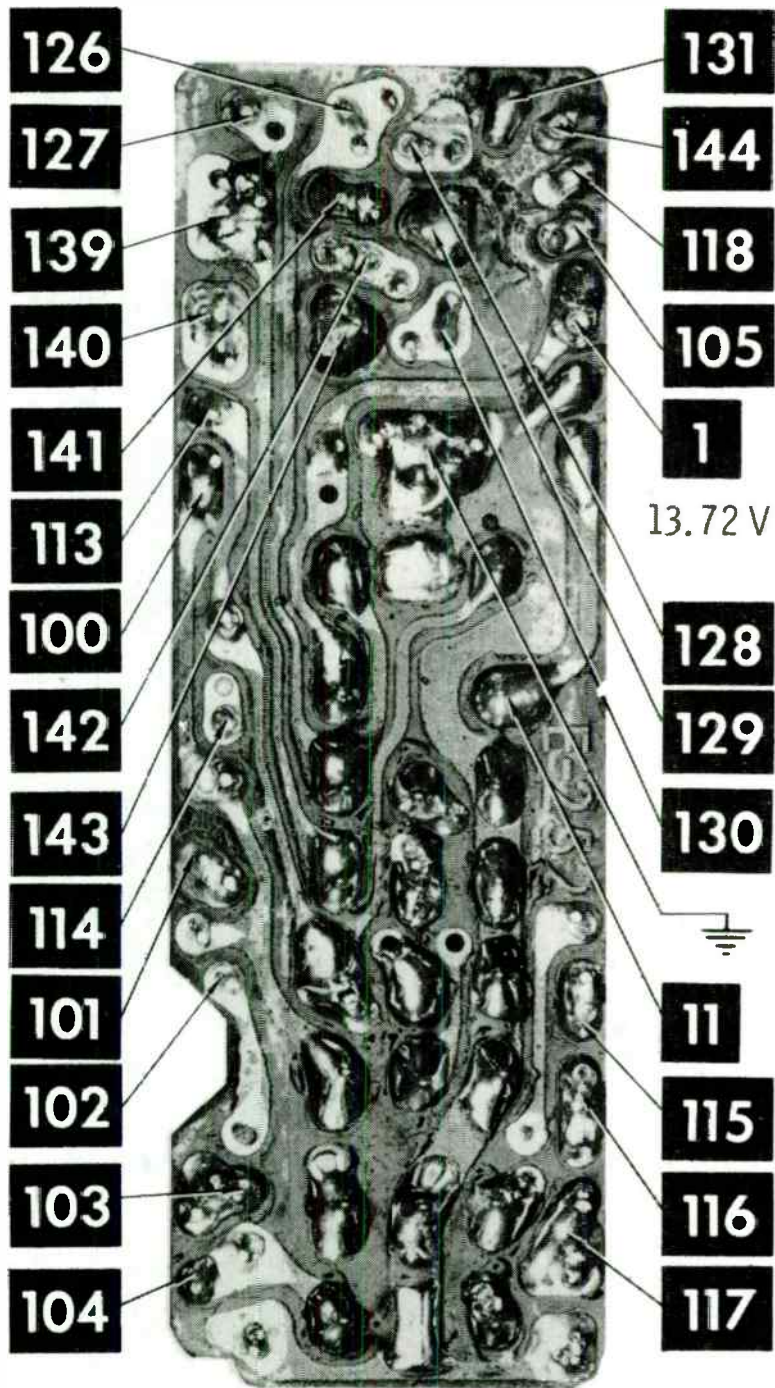


PANASONIC MODEL CG-999EU

REAR POWER AMP BOARD

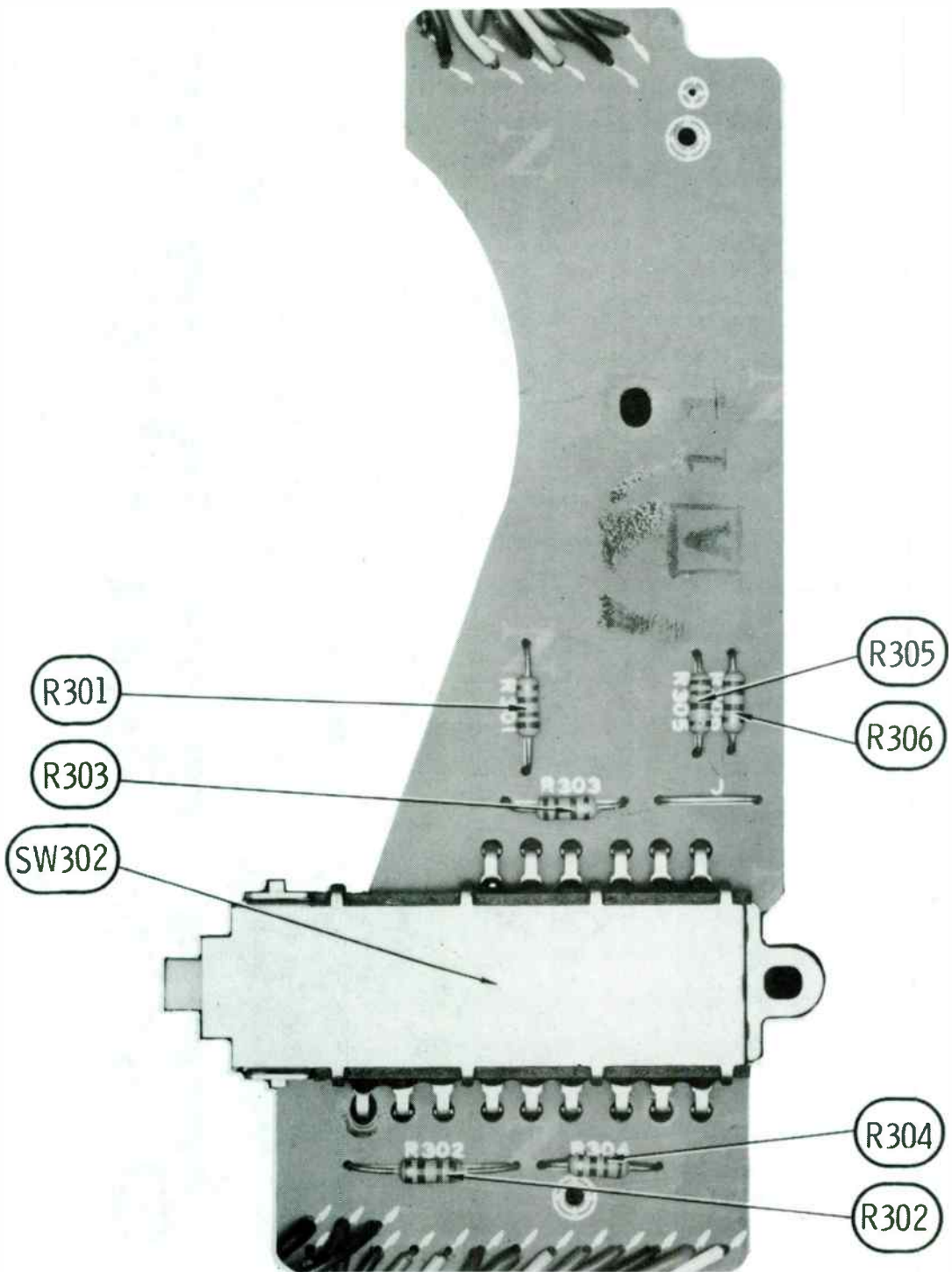


VOLUME BOARD

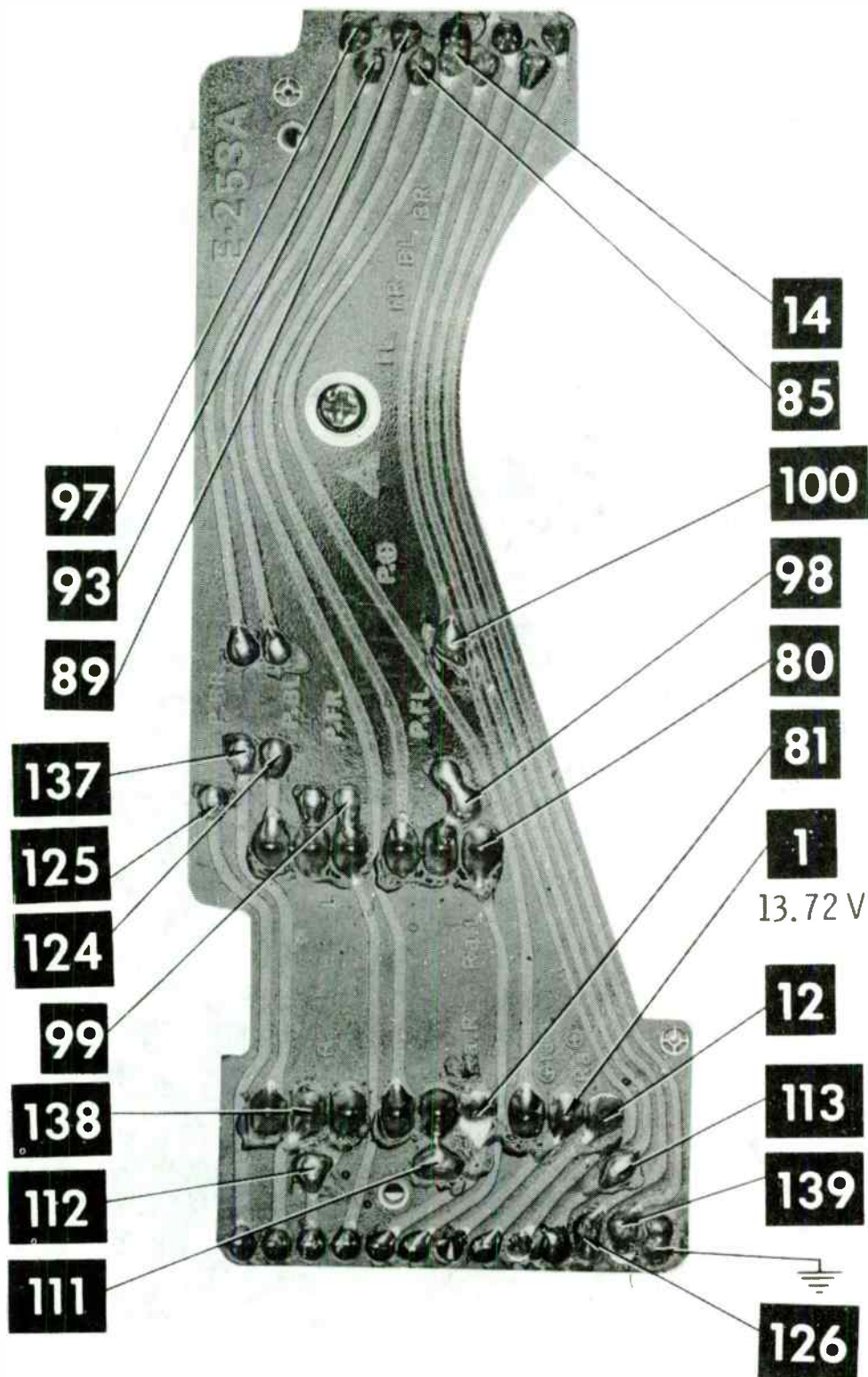


PANASONIC MODEL CG-999EU

VOLUME BOARD

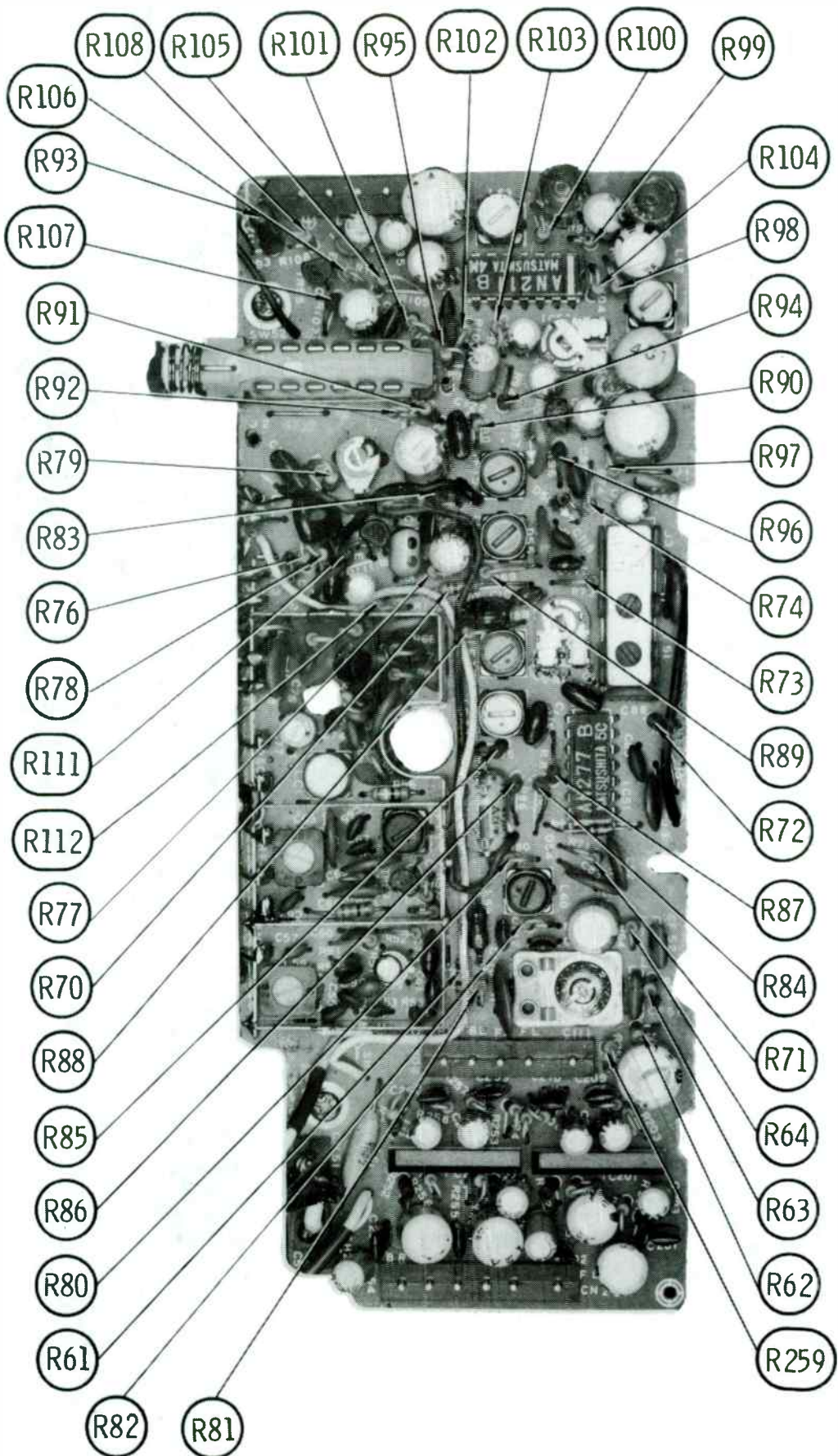


SWITCH BOARD

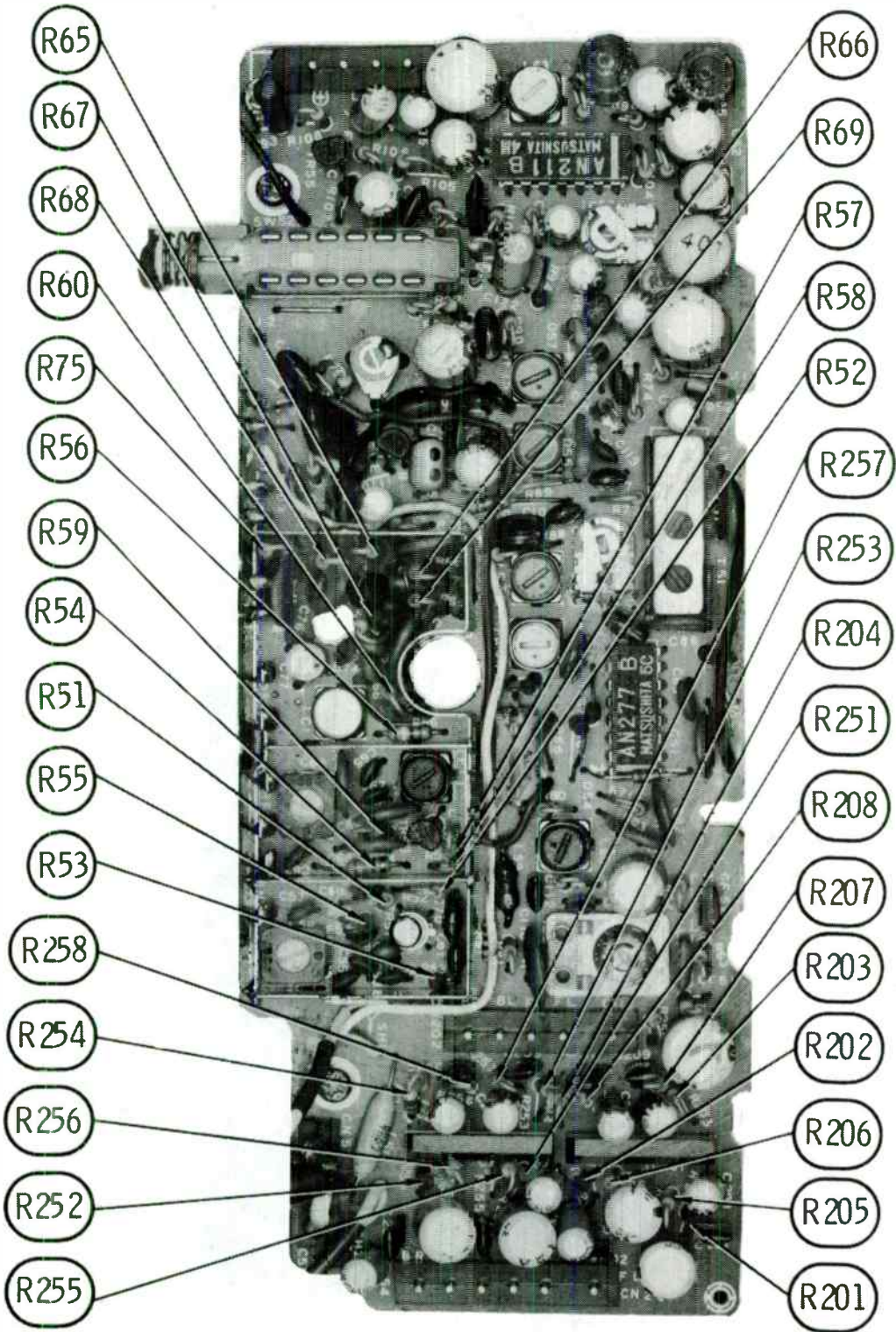


PANASONIC MODEL CQ-999EU

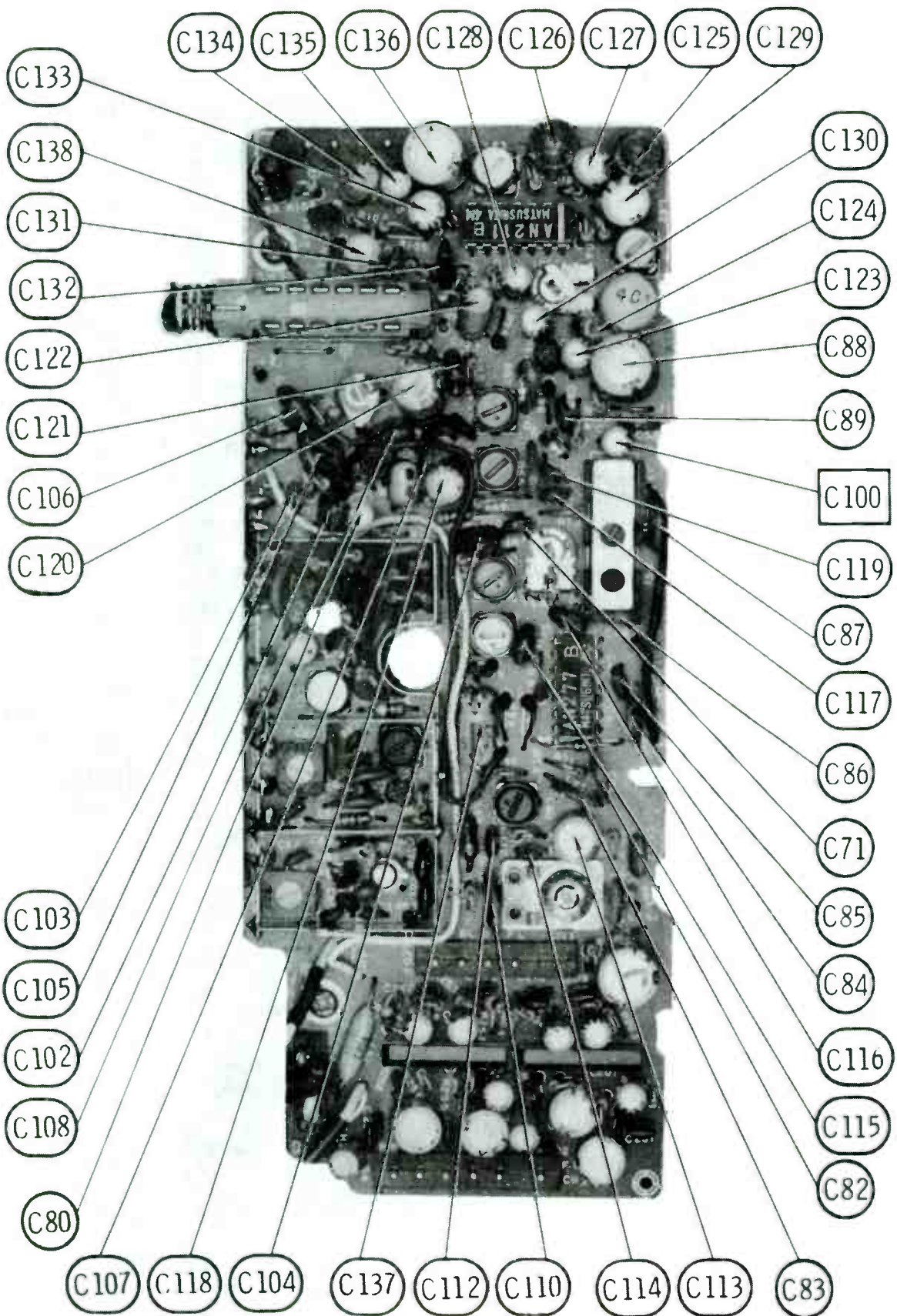
