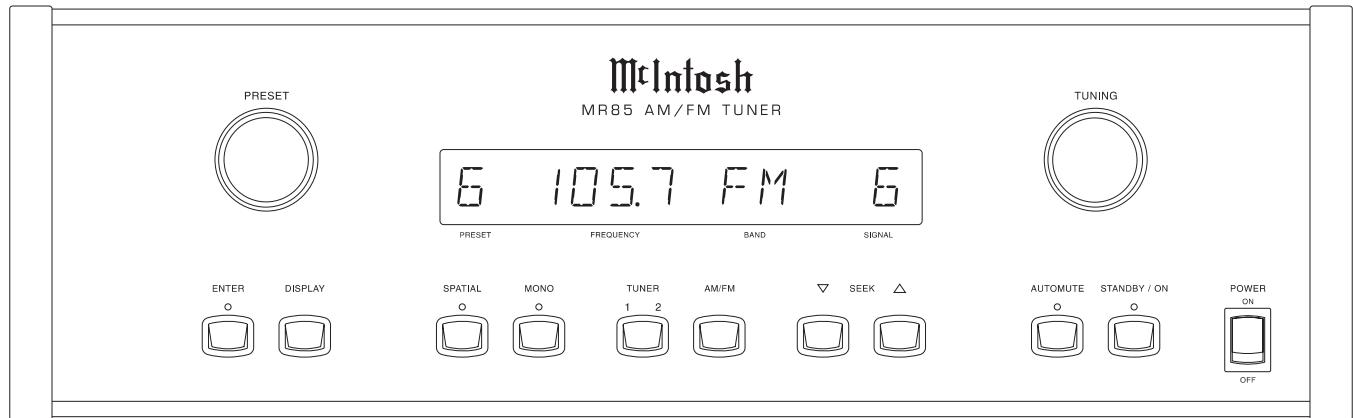


MR85

AM/FM TUNER

INCLUDING TM1 TUNER MODULE OPTION



CONTENTS

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McIntosh
SERVICE MANUAL

PERFORMANCE SPECIFICATIONS

FM Tuner Specifications

Useable Sensitivity

14dB_F which is 1.4uV across 75 ohms

50dB Quieting Sensitivity

Mono: 19dB_F which is 2.4uV across 75 ohms

Stereo: 35dB_F 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)

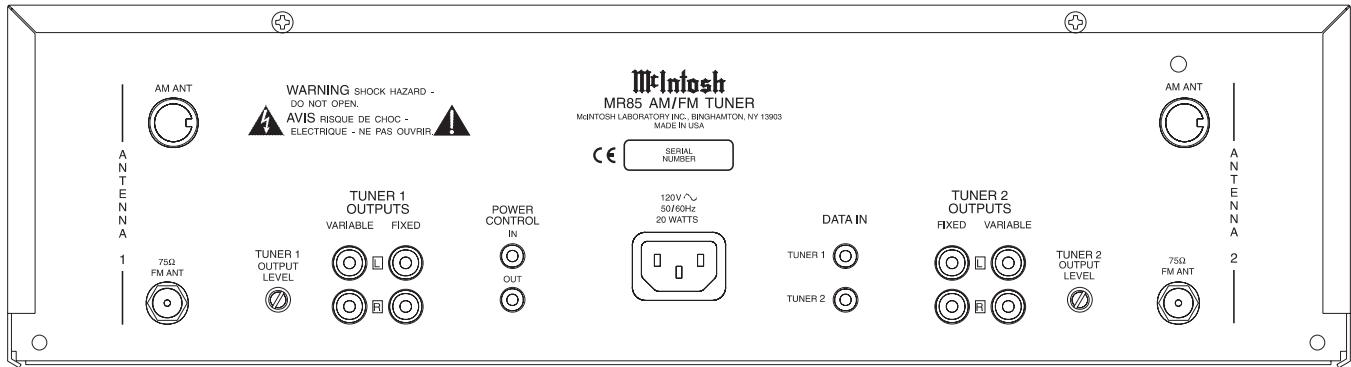
Weight

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

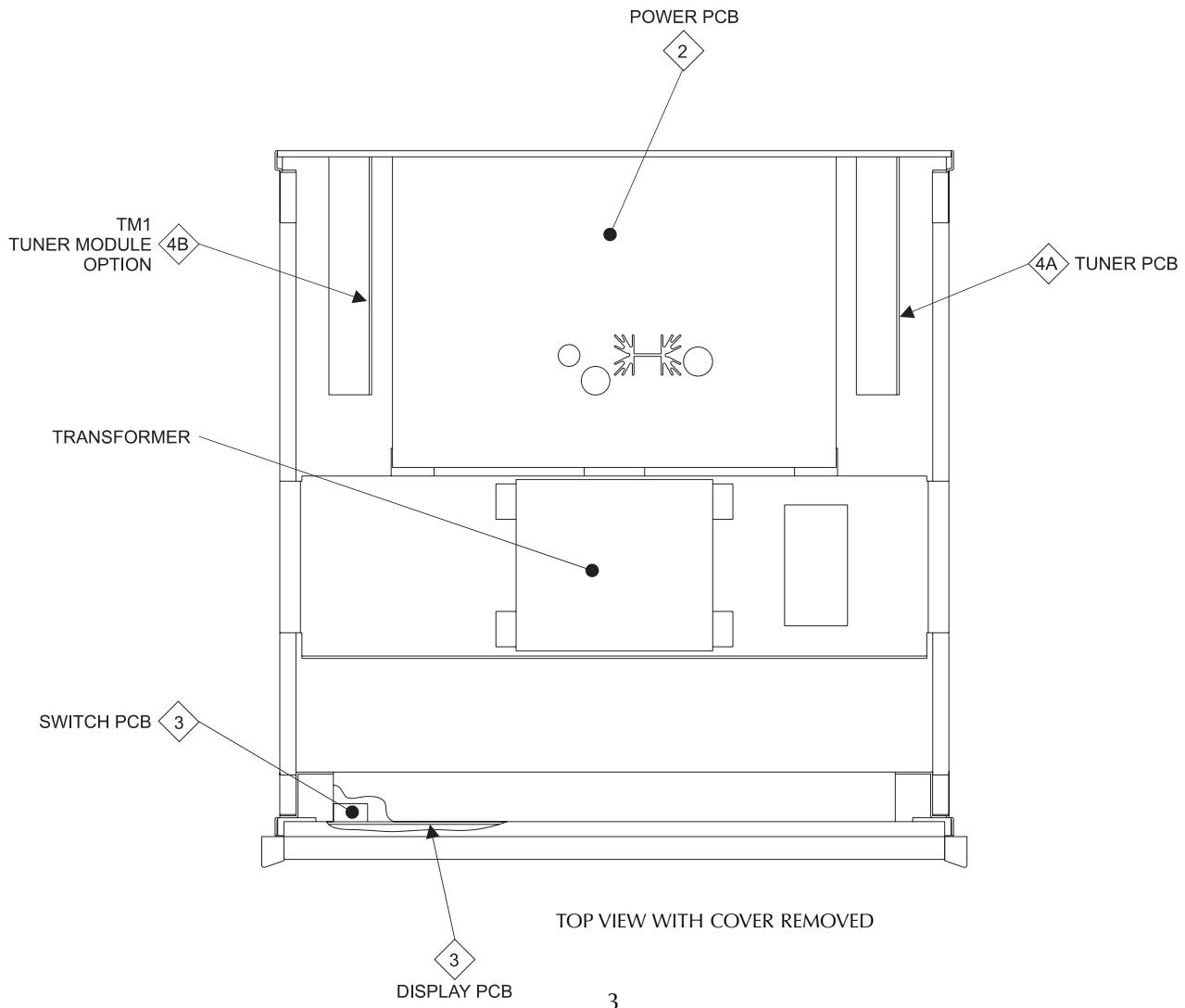
NOTES

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.

