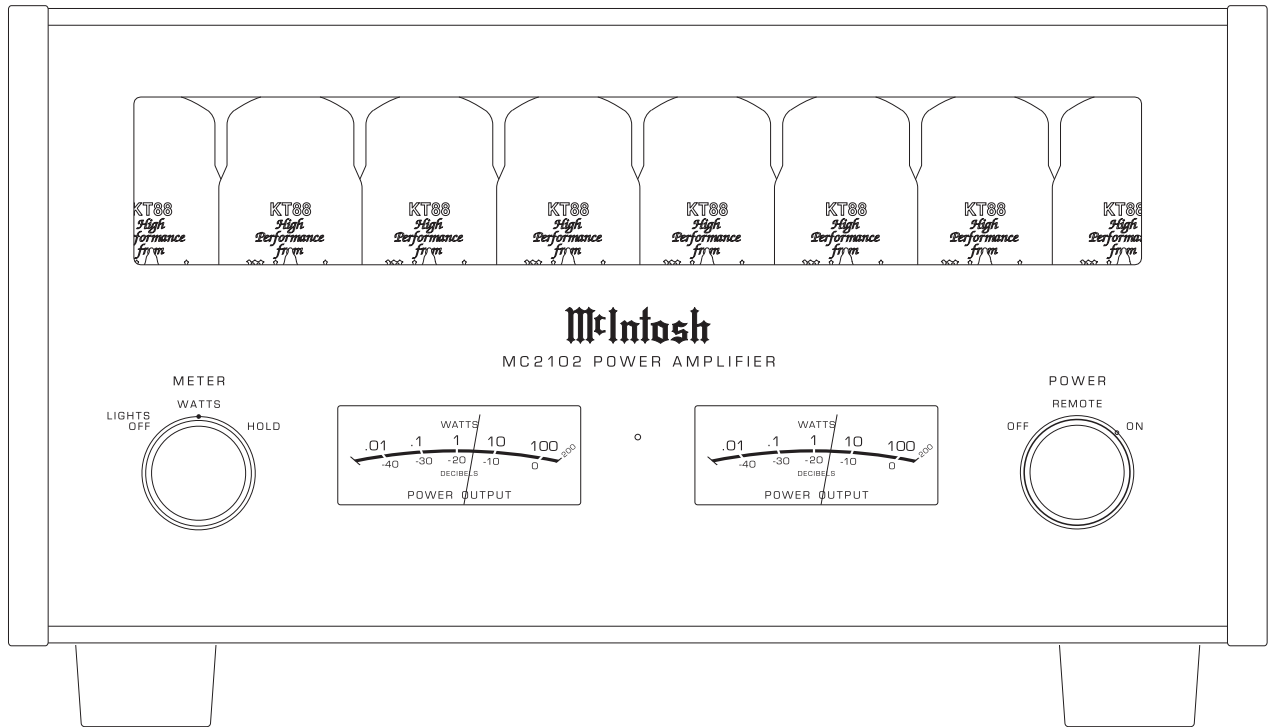


MC2102

POWER AMPLIFIER



CONTENTS

Performance Specifications	2	Power Supply Schematic and PCB	15 - 18
Notes	2	Output Schematic and PCB	17 - 18
Rear Panel	3	Remote Switch Schematic and PCB	19 - 20
Section Location	4	Panel Lamp A Schematic and PCB	19 - 20
Block Diagram	5 - 6	Panel Lamp B Schematic and PCB	21
Interconnection Diagram	7 - 8	Meter A & B Schematic and PCB	22
Input Schematic and PCB	9 - 10	Parts List	23 - 26
Daughter Schematic and PCB	11 - 13	Exploded Views and Parts Lists	27 - 32
Amplifier Schematic and PCB	11 - 12, 14	Repacking Instruction	33

McIntosh®

SERVICE MANUAL

PERFORMANCE SPECIFICATIONS

Power Output

Minimum sine wave continuous average power output per channel, both channels operating is:
100 watts into 2 ohm load
100 watts into 4 ohm load
100 watts into 8 ohm load

Power Output Mono Parallel

Minimum sine wave continuous average power output is:
200 watts into 1 ohm, 2 ohm or 4 ohm load

Power Output Mono Bridge

Minimum sine wave continuous average power output is:
200 watts into 4 ohm, 8 ohm or 16 ohm load

Rated Power Band

20Hz to 20,000Hz

Total Harmonic Distortion

Maximum Total Harmonic Distortion at any power level from 250 milliwatts to rated power output is:
0.5% for 2, 4 or 8 ohm loads (Stereo)
0.5% for 1, 2 or 4 ohm loads (Mono Parallel)
0.5% for 4, 8 or 16 ohm loads (Mono Bridge)

Frequency Response

+0, -0.25dB from 20Hz to 20,000Hz
+0, -3dB from 10Hz to 70,000Hz

Sensitivity

2.5 Volts Unbalanced Input
5 Volts Balanced Input

A-Weighted Signal To Noise Ratio

100dB

Intermodulation Distortion

Maximum Intermodulation Distortion if instantaneous peak output does not exceed twice the rated output, for any combination of frequencies from 20Hz to 20,000Hz is:
0.5% for 2, 4 or 8 ohm loads (Stereo)
0.5% for 1, 2 or 4 ohm loads (Mono Parallel)
0.5% for 4, 8 or 16 ohm loads (Mono Bridge)

Input Impedance

20,000 ohms Unbalanced Inputs
40,000 ohms Balanced Inputs

Wide Band Damping Factor

Greater than 18

Power Requirements

100 Volts ~ , 50/60Hz at 6.0 amps
110 Volts ~ , 50/60Hz at 5.5 amps
120 Volts ~ , 50/60Hz at 5.0 amps
220 Volts ~ , 50/60Hz at 2.5 amps
230 Volts ~ , 50/60Hz at 2.5 amps
240 Volts ~ , 50/60Hz at 2.5 amps

Note: Refer to the rear panel of the MC2102 for the correct voltage.


Dimensions

Front Panel: 17-3/4 inches (45.08cm) wide, 10-1/8 inches (25.72cm) high. Depth behind front mounting panel is 16 inches (40.64cm). Clearance required in front of the Front Panel is 1 inches (2.54cm) for knobs.

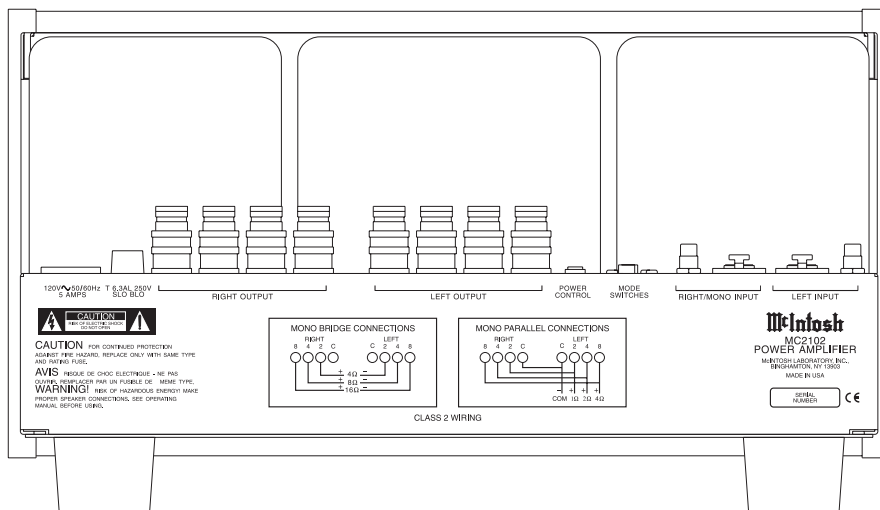
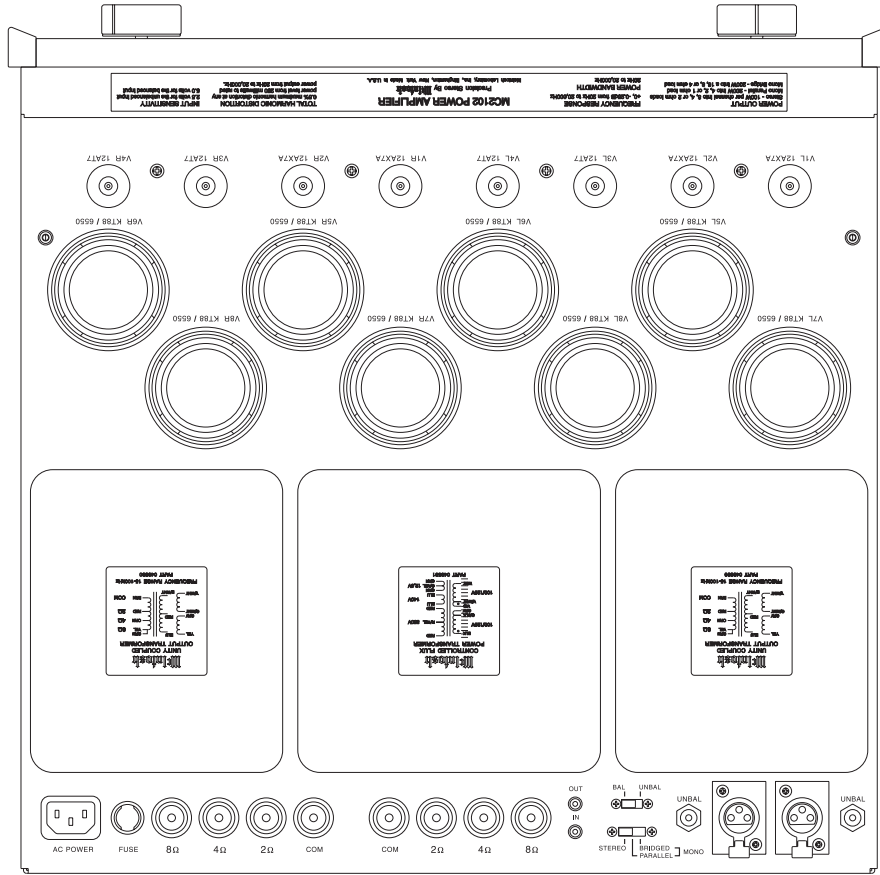
Weight