SWITCH BOARD



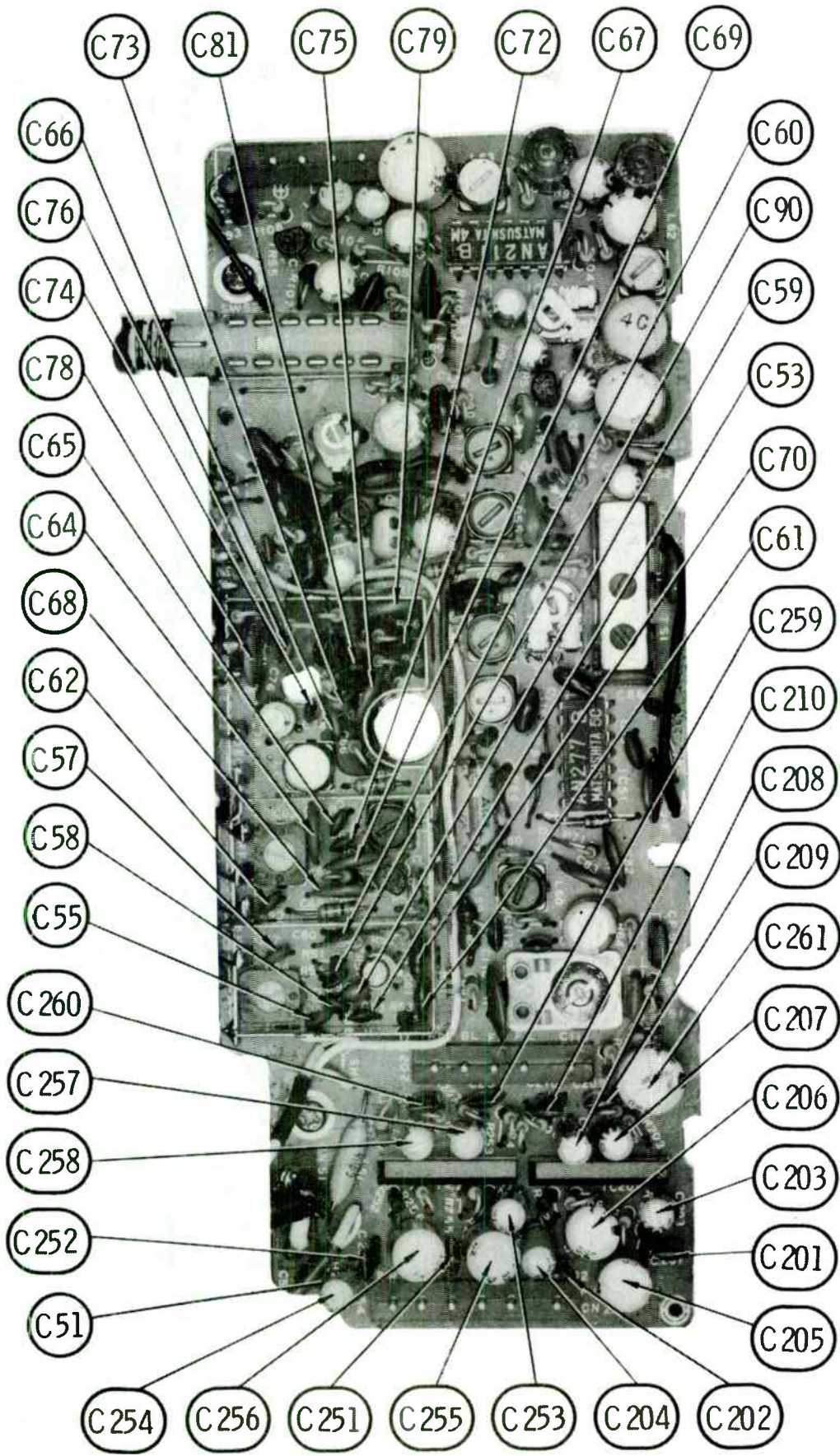
IF/PREAMP BOARD



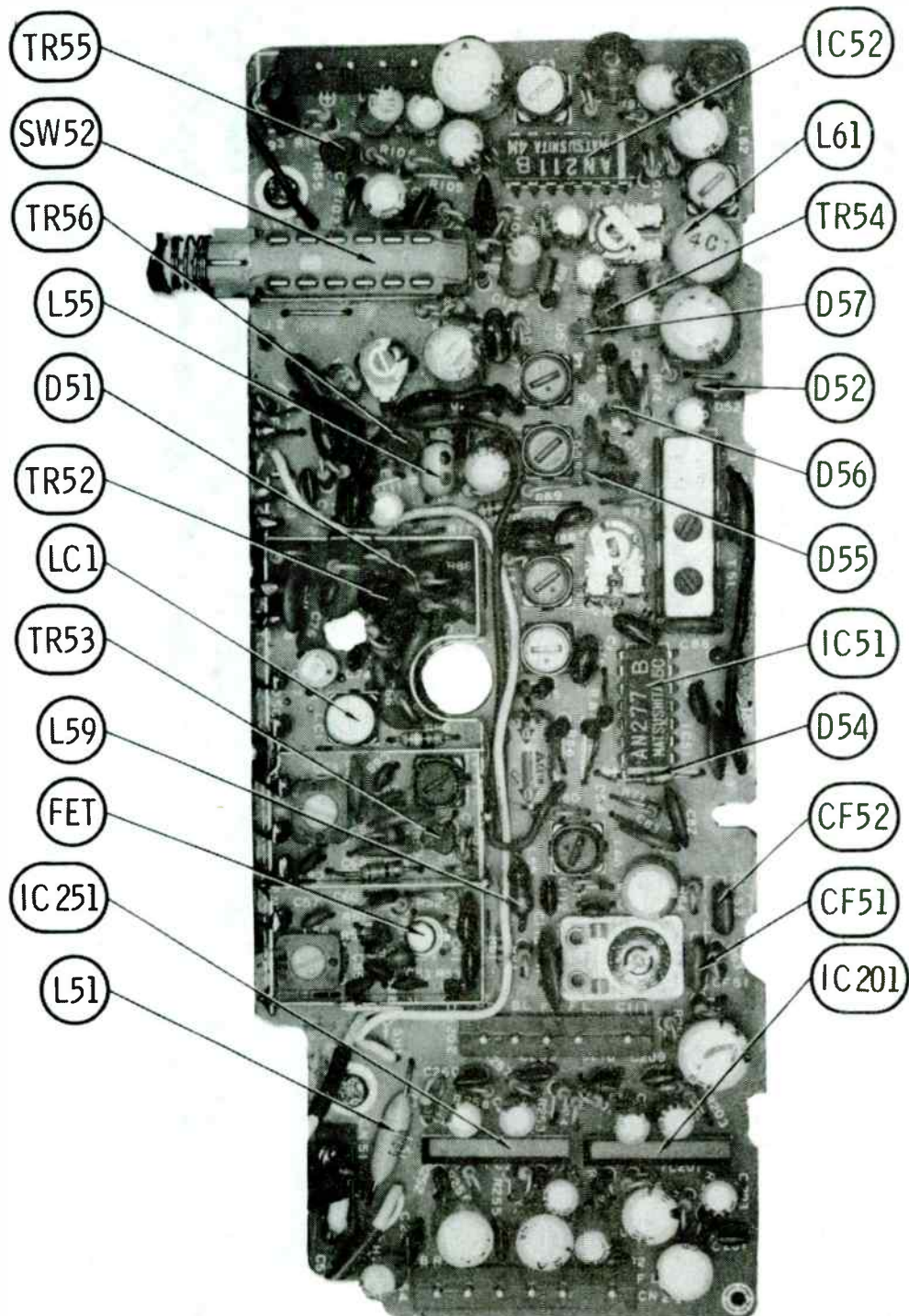
IF/PREAMP BOARD



IF/PREAMP BOARD

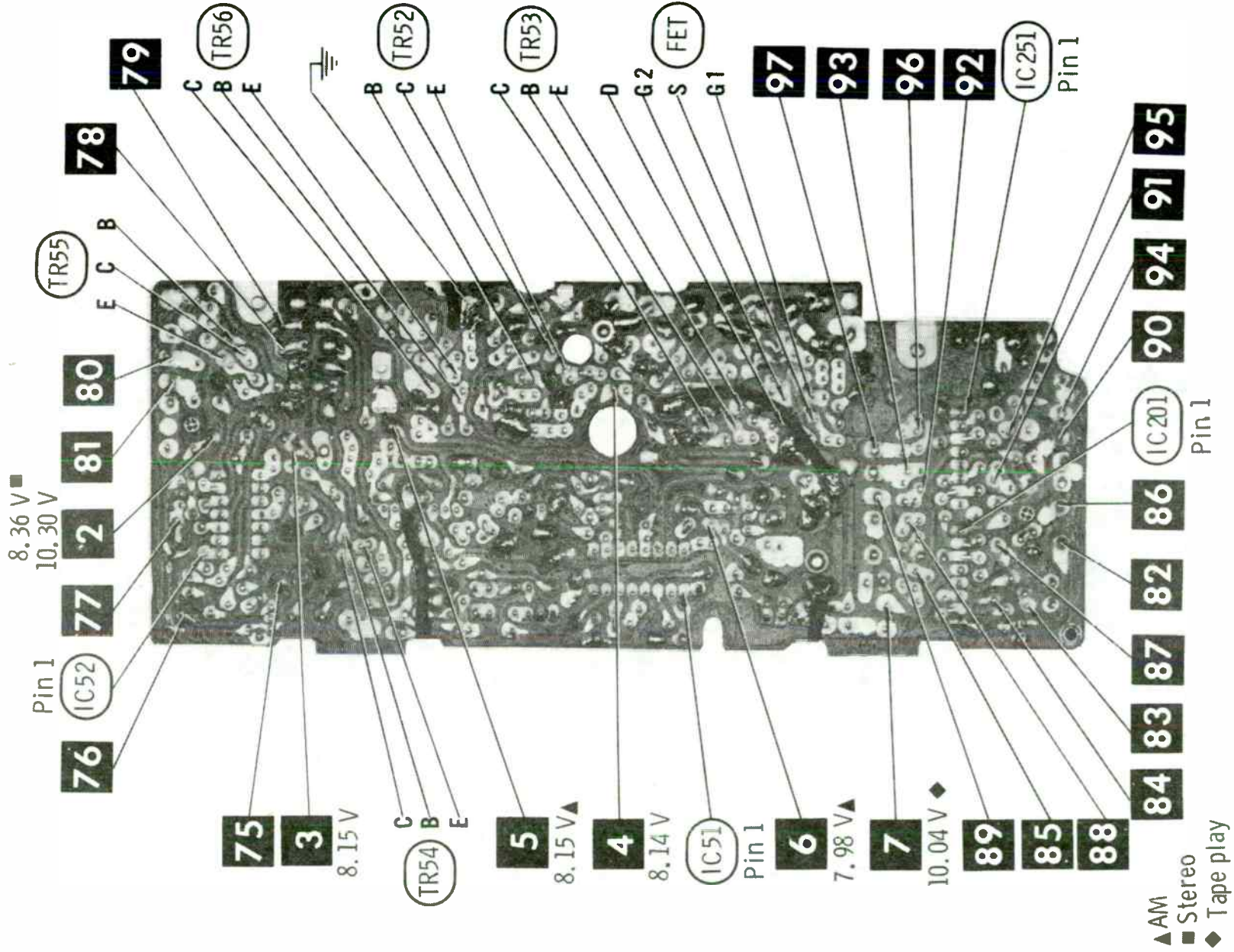


IF/PREAMP BOARD

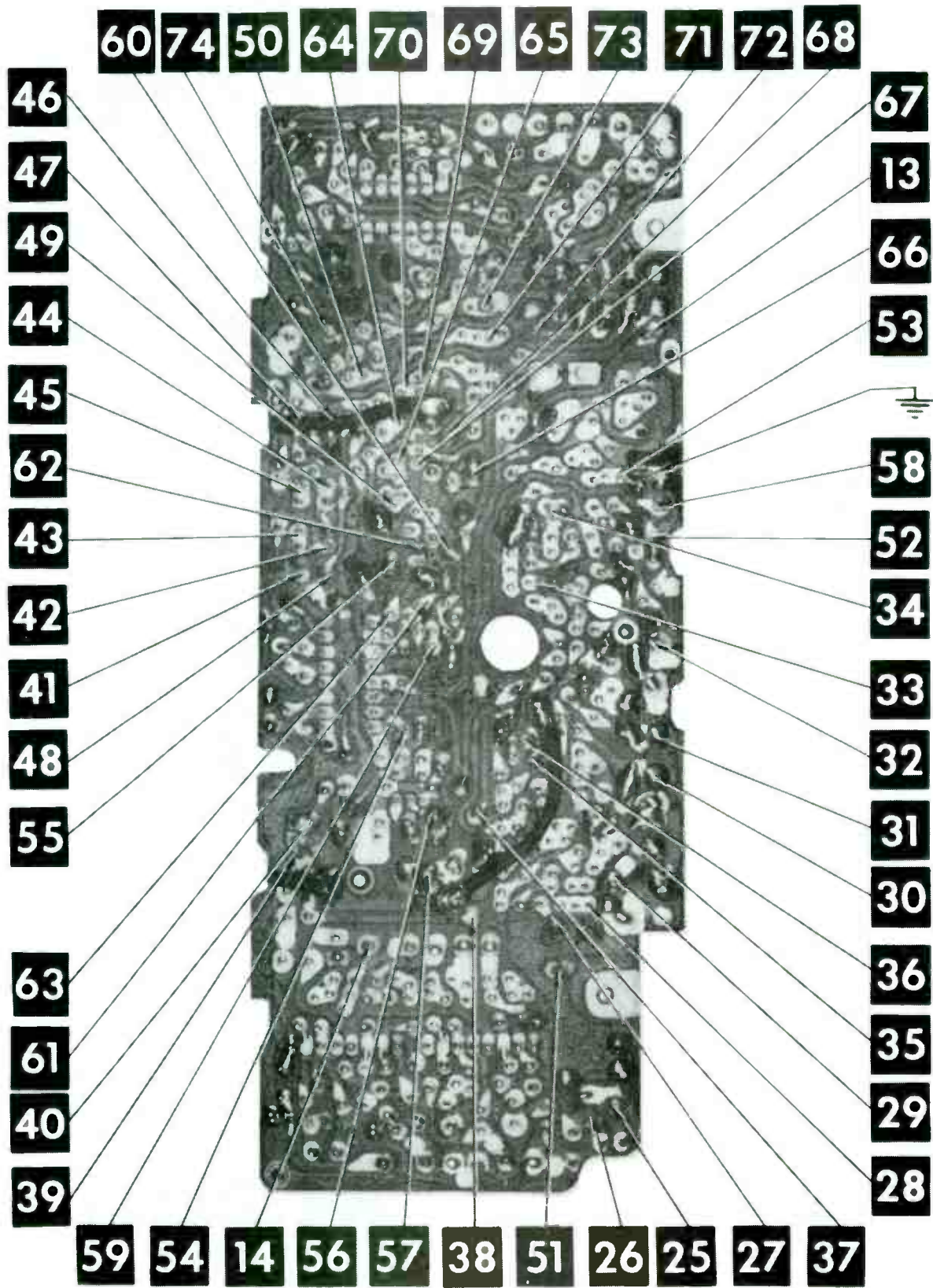


IF/PREAMP BOARD

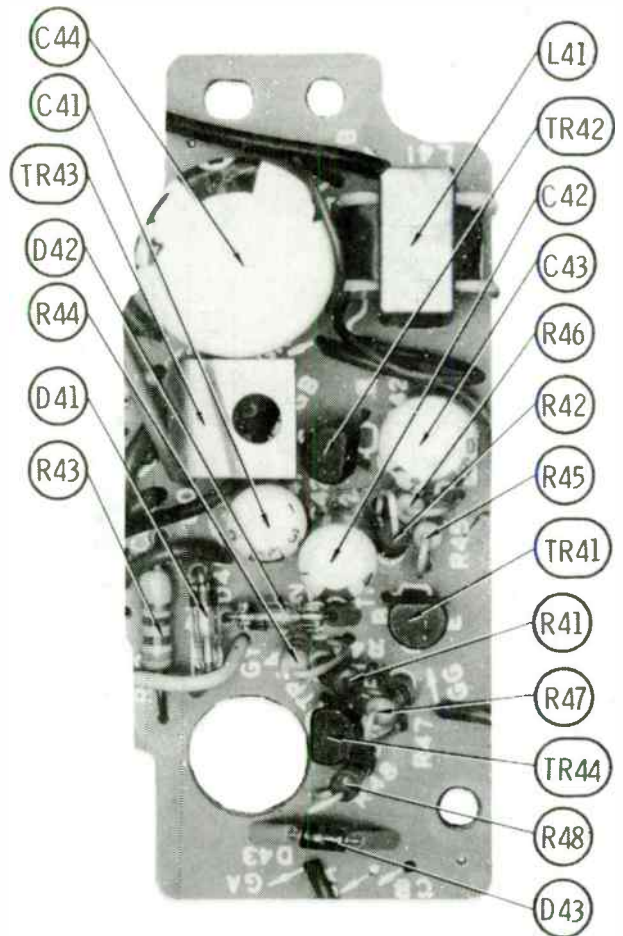
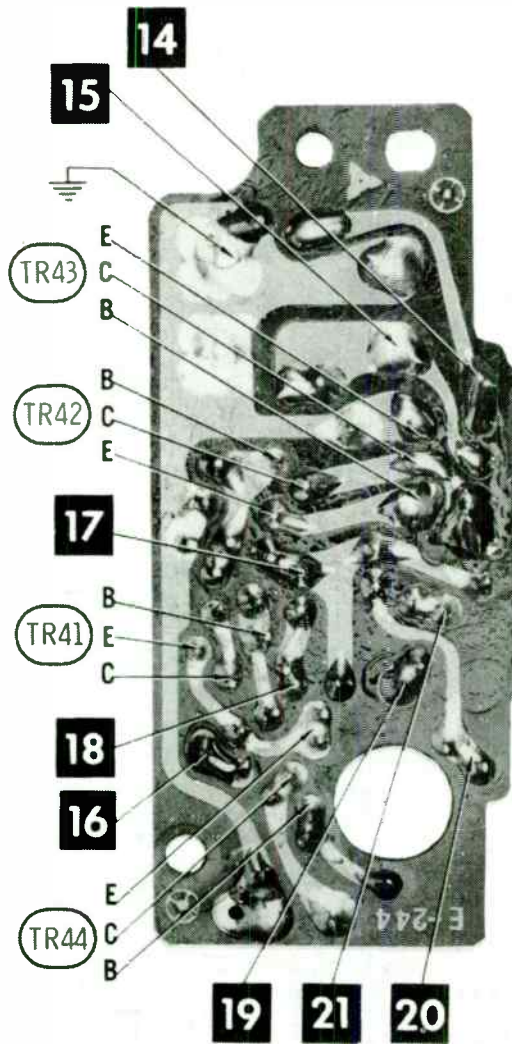
PANASONIC MODEL CQ-999EU



