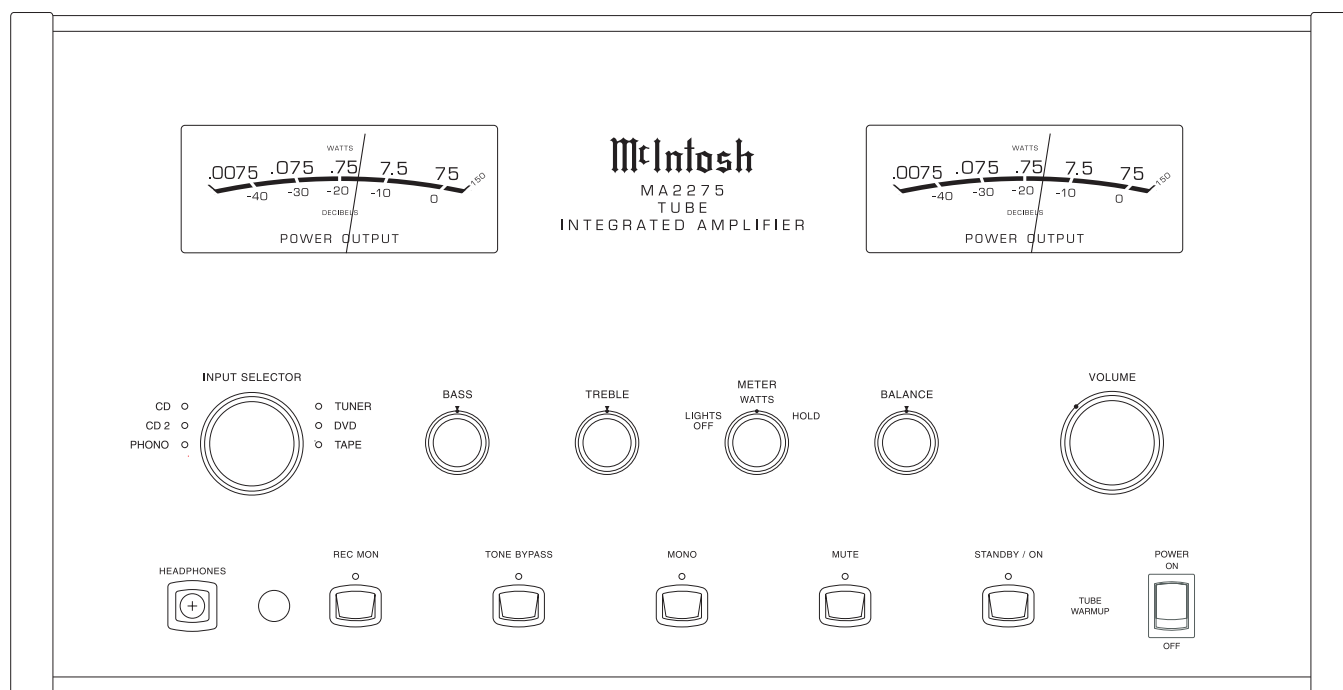




MA2275

TUBE INTEGRATED AMPLIFIER



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SERVICE MANUAL

PERFORMANCE SPECIFICATIONS

Power Output

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

Frequency Response

+0, -0.5dB from 20Hz to 20,000Hz
+0, -3dB from 10Hz to 50,000Hz

Sensitivity

Phono: 4.4mV for 2.5V preamp output
High Level: 450mV for 2.5V preamp output
Power Amplifier Input: 2.5V for rated output

A-Weighted Signal To Noise Ratio

Phono Input: 80dB below 10mV input
High Level: 97dB below rated output
Power Amplifier: 110dB below rated output

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 a 2, 4 or 8 ohm load

Input Impedance

Phono: 47k ohms, 65pF
High Level: 22k ohms

Maximum Input Signal

Phono: 90mV
High Level: 8V

Preamplifier Maximum Voltage Output

Phono: 8V
High Level: 8V
Main Out: 8V at preamp output

Voltage Gain

High Level to Tape output: 0dB
High Level to Preamp output: 15dB

Wide Band Damping Factor

Greater than 18

Power Requirements

100 Volts, 50/60Hz at 3.6 amps
110 Volts, 50/60Hz at 3.6 amps
120 Volts, 50/60Hz at 3.6 amps
220 Volts, 50/60Hz at 1.8 amps
230 Volts, 50/60Hz at 1.8 amps
240 Volts, 50/60Hz at 1.8 amps

Note: Refer to the rear panel of the MA2275 for the correct voltage.

Preamplifier Tube Compliment

2 - 12AX7A Phono Circuitry
2 - 12AX7A High Level Circuitry

Power Amplifier Tube Compliment

2 - 12AT7
4 - KT88/6550

Overall Dimensions

Width is 17-3/4 inches (45.09cm), Height is 10-1/8 inches (25.72cm) including feet, Depth is 18-3/4 inches (47.63cm) including the Front Panel and Knobs

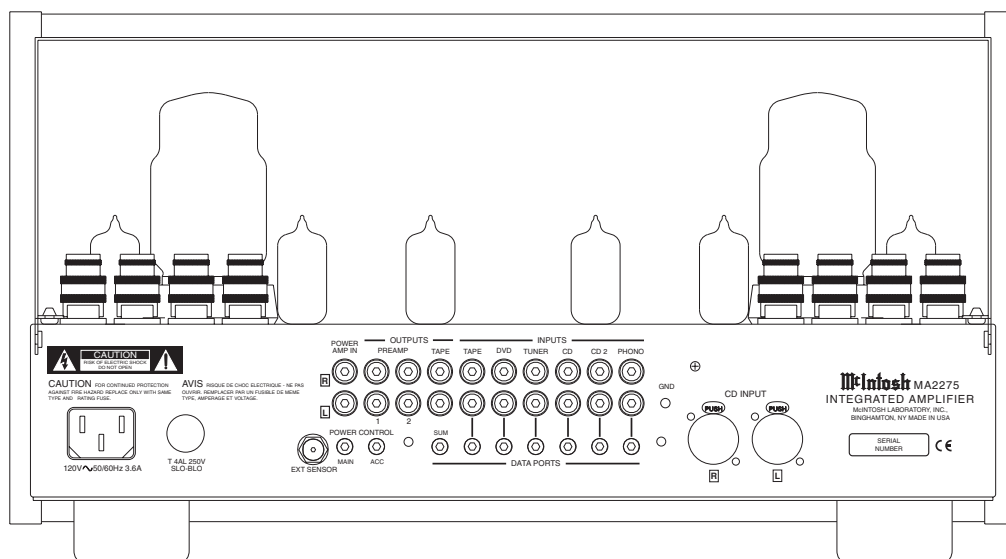
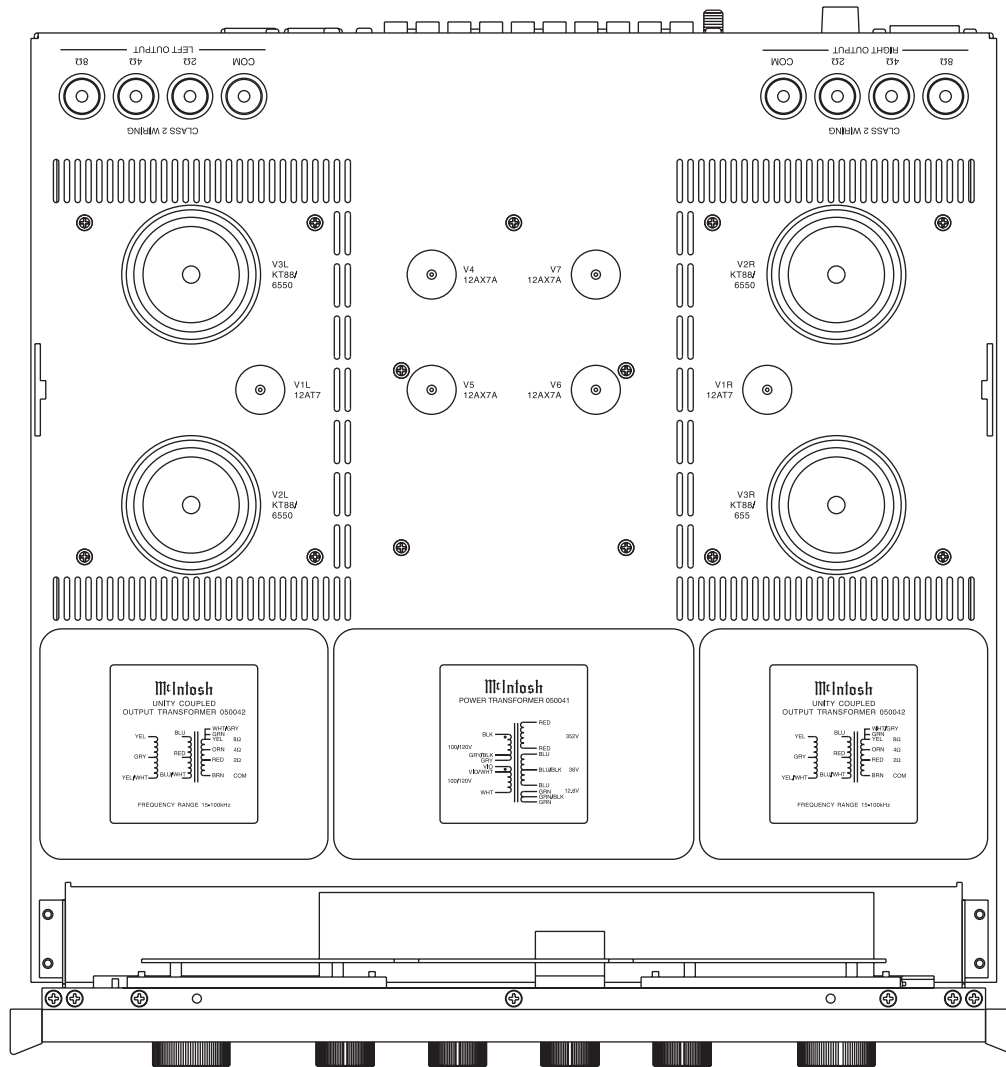
Weight

77 pounds (35 kg) net, 110 pounds (50 kg) in shipping carton

NOTES

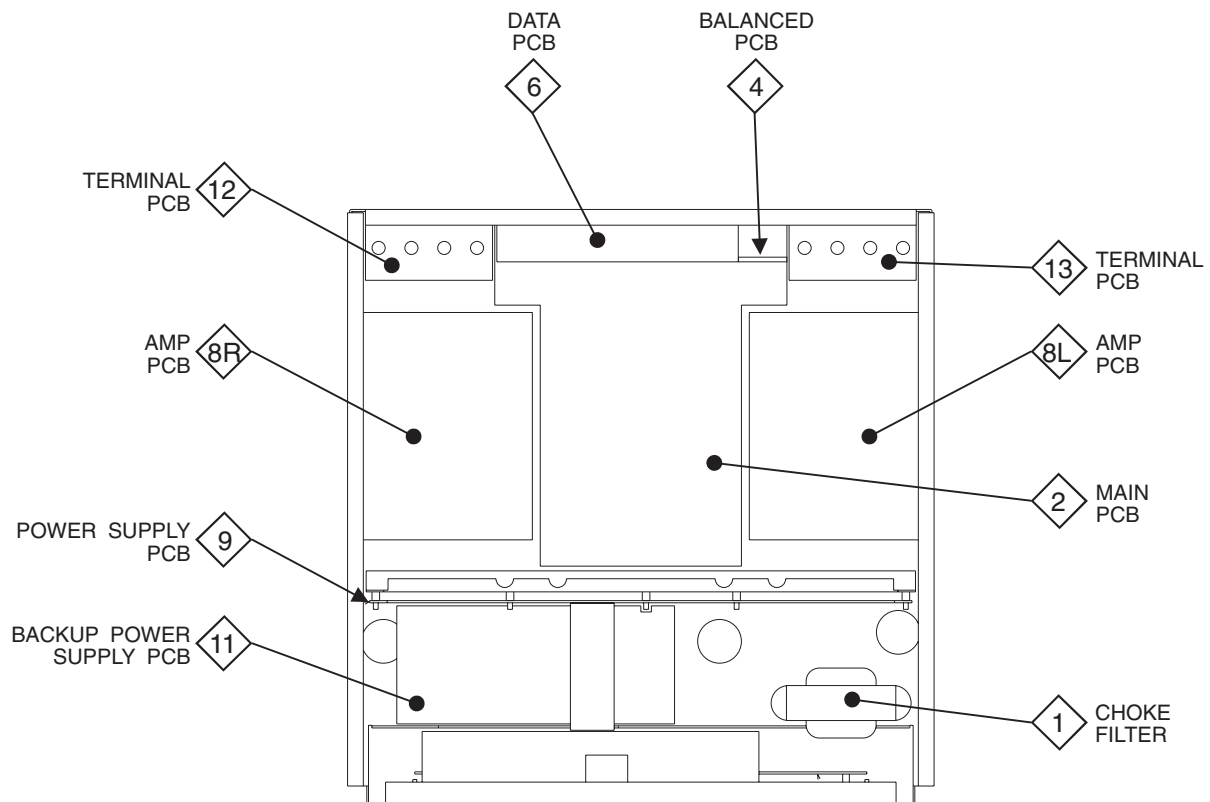
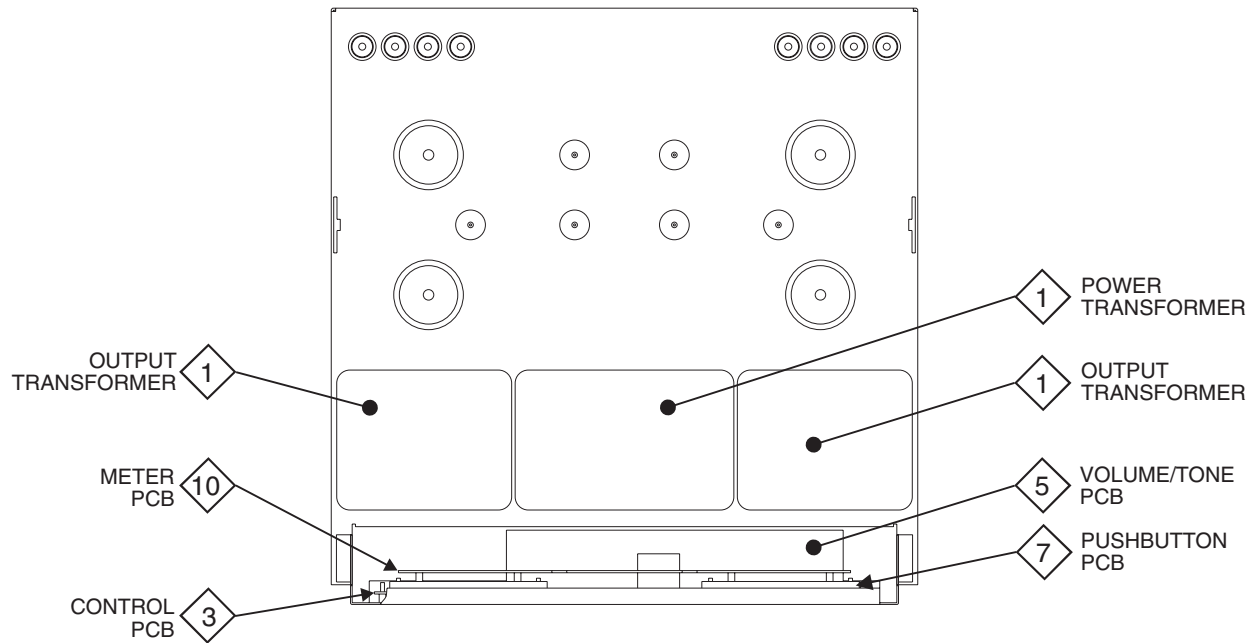
1. The heavy lines on the schematic denote the primary signal path.
2. Unless otherwise noted, all voltages indicated on the schematics are measured under the following conditions:
 - a. AC input at 120 volts, 50/60Hz.
 - b. All voltages are +/-10% with respect to ground. A high impedance (10 megaohm) 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 VIEWS