88 pounds (40kg) net, 121 pounds (54.9kg) in shipping carton

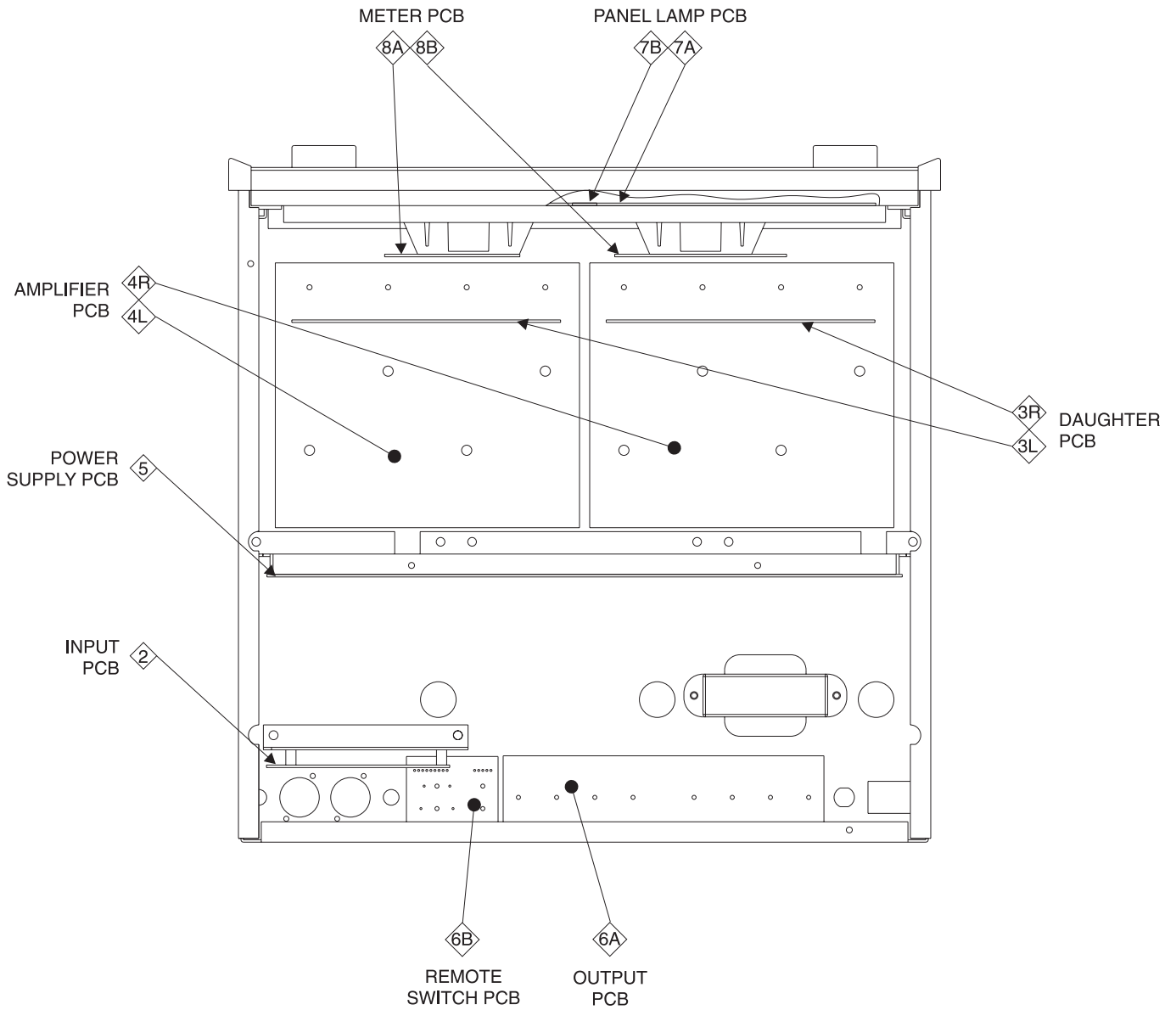
NOTES

1. The heavy lines 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.

TOP AND REAR PANEL

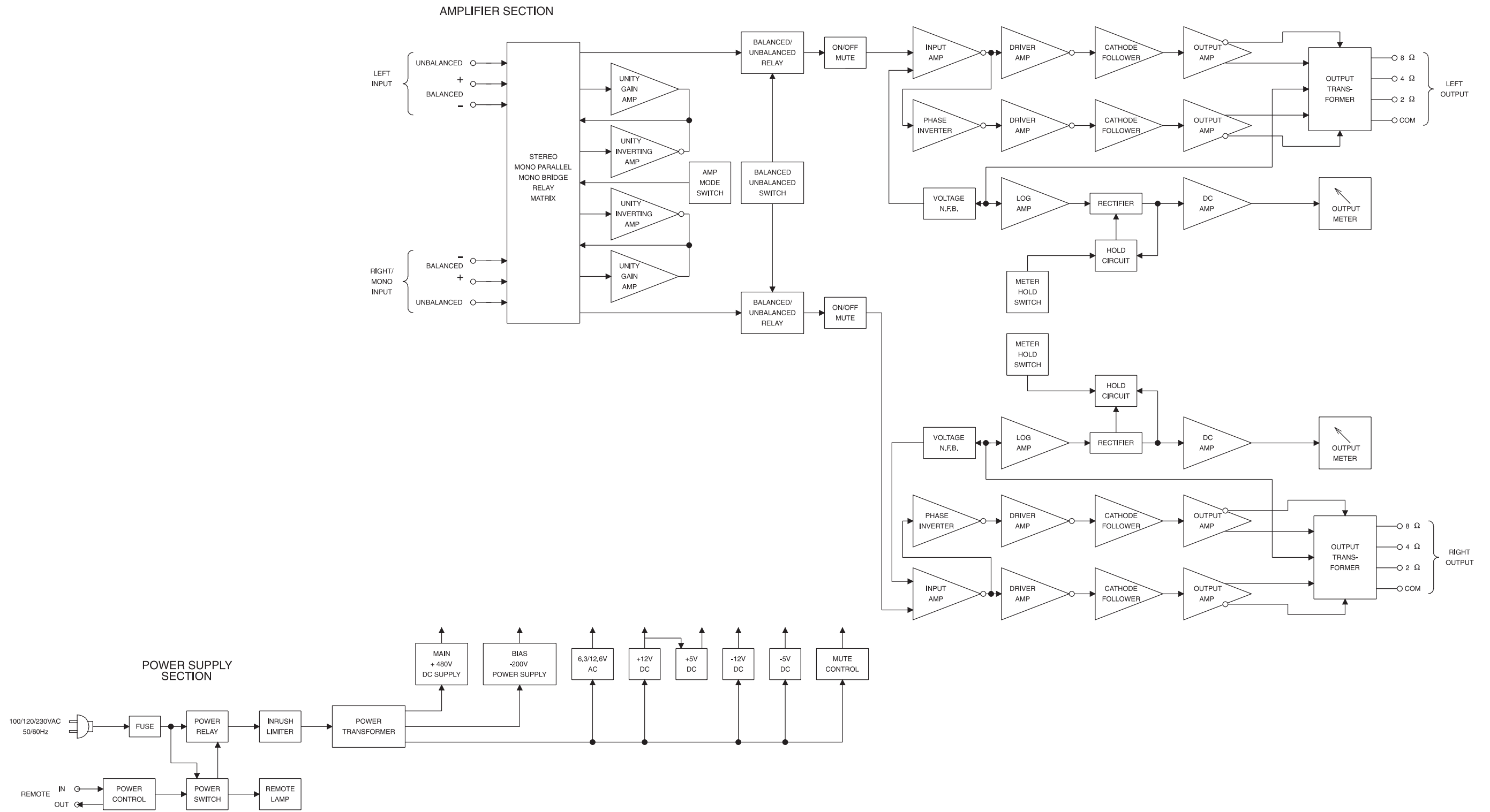


SECTION LOCATIONS

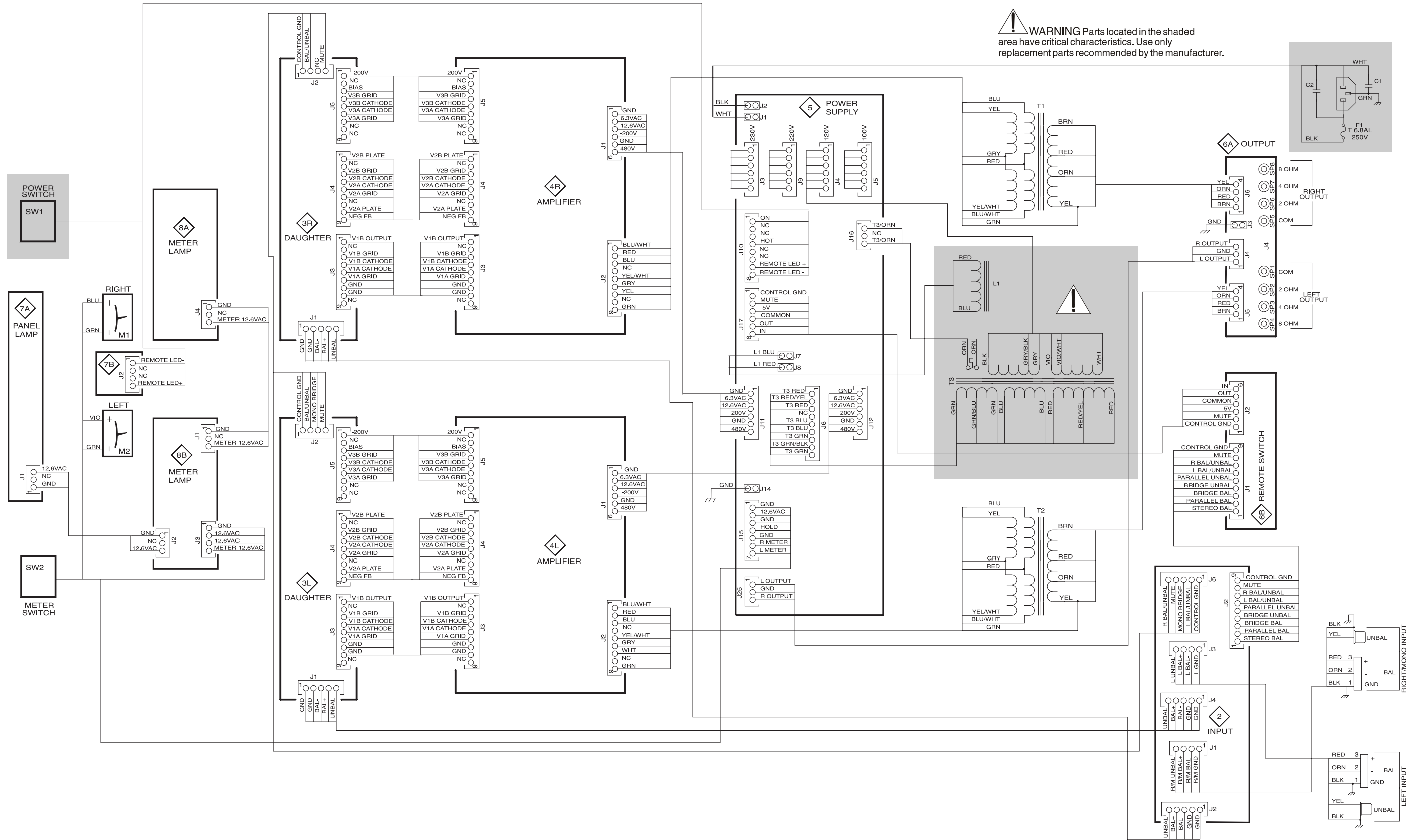


BOTTOM VIEW WITH COVER REMOVED

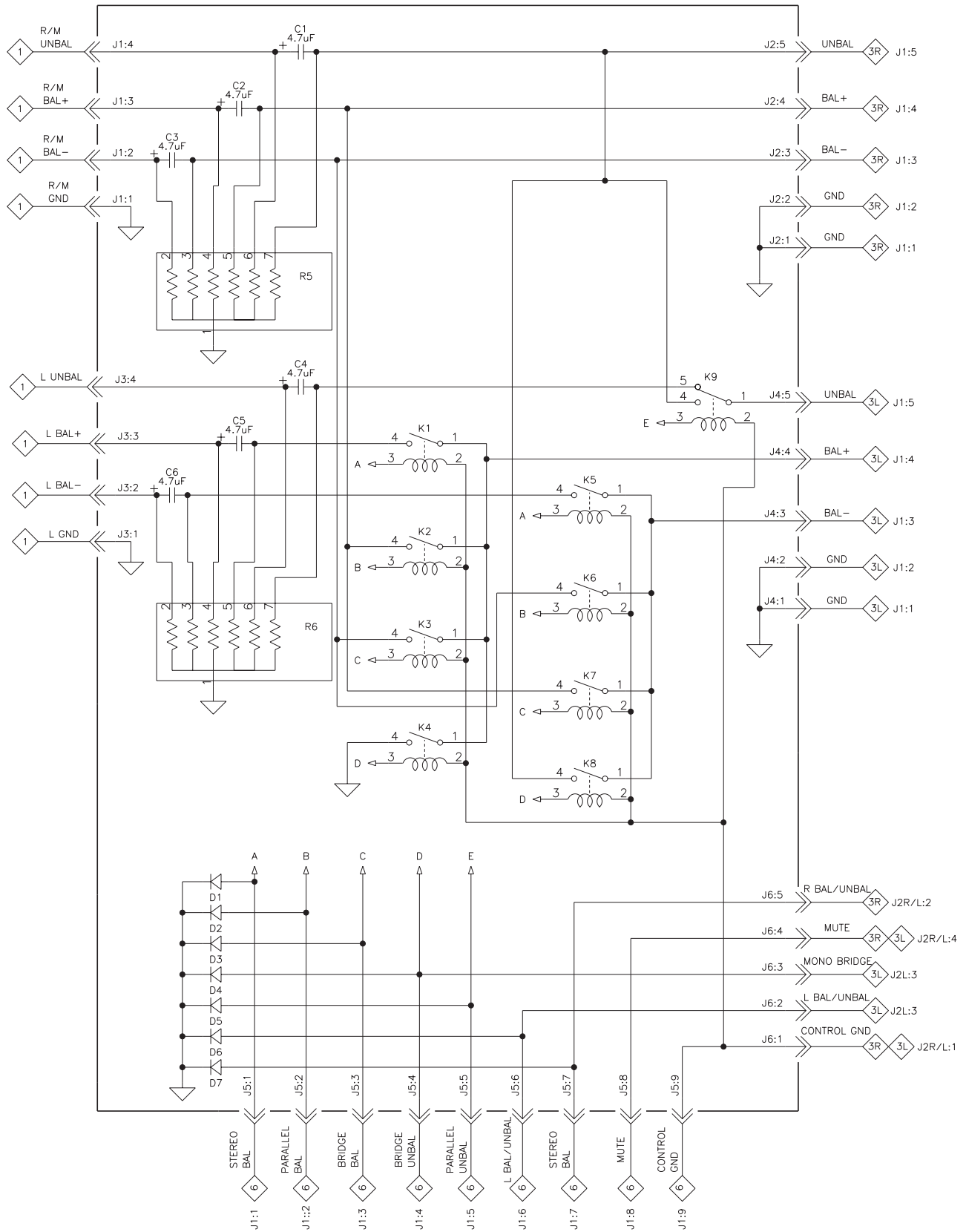
BLOCK DIAGRAM



1 INTERCONNECT