IF/PREAMP BOARD



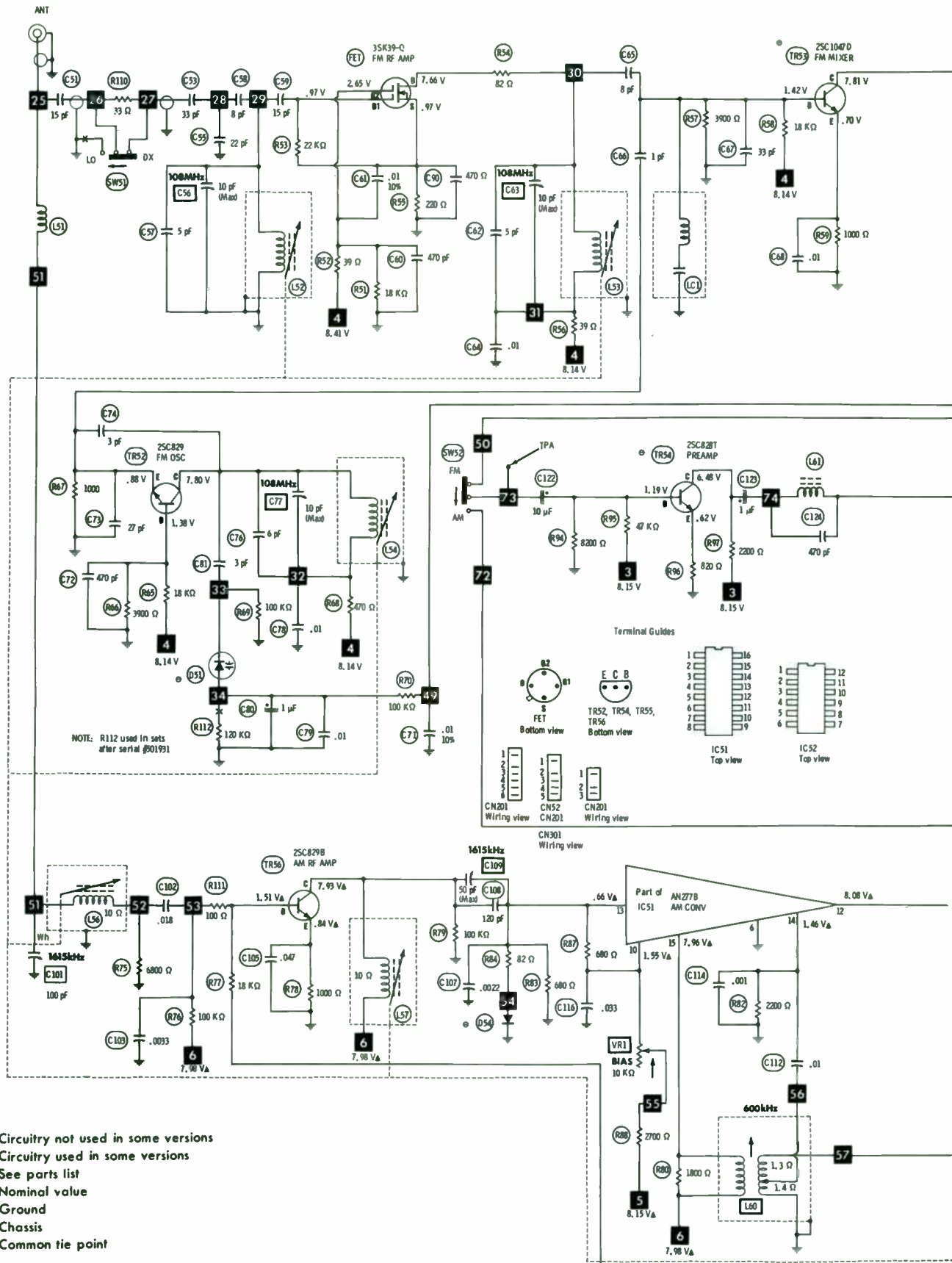
IF/PREAMP BOARD



PANASONIC MODEL CG-999EU

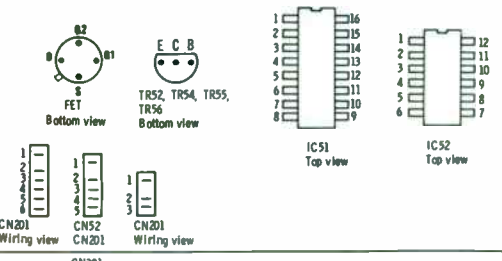
2CH/4CH BOARD

NOTE: DEMAGNETIZE HEADS AFTER SERVICING



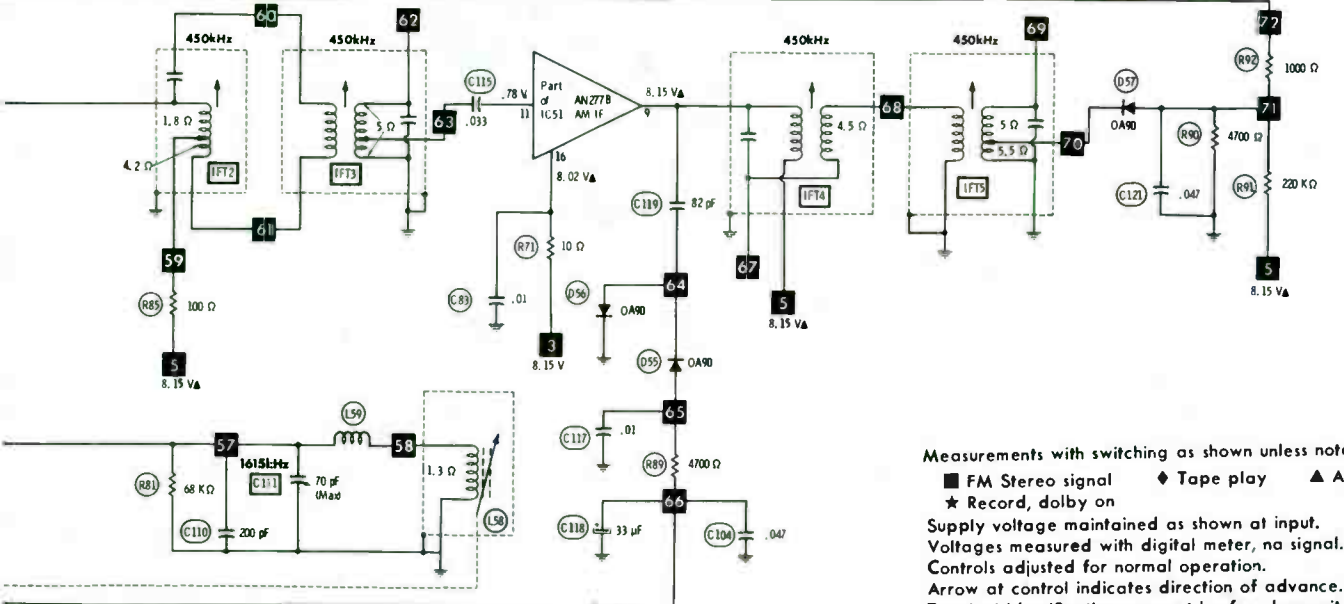
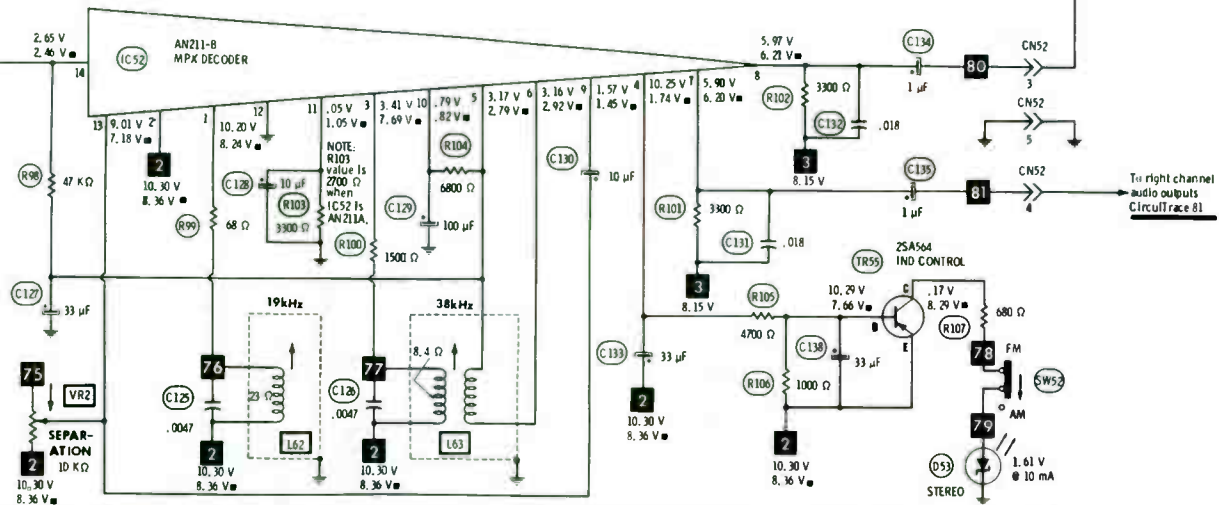
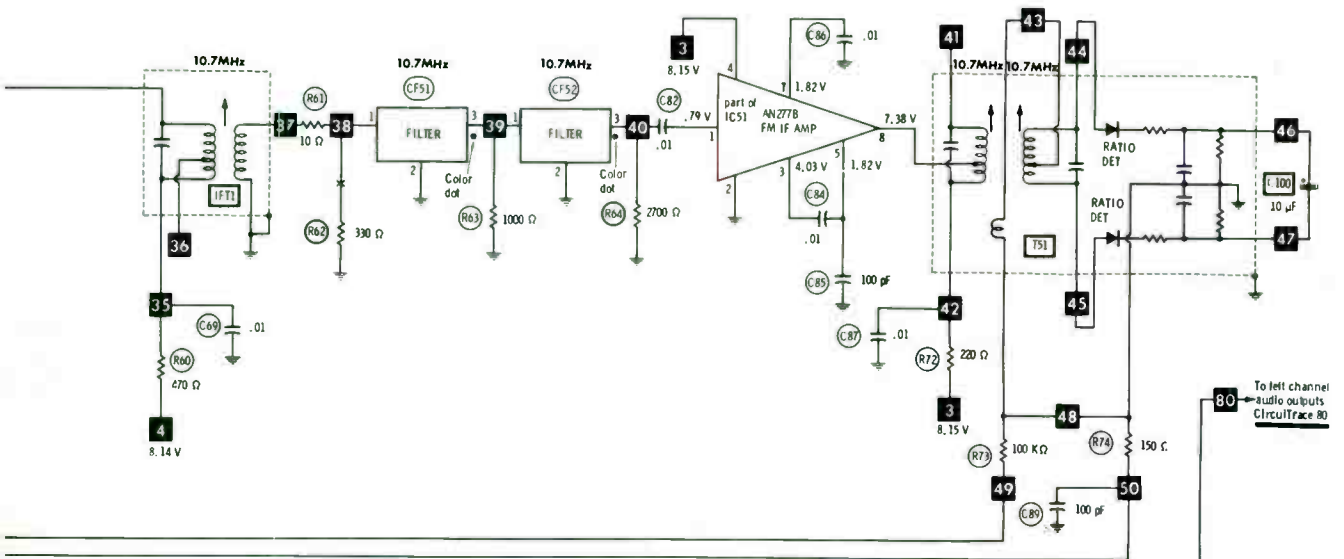
NOTE: R112 used in sets after serial #01931

Terminal Guides



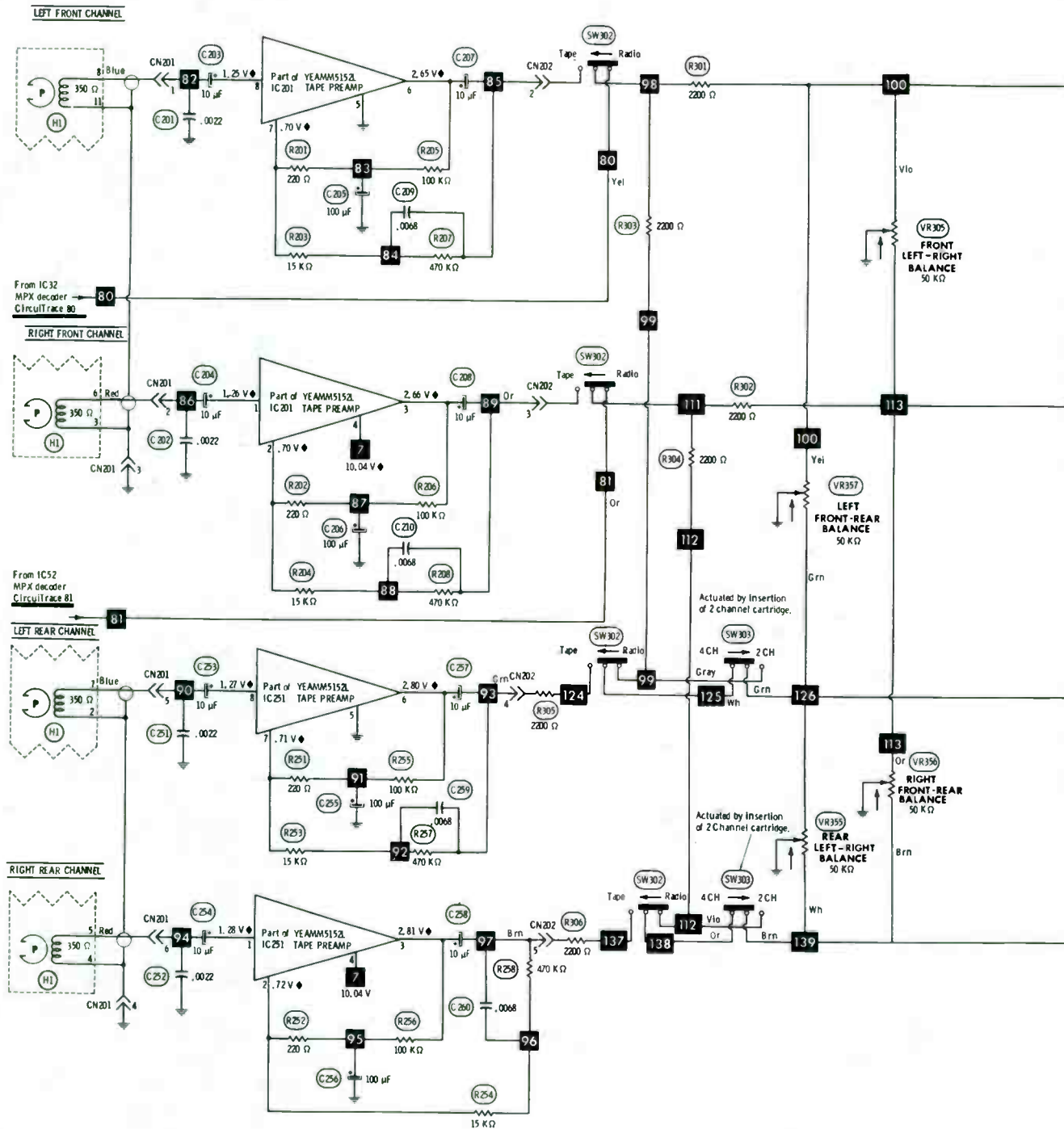
- ✕ Circuitry not used in some versions
- Circuitry used in some versions
- ⊙ See parts list
- ⊛ Nominal value
- ⊕ Ground
- ⏏ Chassis
- ▽ Common tie point

A PHOTOFACIT STANDARD NOTATION SCHEMATIC
WITH **CIRCUITRACE**
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Measurements with switching as shown unless noted:
 ■ FM Stereo signal ♦ Tape play ▲ AM
 ★ Record, dolby on
 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.

NOTE: DEMAGNETIZE HEADS AFTER SERVICING



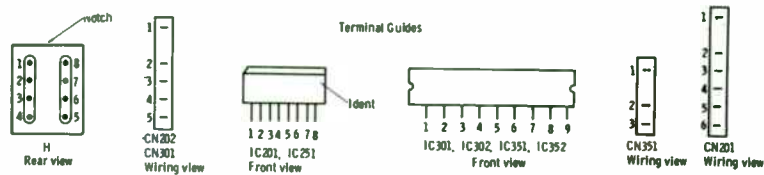
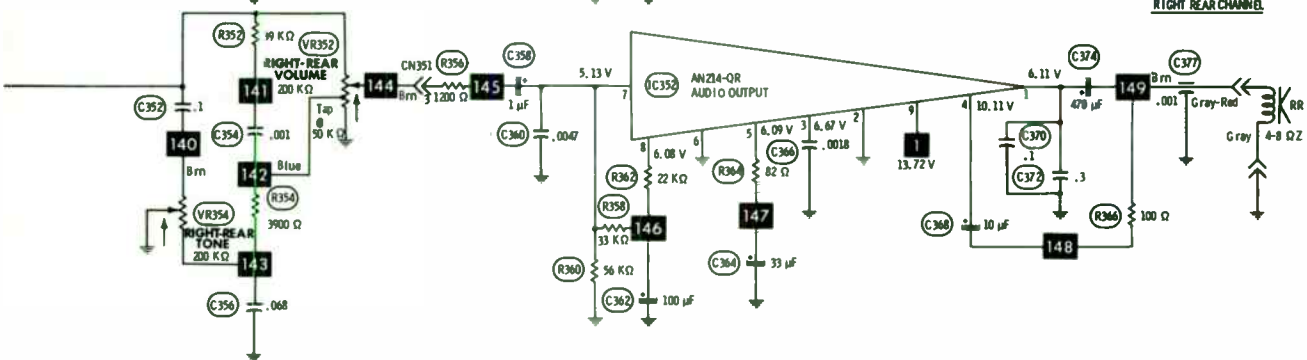
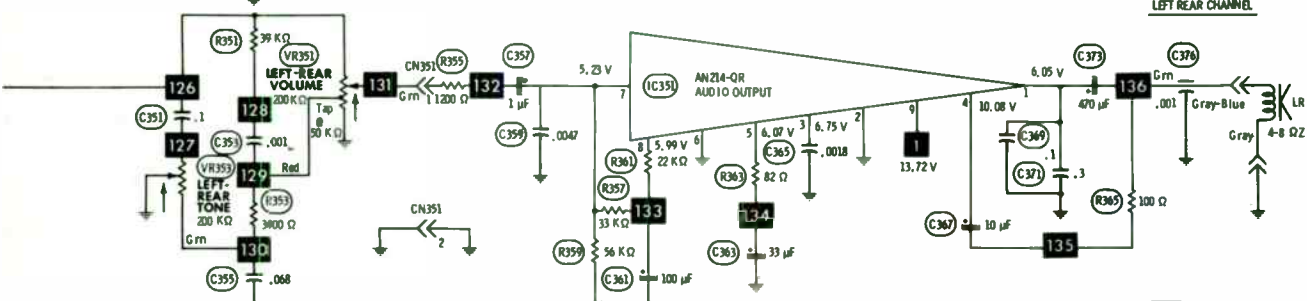
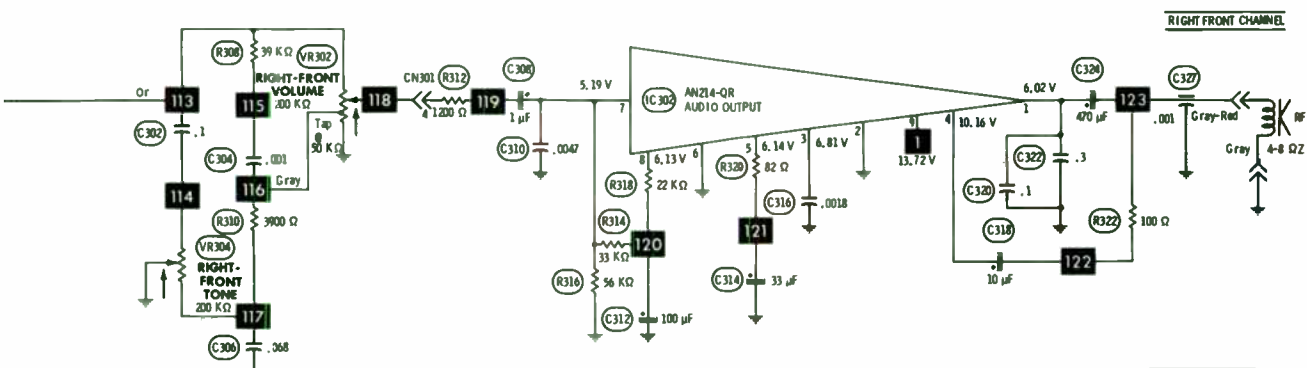
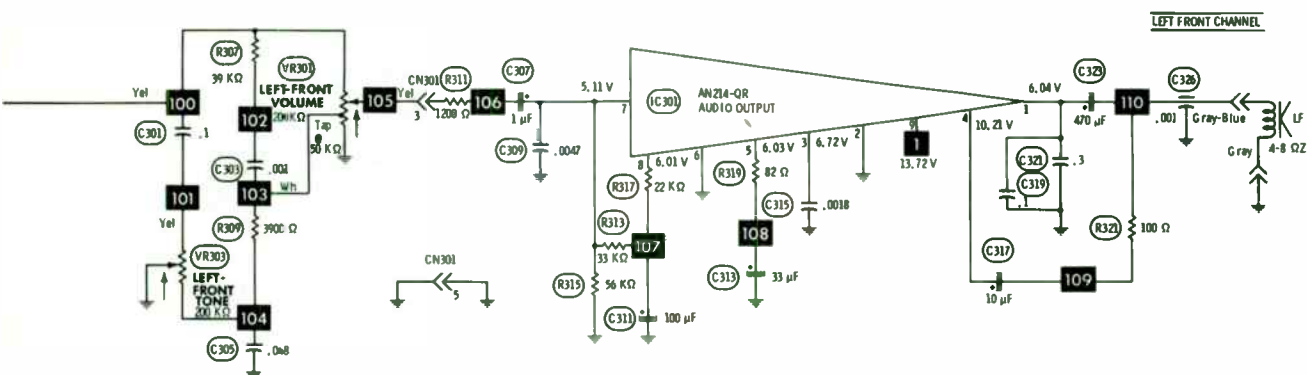
- *— Circuitry not used in some versions
- - - Circuitry used in some versions
- ⊕ See parts list
- ⊗ Nominal value
- ⊥ Ground
- ▭ Chassis
- ▽ Common tie point

