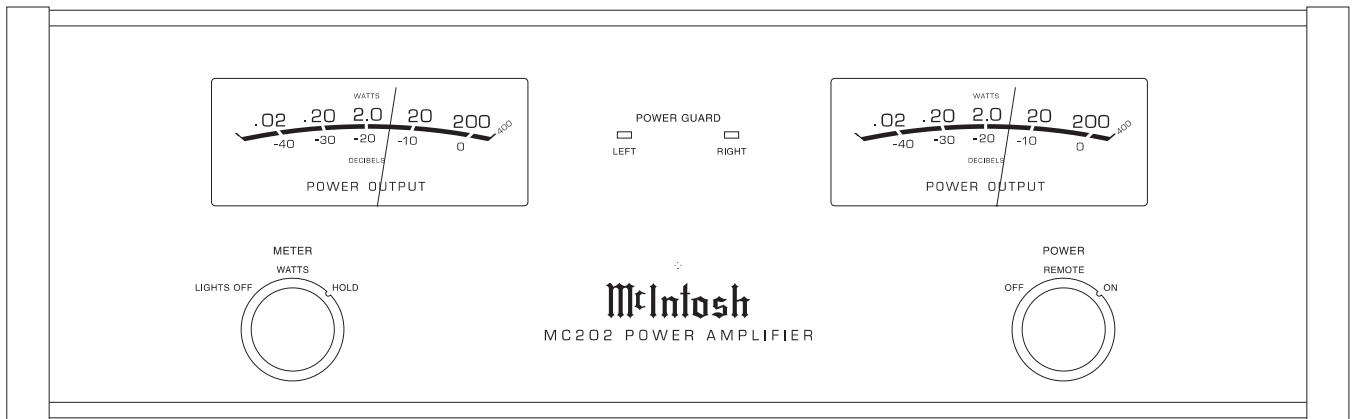


MC202

POWER AMPLIFIER



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McIntosh

SERVICE MANUAL

PERFORMANCE SPECIFICATIONS

Power Output Stereo

200 watts into 2, 4 or 8 ohm loads is the minimum sine wave continuous average power output per channel with both channels operating.

Power Output Mono Bridged

400 watts into 4, 8 or 16 ohm loads is the minimum sine wave continuous average power output.

Output Load Impedance

Stereo - 2, 4 or 8 ohms
Mono - 4, 8 or 16 ohms

Rated Power Band

20Hz to 20,000Hz

Dynamic Headroom

1.9dB

Frequency Response

+0, -0.25dB from 20Hz to 20,000Hz
+0, -3dB from 10Hz to 100,000Hz

Total Harmonic Distortion

0.005% maximum at any power level from 250 milliwatts to rated power per channel from 20Hz to 20,000Hz, all channels operating.

Intermodulation Distortion

0.005% maximum if instantaneous peak output per channel does not exceed twice the rated output with all channels operating for any combination of frequencies from 20Hz to 20,000Hz.

Signal To Noise Ratio (A Weighted)

110dB below rated output

Sensitivity

1.7 Volts Unbalanced Input
3.4 Volts Balanced Input

Input Impedance

10,000 ohms Unbalanced and Balanced

Wide Band Damping Factor

Greater than 40

Power Requirements

100 Volts, 50/60Hz at 4.8 amps
110 Volts, 50/60Hz at 4.4 amps
120 Volts, 50/60Hz at 4.0 amps
220 Volts, 50/60Hz at 2.0 amps
230 Volts, 50/60Hz at 2.0 amps
240 Volts, 50/60Hz at 2.0 amps

Note: Refer to the rear panel of the MC202 for the correct voltage.


Dimensions

Front Panel: 17-1/2 inches (44.45cm) wide, 5-7/16 inches (13.81cm) high. Depth behind front mounting panel is 18 inches (45.72cm). Clearance required in front of the Front Panel is 1 inch (2.54cm) for knobs.

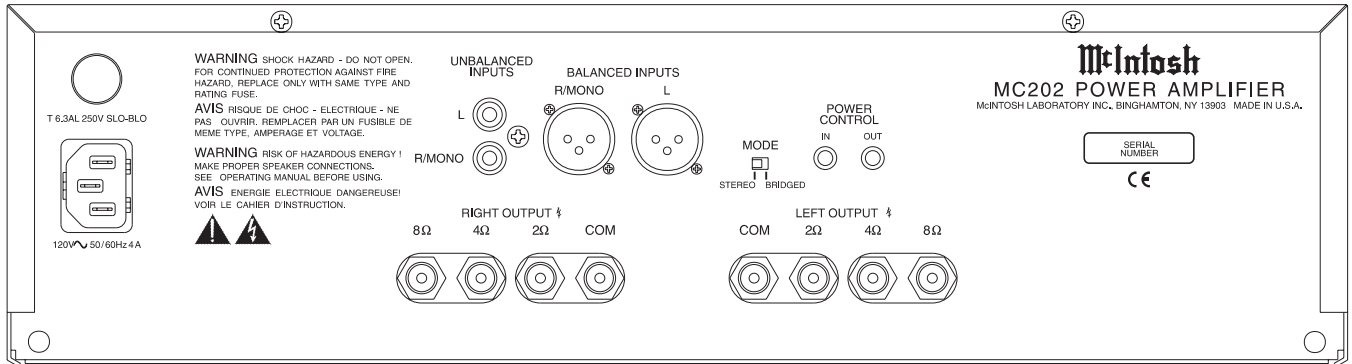
Weight

65 pounds (29.49 kg) net, 83 pounds (37.65 kg) in shipping carton.