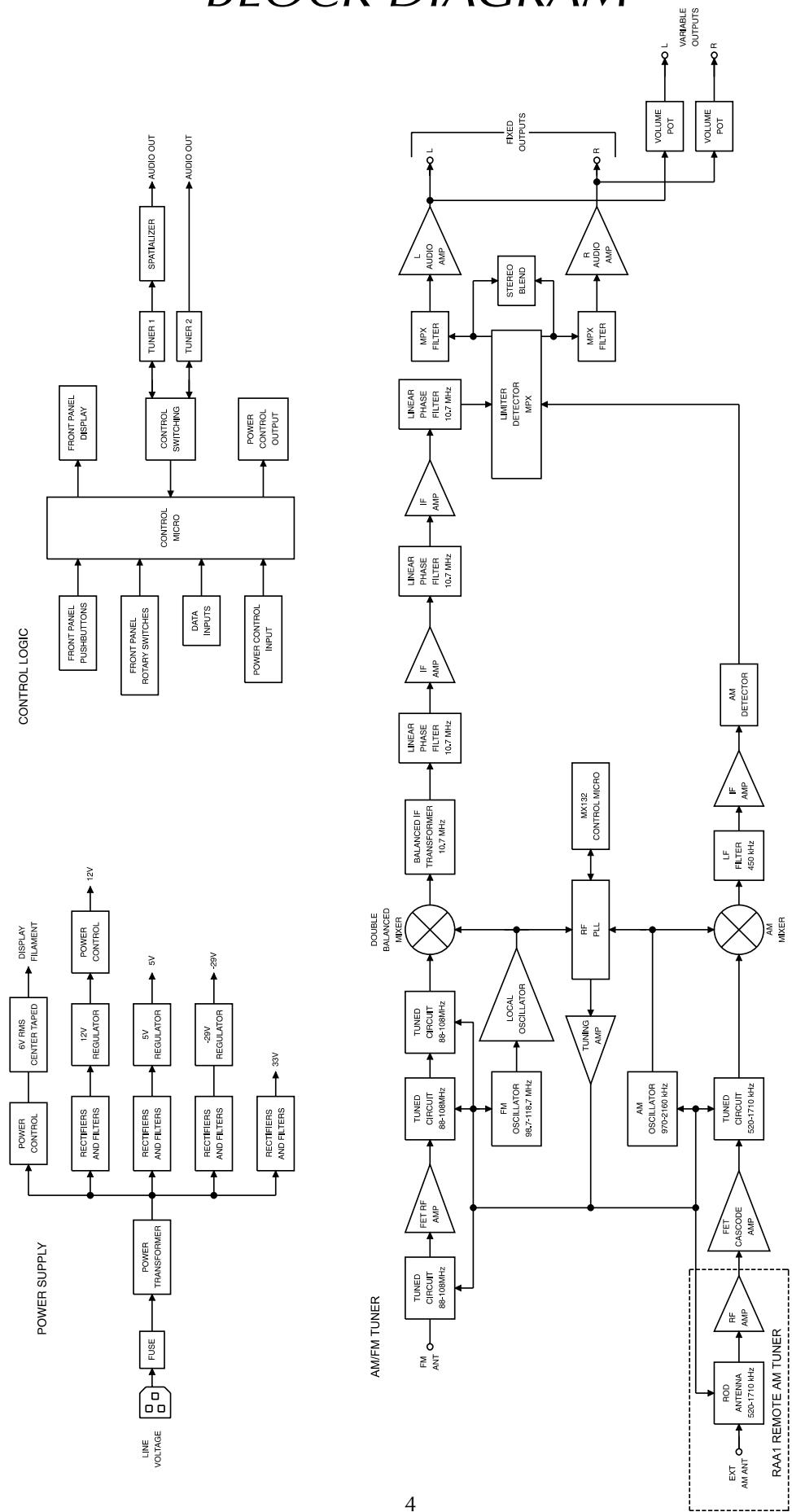
REAR PANEL



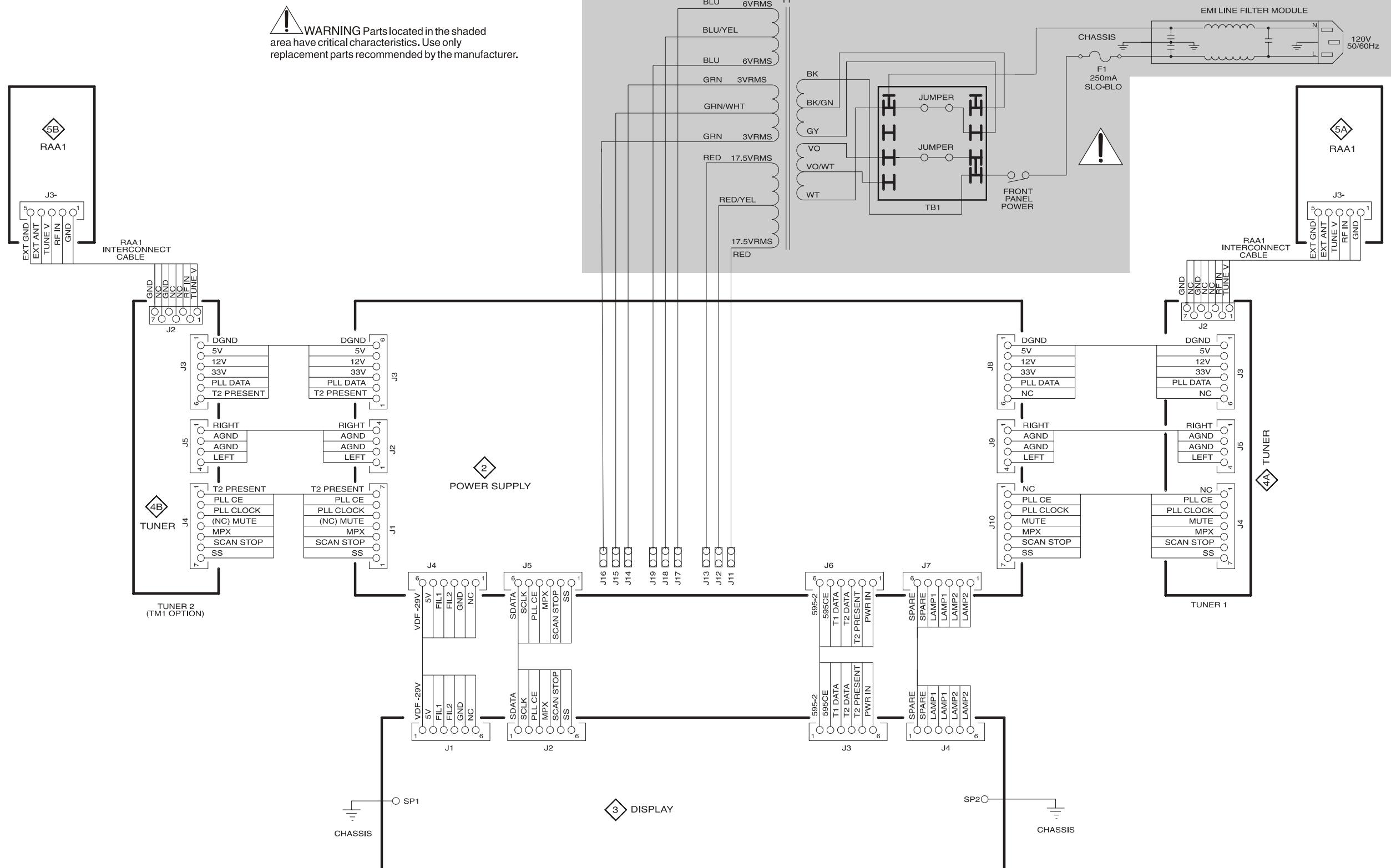
SECTION LOCATION