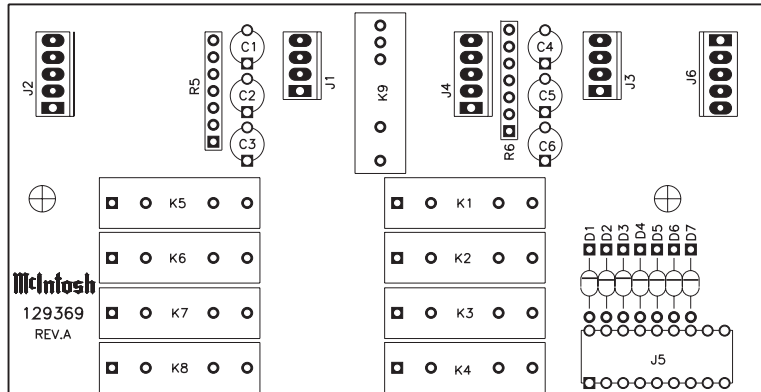


2 INPUT 049508



2

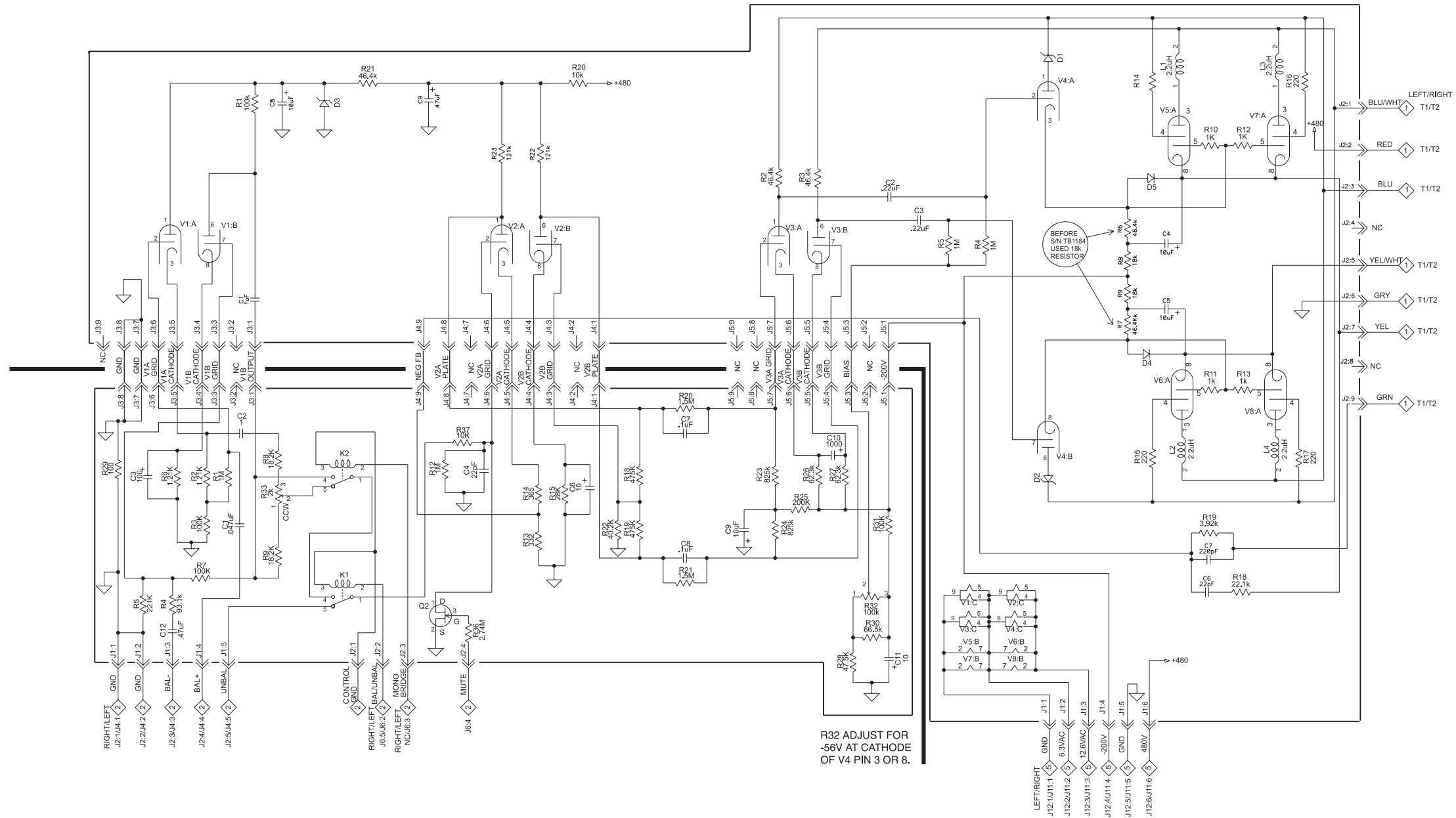
INPUT 049508



3L 3R

DAUGHTER 049507

MC2102

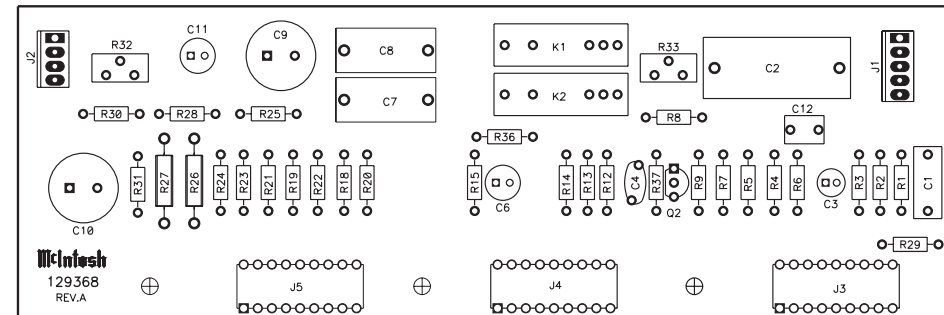


4L 4R

AMPLIFIER 049517

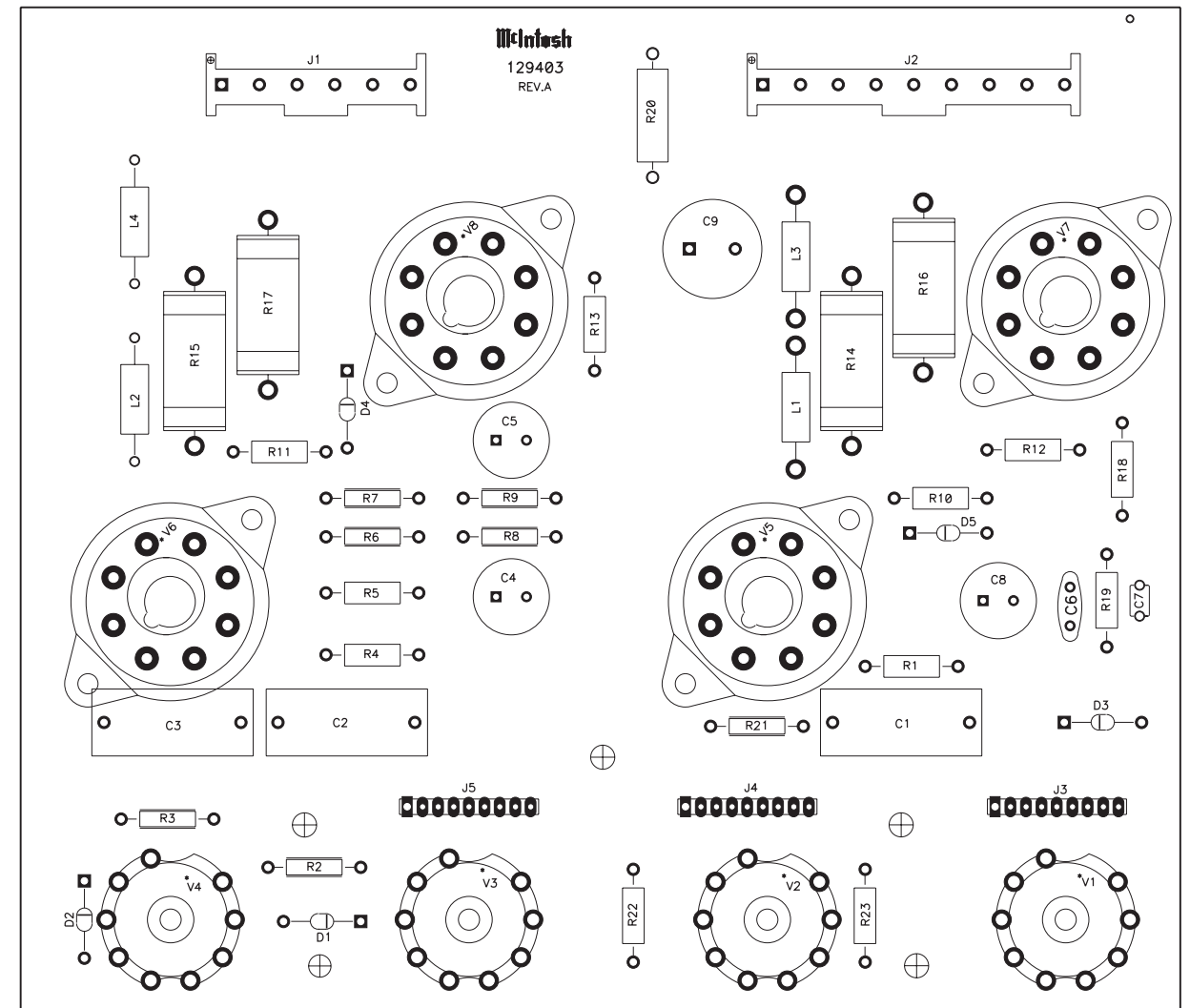
3L 3R

DAUGHTER 049507



4L 4R

AMPLIFIER 049517

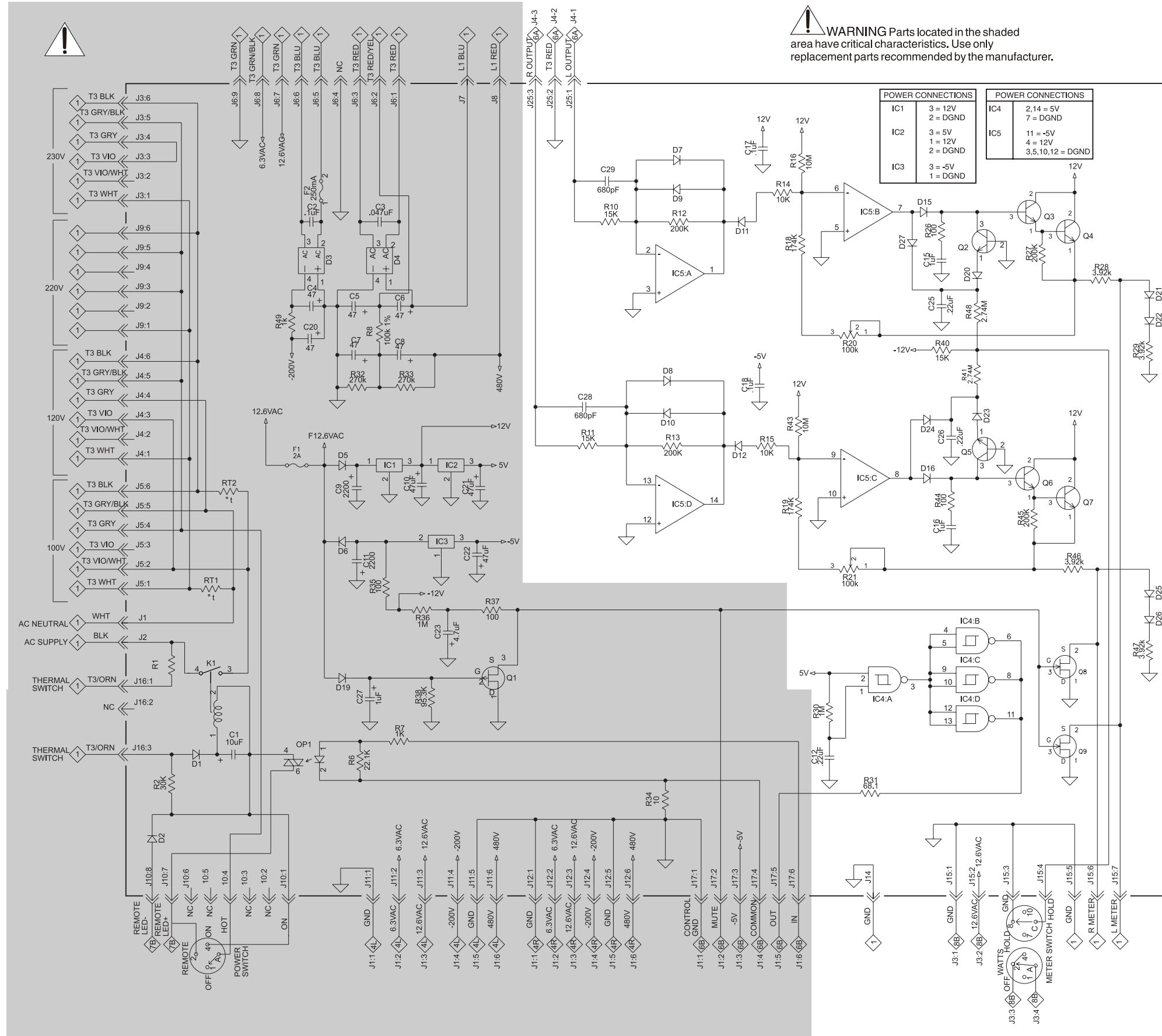


*DENOTES COMPONENTS ON REVERSE OR BACKSIDE OF PC BD

5

