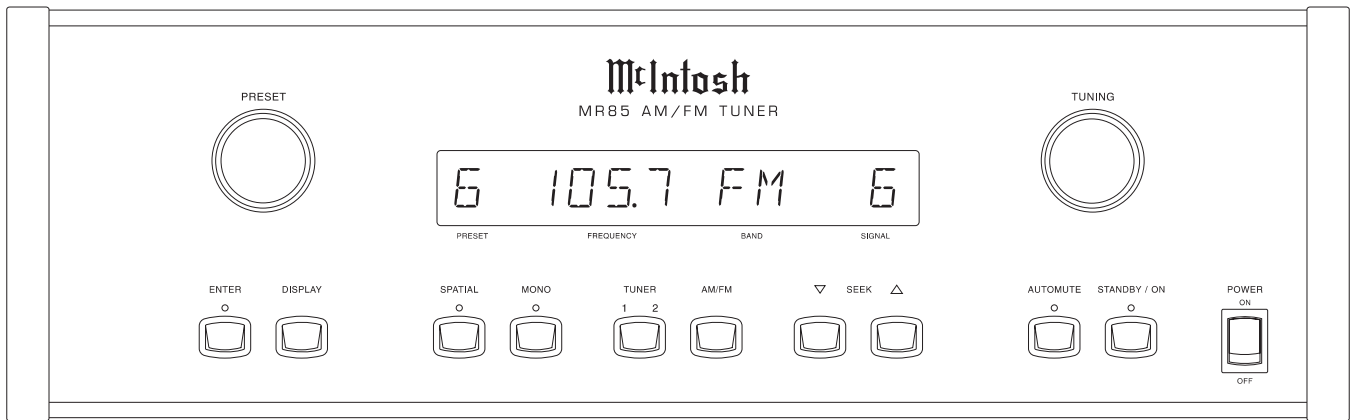


# MR85

## AM/FM TUNER

INCLUDING TM1 TUNER MODULE OPTION



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# McIntosh

## SERVICE MANUAL

# PERFORMANCE SPECIFICATIONS

## FM Tuner Specifications

### Useable Sensitivity

14dBm which is 1.4uV across 75 ohms

### 50dB Quieting Sensitivity

Mono: 19dBm which is 2.4uV across 75 ohms

Stereo: 35dBm which is 15uV across 75 ohms

### Signal To Noise Ratio

Mono: 75dB

Stereo: 70dB

### Frequency Response

Mono: + 0, - 1dB from 20 to 15,000Hz

Stereo: + 0, - 1dB from 20 to 15,000Hz

### Harmonic Distortion

Mono: 0.3% at 100Hz

0.3% at 1,000Hz

0.3% at 10,000Hz

Stereo: 0.45% at 100Hz

0.45% at 1,000Hz

0.65% at 10,000Hz

### Intermodulation Distortion

Mono 0.25%

Stereo 0.45%

### Capture Ratio

1.2dB

### Alternate Channel Selectivity

75dB

### Spurious Response

100dB

### Image Response

75dB

### RF Intermodulation

65dB

### Stereo Separation

45dB at 100Hz

45dB at 1,000Hz

35dB at 10,000Hz

### SCA Rejection

65dB

## AM Tuner Specifications

### Sensitivity

20uV External Antenna Input

### Signal To Noise Ratio

48dB at 30% modulation

58dB at 100% modulation

### Harmonic Distortion

0.5% maximum at 50% modulation

### Frequency Response

50Hz to 6kHz NRSC

### Adjacent Channel Selectivity

45dB minimum IHF

### Image Rejection

65dB minimum from 540 to 1600kHz

### IF Rejection

80dB minimum

## General Specifications

### Rated Output

Fixed output: 1.2 Volts

Variable output: 0 - 1.2 Volts

### Output Impedance

Less than 100 ohms

### Power Requirements

100 Volts, 50/60Hz at 20 watts

110 Volts, 50/60Hz at 20 watts

120 Volts, 50/60Hz at 20 watts

220 Volts, 50/60Hz at 20 watts

230 Volts, 50/60Hz at 20 watts

240 Volts, 50/60Hz at 20 watts

*Note Refer to the rear panel of the MR85 for the correct voltage.*


### Dimensions

17-1/2" (44.5cm) W, 5-3/8" (13.7cm) H, 17-1/2" (44.5cm) D,  
(including clearance for connectors)