A PHOTOFACIT STANDARD NOTATION SCHEMATIC WITH **CIRCUITRACE**

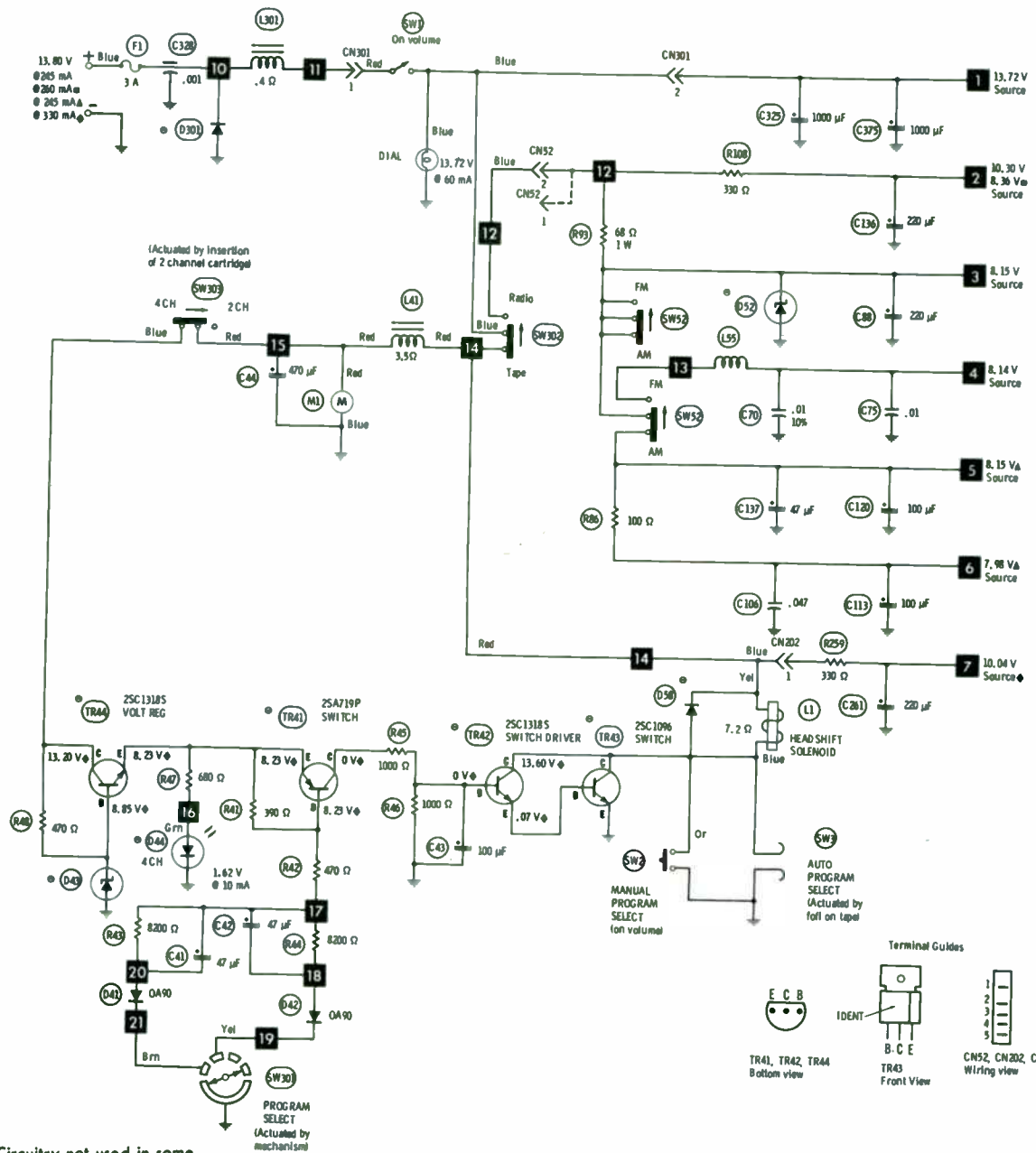
© Howard W. Sams & Co., Inc. 1977

Measurements with switching as shown unless noted:
 ■ FM Stereo signal ♦ Tape play ▲ AM
 ★ Record, dolby on

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.



NOTE: DEMAGNETIZE HEADS AFTER SERVICING



- Circuitry not used in some
 - - - 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
 - ▲ AM
 - ★ Record, dolby on
- 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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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.
D41	0A90		1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
D42	0A90		1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
D43		YEAD025	GEZD-9.1		ZB9.1B		RE 114		RT-240	ECG139
D44		YEAD022		D201		HEPR2503	RE 195	SK3126	RT-262	
D51		YEAD029	GE-90		ZBB.2B		RE 112		RT-257	ECG5072
D52		YEAD010	GEZD-8.2							
D53		YEAD022								
D54		YAAD010	GE-300	D200	PTC214	HEPR0602	RE 52	SK3100	RT-218	ECG177
D55	0A90		1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
D56	0A90		1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
D57	0A90		1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
D58		YAAD004	GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
D301		YAAD004	GE-504A	5A4D	PTC201	HEPR0052	RE 49	SK3030	RT-213	ECG116
FET	3SK39Q	YEAN3SK39-Q	GE-FET-4		PTC181	HEPF2004	RE 199	SK3050	RT-181	ECG222
IC51	AN277B,A		GEIC-63							ECG1073
IC52	AN211B,A		GEIC-48							ECG1056
IC201	M5152L									
IC251	M5152L	YEAMM5152L								
IC301	AN214QR		GEIC-49		PTC757		RE 338-IC			ECG1058
IC302	AN214QR		GEIC-49		PTC757		RE 338-IC			ECG1058
IC351	AN214QR		GEIC-49		PTC757		RE 338-IC			ECG1058
IC352	AN214QR		GEIC-49		PTC757		RE 338-IC			ECG1058
TR41	2SA719P, Q,R		GE-21	TR-28	PTC103	HEPS0012	RE 26	SK3114	RT-126A	ECG159
TR42	2SC1318S Q,R		GE-210	TR-21	PTC178	HEPS0015	RE 17	SK3122	RT-302	ECG128
TR43	2SC1096 K,L,M	YAANL25C1096-KLM	GE-28	TR-55	PTC110	HEPS5027	RE 42	SK3054	RT-167	ECG186A
TR44	2SC1318S, Q,R		GE-210	TR-21	PTC178	HEPS0015	RE 17	SK3122	RT-302	ECG128
TR52	2SC829B,C		GE-20	(IR)2SC829B	PTC121	HEPS0015	RE 9	SK3122	RT-30B	ECG229
TR53	2SC1047D, B,C		GE-20	(IR)2SC829B	PTC121	HEPS0015	RE 9	SK3122	RT-30B	ECG229
TR54	2SC828T, R,S		GE-61	(IR)2SC828A	PTC121	HEPS0015	RE 192	SK3122	RT-302	ECG199
TR55	2SA564		GE-65	(IR)2SA564A	PTC103	HEPS0019	RE 26	SK3114	RT-303	ECG234
TR56	2SC829B,C		GE-20	(IR)2SC829B	PTC121	HEPS0015	RE 9	SK3122	RT-30B	ECG229

PANASONIC MODEL CG-999EU

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C41	47 6.3V	ECEA6V47L	PC50-10	VTT47A6	EV-1026
C42	47 6.3V	ECEA6V47L	PC50-10	VTT47A6	EV-1026
C43	100 6.3V	ECEA6V100L	PC100-10	VTT100E10	EV-1030
C44	470 16V	ECEA16V470W	PC500-16	VTT47QJ16	EV-1250
C80	1 50V	ECEA50V1L	PC1-50	VTT1B63	EV-1615
C88	220 10V	ECEA10V220L	PC250-10		EV-1140
C100	10 16V	ECEA16V10L	PC10-25	VTT10A25	EV-1222
C113	100 10V	ECEA10V100L	PC100-10	VTT100E10	EV-1130
C118	33 5.3	ECEA6V33L	PC30-25	VTT33A10	EV-1125
C120	100 10V	ECEA10V100L	PC100-10	VTT100E10	EV-1130
C122	10 16V	ECEA16V10L	PC10-25	VTT10A25	EV-1222
C123	1 50V	ECEA50V1L	PC1-50	VTT1B63	EV-1615
C127	33 5.3V	ECEA6V33L	PC30-25	VTT33A10	EV-1125
C128	10 16V	ECEA16V10L	PC10-25	VTT10A25	EV-1222
C129	100 6.3V	ECEA6V100L	PC100-10	VTT100E10	EV-1030
C130	10 16V	ECEA16V10L	PC10-25	VTT10A25	EV-1222
C133	33 10V	ECEA10V33L	PC30-25	VTT33A10	EV-1125
C134	1 50V	ECEA50V1L	PC1-50	VTT1B63	EV-1615
C135	1 50V	ECEA50V1L	PC1-50	VTT1B63	EV-1615
C136	220 10V	ECEA10V220L	PC250-10		EV-1140
C137	47 10V	ECEB10V47L	PC50-16	VTT47D16	EV-1226
C138	33 10V	ECEA10V33L	PC30-25	VTT33A10	EV-1125
C203	10 16V	ECEA16V10L	PC10-25	VTT10A25	EV-1222
C204	10 16V	ECEA16V10L	PC10-25	VTT10A25	EV-1222
C205	100 6.3V	ECEA6V100L	PC100-10	VTT100E10	EV-1030
C206	100 6.3V	ECEA6V100L	PC100-10	VTT100E10	EV-1030
C207	10 16V	ECEA16V10L	PC10-25	VTT10A25	EV-1222
C208	10 16V	ECEA16V10L	PC10-25	VTT10A25	EV-1222
C253	10 16V	ECEA16V10L	PC10-25	VTT10A25	EV-1222
C254	10 16V	ECEA16V10L	PC10-25	VTT10A25	EV-1222
C255	100 6.3V	ECEA6V100L	PC100-10	VTT100E10	EV-1030
C256	100 6.3V	ECEA6V100L	PC100-10	VTT100E10	EV-1030
C257	10 16V	ECEA16V10L	PC10-25	VTT10A25	EV-1222
C258	10 16V	ECEA16V10L	PC10-25	VTT10A25	EV-1222

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			
		MFRG. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C261	220 10V	ECEA10V220L	PC250-10		EV-1140
C307	1 50V	ECEA50V1L	PC1-50	VTT1863	EV-1615
C308	1 50V	ECEA50V1L	PC1-50	VTT1863	EV-1615
C311	100 16V	ECEA16V100L	PC100-16	VTT100F16	EV-1230
C312	100 16V	ECEA16V100L	PC100-16	VTT100F16	EV-1230
C313	33 10V	ECEA10V33L	PC30-25	VTT33A10	EV-1125
C314	33 10V	ECEA10V33L	PC30-25	VTT33A10	EV-1125
C317	10 16V	ECEA16V10L	PC10-25	VTT10A25	EV-1222
C318	10 16V	ECEA16V10L	PC10-25	VTT10A25	EV-1222
C323	470 16V	ECEA16V470Z	PC500-16	VTT470J16	EV-1250
C324	470 16V	ECEA16V470Z	PC500-16	VTT470J16	EV-1250
C325	1000 16V	ECEA16V1000L	PC1000-16	VTT1000L16	EV-1260
C357	1 50V	ECEA50V1L	PC1-50	VTT1863	EV-1615
C358	1 50V	ECEA50V1L	PC1-50	VTT1863	EV-1615
C361	100 16V	ECEA16V1D0L	PC100-16	VTT100F16	EV-1230
C362	100 16V	ECEA16V1D0L	PC100-16	VTT100F16	EV-1230
C363	33 10V	ECEA10V33L	PC30-25	VTT33A10	EV-1125
C364	33 10V	ECEA10V33L	PC30-25	VTT33A10	EV-1125
C367	10 16V	ECEA16V10L	PC10-25	VTT10A25	EV-1222
C368	10 16V	ECEA16V10L	PC10-25	VTT10A25	EV-1222
C373	470 16V	ECEA16V470Z	PC500-16	VTT470J16	EV-1250
C374	470 16V	ECEA16V470Z	PC500-16	VTT470J16	EV-1250
C375	1000 16V	ECEA16V1000L	PC1000-16	VTT1000L16	EV-1260

CAPACITORS

ITEM No.	RATING	MFRG. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C51	15 10%	YECCD05150K				
C53	33 10%	YACCD05330K				
C55	22 10%	YECCD05220K				
C56	10	YEECTY128				
C57	5	ECCD050500				
C58	8	ECCD050800				
C59	15 10%	YECCD05150K				MWA-080
C60	470 10%		DD-471	CD15CD080003 CD15CD150J03 GP470 WMF1S1	GP347 EWF1A110	MWA-150 10TS-T47 1P8-S1D
C61	.01 10%					
C62	5	ECCD050500				
C63	10	YEECTY128				
C64	.01	ECKETH103PF				
C65	8	ECCD050800				
C66	1	YECCD05010C				MWA-080
C67	39 10%					MWA-010
C68	.01	ECKETH103PF				MWA-390
C69	.01	ECKETH103PF				
C70	.01 10%					
C71	.01 10%					
C72	470 10%		DD-471	WMF1S1 WMF1S1 GP470 CD15ED270J03	EWF1A110 EWF1A110 GP347 SX427	1P8-S10 1P8-S10 10TS-T47 MWA-270
C73	27 10%					
C74	3	YECCD05030DC				
C75	.01	ECKETH103PF				
C76	6	YECCD050600W				MWA-060
C77	10	YECTTA139				
C78	.01	ECKETH103PF				
C79	.01	ECKETH103PF				
C81	3	YECCD05030DC				
C82	.01	ECKETH103PF				
C83	.01	ECKETH103PF				
C84	.01	ECKETH103PF				
C85	100 10%		DD-101	GP100	GP310	10TS-T10
C86	.01	ECKETH103PF				
C87	.01	ECKETH103PF				
C89	100 10%		DD-101	GP100	GP310	10TS-T10
C90	470 10%		DD-471	GP470	GP347	10TS-T47
C101	100	YECTTC29J101				
C102	.018	YEQN05183M				
C103	.0033 10%	YEQN05332K				
C104	.047	YEQN05473M	UK50-503		M192P1839R8 M192P3329R8 MAG5015	192P1839R8 192P3329R8
C105	.047	YEQN05473M	UK50-503		MAG5015	
C106	.047	YEQN05473M	UK50-503		MAG5015	
C107	.0022 10%	YEQN05222K			M192P2229R8	192P2229R8
C108	120 10%			CD15FD121J03	SX312	MWA-121
C109	50	ECV12W50P32				
C110	200 5%			CD15FD201J03	SX320	MWA-201
C111	70	YECTTT70				
C112	.01 10%					
C114	.001			WMF1S1 DPMS6D1	EWF1A110 EWF1A210	1P8-S1D 1P8-D10
C115	.033				M192P3339R8	192P3339R8
C116	.033				M192P3339R8	192P3339R8
C117	.01 10%			WMF1S1	EWF1A110	1P8-S10
C119	82 10%		DD-820		GP482	10TS-Q82

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.		
C121	.047	YECQ05473M	UK50-503		MAG5015	MWA-471		
C124	470 5% 125V	ECQ51471JZ						
C125	.0047 5% 125V	ECQ51472JZ						
C126	.0047 5% 125V	ECQ51472JZ						
C131	.018	YECQ05183M						
C132	.018	YECQ05183M						
C201	.0022 10%	YECQ05222K						
C202	.0022 10%	YECQ05222K						
C209	.0068 10%	YECQ05222K			WMF1D68		MAG1201	192P1839R8
C210	.0068 10%						192P1839R8	
C251	.0022 10%						192P2229R8	
C252	.0022 10%						192P2229R8	
C259	.0068 10%						192P2229R8	
C260	.0068 10%						192P2229R8	
C301	.1 12V						192P2229R8	
C302	.1 12V						192P2229R8	
C303	.001						192P2229R8	
C304	.001						192P2229R8	
C305	.068	YECQ05683M			UK12-104		MAG1201	192P4729R8
C306	.068						192P4729R8	
C309	.0047						192P4729R8	
C310	.0047						192P4729R8	
C315	.0018						192P4729R8	
C316	.0018						192P4729R8	
C319	.1						192P4729R8	
C320	.1						192P4729R8	
C321	.3 12V						192P4729R8	
C322	.3 12V						192P4729R8	
C326		YECQ05472M			UK50-683		MAG1201	192P4729R8
C327							192P4729R8	
C328							192P4729R8	
C351	.1 12V						192P4729R8	
C352	.1 12V						192P4729R8	
C353	.001		192P4729R8					
C354	.001		192P4729R8					
C355	.068		192P4729R8					
C356	.068		192P4729R8					
C359	.0047		192P4729R8					
C360	.0047	192P4729R8						
C365	.0018	YECQ05472M	UK50-683	MAG1201	192P4729R8			
C366	.0018			192P4729R8				
C369	.1			192P4729R8				
C370	.1			192P4729R8				
C371	.3 12V			192P4729R8				
C372	.3 12V			192P4729R8				
C376				192P4729R8				
C377				192P4729R8				

PANASONIC MODEL CQ-999EU

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.	TRW PART No.				
VR1	Bias	10K	EYN-K4AA00B14 EYN-K4AA00B14 EWK-80TS34296 (18)							
VR2	Separation	10K								
VR301	Left-Front Volume	200K Tap @ 50K								
VR302	Right-Front Volume	200K Tap @ 50K								
VR303	Left-Front Tone	200K								
VR304	Right-Front Tone	200K								
VR305	Front L/R Balance	50K								
VR351	Left Rear Volume	200K Tap @ 50K								
VR352	Right-Rear Volume/Power Switch	200K Tap @ 50K								
VR353	Left-Rear Tone	200K								
VR354	Right-Rear Tone	200K								
VR355	Right F/R Balance/Program Select	50K								
VR356	Right F/R Balance	50K					EWK-60RS34G54 (19)			
VR357	Left F/R Balance	50K								

(18) Includes VR301, VR302, VR303, VR304, VR305, VR351, VR352, VR353, VR354, VR355.