SECTION LOCATIONS

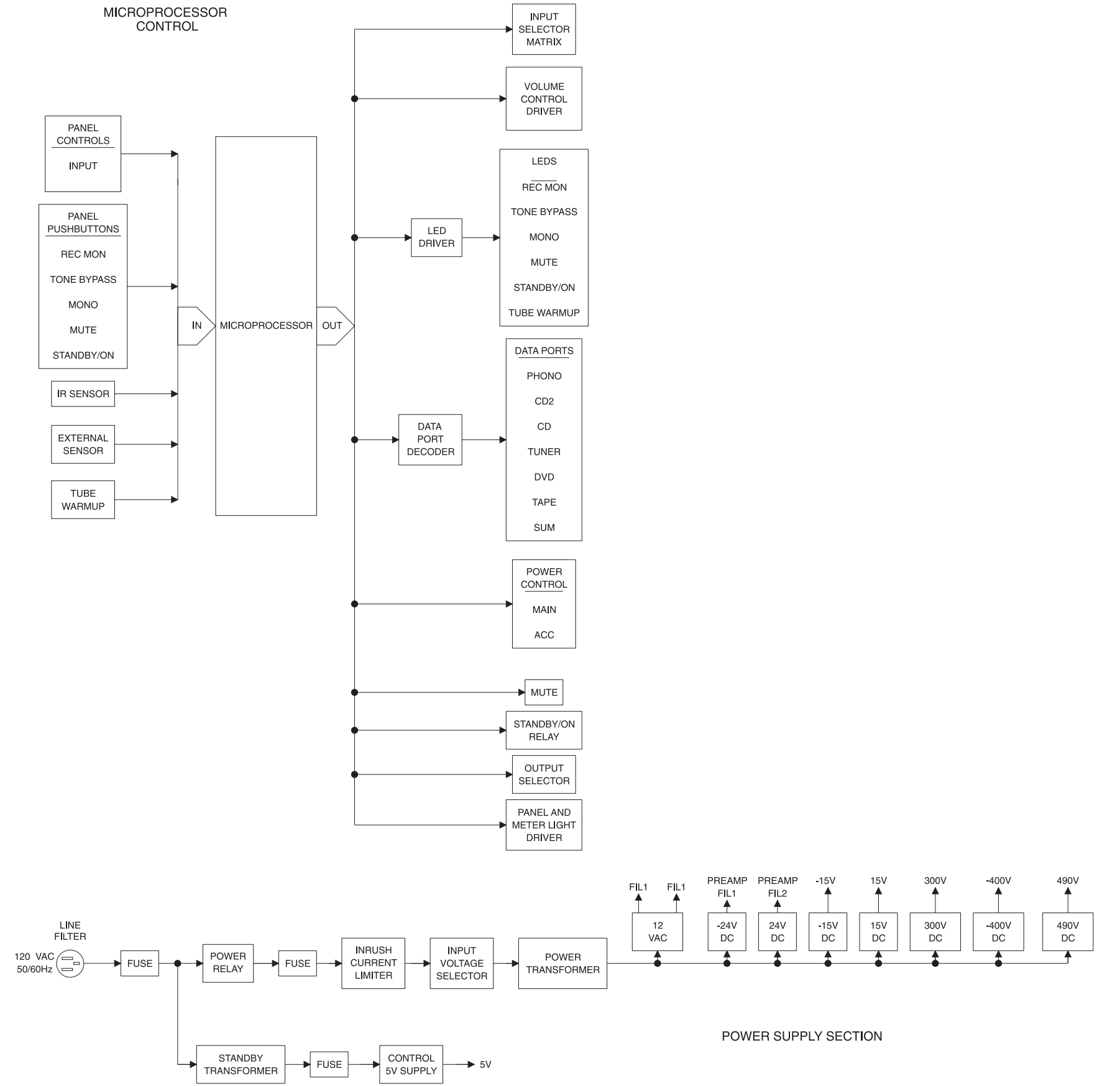
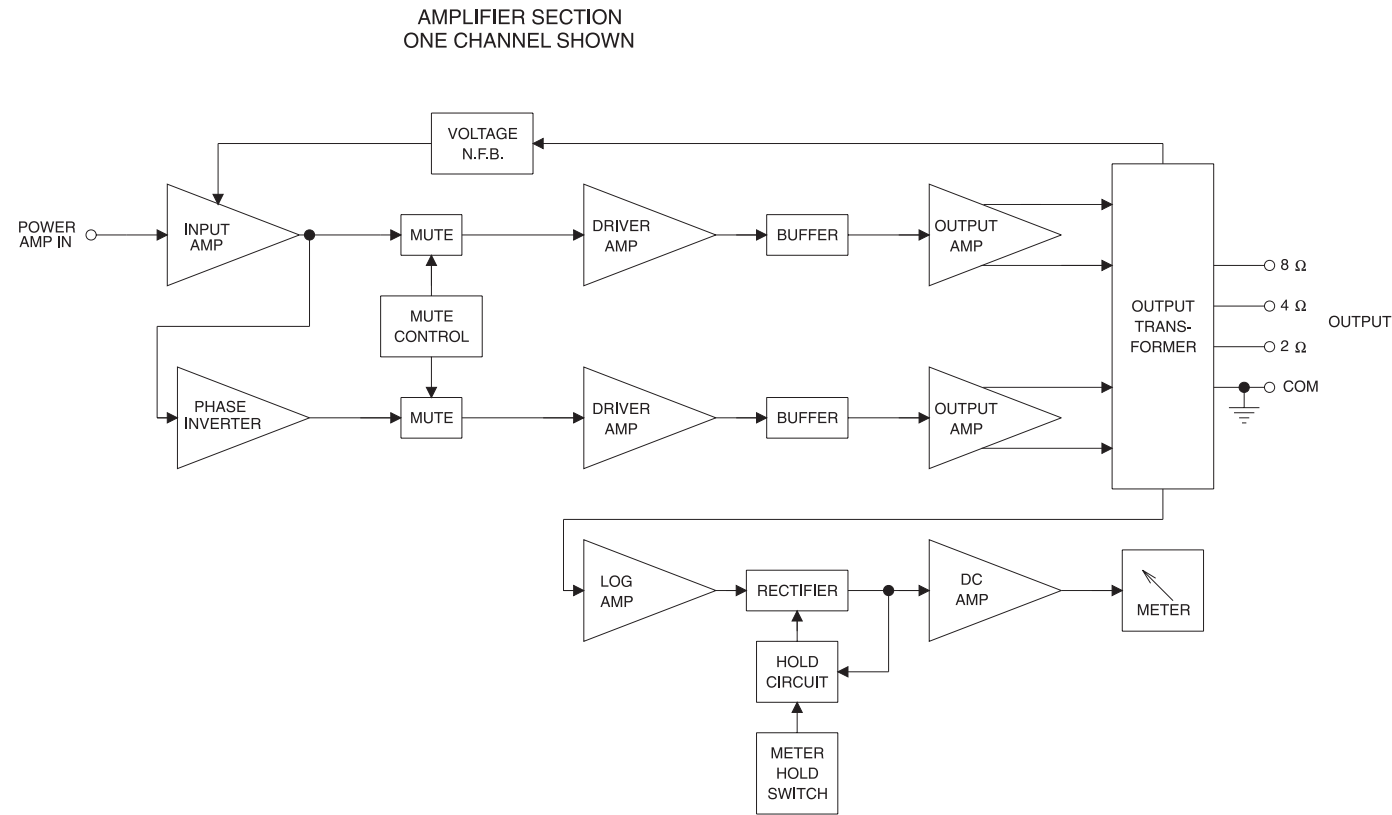
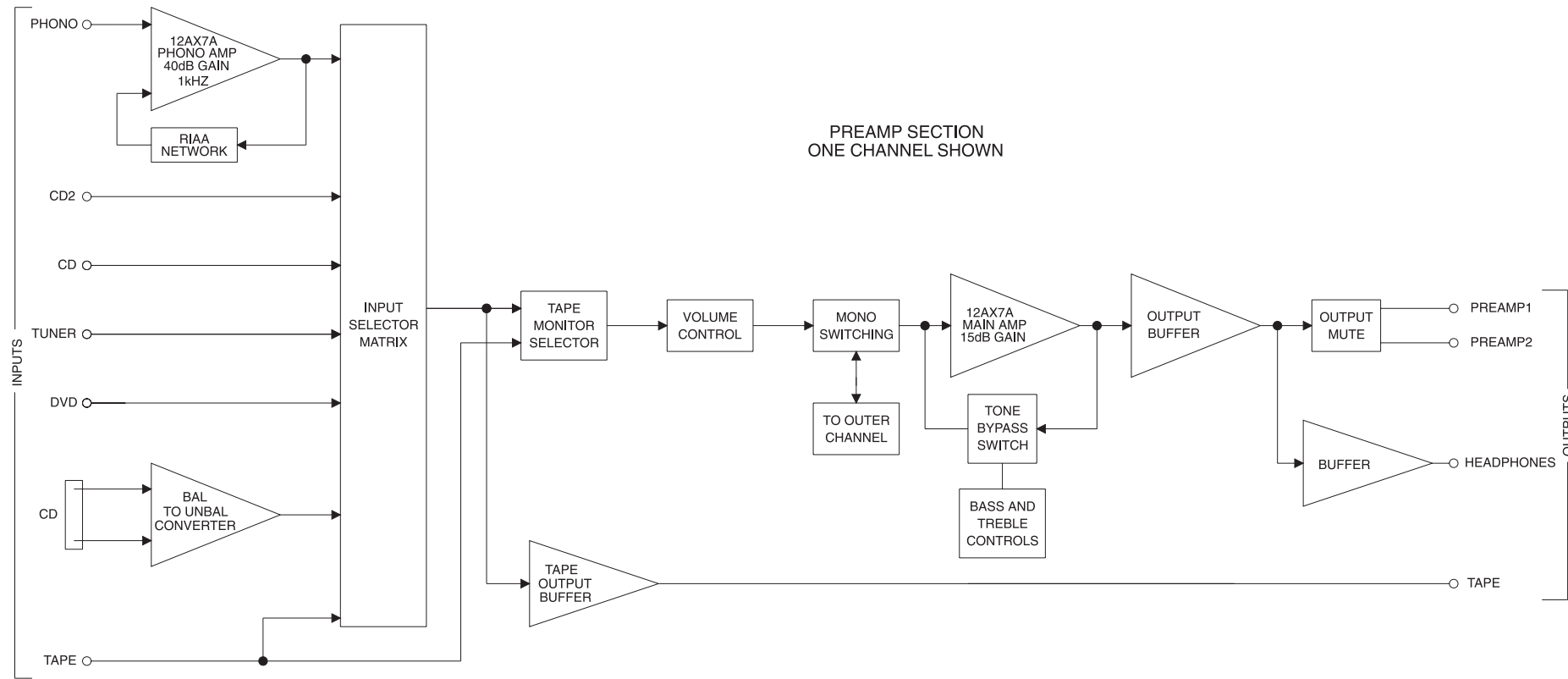
TOP VIEW WITH COVERS REMOVED