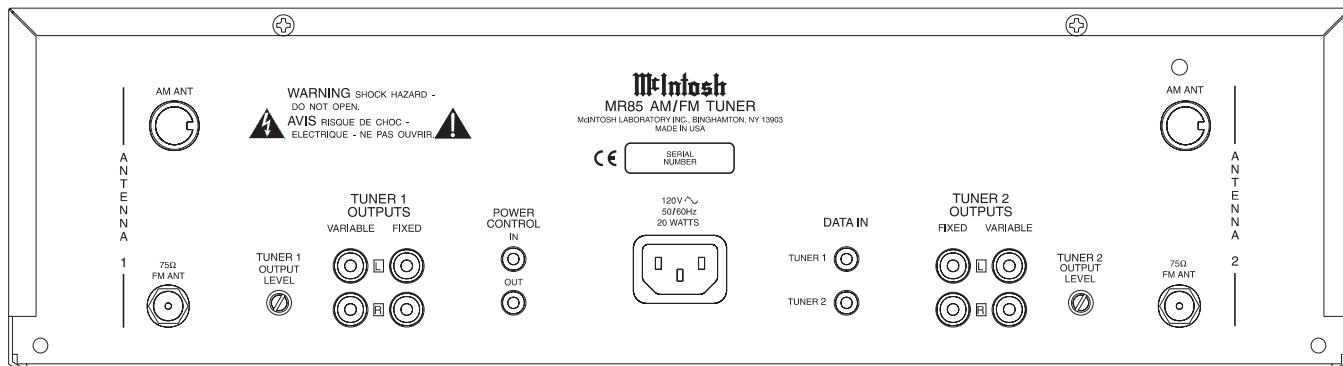
### Weight

25.5 pounds (11.6 kg) net, 43 pounds (19.5 kg) in  
shipping carton

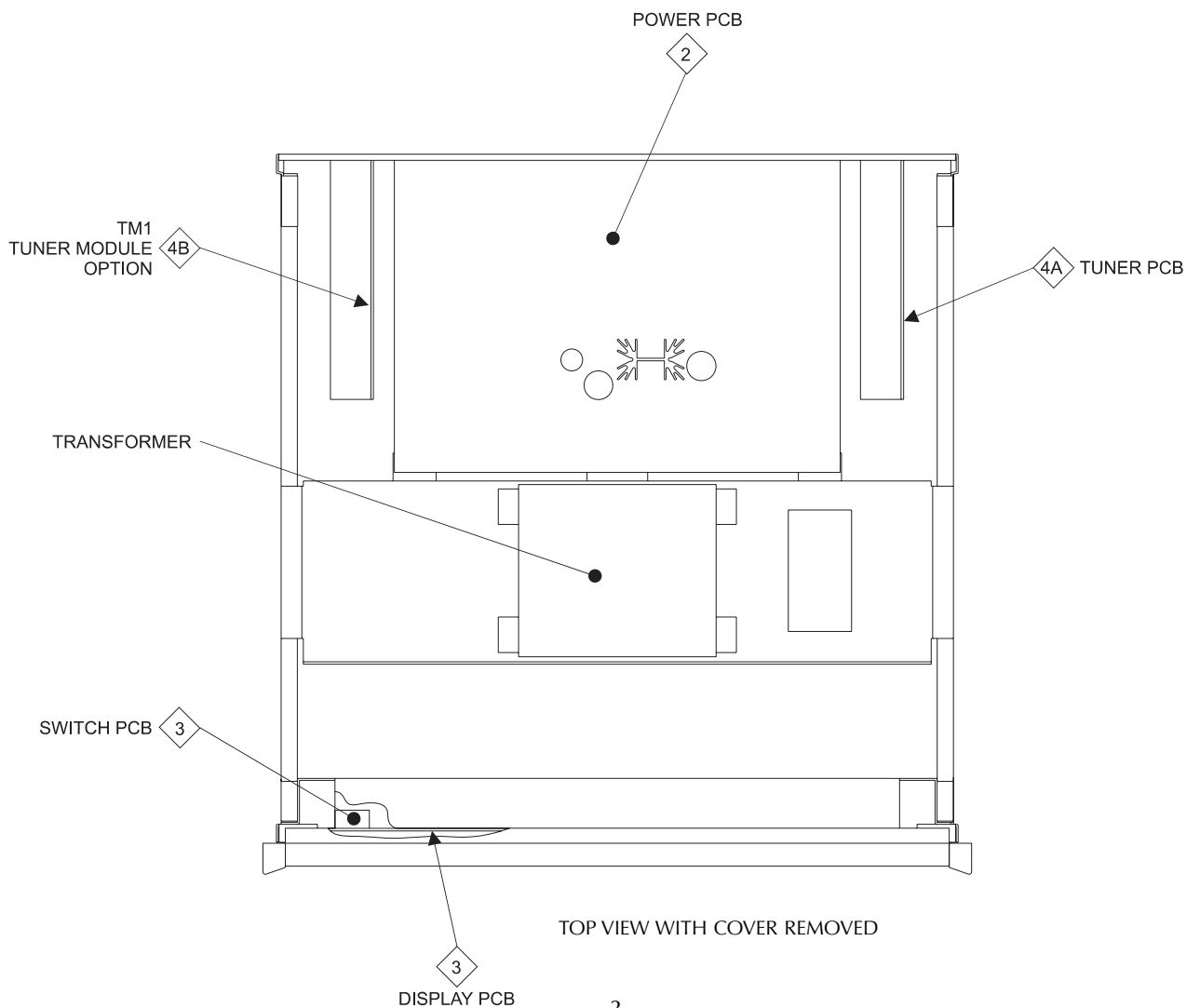
## NOTES

1. The heavy notes on the schematic denote the primary signal path.
2. Unless otherwise noted, all voltages indicated on the schematics are measured under the following conditions:
  - a. AC input at 120 volts, 50/60Hz.
  - b. All voltages are +/-10% with respect to ground. A high impedance (10 megaohm) voltmeter must be used.
3. Unless otherwise specified:
  - a. Resistor values are in ohms.
  - b. Capacitor values are microfarads (uF).
  - c. Inductor values are in microhenries (uH).
4. On PC board drawings, Square pad indicates:
  - a. Polarized Capacitors - Positive
  - b. Diodes - Cathode
  - c. Others - Pin 1
5. **WARNING**  Parts marked with the symbol have critical characteristics. Use only replacement parts recommended by the manufacturer.

