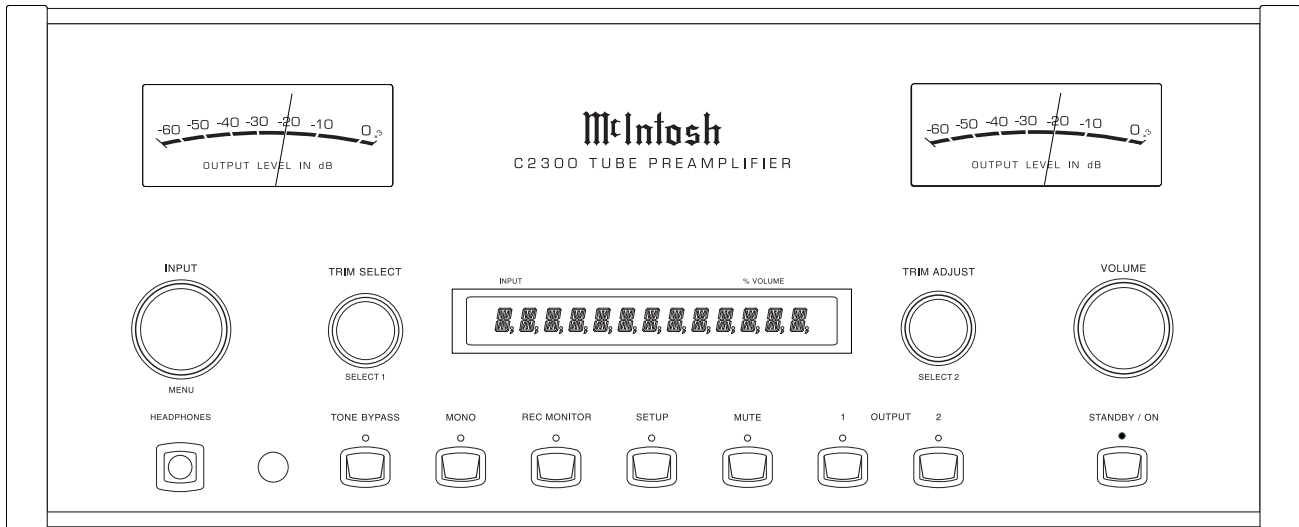




C2300

TUBE PREAMPLIFIER

SERIAL NO. YA1001 And Above



CONTENTS

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SERVICE MANUAL

PERFORMANCE SPECIFICATIONS

General Specifications

Frequency Response

+0, -0.5dB from 20Hz to 20,000Hz

+0, -1dB from 10Hz to 100,000Hz

Total Harmonic Distortion

0.08% from 20Hz to 20,000Hz

Rated Output (Main)

2.5V Unbalanced, 5V Balanced

Maximum Voltage Output

8V RMS Unbalanced, 16V RMS Balanced

Sensitivity (for rated output)

High Level, 450mV unbalanced, 900mV balanced

Phono MM, 4.5mV

Phono MC, 0.45mV

Signal To Noise Ratio (A-Weighted)

High Level, 93dB

Phono, 80dB

Input Impedance

High Level, 20K ohms unbalanced, 40k ohms balanced

Phono MM, 47K ohms; 50 to 750pF, in 50pF steps

Phono MC, 25, 50, 100, 200, 500 or 1,000 ohms; 100pF

Maximum Input Signal

High Level, 5V Unbalanced, 10V Balanced

Phono MM, 50mV

Phono MC, 5mV

Voltage Gain

High Level to SRVR(REC) Output: 0dB

High Level to Main Output: 15dB

Phono MM to Record Output: 40dB

Phono MC to Record Output: 60dB

Output Impedance

220 ohms

Headphone Load Impedance

16 ohms to 250 ohms

Tube Compliment

MM Phono Circuitry: 2 - 12AX7A

MC Phono Circuitry: 2 - 12AX7A

High Level Circuitry: 2 - 12AX7A

Power Requirements

100 Volts, 50/60Hz at 75 watts

110 Volts, 50/60Hz at 75 watts

120 Volts, 50/60Hz at 75 watts

220 Volts, 50/60Hz at 75 watts

230 Volts, 50/60Hz at 75 watts

240 Volts, 50/60Hz at 75 watts

Standby Power, less than 2 watts

Note: Refer to the rear panel of the C2300 for the correct voltage.

Overall Dimensions

Width is 17-1/2 inches (44.45cm)

Height is 6 inches (15.24cm) including feet

Depth is 18 inches (45.72cm) including the Front Panel,

Knobs and Cables

Weight

29.5 pounds (13.41 kg) net, 44.9 pounds (20.41 kg) in shipping carton


Shipping Carton Dimensions

Width is 25 inches (63.5cm)

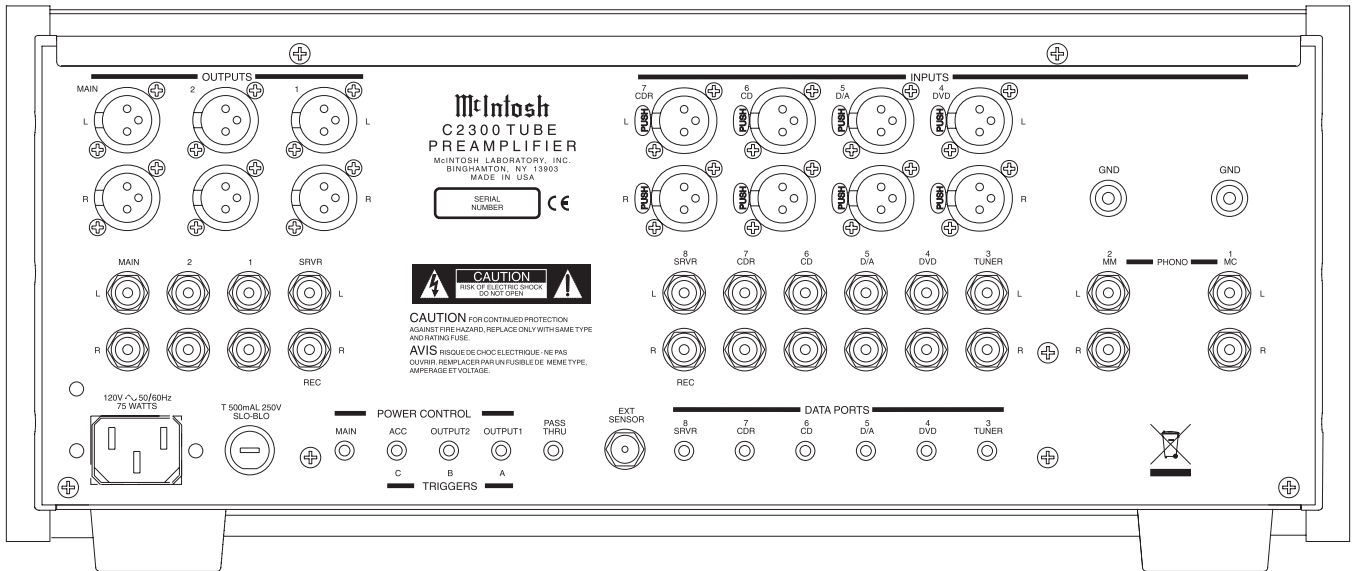
Depth is 27 inches (68.6cm)

Height is 12 inches (30.5cm)

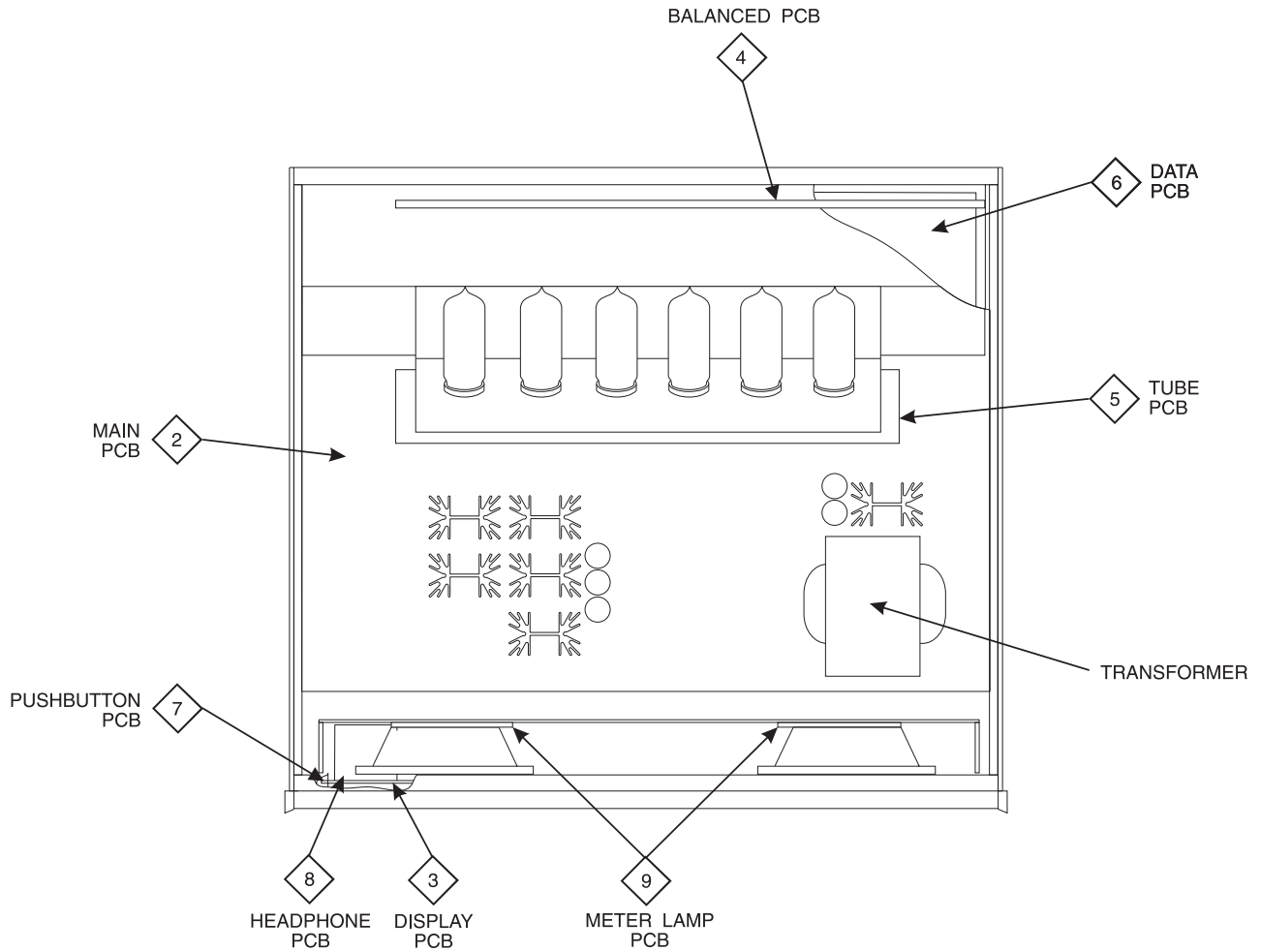
NOTES

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.
6. Use McIntosh Remote Control Model HR061 with the C2300.