(19) Includes VR356 and VR357.

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.

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COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
I FT1	IF 10.7MHz	YE1F07S7037			74F335A1
I FT2	IF 455kHz	YE1A07S7076A			
I FT3	IF 455kHz	YE1A07S7077B			
I FT4	IF 455kHz	YE1A07S7078C			
I FT5	IF 10.7MHz	YE1A07S7079D			
L51	Am Ant Choke	YELQ05C040			
L52	FM Ant	(1)			
L53	FM RF	(1)			
L54	FM Osc	(1)			
L55	RF Choke	YELQ09C006			
L56	AM Ant	(1)			
L57	AM RF	(1)			
L58	AM Osc Tuning	(1)			
L59	Image Trap	YELT06C003			
L60	AM Osc	YELLO7S073			
L61	67kHz Trap	ELQ4C1			
L62	19kHz	YELM07S912			
L63	38kHz	YELM07S911			
LC1	10.7MHz Trap	YE1F07S5038			
TS1	Ratio Detector	EULBFD115A			

(1) Part of M50 Tuner Assembly.

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.	
L41	165mA	3.5	9.5mH	YATQ014F003			
L301	330mA	.4	1.9mH	YETQ025F036			

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	XBB1F30NR1	YEAJ01078	AGC-3	HDJ	312003	150145	FG3-2	

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CF51	Ceramic Filter	YE1N09N5004 (1)	SFE 10.7mA (Blue Dot)
CF52	Ceramic Filter	YE1N09N5004 (1)	SFE 10.7mA (Blue Dot)
L1	Solenoid	YAXX01020	Headshift
M1	Motor	YASAK01026	Tape Transport (2000 rpm @ 13.20 volts)
M50	Tuner Assembly	YEAU05149	FM
H1	Tape Head	YEAH1484AZ	4 Channel/8-Track Play
SW1	Switch		On/Off (On right-rear volume control)
SW2	Switch		Manual Program Select (on right F/R balance)
SW3	Switch		Auto Program Select
SW51	Switch	YEAS09029	DX/Local
SW52	Switch	YEAS09050	AM/FM Select
SW301	Switch	YEAS10001	Channel Select
SW302	Switch	YEAS07019	Radio/Tape
SW303	Switch	YEAS07020	4 Ch/2 Ch Select
	Connector Assembly	YEAJ03163	Speaker A (Left Front)
	Connector Assembly	YEAJ03164	Speaker B (Right Front)
	Connector Assembly	YEAJ03165	Speaker C (Left Rear)
	Connector Assembly	YEAJ03166	Speaker D (Right Rear)

(1) When replacing, CF51 and CF52 should also be replaced.

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

ITEM	PART No.	ITEM	PART No.
Escutcheon Assembly	YEF02113	Button, AM/FM (5 used)	YEFE10140
Scale, Dial (1)	YEFJ08239	Button, DX/Local	YEFE10132
Pointer, Dial	YEFH01101	Button, AM/FM	YEFE10135
Door, Tape (1)	YEFX002017	Button, Eject	YEFE10134
Shaft, Tape Door (1)	YEFW06096	Knob, Tone/Balance (Front)	YEFE01513
Spring, Tape Door (1)	YEFX005122	Knob, Volume/Balance (Rear)	YEFE01016

(1) Part of Escutcheon Assembly (M133).

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 13 Colors
	8524 (Stranded) Available in 13 Colors
Shielded Hook-up Wire	Use BELDEN No. 8401 or 8421
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.)

INDEX

This index lists all radios appearing in "Auto Radio Manuals" and "PHOTOFACT Auto Radio Series"

KEY → PCB-Production Change Bulletin EP-Early Production LP-Late production REV-Revised

AFCO	VOL.	ALLIS CHALMERS	VOL.	AMERICAN MOTORS	VOL.	AMERICAN MOTORS	VOL.	ASTRO LINE (See Boman VOL. Astrosonix)	AUDIOVOX (CONT.)	VOL.
APX-810	216	OBTAC 70	80	1RA1226 72	155	3672718 (1HT2409)	200	ATR KARADIO	C-463	155
AG-52	222	1BTAC	112	1RA1301 73	166	3672718 (SHT2409)	170		C-480	156
SC-700	224	7BT 249523	44	1RA1508 75	212	3672718 (SHT3607)	76, 231		C-505	157
ID-300AFX	195	787X	50	1RA2007 69-70	84	3672718	216		C-506 (Pg.5)	157
ID-400PB	221			1RA2211 72	131	3674344 (ZHT1432)	167	BKS410 61-62 Buick	C-506B	227
IDC-600AFX	220			1RA2315 74	171	3674344	217	COT416 60-62 Merc.	C-510	227
IDC-650AE	231			1RA2404 75	200	3676501	217	CT412 61-62 Chev.	C-520	94
SB-480	225			1RA2413 74	169	3678002	167	CR414 60-62 Chev.	C-520A	138
SCX-900	226	ALLSTATE		1RA2511 74	219	3678003	167	DED418 62 Dodge	C-520C	221
SK-301SB	227	5018	22	1RA2520	219	3678005	167	FAL420 60-62 Ford	C-525	221
		5028 Ch.528.50280/		1RA4404 74	171	3678032	172	FD422 60-62 Ford	C-540	136
		50281	7	1RA4503	217	3678035	212	LR424 62 Dodge	C-560	94
		5033 Ch.528.50330/		1RA4518	217	3678159	171	MY426 62 Merc.	C-563	135
AIRCASLE		50331	7	1RA5002 (70)	87	3690419	217	OEF428 61-62 Olds.	C-565	94
610.A67	1	5050	30	1RB1002 70	86	3690420	212	PCT432 61-62 Pont.	C-575	93
610.PE-153 52-53	3	5066	26	2AM1606 76	229	3690422	216	PH430 62 Ply.	C-575A	177
Ford	4	5098 Ch.833.50980	9	2AM1607 76	229	3690422	216	TR270N	C-575B	220
610.W-100	5	5099 Ch.833.50990	9	2HT1244 72	133	3691020	76	TR1279-12V	C-576	93
		6225 Ch.528.5504G/		2HT1303 73	166	3691021	76	TT-727 Tractor	C-577	136
		55041	11	2HT1409, 2HT1413,		3691022	76	VT434 62 Ply.	C-577A	214
AIR CHIEF (See Firestone)		6231 Ch.528.62310	9	2HT1432 74	167	3691022	76	401	C-578	209
		6232 Ch.528.62320	9	2HT1509 75	212	3691024	76	606	C-579	220
AIRLINE (Also See Riverside)		6240 Ch.528.62400	5	2HT2511	219	3691026	76	612	C-700	133
		6256 Ch.528.55040/		2JA1001 70	82	3535089 76	231	707	C-700A	214
		55041	11	2JA1228 72	133	3535092 76	229	1279-6V	C-701	202
FJB-6590A 55 Ford	6	6263 Ch.528.6263	5	2JA1304, 2JA1305 73	166	5451456 (1KJ1405)	167	1279-12V	C-901	213
35BR-6796A	5	6263-2 Ch.528.6263-2.	5	2JA1407, 2JA1408 74	167	5451456 (5KJ1405)	167		C-902	224
61-6787 52 Ford	5	6264 Ch. 528.6264	5	2JA2001 70	83	5454307	216		C-903	186
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61-6789 51-52 Chev.	5	6266 Ch.528.6266	6	2RA1307 75	212	8990377	6		C-910	191
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61-6793 55 Chev.	5	6269 Ch.62690/91	7	2RA1508 75	212	8990378 (6MA)	6	1AU2121 71	C-920	134
61-6794 55 Plym.	5	6284 Ch.528.6284	4	2RA1524 75	212	8990455	6	1AU2240 72	C-930	91
61-6795 55 Merc.	5	6286-4 Ch.528.6286-4.	4	2RA1525 75	212	8990494	8	1VW1327 (Sapphire XVIII)	C-935	95
61-12601 Tractor	5	6287-4 Ch.528.6287-4.	4	2RA2510	219	8990543	8	73	C-940	99
		6295-6 Ch.528.6295-6.	4	2RA2503	219	8990582	10	1VW1419 (Sapphire)	C-950	99
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		833.50181	27	2TR 62	29	8990833	14	1VW2427 74	C-975	138
		833.50202	27	2SAM1608 76	229	8990981	29	1VW3401 74	C-976	160
		833.50490	28	SAM1609 76	229	8991796	82	1VW4112 (Sapphire XVII)	C-977	182
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		833.50930	28	SAM2604	227	8991835	86	1VW4309 (Sapphire XXI)	C-979	182
CEP-764T 64		833.50931 64 VM	28	SAM3604/3605 76	231	8991836	84	73	C-980	139
Chevelle	31	833.62741	32	SHT1409 74	167	8991989	82	1VW4412, SVM4412	C-983 (Pg.15)	166
CHP-164T 64 Chev.	31	833.62800	30	SHT1509 75	212	8992206	62	74	C-984	187
CHP-165T 65 Chev.	33	833.63070	32	SHT2409 74	210	8992251	88	1VW4419 (Sapphire XXI)	C-986 (136-1013)	206
CHP-564T 64		833.500510 65 Chev.	32	SHT2511	219	8992252 (F8SMG)	68	74 Fox	C-990	162
Chery 11	31	833.501220	30	SHT3510	216	8992290 (A8MG)	65	1VW419 (Sapphire XXI)	CA-73-FM (Pg.21)	133
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DAP-864T 64 Dodge	31	833.503050 65	30	SJC3603 76	231	8992417	86	XVII1 74	CA-74-FM (Pg.21)	133
DAP-865T 64 Dodge	31	833.503060 65	30	SKJ1405 74	167	8992417	86	5VW1419 (Sapphire XVII)	CA-74-MPX (Pg.45)	136
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FAP-264T 64 Ford	31	833.624640	30	SKJ3511	216	8992525	166	5VW3401 74	CA-75-TPX/A	219
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PLP-465T 65 Ply.	33	856.62470	52	SRA3509	216	8992833 (IHT1224)	133	AUDIO/STEREO	CH-74-FM-MPX	181
PLPF-465T 65				SRA3520	219	8992861 (IHT1505)	166	A-12	CH-74-PB	174
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Rambler	33	AMERICAN MOTORS		SRA4503	217	8992861 (IHT2506)	170	A-30	CH-75-MXD	216
RAP-364T 64 Rambler	26	(Also See Hudson, Nash & Rambler)		SRA4505	217	8992928 (LJA2505)	170	A-30	CH-75-ODX	226
RAP-365T 65 Rambler	33			SRA4518	217	8992953	153	A-40	CH-75-TPX/A	219
SM-130RPE	26			6MR 56	6	8993042	169	A-50	(SHT-7 to Pg.21)	160
UP-220RPT	26	AMG 68	65	6SMR 56	35	8993043	169	A-100	CHT-73-FM-MPX	181
VAP-464T 64 Ply.	31	AF6TMR 66 (Pg 120)	28	7MR 57	6			A-900	CHT-73-PB	174
VAP-465T 65 Ply.	33	AF7SMR 67	44	7SMR 67	6			A-100	CHT-74-DLX	
VMP-19T 58-64 VM	26	F8SMG 68	68	8SMR 68	50				(Sim. to Pg.21)	160
VMP-19T 65 Prod VM	34	F8SMR 68	63	9SMG 69	82				CHT-74-FM-MPX	181
		F9SMG 69	83	9SMR 70	86				CHT-74-PB	174
		F9SMR 69-70	84	13MA 60	14				CHT-75-CXP	218
ALLCAR		P7MA 67	47	13MAM 60	14				CHT-75-TPX/A	219
R-1 65 Ply.	34	P8MA 68	62	14MR 61	15				CK-73-FM (Pg.5)	137
R-2 65 Ply.	34	P9MA 69	82	22BA R22BA 62	18				CK-73-MPX	177
R-3 65 Ply.	34	RV4R 64	24	22BA R22BA 62	18				CK-74-FM (Pg.5)	137
R-4 65 Dodge	34	OSAR 60	12	22BAX R22BAX 62	18				CK-74-MPX	177
R-5 65 Dodge	34	O4MA 60	11	7MA 57	6				CNO-73-FM (Pg.21)	133
R-6 65 Dodge	34	IHT1224 72	133	83MR 58	8				CNO-73-MPX (Pg.45)	136
R-7A 65 Chry.	34	IHT1503 73	166	84MA 58	8				CNO-73-PB (Pg.21)	136
R-7B 65 Chry.	34	IHT1509 75	212	93MA 59	17				CNO-74-FM (Pg.21)	133
R-7C 65 Chry.	34	IHT1510 75	212	94MA 59	17				CNO-74-MPX (Pg.45)	136
R-9 65 Chev.	34	IHT2102 72	136	3591052	87				CNO-74-PB (Pg.21)	136
R-10 65 Chev.	34	IHT2206 73	136	3601578	87				BKS-75-CXP	218
R-11 65 Chev.	34	IHT2409 74	200	3614434 (IRA1016)	86				BKS-75-MXD	216
R-16 65 Chev.	34	IHT2412 74	169	3614434 (2RS1016)	86				BKS-75-ODX	226
R-18 65 Pont.	34	IHT2510	219	3614435	86				BKS-75-TPX/A	219
R-19 65 Olds.	34	JJA1001 70	82	3631192	86				CO-73-FM (Pg.5)	137
R-20 65 Pont.	34	JJA1227 72	133	3631193 (JJA2001)	83				CO-73-MPX	177
R-21 65 Olds.	34	JJA1305 73	166	3632704	83				CO-74-FM (Pg.5)	137
R-22 65 Buick	34	JJA2001 70	83	365103						

AUDIOVOX (CONT.)	VOL.	AUDIOVOX (CONT.)	VOL.	AUDIOVOX (CONT.)	VOL.	AUTOMATIC (CONT.)	VOL.	AUTOMATIC (CONT.)	VOL.	AUTOMATIC (CONT.)	VOL.
CVA-73-PB	174	HO-75-TPX/A	219	VNF-71-FM (Sim. to Pg. 5)	137	CFV-2202 70-72 Chev.	131	DHP-7133 67 Dodge	62	FFM-1468 71 Olds	131
CVA-74-FM-MPX	181	ID-200	202	VNF-71-PB (Sim. to Pg. 5)	137	CFV-2202AC 70-72 Chev.	131	DKP-3077 73 Dodge	159	FFM-2217 71-72 Olds	131
CVA-74-PB	174	ID-300	209	VNSB-74-FM	193	CFV-3298	169	DMX-132 53 Dodge	5	FFM-3298 73 Olds	169
CVA-75-CXP	216	ID-400 (Pg. 5)	182	136-1001	174	CHA-4109 74 Chev.	176	DMF-7372 67 Dodge	61	FFM-3024 73 Olds	159
CVA-75-MXD	218	ID-600 (Pg. 5)	187	136-1002	174	CHG-4299 74 Chev.	169	DP-6 57-59 Renault	12	FFM-4028 64 Olds	28
CVA-75-QDX	226	LCO-75-CXP	218	136-1003	181	CHL-4002 74 Chev.	159	DP-11 57-59 Renault	12	FFM-5033 65 Olds	29
CVA-75-TPX/A	219	LCO-75-FDX	222	136-1006A	214	CHX-4463 74 Chev.	170	DP-5127N 65 Dodge	35	FFM-3704 73 Ford	171
DA-73-FM (Pg. 21)	133	LCO-75-FFX	223	136-1007A	214	CHK-4655 74 Chev.	177	DP-4107 64 Dodge	26	FT-227 57 Ford	64
DA-73-MPX (Pg. 45)	136	LUV-73-QDX	226	136-1012	214	CHE-4533 74 Chev.	168	DP-5127N 65 Dodge	35	FTM-7218 64-67 Ford	12
DA-73-PB (Pg. 21)	136	LUV-73-FM (See Pg. 5)	137	136-1016	223	CKE-4296 74 Chev.	169	DP-8214 67-68 Dodge	60	FTP-37A 57 Ford	9
DA-74-FM (Pg. 21)	136	LUV-73-MPX	177	136-1021	223	CKL-4019 74 Chev.	159	DPP-2346	176	FUP-3080 63 Ford	23
DA-74-PB (Pg. 45)	136	LUV-73-PB (Pg. 5)	138	136-1022	226	CKL-4741 74 Chev.	171	DRX-7117 66-67 Dodge	62	FUP-4057 64 Ford	27
DA-75-CXP	218	LUV-74-FM (Pg. 5)	137	136-1024	226	CKX-4489 74 Chev.	170	DTX-67A 57-58 Dodge	12	FXP-3451 73 Ford	167
DA-75-TPX/A	219	LUV-74-MPX	177	136-1027	219	CLU-2098 73 Chev.	159	DTX-68 57-58 Dodge	12	FXP-3451 73 Ford	167
DCF-75-CXP	218	MAT-73-FM (Pg. 21)	133	AUSTIN HEALEY		CM-353 53 Chev.	4	DUP-42	20	FXP-3451 73 Ford	167
DCF-75-QDX	218	MAT-73-MPX (Pg. 45)	133	HAC700 4TMB	30	DMF-7217 67 Chev.	60	DUP-4651	27	FXT-5611	177
DCF-75-TPX/A	219	MAT-74-FM (Pg. 21)	133	AUTOMATIC		DMR-7151 67 Chev.	60	DUP-6202	27	GAP-3031 Pont.	165
DMO-75-CXP	218	MAT-74-MPX (Pg. 45)	136	AC-4558 64 Merc.	27	DMR-8252 67-68 Chev.	60	DX-100 60 Dodge	14	GAP-3031A (TCP-3028)	159
DMO-75-QDX	226	MAT-75-CXP	218	ACE-3113 73 Chev.	161	CNV-3022 73 Chev.	159	DX-619 59 Dodge	13	GES-6394-PAK-7	71
DMO-75-TPX/A	219	MAT-75-QDX	226	ACP-3109 73 Chev.	161	CP-478-C 58 Chev.	12	DX-5121 65 Dodge	30	GES-8111-1-PAK	71
DST-73-FM (Pg. 21)	133	MAT-75-TPX/A	219	ACP-3044 63 Merc.	23	CP-489-F 59 Chev.	14	DX-5121N 65 Dodge	35	GFP-1495 71 Pont.	131
DST-73-MPX (Pg. 45)	136	ME-73-FM-MPX	181	ACP-3109 73 Chev.	161	CP-500 59-60 Chev.	14	DX-8212 68 Dodge	60	GFP-2210 71-72 Pont.	131
DST-73-PB (Pg. 21)	136	ME-73-PB	174	ACP-4559 64 Merc.	27	CP-511AT 61 Chev.	16	DX-8212 68 Dodge	60	GFP-3294 73 Pont.	169
DST-74-FM (Pg. 21)	133	ME-74-FM-MPX	181	ACS-6000	73	CP-522AT	19	DXA-3053 63 Dodge	22	GFP-3333 73 Pont.	175
DST-74-MPX (Pg. 45)	136	ME-74-PB	174	ACV-3117 (APP-2567)	73	CP-522AT 62 Chev. (LP)	24	DXA-4259 74 Ford	172	GPE-4545 74 Pont.	168
DST-74-PB (Pg. 21)	136	OL-73-FM-MPX	181	AFP-3103 (APP-2567)	161	CP-3002 63 Chev.	23	ECL-4055 74 Ford		GPL-4041 (Sim. to Pg. 5)	159
DTN-71-FM (Sim. to Pg. 5)	137	OL-73-PB	174	APC-3107 (APP-2565)	161	CP-4050 64 Chev.	28	EM-219	119	GPP-3733 73 Pont.	171
DTN-610-FM (Pg. 5)	93	OL-75-CXP	218	APF-3103 (APP-2567)	161	CP-4050N 64 Chev.	37	EM-29	29	GPP-4733 74 Pont.	171
DTN-620-FM (Pg. 5)	94	OL-75-MXD	216	APC-3107 (APP-2565)	161	CP-5004 65 Chev.	29	EMX-6810	89	GPP-4733 74 Pont.	171
DTN-1200-FM	154	OL-75-QDX	226	APF-3103 (APP-2567)	161	CP-5004N 65 Chev.	37	EP-108 58 Ford	12	GPP-4733 74 Pont.	171
DTN-73-FM (Pg. 5)	155	OL-75-TPX/A	219	APC-3107 (APP-2565)	161	CP-6052 66 Chev.	39	ESS-8528	95	GPP-4733 74 Pont.	171
DTR-73-FM (Pg. 5)	177	OLF-73-FM-MPX	181	APC-3107 (APP-2565)	161	CP-8254T 68 Chev.	60	ESS-8528	95	GPP-4733 74 Pont.	171
DTR-73-PB (Pg. 5)	138	OLF-74-FM-MPX	181	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	F-100 45-50 (Rev.)	121	GPP-4733 74 Pont.	171
DTR-74-FM (Pg. 5)	137	OLF-74-PB	174	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	F-100 45-50 (Rev.)	121	GPP-4733 74 Pont.	171
DTR-74-MPX	177	OLF-75-CXP	218	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	F-128/C 58 Ford	12	GPP-4733 74 Pont.	171
DTR-74-PB (Pg. 5)	138	OLF-75-MXD	216	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	F-139 59 Ford	11	GPP-4733 74 Pont.	171
DTR-75-CXP	218	OLF-75-QDX	226	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	F-151 51 Ford (Rev.)	6	GPP-4733 74 Pont.	171
DTR-75-TPX/A	219	OLF-75-TPX/A	219	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	F-152 52 Ford	6	GPP-4733 74 Pont.	171
DVA-73-FM (Pg. 5)	137	OMA-73-FM (Pg. 21)	133	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	F-241 54 Ford	6	GPP-4733 74 Pont.	171
DVA-73-MPX (Pg. 45)	136	OMA-73-MPX (Pg. 45)	136	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	F-322A	19	GPP-4733 74 Pont.	171
DVA-73-PB (Pg. 5)	138	OMA-73-PB (Pg. 21)	136	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	F-3016 63 Ford	23	GPP-4733 74 Pont.	171
DVA-74-FM (Pg. 5)	136	OMA-74-FM (Pg. 21)	133	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	F-4055 64 Ford	27	GPP-4733 74 Pont.	171
DVA-74-MPX (Pg. 5)	136	OMA-74-MPX (Pg. 45)	136	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	F-5088N 65 Ford	36	GPP-4733 74 Pont.	171
DVA-75-CXP	218	OMA-74-PB (Pg. 21)	136	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	F-6105P 65/66 Ford	40	GPP-4733 74 Pont.	171
DVA-75-TPX/A	219	OML-71-FM (Sim. to Pg. 5)	137	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-219 59 Ford	11	GPP-4733 74 Pont.	171
ECO-73-FM (Pg. 5)	138	OML-71-PB (Sim. to Pg. 5)	137	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-3056 63 Ford	23	GPP-4733 74 Pont.	171
ECO-73-MPX	177	OML-73-FM (Pg. 5)	138	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-4555 64 Chev.	27	GPP-4733 74 Pont.	171
ECO-74-FM (Pg. 5)	137	OML-73-PB (Pg. 5)	138	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
ECO-74-MPX	177	OML-74-FM (Pg. 5)	137	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
ECO-74-PB (Pg. 5)	138	OML-74-PB	174	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
ECO-75-CXP	218	OML-75-CXP	218	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
ECO-75-QDX	226	OML-75-MXD	216	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
ECO-75-TPX/A	219	OML-75-QDX	226	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FCC-73-FM (Pg. 5)	137	OML-75-TPX/A	219	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FCC-73-MPX	177	OML-75-PB (Pg. 5)	138	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FCC-74-FM (Pg. 5)	137	OML-75-QDX	226	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FCC-74-MPX	177	OML-75-TPX/A	219	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FDT-73-FM-MPX	181	OML-75-PB (Pg. 5)	138	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FDT-73-PB	174	OML-75-QDX	226	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FDT-74-FM-MPX	181	OML-75-TPX/A	219	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FDT-74-PB	174	OML-75-PB (Pg. 5)	138	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FDT-75-CXP	218	OML-75-QDX	226	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FDT-75-TPX/A	219	OML-75-TPX/A	219	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FGA-75-CXP	218	OML-75-PB (Pg. 5)	138	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FGA-75-FDX	222	OML-75-QDX	226	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FGA-75-FDX	222	OML-75-TPX/A	219	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FGA-75-QDX	226	OML-75-PB (Pg. 5)	138	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FGA-75-TPX/A	219	OML-75-QDX	226	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FMK-73-FM-MPX	181	OML-75-TPX/A	219	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FMK-73-PB	174	OML-75-PB (Pg. 5)	138	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FMK-74-FM-MPX	181	OML-75-QDX	226	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FMK-74-PB	174	OML-75-TPX/A	219	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FMK-75-CXP	218	OML-75-PB (Pg. 5)	138	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FMK-75-FDX	222	OML-75-QDX	226	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FMK-75-FPX	223	OML-75-TPX/A	219	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FMK-75-QDX	226	OML-75-PB (Pg. 5)	138	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FMK-75-TPX/A	219	OML-75-QDX	226	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P 65/66 Ford	40	GPP-4733 74 Pont.	171
FMU-73-PB	174	OML-75-TPX/A	219	APF-3103 (APP-2567)	161	CP-8254T 68 Chev.	60	FA-6059P			