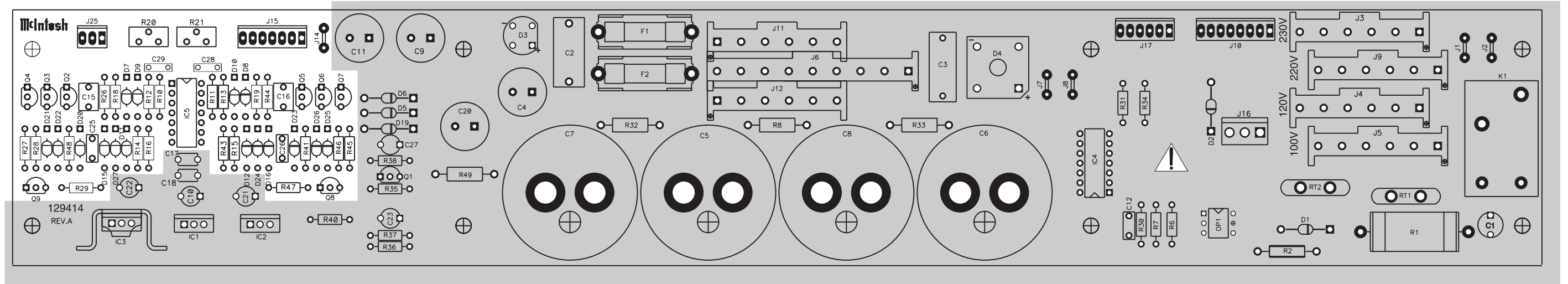
POWER SUPPLY 049509

MC2102

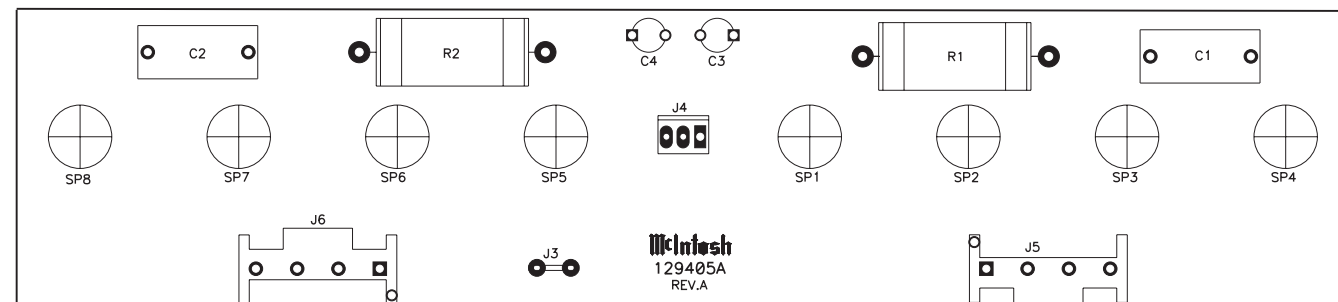
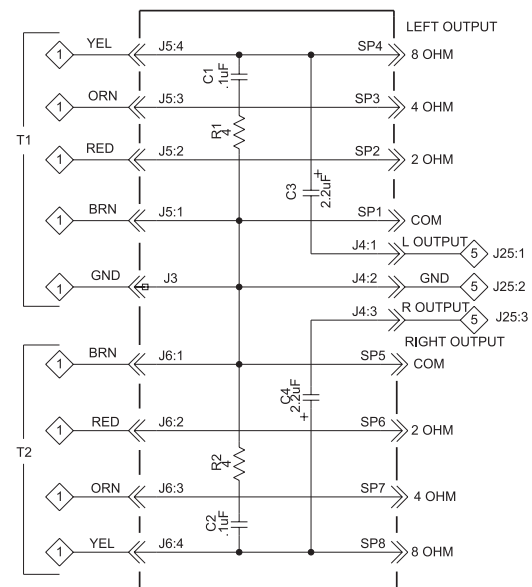


5 POWER SUPPLY 049509

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

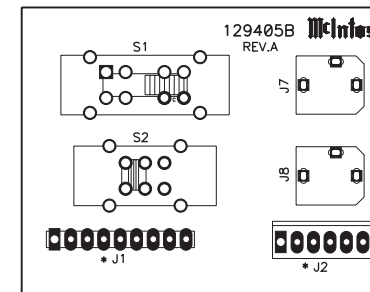
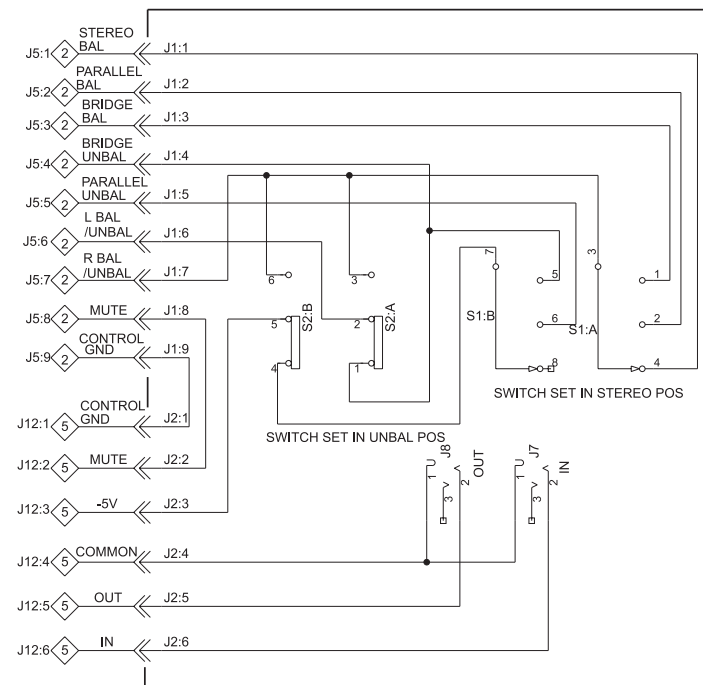


6A OUTPUT 049510

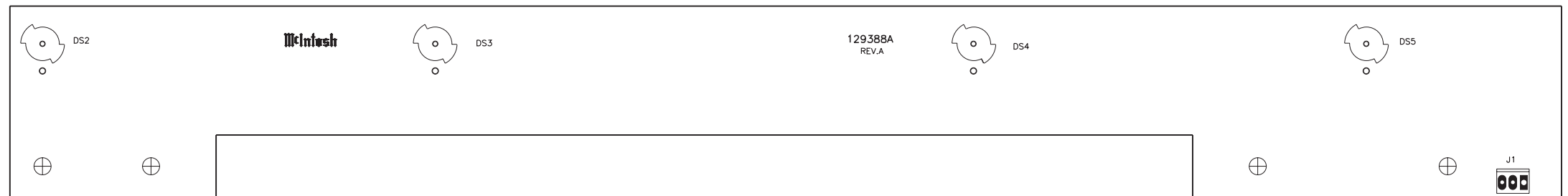
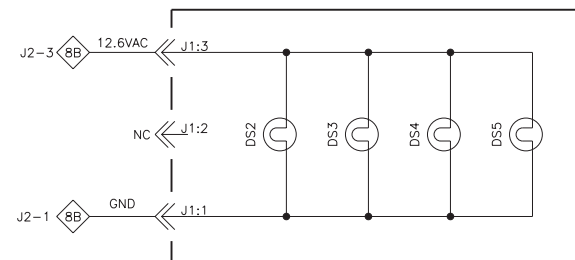