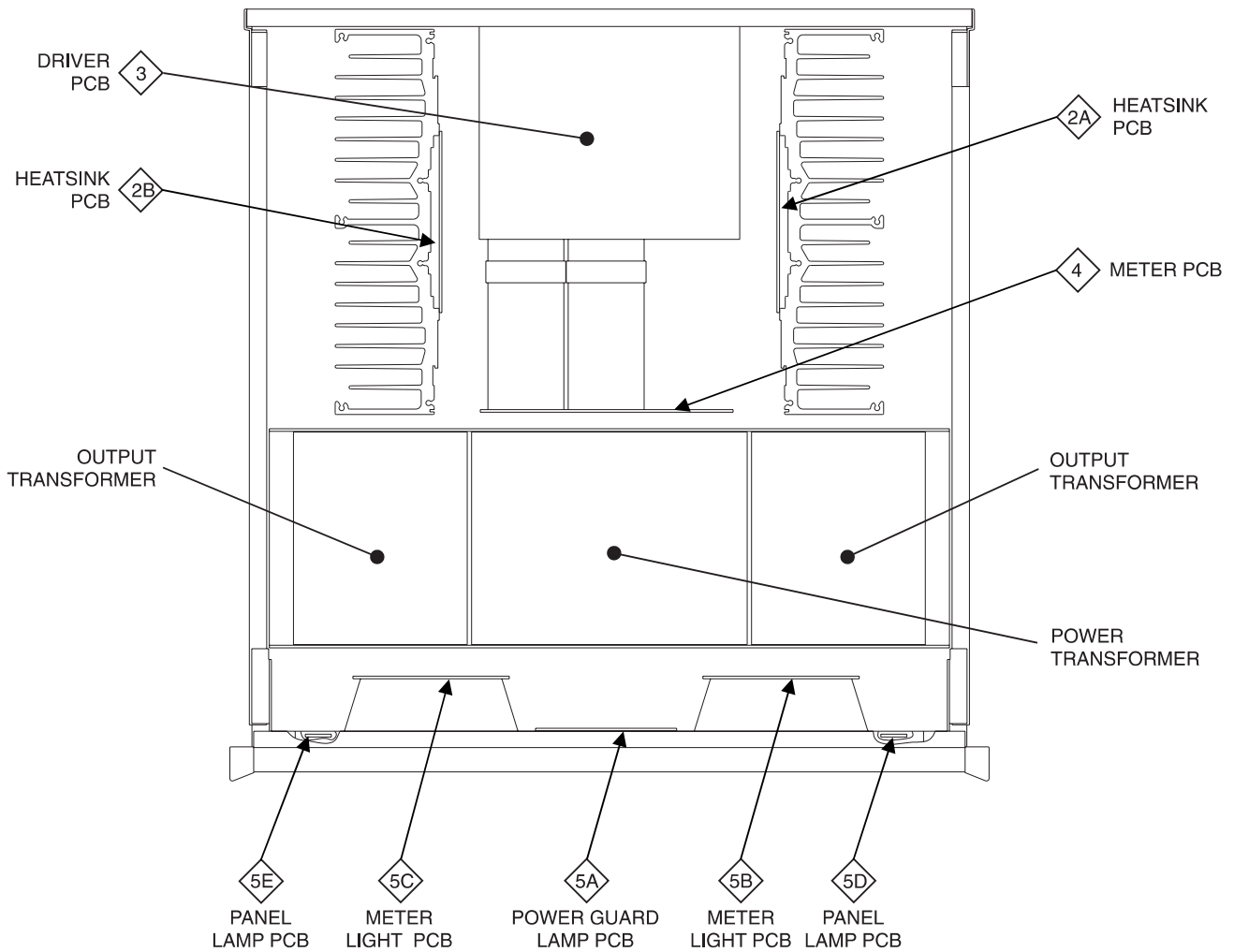
NOTES

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

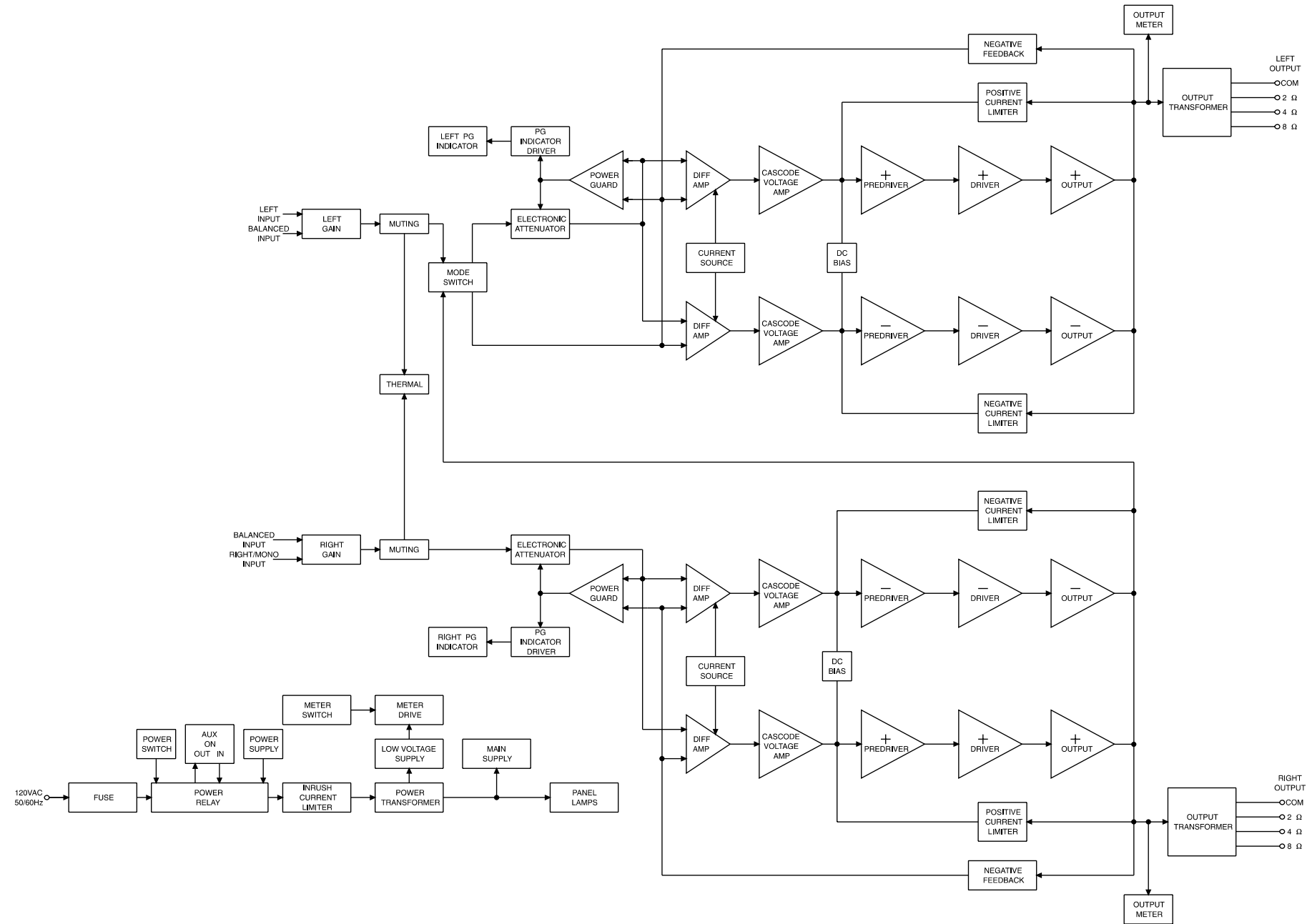


SECTION LOCATIONS

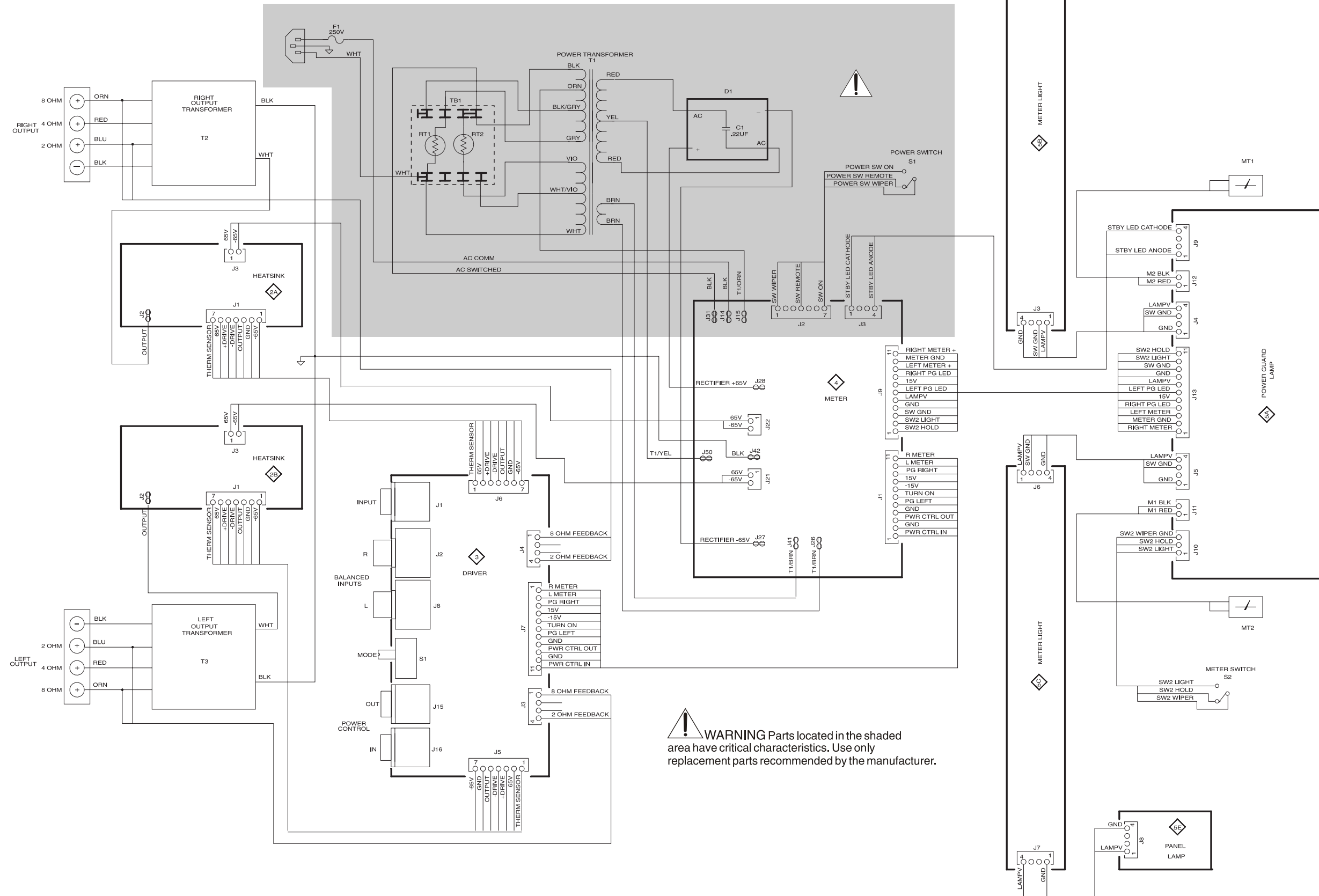


NOTES

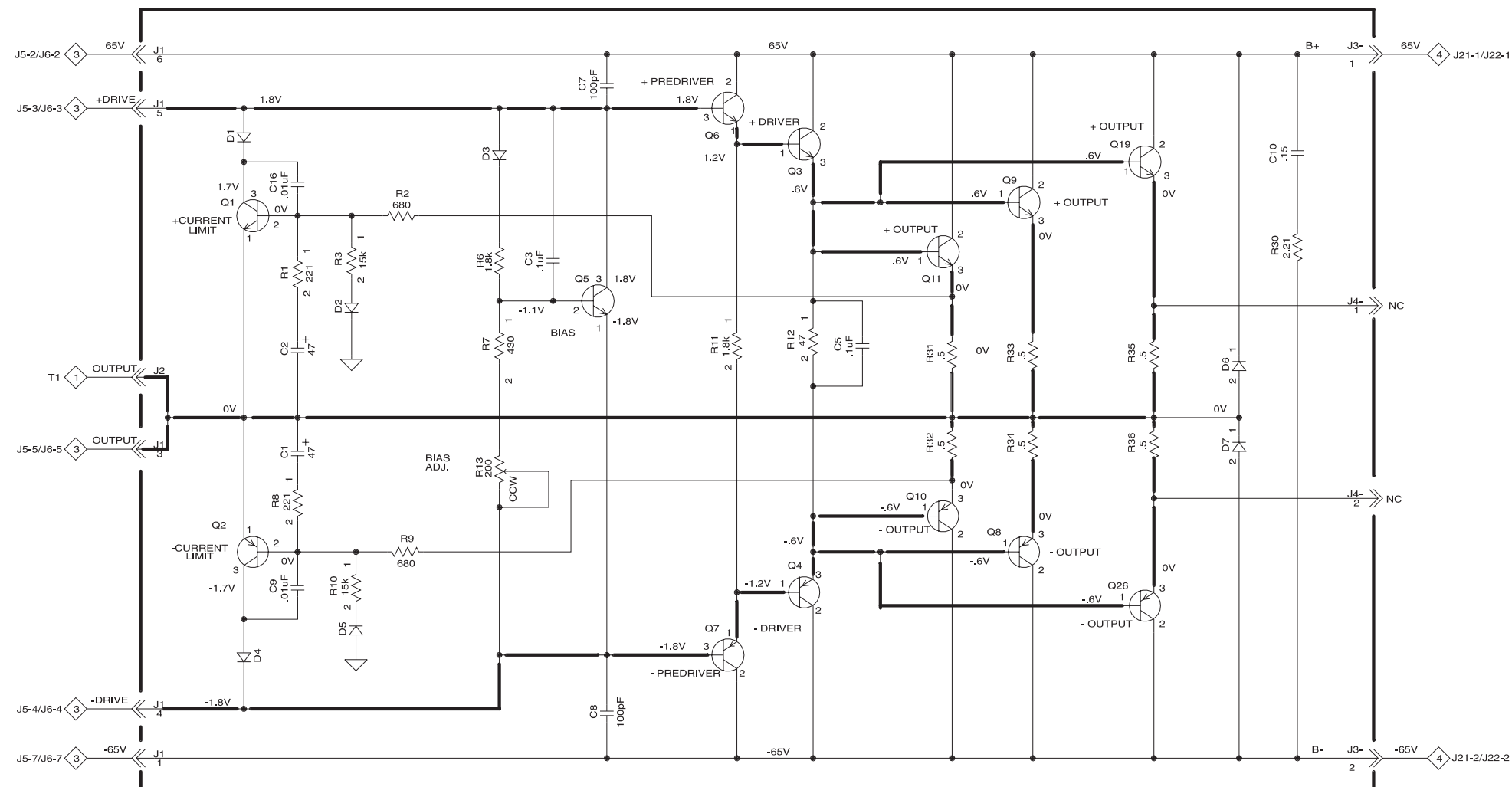
BLOCK DIAGRAM