BOTTOM VIEW WITH COVER REMOVED

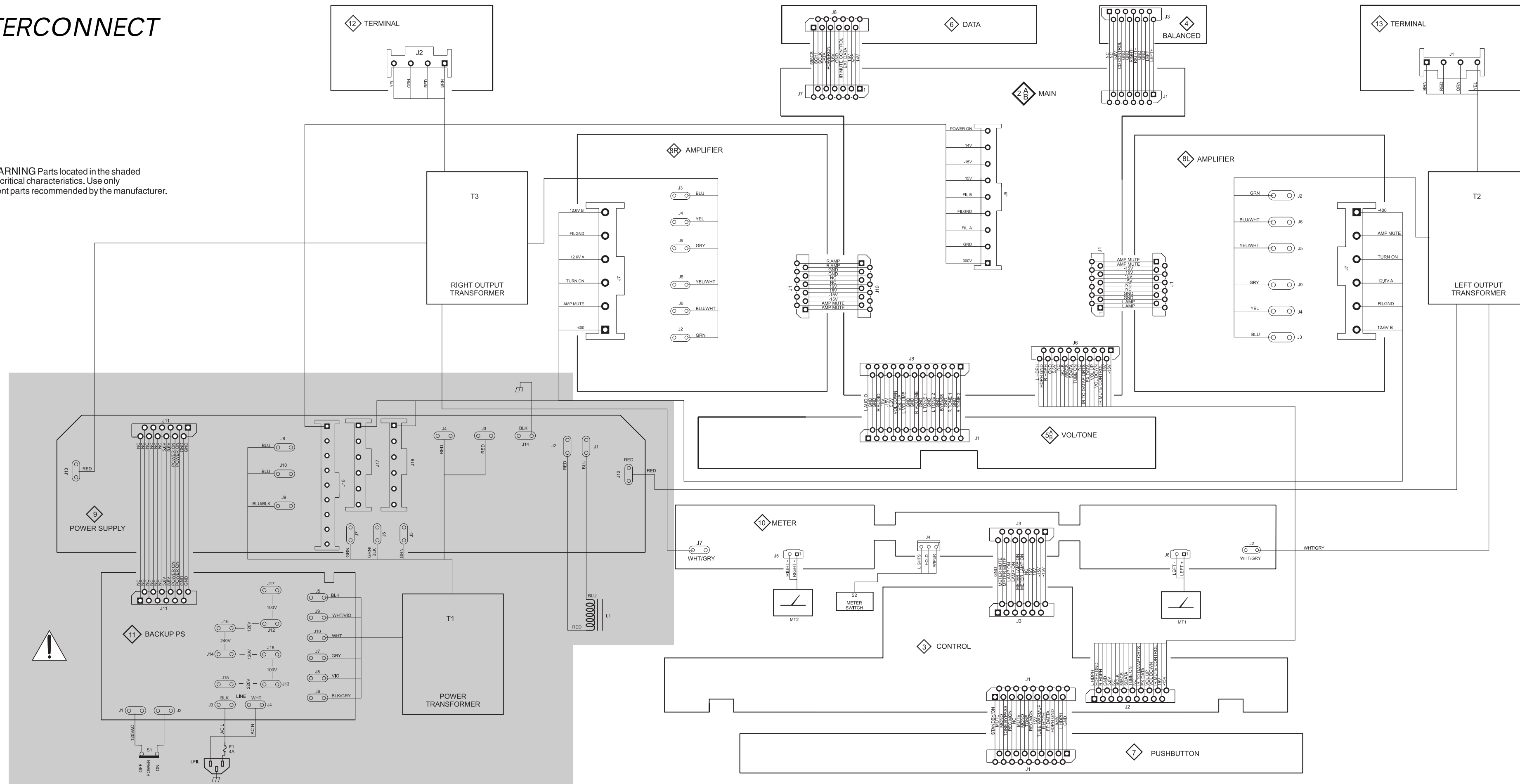
BLOCK DIAGRAM

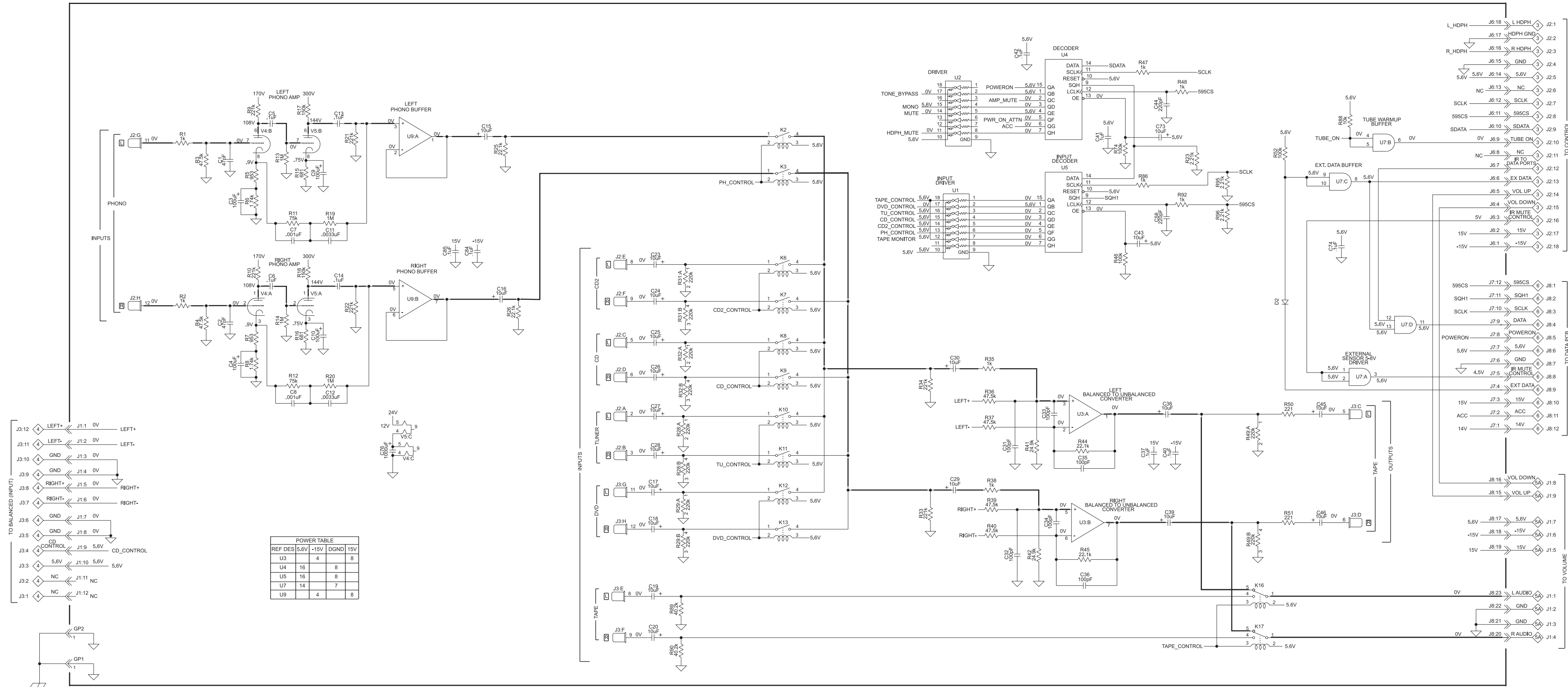
MA2275

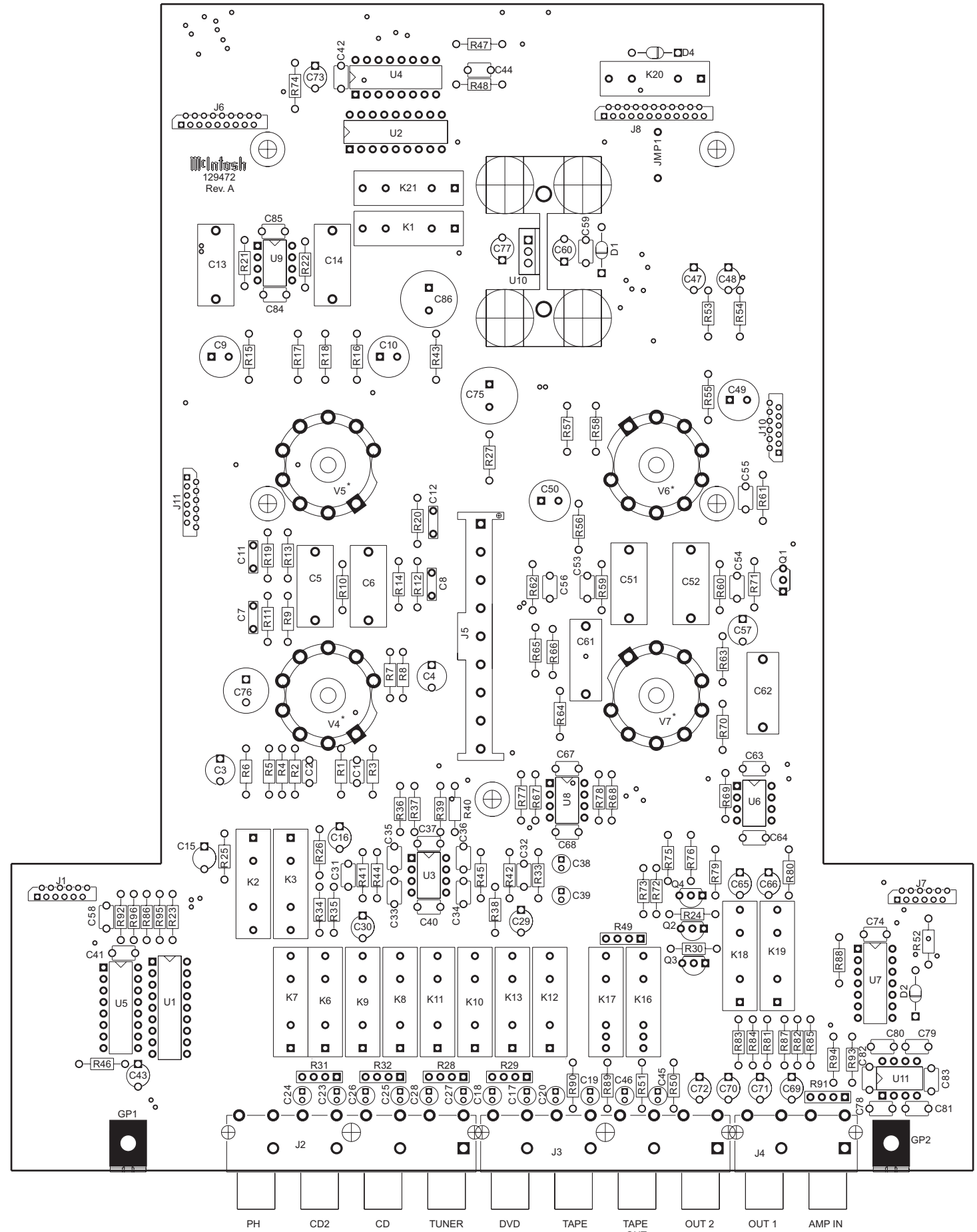
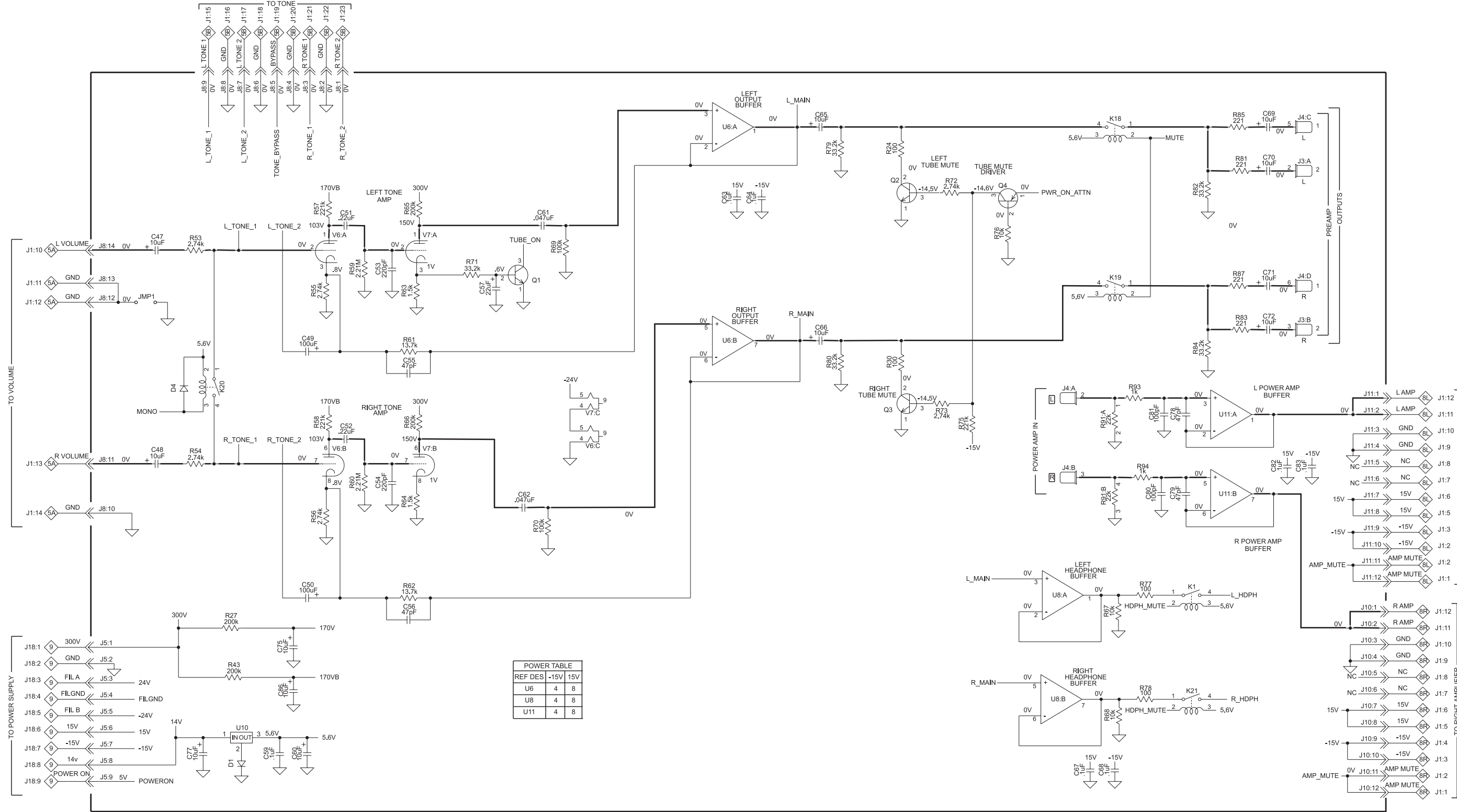


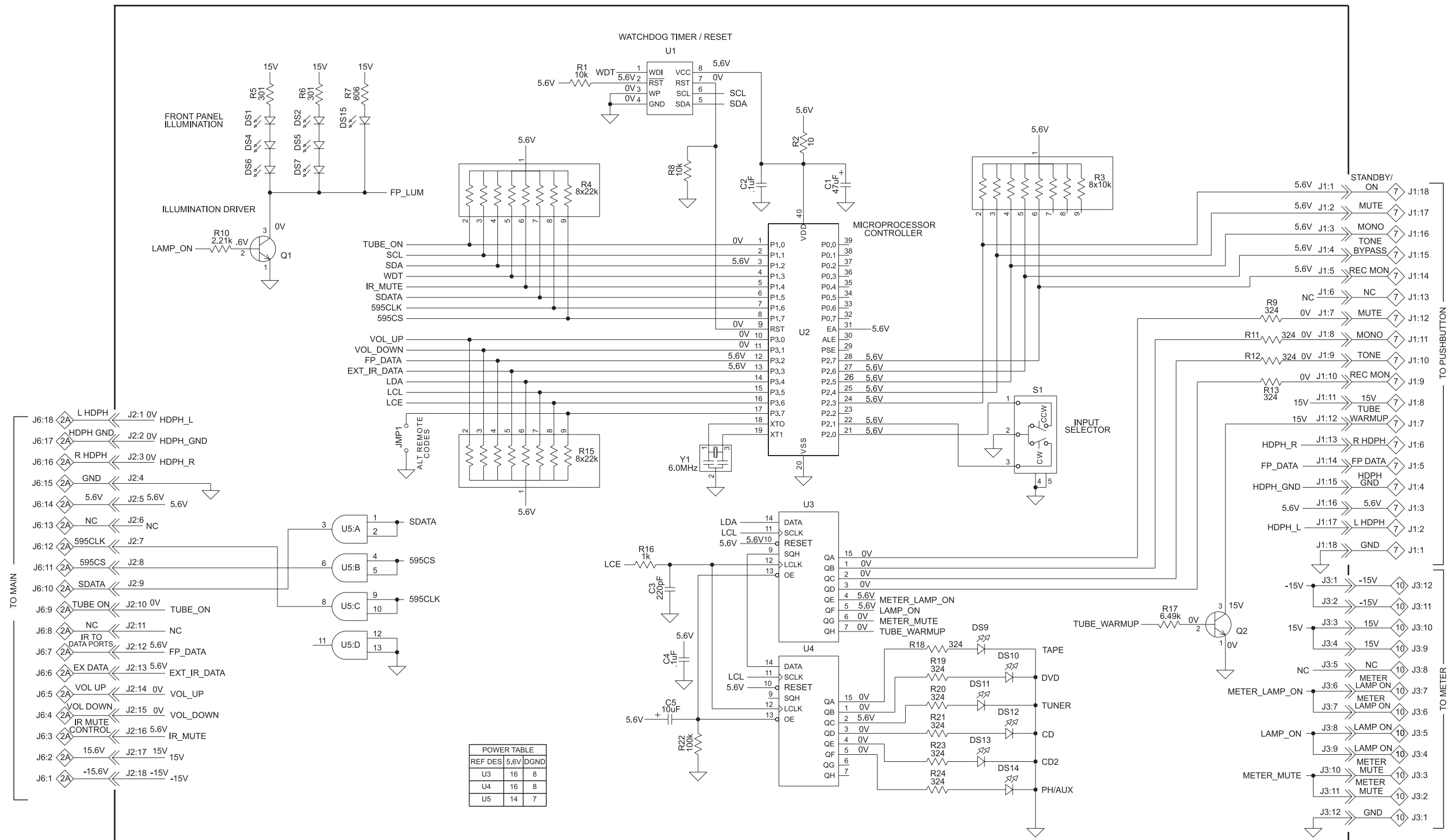
1 INTERCONNECT

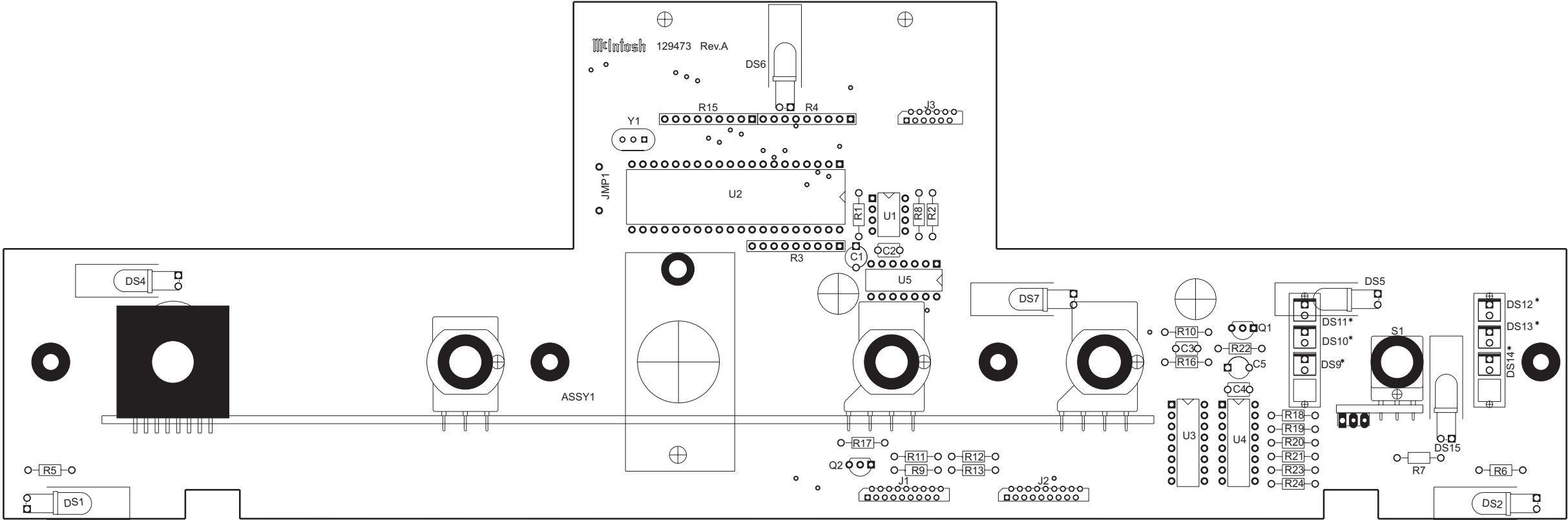
! WARNING Parts located in the shaded area have critical characteristics. Use only replacement parts recommended by the manufacturer.





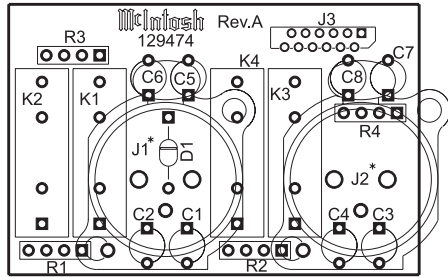
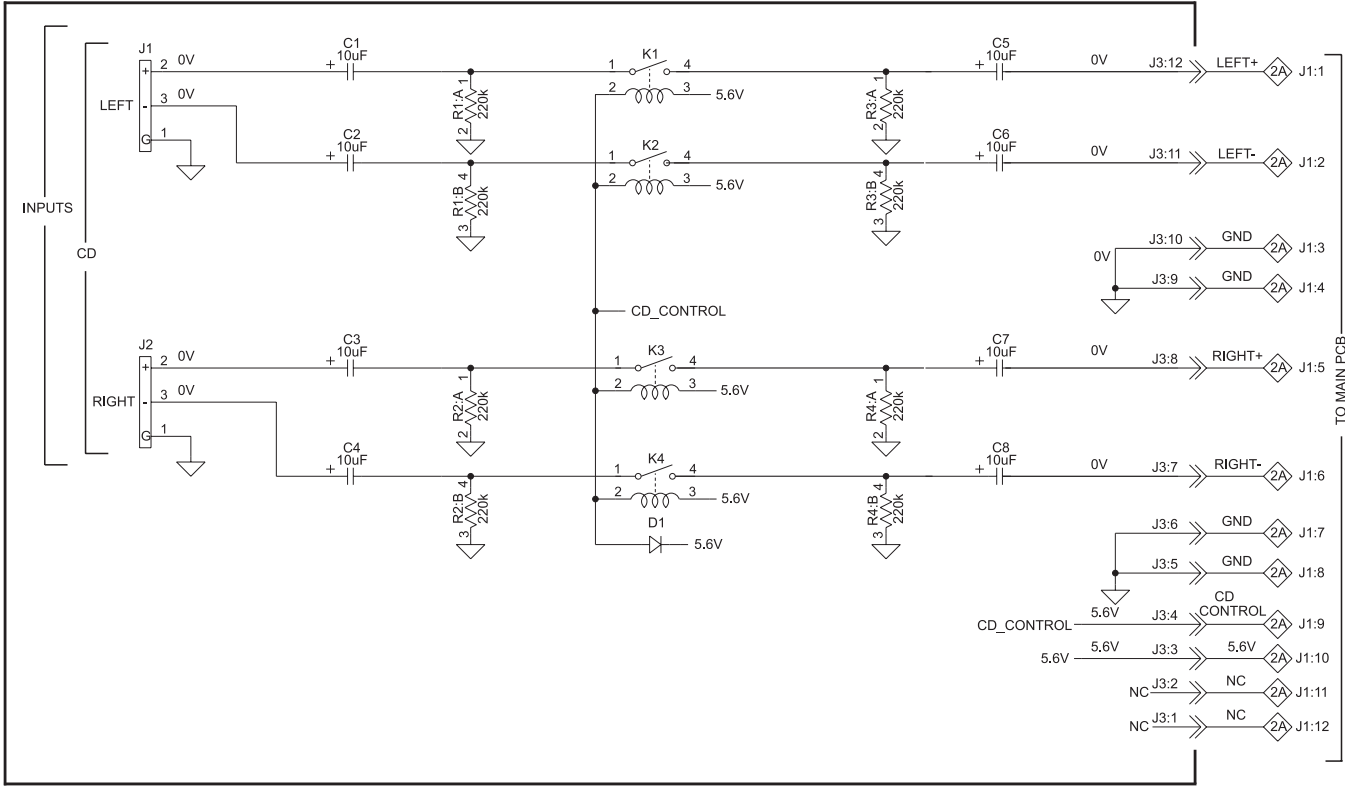