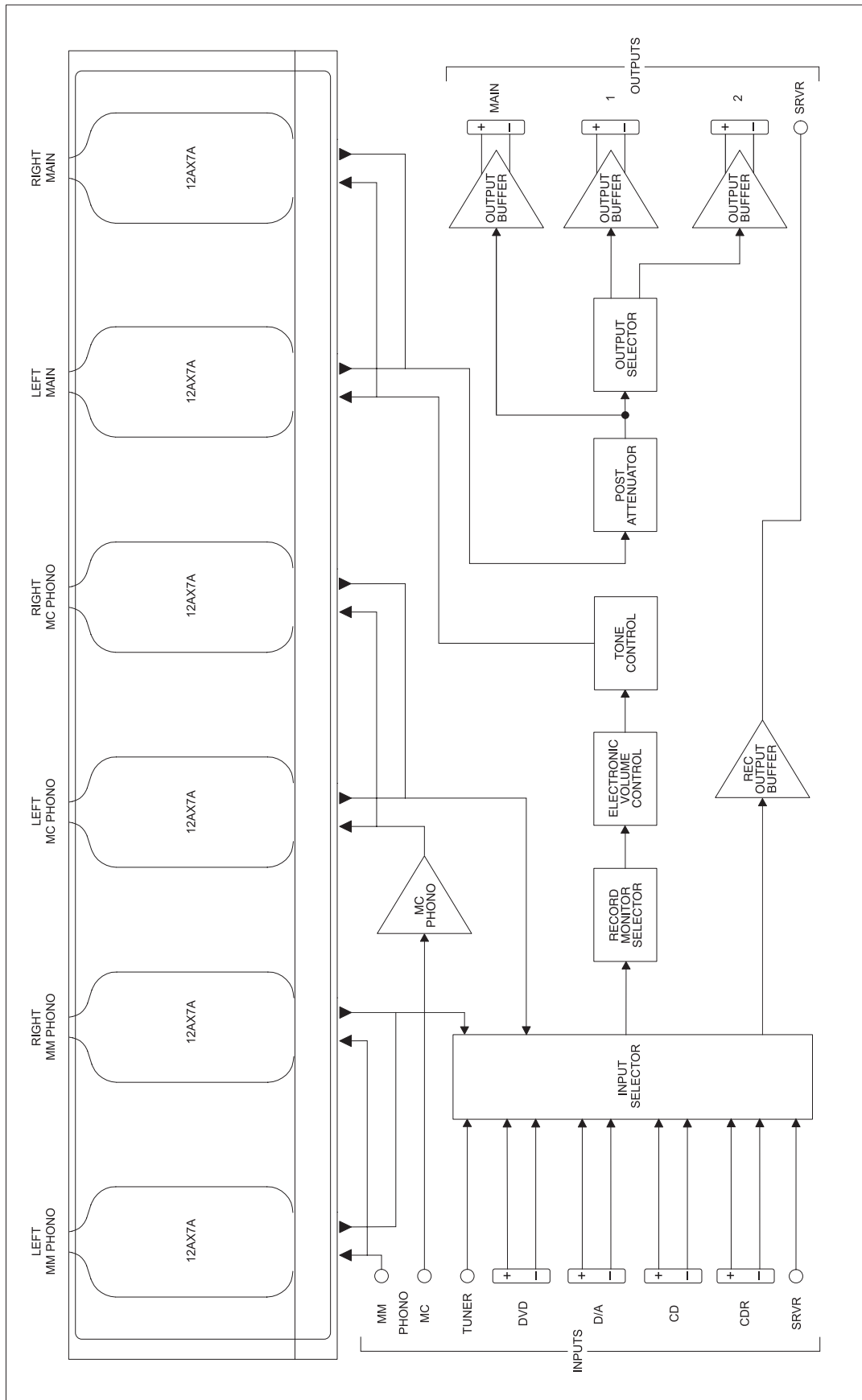
REAR PANEL



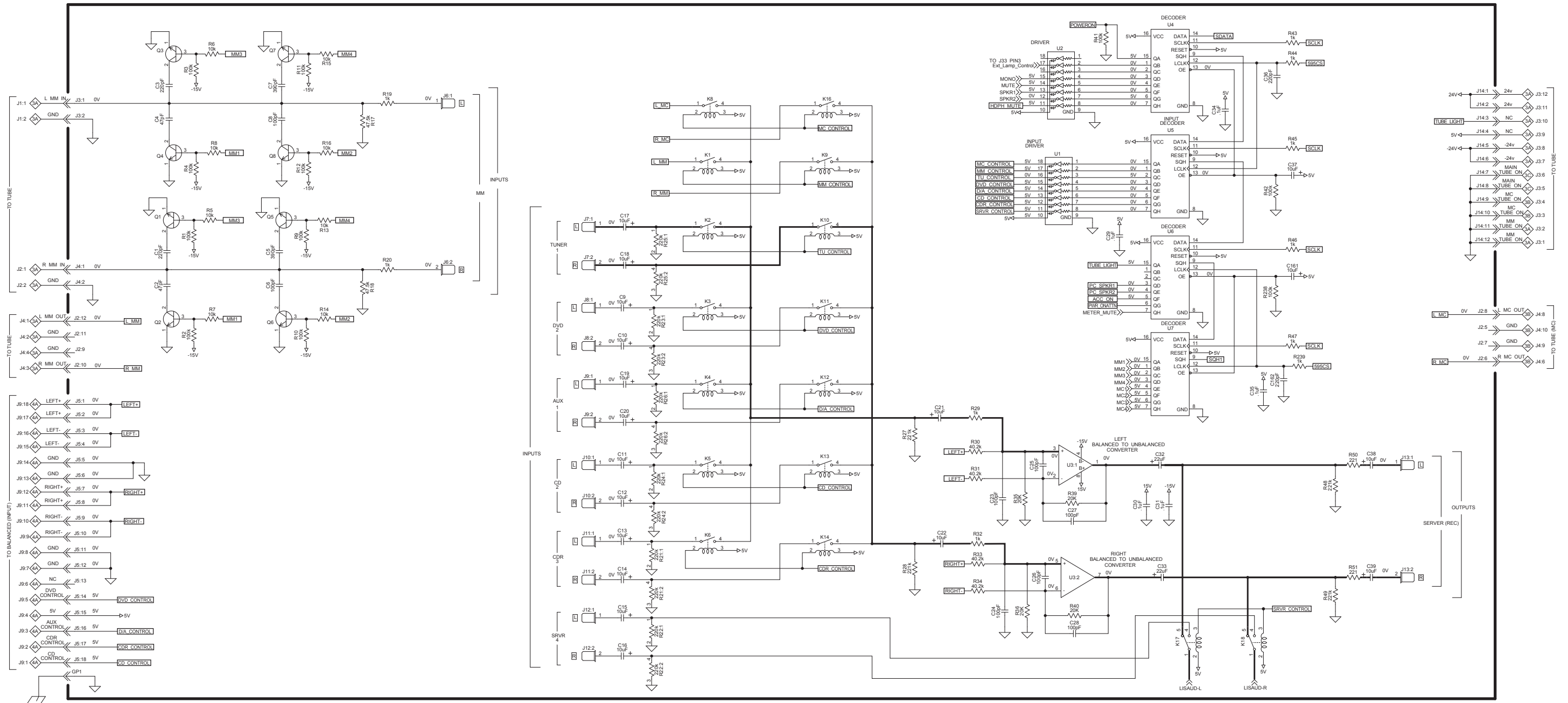
SECTION LOCATION

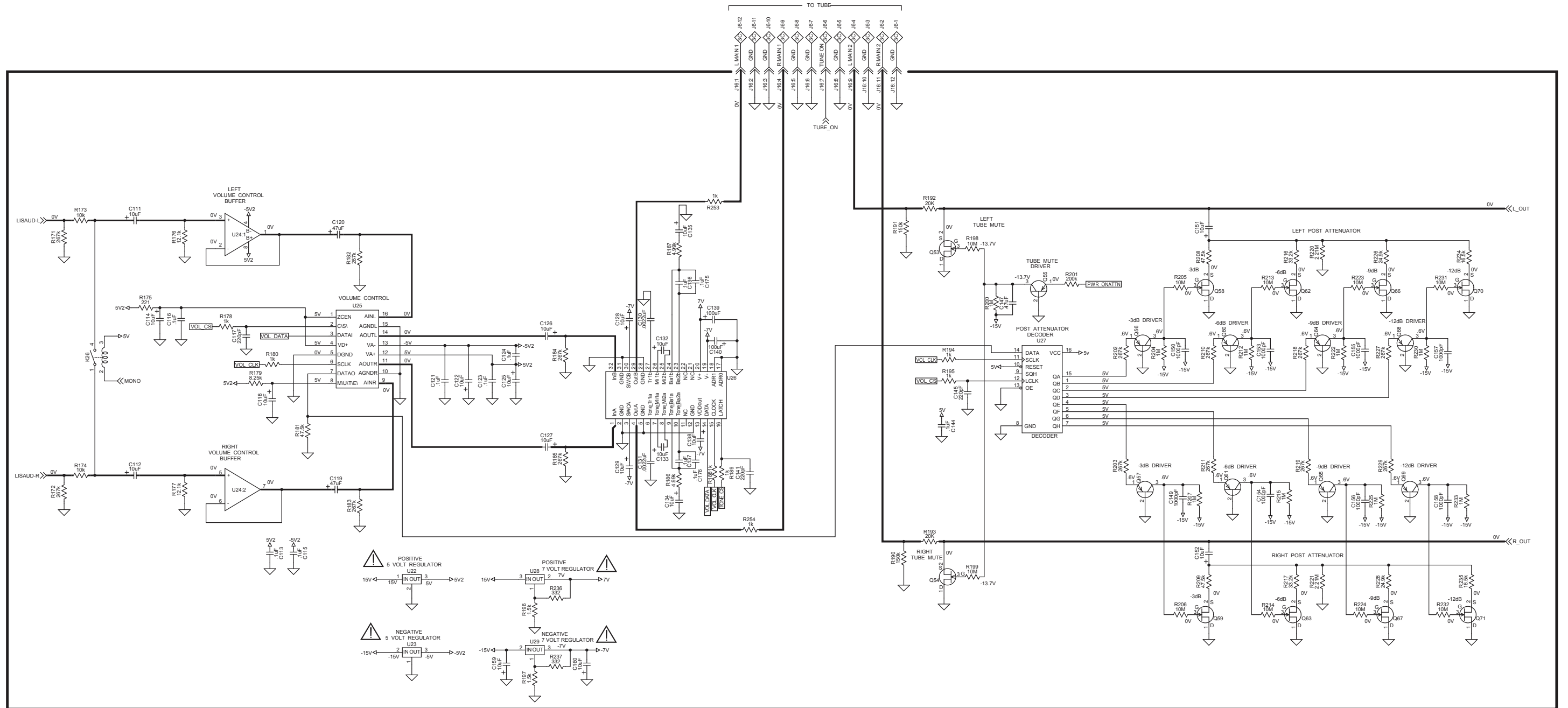


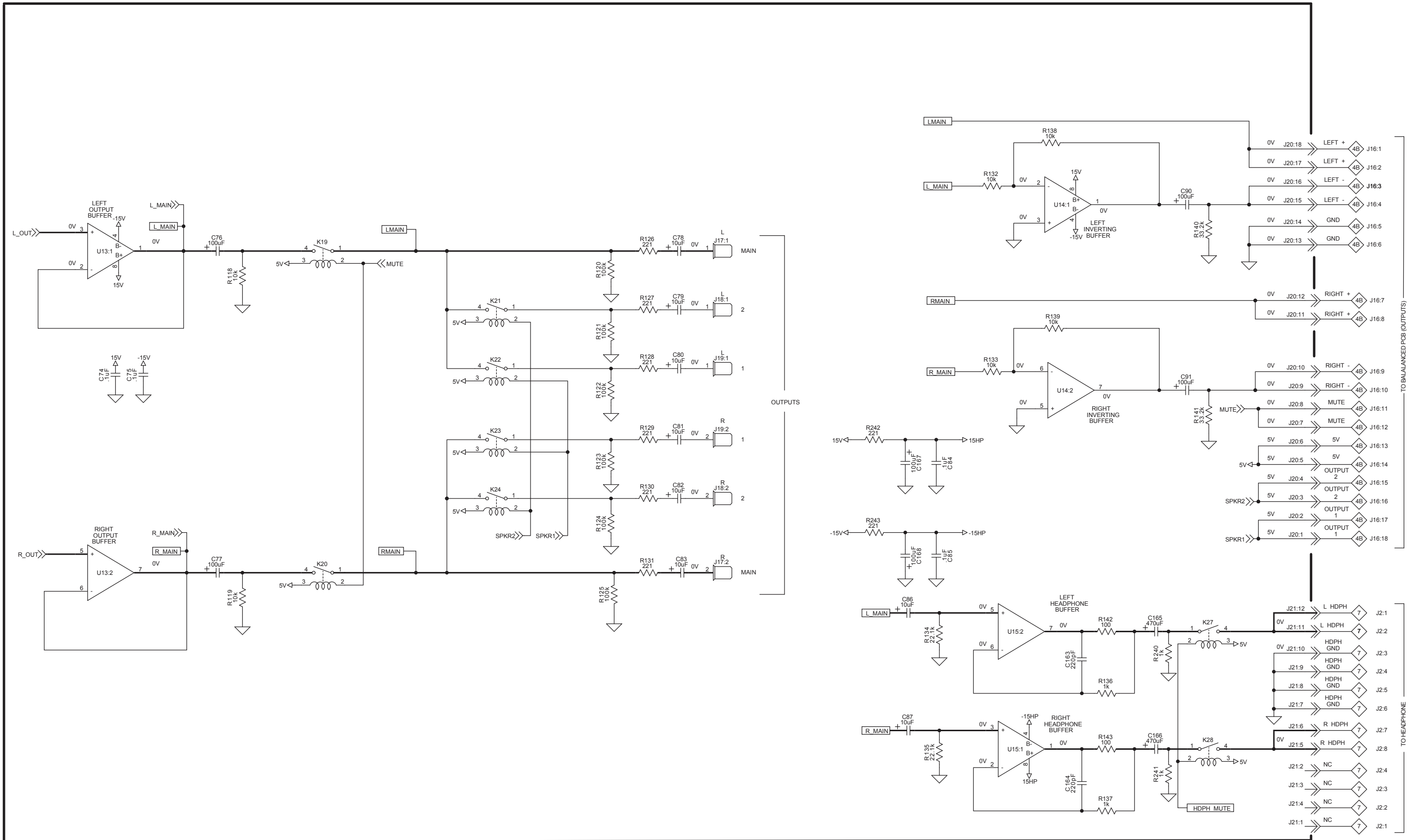
BLOCK DIAGRAM

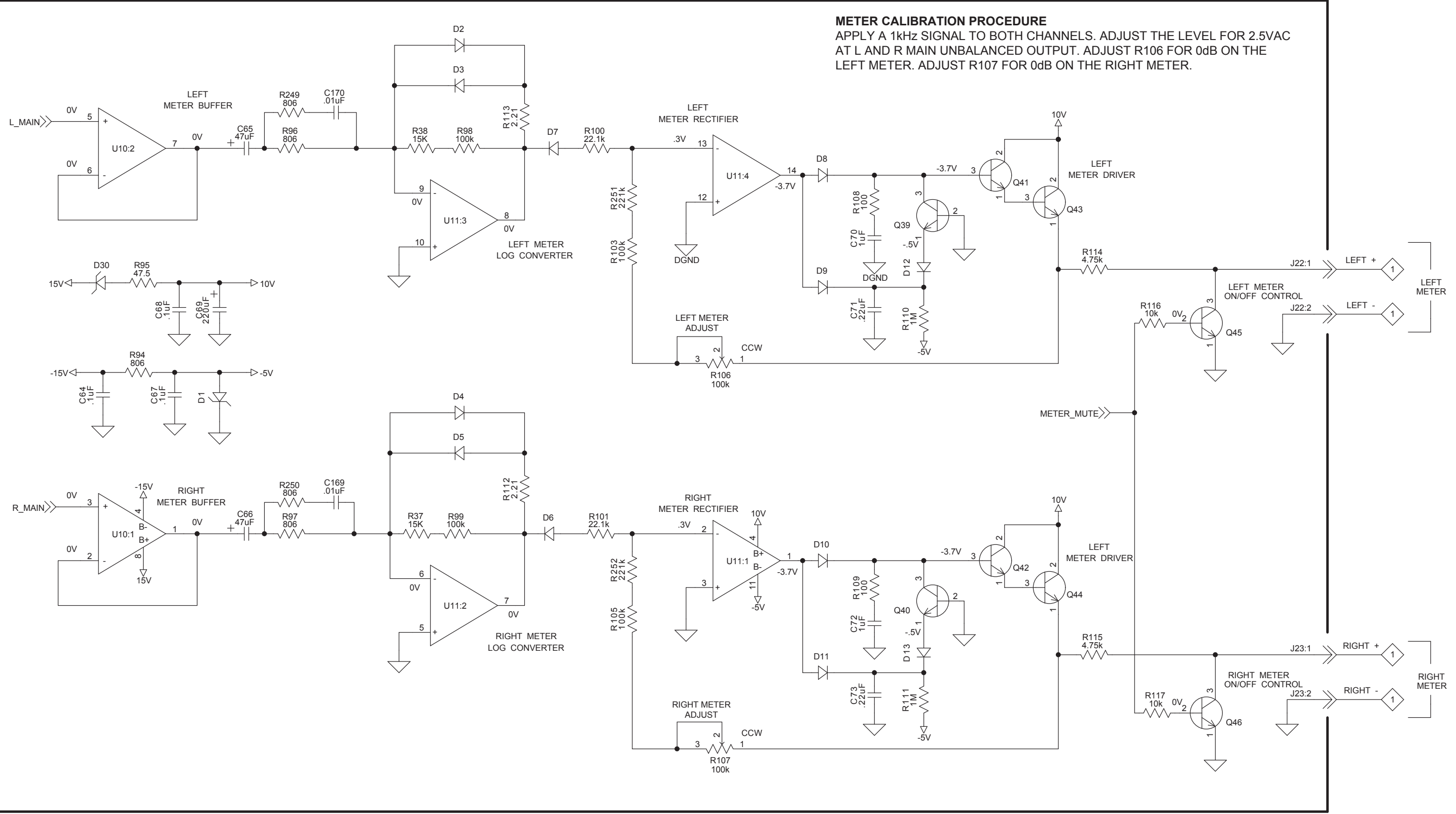


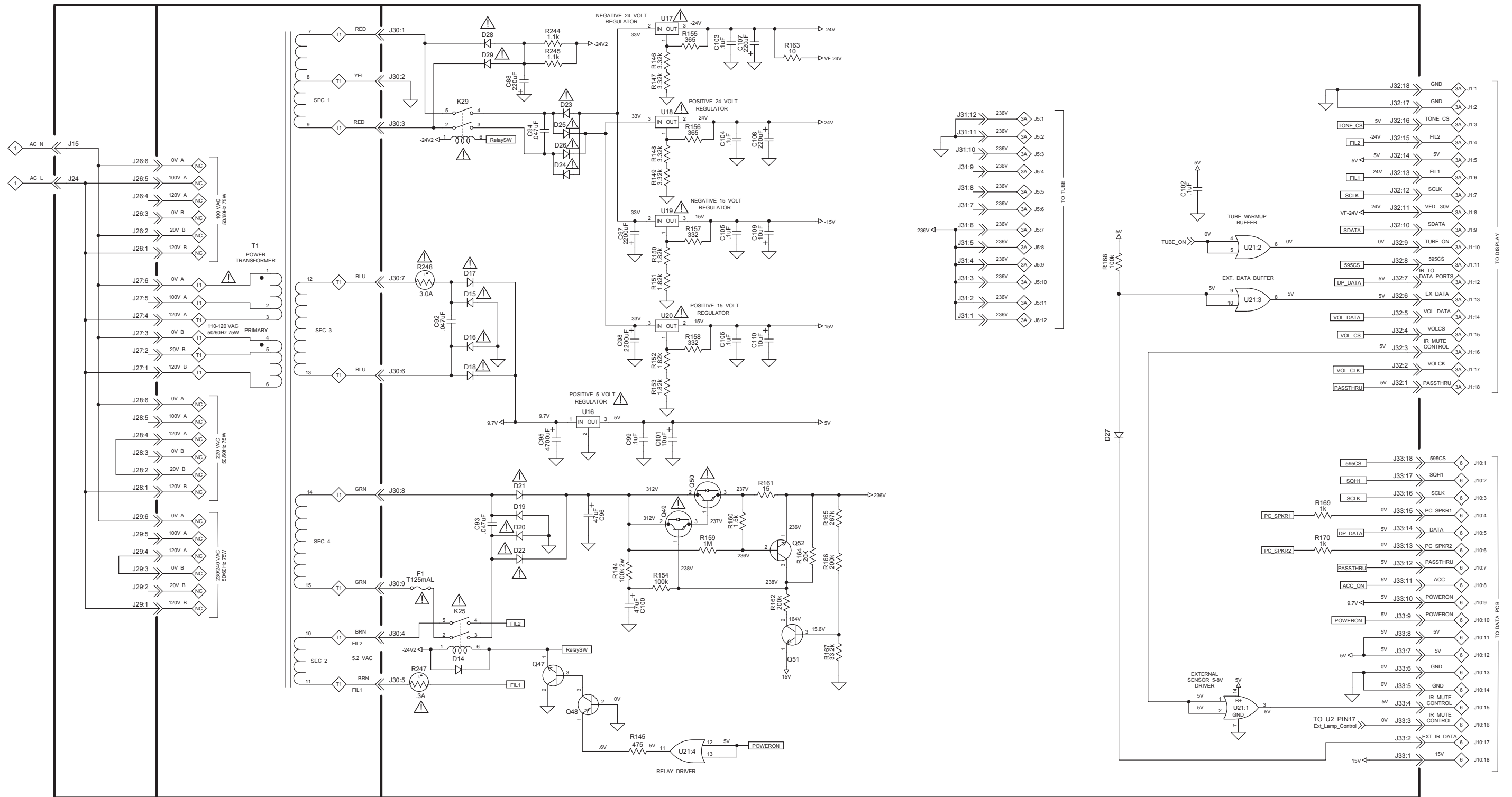