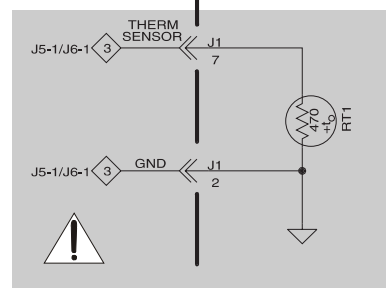
INTERCONNECT



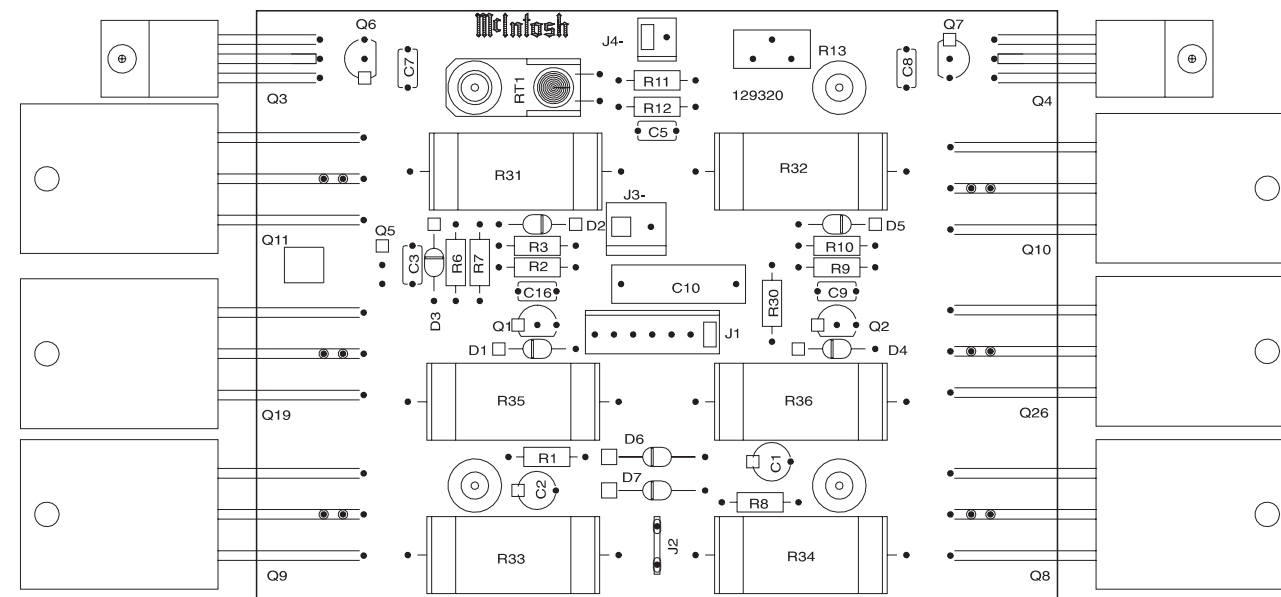
2A 2B HEATSINK 049346



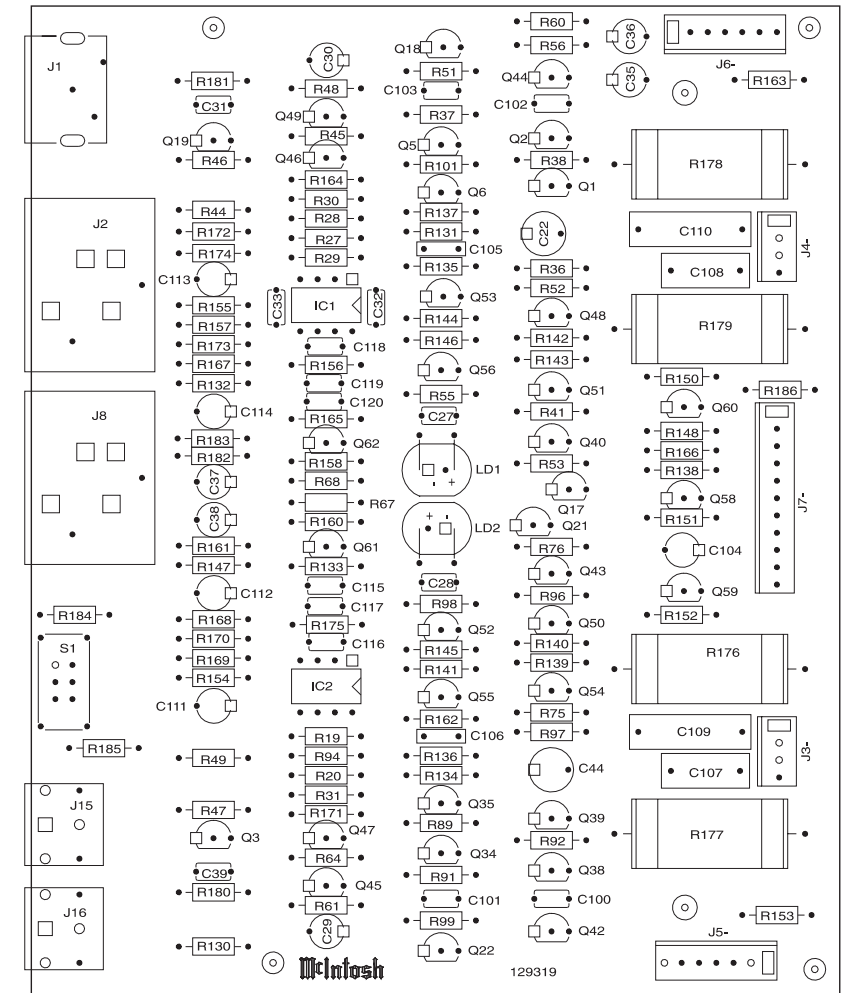
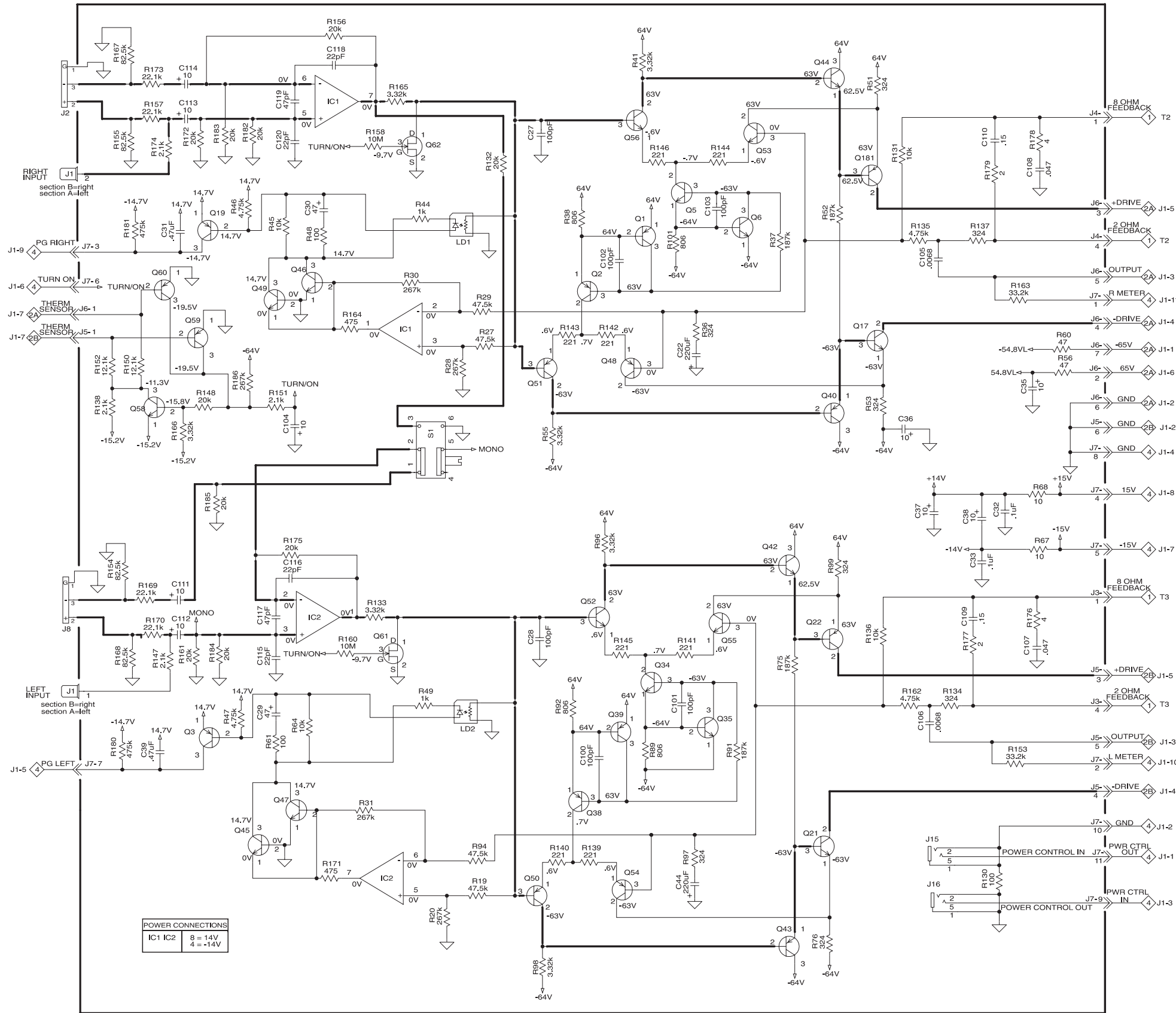
BIAS ADJ: ADJUST R13 FOR 12mV +/-3mV ACROSS J4-1 AND