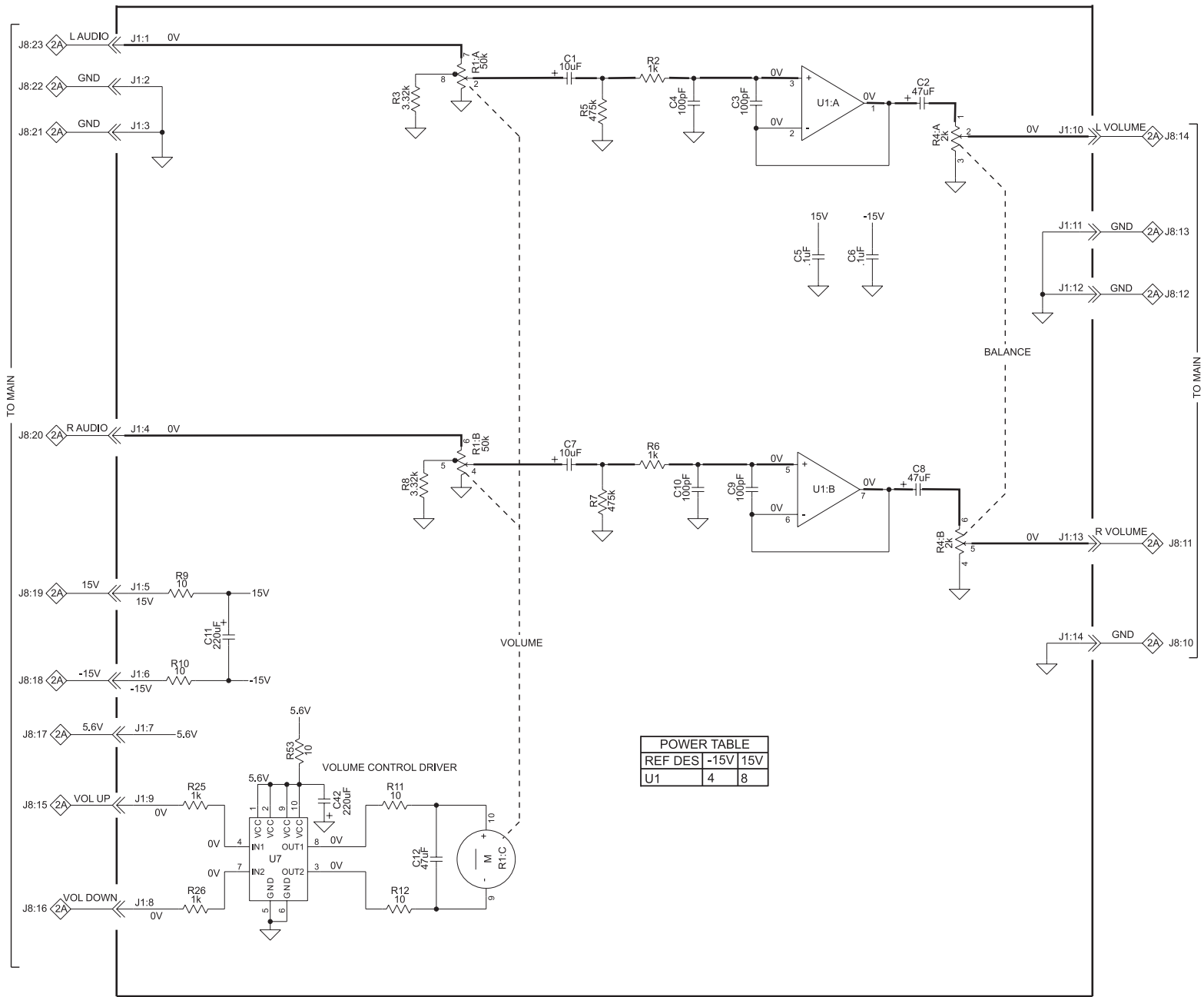


4

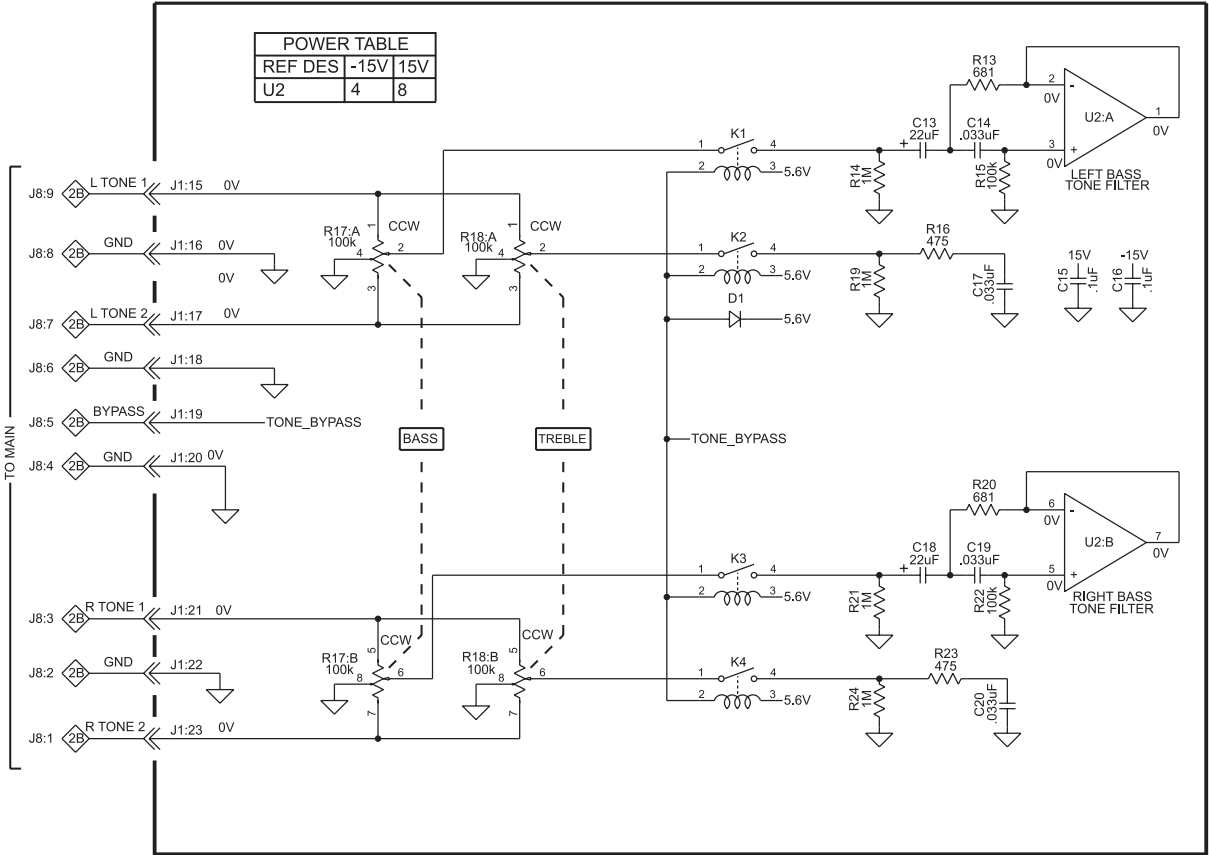
BALANCED 049967



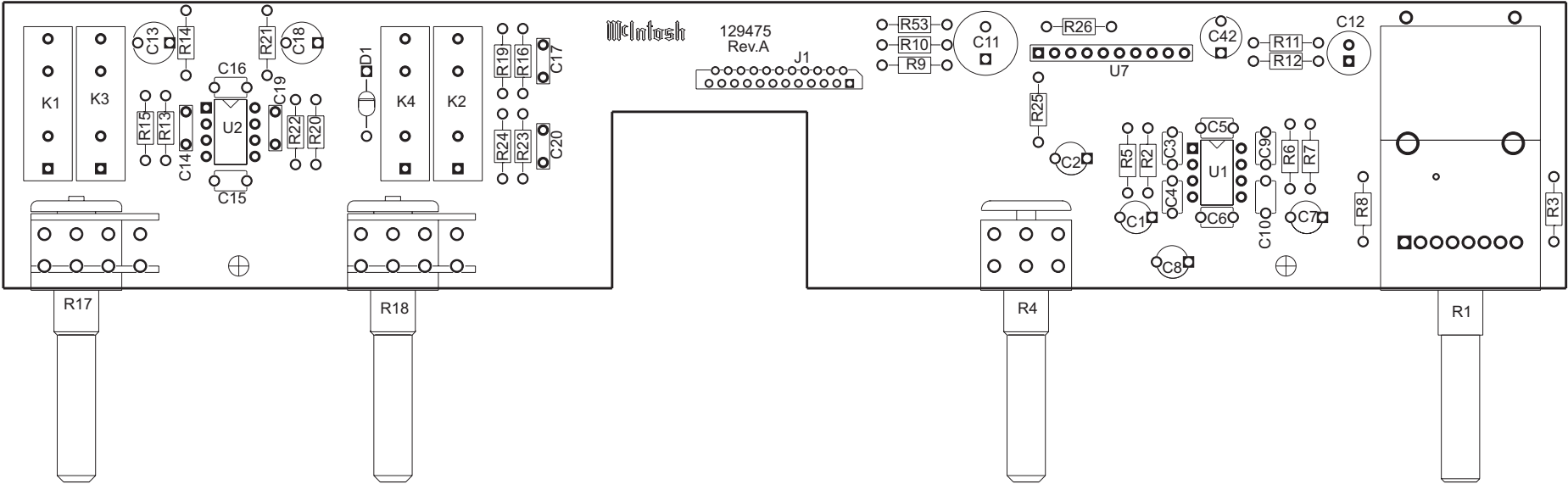
5A *VOLUME/TONE* 049968

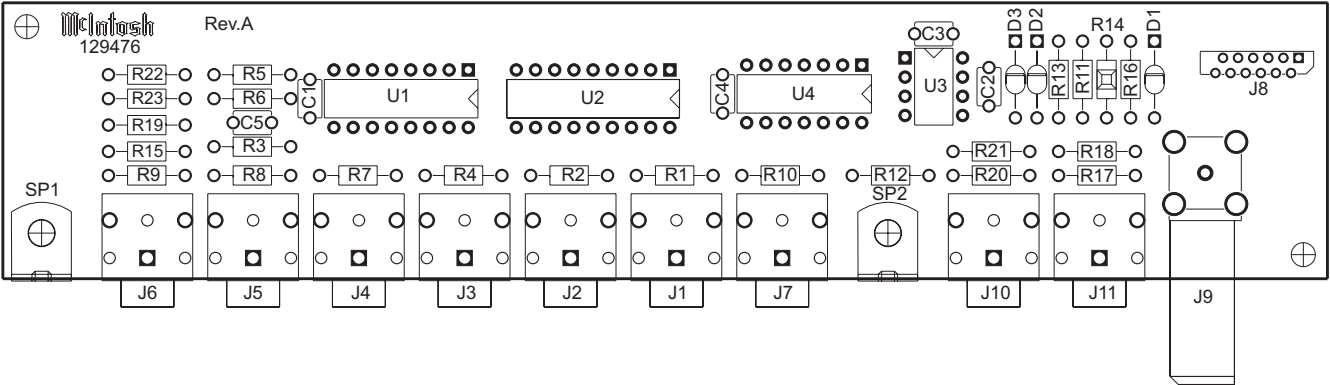
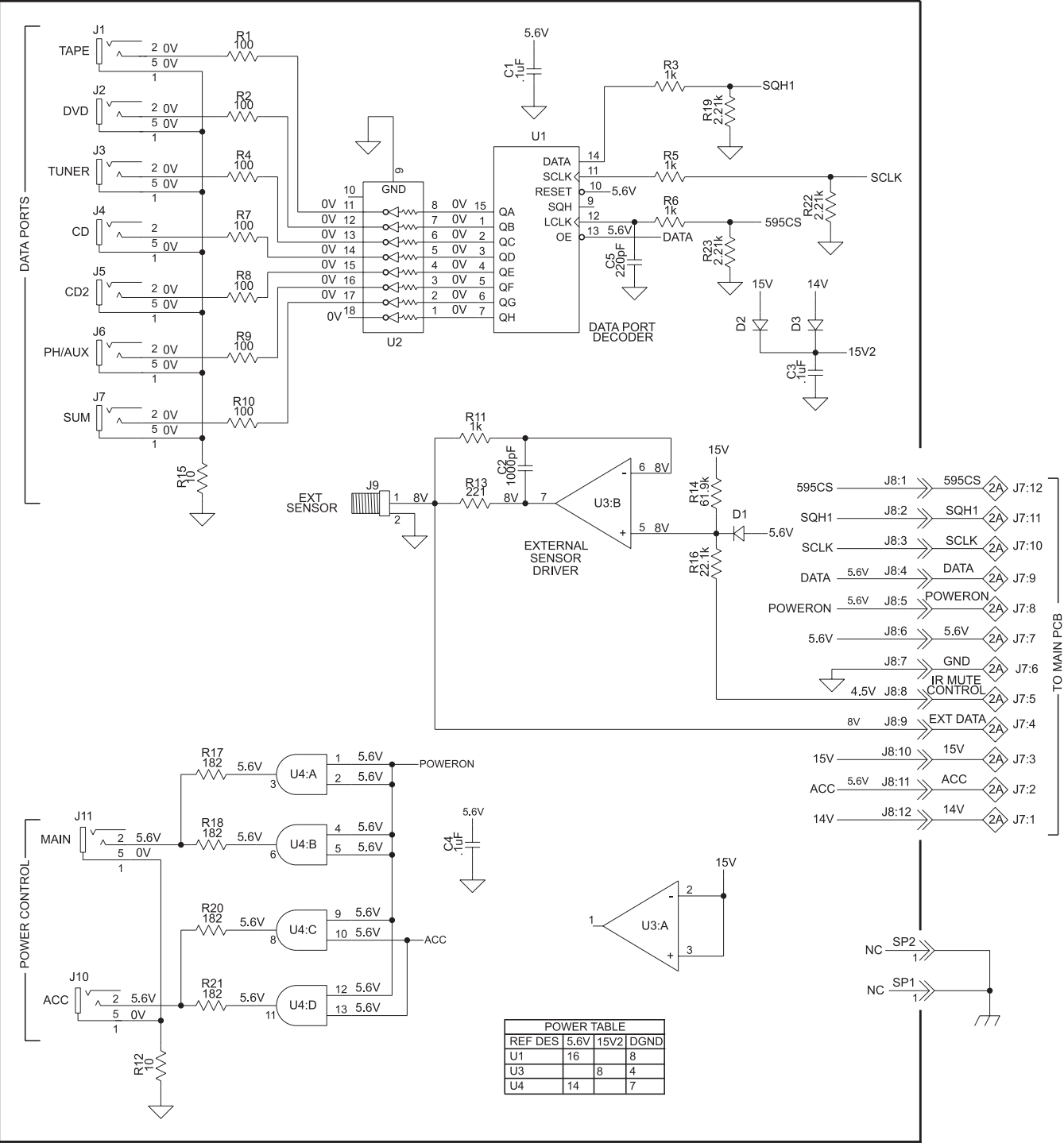


5B *VOLUME/TONE* 049968

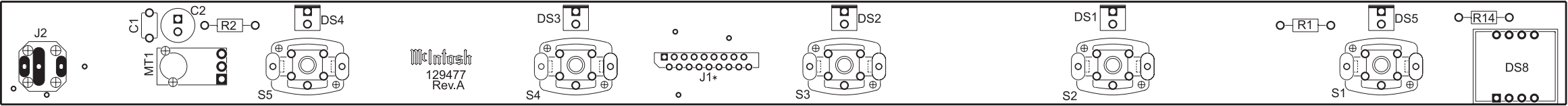
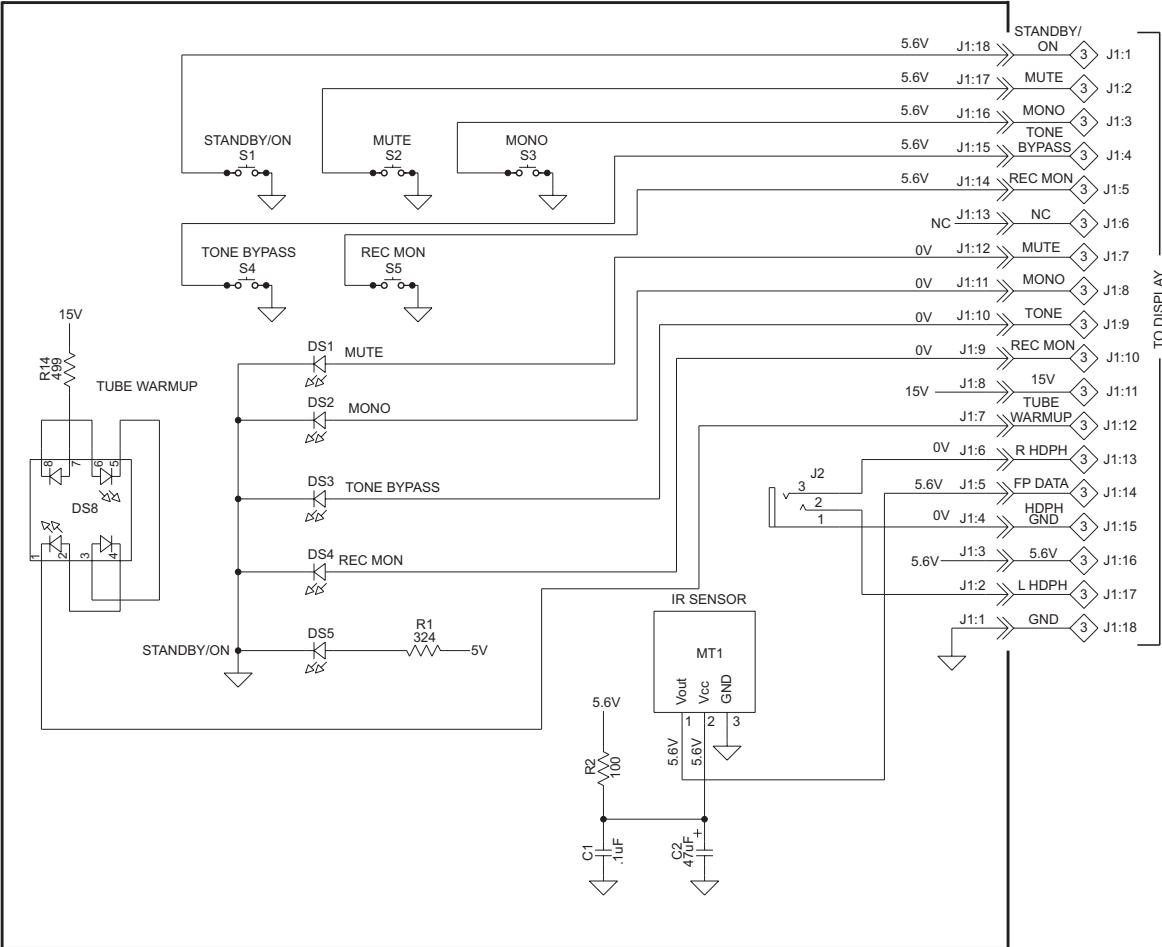