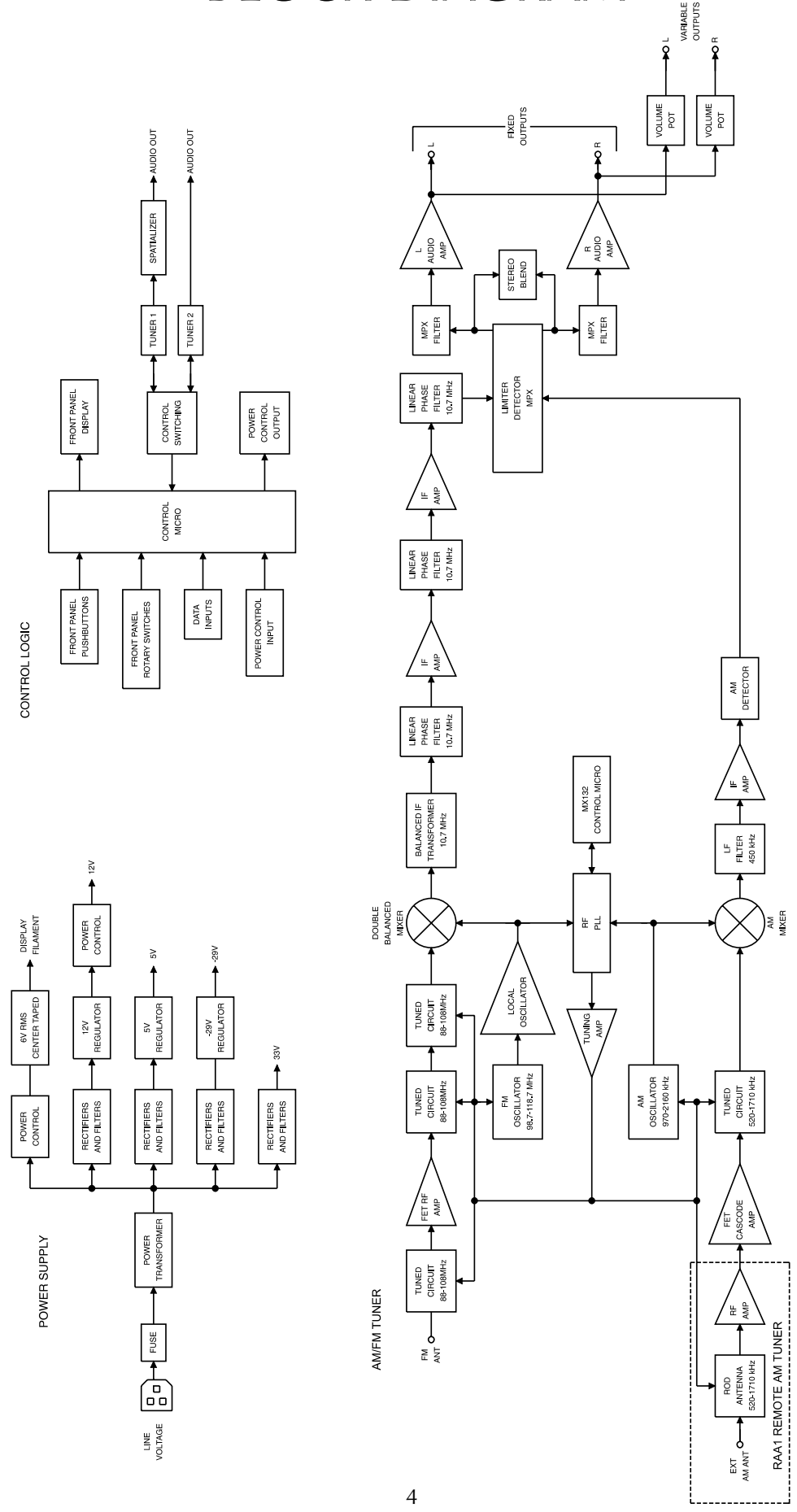
# REAR PANEL



# SECTION LOCATION

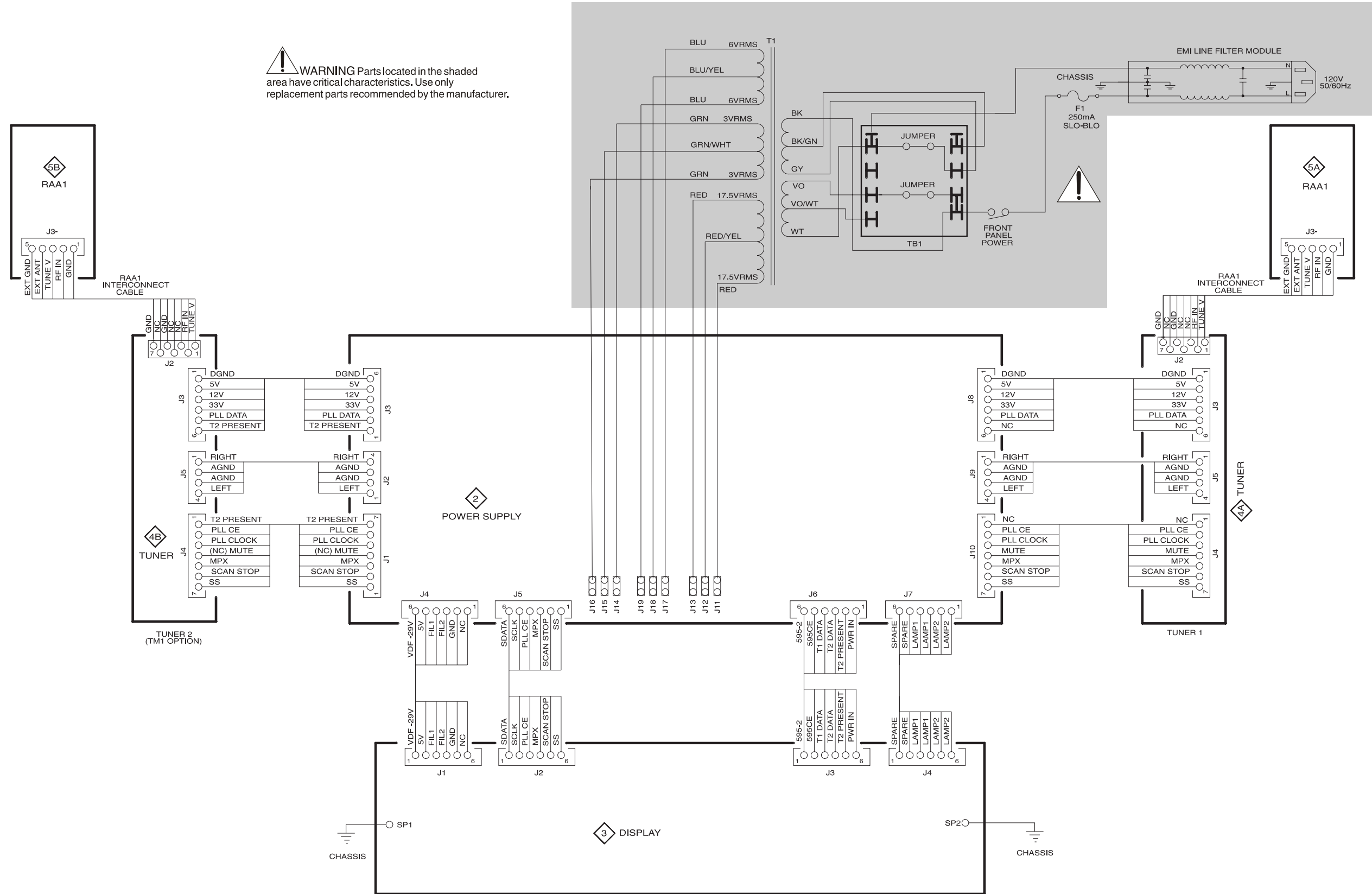


# BLOCK DIAGRAM



# INTERCONNECT

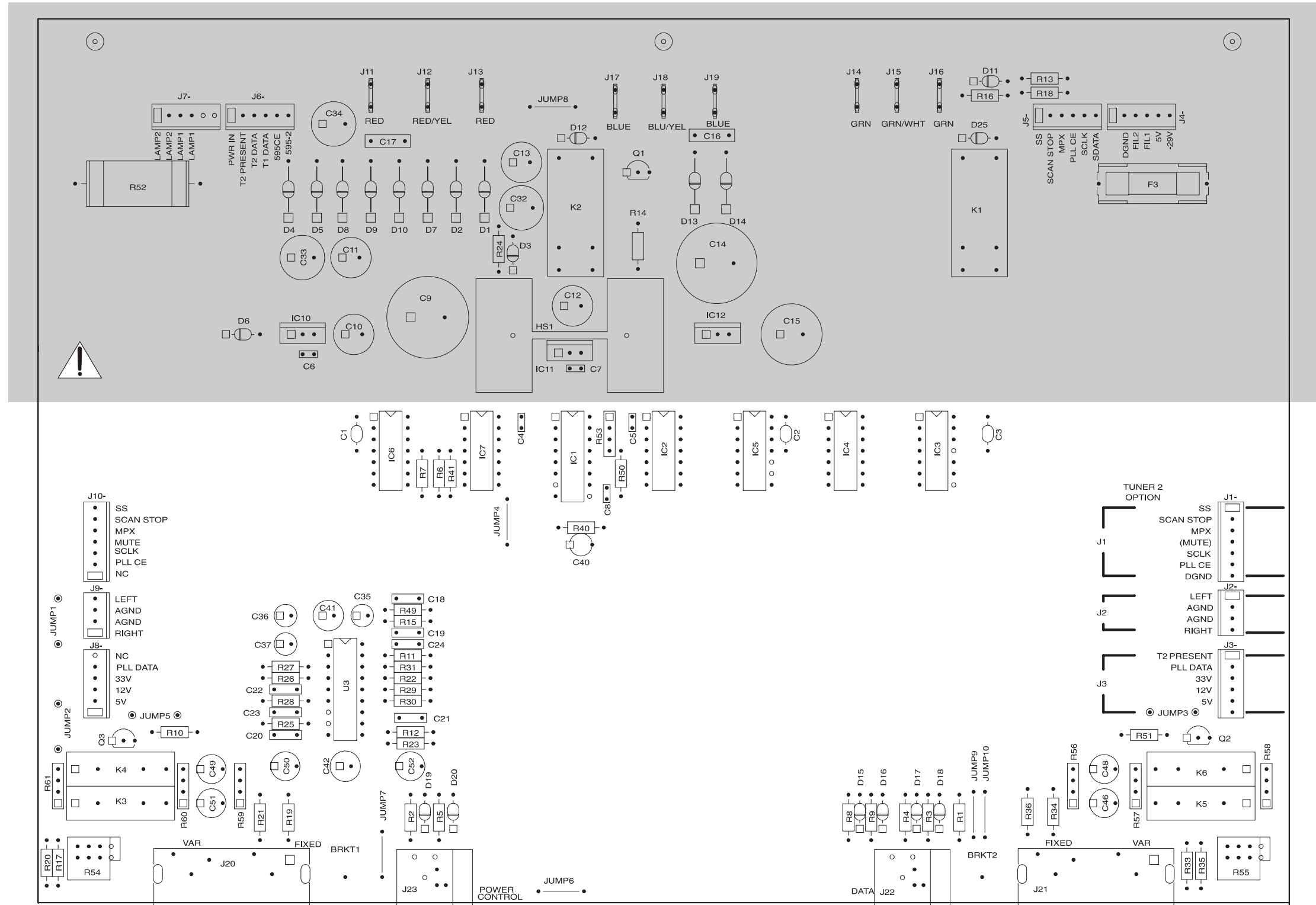
**WARNING** Parts located in the shaded area have critical characteristics. Use only replacement parts recommended by the manufacturer.