AUTOMATIC (CONT.)	VOL.	AUTOMATIC (CONT.)	VOL.	AUTOMATIC (CONT.)	VOL.	AUTOMATIC (CONT.)	VOL.	BENDIX (CONT.)	VOL.	BOMAN ASTROSONIX (CONT.)	VOL.
MUF-4281 74 Ford	169	PPM-1434 71 Pont.	131	TAC-4541 64 Chev.	28	VEP-4706 74 Chev.	171	58CH 65 Chev.	31	VM305-PM (Sim. to Pg.5)	142
MUL-4046 74 Ford	159	PPM-2208 71-72 Pont.	131	TAC-5514 65 Chev.	37	VEX-4457 74 Chev.	170	58CL 65 Chev.	31	VM-405-FM VW	144
MUN-4832 74 Ford	169	PPM-3092A 63 Pont.	22	TAP-3074 63 Olds.	23	VFA-1847 71 Chev.	131	58TCT 65 Chev.	32	VM1-72-FM VW	128
(Pg.5)	163	PPM-3094 63 Pont.	22	TAP-4526 64 Olds.	28	VFA-2204 71-72 Chev.	131	68C2 66 Chev.	38	100-M	115
MUS-4067 64 Ford	27	PPM-3295 73 Pont.	169	TAX-4542 64 Chev.	28	VFA-3297 71-73 Chev.	169	68CC 66 Chev.	38	150-M	187
MUS-5059 65 Ford	29	PPM-6257 66 Pont.	66	TAX-5513M 65 Chev.	37	VFP-3249 73 Volvo	172	68CH 66 Chev.	38	300-PB	118
MUS-5059N 65 Ford	36	PPX-5109 65 Ply.	30	TC-3035 63 Olds.	23	VFX-3004 71-73 Chev.	159	68CL 66 Chev.	38	305-PB	142
MUS-7209 67 Ford	60	PPX-5109N 65 Ply.	35	TCM-3011 63 Chev.	22	VX-4428 74 Volvo	174	68CT 66 Chev.	38	350-FM	144
MUX-4455 74 Ford	170	PPX-7105 67 Ply.	62	TCM-4041 Chev.	22	VP-12	12	78C2 67 Chev.	45	400-FM	112
MVE-4521 74 Ford	169	PPX-8206 68 Ply.	62	TCM-5014 65 Chev.	29	VP-6228 58-67 VW	74	78C3 67 Chev.	45	402-FM	222
MVC-4284 74 Ford	168	PIE-4519 74 Ford	168	TCX-5014N 65 Chev.	37	VP-6235 68-69 VW	89	78C4 67 Chev.	45	405-FM (Pg.5)	144
MVC-4519 74 Ford	169	PIF-4286 (Pg.21)	169	TCX-3019(TCS-3049A)	73 Chev.	VP-8200 60 Ply.	15	78C5 67 Chev.	45	600-MPX	113
MWL-4058 74 Merc.	159	PII-4050 74 Ford	159	TCX-4042 64 Chev.	28	VPA-3076 63 Ply.	22	78C6 67 Chev.	45	602-MPX	163
MWM-4822 74 Ford(Pg.5)	163	PIK-4820 74 Ford	163	TCX-5013 65 Chev.	29	VPA-3706 73 Chev.	171	78C7 67 Chev.	45	605-MPX	188
MWX-4493 74 Ford	170	(Pg.5)	173	TCX-5013 65 Chev.	29	VSC-6767 67 VW	70	78C8 67 Chev.	47	642-MPX	163
MXD-3453 73 Ford	167	PIP-4720 74 Ford	170	TCX-5013M 65 Chev.	37	VVF-4233 74 VW	172	78C9 67 Chev.	47	650-MPX	224
Merc.	167	PIX-4495 74 Ford	170	TCX-8274 67-68 Chev.	60	VX-4420 74 VW	174	88DT 68 Dodge	60	2000-MPX	179
MKR-8404	125	PM-256 53 Ply.	5	TDD-4730 74 Olds.	171	VT-5108 65 Ply.	30	22B See MoPar 805	17		
MKT-3479 73 Merc.	167	PNF-1898 71 Ford	131	TDF-4278 (Pg.21)	169	VTP-440 60 Ply.	15	23BC See MoPar 327	17		
MKT-3479B 73 Merc.	170	PNF-2235 71-72 Ford	131	TDW-1257 64-69 Dodge	64	VTP-3038 63 Ply.	22	23BD, 23BP, 23BPX	17		
MKT-3648 73 Merc.	165	PNF-3358 (AFC-1303)	175	TDW-2254 71-72 Olds.	131	VTP-5107 65 Ply.	30	See MoPar 322	17		
MKV-3493 73 Ford	167	POE-4507 74 Pont.	168	TDX-4477	170	WR-8208 68 Ply.	60	24BC See MoPar 410	18		
Merc.	167	POF-4295 74 Pont.	169	TER-3523 73 Ford,	164	VWF-4235 74 VW	172	24BI See MoPar 409	18		
MKV-3493B 73 Ford	170	POL-4030 74 Pont.	159	Merc.(EP)	164	VWX-4422 74 VW	174				
N-638 58-59 Amer.	15	POP-4708 74 Pont.	171	TER-3523 73 Ford,	164	VXA-3457 73 Chev.	167				
Motors	15	POK-4455 74 Pont.	170	Merc.(LP)	168	VXA-3626 73 Chev.	165				
N-639 58-59 Amer.	13	POK-4455 74 Pont.	170	TFC-1489 70-71 Olds,	131	M-76 thru 57 VW	12				
Motors	13	POK-4455 74 Pont.	170	TFC-1489 70-71 Olds,	131	N-84 58-63 VW	23				
N-3028 63 Amer.	23	PP-330 60 Ply.	15	TFC-3293 73 Olds,	169	N-89 58-59 VW	12				
Motors	23	PP-330 60 Ply.	15	TFC-3293 73 Olds,	169	N-3040 58-63 VW	23				
N-749 58-59 Amer.	13	PP-341AT 61 Ply.	16	TFC-3293 73 Olds,	169	N-3040A 64 VW	28				
Motors	13	PP-819 59 Ply.	15	TFK-3285 73 Ford	169	N-5204 65 VW (Pg.4)	28				
N-3068 63 Amer.	23	PP-3026 63 Ply.	22	TFK-4285 74 Ford	169	NFM-5387 58-67 VW	54				
Motors	23	PP-5105 65 Ply.	30	TFO-3278	169	WP-4 58-59 VW	12				
NAP-3069 63 Amer.	23	PP-5105M 65 Ply.	35	TFX-3207	169	WP-7 thru 57 VW	12				
Motors	23	PP-7103 66-67 Ply.	60	TFX-3285	169	WP-7C VW	12				
NAY-3052 63 Chry.	23	PP-8202 68 Ply.	60	TFX-3296	169	WP-19 58-59 VW	12				
ND-8224 68 Chry.	60	PP-3708 67 Ply.	171	TP-3053 73 Ford	159	WP-21 58-63 VW	23				
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NP-5153 63 Amer.	29	PXC-3455 73 Pont.	167	TPC-424T 63 Olds,	23	NP-638 58 thru 57 VW	12				
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NPP-2349	176	PXM-3638 (XPA-2575A)	165	TPC-3036 63 Olds,	23	XER-1443	149				
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NY-598A 58 Chry.	10	RRK-4446	170	TPC-7170 66-67 Pont.	62						
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44BFMT1 74	173	7298964 67	45	46CMH1 74	179			21XPB1 73	137	985447 63	19
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7304611	68	7936011 (21BPF1)	72, 113	2864966 68	50			1BCC 71	89	2884520 70	94
7304611	68	7936011 (21BPF2)	72, 113	2864966 68	50			1BCC 71	89	2884520 70	94
7304621	68	7936011 (31BPF1)	73, 138	2864966 68	50			1BCC 71	89	2884520 70	94
7305201	68	7936011 (41BPF1)	74, 168	2864966 68	50			1BCC 71	89	2884520 70	94
7305211	68	7936011 (51BPF1)	75, 186	2864966 68	50			1BCC 71	89	2884520 70	94
7305221	68	7936181 72	115	2864966 68	50			1BCC 71	89	2884520 70	94
7305201/A	49	7936191 72	118	2864966 68	50			1BCC 71	89	2884520 70	94
7305311	68	7936271 72	117	2864966 68	50			1BCC 71	89	2884520 70	94
7305311A	68	7936601 72	127	2864966 68	50			1BCC 71	89	2884520 70	94
7305441	67	7937271 72	112	2864966 68	50			1BCC 71	89	2884520 70	94
7305451	68	7937571 (21VFP1)	72, 117	2864966 68	50			1BCC 71	89	2884520 70	94
7305841 (11TPB1)	71	7937571 (21VFP2)	72, 127	2864966 68	50			1BCC 71	89	2884520 70	94
7305841 75	216	7937581 72	117	2864966 68	50			1BCC 71	89	2884520 70	94
7305841 (21TPB1)	72, 110	7939071 (31BPT1)	73, 139	2864966 68	50			1BCC 71	89	2884520 70	94
7305841 (21TPB2)	72, 124	7939071 (41BPT1)	74, 166	2864966 68	50			1BCC 71	89	2884520 70	94
7305841 (41SVPB1)	74, 167	7939071 (51BPT1/T2)	75, 188	2864966 68	50			1BCC 71	89	2884520 70	94
7305841 (51SVPB1)	75, 186	75	188	2864966 68	50			1BCC 71	89	2884520 70	94
7306121	68	7939071 (51BPT2)	75, 207	2864966 68	50			1BCC 71	89	2884520 70	94
7306361	68	7939081 (31BPT2)	73, 142	2864966 68	50			1BCC 71	89	2884520 70	94
7307121	68	7939081 (31BPT3)	73, 151	2864966 68	50			1BCC 71	89	2884520 70	94
7307801 (Sim. to Pg. 51)	44	7939081 (41BPT1)	74, 171	2864966 68	50			1BCC 71	89	2884520 70	94
7307811 (Sim. to Pg. 41)	48	7939081 (51BPT1/T2)	75, 189	2864966 68	50			1BCC 71	89	2884520 70	94
7307821 (Sim. to Pg. 41)	48	7939071 (51BPT3)	75, 206	2864966 68	50			1BCC 71	89	2884520 70	94
7307831 (Sim. to Pg. 22)	49	9343051 75	186	2864966 68	50			1BCC 71	89	2884520 70	94
7307841 (Sim. to Pg. 22)	49	9343061 75	189	2864966 68	50			1BCC 71	89	2884520 70	94
7307851 (Sim. to Pg. 41)	48	9344611 75	191	2864966 68	50			1BCC 71	89	2884520 70	94
7307861 (Sim. to Pg. 22)	49	9345270 (Pg. 103)	191	2864966 68	50			1BCC 71	89	2884520 70	94
7308211	69	9345280 (Pg. 103)	191	2864966 68	50			1BCC 71	89	2884520 70	94
7313091 70	76	9345290 (Pg. 103)	188	2864966 68	50			1BCC 71	89	2884520 70	94
7313971 (11BT411)	71, 97	9347740 76	221	2864966 68	50			1BCC 71	89	2884520 70	94
7313971 (21AT411)	72, 112	9347980 75-76	220	2864966 68	50			1BCC 71	89	2884520 70	94
7314201 (11BPB2)	71, 97	9348311 76	217	2864966 68	50			1BCC 71	89	2884520 70	94
7314201 (21BPB1)	72, 112	9348321 76	217	2864966 68	50			1BCC 71	89	2884520 70	94
7314201 (21BPB2)	72, 120	9348341	218	2864966 68	50			1BCC 71	89	2884520 70	94
7314201 (31BPB1)	73, 137	9343061 75	217	2864966 68	50			1BCC 71	89	2884520 70	94
7314201 (31BPB2)	73, 145			2864966 68	50			1BCC 71	89	2884520 70	94
7314201 (41BPB1)	74, 165			2864966 68	50			1BCC 71	89	2884520 70	94
7314201 (51BPB1)	75, 187			2864966 68	50			1BCC 71	89	2884520 70	94
7314211 (11BPM1/M2)	71, 101			2864966 68	50			1BCC 71	89	2884520 70	94
7314211 (21BPM1)	72, 114			2864966 68	50			1BCC 71	89	2884520 70	94
7314211 (31BPM1)				2864966 68	50			1BCC 71	89	2884520 70	94
(PCBAR-151)	73, 140			2864966 68	50			1BCC 71	89	2884520 70	94
7314211 (41BPM2)	74, 169			2864966 68	50			1BCC 71	89	2884520 70	94
7314211 (41BPM1)	74, 174			2864966 68	50			1BCC 71	89	2884520 70	94
7314211 (51BPM1/M2)	75, 191			2864966 68	50			1BCC 71	89	2884520 70	94
7314221 71	93			2864966 68	50			1BCC 71	89	2884520 70	94
7314291 71	104			2864966 68	50			1BCC 71	89	2884520 70	94
7895851-1	76, 229			2864966 68	50			1BCC 71	89	2884520 70	94
7896001 (Sim. to Pg. 47)	221			2864966 68	50			1BCC 71	89	2884520 70	94
7930061 72	115			2864966 68	50			1BCC 71	89	2884520 70	94
7930121 (11BPM1)	71, 105			2864966 68	50			1BCC 71	89	2884520 70	94
7930121 (11BPM2)	71, 118			2864966 68	50			1BCC 71	89	2884520 70	94
7930121 (21XPM1)	72, 118			2864966 68	50			1BCC 71	89	2884520 70	94
7930161 71	115			2864966 68	50			1BCC 71	89	2884520 70	94
7930631 71	102			2864966 68	50			1BCC 71	89	2884520 70	94
7933241 (11APB1)	71, 96			2864966 68	50			1BCC 71	89	2884520 70	94
7933241 (21APB1)	72, 112			2864966 68	50			1BCC 71	89	2884520 70	94
7933241 (21APB2)	72, 124			2864966 68	50			1BCC 71	89	2884520 70	94
7933241 (41XPB1)	74, 167			2864966 68	50			1BCC 71	89	2884520 70	94
7933241 75	217			2864966 68	50			1BCC 71	89	2884520 70	94
7933241 (51XPB2)	75, 186			2864966 68	50			1BCC 71	89	2884520 70	94
7933251 (11AFP1)	71, 104			2864966 68	50			1BCC 71	89	2884520 70	94
7933251 (21AFP1)	72, 117			2864966 68	50			1BCC 71	89	2884520 70	94
7933251 (21AFP2/P3)	72, 127			2864966 68	50			1BCC 71	89	2884520 70	94
7933251 (51XFP1/PK1)	75, 189			2864966 68	50			1BCC 71	89	2884520 70	94
7933261 (11AFP1)	71, 100			2864966 68	50			1BCC 71	89	2884520 70	94
7933261 (21AFP1)	72, 109			2864966 68	50			1BCC 71	89	2884520 70	94
7933261 (51XFP1)	75, 191			2864966 68	50			1BCC 71	89	2884520 70	94
7933271 (21AFP1)	72, 74			28649							