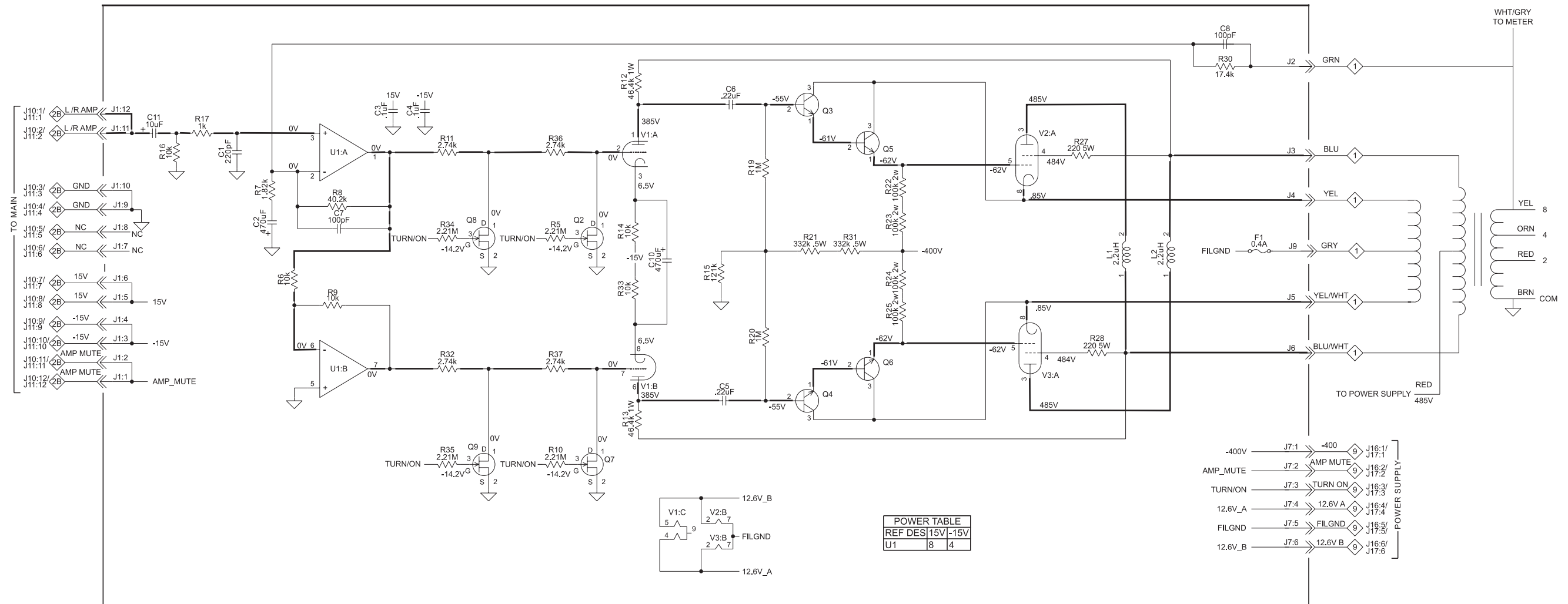
5 *VOLUME/TONE* 049968

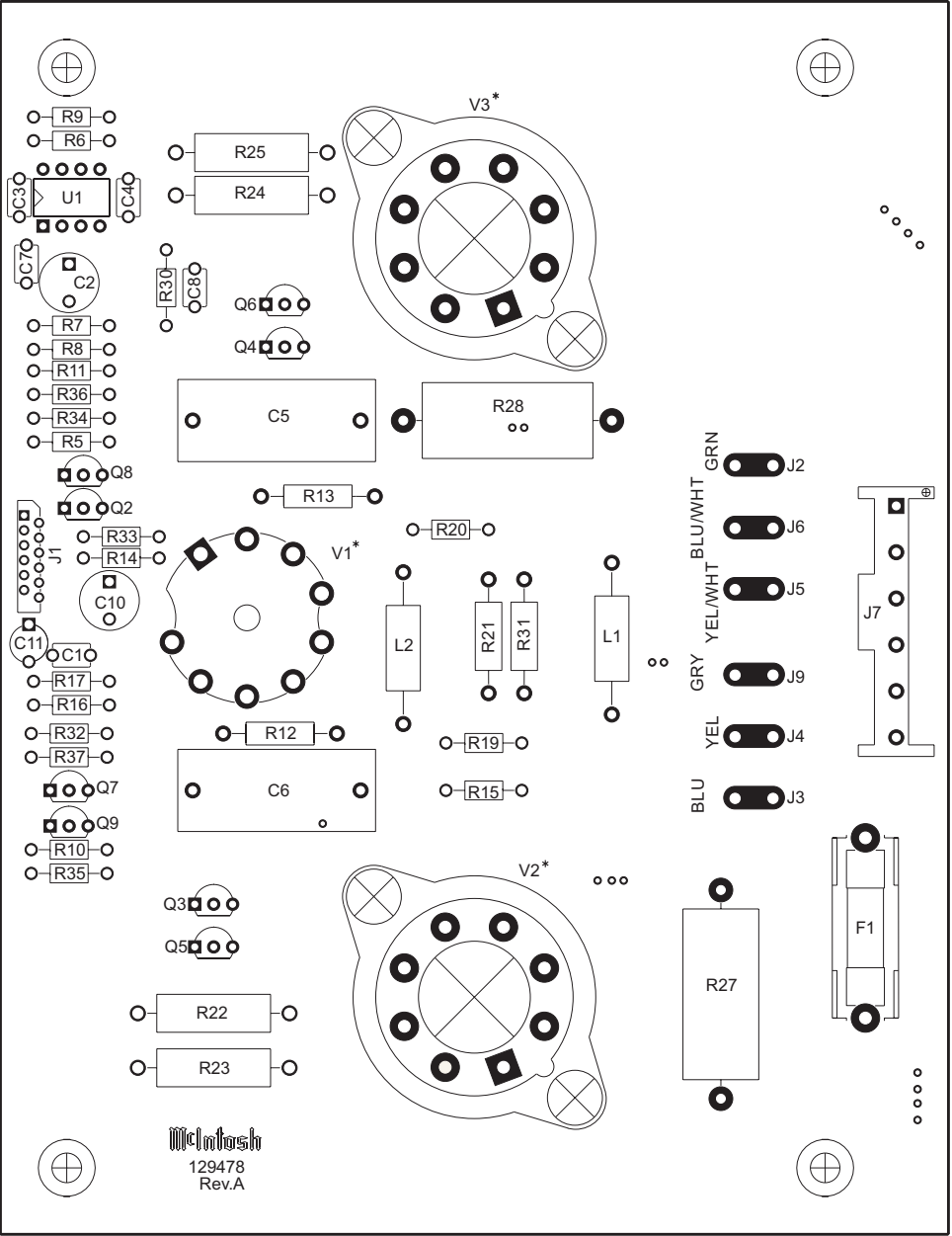




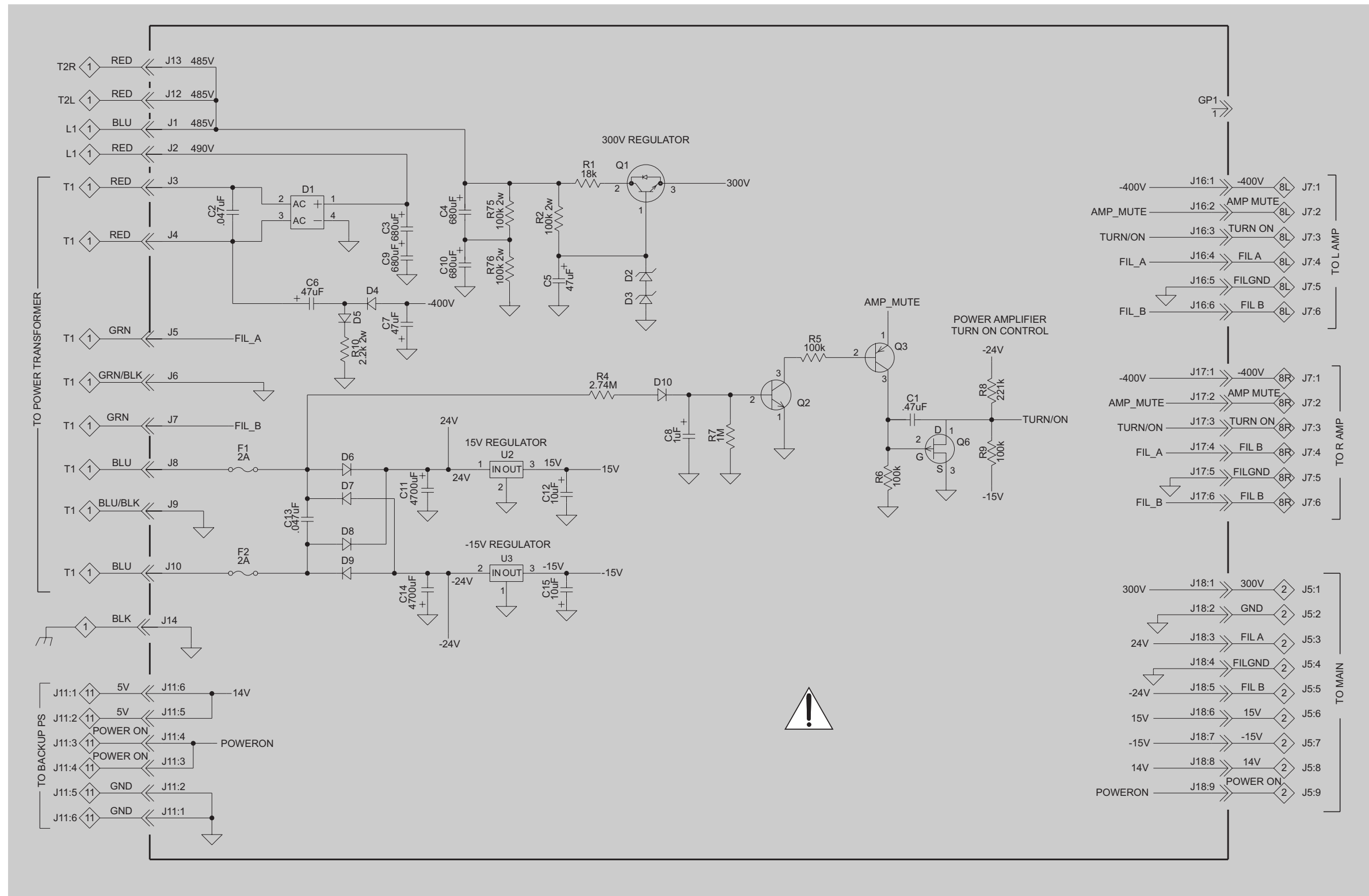
7 **PUSHBUTTON** 049970







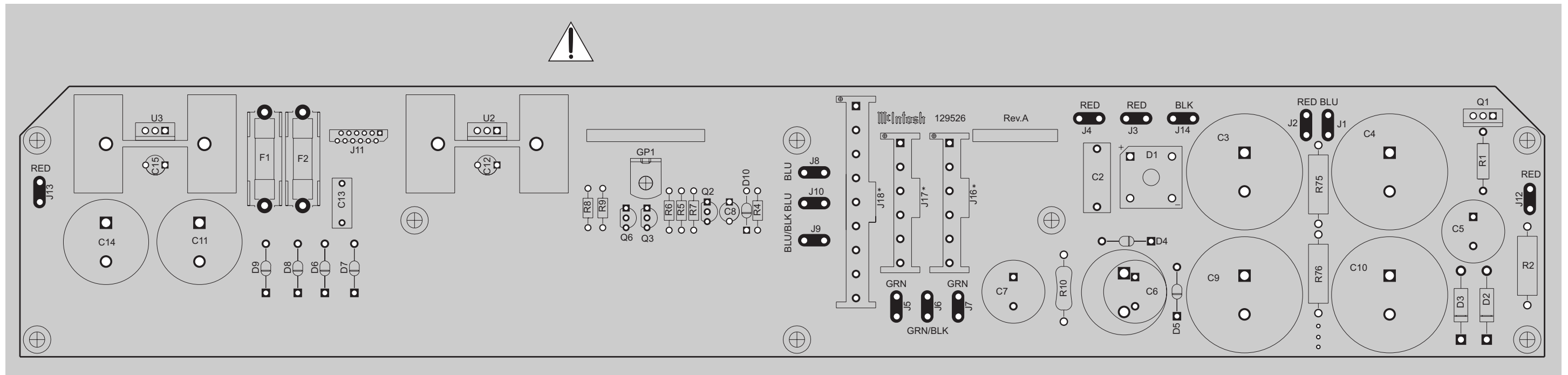
9 POWER SUPPLY 049972



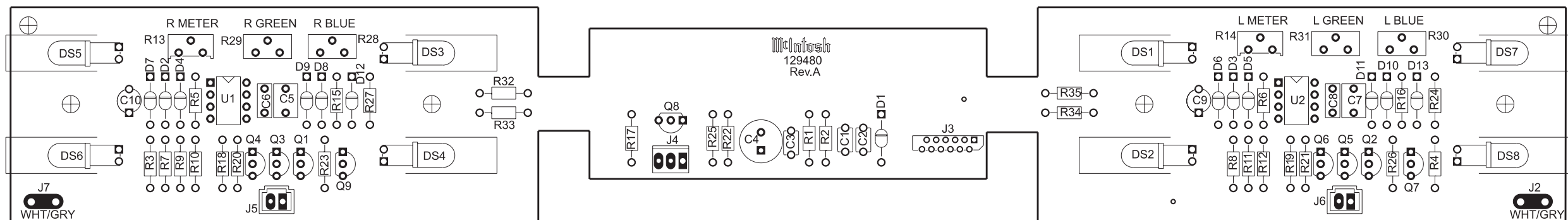
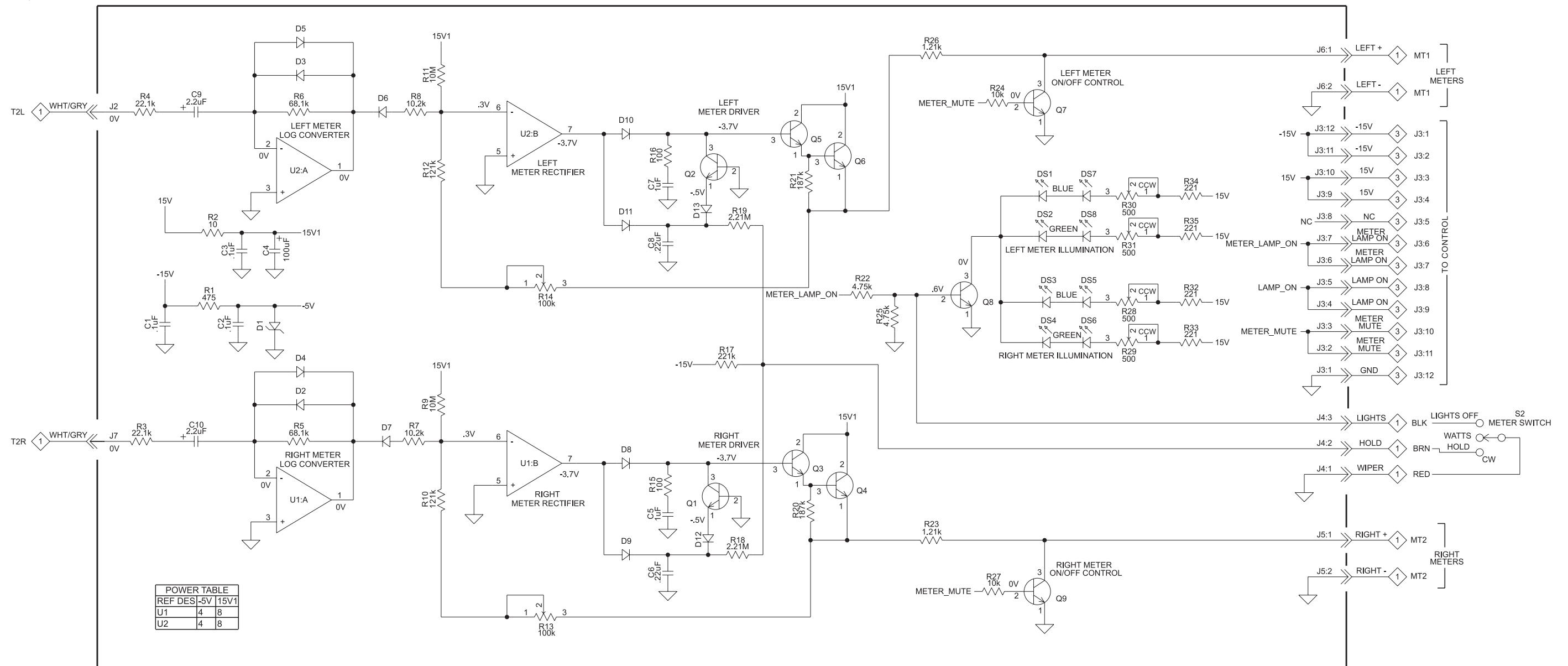
WARNING Parts located in the shaded area have critical characteristics. Use only replacement parts recommended by the manufacturer.