•DENOTES COMPONENTS ON REVERSE OR BACKSIDE OF PC BD

6B REMOTE SWITCH 049510

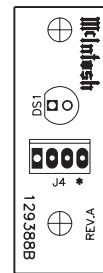
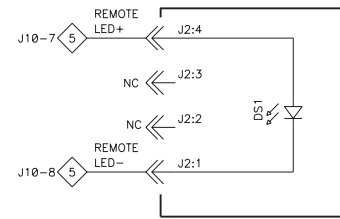


7A PANEL LAMP 049646

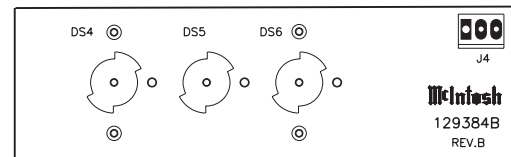
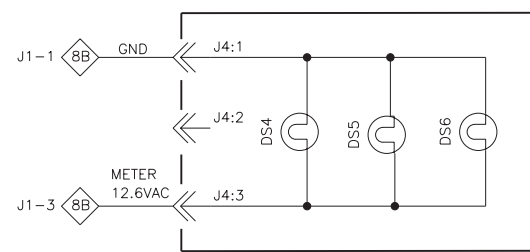


*DENOTES COMPONENTS ON REVERSE OR BACKSIDE OF PC BD

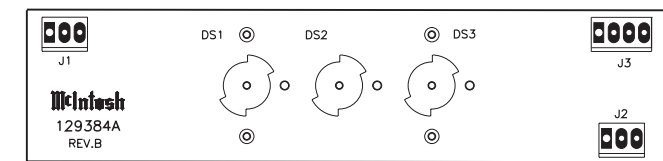
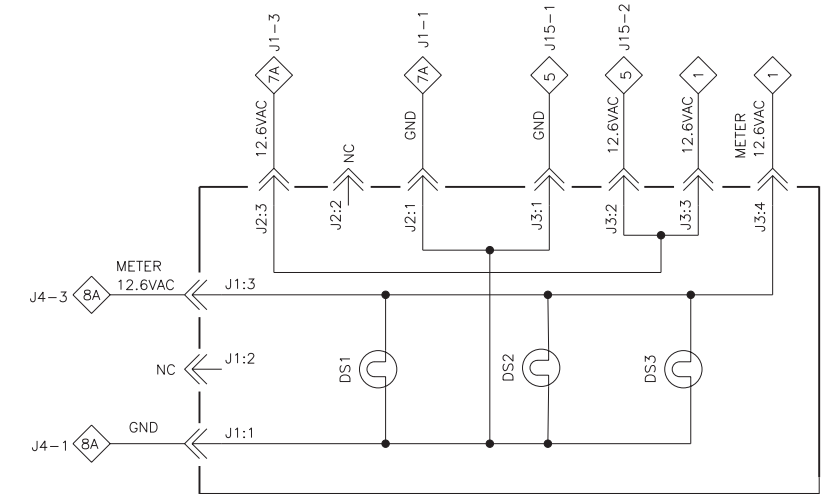
7B PANEL LAMP 049646