**2** POWER SUPPLY 049410

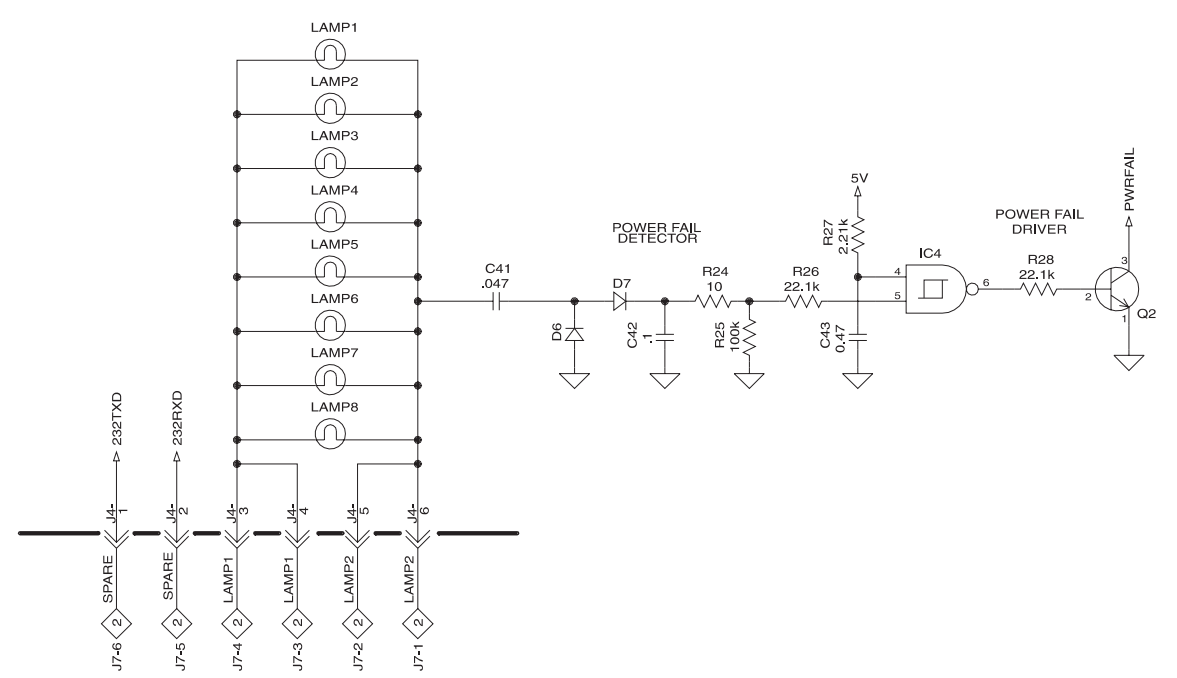
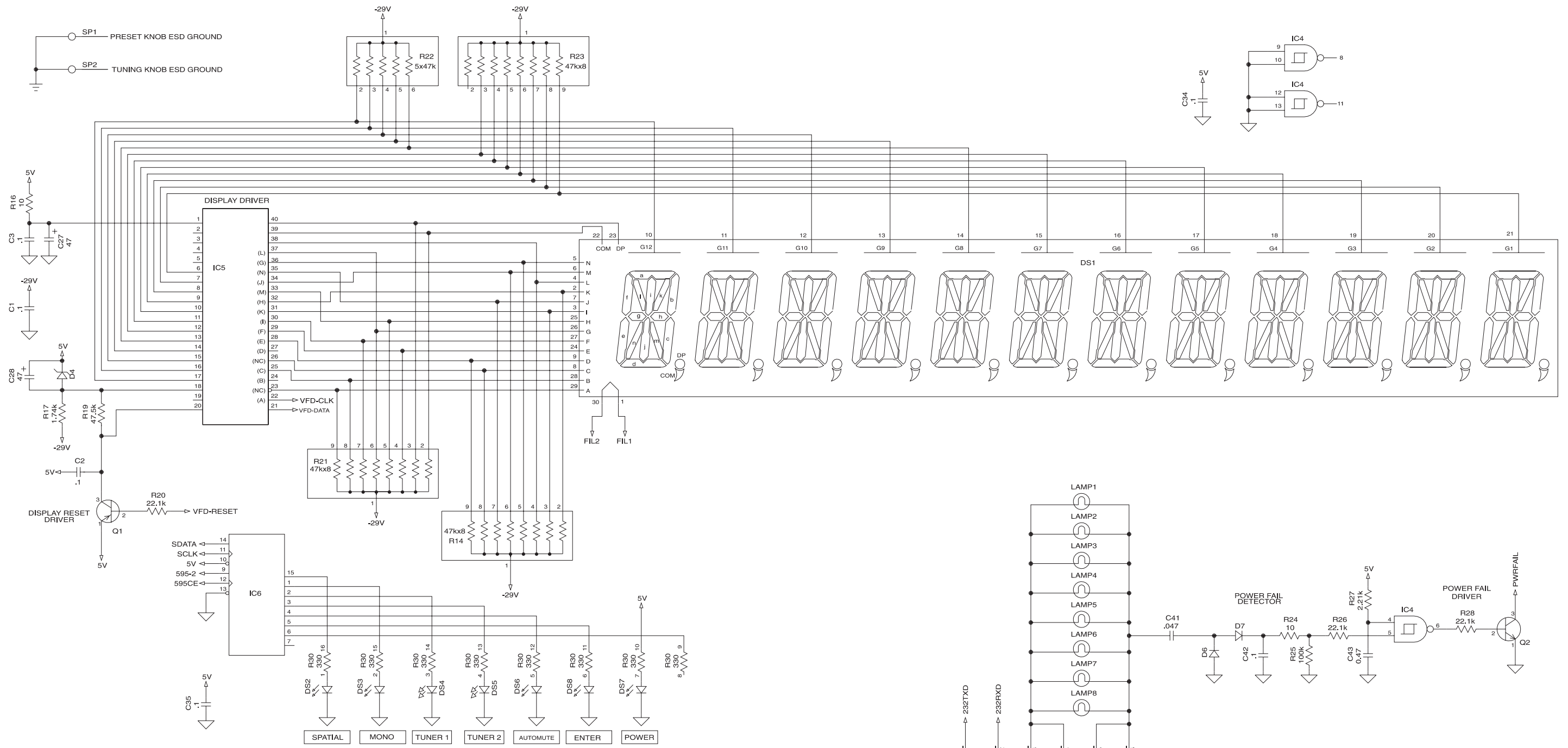
**!** WARNING Parts located in the shaded area have critical characteristics. Use only replacement parts recommended by the manufacturer.