9 POWER SUPPLY 049972

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

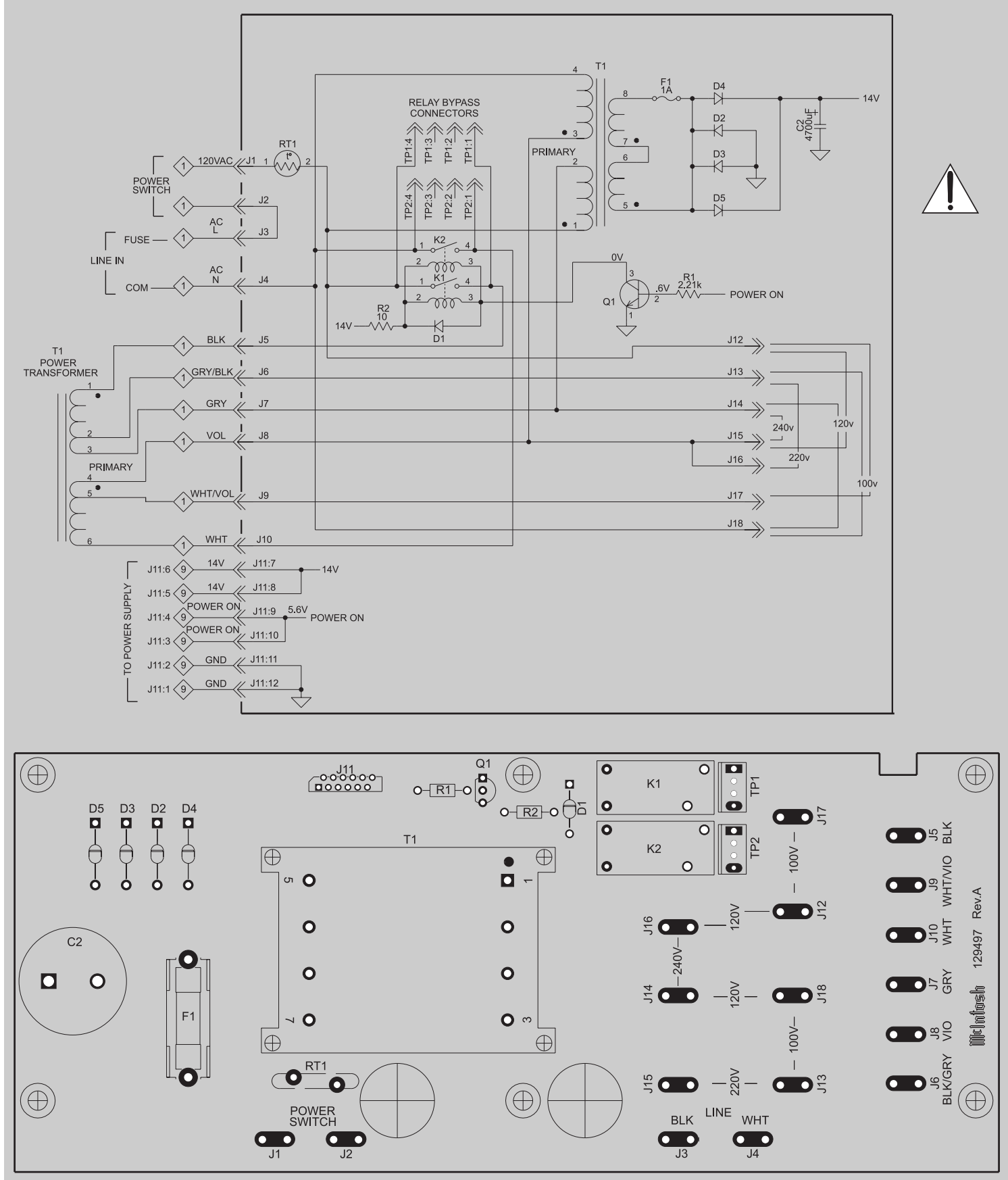


10 METER 049973

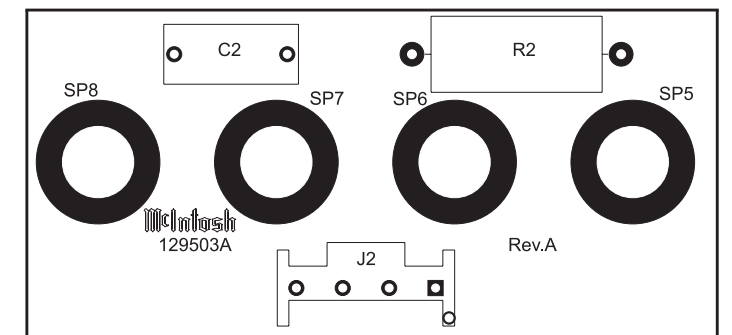
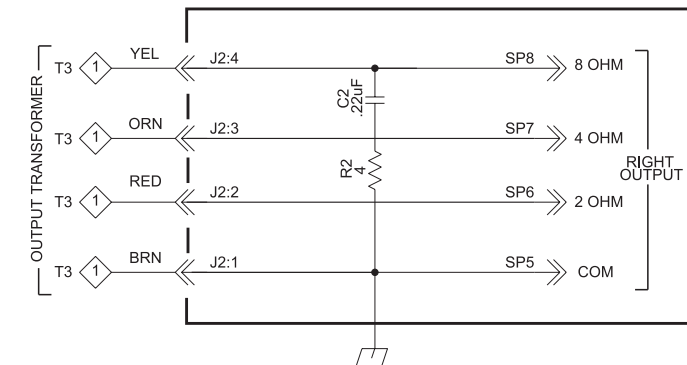


11 BACKUP PS 050007

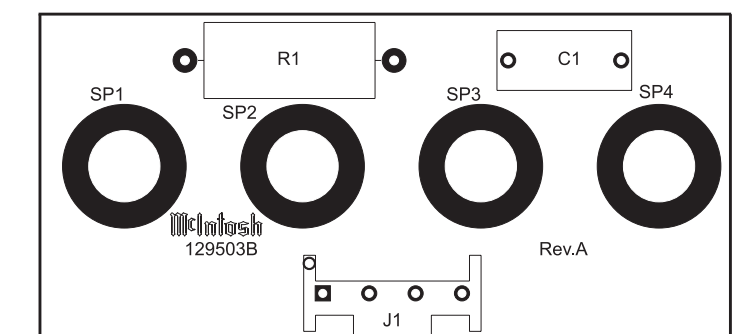
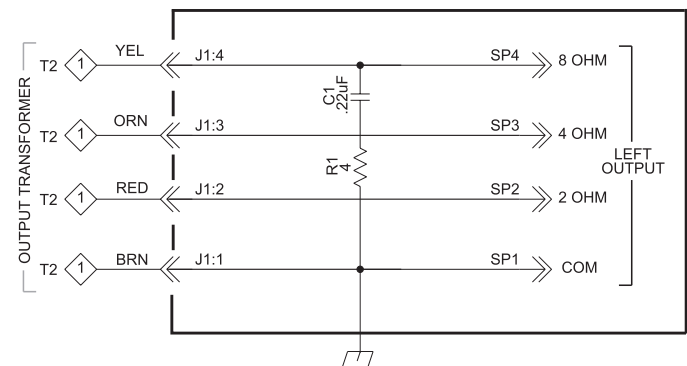
! WARNING Parts located in the shaded area have critical characteristics. Use only replacement parts recommended by the manufacturer.



12 TERMINAL 050052



13 TERMINAL 050052



PARTS LIST

Ref. No.	Description	Part No.	
① INTERCONNECT	L1 CHOKE FILTER .5H	122379	
	LFIL LINE FILTER	117755	
	MT1 METER	124087	
	MT2 METER	124087	
	S1 POWER SWITCH	171026	
	S2 SWITCH	146243	
	T1 POTTED TRANSFORMER, POWER	050041	
	T2 POTTED TRANSFORMER, OUTPUT	050042	
	T3 POTTED TRANSFORMER, OUTPUT	050042	
	② 049965 MAIN PCB	C1 CAP MONO 47PF 200V 10% NPO	061299
C2 CAP MONO 47PF 200V 10% NPO		061299	
C3 CAP ELECT 100UF 16V OR 25V		066447	
C4 CAP ELECT 100UF 16V OR 25V		066447	
C5 CAP MPF 0.1UF 630VDC		064431	
C6 CAP MPF 0.1UF 630VDC		064431	
C7 CAP PF 0.001UF 5% 63VDC		064300	
C8 CAP PF 0.001UF 5% 63VDC		064300	
C9 CAP ELECT 100UF 25V-50V		066161	
C10 CAP ELECT 100UF 25V-50V		066161	
C11 CAP MPF 0.0033UF 5% 63VDC		064306	
C12 CAP MPF 0.0033UF 5% 63VDC		064306	
C13 CAP MPF 0.1UF 630VDC		064431	
C14 CAP MPF 0.1UF 630VDC		064431	
C15 CAP ELECT 10UF 50V		066445	
C16 CAP ELECT 10UF 50V		066445	
C17 CAP ELECT 10UF 16V 4X5 CASE		066382	
C18 CAP ELECT 10UF 16V 4X5 CASE		066382	
C19 CAP ELECT 10UF 16V 4X5 CASE		066382	
C20 CAP ELECT 10UF 16V 4X5 CASE		066382	
C23 CAP ELECT 10UF 16V 4X5 CASE		066382	
C24 CAP ELECT 10UF 16V 4X5 CASE		066382	
C25 CAP ELECT 10UF 16V 4X5 CASE		066382	
C26 CAP ELECT 10UF 16V 4X5 CASE		066382	
C27 CAP ELECT 10UF 16V 4X5 CASE		066382	
C28 CAP ELECT 10UF 16V 4X5 CASE		066382	
C29 CAP ELECT 10UF 50V		066445	
C30 CAP ELECT 10UF 50V		066445	
C31 CAP MONO 100PF 100V 10% NPO		061300	
C32 CAP MONO 100PF 100V 10% NPO		061300	
C33 CAP MONO 100PF 100V 10% NPO		061300	
C34 CAP MONO 100PF 100V 10% NPO		061300	
C35 CAP MONO 100PF 100V 10% NPO		061300	
C36 CAP MONO 100PF 100V 10% NPO		061300	
C37 CAP MONO .1uF 50V 20% Z5U		061305	
C38 CAP ELECT 10UF 16V 4X5 CASE		066382	
C39 CAP ELECT 10UF 16V 4X5 CASE		066382	
C40 CAP MONO .1uF 50V 20% Z5U		061305	
C41 CAP MONO .1uF 50V 20% Z5U		061305	
C42 CAP MONO .1uF 50V 20% Z5U		061305	
C43 CAP ELECT 10UF 50V		066445	
C44 CAP MONO 220PF 100V 10% NPO		061301	
C45 CAP ELECT 10UF 16V 4X5 CASE		066382	
C46 CAP ELECT 10UF 16V 4X5 CASE		066382	
C47 CAP ELECT 10UF 50V		066445	
C48 CAP ELECT 10UF 50V		066445	
C49 CAP ELECT 100UF 25V-50V		066161	
C50 CAP ELECT 100UF 25V-50V		066161	
C51 CAP MPF 0.22UF 400VDC		064438	
C52 CAP MPF 0.22UF 400VDC		064438	
C53 CAP MONO 220PF 100V 10% NPO		061301	
③ 049966 CONTROL PCB		C1 CAP ELECT 47UF 35V	066446
		C2 CAP MONO .1uF 50V 20% Z5U	061305
	C3 CAP MONO 220PF 100V 10% NPO	061301	
	C4 CAP MONO .1uF 50V 20% Z5U	061305	
	C5 CAP ELECT 10UF 50V	066445	
	DS1 LED GREEN 5MM HI-INTENSITY	058165	
	DS2 LED GREEN 5MM HI-INTENSITY	058165	

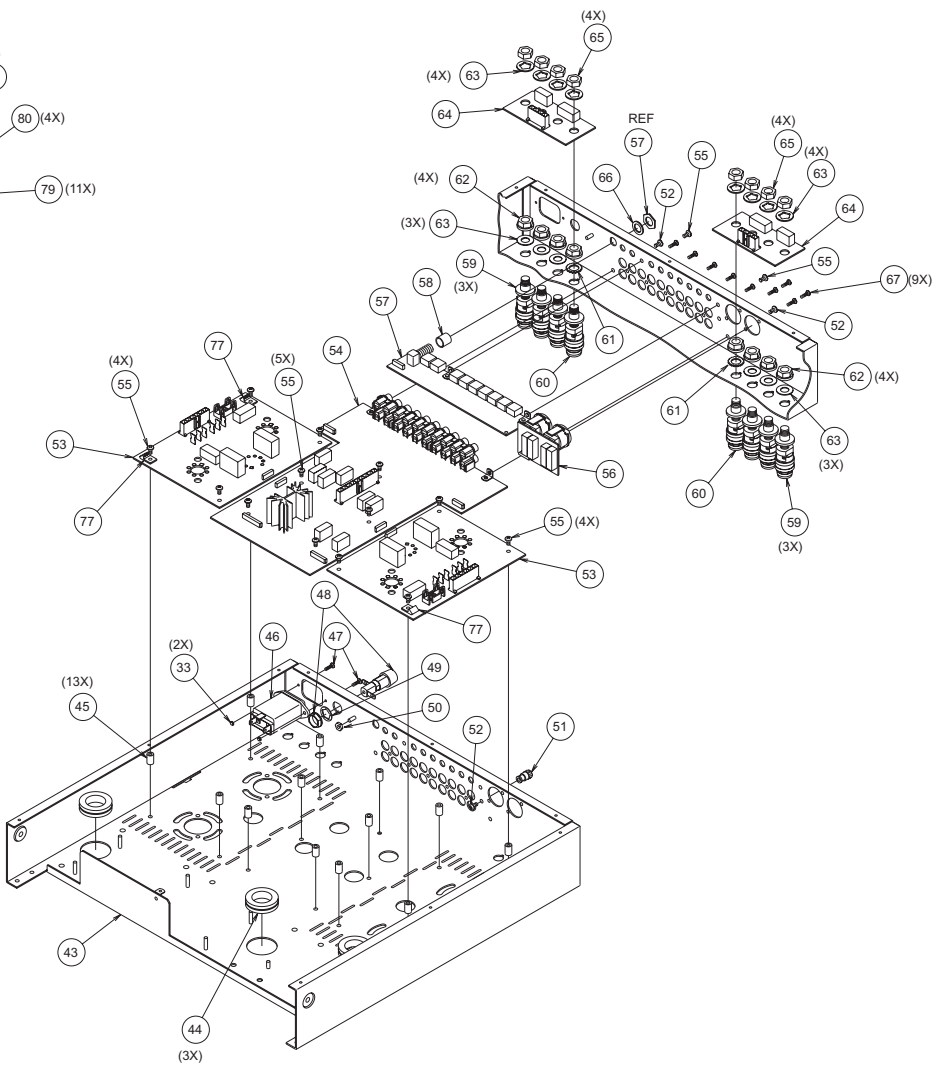
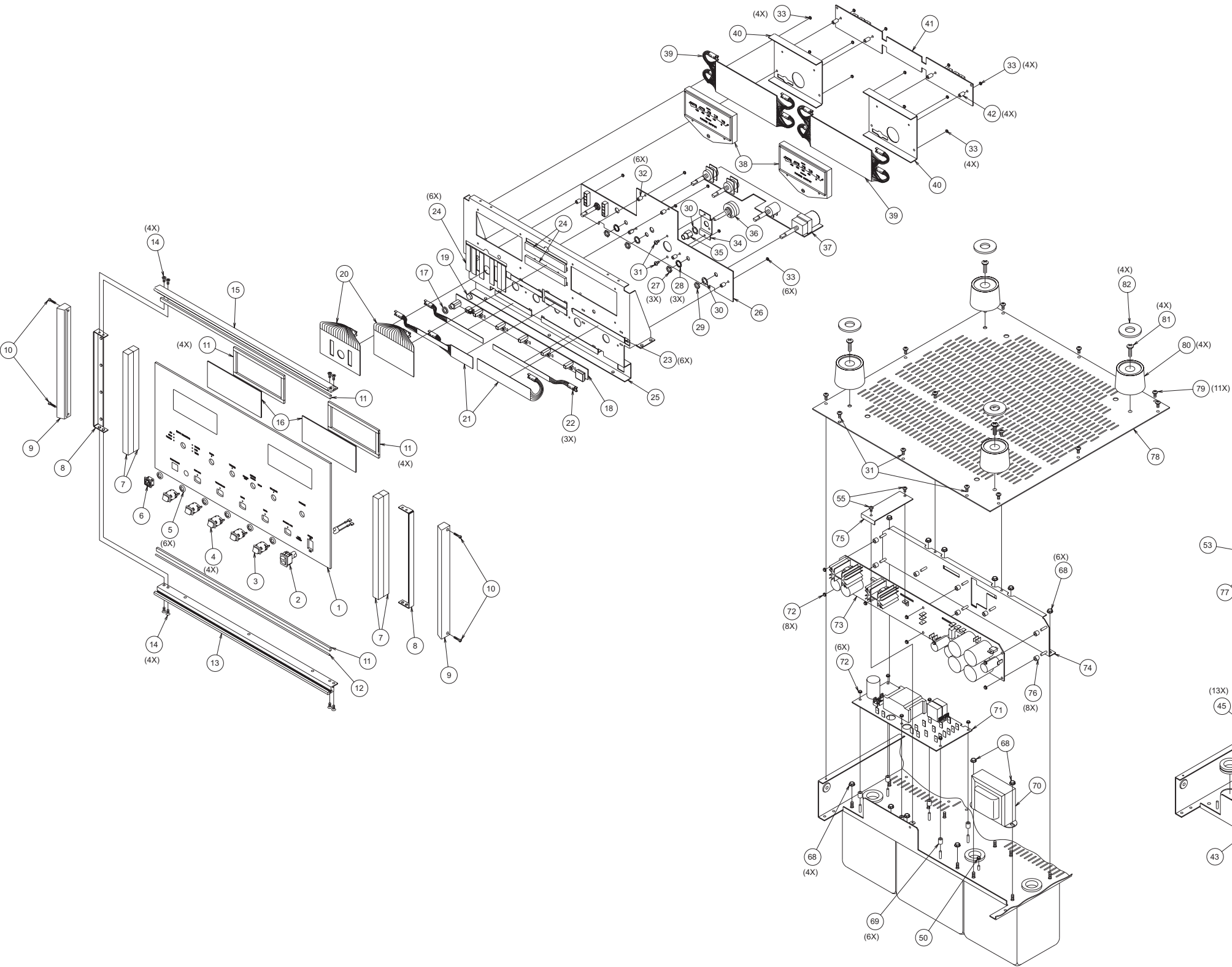
PARTS LIST con't