8A METER 049612



8B METER 049612



PARTS LIST

Reference No.	Description	Part No.
INTERCONNECT		
C1 C2	DISC CAP 0.0047MF	06127600
F1	FUSE 6.3A 250V SLO BLO IEC	08910400
L1	CHOKER, FILTER 0.5H 800MA	12233700
M1 M2	METER, OUTPUT	12407900
SW1 SW2	SWITCH, METER/POWER 2P3T	14625300
T1 T3	OUTPUT TRANS (LESS DECAL 126714)	04959000
T2	POWER TRANS (LESS DECAL 126713)	04959100
049508 INPUT		
C1 C2 C3 C4 C5 C6	CAP ELECT 4.7UF 50V	06651200
D1 D2 D3 D4 D5 D6 D7	DIODE SILICON	07004700
J1 J3	CONN 4 PIN	11721500
J2 J4 J6	CONN MALE 5 PIN	11721600
J5	RECEPTACLE 9 POSITION	11772200
K1 K2 K3 K4 K5 K6 K7 K8	RELAY REED FORM 1A 5V 500 OHMS	08705000
K9	RELAY REED FORM 1C 5V 125 OHM	08705600
R5 R6	RES NETWORK 47KX6	14445800
049507 DAUGHTER		
C1	CAP POLYPROP .047UF 10% 250VDC	06436400
C2	CAP POLYPROP 1UF 20% 250VDC	06443300
C3	CAP ELECT 100UF 6.3V	06649800
C4	CAP DISC 22PF 500V	06129300
C6 C11	CAP ELECT 10UF 100V	06649200
C7 C8	CAP MPOLY 0.1UF 630VDC	06443100
C9	CAP ELECT 10UF 250V	06649300
C10	CAP ELECT 1000UF 16V NP	06650000
C12	CAP M POLY .47UF 5% 50/63VDC	06433300
J1	CONN MALE 5 PIN	11721600
J2	CONN 4 PIN	11721500
J3 J4 J5	RECEPTACLE 9 POSITION	11772200
K1 K2	RELAY REED FORM 1C 5V 125 OHM	08705600
Q2	TRANSISTOR N JFET	13222200
R1 R12	RES MF 1M 1/4W	14426900
R2 R6	RES MF 1.21K 1% 1/4W	14419100
R3 R7 R31	RES MF 100K 1% 1/4W	14411300
R4	RES MF 93.1K 1% 1/4W	14441700
R5	RES MF 221K 1% 1/4W	14442100
R8 R9	RES MF 18.2K 1% 1/4W	14418100
R13	RES MF 332 1% 1/4W	14444600
R14	RES MF 365 1% 1/4W	14407100
R15	RES MF 28K 1% 1/4W	14436700
R18 R19	RES MF 475K 1% 1/4W	14436400
R20 R21	RES MF 1.5M 1% 1/4W	14442200
R22	RES MF 40.2K 1% 1/4W	14410700
R23 R24	RES MF 825K 1% 1/4W	14446000
R25	RES MF 200K 1% 1/4W	14411700
R26 R27	RES MF 61.9K 1% 1W	14445500
R28	RES MF 47.5K 1% 1/4W	14410800
R29	RES MF 100 1% 1/4W	14419600
R30	RES MF 66.5K 1% 1/4W	14445600
R32	POT TRIMMER 100K OHM 20%	13438300
R33	POT TRIMMER 2K OHM 20%	13438400
R36	RES MF 2.74M 1/4W	14427100
R37	RES MF 10K 1% 1/4W	14405300

049517 AMPLIFIER

C1	CAP POLYPROP 1UF 20% 250VDC	06443300
C2 C3	CAP POLYPRP 0.22UF 20% 1000VDC	06443200
C4 C5 C8	CAP ELECT 10UF 250V	06649300
C6	CAP DISC 22PF 500V	06129300
C7	CAP MONO 330PF 200V 10% NPO	06131100
C9	CAP ELECT 47UF 450V	06649700
D1 D2 D3	DIODE ZENER 200V 1.5W	07014600
D4 D5	DIODE RECTIFIER	07013100
J1	CONN MALE 6 PIN	11769800
J2	HEADER 9 CIRCUIT	11772400
J3 J4 J5	HEADER 9 POSITION	11772300
L1 L2 L3 L4	CHOKER 2.2 MH	12200100
R1	RES MF 100K 1% 1/2W	14442900
R2 R3 R6 R7 R21	RES MO 46-4K 1% 1W	14443600
R4 R5	RES MF 1M 1% 1/2W	14443200
R8 R9	RES MO 18K 5% 1W	14428600
R10 R11 R12 R13	RES MF 1K OHM 1% 1/2W	14430900
R14 R15 R16 R17	RES MO 220 5% 5W	14446300
R14 R15 R16 R17 L1 L3	SOLDER LUG .070 HOLE	07502000
R18	RES MF 22.1K 1% 1/2W	14442700
R19	RES MF 3.92K 1% 1/2W	14442400
R20	RES MO 10K 5% 2W	14443700
R22	RES MF 121K OHM 1% 1/2W	14430800
R23	RES MF 82.5K 1% 1/2W	14445900
V1 V2 V3 V4	SOCKET 9 PIN TUBE CERAMIC	17817000
V5 V6 V7 V8	SOCKET OCTAL TUBE CERAMIC	17816900

049509 POWER SUPPLY

C1	CAP ELECT 22UF 100V	06650600
C2	CAP MPOLY 0.1UF 630VDC	06443100
C3	CAP POLY .047UF 10% 1000VDC	06443400
C4 C20	CAP ELECT 47UF 250V	06649600
C5 C6 C7 C8	CAP ELECT 1000MF 300V	06652000
C9 C11	CAP ELECT 2200MF 25V	06652200
C10 C21 C22	CAP ELECT 47UF 35V	06644600
C12 C25 C26	CAP M POLY .22UF 5% 63VDC	06432900
C15 C16	CAP M POLY 1UF 5% 63VDC	06433700
C17 C18	CAP MONO .1UF 50V 20% Z5U	06130500
C23	CAP ELECT 4.7UF 50V	06651200
C27	CAP ELECT 1UF 50V	06651000
C28 C29	CAP POLY 680PF 5% 160VDC	06429800
D1 D2 D5 D6 D19	DIODE SIL 400 PIV @ 1.5A	07003100
D3	RECT BRIDGE 400V/0.9A	07016800
D4	DIODE BRIDGE RECT 1000V 6A	07016500
D7 D8 D9 D10 D11 D12 D15	DIODE SILICON	07004700
D16 D20 D21 D22 D23 D24	DIODE SILICON	07004700
D25 D26 D27	DIODE SILICON	07004700
F1	FUSE 2A 250V SLO-BLO 5X20 IEC	08908800
F1 F2	HOLDER FUSE 5X20MM	17815900
F2	FUSE .25A 250V SLO-BLO	08905900
IC1	IC REGULATOR 12V	13315600
IC2	IC REGULATOR 5V	13325000
IC3	IC -5V REGULATOR	13325300
IC4	IC NAND SCHMITT 2-IN X 4	13319200
IC5	IC QUAD OP AMP TLC074CN	13341900

PARTS LIST con't

Reference No.	Description	Part No.
J1 J2 J7 J8 J14	BLADE FASTON .187	11772600
J3 J4 J5 J9 J11 J12	CONN MALE 6 PIN PCB MOUNT	11769800
J6	HEADER 9 CIRCUIT	11772400
J10	CONN 8 POS MALE	11727500
J15	CONN MALE 7 PIN	11721700
J16	CONN 3 POS MALE	11729300
J17	CONN MALE 6 POS	11721800
J25	CONN MALE 3 POS	11721400
K1	RELAY 48VDC TV-8	08705200
OP1	TRIAC OPTOCOUPLER	13102400
Q1	TRANSISTOR P CHAN JUNCTION FET	13222600
Q2 Q5	TRANSISTOR NPN	13222300
Q3 Q4 Q6 Q7	TRANSISTOR NPN	13225400
Q8 Q9	TRANSISTOR N JFET	13222200
R1	RES WW 1.5K 10% 5W	13907900
R2	RES MET OXIDE 30K 5% 2W RES	14435300
R6	RES MF 22.1K 1% 1/4W	14418700
R7	RES MF 1K 1% 1/4W	14409000
R8	RES MF 10K 1% 1/2W	14442500
R10 R11 R40	RES MF 15K 1% 1/4W	14441200
R12 R13 R27 R45	RES MF 200K 1% 1/4W	14411700
R14 R15	RES MF 10K 1% 1/4W	14405300
R16 R43	RES MF 10M 1% 1/4W	14426400
R18 R19	RES MF 174K 1% 1/4W	14435200
R20 R21	POT TRIMMER 100K OHM 20%	13438300
R26 R35 R37 R44	RES MF 100 1% 1/4W	14419600
R28 R29 R46 R47	RES MF 3920 OHM 1% 1/4W	14419800
R30 R36	RES MF 1M 1/4W	14426900
R31	RES MF 68.1 1% 1/4W	14408200
R32 R33	RES CF 270K 5% 1/2W	14155100
R34	RES CF 10 5% 1/4W	14113600
R38	RES MF 95.3K 1% 1/4W	14412700
R41 R48	RES MF 2.74M 1/4W	14427100
R49	RES MF 1K OHM 1% 1/2W	14430900
RT1 RT2	SOLDER LUG .070 HOLE	07502000
RT1 RT2	THERMISTOR 5 OHM	14415100
049510 REMOTE SWITCH/OUTPUT		
C1 C2	POLYPRO 0.22MF 400V 20%	06443800
C3 C4	CAP ELEC 2.2UF	06651100
J1	HEADER 9 POSITION	11772300
J2	CONN MALE 6 POS	11721800
J3	BLADE FASTON .187	11772600
J4	CONN MALE 3 POS	11721400
J5 J6	HEADER 4 CIRCUIT POST	11777200
J7 J8	JACK MINI WITH NUT	11775800
R1 R2	RES WW 4 OHMS 5% 5W	13911900
S1	SWITCH SLIDE 2P3T	14807500
S2	SWITCH SLIDE DPDT 3MM	14807400
049646 PANEL LAMP		
DS1	LED RED HIGH EFFICIENCY	05814800
DS2 DS3 DS4 DS5	LAMP INCANDESCENT 14V 100MA	05815300
J1	CONN MALE 3 POS	11721400
J2	CONN 4 PIN	11721500