NOTES



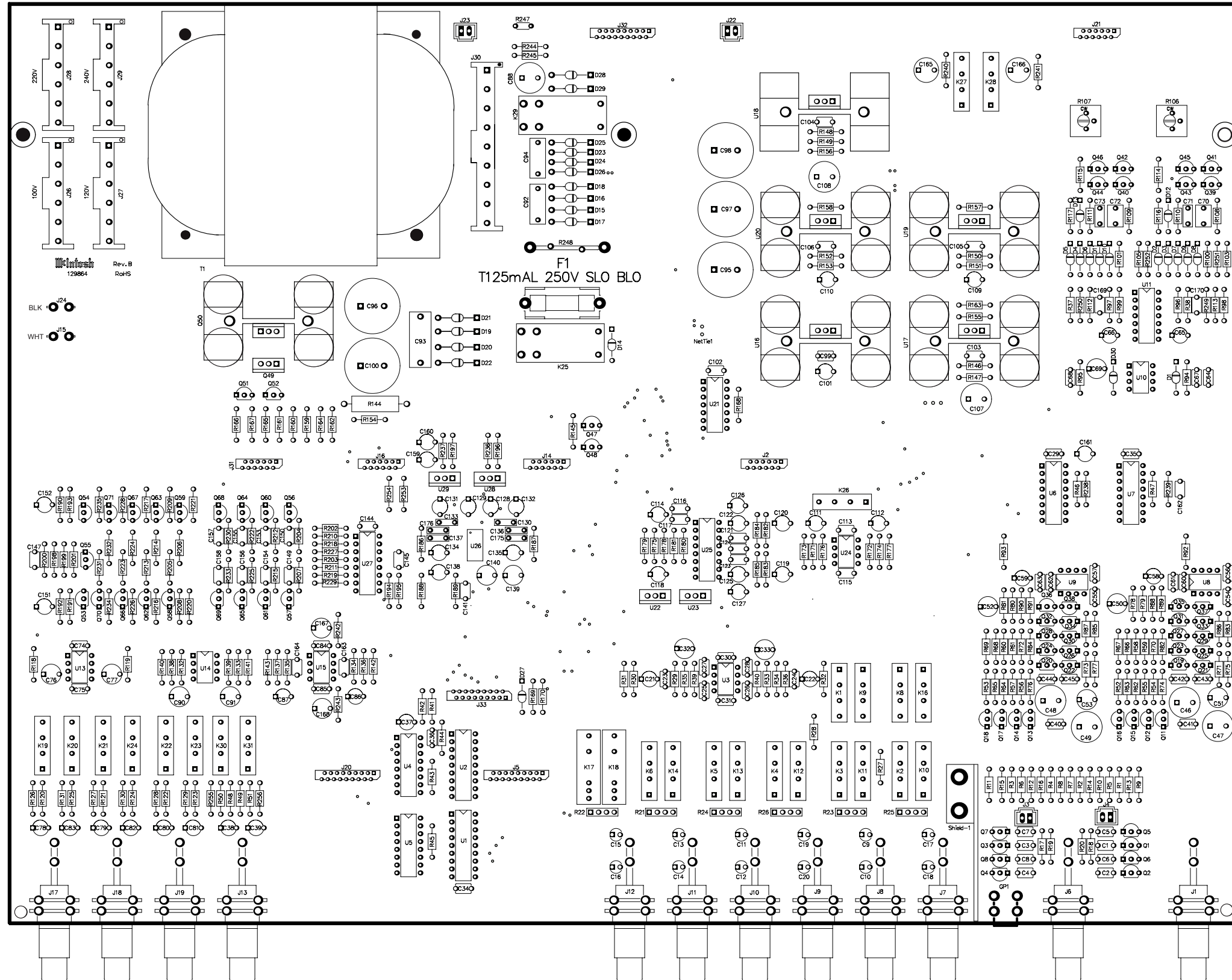




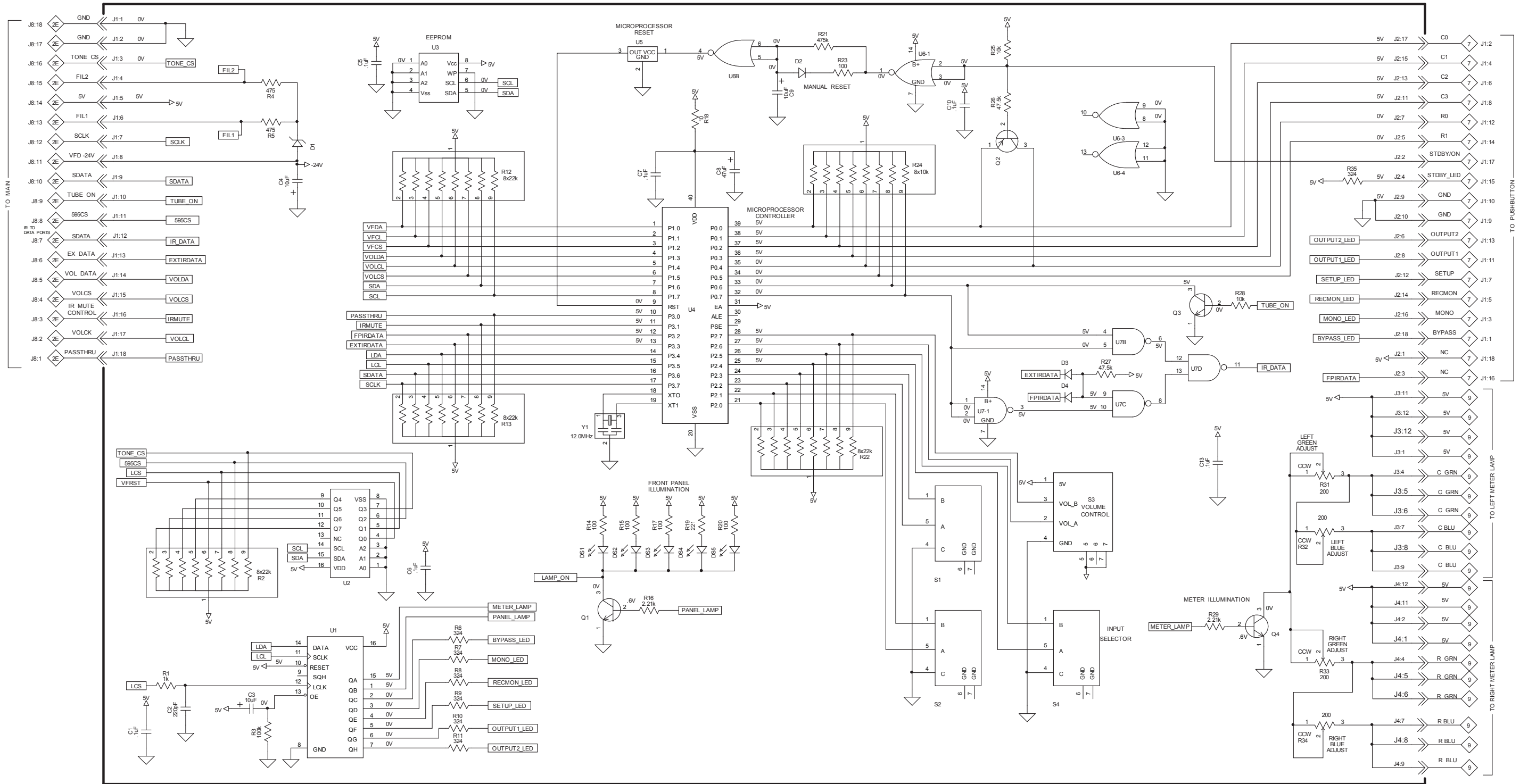




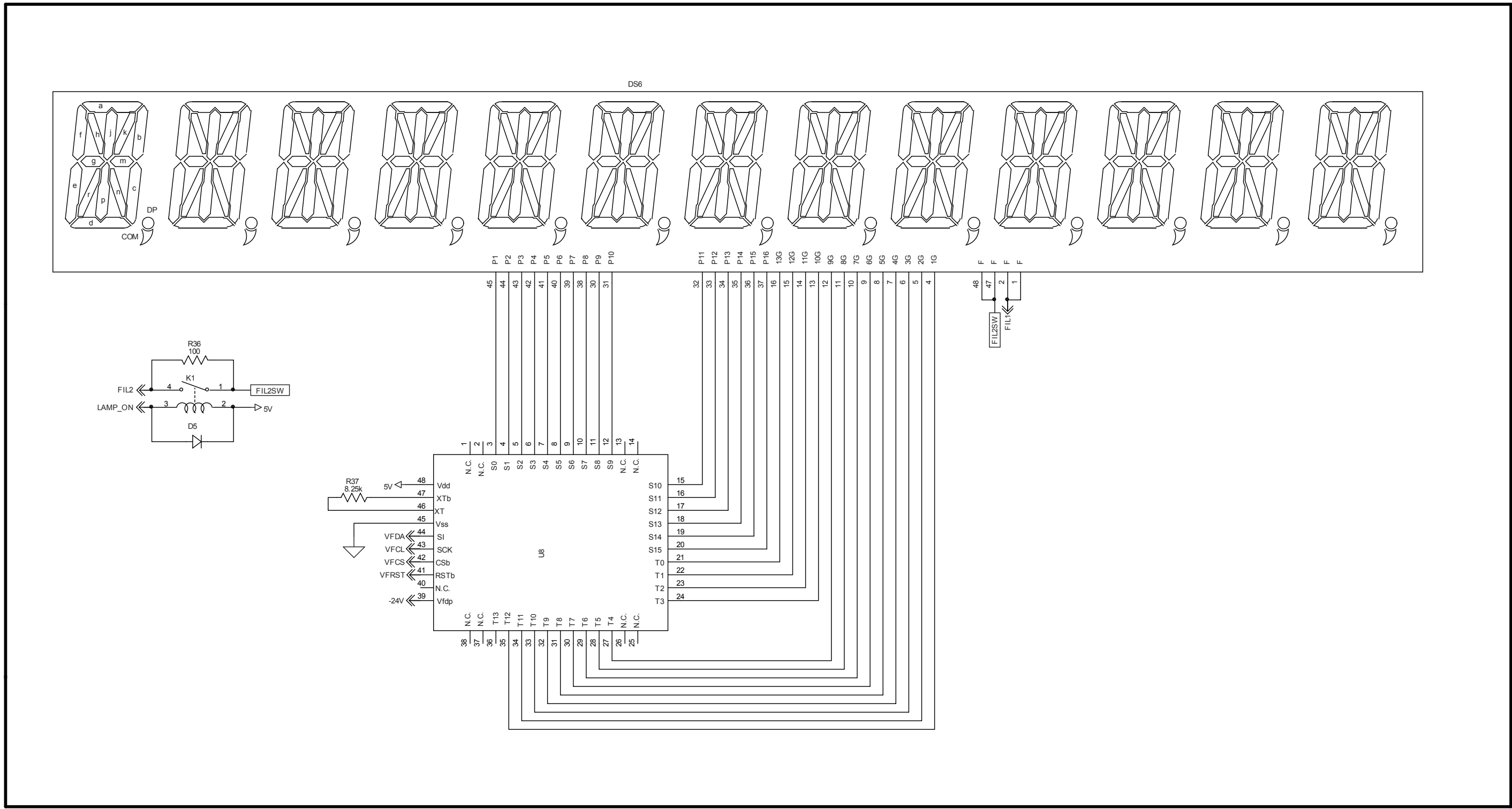
! WARNING Parts marked with a triangle and exclamation mark have critical characteristics. Use only replacement parts recommended by the manufacturer.