DS4	LED GREEN 5MM HI-INTENSITY	058165	K4	RELAY REED FORM 1A 5V 500 OHMS	087050	U7	IC DC MOTOR DRIVER	133191	MT1	SENSOR IR 38KHZ	121046				
DS5	LED GREEN 5MM HI-INTENSITY	058165	R1	RES NETWORK 2X220K ISO	144262	6	049969 DATA PCB		R1	RES MF 324 OHM 1% 1/4W	144338				
DS6	LED GREEN 5MM HI-INTENSITY	058165	R2	RES NETWORK 2X220K ISO	144262				R2	RES MF 100 OHM 1% 1/4W	144196				
DS7	LED GREEN 5MM HI-INTENSITY	058165	R3	RES NETWORK 2X220K ISO	144262				C1	CAP MONO .1uF 50V 20% Z5U	061305				
DS9	LED SQUARE RED	058109	R4	RES NETWORK 2X220K ISO	144262				C2	CAP MONO 1000PF 50V 10% NPO	061303				
DS10	LED SQUARE RED	058109							C3	CAP MONO .1uF 50V 20% Z5U	061305				
DS11	LED SQUARE RED	058109	5	049968 VOLUME/TONE PCB			C4	CAP MONO .1uF 50V 20% Z5U	061305		R14	RES MF 499 1% 1/4W	144087		
DS12	LED SQUARE RED	058109			C1	CAP ELECT 10UF 50V	066445		C5	CAP MONO 220PF 100V 10% NPO	061301		S1	SWITCH PB TACT	150058
DS13	LED SQUARE RED	058109			C2	CAP ELECT 47UF 35V	066446		D1	DIODE SILICON	070047		S2	SWITCH PB TACT	150058
DS14	LED SQUARE RED	058109			C3	CAP MONO 100PF 100V 10% NPO	061300		D2	DIODE SILICON	070047		S3	SWITCH PB TACT	150058
DS15	LED GREEN 5MM HI-INTENSITY	058165			C4	CAP MONO 100PF 100V 10% NPO	061300		D3	DIODE SILICON	070047	8	049971 AMPLIFIER PCB		S4
J1	CONN FFC 18PIN	117765	C5	CAP MONO .1uF 50V 20% Z5U	061305		J1	JACK HEADPHONE STEREO 1/8IN	117759		C1			CAP MONO 220PF 100V 10% NPO	061301
J2	CONN FFC 18PIN	117765	C6	CAP MONO .1uF 50V 20% Z5U	061305		J2	JACK HEADPHONE STEREO 1/8IN	117759		C2			CAP ELECT 470UF 16V	066508
J3	CONN 12 PIN FFC	117720	C7	CAP ELECT 10UF 50V	066445		J3	JACK HEADPHONE STEREO 1/8IN	117759		C3			CAP MONO .1uF 50V 20% Z5U	061305
Q1	TRANSISTOR NPN SILICON	132171	C8	CAP ELECT 47UF 35V	066446		J4	JACK HEADPHONE STEREO 1/8IN	117759		C4			CAP MONO .1uF 50V 20% Z5U	061305
Q2	TRANSISTOR NPN	132223	C9	CAP MONO 100PF 100V 10% NPO	061300		J5	JACK HEADPHONE STEREO 1/8IN	117759		C5	CAP POLYPROP 0.22UF 20% 1KVDC	064432		
R1	RES MF 10K 1% 1/4W	144053	C10	CAP MONO 100PF 100V 10% NPO	061300		J6	JACK HEADPHONE STEREO 1/8IN	117759		C6	CAP POLYPROP 0.22UF 20% 1KVDC	064432		
R2	RES MF 10 OHM 1% 1/4W	144157	C11	CAP ELECT 220UF 50V 20%	066254		J7	JACK HEADPHONE STEREO 1/8IN	117759		C7	CAP MONO 100PF 100V 10% NPO	061300		
R3	RES NET 10K X8 RES B	144253	C12	CAP ELECT 47UF 10V BP	066378		J8	CONN 12 PIN FFC	117720		C8	CAP MONO 100PF 100V 10% NPO	061300		
R4	RES NETWORK 9X-1-223	144238	C13	CAP ELECT 22UF 100V	066506		J9	CONN GOLD F RIGHT ANGLE	117661		C10	CAP ELECT 470UF 16V	066508		
R5	RES MF 301 OHM 1% 1/4W	144484	C14	CAP MPF 0.033UF 5% 63VDC	064318		J10	JACK HEADPHONE STEREO 1/8IN	117759		C11	CAP ELECT 10UF 50V	066445		
R6	RES MF 301 OHM 1% 1/4W	144484	C15	CAP MONO .1uF 50V 20% Z5U	061305		J11	JACK HEADPHONE STEREO 1/8IN	117759		F1	FUSE T 0.4A 250V	089108		
R7	RES MF 806 OHM 1% 1/4W	144089	C16	CAP MONO .1uF 50V 20% Z5U	061305		R1	RES MF 100 OHM 1% 1/4W	144196		J1	CONN 12 PIN FFC	117720		
R8	RES MF 10K 1% 1/4W	144053	C17	CAP MPF 0.033UF 5% 63VDC	064318		R2	RES MF 100 OHM 1% 1/4W	144196		J2	BLADE FASTON W/FEET	117708		
R9	RES MF 324 OHM 1% 1/4W	144338	C18	CAP ELECT 22UF 100V	066506		R3	RES MF 1K 1% 1/4W	144090		J3	BLADE FASTON W/FEET	117708		
R10	RES MF 2.21K 1% 1/4W	144298	C19	CAP MPF 0.033UF 5% 63VDC	064318		R4	RES MF 100 OHM 1% 1/4W	144196		J4	BLADE FASTON W/FEET	117708		
R11	RES MF 324 OHM 1% 1/4W	144338	C20	CAP MPF 0.033UF 5% 63VDC	064318		R5	RES MF 1K 1% 1/4W	144090		J5	BLADE FASTON W/FEET	117708		
R12	RES MF 324 OHM 1% 1/4W	144338	C42	CAP ELECT 220UF 25V	066507		R6	RES MF 1K 1% 1/4W	144090		J6	BLADE FASTON W/FEET	117708		
R13	RES MF 324 OHM 1% 1/4W	144338	D1	DIODE SILICON	070047		R7	RES MF 100 OHM 1% 1/4W	144196		J7	CONN PCB MOUNT POWER RED	117719		
R15	RES NETWORK 9X-1-223	144238	J1	CONN 23 PIN FFC	117715		R8	RES MF 100 OHM 1% 1/4W	144196		J9	BLADE FASTON W/FEET	117708		
R16	RES MF 1K 1% 1/4W	144090	K1	RELAY REED FORM 1A 5V 500 OHMS	087050		R9	RES MF 100 OHM 1% 1/4W	144196		L1	CHOKE 2.2mH	122001		
R17	RES MF 6.49K 1% 1/4W	144140	K2	RELAY REED FORM 1A 5V 500 OHMS	087050		R10	RES MF 100 OHM 1% 1/4W	144196		L2	CHOKE 2.2mH	122001		
R18	RES MF 240 OHM 1% 1/4W	144338	K3	RELAY REED FORM 1A 5V 500 OHMS	087050		R11	RES MF 1K 1% 1/4W	144090		Q2	TRANSISTOR N JFET	132222		
R19	RES MF 240 OHM 1% 1/4W	144338	K4	RELAY REED FORM 1A 5V 500 OHMS	087050		R12	RES MF 10 OHM 1% 1/4W	144157		Q3	TRANSISTOR NPN	132136		
R20	RES MF 240 OHM 1% 1/4W	144338	R1	POT 50KAX2	134490		R13	RES MF 221 OHM 1% 1/4W	144172		Q4	TRANSISTOR NPN	132136		
R21	RES MF 240 OHM 1% 1/4W	144338	R2	RES MF 1K 1% 1/4W	144090		R14	RES MF 61.9K OHM 1/4W	144335		Q5	TRANSISTOR NPN	132136		
R22	RES MF 100K 1% 1/4W	144113	R3	RES MF 3.32K 1% 1/4W	144095		R15	RES MF 10 OHM 1% 1/4W	144157		Q6	TRANSISTOR NPN	132136		
R23	RES MF 240 OHM 1% 1/4W	144338	R4	POT BALANCE 2KOHM	134464		R16	RES MF 22.1K 1% 1/4W	144187		Q7	TRANSISTOR N JFET	132222		
R24	RES MF 240 OHM 1% 1/4W	144338	R5	RES MF 475K 1% 1/4W	144364		R17	RES MF 182 OHM 1/4W 1%	144273		Q8	TRANSISTOR N JFET	132222		
S1	PC BD SWITCH	129294	R6	RES MF 1K 1% 1/4W	144090		R18	RES MF 182 OHM 1/4W 1%	144273		Q9	TRANSISTOR N JFET	132222		
U1	IC SUPERVISOR WITH EEPROM	133468	R7	RES MF 475K 1% 1/4W	144364		R19	RES MF 2.21K 1% 1/4W	144298		R5	RES MF 2.21M 1/4W	144265		
U2	IC PROGRAMMED MC2275 V1.00	133523	R8	RES MF 3.32K 1% 1/4W	144095		R20	RES MF 182 OHM 1/4W 1%	144273		R6	RES MF 10K 1% 1/4W	144053		
U3	IC SHFT REG SER-PAR	133186	R9	RES MF 10 OHM 1% 1/4W	144157		R21	RES MF 182 OHM 1/4W 1%	144273		R7	RES MF 1.82K 1% 1/4W	144296		
U4	IC SHFT REG SER-PAR	133186	R10	RES MF 10 OHM 1% 1/4W	144157		R22	RES MF 2.21K 1% 1/4W	144298		R8	RES MF 40.2K 1% 1/4W	144107		
U5	IC AND 2 INPUT X 4	133175	R11	RES MF 10 OHM 1% 1/4W	144157		R23	RES MF 2.21K 1% 1/4W	144298		R9	RES MF 10K 1% 1/4W	144053		
Y1	RESONATOR CERAMIC 6.0MHZ W/CAP	180039	R12	RES MF 10 OHM 1% 1/4W	144157		SP1	BRACKET PCB CARD MOUNTING	003611		R10	RES MF 2.21M 1/4W	144265		
4	049967 BALANCED PCB		R13	RES MF 681 OHM 1% 1/4W	144195		SP2	BRACKET PCB CARD MOUNTING	003611		R11	RES MF 2.74K 1% 1/4W	144304		
			R14	RES MF 1M 1/4W	144269		U1	IC SHFT REG SER-PAR	133186		R12	RES MO 46.4k 1% 1W	144436		
			R15	RES MF 100K 1% 1/4W	144113		U2	IC 8 LN DRIVER ARRAY	133180		R13	RES MO 46.4k 1% 1W	144436		
			R16	RES MF 475 OHM 1% 1/4W	144086		U3	IC OPERATIONAL AMPLIFIER	133189		R14	RES MF 10K 1% 1/4W	144053		
			R17	POTENTIOMETER	134457		U4	IC AND 2 INPUT X 4	133175		R15	RES MF 121K 1% 1/4W	144418		
C1	CAP ELECT 10UF 50V	066445	R18	POTENTIOMETER	134457	7	049970 PUSHBUTTON PCB		R16	RES MF 47.5K 1% 1/4W	144108				
C2	CAP ELECT 10UF 50V	066445	R19	RES MF 1M 1/4W	144269				R17	RES MF 1K 1% 1/4W	144090				
C3	CAP ELECT 10UF 50V	066445	R20	RES MF 681 OHM 1% 1/4W	144195				R19	RES MF 1M 1/4W	144269				
C4	CAP ELECT 10UF 50V	066445	R21	RES MF 1M 1/4W	144269				R20	RES MF 1M 1/4W	144269				
C5	CAP ELECT 10UF 50V	066445	R22	RES MF 100K 1% 1/4W	144113				R21	RES MF 332k 1% .5W	144355				
C6	CAP ELECT 10UF 50V	066445	R23	RES MF 475 OHM 1% 1/4W	144086		DS2	LED SQUARE RED	058109		R22	RES MO 100K 5% 2W	144438		
C7	CAP ELECT 10UF 50V	066445	R24	RES MF 1M 1/4W	144269		DS3	LED SQUARE RED	058109		R23	RES MO 100K 5% 2W	144438		
C8	CAP ELECT 10UF 50V	066445	R25	RES MF 1K 1% 1/4W	144090		DS4	LED SQUARE RED	058109		R24	RES MO 100K 5% 2W	144438		
D1	DIODE SILICON	070047	R26	RES MF 1K 1% 1/4W	144090		DS5	LED SQUARE RED	058109		R25	RES MO 100K 5% 2W	144438		
J1	XLR FEMALE VERTICAL WITH LATCH	117813	R53	RES MF 10 OHM 1% 1/4W	144157		DS8	LED ARRAY(4) YELLOW SQUARE	058126		R27	RES WW 220 OHM 10% 5W	139009		
J2	XLR FEMALE VERTICAL WITH LATCH	117813	U1	IC DUAL OPERATIONAL AMPLIFIER	133260		J1	CONN FFC 18PIN	117765		R28	RES WW 220 OHM 10% 5W	139009		
J3	CONN 12 PIN FFC	117720	U2	IC OPAMP NE4558N	133028		J2	JACK PHONO 1/8 STEREO VER	117462		R30	RES MF 17.4K 1% 1/4W	144413		
K1	RELAY REED FORM 1A 5V 500 OHMS	087050													
K2	RELAY REED FORM 1A 5V 500 OHMS	087050													
K3	RELAY REED FORM 1A 5V 500 OHMS	087050													