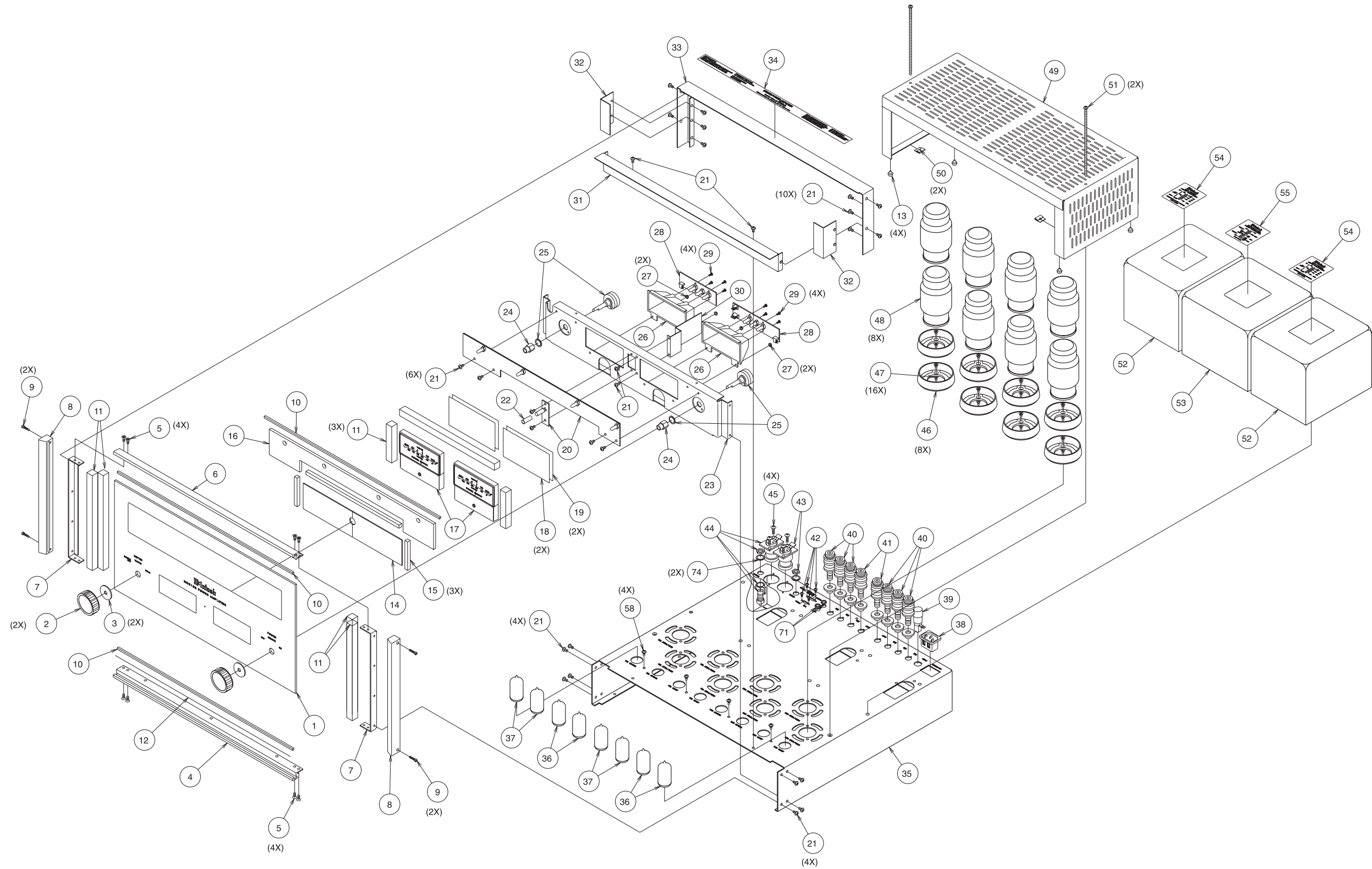
049612 METER LAMP

DS1 DS2 DS3 DS4 DS5 DS6	LAMP INCANDESCENT 14V 100MA	05815300
J1 J4	CONN MALE 3 POS	11722100
J2	CONN MALE 3 POS	11721400
J3	CONN 4 PIN	11721500

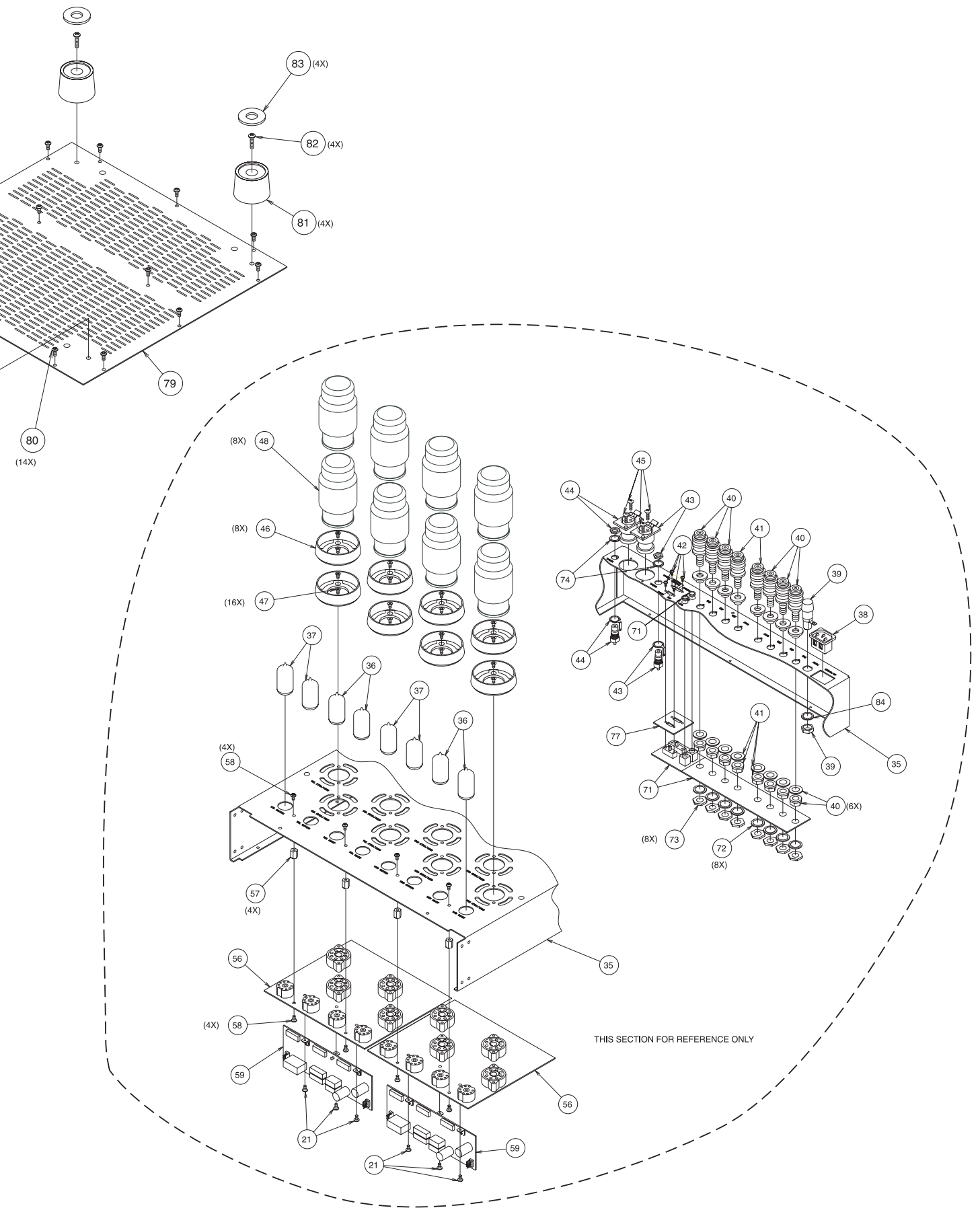
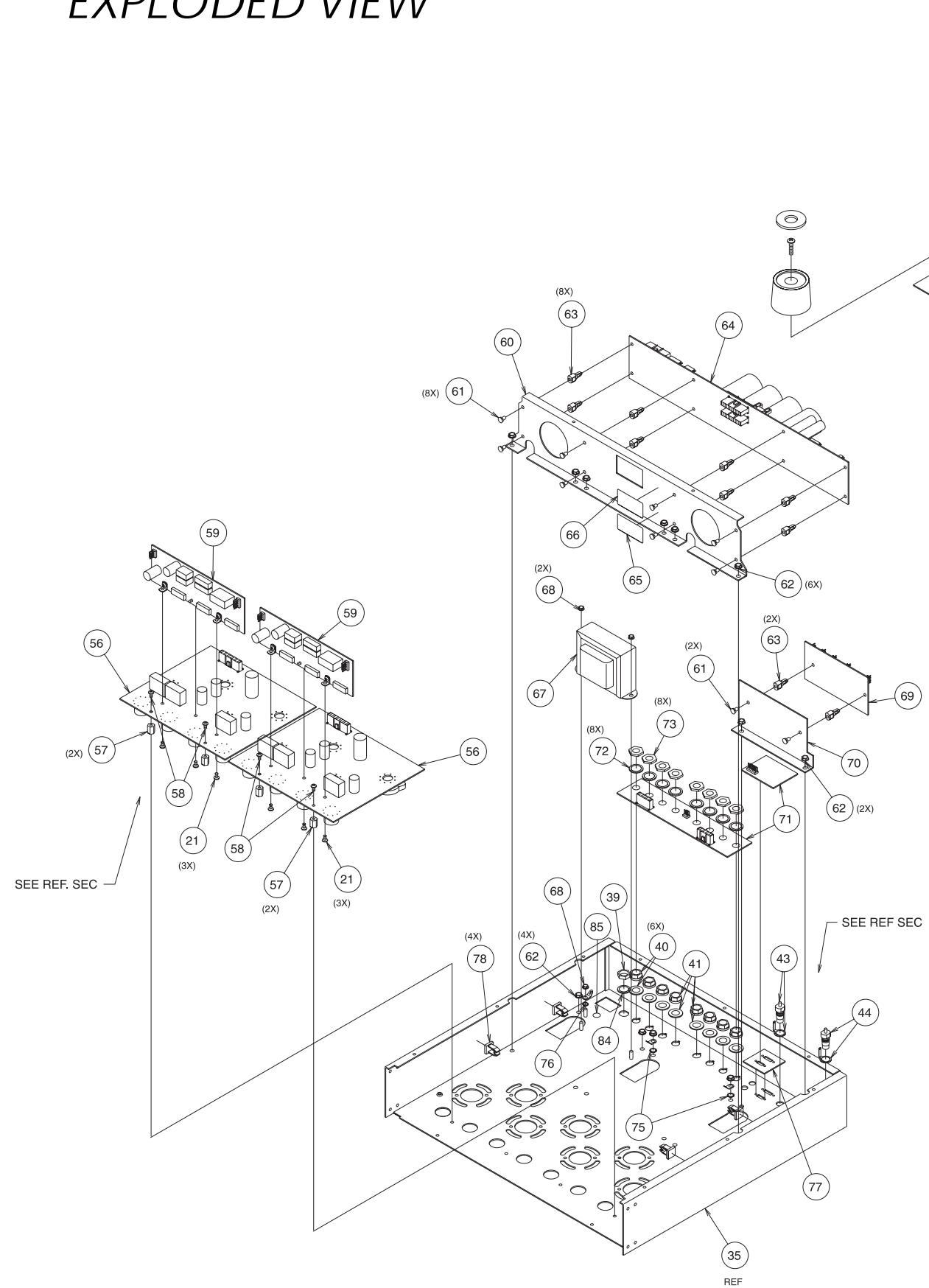
MISC ITEMS