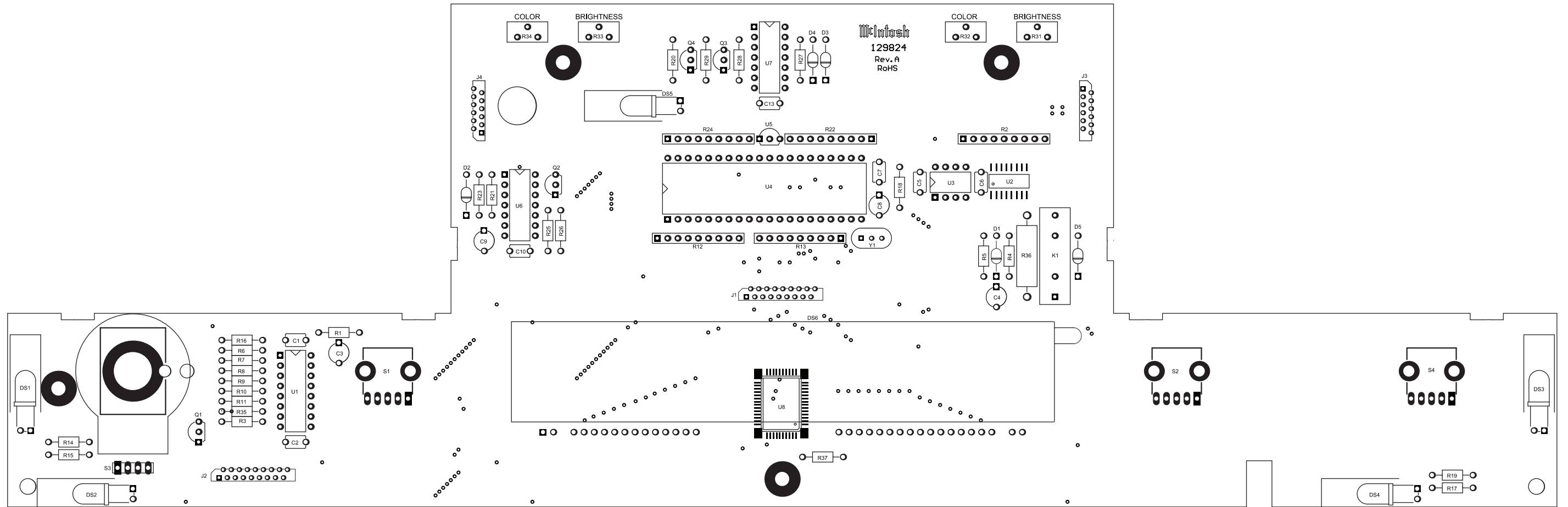
3A DISPLAY 750641 SCH 1 OF 2

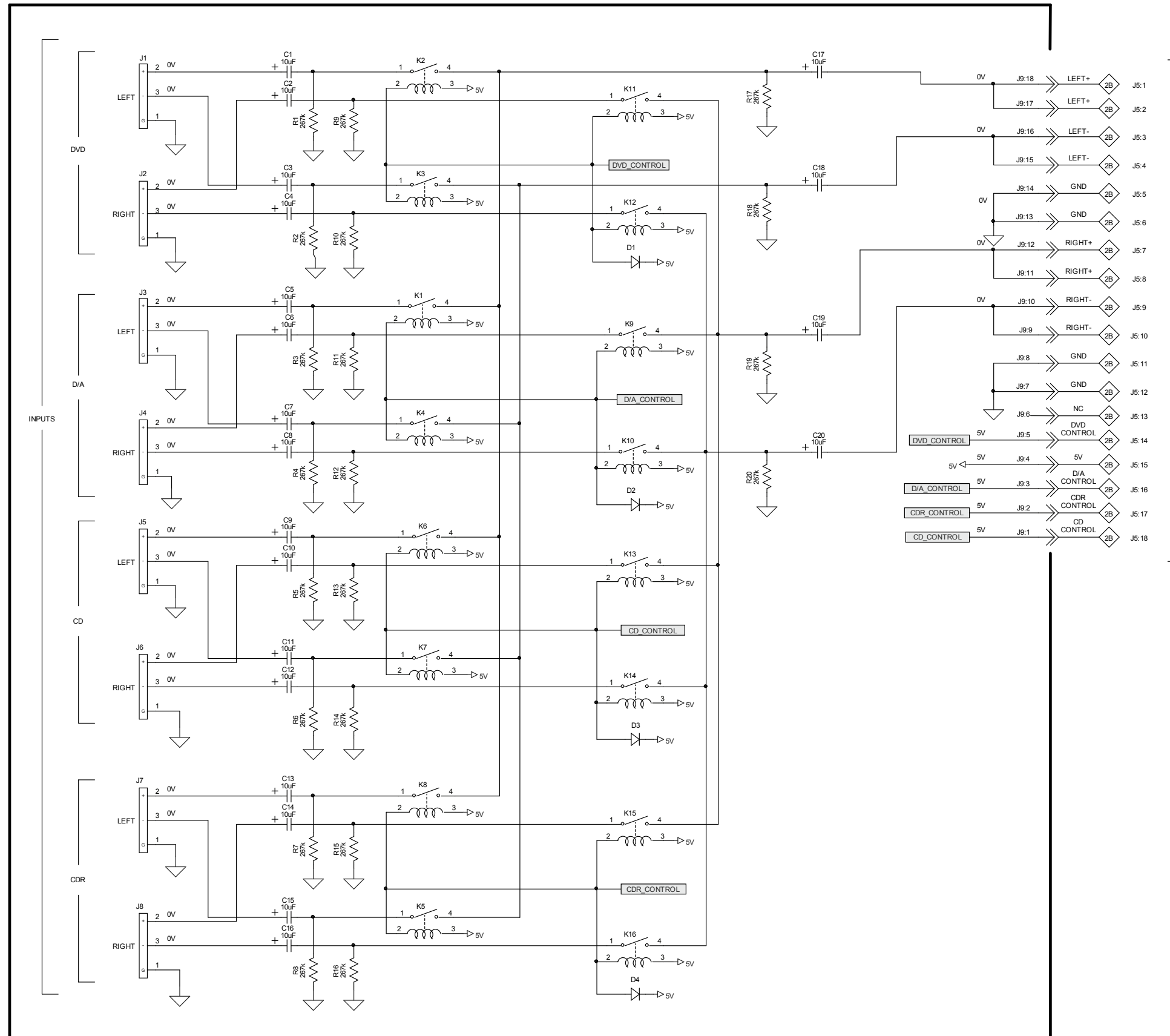


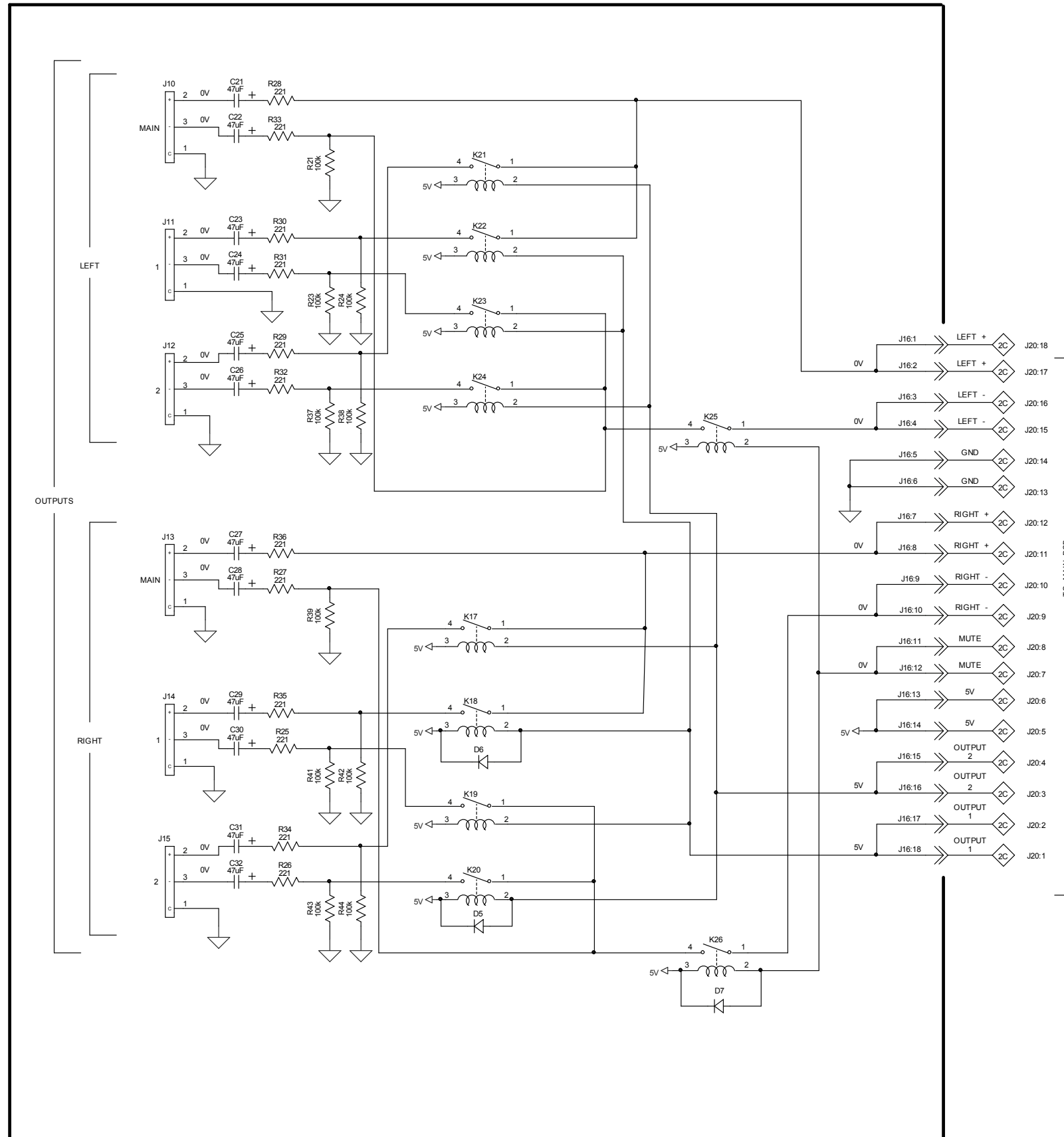
3B DISPLAY 750641 SCH 2 OF 2



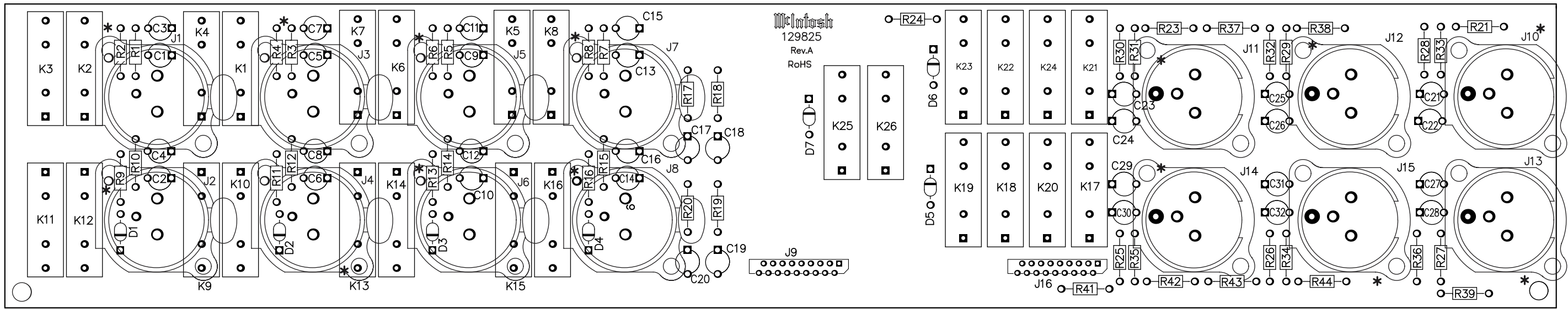