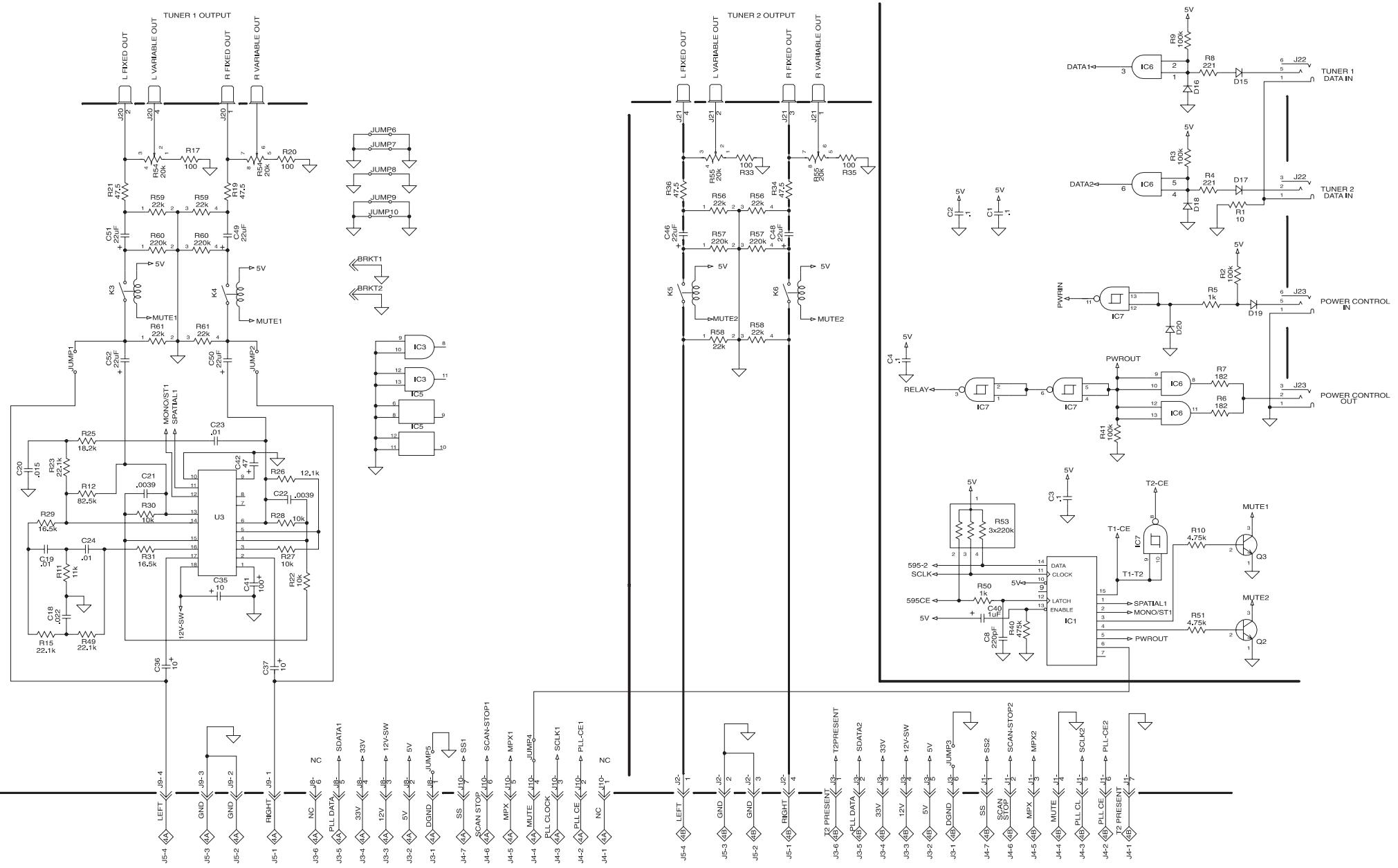
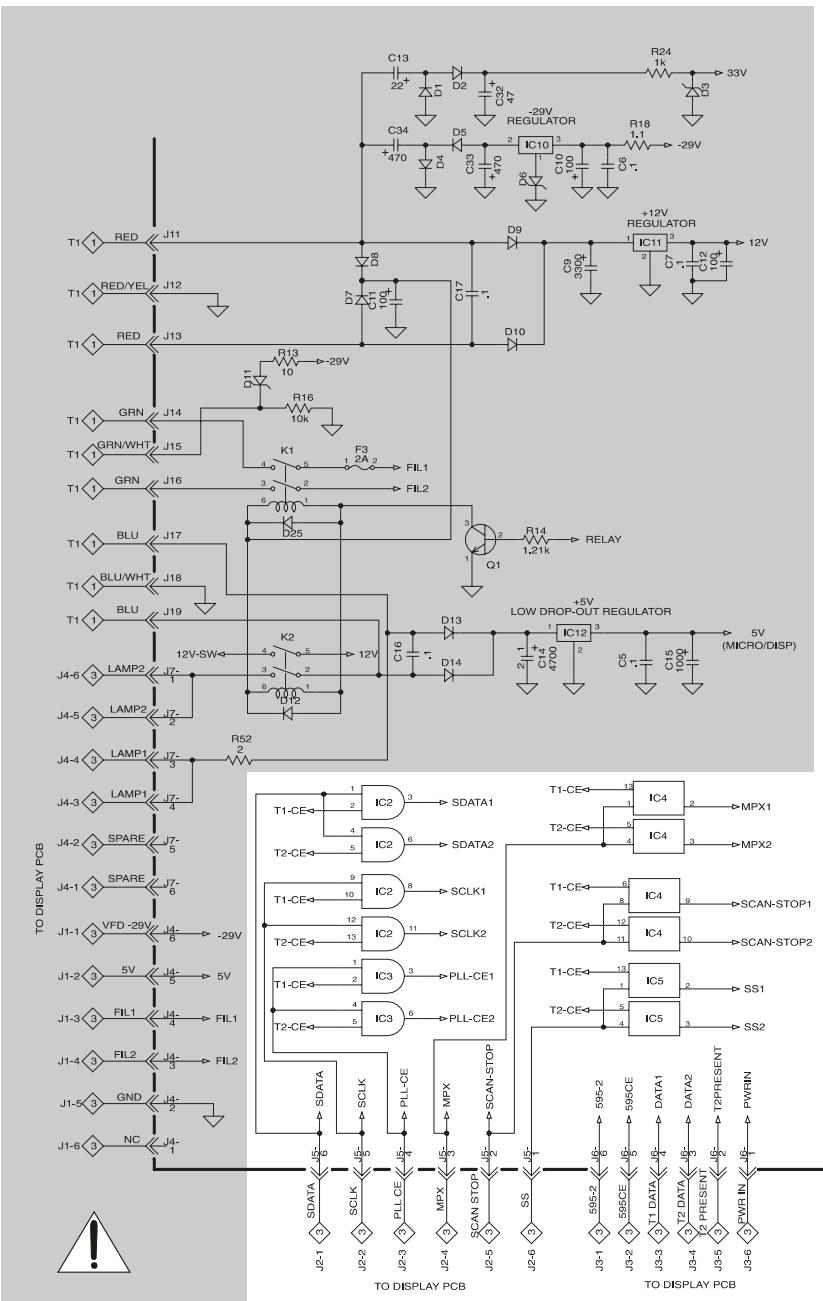
BLOCK DIAGRAM