J4-2 WITH NO INPUT SIGNAL AND HEATSINKS COOL.



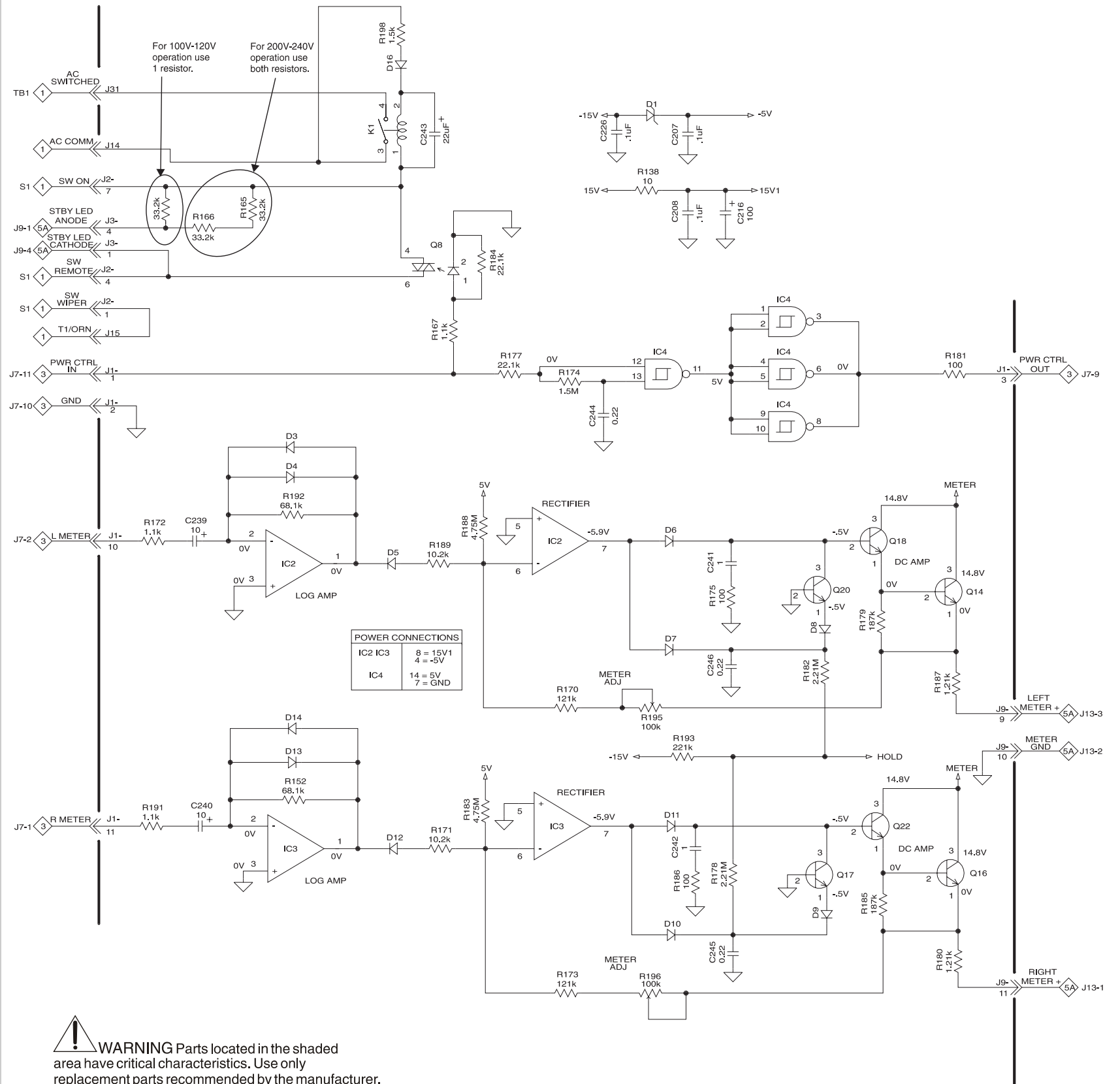
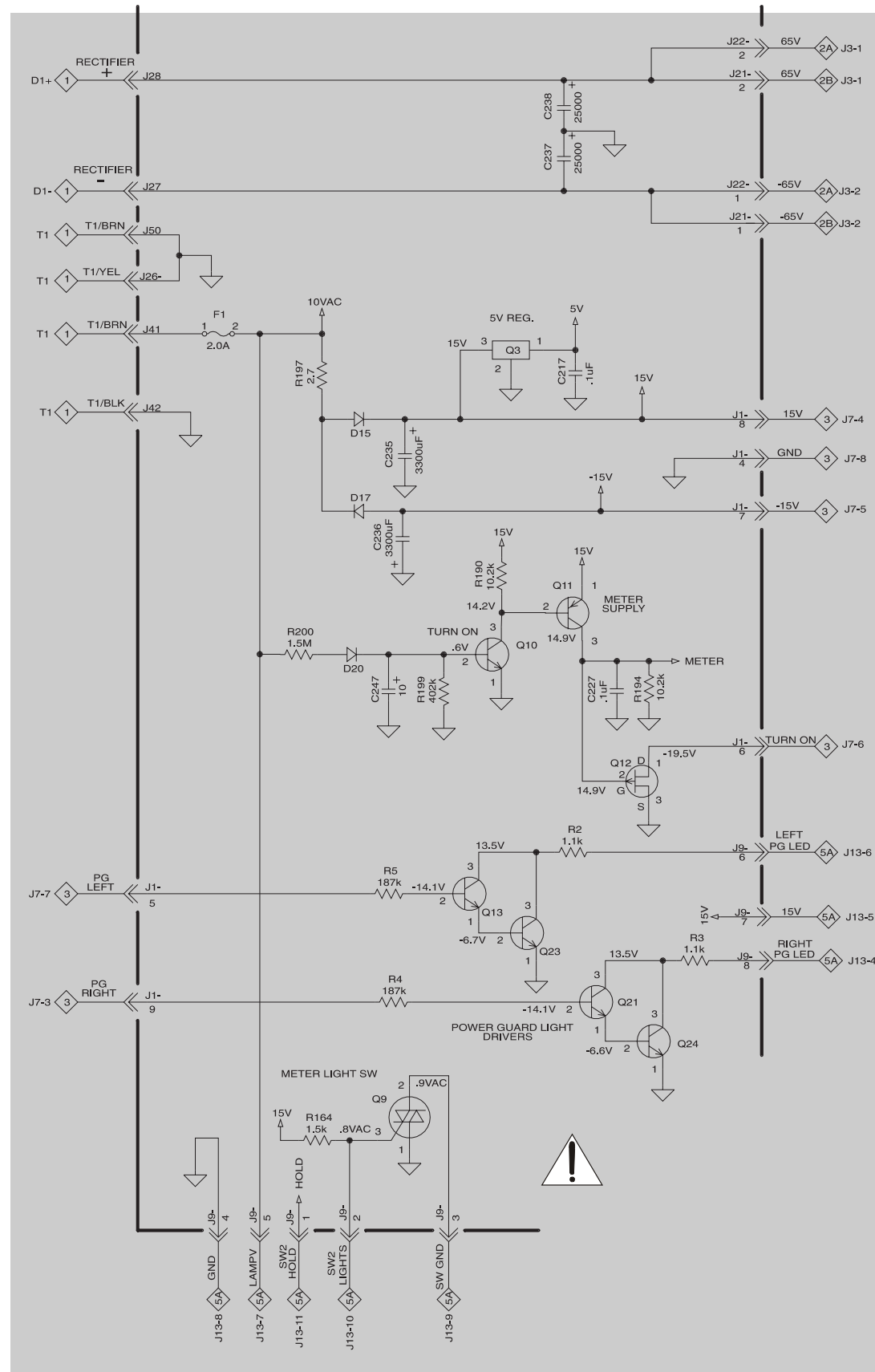
WARNING Parts located in the shaded area have critical characteristics. Use only replacement parts recommended by the manufacturer.