3 *DISPLAY 750641 PCB*





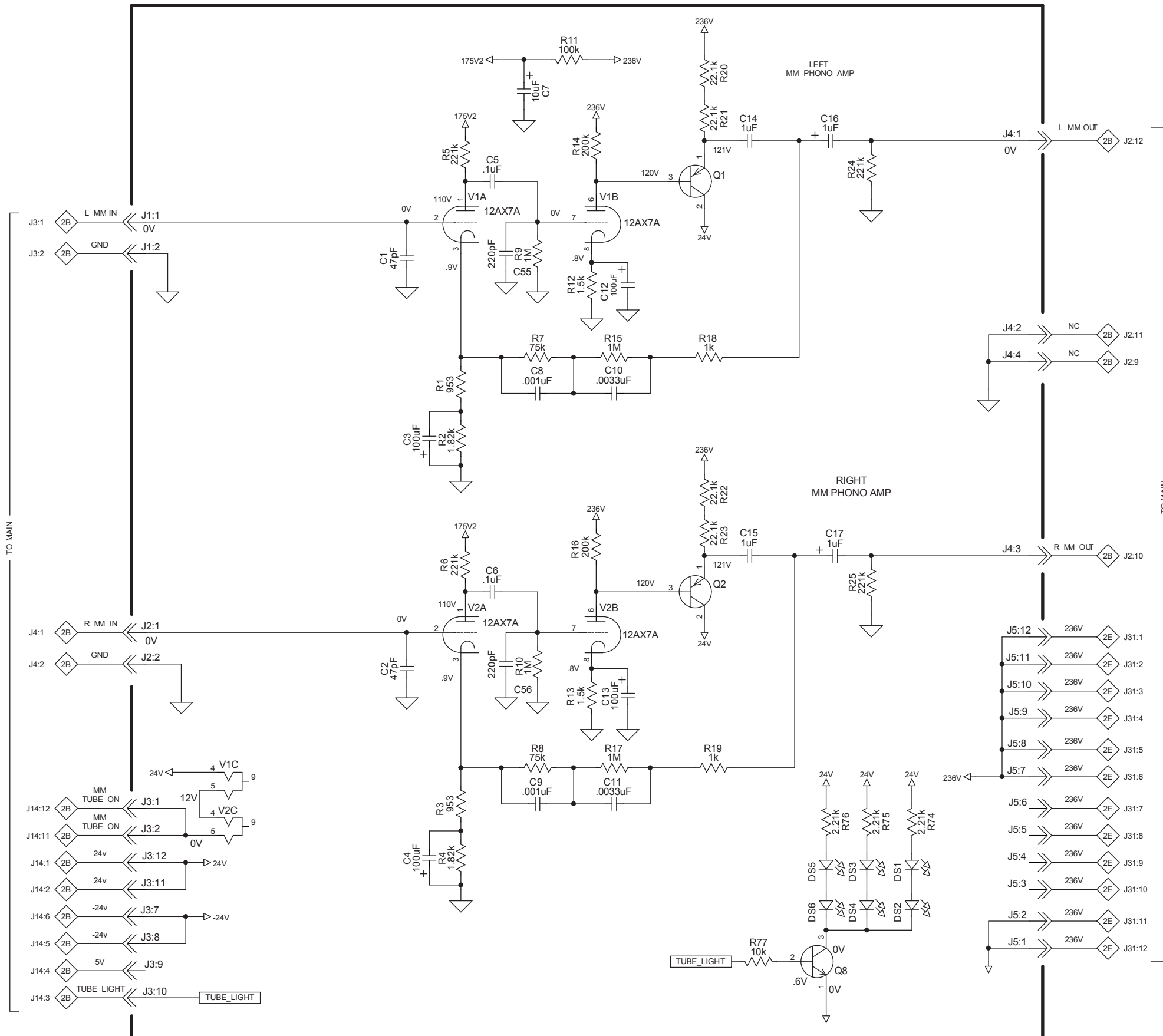


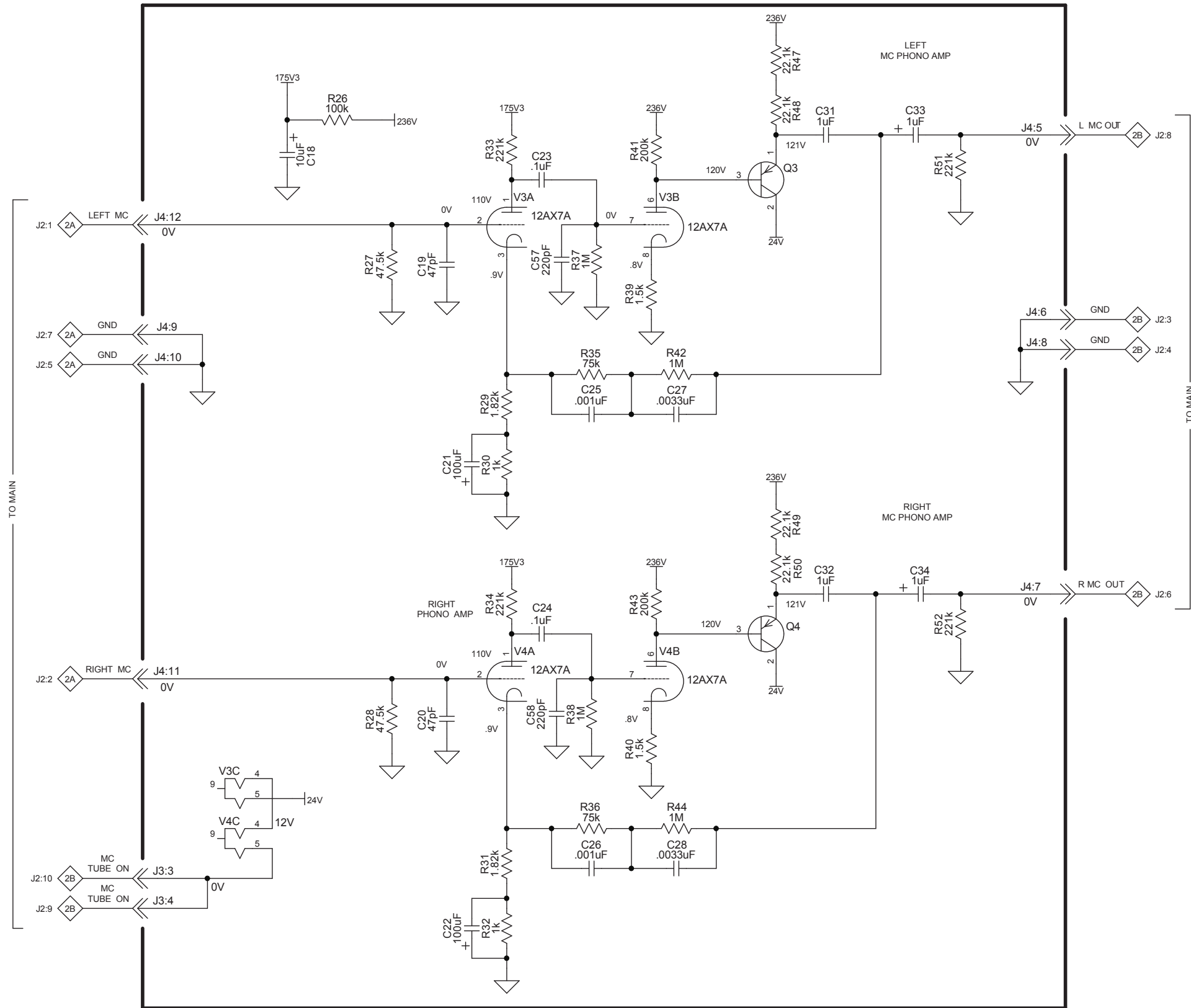
4 BALANCED 750642 PCB

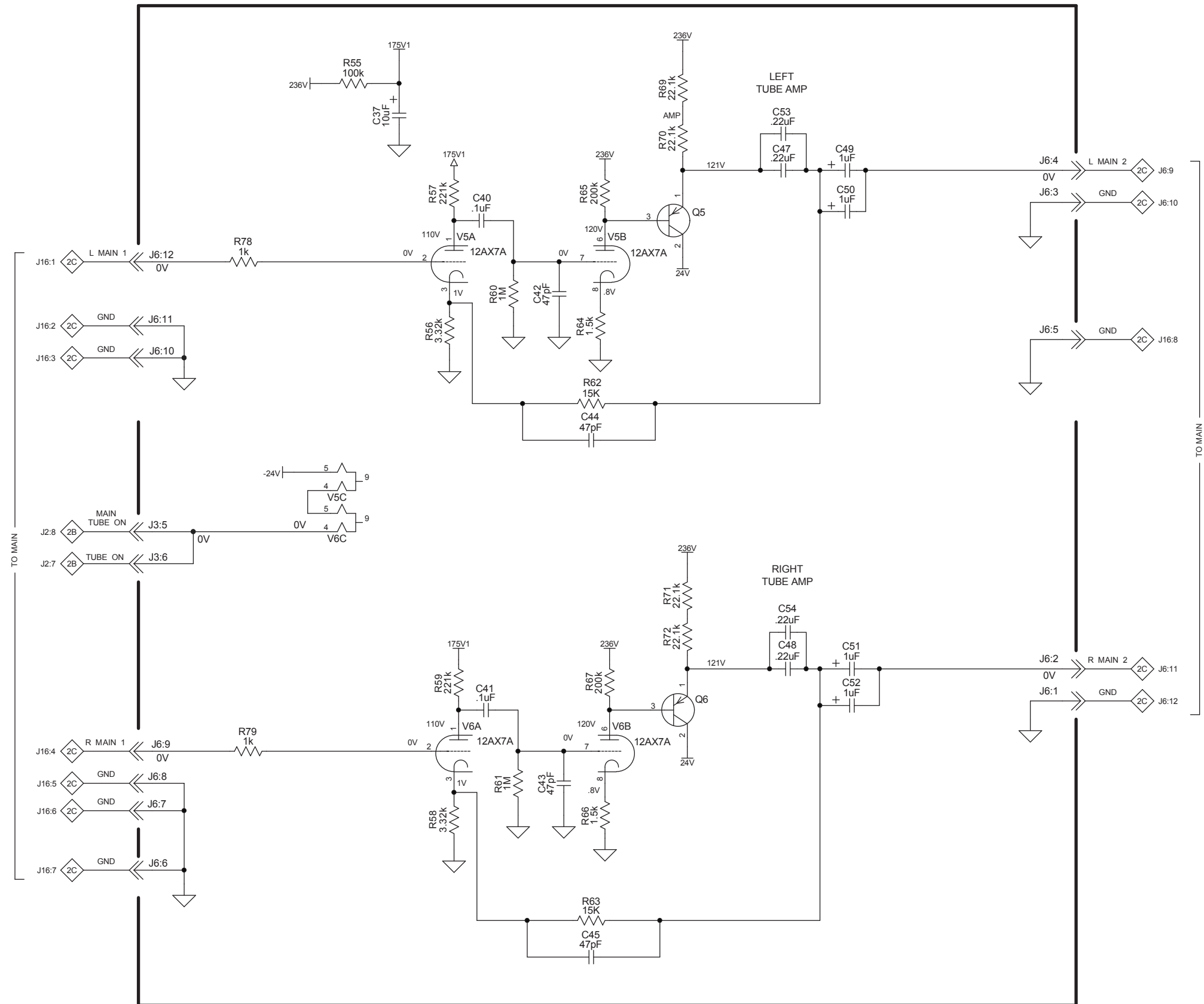




TUBE 750643 SCH 1 OF 3

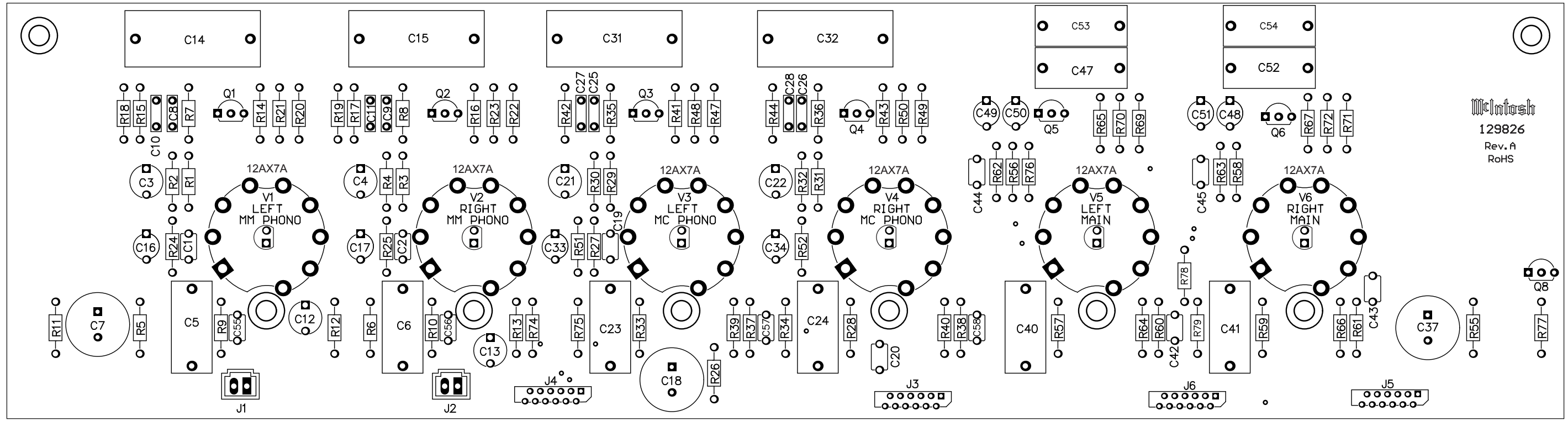