INTERCONNECT



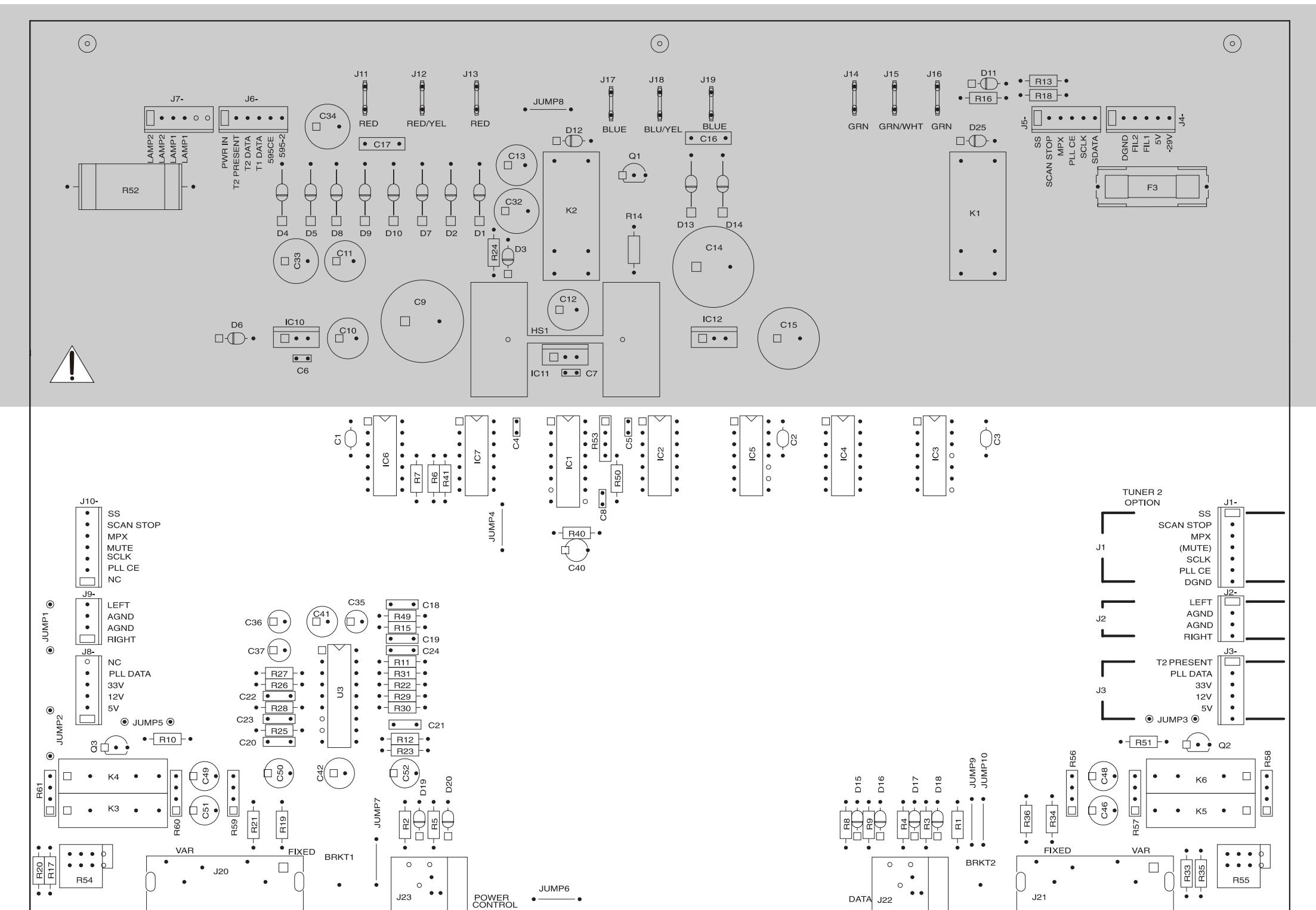
2 POWER SUPPLY 049410



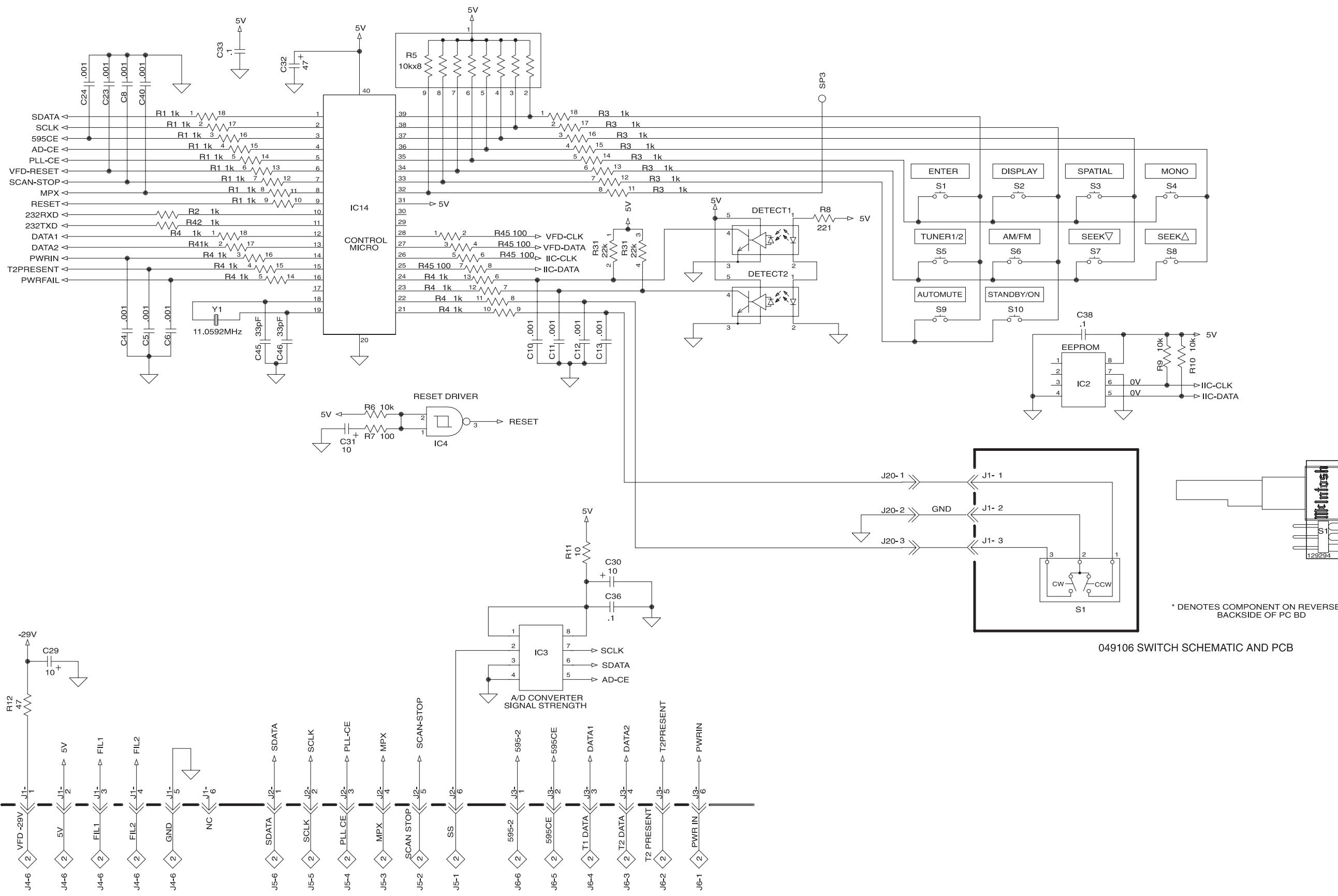
WARNING Parts located in the shaded area have critical characteristics. Use only replacement parts recommended by the manufacturer.