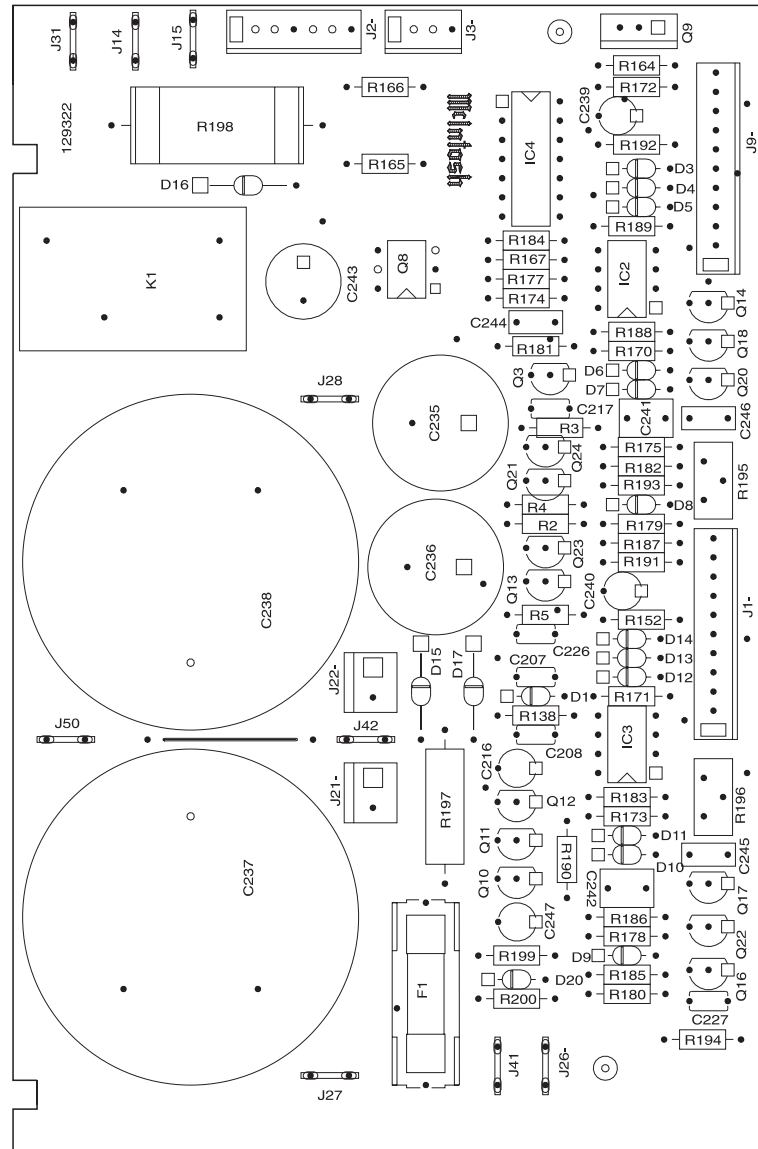
3 DRIVER 049353



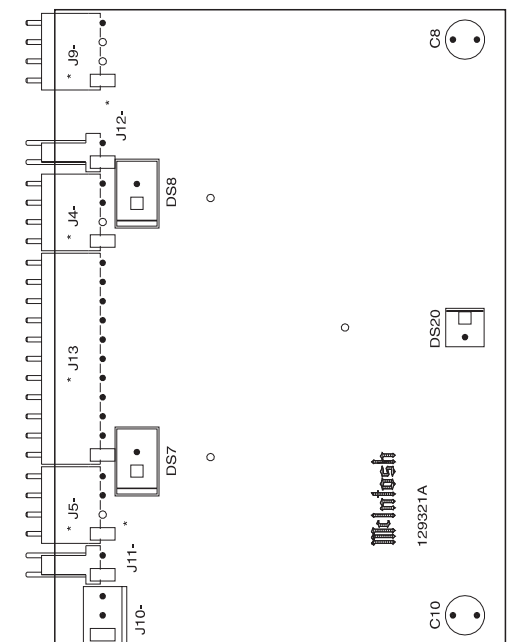
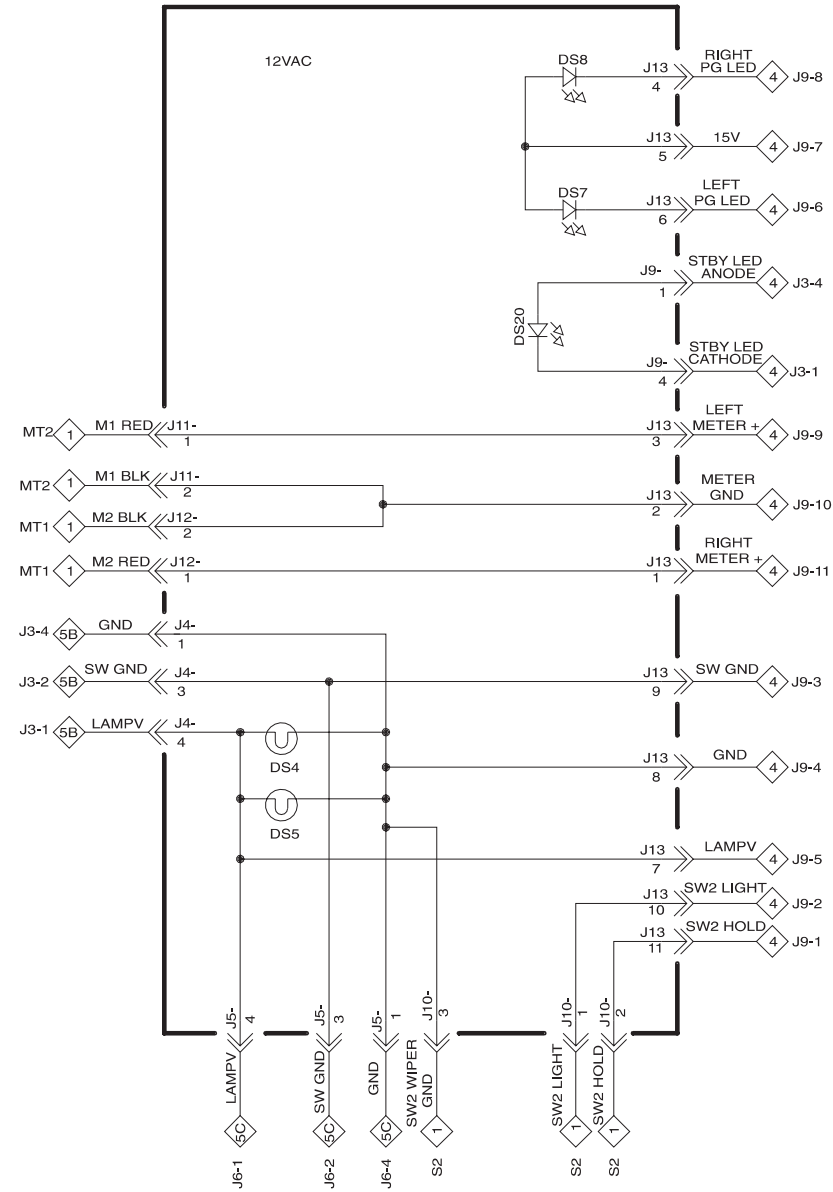
4 METER 049352