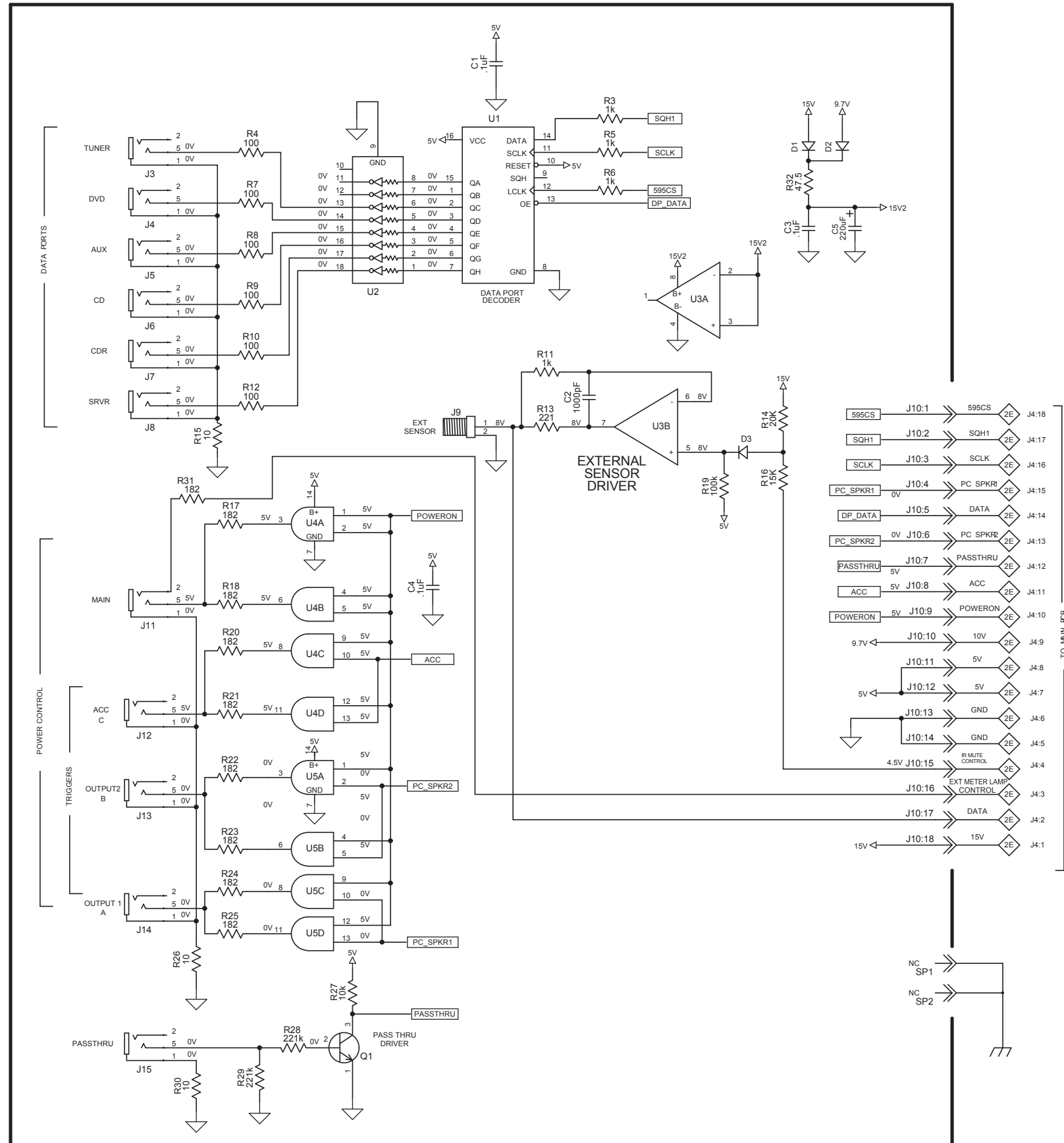


5 TUBE 750643 PCB

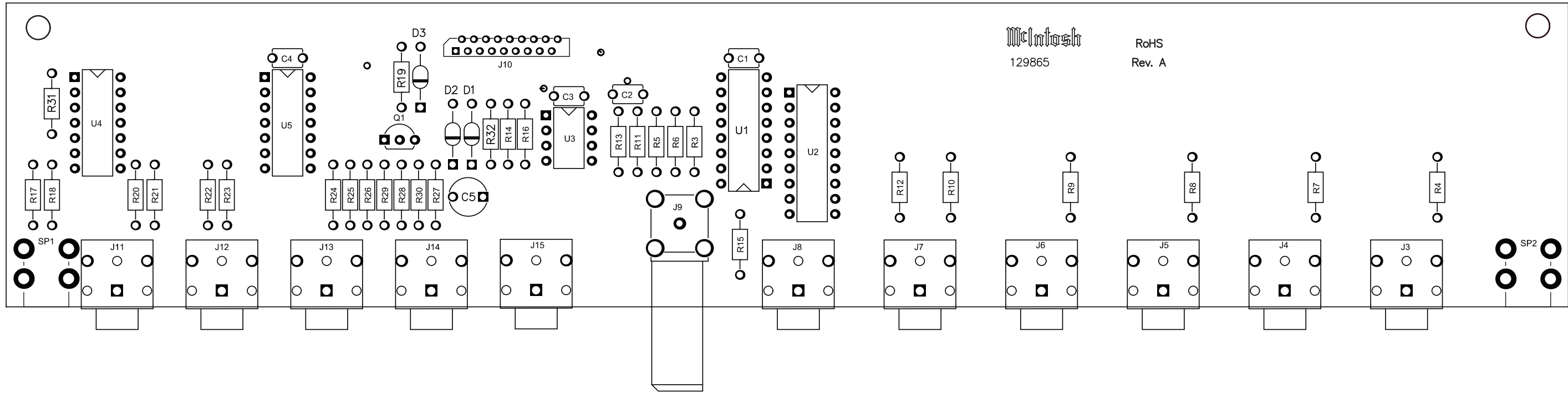
C2300



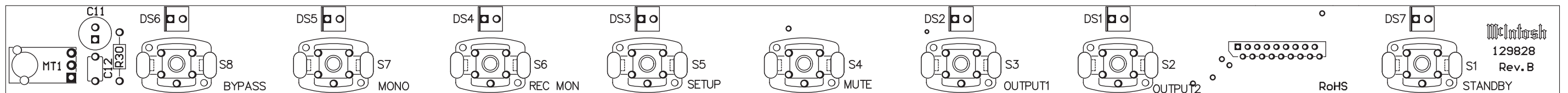
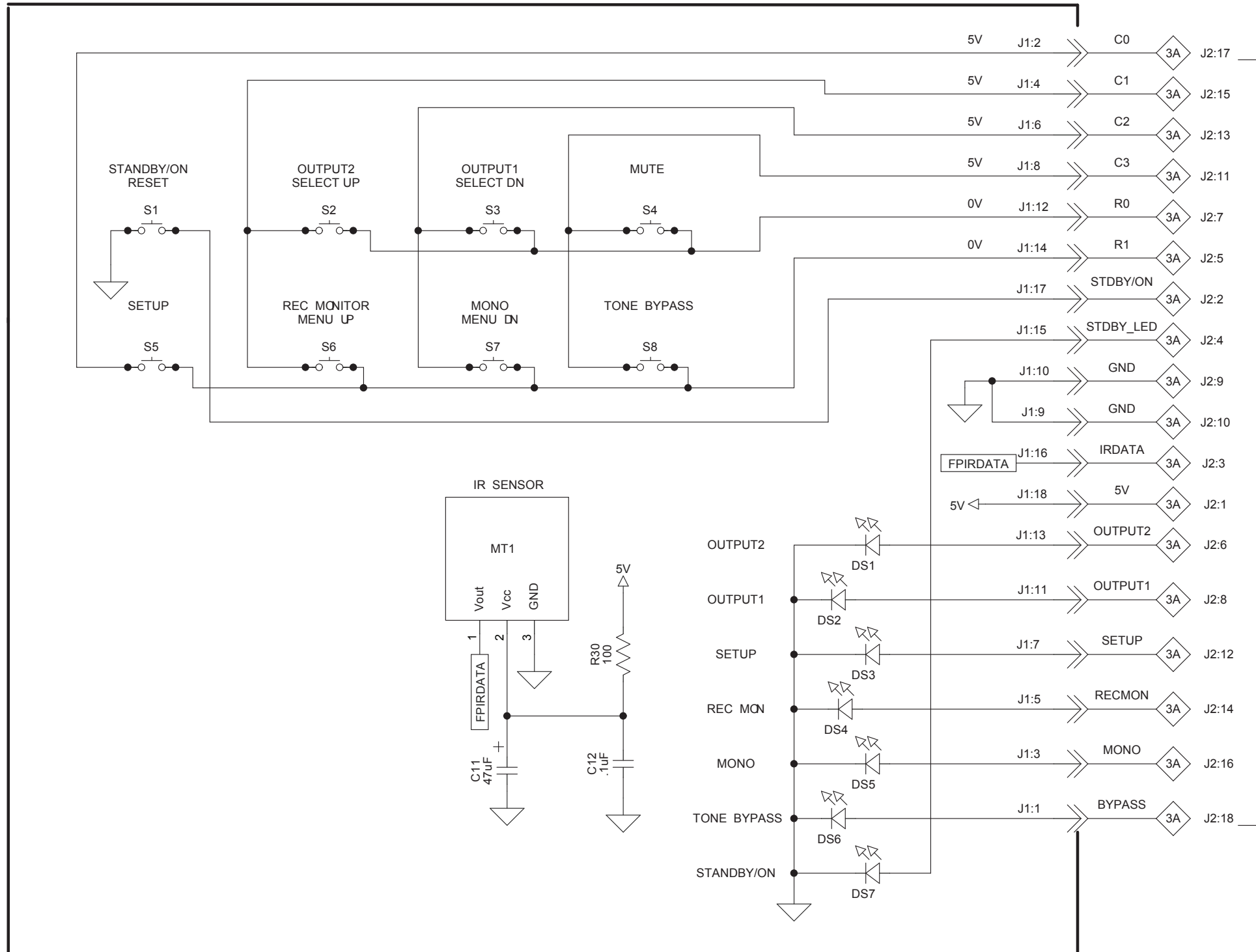
Minish
129826
Rev. A
RoHS