EDSEL	VOL.	FORD (CONT.)	VOL.	FORD (CONT.)	VOL.	FORD (CONT.)	VOL.	GM (See GMC or Chevrolet)	VOL.	HITACHI	VOL.
B9KF-18805-D/18806-C		D2TJ-18806 72	124	OBTB 70 (Sim. to Pg. 51)	59	5TBU 65	33	GMC		CS-133	103
59	10	D2UA-18806 72	126	OBTF 70	83	5TMF 65	28			CS-214	166
CKF-18805/06 60	12	D2VA-18806 72	138	OBTT 70 (Sim. to Pg. 51)	59	5TMS/SF 65	28			CS-1000IC	111
045E 60	12	D2ZA-19A21 72	127	OBTM/TP/TL 70	77	5TMZ 65	28	01TPB1/B2 70	101	CS-1050IC	123
8ABE 58	8	D2ZA-19A242-AF 72		OBTU 70	77	5TPO 65	28	05TCPF2 70	92	CS1100IC	103
87SE 58	8	(Pg. 57)	135	OBTV 70 (Sim. to Pg. 51)	59	5TPO 65	28	06TTCP1 70	74	CS-1150IC	123
94BE 59	10	D2ZA-18806 72	129	OFBD 70	75	5TPO 65	28	06TT411 70	84	CS-1440IC	153
		D3AA-19A168-AD 73	155	OFBF (EP) 70 (Pg. 59)	73	6A-D60A-19A171 76	226	06TT412 70	93	CS-1700IC	123
		D3AA-19A241 73	137	OFBO 70	81	6A-D6EA-19A171 76	226	16TFP1 71	104	CS-1750IC	143
		D3DA-18806 73	136	OFBSW 70	96	6BF 56	6	16TRMP1 71	96	CSK-1300 IC	148
		D3DA-19A241 73	137	OFBZ 70	79	6BF 56	6	16TTCP1 71	96	KMI001	38
		D3TA-18806A 73	138	OFBZ 70	79	6BTB 66	36	16TT411 71	97	KM-1520H	129
		D3TA-18806B 73	138	04BF 60 (EP)	12	6TBB 66	36	16UT411 71	97	TM-816U	37
		D3ZA-19A242-AB 73	153	04BT 60	30	6TBB 66 (LP)	59	26TCPF/P3 72	127	TRQ-206	116
		D3ZA-18806 73	136	04BF 60 (LP)	30	6TBB 66	36	26TFP1 72	117		
		D4AA-19A168-AA 74	183	04BT 60	30	6TBT 66	36	26TRMP1 72	110		
		D4AA-19A168-BA 74	181	04BT 60	12	6TBT 66, 67 (LP)	41	26TTCP1 72	124		
		D4AA-19A241AA 74	174	04BF 60	12	6TBT 67 & 69	59	26TTCP2 72	124		
		D4AA-18806AA 74	171	04MF 60	12	6TBU 66	36	26TT411 72	112		
		D4BJ-18810AA 74	172	04MF 60	12	6TBU 66, 67	41	35RMT1 73 (PCB AR-151)	127	769	28
		D4DA-19A171-BA 74	178	11BTB 71 (Sim. to Pg. 51)	59	6TBU 66, 67 (LP)	41	35RMT1 73 (PCB AR-151)	127	769 (Rev.)	31
		D4DA-18806AA 74	170	11BTB 71 (Sim. to Pg. 51)	59	6TBU 67 & 69	59	35STFP1 (Pg. 25)	175		
		D4HA-18810AA 74	172	11BT 71	115	6TBU 66	36	35TRMP1 (Pg. 47)	124		
		D4HA-18810-BA 74	172	11BT 71 (Sim. to Pg. 51)	59	6TBU 66	36	35TTCP1 (Pg. 47)	124		
		D4TA-19A241AA 74	174	11BT 71 (Sim. to Pg. 51)	59	6TBU 66	36	41BFM1 74	174		
		D4TA-18806AA 74	171	11R1M4 74	178	6TBU 66	36	41BFM2 74	169		
		D4TA-18806BA 74	170	11R2FM 74	178	6TBU 66	36	41BPBK1 74	165		
		D4TA-18810AA 74	172	11R3M4 74	180	7TTP 67	41	41TPB1 74	167		
		D4UA-18806AA 74	170	11R4M 74	178	7TTP 67	41	45FRMT1 74 (PCB AR151)	175		
		D5AA-19A168 75	186	11R5M 74	178	7TTP 67	41	45TFP1 74	127		
		D5AA-19A168-BD 76	222	11R6M 74	180	7TTP 67	41	45TPB1, 45TTCP1 74	167		
		D5AA-19A241 76 (Sim. to Pg. 61)	188	11R7M 74	180	7TTP 67	41	55TFP1 75	189		
		D5DA-19A168-AA 75	199	11R8M 74	180	7TTP 67	41	55TPB1 75	186		
		D5DA-19A171-AB 75	200	11R9M 74	180	7TTP 67	41	55TPB2 75	217		
		D5HA-18810AA 76 (Sim. to Pg. 49)	172	11R0M 74	180	7TTP 67	41	55TTCP1 75	186		
		D5HA-19A168AA 76 (Sim. to Pg. 55)	186	11R1M 74	180	7TTP 67	41	55TTCP2 75	217		
		D5SA-19A168 75	186	11R2M 74	180	7TTP 67	41	60APBK1 76 (Pg. 29)	192		
		D5SA-19A168-BD 76	222	11R3M 74	180	7TTP 67	41	60HFM1 76 (Pg. 57)	191		
		D6AA-19A241 75	188	11R4M 74	180	7TTP 67	41	60HFM1/BK1 76 (Pg. 65)	187		
		D6BA-19A168-BD 76	222	11R5M 74	180	7TTP 67	41	65HDPB1 76 (Pg. 87)	186		
		D6BA-19A242-AA 76	223	11R6M 74	180	7TTP 67	41	65TCF1 76 (Pg. 85)	189		
		D6DA-19A171 76	226	11R7M 74	180	7TTP 67	41	65TCPB1 76 (Pg. 87)	186		
		D6DA-18806AA 76	221	11R8M 74	180	7TTP 67	41	86TT431 68	73		
		D6EA-19A171 76	226	11R9M 74	180	7TTP 67	41	91TPB1 69 Truck	59		
		D6GA-19A188-AD 76	228	11R0M 74	180	7TTP 67	41	96TT411 69	73		
		D6TA-19A241 76 (Sim. to Pg. 61)	188	11R1M 74	180	7TTP 67	41	96TT412 69	73		
		D6TA-18806AB 76 (Sim. to Pg. 85)	171	11R2M 74	180	7TTP 67	41	96TTCP1 69	69		
		D8MF 68	53	11R3M 74	180	7TTP 67	41	223398	9		
		D9MF 69	94	11R4M 74	180	7TTP 67	41	223350 60	13		
		D20A-19A241 72	94	11R5M 74	180	7TTP 67	41	223394 61	16		
		D20A-18806 72	127	11R6M 74	180	7TTP 67	41	223598 62	18		
		D20A-18806 72	127	11R7M 74	180	7TTP 67	41	223400 63	20		
		D20A-18806 72	127	11R8M 74	180	7TTP 67	41	223400 64	24		
		D20A-18806 72	127	11R9M 74	180	7TTP 67	41	229156 65	29		
		D20A-18806 72	127	11R0M 74	180	7TTP 67	41	229156 66	29		
		D20A-18806 72	127	11R1M 74	180	7TTP 67	41	229380 67	36		
		D20A-18806 72	127	11R2M 74	180	7TTP 67	41	229380 68	36		
		D20A-18806 72	127	11R3M 74	180	7TTP 67	41	229380 69	36		
		D20A-18806 72	127	11R4M 74	180	7TTP 67	41	229380 70	36		
		D20A-18806 72	127	11R5M 74	180	7TTP 67	41	229380 71	36		
		D20A-18806 72	127	11R6M 74	180	7TTP 67	41	229380 72	36		
		D20A-18806 72	127	11R7M 74	180	7TTP 67	41	229380 73	36		
		D20A-18806 72	127	11R8M 74	180	7TTP 67	41	229380 74	36		
		D20A-18806 72	127	11R9M 74	180	7TTP 67	41	229380 75	36		
		D20A-18806 72	127	11R0M 74	180	7TTP 67	41	229380 76	36		
		D20A-18806 72	127	11R1M 74	180	7TTP 67	41	229380 77	36		
		D20A-18806 72	127	11R2M 74	180	7TTP 67	41	229380 78	36		
		D20A-18806 72	127	11R3M 74	180	7TTP 67	41	229380 79	36		
		D20A-18806 72	127	11R4M 74	180	7TTP 67	41	229380 80	36		
		D20A-18806 72	127	11R5M 74	180	7TTP 67	41	229380 81	36		
		D20A-18806 72	127	11R6M 74	180	7TTP 67	41	229380 82	36		
		D20A-18806 72	127	11R7M 74	180	7TTP 67	41	229380 83	36		
		D20A-18806 72	127	11R8M 74	180	7TTP 67	41	229380 84	36		
		D20A-18806 72	127	11R9M 74	180	7TTP 67	41	229380 85	36		
		D20A-18806 72	127	11R0M 74	180	7TTP 67	41	229380 86	36		
		D20A-18806 72	127	11R1M 74	180	7TTP 67	41	229380 87	36		
		D20A-18806 72	127	11R2M 74	180	7TTP 67	41	229380 88	36		
		D20A-18806 72	127	11R3M 74	180	7TTP 67	41	229380 89	36		
		D20A-18806 72	127	11R4M 74	180	7TTP 67	41	229380 90	36		
		D20A-18806 72	127	11R5M 74	180	7TTP 67	41	229380 91	36		
		D20A-18806 72	127	11R6M 74	180	7TTP 67	41	229380 92	36		
		D20A-18806 72	127	11R7M 74	180	7TTP 67	41	229380 93	36		
		D20A-18806 72	127	11R8M 74	180	7TTP 67	41	229380 94	36		
		D20A-18806 72	127	11R9M 74	180	7TTP 67	41	229380 95	36		
		D20A-18806 72	127	11R0M 74	180	7TTP 67	41	229380 96	36		
		D20A-18806 72	127	11R1M 74	180	7TTP 67	41	229380 97	36		
		D20A-18806 72	127	11R2M 74	180	7TTP 67	41	229380 98	36		
		D20A-18806 72	127	11R3M 74	180	7TTP 67	41	229380 99	36		
		D20A-18806 72	127	11R4M 74	180	7TTP 67	41	229380 100	36		
		D20A-18806 72	127	11R5M 74	180	7TTP 67	41	229380 101	36		
		D20A-18806 72	127	11R6M 74	180	7TTP 67	41	229380 102	36		
		D20A-18806 72	127	11R7M 74	180	7TTP 67	41	229380 103	36		
		D20A-18806 72	127	11R8M 74	180	7TTP 67	41	229380 104	36		
		D20A-18806 72	127	11R9M 74	180	7TTP 67	41	229380 105	36		
		D20A-18806 72	127	11R0M 74	180	7TTP 67	41	229380 106	36		
		D20A-18806 72	127	11R1M 74	180	7TTP 67	41	229380 107	36		
		D20A-18806 72	127	11R2M 74	180	7TTP 67	41	229380 108	36		
		D20A-18806 72	127	11R3M 74	180	7TTP 67	41	229380 109	36		
		D20A-18806 72	127	11R4M 74	180	7TTP 67	41				

MoPar	VOL.	MoPar (CONT.)	VOL.	MoPar (CONT.)	VOL.	MOTOROLA (CONT.)	VOL.	MOTOROLA (CONT.)	VOL.	MOTOROLA (CONT.)	VOL.
C-5909 59 Chry.	11	304 60 Desoto	13	851 58 Chry.	8	CTM64 64 Chev.	25	TM203S (Sim. to Pg. 57)	95	301X	11
P-5901 59 Ply.	11	305 60 Dodge	13	852 58 Dodge	8	CV71A 71 Chev.	106	TM213S	162	302 (MoPar 302)	13
R3BC 63 Chry.	19	306 61 Dodge	16	854 58 Ply.	9	CY65A 62-65 Chev.	32	TM226S	215	310X	13
R3BD 63 Dodge	19	309 61 Ply.	16	855 59 Ply.	11	CY65M 62-65 Chev.	33	TM270M	79	311X	13
R12BDT 61 Dodge	16	310 60 Ply.	14	856 59 Dodge	10	CY66A 66 Chev.	38	TM295M	33	320X	21
R23BDQ 62 Dodge	19	311 61 Ply.	16	857 59 Desoto	10	CY67A 67 Chev.	44	TM296M	40	323T	22
R95BC-S 59 Chry.	10	312 61 Desoto	16	858 59 Chry.	10	CY68A 68 Chev.	56	TM297M	48	324	25
RV4C	24	313 60 Dodge	14	860 59 Ply.	12	CY69A 69 Chev.	69	TM298M	71	395/-12	5
RV4CL	24	314 61 Dodge	16	861 59 Chry.	12	CY70A 70 Chev.	77	TM315M	33	396/-12	6
RV5C 65	30	314V 61 Ply.	16	900 55 Dodge	5	CYA62 62 Chev.	20	TM316M	40	397	7
RV5CC 65	30	317 61 Chry.	15	901 55 Desoto	5	CYA63 61-63 Chev.	22	TM316S	216	397X	7
RV5CL 65	30	322 62 Ply.	17	902 55 Chry.	5	CYA64 62-64 Chev.	25	TM318M	54	398X	9
03BC 60 Chry.	13	323 62 Dodge	17	903 55 Chry.	5	CYH62 62 Chev.	19	TM325M (Pg. 108)	25	403	5
03BD 60 Dodge	13	324 62 Ply.	17	910/HR 56 Dodge	6	CYH63 62-63 Chev.	22	TM326M	40	404	5
03BS 60 Desoto	13	327 62 Chry.	17	911 65 Desoto	6	CTH64 62-64 Chev.	25	TM327M	46	406	11
04BC 60 Chry.	13	330 63 Ply.	21	912/HR 56 Chry.	7	FMSMP (200)	125	TM328M	77	412	11
04BI 60 Chry.	13	331 63 Dodge	21	916/HR 56 Ply.	7	FMS5M	35	TM339M	40	424	25
3BLE 63 Dodge	19	332 63 Dodge	21	917HR 57 Ply.	8	FM67M	45	TM402S	230	414	25
3BVD 63 Ply.	19	333 63 Chry.	21	918 57 Dodge	7	FM68M	59	TM413S	160	500X	13
4TBC 64 Chry.	24	334 64 Dodge	24	919/HR 57 Dodge	7	FM70M	82	TM415M	32	503	4
4TBLH 64 Dodge	24	335 64 Ply.	25	920HR 57 Chry.	8	FM10GM	40	TM416M	41	504	5
4TBL 64 Dodge	24	336 64 Dodge	25	921HR 57 Chry.	8	FM10BM	55	TM416S	217	506/-12	7
4TBE 64 Dodge	24	337 63 Dodge	22	922 58 Chry.	9	FM150M	85	TM525A	33	520T	21
4TBE 64 Ply.	24	339 63 Dodge	22	923 58 Desoto	9	FM200A	34	TM526A	41	524	26
5BP 65 Ply.	28	343 63 Chry.	22	924HR	9	FM210A	72	TM527A	46	553	4
5BFD 65 Dodge	30	344 63 Dodge	22	925 58 Ply.	9	FM214A	201	TM529A	75	555/-12	6
5BPD 65 Ply.	28	345 63 Ply.	22	927 59 Desoto	11	FM273AX	203	TM570A	82	556	6
5BVE 65 Ply.	28	347 62 Dodge	19	928 59 Chry.	10	FM360A	87	TM573A	158	595/-12	6
5FBC 65 Chry.	30	348 64 Chry.	24	929 59 Chry.	11	FM481AX	130	TM626A	41	596/-12	6
5FBD 65 Dodge	30	350 63 Dodge	19	2820635 68 Chry.	51	FM675A	202	TM703S	95	597X	7
5FBI 65 Chry.	30	351 64 Chry.	25			FM755AX	202	TM706S	47	601X	13
5FBL 65 Dodge (Pg. 86)	30	352 64 Chry.	25	MOTOROLA		FM755X-1	225	TM707S/-1, 708S/-1,		611T (MoPar 610T)	4
5FBP 65 Ply.	28	353 64 Dodge	25	AF4TMR 64 Amer. Motors	26	FM900	14	TM709S	65	612 (MoPar 609)	4
5FBPD 65 Ply.	28	354 64 Dodge	24	BK3A6 42/46-53 Buick	5	FM990X	47	TM711S	68	624 (MoPar 624)	8
5FBVE 65 Ply. (Pg. 86)	30	355 64 Dodge	25	BK4FM 64 Buick	26	FM991X	60	TM714S (Mech. Ch.)	72	701 (MoPar 701)	12
5TBDT 65 Dodge (Sim. to Pg. 64)	26	361 6BPD 66 Ply.	36	BK4FMC 64 Buick	34	FM992X	85	TM714S (Mech. Ch.)	82	829 (MoPar 829)	4
68L 66 Dodge	37	362 65 Dodge	30	BK53A6 45-53 Buick	5	FM100	85	MTD176J	82	845 (MoPar 845)	8
6BP 66 Ply.	37	363 65 Dodge	30	BK53A6 45-53 Buick	5	FM100	19	TM718S (Ch. TD1381)	116	846 (MoPar 846)	8
6BPD 66 Ply.	37	364 5FBD 65 Dodge	36	BK47/46-52 Buick	5	FM100	19	TM718S (Ch. TD1381)	116	849 (MoPar 849)	8
6BVE 66 Ply.	37	364 6FBD 66 Dodge	36	BK6A1 56 Buick	7	FM100	19	U3MM	24	852 (MoPar 852)	8
6BVS 66 Ply.	37	365 65 Chry.	28	BK6AX 56 Buick	7	GMS3A6 48-53 Chev/GMC	5	VMA7 53-57 VW	11	853 (MoPar 853)	8
6BVC 66 Chry.	36	365 65 Chry.	28	BK6AX 56 Buick	7	GVT50A 48-53 Chev/GMC	5	VMA8 58 VW	12	854 (MoPar 854)	9
6FBD 66 Dodge	36	365 65 Chry.	28	BK6AX 59 Buick	10	GV-701	11	VMA60 VW	13	856 (MoPar 856)	10
6FBL 66 Dodge	36	366 5FBC 65 Chry.	30	BK6A0X 60 Buick	15	HF-800	9	VMA63 63 VW	22	857 (MoPar 857)	10
6FBP 66 Ply.	36	366 6FBC 66 Chry.	36	BK6A1 61	15	HN2A6 51-52 Hudson	5	VMA64 58-64 VW	25	860 (MoPar 860)	12
6FBPD 66 Ply.	36	367 5FBI 65 Chry.	30	BK6A2 62 Buick	20	HN4A6 54 Hudson	5	VMM60 60 VW	22	861 (MoPar 861)	12
6FBVE 66 Ply.	36	369 6FBP, 6FBVE 66 Ply.	48	BK6A3 63 Buick	22	HN4M6 54 Hudson	5	VMM63 58-63 VW	22	875AX	224
7BC 67 Chry.	42	369 7FBP 67 Ply.	48	BK6A4 64 Buick	24	HN53M6 51-53 Hudson	5	VMM64 58-64 VW	25	923 (MoPar 923)	9
7BD 67 Dodge	42	372 (Pg. 86) 65 Ply.	30	CA61X 61 Buick, Olds,	16	HT3A6 53 Hudson	5	OSAR (See Amer. Motors 8990811)	12	891600	24
7BD 67 Dodge	42	373 (Pg. 86) 65 Dodge.	30	CA62 62 Buick, Olds,	16	ILSTCA, -12 55 Intl.	6	04MA 60 Amer. Motors	11	980886 64 Opel	26
7BDT 67 Dodge	44	374 67 Ply.	48	CA63 61-63 Buick, Olds,	22	IM201R	41	(Pg. 10)	11		
7BP 67 Ply.	42	375 67 Chry.	48	CA63 61-63 Buick, Olds,	22	IM202R	41	04MD/ME/WFM (Pg. 77)	12	Chassis	
7BVE 67 Ply.	42	376 7BC 67 Chry.	42	CA63 61-63 Buick, Olds,	22	IM204R	66	IC2RFM4 (Pg. 43)	66	R15A6	5
7BVC 67 Chry.	42	376 (2820635 68 Chry.)	51	CA63 61-63 Buick, Olds,	22	IC2RFM4 (Pg. 43)	66	IC3RMM4 (Pg. 39)	180	R16M6	5
7FD 67 Dodge	42	377 67 Dodge	48	CA63 61-63 Buick, Olds,	22	IC3RMM4 (Pg. 39)	180	IC3RMM4	204	R17A6	5
7FBD 67 Dodge	48	377 67 Dodge	48	CE65A 65 Chev.	32	NH3C 53 Nash	5	2AT-1	21		
7FBP 67 Ply.	48	379 66 Dodge	36	CE66 66 Chev.	38	NH4AC 54 Nash (See AC-154)	5	2MT2031	127		
7FBPD 67 Ply.	48	381 67 Dodge	43	CE67A 67 Chev.	44	NH5AC 55 Nash (See AC-154)	5	2MT	20	MUNTZ/STEREO	
7FBVA 67 Dodge, Ply.	48	385 67 Dodge, Ply.	48	CE68A 68 Chev.	56	OE2A6 51-52 Olds.	5	2TMF (Pg. 71)	18	C-90	50
12B 61 Dodge	15	402 60 Chry.	13	CE69A 69 Chev.	69	OE4FM 64 Olds	26	2TMY (Pg. 71)	18	C-100	50
13BC 61 Chry.	15	403 60 Chry.	13	CE70A 70 Chev.	77	OE4FMC 64 Olds.	34	3AT	22	M-12	53
13BD 61 Dodge	16	404 61 Chry.	15	CE76A 64 Chev.	24	OE65A 65 Olds.	32	4MT	22	M-30	52
13BS 61 Desoto	16	407 61 Chry.	15	CE76A 64 Chev.	24	OE66A 65-66 Olds.	40	4AT	25	M-40	50
14BC 61 Chry.	15	409 62 Chry.	18	CE76A 64 Chev.	24	OE67A 67 Olds.	45	5AT	25	M-45	54
14BI 61 Chry.	15	410 62 Chry.	18	CE76A 64 Chev.	24	OE7A 57 Olds.	7	6AT	25	M-50	60
24BC 62 Chry.	18	411 63 Chry.	20	CE76A 64 Chev.	24	OE9A 59 Olds.	12	7AT	25	M-430	190
24BI 62 Chry.	18	413 63 Chry.	20	CE76A 64 Chev.	24	OE9A 59 Olds.	12	8AT	25	M-430	190
34BCS 63 Chry.	20	414 64 Chry.	24	CE76A 64 Chev.	24	OE9A 59 Olds.	12	9AT	25	M-430	190
34BI 63 Chry.	20	415 64 Chry.	24	CE76A 64 Chev.	24	OE9A 59 Olds.	12	10AT	25	M-430	190
44BCS 64 Chry.	24	416 65 Chry.	24	CE76A 64 Chev.	24	OE9A 59 Olds.	12	11AT	25	M-430	190
44BI 64 Chry.	24	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	12AT	25	M-430	190
84BC 58 Chry.	8	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	13AT	25	M-430	190
85BC 58 Chry.	9	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	14AT	25	M-430	190
94BC 59 Chry.	10	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	15AT	25	M-430	190
101 60 Ply.	13	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	16AT	25	M-430	190
102 60 Dodge	13	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	17AT	25	M-430	190
104 60 Ply.	13	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	18AT	25	M-430	190
106 60 Dodge	14	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	19AT	25	M-430	190
107 61 Dodge	15	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	20AT	25	M-430	190
109 61 Ply.	15	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	21AT	25	M-430	190
110 60 Ply.	15	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	22AT	25	M-430	190
111 61 Ply.	15	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	23AT	25	M-430	190
112 60 Desoto	14	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	24AT	25	M-430	190
113 61 Ply.	14	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	25AT	25	M-430	190
114 61 Dodge	15	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	26AT	25	M-430	190
202 62 Dodge	18	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	27AT	25	M-430	190
203 62 Ply.	18	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	28AT	25	M-430	190
205 62 Dodge	17	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	29AT	25	M-430	190
206 64 Dodge	24	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	30AT	25	M-430	190
214 63 Ply.	19	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	31AT	25	M-430	190
215 63 Dodge	19	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	32AT	25	M-430	190
216 63 Ply.	22	417 65 Chry.	31	CE76A 64 Chev.	24	OE9A 59 Olds.	12	33AT	25	M-430	190
217 63 Dodge											