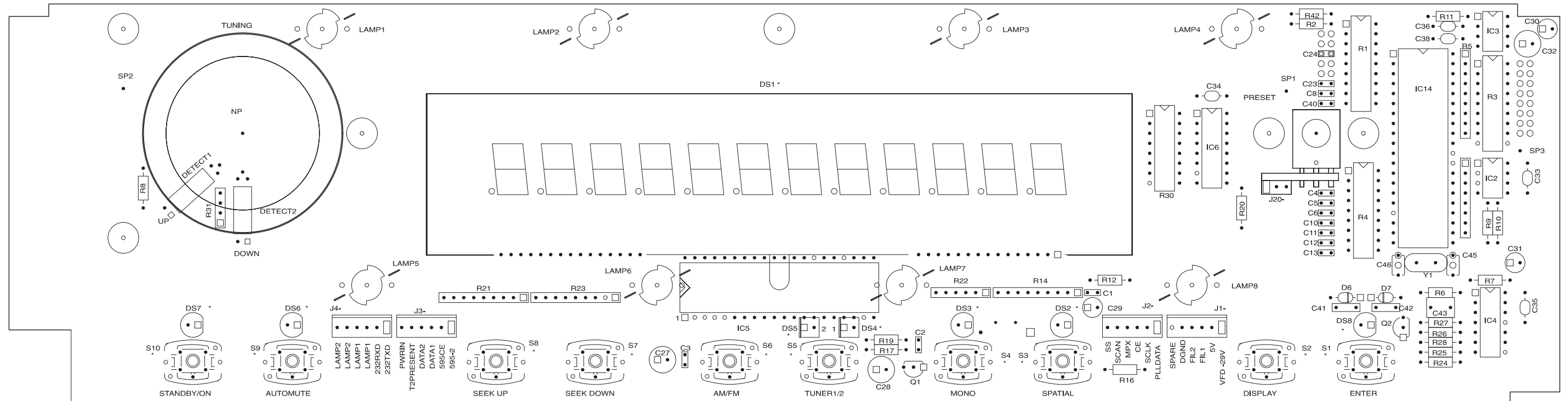




# 3 DISPLAY 049409 2 OF 2



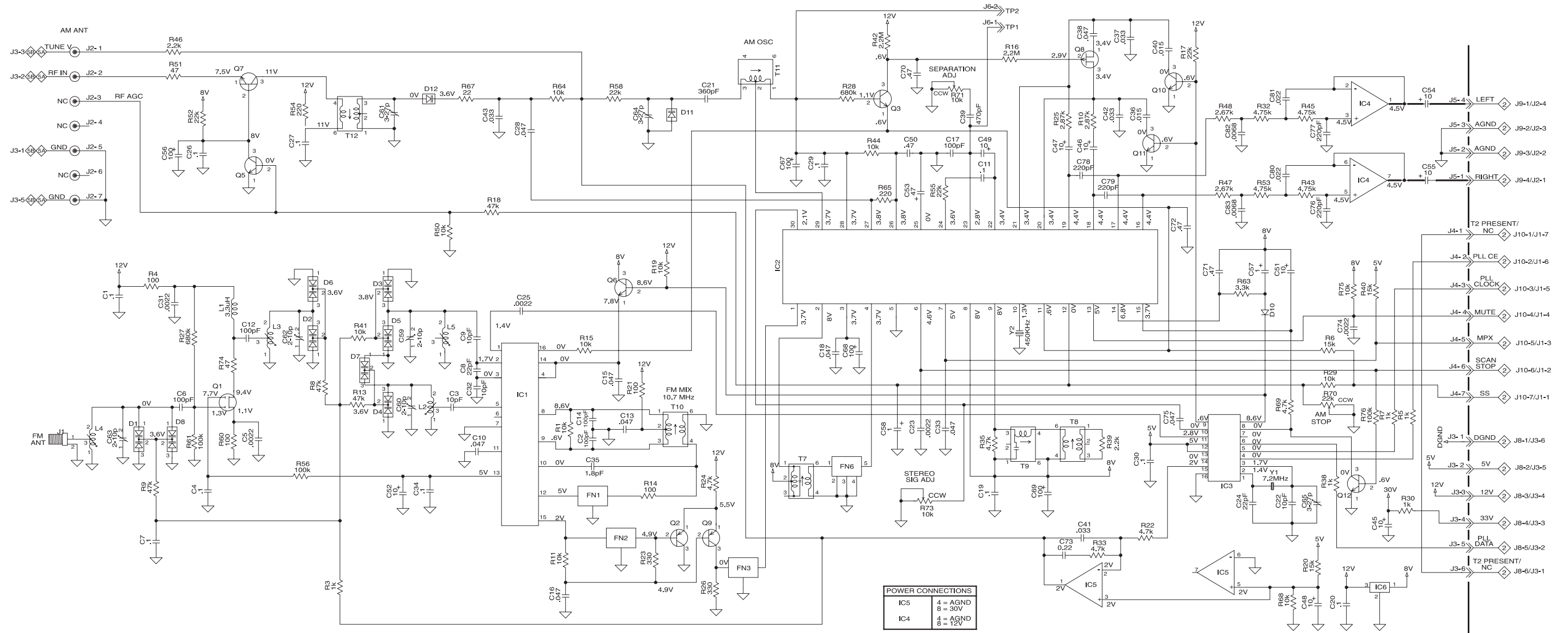
# 3 DISPLAY 049409



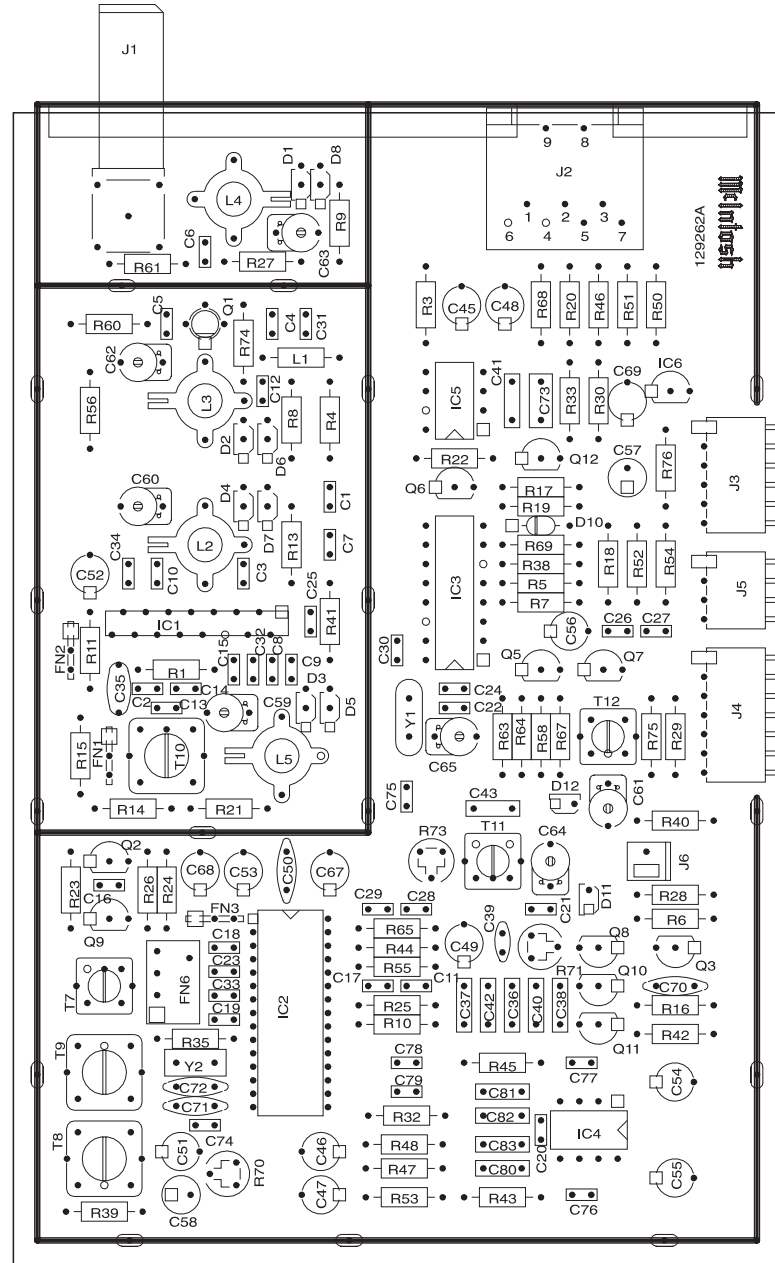
\*DENOTES COMPONENTS LOCATED ON REVERSE OR BACKSIDE OF PC BD

# 4A 4B TUNER 049084

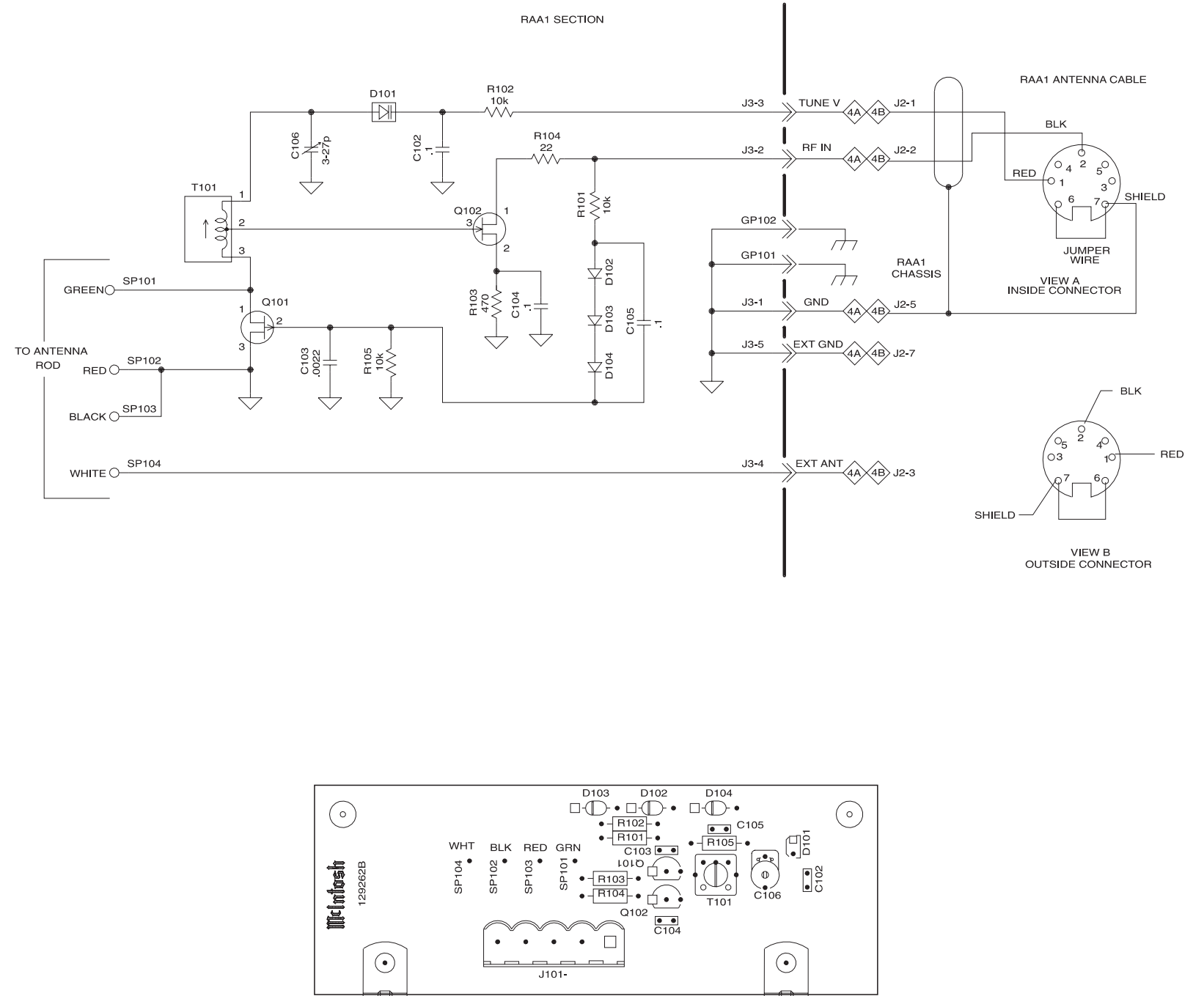
MR85



**4A 4B** TUNER 049084



**5A 5B** RAA1 049084





# PARTS LIST

144351	1.74K 1% 1/4W MF RES	R17	133189	IC OPERATIONAL AMPLIFIER	IC4 IC5
144366	RES NETWORK ISOLATED 2X22K	R31	133231	LA1175 FM FRONT END	IC1
150058	TACT SWITCH	S1 S2 S3 S4	133270	IC DIRECT PLL FREQ SYNTHESIZER	IC3
		S5 S6 S7 S8	133381	AM-FM MPX TUNER IC	IC2
		S9 S10	134406	TRIMPOT 22K	R70
178133	40-PIN IC SOCKET	IC14	134414	POTENTIOMETER: 10K OHM	R71 R73
180051	CRYSTAL 11.0592MHZ	Y1			
			141025	RES CF 100 5% 1/4W	R4 R14 R21
					R60
<b>049084 TUNER/RAA1 PCB</b>					R54 R65
060027	TRIM CAP: 2-10PF	C59 C60 C62	141033	RES CF 220 5% 1/4W	R23 R26
		C63	141037	RES CF 330 5% 1/4W	R103
060029	3-27PF TRIMMER CAPACITOR	C61 C64 C65	141041	RES CF 470 5% 1/4W	R3 R5 R7 R30
		C106	141049	RES CF 1.0K 5% 1/4W	R38
061002	DISC CAP: 1.8PF+/- .25PF NPO	C35			R39 R46
061249	DISC CAP: .47UF 50V MONOLITHIC	C50 C70 C71	141057	RES CF 2.2K 5% 1/4W	R63
		C72	141060	RES CF 3.3K 5% 1/4W	R22 R24 R33
061256	M.CAP: 470PF,5%,100V	C39	141064	RES CF 4.7K 5% 1/4W	R35 R69
061257	360PF 5% 100V	C21			R1 R11 R15
061273	220PF 5% 100V NPO	C76 C77 C78	141072	RES CF 10K 5% 1/4W	R19 R29 R41
		C79			R44 R50 R64
061275	MONO CAP: 100PF,5%,100V,NPO	C2 C6 C12			R68 R75 R101
		C14 C17			R102 R105
061277	MONO CAP 0.1MF 20% 50V	C1 C4 C7 C11			R6 R20 R40
		C19 C20 C26	141076	RES CF 15K 5% 1/4W	R17 R52 R55
		C27 C29 C30	141080	RES CF 22K 5% 1/4W	R58
		C34 C102			R8 R9 R13
		C104 C105	141088	RES CF 47K 5% 1/4W	R18
061282	22PF 10% 100V CAPACITOR	C8 C24			R56 R61 R76
061286	MONO CAP .047UF 10% 50V RADIA	C10 C13 C15	141096	RES CF 100K 5% 1/4W	R27 R28
		C16 C18 C28	141116	RES CF 680K 5% 1/4W	R16 R42