4 METER 049352

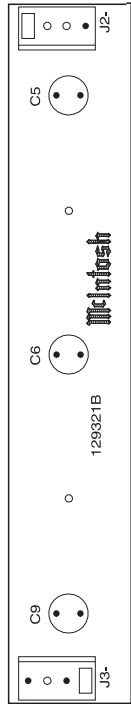
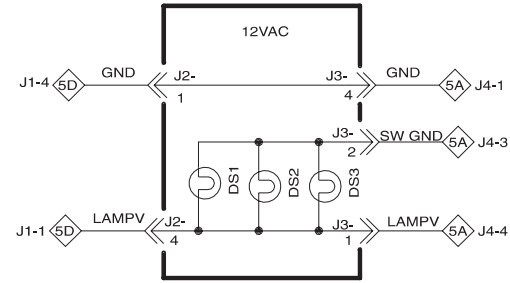


5A POWER GUARD LAMP 049354

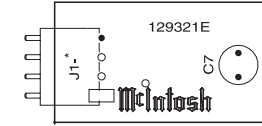
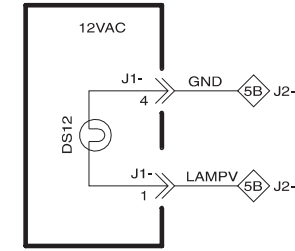


*DENOTES COMPONENTS ON REVERSE OR BACKSIDE OF PCB BD

5B METER LIGHT 049354

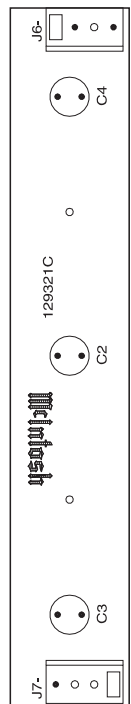
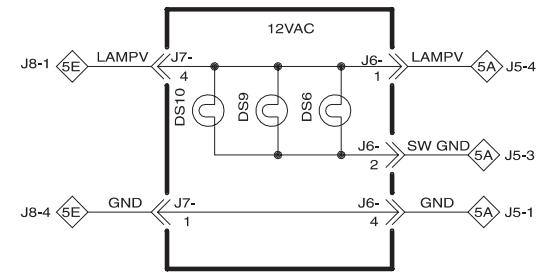


5D PANEL LAMP 049354

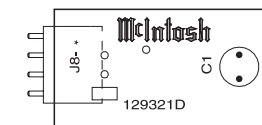
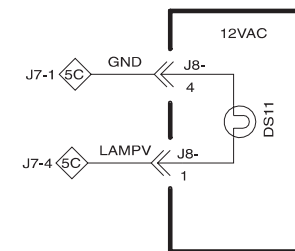