2 POWER SUPPLY 049410

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

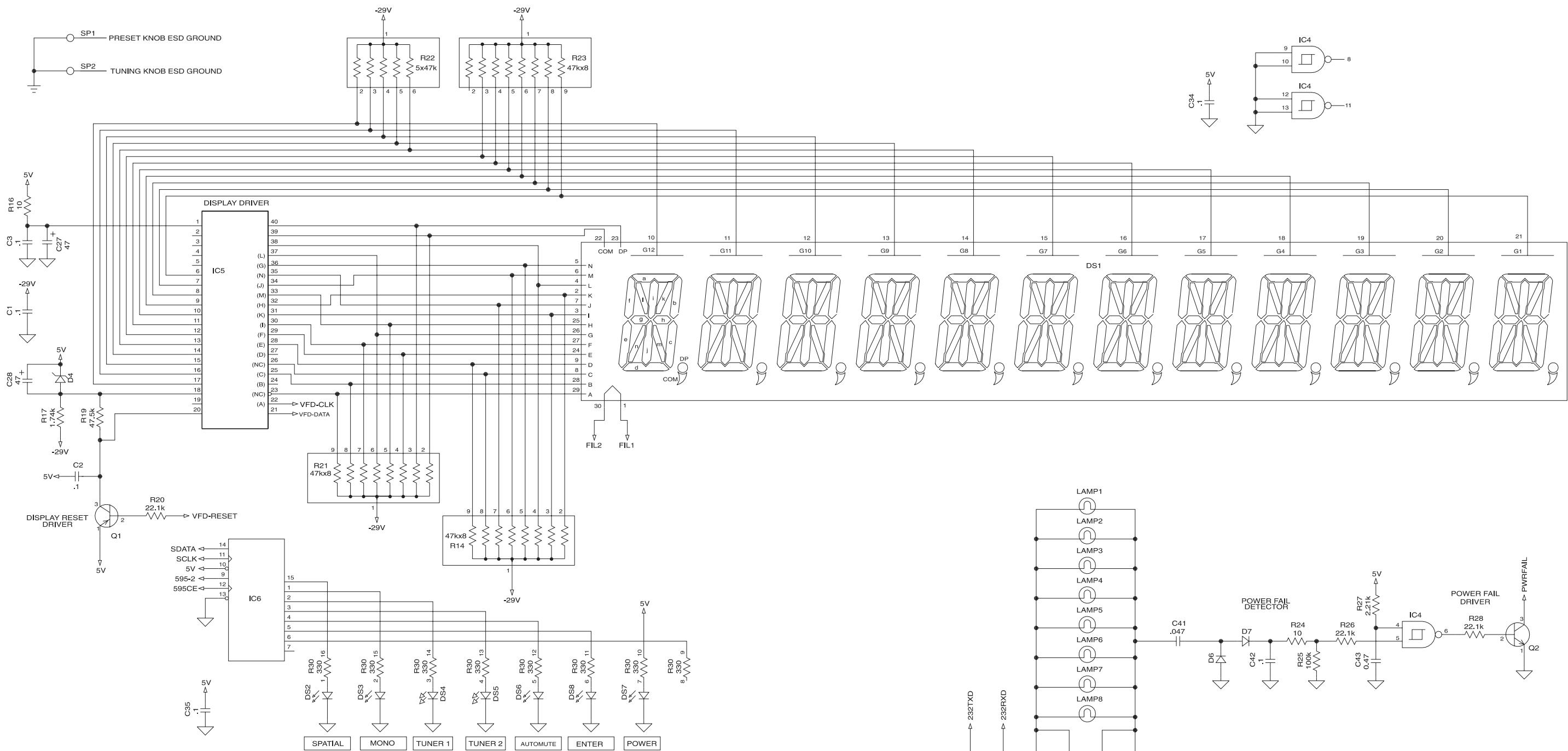


3 DISPLAY 049409 1 OF 2

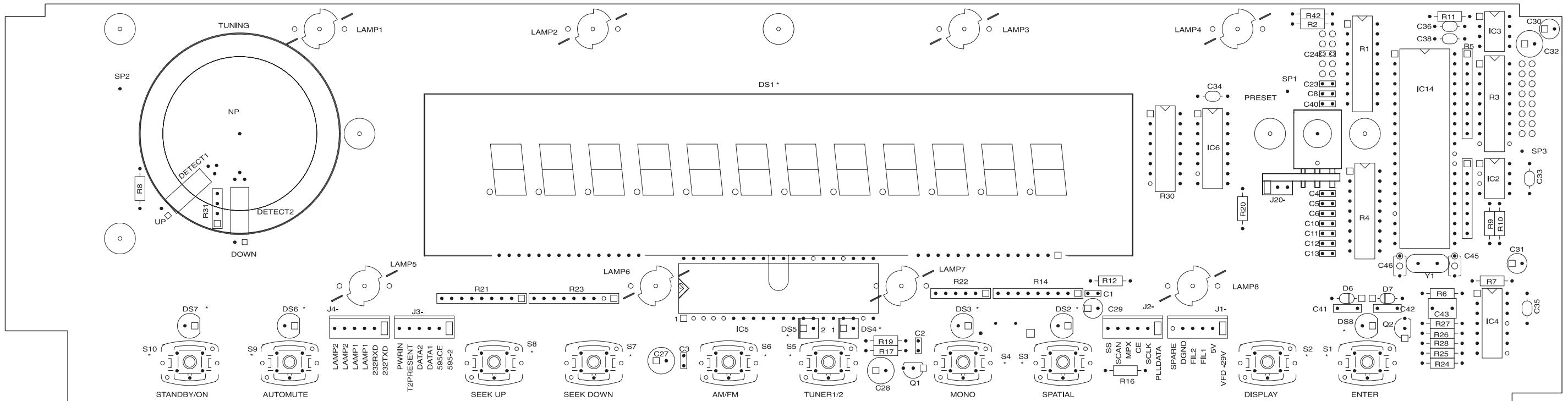


DENOTES COMPONENT ON REVERSE OR
BACKSIDE OF PC BD

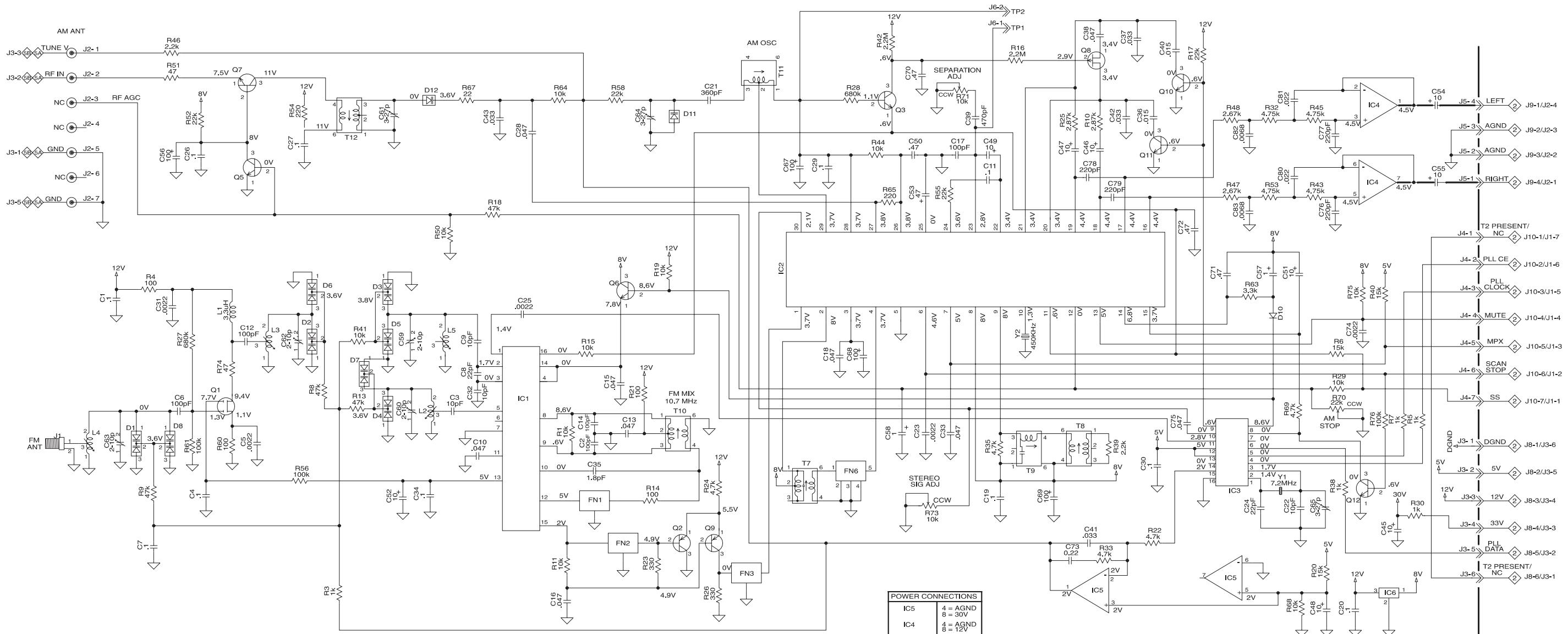
3 DISPLAY 049409 2 OF 2



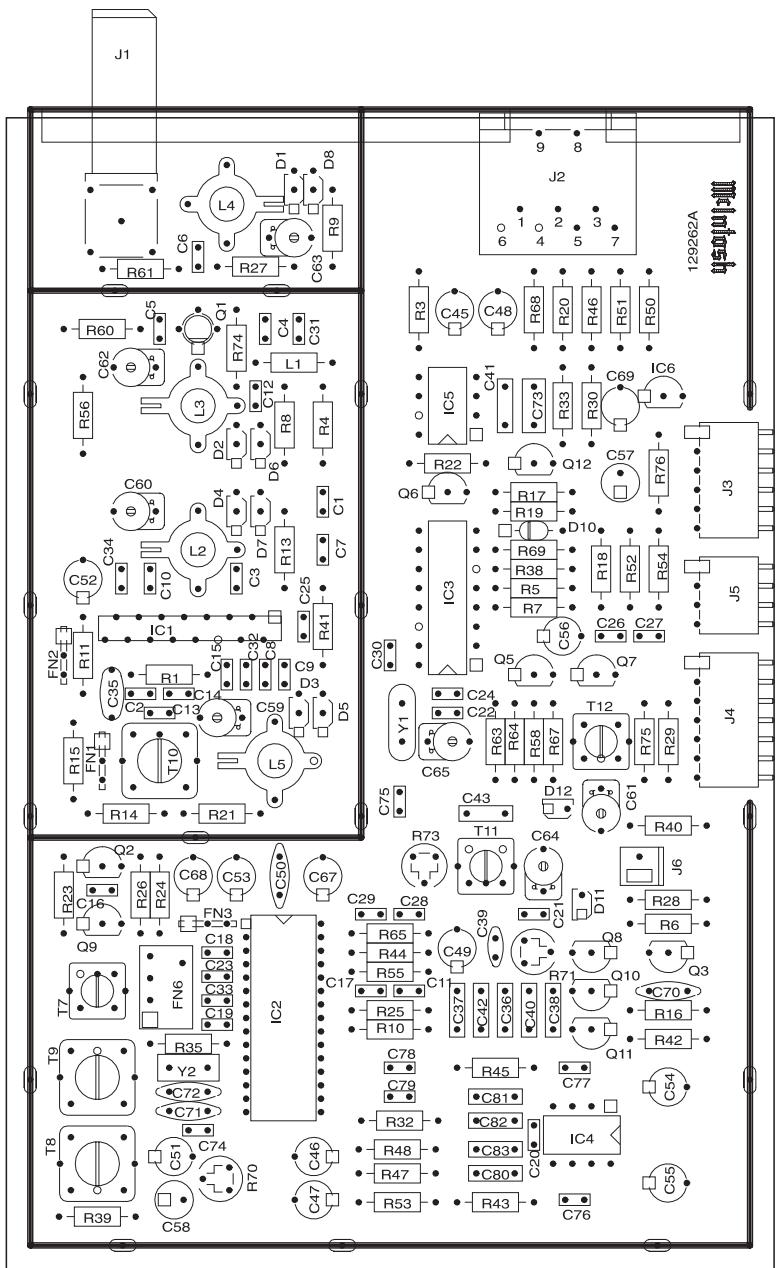
3 DISPLAY 049409



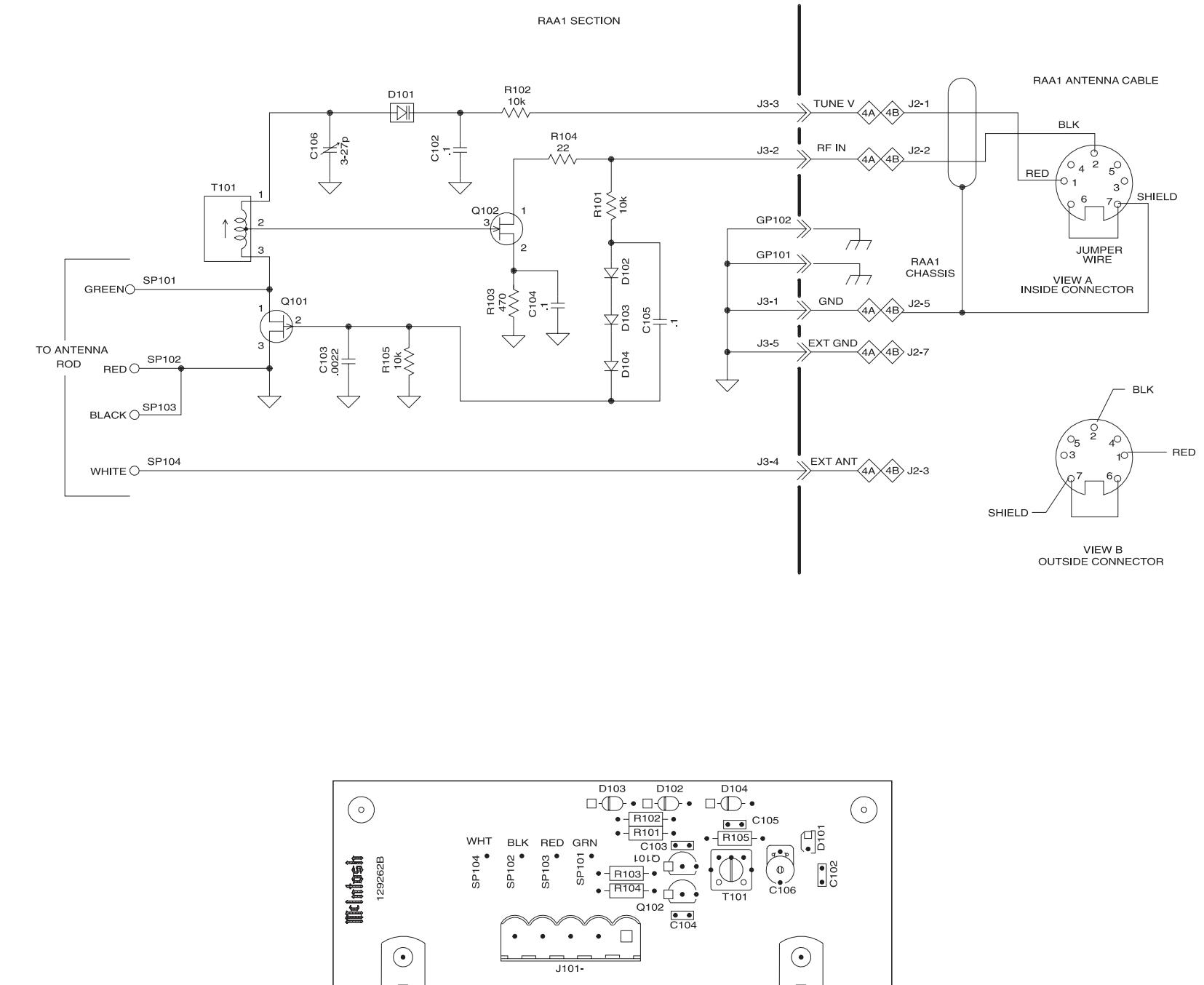
*DENOTES COMPONENTS LOCATED ON REVERSE OR BACKSIDE OF PC BD

4A 4B TUNER 049084


4A **4B** *TUNER* 049084



5A **5B** RAA1 049084



PARTS LIST

PART NO	DESCRIPTION	REF NO		
INTERCONNECT				
171320	SWITCH CABLE ASSY	144101	RES MF 11K 1% 1/4W	
117711	AC INPUT LINE FILTER	144103	RES 16.5K 1% 1/4W	
089101	FUSE, 250mA SLO-BLO 5 X 20	EM1	144112	RES MF 82.5K 1%
159327	MR85 POWER TRANSFORMER	F1	144113	RES MF 100K 1% 1/4W
074091	AC TERMINAL BLOCK	T1	144154	RES MF 12.1K 1% 1/4W
		TB1	144157	RES MF 10 1% 1/4W
			144172	RES MF 221 1% 1/4W
			144181	RES MF 18.2K 1% 1/4W
049410 POWER SUPPLY PCB			R11	
003611	CARD MOUNTING BRACKET	BRKT1	144187	RES MF 22.1K 1% 1/4W
		BRKT2	144191	RES MF 1.21K 1% 1/4W
061268	MONO CAP .1UF, 50V, Z5U 220PF 5% 100V NPO	C1 C2 C3	141196	RES CF 100 5% 1/4W
061273		C8		R29 R31
061277	MONO CAP 0.1MF 20% 50V	C4 C5 C6 C7	144262	RES NETWORK 2X220K ISO
064307	CAP M POLY .0039UF 5% 100/250VDC	C21 C22	144273	R12