		C33 C75	141124	RES CF 2.2M 5% 1/4W	R67 R104
061287	MONO CAP .0022UF 10% 50V RADIA	C5 C23 C25	141144	RES CF 22 5% 1/4W	R51 R74
		C31 C74 C103	141152	RES CF 47 5% 1/4W	R32 R43 R45
061288	MONO CAP 10PF 10% 100V	C3 C9 C22	144097	METAL FILM RES: 4.75K 1% 1/4W	R53
		C32			R47 R48
064310	M POLY CAP:.0068MF,10%,63V DC	C82 C83	144121	METAL FILM RES: 2.67K 1% 1/4W	R10 R25
064314	M POLY CAP:.015UF,5%,63V DC	C36 C40	144142	METAL FILM RES 2.87K 1% 1/4W	T9
064316	M POLY CAP:.022UF,5%,63V DC	C80 C81	162102	TRANSFORMER: QUAD DET PRIM	T8
064318	M POLY CAP:.033UF,5%,63V DC	C37 C41 C42	162103	TRANSFORMER: QUAD DET SEC	T7
		C43	162113	TRANSFORMER (MATCHING)	T10
064320	M POLY CAP:.047UF 5% 63VDC	C38	162114	10.7MHZ MIXER TRANSFORMER	T11 T101
064329	M POLY CAP 0.22UF 5%	C73	162115	AM OSC. COIL	T12
066269	CAP ELECT 1UF 10% 50V	C57 C58	162117	AM RF TRANSFORMER	Y1
066445	ELECT CAP 10MF, 50V AMMO PACK	C45 C46 C47	180036	CRYSTAL 7.2MHZ	Y2
		C48 C49 C51	180046	CERAMIC RESONATOR 450KHZ	FN6
		C52 C54 C55	180055	FILTER 450KHZ	FN1 FN2 FN3
		C53	180056	FILTER CERAMIC 10.7MHZ	
		C56 C67 C68			
		C69	<b>049106 SWITCH PCB</b>		
070047	SILICON DIODE 1N4148 T&R	D10 D102	117670	CONNECTOR 3-PIN RIGHT ANGLE	J1-
		D103 D104	146249	SWITCH PULSE ROTARY	S1
070122	(8) DIODE TUNING ALL 8 DIODES USED ON JAPANESE VERSION	D1 D2 D3 D4 (D5 D6 D7 D8)			
		D11 D12 D101			
070125	TUNING DIODE	J6			
117213	2-PIN MALE CONNECTOR	J3			
117223	MALE CONN: 6 PIN RT. ANGLE	J5			
117240	4 PIN RT. ANGLE	J4			
117319	CONN, RT.ANGLE, MALE, 7 POS	J2			
117383	DIN CONN 7-PIN	J1			
117661	GOLD F CONNECTOR RIGHT ANGLE	J101-			
117677	HEADER 5 PIN	L1			
122229	RF CHOKE: 3.3UH, 10%	L4 L5			
122249	ANT. COIL	L2 L3			
122250	MIXER COIL	Q102			
132178	TRANSISTOR: RF FET, J-310 FET	Q8 Q101			
132220	TRANSISTOR: 1-4V,PNC OFF 250 OH	Q3 Q5 Q6 Q7			
132223	TRANSISTOR NPN MPS4124 2K/REEL	Q10 Q11 Q12			
		Q2 Q9			
132224	TRANSISTOR PNP SI MPS4126 2K/R	Q1			
132256	#3SK114Y (Q1) D MOS FET	IC6			
133147	MC78L08ACP +8V REG				