OLDSMOBILE (CONT.)	VOL.	OLDSMOBILE (CONT.)	VOL.	OLDSMOBILE (CONT.)	VOL.	PANASONIC (CONT.)	VOL.	PLYMOUTH (Also See VOL. MoPar)	VOL.	PLYMOUTH (CONT.)	VOL.
038FPM1 70 Olds.	80	51XPBK1 (7933501)	186	7294753 982689 66 Olds 36		CR-B1717EU	233	18VD 71 Valiant		3501328 (1CH4405, 181	
038FM2 70 1/2 Olds	88	51XPBT1, 51XPET2		7297564 66 Olds		CR-0038	149	(Similar to page 45) . 94		3501328(1CH4507, 195	
038PBI 70 Olds.	73	(7933271) 75 Omega	193	7298413 67 Oldsmobile 45		CR-119EU	140	2CH1605 75	223	5CH4507 75 Fury	195
038T411 70 F-85 & Olds 78		53APB1 (9346723)		7299563 67 F-85	43	CR-242EU	176	2CH2602 76	228	5CH4507 75 Fury	195
03EPM1 70 Toronado	80	75 Cutlass	190	7299573 67 Toronado	45	CR-501EUA	150	5CH505 76	228	5CH4402 74 Plymouth	180
03EPM2 70 1/2 Toronado 88		53APB2 75 Olds		7299583 67 Toronado	42	CR-515EU	140	5CH4402 74 Plymouth	180	5CH4508 75 Fury	192
03EPB1 70 Toronado	73	(See page 93)	190	7300083 67 Toronado	44	CR-656EU	220	244 (8BBA, 98BA)		5CH4508 75 Fury	192
03ET412 70 Toronado	78	53APBK1 (9346733)		7300093 67 Oldsmobile 44		CR-657EU/658EU	217	68-69 Barracuda)	61	5CH4508 75 Fury	192
03FPM1 (7932753)		75 Cutlass	190	7300113 67 Oldsmobile 42		CR-700EU	139	245 (8BVA, 98VA)		5CH4508 75 Fury	192
71 F-85	105	53APBK2 75 Olds		7300153 67 Toronado	46	CR-701EU	166	68-69 Valiant	61	5CH4508 75 Fury	192
13APB1 (7932743)		(See Page 93)	190	7300173 67 Toronado	44	CR-714EU	174	250 68 Fury	51	5CH4508 75 Fury	192
71 F-85 & Olds	101	53BPM1 (9346763)		7302013 68 F-85	52	CR-715EU	174	251 (8BBE, 98BCC)		5CH4508 75 Fury	192
13AT411 (7932763)		75 Cutlass, Olds,		7302023 68 Olds, F-85	50	CK-131EU	143	68-69 Belvedere	61	5CH4508 75 Fury	192
71 F-85	97	53BPM2, 53BPM3		7302053 67 Toronado	46	CK-325EU	151	384 (8FBPD) 68 Ply	58	5CH4508 75 Fury	192
13BFM1 (7930033)	98	(9346783) 85 Cutlass,		7303143 68 Oldsmobile 51		CK-326EU	151	388 (8FBCC) 68		5CH4508 75 Fury	192
13BFM2 71 Olds,	98	Oldsmobile, Toronado	193	7303153 68 Oldsmobile 49		CK-351EU	111	Belvedere	58	5CH4508 75 Fury	192
13BFMT1 (7930063)	98	53BPM3, 53BPM4		7303203 68 Toronado	49	CK-375EU	177	390 68 Fury	55	5CH4508 75 Fury	192
71 Olds & Toronado	97	53BPK1 (9346743)		7303223 68 Toronado	49	CK-385EU	221	398 (8FBBA) 68		5CH4508 75 Fury	192
13BFMT2 (7930063)	97	53BPK2 (9346753)		7303253 68 Toronado	51	CK-475EU	183	Barracuda	58	5CH4508 75 Fury	192
71-1/2 Olds, Toronado, 117		75 Cutlass, Oldsmobile,		7305203 68 Oldsmobile,		CK-567EU	172	399 (8FBVA) 68 Valiant	58	5CH4508 75 Fury	192
13BPB2 (7930013) 71		Toronado	191	Toronado	50	CK-568EU	172	2864 515 (8BBD, 98BD)		5CH4508 75 Fury	192
Olds & Toronado	101	53BPK1 (9346703)		7305933 68 Olds, F-85	50	(Similar to page 95)	172	68-69 Barracuda (Simi-		5CH4508 75 Fury	192
13BPT1 (7930053)		75 Oldsmobile,		7307313 69, 69 1/2		CK-601EU	144	lar to page 93)	61	5CH4508 75 Fury	192
71 Olds, Toronado	96	Toronado	190	Oldsmobile	74	CK-601EU (PCB)	176	2864 527 (8BVA, 98VA)		5CH4508 75 Fury	192
13BPT2 (7930053)		53BPK2 75 Olds		7307813 69 69 1/2		CK-675EU	181	68-69 Valiant (Similar		5CH4508 75 Fury	192
71 1/2 Olds, Toronado, 118		(See Page 93)	190	Toronado	229	CK-777EU	99	to page 93)	61	5CH4508 75 Fury	192
23AFM1 (7935013) 72		53BPK3 (9346713)		7895851-1 76	229	CK-807SU	66	2864 756 (8FBPD) 68		5CH4508 75 Fury	192
F-85	112	75 Oldsmobile,		7933241	217	CK-830EU	111	Fury (Similar to		5CH4508 75 Fury	192
23AFP1 (7938303)		Toronado	190	7933401	217	CK-880EU	148	page 41)	58	5CH4508 75 Fury	192
72 F-85	118	53BPK4 (9346773)		9346783	219	CK-880EU (PCB)	164	2864 767 (8BBE, 98BCC)		5CH4508 75 Fury	192
23AFP2/P3 (7938303)	125	75 Cutlass, Oldsmobile,		9347740 76	221	CK-888SU	95	68-69 Belvedere (Simi-		5CH4508 75 Fury	192
23APB1 (7935003)		Toronado	195	9347980 75-76	222			lar to page 93)	61	5CH4508 75 Fury	192
72 F-85	120	53BPT3 (9346773)				PENNEYS (PENNCREST)		2864963 (390) 68		5CH4508 75 Fury	192
23APB2 (7935003)		75 Cutlass, Olds,				(See JC Penney)		2884044 (400) 68		5CH4508 75 Fury	192
72 F-85	128	Toronado	210			PEUGEOT		2884 056 (8FBBA)		5CH4508 75 Fury	192
23AT411 (7937413) 72		60BFM1 76 (Pg. 13)	189			2PG2130 (98102)		68 Valiant (Similar		5CH4508 75 Fury	192
F-85	112	60BFP1/PK1 76 (Pg. 21)	182			72 Peugeot	129	to page 41)	58	5CH4508 75 Fury	192
23BPM1 (7935033)		60BFP2/BK1 76 (Pg. 29)	192					2884 057 (8BVA, 98VA)		5CH4508 75 Fury	192
72 Olds, Toronado	110	60BPM1 76 (Pg. 57)	191					68-69 Barracuda (Simi-		5CH4508 75 Fury	192
23BPM2 (7938313)		60BPM2 76 (Pg. 57)	201					lar to page 41)	58	5CH4508 75 Fury	192
72 Olds, Toronado	117	60BPM3 76 (Pg. 57)	201					2884 063 (8FBCC) 68		5CH4508 75 Fury	192
23BFP1 (7938313)		60BPM4/PK1 76 (Pg. 27)	186					Belvedere (Similar		5CH4508 75 Fury	192
72 Olds, Toronado	114	60BPM5/PK1 76 (Pg. 27)	186					to page 41)	58	5CH4508 75 Fury	192
23BFB1 (7935023)		60BPM6/PK1 76 (Pg. 85)	191					2884 101 (CF10103)		5CH4508 75 Fury	192
72 Olds, Toronado	115	60BPM7/PK1 76 (Pg. 85)	191					70 Fury	88	5CH4508 75 Fury	192
23BPB2 (7935023)		60BPM8/PK1 76 (Pg. 87)	221					2884 103 (254) 69 Fury	67	5CH4508 75 Fury	192
72 Olds, Toronado	125	61HFM2 (Sim. to Pg. 47)	221					2884 610 (CF61003)		5CH4508 75 Fury	192
23BPT1 (7935063)		61HFM3 75	229					2884 633 (1CH4007)		5CH4508 75 Fury	192
72 Olds & Toronado	118	63AFM1 76 (Pg. 103)	188					70 Belvedere	90	5CH4508 75 Fury	192
33AFM1 (7937983)		63AFP1/PK1 76 (Pg. 103)	189					2884 649 (0BD5)		5CH4508 75 Fury	192
73 F-85 (PCB AR-151)	139	63APB1/BK1 76 (Pg. 93)	190					70 Valiant Duster	92	5CH4508 75 Fury	192
33AFM2 (7935053)		93AFM1/M2 69 F-85	68					2884658 (CF65803)		5CH4508 75 Fury	192
73 F-85	145	93AFP1 (7307863)						2884 774 (CF74803)		5CH4508 75 Fury	192
33AFM3 (7935053)		69 F-85	70					D-5407 See MoPar 820	4	5CH4508 75 Fury	192
73 F-85	144	93APB1 69 F-85	63					P-5206 See MoPar 819	4	5CH4508 75 Fury	192
33AFPB1 (7938323)		93BPM1 69 Olds	68					P-5606 See MoPar 840	6	5CH4508 75 Fury	192
73 F-85	146	93BPM2 (7307313)						P-5701 See MoPar 848	8	5CH4508 75 Fury	192
33AFPBK2 (9342563)		69 Olds	74					P-5703 See MoPar		5CH4508 75 Fury	192
73 F-85	146	93BPM3 (7307313)						917HR	8	5CH4508 75 Fury	192
33APB1 (7935443)		69 1/2 Olds	74					P-5801 See MoPar 848	8	5CH4508 75 Fury	192
73 F-85	142	93BPT1/2 (7307303) 69	71					P-5803 See MoPar 925	9	5CH4508 75 Fury	192
33APB2 (7936143)		93BT411 69 F-85, Olds	69					P-5901 See MoPar 855	11	5CH4508 75 Fury	192
73 F-85	147	93BT412 69 1/2 F-85,	69					P-6234	20	5CH4508 75 Fury	192
33APBK1 (7938003)		Olds	69					S-5323 See Studebaker		5CH4508 75 Fury	192
73 F-85	142	93EFM1/M2 69	68					Model AC-2301	4	5CH4508 75 Fury	192
33APBK2 (7938003)		93EFM2/M2 69	68					S-5327 See Studebaker		5CH4508 75 Fury	192
73 F-85	147	93EFM3/M2 69	68					Model AC-2300	4	5CH4508 75 Fury	192
33APBT1 (7935043)		Toronado M/Htr	68					S-5524 See Studebaker		5CH4508 75 Fury	192
73 F-85	140	93EFM4 (7307813)						Model AC-2301	4	5CH4508 75 Fury	192
33BPM1 (7937953)		69 Toronado	74					S-5528 See Studebaker		5CH4508 75 Fury	192
73 Olds, Toronado	139	93EFM5 (7307813)						Model AC-2300	4	5CH4508 75 Fury	192
33BPM2 (7937973)		69 1/2 Toronado	74					S-5529 See Studebaker		5CH4508 75 Fury	192
73 Olds, Toronado	145	93EPB1 (7308203)						Model AC-2300	4	5CH4508 75 Fury	192
33BPM3 (7937973)		69 Toronado	71					TAR-58 See MoPar 700	8	5CH4508 75 Fury	192
73 Olds, Toronado	144	93ET411 69 Toronado	69					929 See MoPar 929	11	5CH4508 75 Fury	192
33BPM4 (7938333)		93ET412 69 1/2	69							5CH4508 75 Fury	192
73 Olds, Toronado	146	Toronado	69							5CH4508 75 Fury	192
33BPM5 (7937943)		982029 62	17							5CH4508 75 Fury	192
73 Olds, Toronado	142	982030 62	18							5CH4508 75 Fury	192
33BPB2 (7937943)		982136 63	19							5CH4508 75 Fury	192
73 Olds, Toronado	147	982137 63	20							5CH4508 75 Fury	192
33BPT1 (7937963)		982149 63 F-85	20							5CH4508 75 Fury	192
73 Olds, Toronado	140	982212 63	21							5CH4508 75 Fury	192
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43APBK1 (9343303)		982290 53	4							5CH4508 75 Fury	192
74 Cutlass	173	983004 53	4							5CH4508 75 Fury	192
43BPM1 (9343343) 74		983090 54	5							5CH4508 75 Fury	192
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Corvaire	19	FLH-16663A 60/63 Chev		TC-26F	221	LA-61-PB 61 Lark	17	CII-65PB 65 Chevy II	35	PD-65PB 65 Fury	34
FJB-6608A 61 Lancer	18	4 GMC Trucks	34	TC-30 (Pg. 89)	164	LR-61-PB 61 Lancer	18	CII-66PB 66 Chevy II	37	PD-66PB 66 Fury	36
FJB-6609	19	FLH-16665A 64/65 Dodge		TC-30A	164	DF-61-PB 61 F-85	17	CII-67PB 66/67		PD-67PB 67 Fury	46
FJB-6609A	19	Truck	35			OL-61-PB 61 Olds	17	Chevy II	46	PL-62PB 62/63 Plym	26
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Rambler	22	61-16584A 63 Rambler	35			PG-61-PB 61 Pontiac	17	CG-67PB 67 Cougar	46	PL-64PB 64 Plymouth	23
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FJB-6615A	27							CH-66M/PB 66 Chev	37	W/Air Conditioning	35
FJB-6618A 61 Rambler	17							CH-67PB 67 Chev	46	PO-67PB 67 Pontiac	46
FJB-6619A	20							CHT-63M 63 ChevTruck	26	RA-63PB 63 Rambler	26
FJB-6643A 60-62 Comet,	19							CHT-64M See page 136		RA-64PB 64 Rambler	23
Falcon	21							CHT-65M 65 ChevTruck	35	RA-65PB 65 Rambler	32
FJB-6649A Tractor	20							CHT-65PB 65 Chevrolet		SA-66PB 66 Rambler	
FJB-6658	20							CHT-66M/PB 66 Chev	35	SA-66PB 66 Rambler	37
FJB-6679A	10							CHT-67PB 67 Chev	37	RA-67PB 67 Rambler	46
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FJB-6686A 59 Plym.	12							Truck		RU-112TC 5-014	40
FJB-6687 59 Ford	11							Truck		RU-113TC 5-016	40
FJB-6688 59 Chev.	11							Truck		RU-114TC 5-008	39
FJB-6689A 59 Plym.	12							Truck		RU-115TC 5-010	39
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FJB-16574A 63 Buick	23							Truck		TC-110MD	32
FJB-16576A 63								Truck		TC-112CM	184
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FJB-16578A 63 Ford	23							Truck		TC-300M 64 VW	23
FJB-16579A 63 Falcon	23							Truck		TC-300M 5-041 65 Prod.	36
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FJB-16581A 63 Merc.	23							Truck		TC-400PB 64 VW	23
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FLH-16537A 65Galaxie	35							Truck			
FLH-16538A 64								Truck			
Fairlane	34							Truck			
FLH-16539A 65								Truck			
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FLH-16541A 64/65								Truck			
Falcon, 64 Comet	35							Truck			
FLH-16543A 65 Comet	35							Truck			
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FLH-16547A 65								Truck			
Ambassador, Classic	34							Truck			
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FLH-16651A 63/65								Truck			
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FLH-16652A 64 Buick								Truck			
Special	35							Truck			
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FLH-16654A 64 F-85	34							Truck			
FLH-16658A 64/65								Truck			
Tempst	35							Truck			

TOYOTA (CONT.)	VOL.	TRUETONE (CONT.)	VOL.	VALIANT (See MoPar)	VOL.	VOLKSWAGEN (CONT.)	VOL.	VOLKSWAGEN (CONT.)	VOL.	VOLVO (CONT.)	VOL.
CR-652BTR (86011-20200) Corona	180	D4426A	5			1VW3401 74 Custom Beetle, Dasher, Karmann Ghia, Super Beetle, Sedan 412, Transporter.193		SVW4309 (Sapphire XXI) 73 Karmann Ghia, Volkswagen	179	9FBV0 69 Volvo, 9FBVOC 69 Coupe 140, 9FBVOD 69 Coupe P1800.112	
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TO-71-FM	135	DC4209	26			2VM1116 (Sapphire XV) 71 Fastback, Karmann Ghia, Sedan, Sedan 411, Squareback, Transporter	118	78V9 67 Sedan	44		
TO-71-MPX	135	DC4203B	31			2VM1327 (Sapphire XVIII) 73 Custom Beetle, Super Beetle, Fastback, Squareback, Karmann Ghia, Sedan 411, Transporter	155	78V3 67 Type 3	43		
73 Corolla, Corona	156	DC4203C	35			2VM2109 (Sapphire XIV) 72 Transporter, Squareback	130	78V4 67 Type 3	43		
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