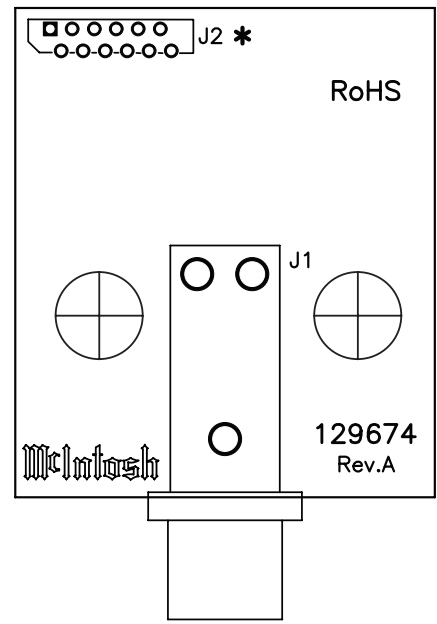
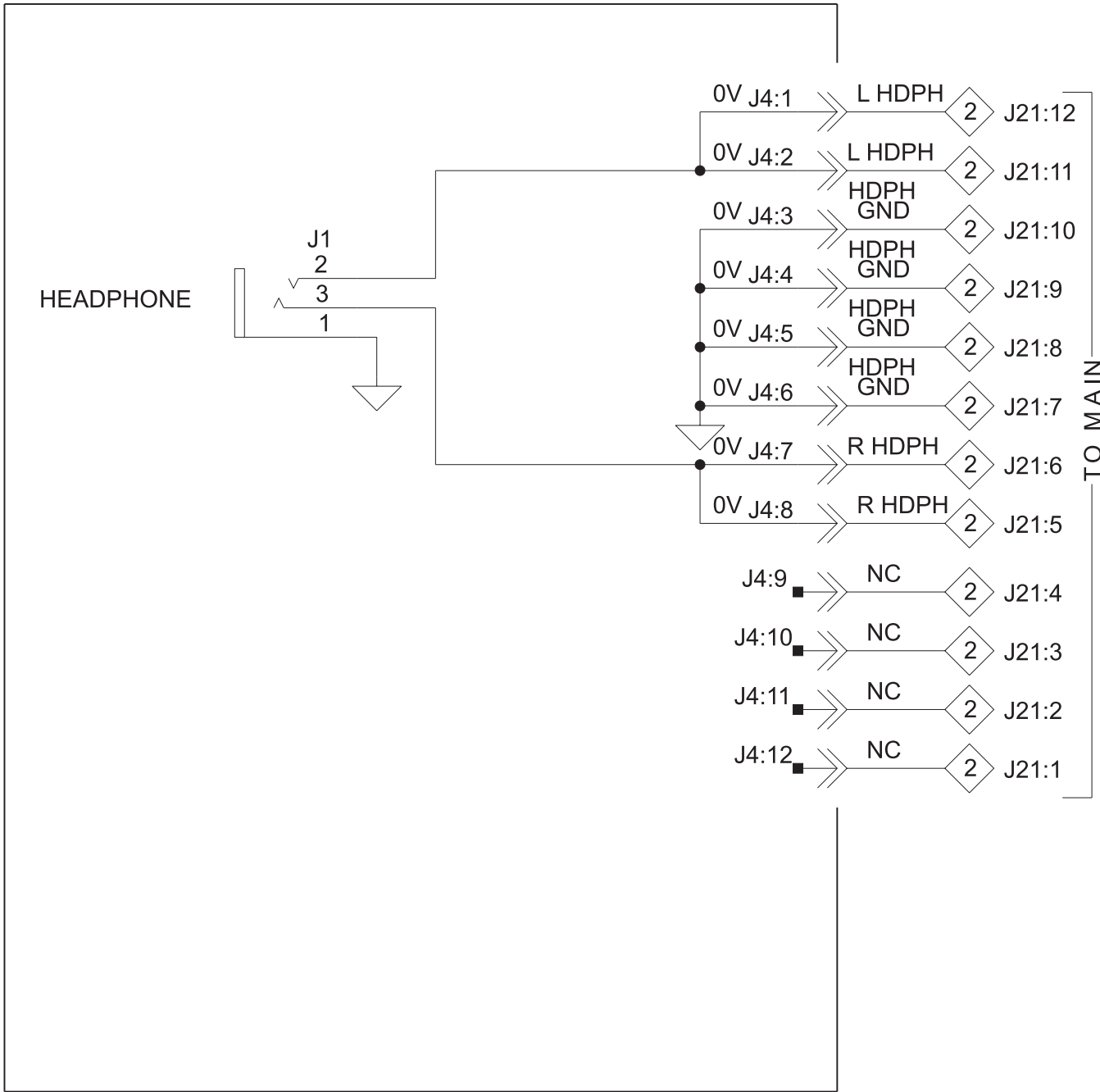
6 DATA 750762 PCB



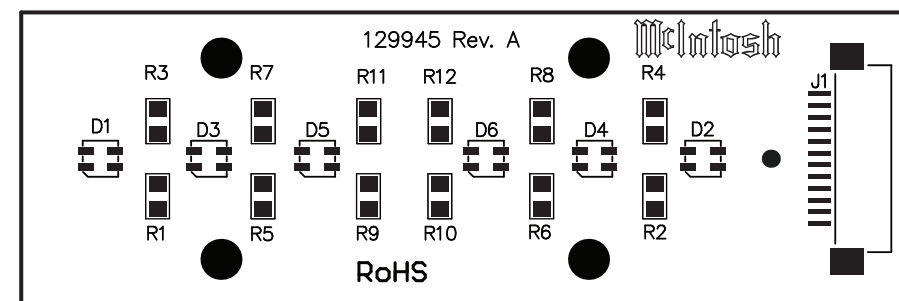
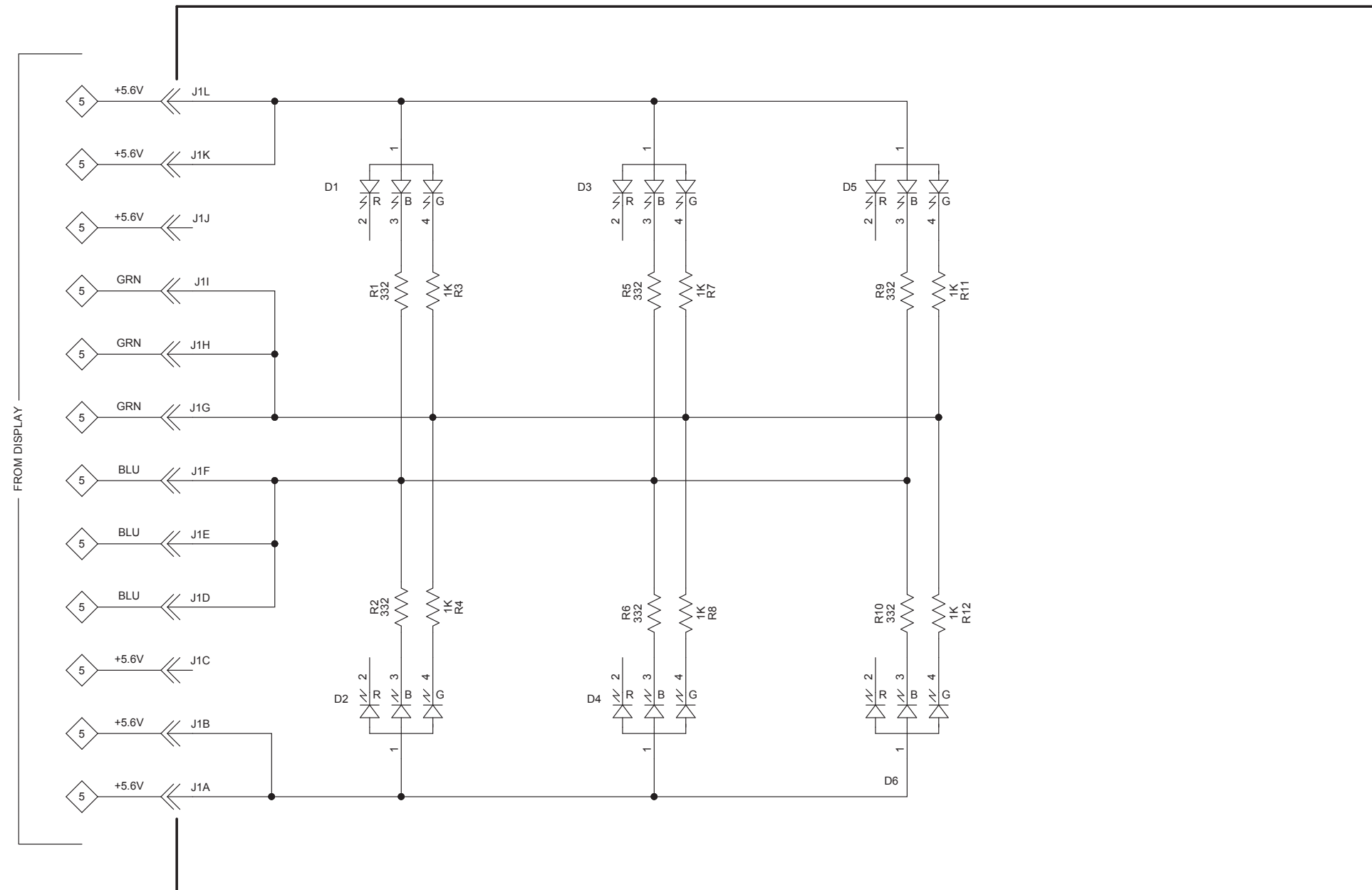
7 PUSHBUTTON 750645 SCH AND PCB