064312	CAP M POLY .01UF 5% 63VDC	C19 C23 C24	144323	R2 R3 R9 R41
064314	CAP M POLY .015UF 5% 63/250VDC	C20	144364	R26
064316	CAP M POLY .022UF 5% 63VDC	C18	144366	R1
064338	CAP M POLY 0.1MF 100V	C16 C17		R4 R8
066161	CAP ELECT 100UF 25V-50V	C10 C11 C12	144442	R25
066214	CAP ELECT 22UF 100V RADIAL	C13		R15 R23 R49
066215	CAP ELECT 47UF 50V	C42		R14
066221	CAP ELECT 10UF 50V SINGLE END	C35 C36 C37		R17 R20 R33
066278	CAP ELECT 47MF 100V 20%	C32	058109	R35
066344	CAP ELECT 100UF 25V	C41	058150	LED, SQUARE TYPE(RED)
066360	CAP ELECT 3300UF 35V	C9	058153	DS4 DS5
066404	CAP ELECT 1000MF 16V	C15		DS1
066443	CAP ELECT 4700MF 35V	C14		LAMP1 LAMP2
066469	CAP ELECT 470UF 50V	C33 C34		LAMP3 LAMP4
066506	CAP ELECT 22UF 100V	C46 C48 C49	058155	LAMP5 LAMP6
		C50 C51 C52		LAMP7 LAMP8
066510	CAP ELECT 1UF 50V	C40	061262	DETECT1
070047	SILICON DIODE 1N4148 T&R	D12 D15 D16		DETECT2
		D17 D18 D19		
		D20 D25	061268	C4 C5 C6 C8
070085	DIODE ZENER 6.2V 5% 500MW	D11		C10 C11 C12
070121	DIODE ZENER 33V 5% 1/2W	D3	061277	C13 C23 C40
070131	DIODE RECTIFIER	D1 D2 D4 D5	061285	C33 C34 C35
		D7 D8 D9 D10	064320	C36 C38
		D13 D14	064325	C1 C2 C3
070132	DIODE ZENER 5V	D6	064333	C45 C46
080017	TO-220 HEATSINK	IC11	066215	C41
087050	REED RELAY FORM 1A, 5V, 500 OHMS	K3 K4 K5 K6	066221	C42
087057	RELAY	K1 K2	070047	C43
089088	FUSE 2A SLO-BLO 5 X 20 250VIEC	F3	070061	C27 C28 C32