*DENOTES COMPONENTS ON REVERSE OR BACKSIDE OF PC BD

5C METER LIGHT 049354



5E PANEL LAMP 049354

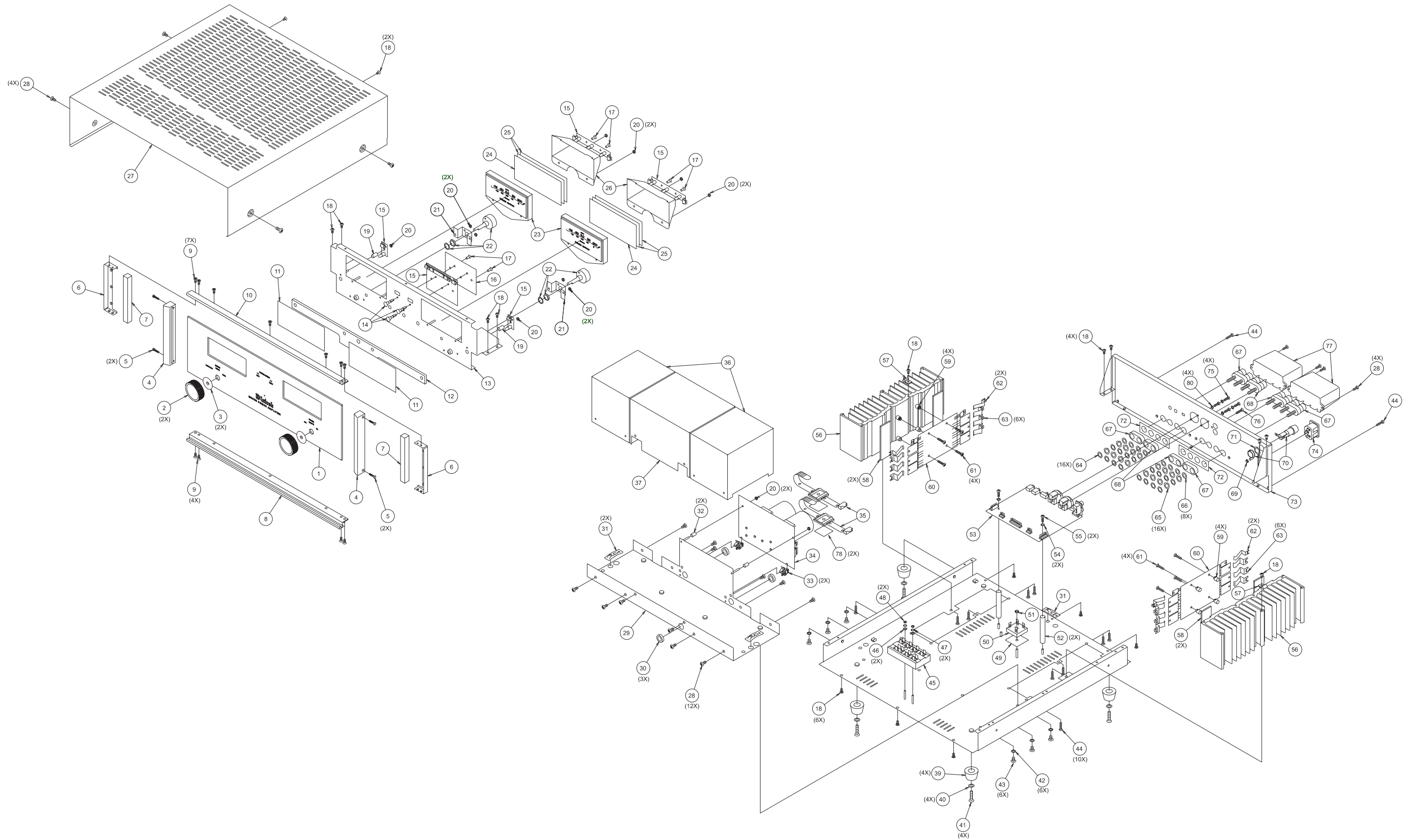


*DENOTES COMPONENTS ON REVERSE OR BACKSIDE OF PC BD

PARTS LIST

PART NO	DESCRIPTION	REFERENCE NO									
INTERCONNECT											
070139	DIODE RECTIFIER	D1	132255	TRANSISTOR PNP	Q2 Q38 Q48 Q50 Q51 Q54	133192	IC NAND SCHMIT 2-IN X 4	IC4			
089104	FUSE 6.3A 250V SLO BLO	F1	132285	TRANSISTOR NPN 25C3334C	Q17 Q21	133260	DUAL OPERATIONAL AMPLIFIER	IC2 IC3			
124077	METER	MT1 MT2	132286	TRANSISTOR PNP 2SA32IC	Q18 Q22	134383	TRIM POT 100K OHM 20%	R195 R196			
146243	SWITCH	S1 S2	133260	DUAL OPERATIONAL AMPLIFIER	IC1 IC2	139079	WIRE RES 1.5K 10% 5W	R198			
049349	POWER TRANSFORMER	T1	137042	FLAMEPROOF RES 47 OHM 5% 1/4W	R56 R60	139218	2.7 OHM 2W 5% WW RESISTOR FP	R197			
049350	OUTPUT TRANSFORMER	T2	139005	WIRE RES 2 OHMS 10% 5W	R177 R179	144081	RES MF 68.1K 1% 1/4W	R152 R192			
074091	AC TERM BLOCK	TB1	139119	WIRE RES 4 OHMS 5% 5W	R176 R178	144091	RES MF 1.1K 1% 1/4W	R2 R3 R167 R172 R191			
049346 HEATSINK PCB											
061300	MONO CAP 100PF 100V 5% NPO T&R	C7 C8	144053	RES MF 10K 1% 1/4W	R45 R64 R131 R136	144106	RES 33.2K 1% 1/4W	R165 R166			
061304	MONO CAP .01UF 50V 5% X 7R T&R	C9 C16	144086	RES MF 475 1% 1/4W	R164 R171	144120	RES MF 402K 1% 1/4W	R199			
061305	MONO CAP .1UF 50V 5% Z50 T&R	C3 C5	144089	RES MF 806 1% 1/4W	R38 R89 R92 R101	144128	RES MF 1.5K 1% 1/4W	R164			
064363	CAP POLYPROP 0.15MF 10% 250VDC	C10	144090	RES MF 1K 1% 1/4W	R44 R49	144130	RES MF 10.2K 1% 1/4W	R171 R189 R190 R194			
066446	CAP ELECT 47MF 35V	C1 C2	144095	RES MF 3.32K 1% 1/4W	R41 R55 R96 R98 R133 R165 R166	144157	RES MF 10 1% 1/4W	R138			
070047	SILICON DIODE 1N4148 T&R	D1 D2 D3 D4 D5	144097	RES MF 4.75K 1% 1/4W	R46 R47 R135 R162	144187	RES MF 22.1K 1% 1/4W	R177 R184			
070131	DIODE RECTIFIER	D6 D7	144104	RES MF 20K 1% 1/4W	R132 R148 R156 R161 R172 R175	144191	RES MF 1.21K 1% 1/4W	R180 R187			
117213	2-PIN MALE CONNECTOR	J4-	144106	RES 33.2K 1% 1/4W	R182 R183 R184 R185	144196	RES MF 100 1% 1/4W	R175 R181 R186			
117217	MALE CONN 7 PIN	J1	144108	RES MF 47.5K 1% 1/4W	R153 R163	144265	RES MF 2.21M 1/4W	R178 R182			
117404	HEADER 2-PIN 0.156	J3-	144112	RES 82.5K 1% 1/4W	R19 R27 R29 R94	144379	RES METAL FILM 4.75M 1/4W 1%	R183 R188			
117708	FASTON BLADE W/FEET	J2	144118	RES MF 267K 1% 1/4W	R154 R155 R167 R168	144406	METAL FILM RES 187K 1% 1/4W	R4 R5 R179 R185			
132171	TRANSISTOR NPN	Q1	144118	RES MF 267K 1% 1/4W	R20 R28 R30 R31 R186	144418	MF RES 121K 1% 1/4W	R170 R173			
132172	TRANSISTOR SI PNP MPSA55	Q2	144154	RES MF 12.1K 1% 1/4W	R150 R152	144421	MF RES 221K 1% 1/4W	R193			
132285	TRANSISTOR NPN 25C3334C	Q6	144157	RES MF 10 1% 1/4W	R67 R68	144422	MF RES 1.5M 1% 1/4W	R174 R200			
132286	TRANSISTOR PNP 2SA32IC	Q7	144172	RES MF 221 1% 1/4W	R139 R140 R141 R142 R143 R144	178159	FUSE HOLDER 5X20MM PCB MOUNT	F1			
134390	TRIM POT 200 OHM 20% HORIZ AD	R13	144179	LDR NETWORK VTL5C9	R145 R146	049354 POWER GUARD LIGHT\METER LIGHT\PANEL LAMP PCB					
137093	MET OX 680 5% .5W	R2 R9	144187	RES MF 22.1K 1% 1/4W	LD1 LD2	058120	LAMP 14V #7373	C1 C2 C3 C4 C5 C6 C9 C10			
137094	MET OX 1.8K 5% .5W	R6 R11	144196	RES MF 100 1% 1/4W	R157 R169 R170 R173			C11 C12			
137095	MET OX 430 5% .5W	R7	144264	RES MF 10M 1% 1/4W	R48 R61 R130	058133	AMBER LED	DS7 DS8			
137096	MET OX 47 5% .5W	R12	144299	RES MF 2.1K 1% 1/4W	R158 R160	058148	RED LED HIGH EFFICIENCY	DS20			
139177	WIREWOUND RES 0.5 OHM 5W 5%	R31 R32 R33 R34 R35 R36	144338	RES MF 324 OHM 1% 1/4W	R138 R147 R151 R174	117221	MALE CONN 3 POS RT. ANGLE	J10-			
144172	RES MF 221 1% 1/4W	R1 R8	144364	RES MF 475K 1% 1/4W	R36 R51 R53 R76 R97 R99 R134	117240	4 PIN RT. ANGLE	J1- J2- J3- J4- J5-J6- J7- J8- J9-			
144279	THERMISTOR 100	RT1	144406	METAL FILM RES 187K 1% 1/4W	R137	117242	11 POS. RT ANGLE	J13			
144378	RES MF 2.21 OHM 1/4W 1%	R30	148059	SLIDE SWITCH	R180 R181	117244	CONN. 2 POS. R-ANGLE	J11- J12-			
144412	MF RES 15K 1% 1/4W	R3 R10	049352 METER PCB								
049353 DRIVER PCB											
061249	DISC CAP .47UF 50V MONOLITHIC	C31 C39	061305	MONO CAP .1UF 50V 5% Z50 T&R	C207 C208 C217 C226 C227						
061298	MONO CAP 22PF 200V 5% NPO T&R	C115 C116 C118 C120	064329	CAP M POLY .22UF 5% 63VDC	C244 C245 C246						
061299	MONO CAP 47PF 200V 5% NPO T&R	C117 C119	064337	CAP M POLY 1MF 5% 63VDC	C241 C242						
061300	MONO CAP 100PF 100V 5% NPO T&R	C27 C28 C100 C101 C102	066390	CAP ELECT 22UF 100V	C243						
		C103	066445	CAP ELECT 10MF 50V	C239 C240 C247						
061305	MONO CAP .1UF 50V 5% Z50 T&R	C32 C33	066447	CAP ELECT 100MF 16V	C216						
064310	CAP MPOLY .0068UF 5% 100/250VDC	C105 C106	066504	CAPACITOR ELECT 25000UF 75V	C237 C238						
064363	CAP POLYPROP 0.15MF 10% 250VDC	C109 C110	066509	CAP ELECT 3300UF 35V	C235 C236						
064364	CAP POLYPROP .047MF 10% 250V	C107 C108	070047	SILICON DIODE 1N4148 T&R	D3 D4 D5 D6 D7 D8 D9 D10 D12						
066446	CAP ELECT 47MF 35V	C29 C30			D12 D13 D14 D20						
066462	CAP ELECT 10UF 100VDC	C35 C36 C37 C38 C104 C111	070130	ZENER DIODE 8.2V 1/2W	D1						
		C112 C113 C114	070131	DIODE RECTIFIER	D15 D16 D17						
066507	CAP ELECT 220UF 25V	C22 C44	087052	RELAY 8A	R1						
117215	4-PIN CONNECTOR	J3- J4-	089089	FUSE 2A SLO-BLO 5X20	F1						
117217	MALE CONN 7 PIN	J5- J6-	117215	4-PIN CONNECTOR	J3-						
117279	11-POS. MALE CONN.	J7-	117217	MALE CONN:7 PIN	J2-						
117436	PJ261G PHON JACK, GOLD	J1	117279	11-POS. MALE CONN.	J1- J9-						
117685	XLR RECEPTACLE FEMALE	J2 J8	117404	HEADER 2-PIN 0.156	J21- J22-						
117759	STEREO 1/8 HEAD PHONE JACK	J15 J16	117708	FASTON BLADE W/FEET	J14 J15 J26- J27 J28 J31 J41 J42 J50						
132222	N. CHANNEL FET	Q61 Q62	131021	TRIAC 8A 200V	Q9						
132223	TRANSISTOR NPN MPS4124 2K/REEL	Q6 Q35 Q42 Q44 Q45 Q46	131022	600V TRIAC DRIVER OPTOCOUPLER	Q8						
		Q47 Q49 Q58	132223	TRANSISTOR NPN MPS4124 2K/REEL	Q10 Q13 Q14 Q16 Q17 Q18 Q20 Q21						
132224	TRANSISTOR PNP	Q1 Q3 Q19 Q39 Q40 Q43 Q59			Q22 Q23 Q24						
		Q60	132224	TRANSISTOR PNP	Q11						
132254	TRANSISTOR NPN	Q5 Q34 Q52 Q53 Q55 Q56	132226	TRANSISTOR P.CHANNEL JUNC.FET	Q12						
			133093	IC REGULATOR +5 VOLT	Q3						