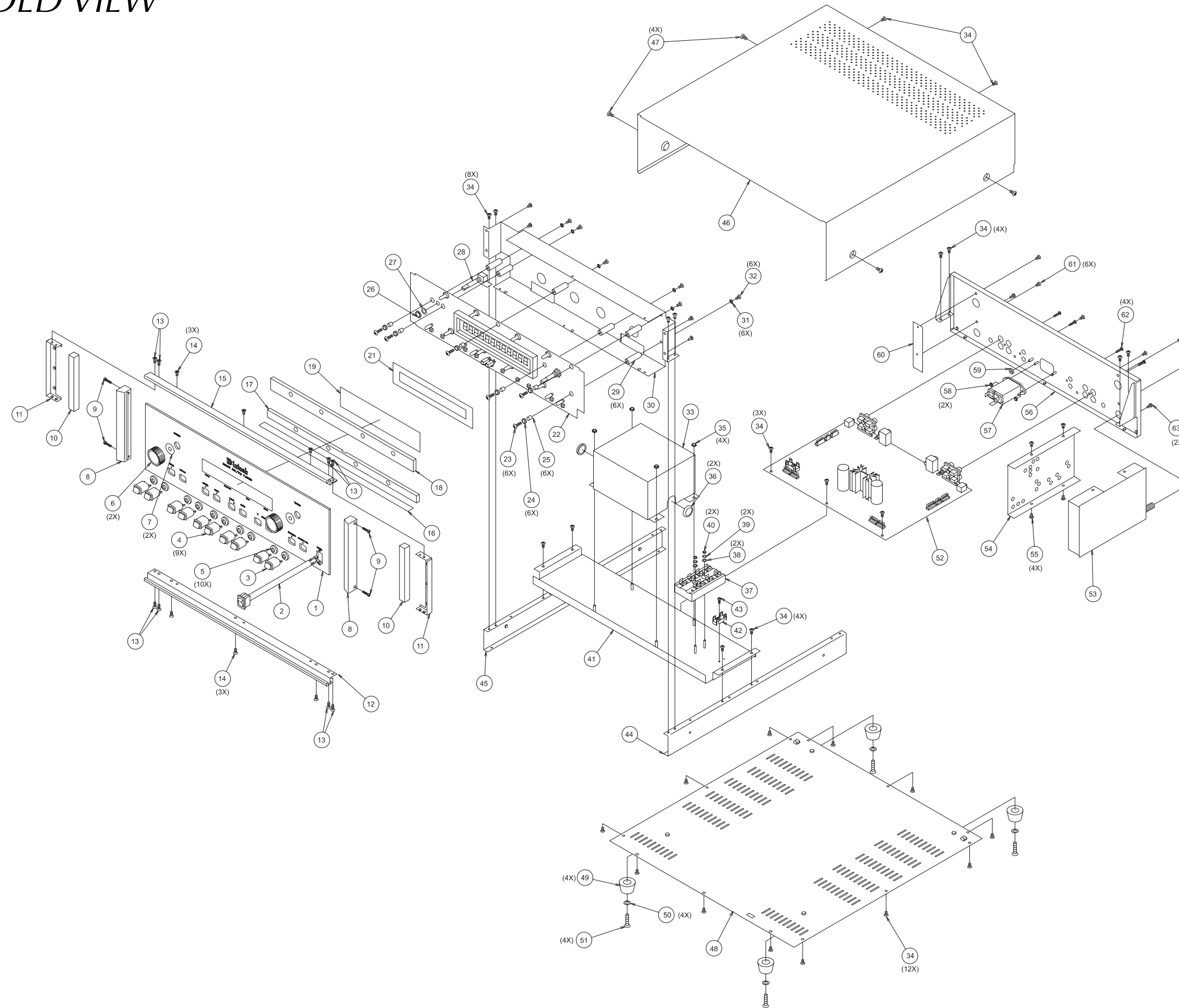
# NOTES

# EXPLODED VIEW PARTS LIST

<i>Ref. No.</i>	<i>Part No.</i>	<i>Description</i>
1	016419	FRONT GLASS
2	171320	C/A SWITCH
3	017531	PUSHBUTTON ASSY RED
4	017517	PUSHBUTTON ASSY
5	078033	O-RING
6	049411	KNOB ASSY
7	104073	BLK FELT WASHER
8	018611	5" ENDCAP
9	101042	TS 4-40 X 1/2 SLOT FILLISTER
10	094360	FOAM TAPE 1/2 X1/2
11	004810	EXTRUSION BRACKET 5"
12	018609	BOTTOM EXTRUSION
13	101172	TCS 6-32 X 1/4 PHIL FLAT U/C
14	100147	MS 6-32 X 3/16 PHIL FLAT U/C
15	018587	TOP EXTRUSION
16	022314	LED SHIELD
17	017806	PLEXIGLAS LOWER
18	017805	PLEXIGLAS UPPER
19	017738	FRONT PANEL FILTER
21	017737	VINYL LOCATOR
22	049409	DISPLAY PCB ASSY
23	100275	MS 6-32 X 1/2 PHIL BLK TRUSS HD
24	078031	GROMMET
25	021030	SPACER: 6 X 1/4
26	110004	M7 X .75 HEX CONTROL NUT
27	104013	LK WASH: 5/16 X .435 X .002 INT STAR
28	049106	SWITCH PCB ASSY
29	021063	STANDOFF: 6-32 X 1-1/8 HEX
30	005077	SUBPANEL
31	104007	LK WASH: 6 X .288 INT STAR
32	100157	MS 6-32 X 1/4 PHIL PAN ZINC
33	005072	TRANSFORMER CAN
34	101054	TS 6-32 X 1/4 PHIL PAN TAPTITE BLK
35	102045	KEP-NUT 6-32 SPECIAL
36	078017	GROMMET 3/4 X 9/16
37	074091	AC TERMINAL BLOCK
38	104001	FLAT STEEL WASH #4 X 9/32 X .025
39	104004	LK WASH: 5 X .255 INT STAR
40	102022	MN 4-40 3/16 X 1/16
41	005073	CHASSIS TRAY
42	178160	FUSE HOLDER
43	100284	SEMS 2-56 X 1/4 PHIL PAN
44	004943	RIGHT SIDE PANEL
45	004942	LEFT SIDE PANEL
46	004940	TOP COVER
47	101078	TS 8-32 X 5/16 PHIL PAN BLK
48	004860	BOTTOM COVER
49	017218	PLASTIC FEET-BLACK
50	104080	FLAT WASHER #10 CLEAR ZINC
51	100159	MS 10-32 X 3/4 PH PAN BLK ZINC
52	049410	POWER PCB ASSY
53	049084	TUNER ASSY/RAA1
54	004903	TUNER COVER
55	101097	TS 6-32 X 3/16 PHIL PAN TAP
56	005070	REAR PANEL
57	117711	AC RECEPT WITH LINE FILTER
58	102001	KEP NUT 4-40 CADMIUM PLATE
59	102020	MACH NUT: 6-32 SELF-LOCK
60	005078	REAR PANEL PLUG
61	100250	SEMS MS 6-32 X 1/4 PHIL PAN
62	101114	SM 4-24 X 1/2 PHIL PAN TYPE A
63	101109	TS 6-32 X 5/16 PHIL PAN TAPTITE