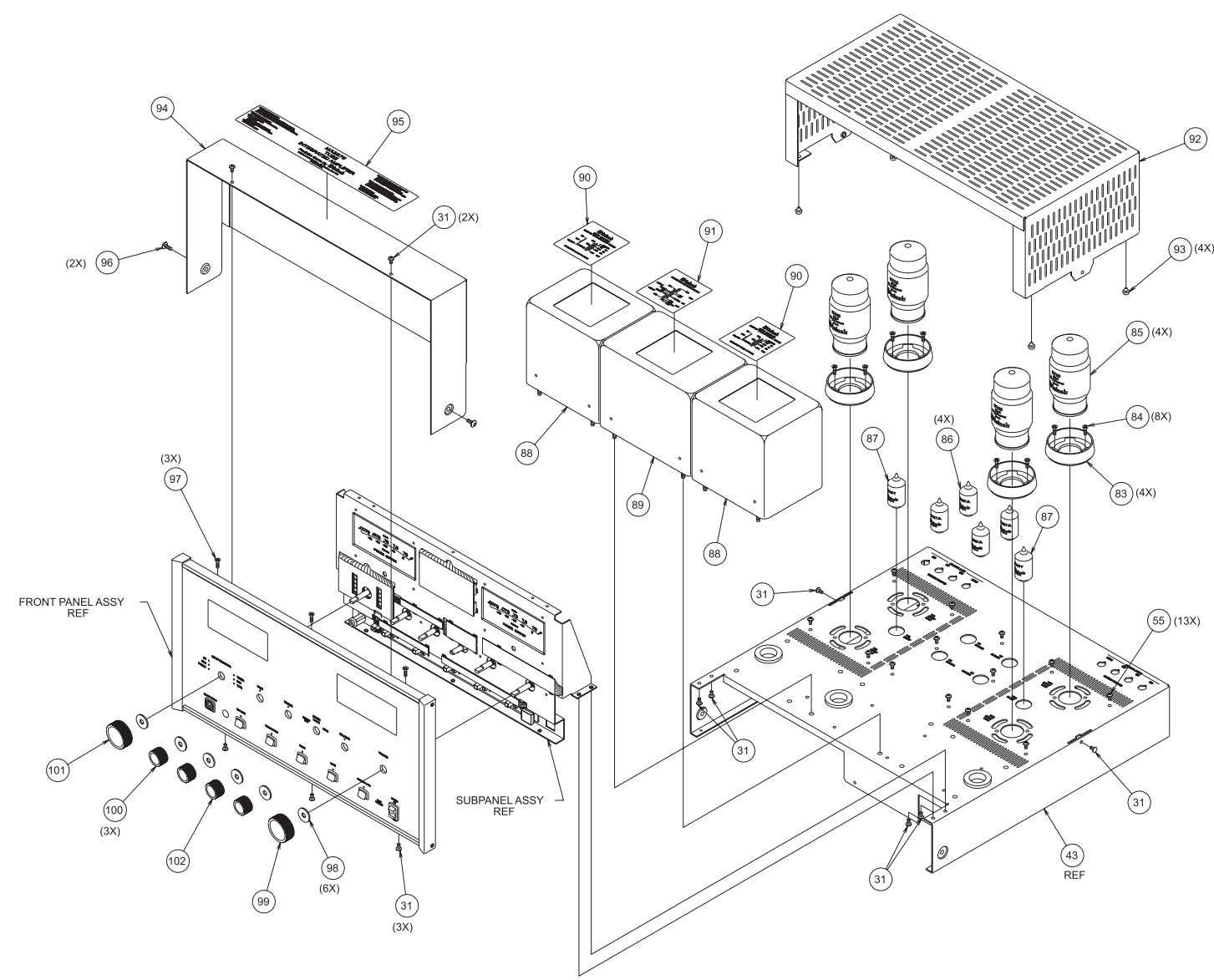
PARTS LIST con't

R31	RES MF 332k 1% .5W	144355	R1	RES MO 18K 5% 1W	144286	R3	RES MF 22.1K 1% 1/4W	144187	K2	RELAY POWER TV5 12V	087070
R32	RES MF 2.74K 1% 1/4W	144304	R2	RES MO 100K 5% 2W	144438	R4	RES MF 22.1K 1% 1/4W	144187	Q1	TRANSISTOR NPN	132223
R33	RES MF 10K 1% 1/4W	144053	R4	RES MF 2.74M 1/4W	144271	R5	RES MF 68.1K 1% 1/4W	144081	R1	RES MF 2.21K 1% 1/4W	144298
R34	RES MF 2.21M 1/4W	144265	R5	RES MF 100K 1% 1/4W	144113	R6	RES MF 68.1K 1% 1/4W	144081	R2	RES MF 10 OHM 1% 1/4W	144157
R35	RES MF 2.21M 1/4W	144265	R6	RES MF 100K 1% 1/4W	144113	R7	RES MF 10.2K 1% 1/4W	144130	RT1	THERMISTER 5 OHM	144151
R36	RES MF 2.74K 1% 1/4W	144304	R7	RES MF 1M 1/4W	144269	R8	RES MF 10.2K 1% 1/4W	144130	T1	TRANSFORMER LOW PROFILE	159342
R37	RES MF 2.74K 1% 1/4W	144304	R8	RES MF 221K 1% 1/4W	144421	R9	RES MF 10M 1% 1/4W	144264	TP1	CONN 4 PIN	117215
U1	IC DUAL OPERATIONAL AMPLIFIER	133260	R9	RES MF 100K 1% 1/4W	144113	R10	RES MF 121K 1% 1/4W	144418	TP2	CONN 4 PIN	117215
V1	TUBE 12AT7	165067	R10	RES MO 2.2K 5% 2W	144494	R11	RES MF 10M 1% 1/4W	144264	1213	050052 TERMINAL PCB	
V2	TUBE KT88	165069	R75	RES MO 100K 5% 2W	144438	R12	RES MF 121K 1% 1/4W	144418			
V3	TUBE KT88	165069	R76	RES MO 100K 5% 2W	144438	R13	POT TRIM 100K OHM 20%	134383	C1	CAP MPF 0.22UF 400VDC	064438
9	049972 POWER SUPPLY PCB		U2	IC REGULATOR 15V	133154	R14	POT TRIM 100K OHM 20%	134383	C2	CAP MPF 0.22UF 400VDC	064438
			U3	IC REGULATOR -15V	133153	R15	RES MF 100 OHM 1% 1/4W	144196	J1	HEADER 4 CIRCUIT POST	117772
C1	CAP MONO .47uF 50V	061249	10	049973 METER PCB		R16	RES MF 100 OHM 1% 1/4W	144196	J2	HEADER 4 CIRCUIT POST	117772
C2	CAP POLY .047UF 10% 1000VDC	064434				R17	RES MF 221K 1% 1/4W	144421	R1	RES WW 4 OHM 5% 5W	139119
C3	CAP ELECT 680UF 315V	066549	C1	CAP MONO .1uF 50V 20% Z5U	061305	R18	RES MF 2.21M 1/4W	144265	R2	RES WW 4 OHM 5% 5W	139119
C4	CAP ELECT 680UF 315V	066549	C2	CAP MONO .1uF 50V 20% Z5U	061305	R19	RES MF 2.21M 1/4W	144265			
C5	CAP ELECT 47UF 450V	066497	C3	CAP MONO .1uF 50V 20% Z5U	061305	R20	RES MF 187K 1% 1/4W	144406			
C6	CAP ELECT 33UF 500V	066542	C4	CAP ELECT 100UF 25V	066161	R21	RES MF 187K 1% 1/4W	144406			
C7	CAP ELECT 47UF 450V	066497	C5	CAP MPF 0.1UF 100V	064337	R22	RES MF 4.75K 1% 1/4W	144097			
C8	CAP ELECT 1UF 50V	066510	C6	CAP MPF 0.22UF 5% 63VDC	064329	R23	RES MF 1.21K 1% 1/4W	144191			
C9	CAP ELECT 680UF 315V	066549	C7	CAP MPF 0.1UF 100V	064337	R24	RES MF 10K 1% 1/4W	144053			
C10	CAP ELECT 680UF 315V	066549	C8	CAP MPF 0.22UF 5% 63VDC	064329	R25	RES MF 4.75K 1% 1/4W	144097			
C11	CAP ELECT 4700UF 35V	066541	C9	CAP ELECT 2.2UF 50V	066511	R26	RES MF 1.21K 1% 1/4W	144191			
C12	CAP ELECT 10UF 50V	066445	C10	CAP ELECT 2.2UF 50V	066511	R27	RES MF 10K 1% 1/4W	144053			
C13	CAP POLYPROP .047UF 10% 250VDC	064364	D1	DIODE ZENER 5V	070132	R28	POT TRIM 500 OHM 20% HORIZ ADJ	134410			
C14	CAP ELECT 4700UF 35V	066541	D2	DIODE SILICON	070047	R29	POT TRIM 500 OHM 20% HORIZ ADJ	134410			
C15	CAP ELECT 10UF 50V	066445	D3	DIODE SILICON	070047	R30	POT TRIM 500 OHM 20% HORIZ ADJ	134410			
D1	DIODE BRID RECT 1000V 6A	070165	D4	DIODE SILICON	070047	R31	POT TRIM 500 OHM 20% HORIZ ADJ	134410			
D2	DIODE ZENER 150V	070170	D5	DIODE SILICON	070047	R32	RES MF 221 OHM 1% 1/4W	144172			
D3	DIODE ZENER 150V	070170	D6	DIODE SILICON	070047	R33	RES MF 221 OHM 1% 1/4W	144172			
D4	DIODE RECTIFIER 1N4007	070169	D7	DIODE SILICON	070047	R34	RES MF 221 OHM 1% 1/4W	144172			
D5	DIODE RECTIFIER 1N4007	070169	D8	DIODE SILICON	070047	R35	RES MF 221 OHM 1% 1/4W	144172			
D6	DIODE SIL 400 PIV @ 1.5A	070031	D9	DIODE SILICON	070047	U1	IC DUAL OPERATIONAL AMPLIFIER	133260			
D7	DIODE SIL 400 PIV @ 1.5A	070031	D10	DIODE SILICON	070047	U2	IC DUAL OPERATIONAL AMPLIFIER	133260			
D8	DIODE SIL 400 PIV @ 1.5A	070031	D11	DIODE SILICON	070047	11	050007 BACKUP POWER SUPPLY PCB				
D9	DIODE SIL 400 PIV @ 1.5A	070031	D12	DIODE SILICON	070047						
D10	DIODE SILICON	070047	D13	DIODE SILICON	070047	C2	CAP ELECT 4700UF 35V	066541			
F1	FUSE 2A 250V SLO-BLO 5X20 IEC	089088	DS1	LED BLUE 5MM HI-INTENSITY	058166	D1	DIODE SILICON	070047			
F2	FUSE 2A 250V SLO-BLO 5X20 IEC	089088	DS2	LED GREEN 5MM HI-INTENSITY	058165	D2	DIODE SIL 400 PIV @ 1.5A	070031			
GP1	BRACKET PCB CARD MOUNTING	003611	DS3	LED BLUE 5MM HI-INTENSITY	058166	D3	DIODE SIL 400 PIV @ 1.5A	070031			
GP2	BRACKET PCB CARD MOUNTING	003611	DS4	LED GREEN 5MM HI-INTENSITY	058165	D4	DIODE SIL 400 PIV @ 1.5A	070031			
J1	BLADE FASTON .187	117726	DS5	LED BLUE 5MM HI-INTENSITY	058166	D5	DIODE SIL 400 PIV @ 1.5A	070031			
J2	BLADE FASTON .187	117726	DS6	LED GREEN 5MM HI-INTENSITY	058165	F1	FUSE 1A 250V SB 5X20 IEC	089107			
J3	BLADE FASTON W/FEET	117708	DS7	LED BLUE 5MM HI-INTENSITY	058166	J1	BLADE FASTON W/FEET	117708			
J4	BLADE FASTON W/FEET	117708	DS8	LED GREEN 5MM HI-INTENSITY	058165	J2	BLADE FASTON W/FEET	117708			
J5	BLADE FASTON W/FEET	117708	J2	BLADE FASTON W/FEET	117708	J3	BLADE FASTON W/FEET	117708			
J6	BLADE FASTON W/FEET	117708	J3	CONN 12 PIN FFC	117720	J4	BLADE FASTON W/FEET	117708			
J7	BLADE FASTON W/FEET	117708	J4	CONN 3 POS MALE MTS100 NORMAL	117214	J5	BLADE FASTON W/FEET	117708			
J8	BLADE FASTON W/FEET	117708	J5	HEADER 2 PIN LATCHING	117766	J6	BLADE FASTON W/FEET	117708			
J9	BLADE FASTON W/FEET	117708	J6	HEADER 2 PIN LATCHING	117766	J7	BLADE FASTON W/FEET	117708			
J10	BLADE FASTON W/FEET	117708	J7	BLADE FASTON W/FEET	117708	J8	BLADE FASTON W/FEET	117708			
J11	CONN 12 PIN FFC	117720	Q1	TRANSISTOR NPN	132223	J9	BLADE FASTON W/FEET	117708			
J12	BLADE FASTON W/FEET	117708	Q2	TRANSISTOR NPN	132223	J10	BLADE FASTON W/FEET	117708			
J13	BLADE FASTON W/FEET	117708	Q3	TRANSISTOR NPN	132254	J11	CONN 12 PIN FFC	117720			
J14	BLADE FASTON W/FEET	117708	Q4	TRANSISTOR NPN	132254	J12	BLADE FASTON W/FEET	117708			
J16	CONN PCB MOUNT POWER RED	117719	Q5	TRANSISTOR NPN	132254	J13	BLADE FASTON W/FEET	117708			
J17	CONN PCB MOUNT POWER RED	117719	Q6	TRANSISTOR NPN	132254	J14	BLADE FASTON W/FEET	117708			
J18	HEADER 9 CIRCUIT POST NATURAL	117724	Q7	TRANSISTOR NPN	132223	J15	BLADE FASTON W/FEET	117708			
Q1	TRANSISTOR: NPN POWER	132295	Q8	TRANSISTOR NPN	132223	J16	BLADE FASTON W/FEET	117708			
Q2	TRANSISTOR NPN	132223	Q9	TRANSISTOR NPN	132223	J17	BLADE FASTON W/FEET	117708			
Q3	TRANSISTOR PNP	132224	R1	RES MF 475 OHM 1% 1/4W	144086	J18	BLADE FASTON W/FEET	117708			
Q6	TRANSISTOR P FET 1-4PO 250 OHM	132220	R2	RES MF 10 OHM 1% 1/4W	144157	K1	RELAY POWER TV5 12V	087070			

EXPLODED VIEW and PARTS LIST



EXPLODED VIEW con't and PARTS LIST



Ref No.	Part No.	Description
1	016495	GLASS
2	171026	CABLE ASSY POWER SWITCH
3	017531	PUSHBUTTON ASSY RED
4	017517	PUSHBUTTON ASSY BLK
5	078033	O-RING
6	017854	BEZEL HEADPHONE
7	094360	TAPE FOAM 1/2 X 1/2
8	004939	BRACKET EXTRUSION
9	018515	END CAP 9"
10	101042	SCREW TS 4-40 X 1/2 SLOT FILL
11	094016	TAPE FOAM 1/4 X 1/8
12	098113	CORD DIAL .027 BLK BRAID SILK
13	018706	EXTRUSION BOTTOM
14	100149	SCREW MACH 6-32 X 1/4 FL U/H ST
15	018738	EXTRUSION TOP
16	092443	FILTER METER
17	078037	O-RING
18	049970	ASSY PUSHBUTTON PCB
19	017191	BUMPER BUTTON
20	017921	LOGO/SELECTOR BACKLIGHT
21	017901	LOGO/ PUSHBUTTON BACKLIGHT
22	017907	TITLE/PUSHBUTTON BACKLIGHT
23	094431	TAPE FOAM WHT 3/8W X 1/32 THK
24	094430	TAPE FOAM WHT 1/2 W X 1/8 THK
25	005347	SUBPANEL
26	049966	ASSY CONTROL PCB
27	110004	NUT CONTROL M7 X 0.75 HEX
28	104013	WASHER LOCK 5/16 X .435 X .002
29	110002	NUT CONTROL M9 X 0.75 PLATED
30	104014	WASHER INT STAR 3/8 X .507 X .002
31	101054	SCREW TAPTITE 6-32 X 1/4 PH PN BLK
32	112060	SPACER 4 X 5/16 STEEL
33	102001	NUT KEP 4-40 CADMIUM PLATE
34	005390	SWITCH PLATE
35	021159	BUSHING SWITCH
36	146243	SWITCH POWER
37	049968	ASSY VOLUME/TONE PCB
38	124087	METER MA2275
39	017922	METER BACKLIGHT
40	005391	METER PLATE
41	049973	ASSY METER PCB
42	112038	SPACER STEEL 4 X 3/8 NICKEL PLATE
43	005346	CHASSIS
44	078031	GROMMET RUBBER 1" ID
45	017895	SPACER NYLON 6-32 X 7/16
46	117755	RECEPTACLE INPUT & LINE FILTER
47	100178	SCREW MACH 4-40 X 3/8 PH PN
48	178161	HOLDER FUSE 5 X 20mm IEC
49	104016	WASHER INT STAR .5 X .630 X .022
50	102003	NUT MACH 6-32 W/LOCK
51	084112	POST GROUND GOLD
52	100250	SCREW MACH SEMS 6-32 X 1/4 PH PN
53	049971	ASSY AMP PCB
54	049954	ASSY MAIN PCB
55	100157	SCREW MACH 6-32 X 1/4 PH PN
56	049967	ASSY BALANCED PCB
57	049969	ASSY DATA PCB
58	017673	SPACER .380 ID X 3/8 L PHENOLIC
59	117740	POST BINDING RED
60	117741	POST BINDING BLK
61	104178	WASHER LOCK M10 EXT STAINLESS
62	102052	NUT GOLD SUPPLIED W/117758
63	104162	WASHER LOCK INTERNAL TOOTH
64	050052	ASSY TERMINAL PCB
65	102051	NUT HEX M9 X 0.75 GOLD PLATED
66	104014	WASHER INT STAR 3/8 X .507 X .002
67	101197	SCREW HI/LO 4-24 X 3/8 PH RD BLK
68	102006	NUT MACH 10-32 W/LOCK
69	021092	SPACER 6 X 5/16
70	122379	CHOKE FILTER
71	050007	ASSY BACKUP POWER SUPPLY PCB
72	102045	NUT KEP 6-32 SPECIAL
73	049972	ASSY POWER SUPPLY PCB
74	005348	SUPPORT BRACKET
75	005395	POWER SUPPLY SHIELD
76	021030	SPACER 6 X 1/4
77	017160	TAB MOUNTING .140 DIA MTG
78	005350	BOTTOM COVER
79	101078	SCREW TAP 8-32 X 5/16 PH PN BLK
80	017841	FOOT
81	100159	SCREW MACH 10-32 X 3/4 PH PN BLK
82	024010	FOOT PAD
83	017761	AIR PIPE
84	100292	SCREW MACH 6-32 X 3/8 PH FH BLK
85	165069	TUBE KT88 MCINTOSH
86	165065	TUBE 12AX7A MCINTOSH
87	165067	TUBE 12AT7
88	050042	POTTED TRANSFORMER OUTPUT
89	050041	POTTED TRANSFORMER POWER
90	126986	DECAL OUTPUT TRANSFORMER
91	126985	DECAL POWER TRANSFORMER
92	005349	TUBE COVER
93	017862	FOOT PUSH-ON
94	005389	DUST COVER
95	126987	DECAL TOP COVER
96	100287	SCREW MACH 8-32 X 3/8 PH TR HD
97	101232	SCREW 6-32 X 1/4 PHIL FLAT
98	104017	WASHER FELT BLK 3/4 X 1/4 X 1/16
99	049695	ASSY KNOB 34 INDEX METRIC
100	049694	ASSY KNOB 21 INDEX METRIC
101	049637	ASSY KNOB 34 METRIC W/O INDEX
102	050055	ASSY KNOB 21 INDEX AMER

REPACKING INSTRUCTIONS

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

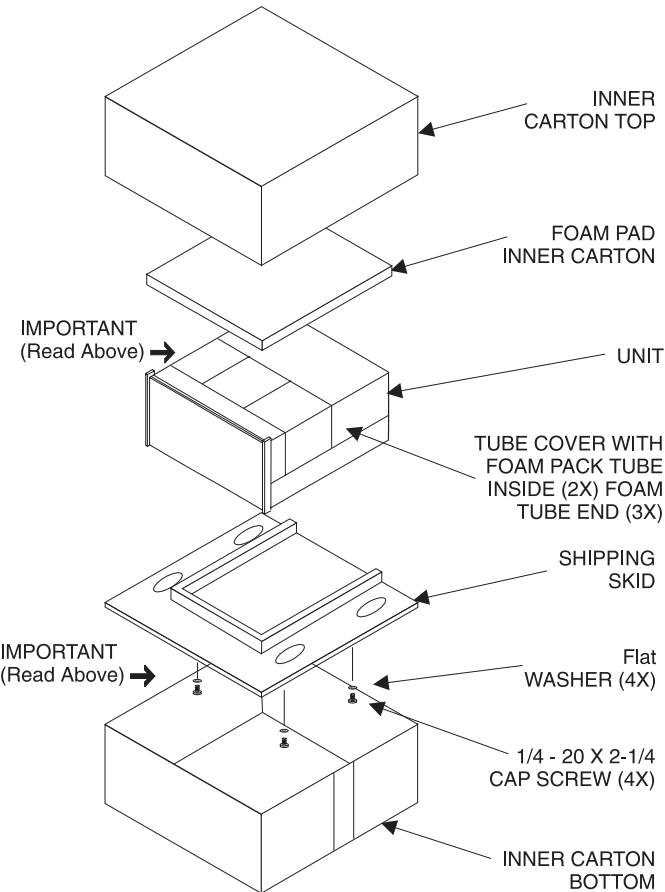
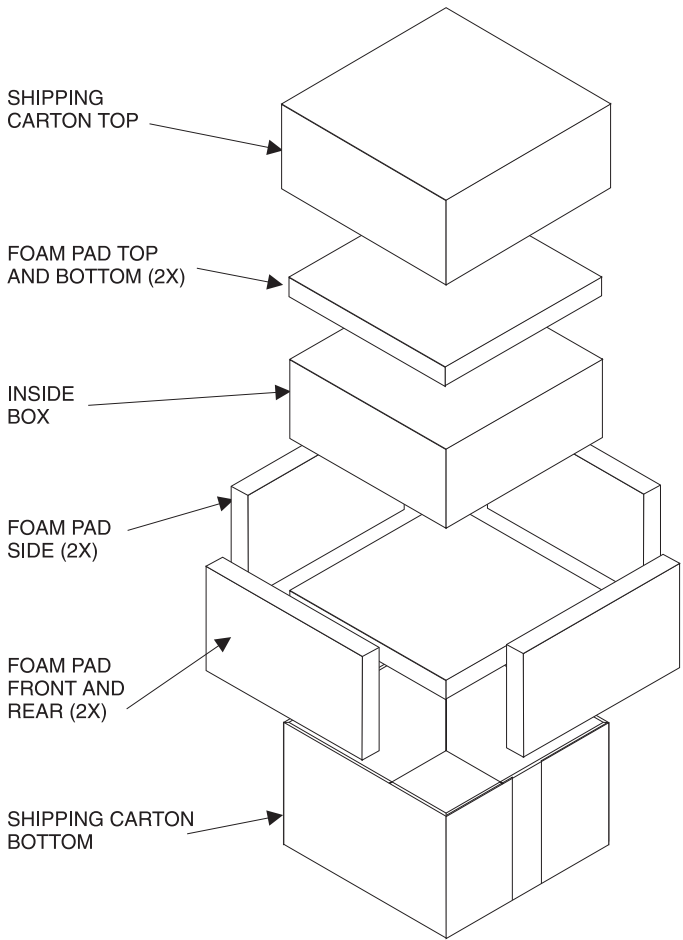
IMPORTANT - For ease of shipment, attach the four feet to the bottom of the unit. Four, 1/4 - 20 x 2-1/4 bolts with washers must be used to fasten the unit securely to the wood skid. Failure to do this will result in shipping damage.

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
3	034180	Tube pack (end)



MA2275

TUBE INTEGRATED 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.

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