117215	4-PIN CONNECTOR	J2- J9-	070093	C29 C30 C31
117217	MALE CONN: 7 PIN	J1- J10-		D6 D7
117218	MALE CONN 6-POS FRICTION LK	J3- J4- J5- J6-	117218	D4
		J7- J8-	132223	DS2 DS3 DS6
			132224	DS7 DS8
117450	PHONE JACK 4P RCA GOLD PLATED	J20 J21		
117549	HEADPHONE JACK DUAL BLACK 1/8	J22 J23	133186	J1- J2- J3- J4-
117708	FASTON BLADE W/FEET	J11 J12 J13	133192	Q2
		J14 J15 J16	133249	Q1
		J17 J18 J19	133347	IC6
132090	TRANSISTOR NPN DAR MPSA25	Q1	133366	IC2
132223	TRANSISTOR NPN MPS4124 2K/REEL	Q2 Q3	133408	IC3
133114	IC AUDIO PROCESSOR	U3	137042	IC14
133119	IC REGULATOR +12 VOLT	IC11	144053	FLAMEPROOF RES 47 OHM 5% 1/4W
133175	IC AND 2 INPUT X 4	IC2 IC3 IC6	144090	R12
133186	IC SHFT REG SER-PAR	IC1	144108	RES MF 10K 1% 1/4W
133192	IC NAND SCHMIT 2-IN X 4	IC7	144113	R2 R42
133306	NEG 24V REGULATOR	IC10	144157	RES MF 47.5K 1% 1/4W
133342	IC QUAD ANALOG SWITCH HI SPEED	IC4 IC5	144172	R19
133365	IC 5V 1.5A REGULATOR LOW DROP	IC12	144187	R25
134495	POTENTIOMETER DUAL 20K TAPPED	R54 R55	144196	R6 R9 R10
137002	RES FP 1.1 OHM 1/4W 5%	R18	144250	R2 R42
137025	FLAMEPROOF RES: 10 OHMS 5% 1/4W	R13	144253	R14 R21 R23
139005	WIRE RES: 2 OHMS 10% 5W	R52	144254	R5
144053	RES MF 10K 1% 1/4W	R16 R22 R27	144259	R22
		R28 R30	144263	R45
144090	RES MF 1K 1% 1/4W	R5 R24 R50	144280	R30
144097	RES MF 4.75K 1% 1/4W	R10 R51	144298	R1 R3 R4
				R27