# EXPLODED VIEW



# REPACKING INSTRUCTION

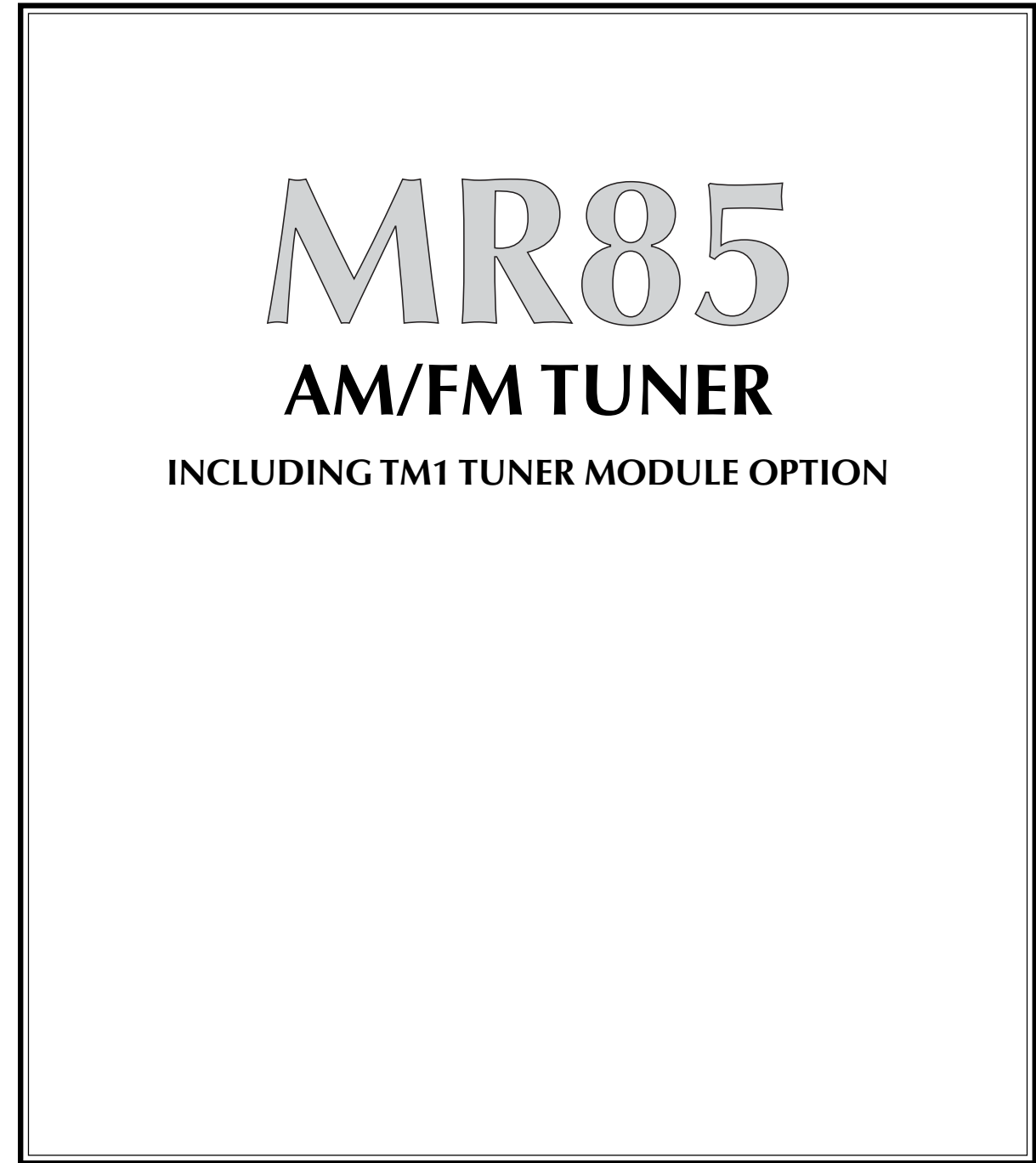
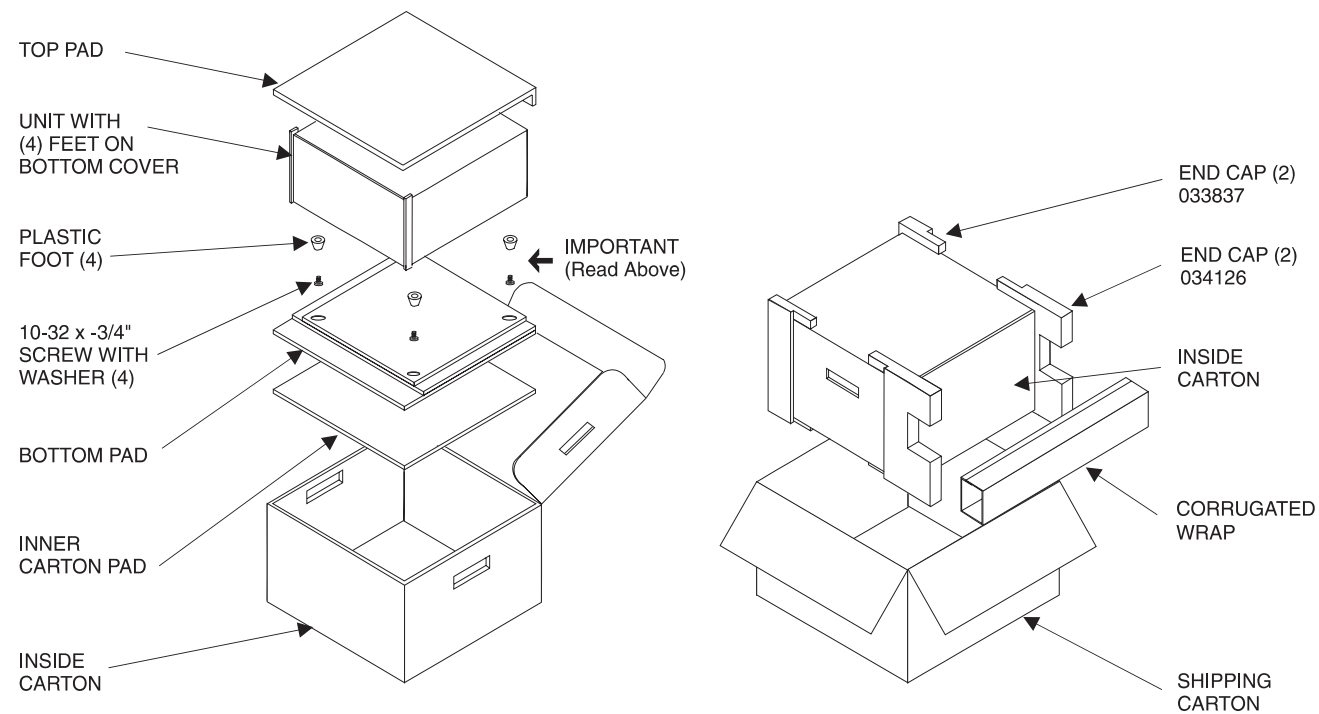
In the event it is necessary to repack the unit for shipment, the unit must be packed exactly as shown below.

**IMPORTANT** - The four plastic feet must be attached to the bottom of the unit so they will locate in the four holes of the bottom pad. Failure to do this will result in shipping damage.

If a shipping carton or any of the interior parts is needed, please call or write the Customer Service Department of McIntosh Laboratory. Order parts from the accompanying list by part number.

Use the original shipping carton and interior parts only if they are in good serviceable condition.

Qty.	Part No.	Description
1	034125	Shipping carton only
2	033837	End cap (Foam pad)
2	034126	End cap (Foam Pad)
1	034044	Corrugated wrap
1	033836	Inside carton only
1	033725	Top pad
1	034008	Bottom pad
1	034037	Inner Carton Pad
4	017218	Plastic foot
4	100159	#10-32 x 3/4" Machine screw
4	104083	#10 x 7/16" Flat washer



# SERVICE MANUAL

The continuous improvement of its products is the policy of McIntosh Laboratory Incorporated, who reserve the right to improve design without notice. Because of the constant upgrading of McIntosh products' circuitry and components, the Company cannot insure, and does not warrant, the accuracy of the within schematic material, which is intended for information only.