POST CARD SERVICE REPAIR	039594
OWNERS MANUAL	040742
TUBE 12AX7A	165065
TUBE 12AT7	165067
TUBE KT88	165069
LINE CORD SET 14GA VW1/PT2	170937

EXPLODED VIEW



EXPLODED VIEW



EXPLODED PARTS LIST

Item No.	Part No.	Description
1	016438	GLASS
2	049595	KNOB ASSY
3	104164	WASHER BLK FELT 1 X 1/4 X 1/16
4	018678	BOTTOM EXTRUSION
5	101172	SCREW TC 6-32 X 1/4 PH FL U/C
6	018585	TOP EXTRUSION
7	005144	EXTRUSION BRACKET
8	018615	END CAP 9"
9	101042	SCREW TS 4-40 X 1/2 SLOT FILLISTER
10	094016	TAPE FOAM 1/4 X 1/8
11	094360	TAPE FOAM 1/2 X 1/2
12	098113	DIAL CORD
13	017862	PUSH-ON FOOT
14	092434	FILTER METER
15	094017	TAPE FOAM 1/4 X 1/4
16	017839	PLEXIGLAS PANEL
17	124079	METER
18	092436	FILTER PALE BLUE
19	092435	FILTER AZURE BLUE
20	049646	PANEL LAMP PCB ASSY
21	100157	SCREW MACH 6-32 X 1/4 PHIL PAN
22	077025	SLEEVE FIBERGLAS #5
23	005134	SUBPANEL
24	021159	BUSHING SWITCH
25	146253	SWITCH METER
26	052099	LIGHT BOX METER
27	102001	KEP NUT 4-40 CADMIUM PLATE
28	049612	METER PCB ASSY
29	101150	SCREW HI/LO 4-40 X 1/4 PHIL PAN
30	005137	MAIN PCB SHIELD
31	005154	DUST COVER BOTTOM
32	005153	DUST COVER SIDE
33	005152	DUST COVER TOP
34	126776	DECAL TOP COVER
35	005126	CHASSIS
36	165067	TUBE 12AT7
37	165065	TUBE 12AX7A
38	117487	RECEPTACLE AC LINE
39	178161	FUSE HOLDER 5 X 20mm
40	117740	BINDING POST RED
41	117741	BINDING POST BLK
42	109018	SCREW MACH M2.5 X 0.45 X 5mm LONG
43	052104	CABLE ASSY RIGHT INPUT
44	052105	CABLE ASSY LEFT INPUT
45	100195	SCREW MACH 4 - 40 X 3/8 PH OVAL GLD
46	017761	AIR PIPE
47	100292	SCREW MACH 6-32 X 3/8 PH FH BLK
48	165069	TUBE KT88
49	005155	TUBE COVER
50	106055	CLIP TINNERMAN
51	101219	SCREW 6-32 X 5 TUBE COVER
52	049590	OUTPUT TRANSFORMER

53	049591	POWER TRANSFORMER
54	126714	DECAL OUTPUT TRANSFORMER
55	126713	DECAL POWER TRANSFORMER
56	049517	AMP PCB ASSY
57	017859	SPACER NYLON 6-32 X 7/16
58	101054	SCREW TAPTITE 6-32 X 1/4 PH PAN BLK
59	049507	DAUGHTER PCB ASSY
60	005135	CHASSIS SUPPORT
61	017801	RIVET PLASTIC
62	102006	NUT MACH W/LOCK
63	017860	SUPPORT PCB LOCKING
64	049509	POWER PCB ASSY
65	126524	DECAL FUSE REPLACEMENT
66	126527	DECAL FUSE
67	122337	CHOKE FILTER
68	102005	NUT MACH 8-32 W/LOCK
69	049508	INPUT PCB ASSY
70	005146	INPUT PCB BRACKET
71	049510	REMOTE SW/OUTPUT
72	104162	WASHER LOCK INTERNAL TOOTH
73	102051	HEX NUT M9 X .75 GOLD PLATED
74	104165	LW 3/8 INTERNAL GOLD TOOTH
75	104067	WASHER LOCK #10 INTERNAL STAR
76	104078	WASHER LOCK #8 INTERNAL STAR
77	005174	SWITCH SPACER
78	017802	WIRE CLAMP
79	005151	BOTTOM COVER
80	101078	8-32 X 5/16 PH PAN BLK
81	017841	FOOT
82	100159	SCREW MACH 10-32 X 3/4 PH PAN BLK
83	024010	FOOT PAD
84	104016	WASHER LOCK 1/2 INT STAR
85	126250	DECAL GROUND

REPACKING INSTRUCTIONS

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

IMPORTANT - For safe shipment, attach the four feet to the bottom of the unit. Four, 1/4 - 20 x 2-1/4 bolts with washers must be used to fasten the unit securely to the wood skid. Failure to do this will result in shipping damage.

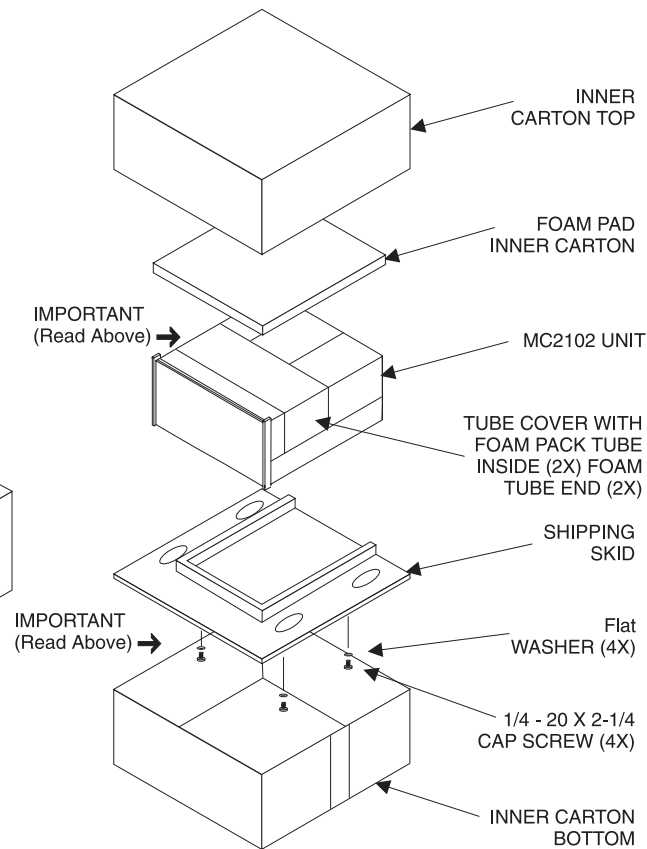
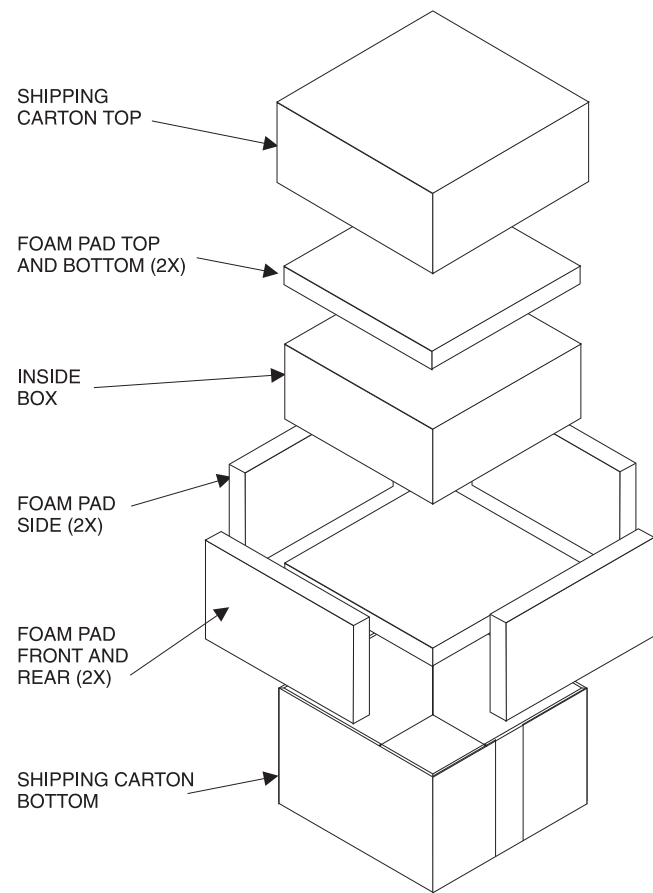
IMPORTANT - Remove Vacuum Tubes from unit and repack in original Tube Pack and place inside Tube Cover before shipping.

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	034051	Shipping carton bottom
2	034186	Foam pad (front and rear)
2	034187	Foam Pad (side)
2	034054	Foam pad (top and bottom)
1	034052	Shipping carton (top)
1	034137	Inner carton (bottom)
1	034161	Shipping skid
1	034188	Foam pad (inner carton)
1	034136	Inner carton (top)
4	101212	1/4 - 20 x 2-1/4 cap screw
4	104058	Flat washer
2	034179	Tube pack
2	034180	Tube pack (end)

MC2102 POWER AMPLIFIER



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.