PARTS LIST

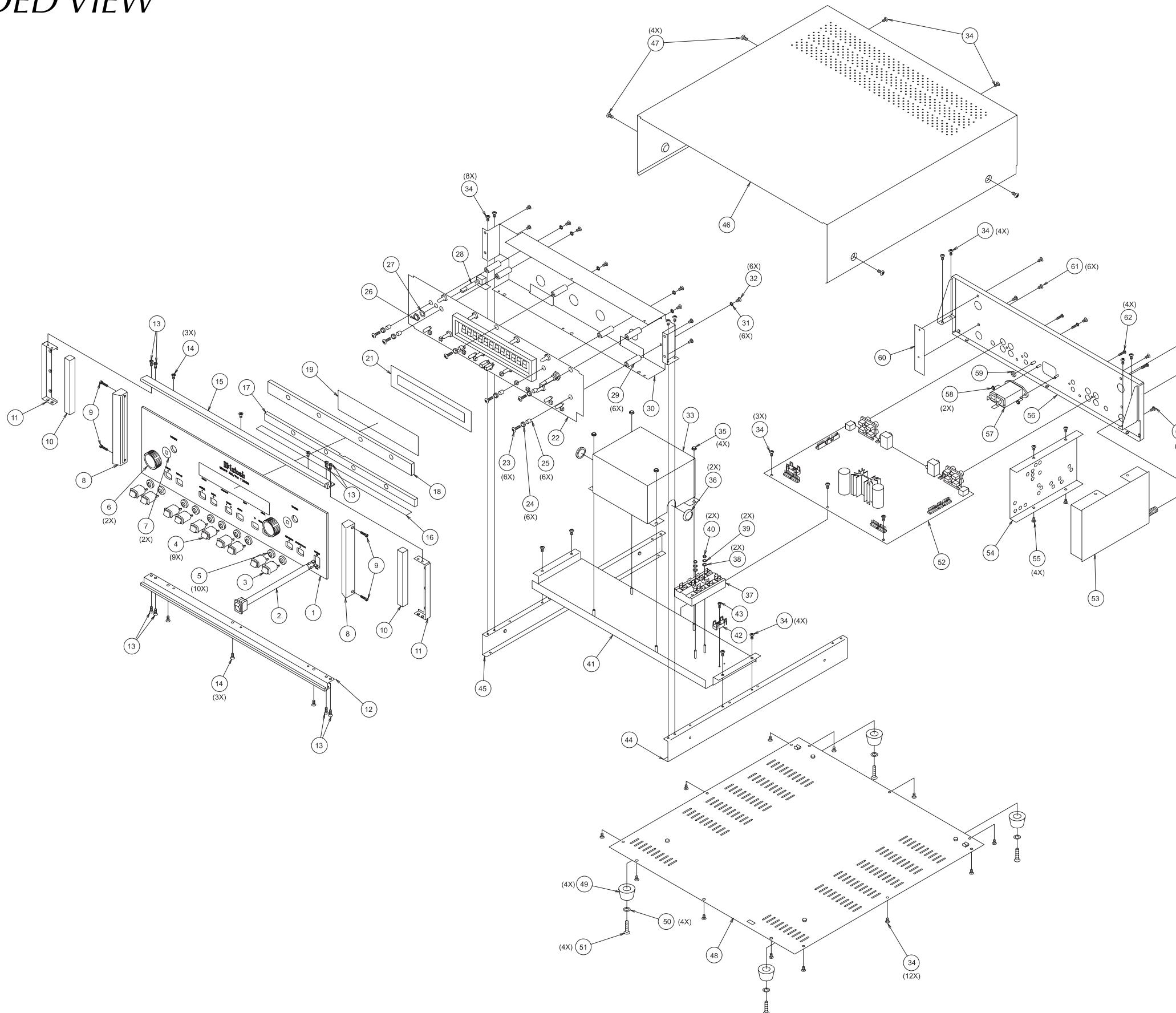
144351	1.74K 1% 1/4W MF RES	R17	133189	IC OPERATIONAL AMPLIFIER	IC4 IC5
144366	RES NETWORK ISOLATED 2X22K	R31	133231	LA1175 FM FRONT END	IC1
150058	TACT SWITCH	S1 S2 S3 S4 S5 S6 S7 S8 S9 S10	133270 133381 134406	IC DIRECT PLL FREQ SYNTHESIZER AM-FM MPX TUNER IC TRIMPOT 22K	IC3 IC2 R70
178133	40-PIN IC SOCKET	IC14	134414	POTENTIOMETER: 10K OHM	R71 R73
180051	CRYSTAL 11.0592MHZ	Y1			
			141025	RES CF 100 5% 1/4W	R4 R14 R21 R60
049084 TUNER/RAA1 PCB		C59 C60 C62 C63	141033 141037	RES CF 220 5% 1/4W RES CF 330 5% 1/4W	R54 R65 R23 R26
060027	TRIM CAP: 2-10PF	C61 C64 C65 C106	141041 141049	RES CF 470 5% 1/4W RES CF 1.0K 5% 1/4W	R103 R3 R5 R7 R30
061002	DISC CAP: 1.8PF+/-25PF NPO	C35	141057	RES CF 2.2K 5% 1/4W	R38
061249	DISC CAP: .47UF 50V MONOLITHIC	C50 C70 C71 C72	141060 141064	RES CF 3.3K 5% 1/4W RES CF 4.7K 5% 1/4W	R39 R46 R63
061256	M.CAP: 470PF,5%,100V	C39			R22 R24 R33
061257	360PF 5% 100V	C21			R35 R69
061273	220PF 5% 100V NPO	C76 C77 C78 C79	141072	RES CF 10K 5% 1/4W	R1 R11 R15 R19 R29 R41
061275	MONO CAP: 100PF,5%,100V,NPO	C2 C6 C12 C14 C17			R44 R50 R64
061277	MONO CAP 0.1MF 20% 50V	C1 C4 C7 C11 C19 C20 C26 C27 C29 C30 C34 C102 C104 C105 C8 C24	141076 141080	RES CF 15K 5% 1/4W RES CF 22K 5% 1/4W	R68 R75 R101 R102 R105 R6 R20 R40 R17 R52 R55
061282	22PF 10% 100V CAPACITOR	C10 C13 C15	141088	RES CF 47K 5% 1/4W	R58 R8 R9 R13
061286	MONO CAP .047UF 10% 50V RADIA	C16 C18 C28 C33 C75	141096 141116 141124	RES CF 100K 5% 1/4W RES CF 680K 5% 1/4W RES CF 2.2M 5% 1/4W	R18 R56 R61 R76 R27 R28
061287	MONO CAP .0022UF 10% 50V RADIA	C5 C23 C25 C31 C74 C103	141144 141152	RES CF 22 5% 1/4W RES CF 47 5% 1/4W	R16 R42 R67 R104 R51 R74
061288	MONO CAP 10PF 10% 100V	C3 C9 C22 C32	144097	METAL FILM RES: 4.75K 1% 1/4W	R32 R43 R45
064310	M POLY CAP:.0068MF,10%,63V DC	C82 C83	144121	METAL FILM RES: 2.67K 1% 1/4W	R47 R48
064314	M POLY CAP:.015UF,5%,63V DC	C36 C40	144142	METAL FILM RES 2.87K 1% 1/4W	R10 R25
064316	M POLY CAP:.022UF,5%,63V DC	C80 C81	162102	TRANSFORMER: QUAD DET PRIM	T9
064318	M POLY CAP:.033UF,5%,63V DC	C37 C41 C42 C43	162103 162113	TRANSFORMER: QUAD DET SEC TRANSFORMER (MATCHING)	T8 T7
064320	M POLY CAP:.047UF 5% 63VDC	C38	162114	10.7MHZ MIXER TRANSFORMER	T10
064329	M POLY CAP 0.22UF 5%	C73	162115	AM OSC. COIL	T11 T101
066269	CAP ELECT 1UF 10% 50V	C57 C58	162117	AM RF TRANSFORMER	T12
066445	ELECT CAP 10MF, 50V AMMO PACK	C45 C46 C47 C48 C49 C51 C52 C54 C55	180036 180046 180055	CRYSTAL 7.2MHZ CERAMIC RESONATOR 450KHZ FILTER 450KHZ	Y1 Y2 FN6
066446	ELECT CAP 47MF, 35V AMMO PACK	C53	180056	FILTER CERAMIC 10.7MHZ	FN1 FN2 FN3
066447	ELECT CAP 100MF 16V AMMO PACK	C56 C67 C68 C69			
070047	SILICON DIODE 1N4148 T&R	D10 D102 D103 D104	117670 146249	049106 SWITCH PCB CONNECTOR 3-PIN RIGHT ANGLE SWITCH PULSE ROTARY	J1- S1
070122	(8) DIODE TUNING ALL 8 DIODES USED ON JAPANESE VERSION	D1 D2 D3 D4 (D5 D6 D7 D8)			
070125	TUNING DIODE	D11 D12 D101			
117213	2-PIN MALE CONNECTOR	J6			
117223	MALE CONN: 6 PIN RT. ANGLE	J3			
117240	4 PIN RT. ANGLE	J5			
117319	CONN, RT.ANGLE, MALE, 7 POS	J4			
117383	DIN CONN 7-PIN	J2			
117661	GOLD F CONNECTOR RIGHT ANGLE	J1			
117677	HEADER 5 PIN	J101-			
122229	RF CHOKE: 3.3UH, 10%	L1			
122249	ANT. COIL	L4 L5			
122250	MIXER COIL	L2 L3			
132178	TRANSISTOR: RF FET, J-310 FET	Q102			
132220	TRANSISTOR: 1-4V,PNC OFF 250 OH	Q8 Q101			
132223	TRANSISTOR NPN MPS4124 2K/REEL	Q3 Q5 Q6 Q7 Q10 Q11 Q12			
132224	TRANSISTOR PNP SI MPS4126 2K/R	Q2 Q9			
132256	#3SK114Y (Q1) D MOS FET	Q1			
133147	MC78L08ACP +8V REG	IC6			

NOTES

EXPLODED VIEW PARTS LIST

Ref. No.	Part No.	Description
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

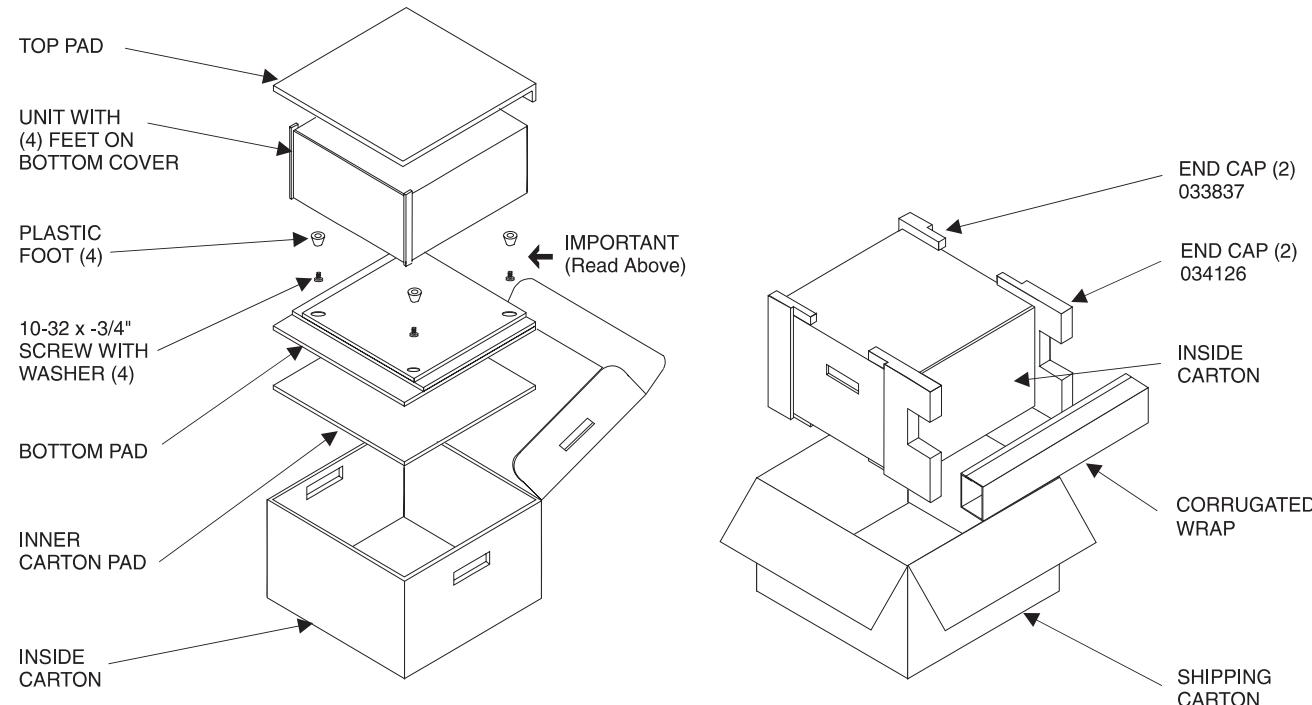
In the event it is necessary to repack the unit for shipment, the unit must be packed exactly as shown below.

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



MR85

AM/FM TUNER

INCLUDING TM1 TUNER MODULE OPTION

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.

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