EXPLODED VIEW



EXPLODED VIEW PARTS LIST

Ref No.	Part No.	Description
1	016411	GLASS PANEL
2	049320	KNOB ASSEMBLY
3	104017	BLK FELT WASHER
4	018611	5" ENDCAP
5	101042	TS 4-40 X 1/2 SLOT FILLISTER
6	004810	EXTRUSION BRACKET 5"
7	094360	FOAM TAPE 1/2 X 1/2
8	018588	BOTTOM EXTRUSION
9	101172	TCS 6-32 X 1/4 PHIL FLAT U/C
10	018587	TOP EXTRUSION
11	017363	PLEXIGLAS FILTER LIGHT BLUE
12	017711	DISPLAY PLEXIGLAS
13	004804	SUBPANEL
14	112092	REVERSE LOCKING PCB SUPPORT
15	049354	LAMP PCB ASSY
16	022315	FISHPAPER SHIELD
17	114072	PLASTIC RIVET
18	101054	TS 6-32 X 1/4 PH PAN TAPTITE BLK
19	112086	NYLON SPACER
20	102001	KEP NUT 4-40 CADMIUM PLATE
21	004805	SWITCH BRACKET
22	146243	POWER SWITCH
23	124077	METER
24	092341	FILTER AZURE BLUE
25	092342	FILTER PALE BLUE
26	017447	PLASTIC LIGHT BOX
27	004809	TOP COVER
28	101078	TS 8-32 X 5/16 PHIL PAN BLK
29	005023	TRAY
30	078003	RUBBER GROMMET
31	106007	SPRING CLIP: LATCH TYPE
32	112038	STL SPACER 4 X 3/8 NICKEL PLT
33	112104	BOARD MOUNT
34	049352	POWER SUPPLY METER PCB ASSY
35	112102	MOUNTING STRAPS
36	049350	OUTPUT TRANSFORMER
37	049349	POWER TRANSFORMER
38	005024	CHASSIS
39	017218	PLASTIC FEET-BLACK
40	104063	FLAT WASHER #10 CLEAR ZINC
41	100159	MS 10-32 X 3/4 PHIL PAN BLK ZINC
42	104067	LK WASH: INTERNAL STAR #10
43	100120	MS 10-32 X 1/4 PHIL PAN ZINC
44	101176	TCS 6-32 X 1/2 PH PAN BLK TYPE F
45	074091	AC TERMINAL BLOCK
46	104001	FLAT STEEL WASHER #4 X 9/32 X .025
47	104004	LK WASHER 5 X .255 INT STAR
48	102022	MN 4-40 3/16 X 3/16
49	084135	THERMAL PAD
50	070139	RECTIFIER BRIDGE
51	102003	MACH NUT 6-32 W/LOCK
52	112103	HEX SPACER 6-32 X 2.375
53	049353	DRIVER PCB ASSY
54	104005	STEEL WASHER: FLAT 6 X 3/8 X .032
55	100255	SEMS 6-32 X 3/8 PHIL PAN INTERNAL
56	018617	AMPLIFIER HEATSINK
57	017160	MOUNTING TAB W/ .140 DIA MTG
58	084187	ISOSTRATE
59	112087	PCB SPACER 1/4"
60	049346	HEATSINK PCB ASSY
61	101059	SM 6 X 5/8 PHIL PAN TYPE A
62	114118	TRANSISTOR CLIP 218
63	114119	TRANSISTOR CLIP 214
64	110009	NUT M5 X 0.8 BRASS WITH GOLD PLATE
65	104130	LK #10 SPLIT PHOS/BRONZE
66	104148	FLAT WASHER BRASS
67	084189	DUAL BINDING POST RED
68	084124	DUAL BINDING POST
69	102020	MACH NUT 6-32 SELF-LOCK
70	178161	FUSE HOLDER 5 X 20mm IEC
71	104016	LK WASH: 1/2 X .630 X .022 INT STAR
72	004800	OUTPUT PLATE
73	005022	REAR PANEL
74	117487	AC LINE RECEPTACLE
75	101197	HI/LO 4-24 X 3/8 PHIL ROUND BLACK
76	101114	SM 4-24 X 1/2 PHIL PAN TYPE A
77	017706	TERMINAL COVER
78	094332	DOUBLE COATED MTG TAPE 1/8" THICK
79	078017	GROMMET 3/4 X 9/16
80	104142	LOCKWASHER 2.5mm INT STAR ZINC

REPACKING INSTRUCTIONS

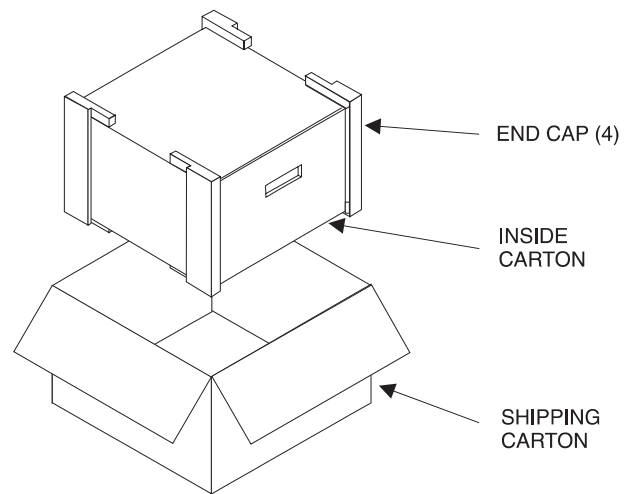
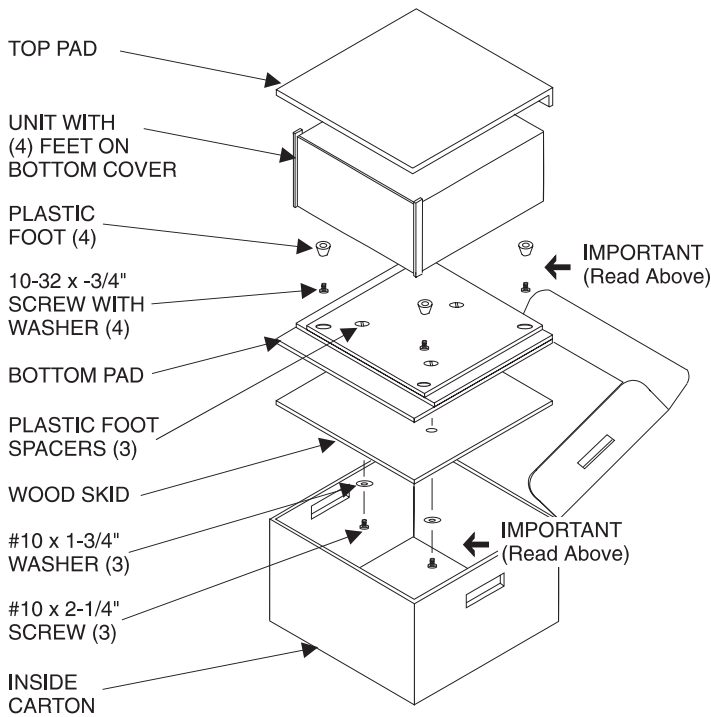
In the event it is necessary to repack the unit for shipment, the unit must be packed exactly as shown below.

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. Three #10 x 2-1/4" screws and washers must be used to fasten the unit securely to the bottom pad and wood skid. 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	033838	Shipping carton only
4	033837	End cap (Foam pad)
1	033836	Inside carton only
1	033725	Top pad
1	034008	Bottom pad
3	017218	Plastic foot (spacer)
1	033699	Wood skid
3	101169	#10 x 2-1/4" Wood screw
3	104033	#10 x 1-3/4" Flat washer
4	017218	Plastic foot
4	100159	#10-32 x 3/4" Machine screw
4	104083	#10 x 7/16" Flat washer
1	049107	Packaging complete



MC202

POWER AMPLIFIER

SERVICE MANUAL

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