8 HEADPHONE 750332 SCH AND PCB



9 *METER LAMP* 750846 SCH AND PCB



PARTS LIST

1 INTERCONNECT

Ref. No.	Description	Part No.
M1	METER	124097
M2	METER	124097

2 MAIN PCB 750761

Ref. No.	Description	Part No.	Ref. No.	Description	Part No.
C1	CAP MONO 220PF 200V 10% NPO	061342	C56	CAP MONO 22PF 200V 10% NPO	061339
C2	CAP MONO 47PF 200V 10% NPO	061340	C57	CAP MONO 22PF 200V 10% NPO	061339
C3	CAP MONO 220PF 200V 10% NPO	061342	C58	CAP ELECT 10UF 50V	066445
C4	CAP MONO 47PF 200V 10% NPO	061340	C59	CAP ELECT 10UF 50V	066445
C5	CAP MONO 390PF 5% 200V	061352	C60	CAP MONO .1UF 50V 20% Z5U	061346
C6	CAP MONO 100PF 100V 10% NPO	061341	C61	CAP MONO .1UF 50V 20% Z5U	061346
C7	CAP MONO 390PF 5% 200V	061352	C62	CAP MONO .1UF 50V 20% Z5U	061346
C8	CAP MONO 100PF 100V 10% NPO	061341	C63	CAP MONO .1UF 50V 20% Z5U	061346
C9	CAP ELECT 10UF 16V	066580	C64	CAP MONO .1UF 50V 20% Z5U	061346
C10	CAP ELECT 10UF 16V	066580	C65	CAP ELECT 47UF 35V	066446
C11	CAP ELECT 10UF 16V	066580	C66	CAP ELECT 47UF 35V	066446
C12	CAP ELECT 10UF 16V	066580	C67	CAP MONO .1UF 50V 20% Z5U	061346
C13	CAP ELECT 10UF 16V	066580	C68	CAP MONO .1UF 50V 20% Z5U	061346
C14	CAP ELECT 10UF 16V	066580	C69	CAP ELECT 220UF 25V	066507
C15	CAP ELECT 10UF 16V	066580	C70	CAP MPF 1UF 5% 63VDC	064337
C16	CAP ELECT 10UF 16V	066580	C71	CAP MPF 0.22UF 5% 63VDC	064329
C17	CAP ELECT 10UF 16V	066580	C72	CAP MPF 1UF 5% 63VDC	064337
C18	CAP ELECT 10UF 16V	066580	C73	CAP MPF 0.22UF 5% 63VDC	064329
C19	CAP ELECT 10UF 16V	066580	C78	CAP ELECT 10UF 50V	066445
C20	CAP ELECT 10UF 16V	066580	C79	CAP ELECT 10UF 50V	066445
C21	CAP ELECT 10UF 50V	066445	C80	CAP ELECT 10UF 50V	066445
C22	CAP ELECT 10UF 50V	066445	C92	CAP POLYPROP .047UF 10% 250VDC	064364
C23	CAP MONO 100PF 100V 10% NPO	061341	C93	CAP POLY .047UF 10% 1000VDC	064434
C24	CAP MONO 100PF 100V 10% NPO	061341	C94	CAP POLYPROP .047UF 10% 250VDC	064364
C25	CAP MONO 100PF 100V 10% NPO	061341	C74	CAP MONO .1UF 50V 20% Z5U	061346
C26	CAP MONO 100PF 100V 10% NPO	061341	C75	CAP MONO .1UF 50V 20% Z5U	061346
C27	CAP MONO 100PF 100V 10% NPO	061341	C76	CAP ELECT 100UF 25V	066573
C28	CAP MONO 100PF 100V 10% NPO	061341	C77	CAP ELECT 100UF 25V	066573
C29	CAP MONO .1UF 50V 20% Z5U	061346	C81	CAP ELECT 10UF 50V	066445
C30	CAP MONO .1UF 50V 20% Z5U	061346	C82	CAP ELECT 10UF 50V	066445
C31	CAP MONO .1UF 50V 20% Z5U	061346	C83	CAP ELECT 10UF 50V	066445
C32	CAP ELECT 22UF 100V	066574	C84	CAP MONO .1UF 50V 20% Z5U	061346
C33	CAP ELECT 22UF 100V	066574	C85	CAP MONO .1UF 50V 20% Z5U	061346
C34	CAP MONO .1UF 50V 20% Z5U	061346	C86	CAP ELECT 10UF 50V	066445
C35	CAP MONO .1UF 50V 20% Z5U	061346	C87	CAP ELECT 10UF 50V	066445
C36	CAP MONO 220PF 200V 10% NPO	061342	C88	CAP ELECT 220UF 50V 20%	066254
C37	CAP ELECT 10UF 50V	066445	C90	CAP ELECT 100UF 25V	066573
C38	CAP ELECT 10UF 50V	066445	C91	CAP ELECT 100UF 25V	066573
C39	CAP ELECT 10UF 50V	066445	C95	CAP ELECT 4700UF 35V	066572
C40	CAP MONO 100PF 100V 10% NPO	061341	C96	CAP ELECT 47UF 450V	066560
C41	CAP MONO 100PF 100V 10% NPO	061341	C97	CAP ELECT 2200UF 20% 50V	066571
C42	CAP MONO 1000PF 50V 10% NPO	061344	C98	CAP ELECT 2200UF 20% 50V	066571
C43	CAP MONO 1000PF 50V 10% NPO	061344	C99	CAP MONO .1UF 50V 20% Z5U	061346
C44	CAP MONO 1000PF 50V 10% NPO	061344	C100	CAP ELECT 47UF 450V	066560
C45	CAP MONO 1000PF 50V 10% NPO	061344	C101	CAP ELECT 10UF 50V	066445
C46	CAP ELECT 1000UF 10V	066309	C102	CAP MONO .1UF 50V 20% Z5U	061346
C47	CAP ELECT 1000UF 10V	066309	C103	CAP MONO .1UF 50V 20% Z5U	061346
C48	CAP ELECT 1000UF 10V	066309	C104	CAP MONO .1UF 50V 20% Z5U	061346
C49	CAP ELECT 1000UF 10V	066309	C105	CAP MONO .1UF 50V 20% Z5U	061346
C50	CAP ELECT 220UF 25V	066507	C106	CAP MONO .1UF 50V 20% Z5U	061346
C51	CAP ELECT 220UF 25V	066507	C107	CAP ELECT 220UF 50V 20%	066254
C52	CAP ELECT 220UF 25V	066507	C108	CAP ELECT 220UF 50V 20%	066254
C53	CAP ELECT 220UF 25V	066507	C109	CAP ELECT 10UF 50V	066445
C54	CAP MPF 0.0033 5% 63VDC	064455	C110	CAP ELECT 10UF 50V	066445
C55	CAP MPF 0.0033 5% 63VDC	064455	C111	CAP ELECT 10UF 50V	066445
			C112	CAP ELECT 10UF 50V	066445
			C113	CAP MONO .1UF 50V 20% Z5U	061346
			C114	CAP ELECT 10UF 50V	066445
			C115	CAP MONO .1UF 50V 20% Z5U	061346

PARTS LIST (Cont'd.)

2 MAIN PCB 750761 (Cont'd.)

Ref. No.	Description	Part No.	Ref. No.	Description	Part No.
C116	CAP MONO .1UF 50V 20% Z5U	061346	D7	DIODE SILICON	070174
C117	CAP MONO 220PF 200V 10% NPO	061342	D8	DIODE SILICON	070174
C118	CAP ELECT 10UF 50V	066445	D9	DIODE SILICON	070174
C119	CAP ELECT 47UF 35V	066446	D10	DIODE SILICON	070174
C120	CAP ELECT 47UF 35V	066446	D11	DIODE SILICON	070174
C121	CAP MONO .1UF 50V 20% Z5U	061346	D12	DIODE SILICON	070174
C122	CAP ELECT 10UF 50V	066445	D13	DIODE SILICON	070174
C123	CAP MONO .1UF 50V 20% Z5U	061346	D14	DIODE SILICON	070174
C124	CAP MONO .1UF 50V 20% Z5U	061346	D15	DIODE SIL 400 PIV @ 1.5A	070031
C125	CAP ELECT 10UF 50V	066445	D16	DIODE SIL 400 PIV @ 1.5A	070031
C126	CAP ELECT 10UF 50V	066445	D17	DIODE SIL 400 PIV @ 1.5A	070031
C127	CAP ELECT 10UF 50V	066445	D18	DIODE SIL 400 PIV @ 1.5A	070031
C128	CAP ELECT 10UF 50V	066445	D19	DIODE RECTIFIER 1N4007	070178
C129	CAP ELECT 10UF 50V	066445	D20	DIODE RECTIFIER 1N4007	070178
C130	CAP MPF 0.0022UF 5% 63VDC	064454	D21	DIODE RECTIFIER 1N4007	070178
C131	CAP MPF 0.0022UF 5% 63VDC	064454	D22	DIODE RECTIFIER 1N4007	070178
C132	CAP ELECT 10UF 50V	066445	D23	DIODE SIL 400 PIV @ 1.5A	070031
C133	CAP ELECT 10UF 50V	066445	D24	DIODE SIL 400 PIV @ 1.5A	070031
C134	CAP ELECT 10UF 50V	066445	D25	DIODE SIL 400 PIV @ 1.5A	070031
C135	CAP ELECT 10UF 50V	066445	D26	DIODE SIL 400 PIV @ 1.5A	070031
C136	CAP MPF 0.1UF 5% 63VDC	064325	D27	DIODE SILICON	070174
C137	CAP MPF 0.1UF 5% 63VDC	064325	D28	DIODE SIL 400 PIV @ 1.5A	070031
C138	CAP ELECT 10UF 50V	066445	D29	DIODE SIL 400 PIV @ 1.5A	070031
C139	CAP ELECT 100UF 25V	066573	D30	DIODE ZENER 5.1V	070186
C140	CAP ELECT 100UF 25V	066573	F1	FUSE 1/8A SLO-BLO 5X20 IEC	089128
C141	CAP MONO 220PF 200V 10% NPO	061342	(F1)	HOLDER FUSE 5X20MM PCB MOUNT	178159
C144	CAP MONO .1UF 50V 20% Z5U	061346		WASHER SHLDR #10 BLK NYLN INS	104101
C145	CAP MONO 220PF 200V 10% NPO	061342	GP1	TERMINAL PC SCREW	117975
C147	CAP MONO .47UF 50V	061320	J1	JACK PHONO GOLD	117862
C149	CAP MONO 1000PF 50V 10% NPO	061344	J2	CONN 12 PIN FFC	117907
C150	CAP MONO 1000PF 50V 10% NPO	061344	J3	HEADER 2 PIN LATCHING	117766
C151	CAP ELECT 10UF 50V	066445	J4	HEADER 2 PIN LATCHING	117766
C152	CAP ELECT 10UF 50V	066445	J5	CONN 18 PIN FFC	117908
C153	CAP MONO 1000PF 50V 10% NPO	061344	J6	JACK PHONO GOLD	117862
C154	CAP MONO 1000PF 50V 10% NPO	061344	J7	JACK PHONO GOLD	117862
C155	CAP MONO 1000PF 50V 10% NPO	061344	J8	JACK PHONO GOLD	117862
C156	CAP MONO 1000PF 50V 10% NPO	061344	J9	JACK PHONO GOLD	117862
C157	CAP MONO 1000PF 50V 10% NPO	061344	J10	JACK PHONO GOLD	117862
C158	CAP MONO 1000PF 50V 10% NPO	061344	J11	JACK PHONO GOLD	117862
C159	CAP ELECT 10UF 50V	066445	J12	JACK PHONO GOLD	117862
C160	CAP ELECT 10UF 50V	066445	J13	JACK PHONO GOLD	117862
C161	CAP ELECT 10UF 50V	066445	J14	CONN 12 PIN FFC	117907
C162	CAP MONO 220PF 200V 10% NPO	061342	J15	BLADE FASTON W/FEET	117708
C163	CAP MONO 220PF 200V 10% NPO	061342	J16	CONN 12 PIN FFC	117907
C164	CAP MONO 220PF 200V 10% NPO	061342	J17	JACK PHONO GOLD	117862
C165	CAP ELECT 470UF 16V	066508	J18	JACK PHONO GOLD	117862
C166	CAP ELECT 470UF 16V	066508	J19	JACK PHONO GOLD	117862
C167	CAP ELECT 100UF 25V	066573	J20	CONN 18 PIN FFC	117908
C168	CAP ELECT 100UF 25V	066573	J21	CONN 12 PIN FFC	117907
C169	CAP MONO .01UF 50V 20% X7R	061345	J22	HEADER 2 PIN LATCHING	117766
C170	CAP MONO .01UF 50V 20% X7R	061345	J23	HEADER 2 PIN LATCHING	117766
C175	CAP MPF 0.1UF 5% 63VDC	064325	J24	BLADE FASTON W/FEET	117708
C176	CAP MPF 0.1UF 5% 63VDC	064325	J26	CONN PCB MOUNT POWER RED	117719
D1	DIODE ZENER 5.1V	070186	J27	CONN PCB MOUNT POWER RED	117719
D2	DIODE SILICON	070174	J28	CONN PCB MOUNT POWER RED	117719
D3	DIODE SILICON	070174	J29	CONN PCB MOUNT POWER RED	117719
D4	DIODE SILICON	070174	J30	HEADER 9 CIRCUIT POST NATURAL	117724
D5	DIODE SILICON	070174	J31	CONN 12 PIN FFC	117907
D6	DIODE SILICON	070174	J32	CONN 18 PIN FFC	117908

PARTS LIST (Cont'd.)

2 MAIN PCB 750761 (Cont'd.)

Ref. No.	Description	Part No.	Ref. No.	Description	Part No.
J33	CONN 18 PIN FFC	117908	Q31	TRANSISTOR PNP SILICON	132304
K1	RELAY REED SPST-NO 5V 1.2A	087078	Q32	TRANSISTOR PNP SILICON	132304
K2	RELAY REED SPST-NO 5V 1.2A	087078	Q33	TRANSISTOR NPN SILICON	132317
K3	RELAY REED SPST-NO 5V 1.2A	087078	Q34	TRANSISTOR NPN SILICON	132317
K4	RELAY REED SPST-NO 5V 1.2A	087078	Q35	TRANSISTOR PNP SILICON	132304
K5	RELAY REED SPST-NO 5V 1.2A	087078	Q36	TRANSISTOR PNP SILICON	132304
K6	RELAY REED SPST-NO 5V 1.2A	087078	Q37	TRANSISTOR NPN SILICON	132317
K8	RELAY REED SPST-NO 5V 1.2A	087078	Q38	TRANSISTOR NPN SILICON	132317
K9	RELAY REED SPST-NO 5V 1.2A	087078	Q39	TRANSISTOR NPN SILICON	132317
K10	RELAY REED SPST-NO 5V 1.2A	087078	Q40	TRANSISTOR NPN SILICON	132317
K11	RELAY REED SPST-NO 5V 1.2A	087078	Q41	TRANSISTOR PNP	132254
K12	RELAY REED SPST-NO 5V 1.2A	087078	Q42	TRANSISTOR PNP	132254
K13	RELAY REED SPST-NO 5V 1.2A	087078	Q43	TRANSISTOR PNP	132254
K14	RELAY REED SPST-NO 5V 1.2A	087078	Q44	TRANSISTOR PNP	132254
K16	RELAY REED SPST-NO 5V 1.2A	087078	Q45	TRANSISTOR NPN SILICON	132317
K17	RELAY REED FORM 1C 5V 125 OHM	087056	Q46	TRANSISTOR NPN SILICON	132317
K18	RELAY REED FORM 1C 5V 125 OHM	087056	Q47	TRANSISTOR NPN 2A 50V	132302
K19	RELAY REED SPST-NO 5V 1.2A	087078	Q48	TRANSISTOR PNP SILICON	132304
K20	RELAY REED SPST-NO 5V 1.2A	087078	Q49	TRANSISTOR NPN POWER	132312
K21	RELAY REED SPST-NO 5V 1.2A	087078	Q50	TRANSISTOR NPN POWER	132312
K22	RELAY REED SPST-NO 5V 1.2A	087078	(Q50)	HEATSINK TO-218	080020
K23	RELAY REED SPST-NO 5V 1.2A	087078	Q51	TRANSISTOR NPN	132325
K24	RELAY REED SPST-NO 5V 1.2A	087078	Q52	TRANSISTOR NPN SILICON	132317
K25	RELAY 24VDC 5A 277VAC	087057	Q53	TRANSISTOR N JFET	132318
K26	RELAY REED SPST-NO 5V 1.2A	087078	Q54	TRANSISTOR N JFET	132318
K27	RELAY REED SPST-NO 5V 1.2A	087078	Q55	TRANSISTOR PNP SILICON	132304
K28	RELAY REED SPST-NO 5V 1.2A	087078	Q56	TRANSISTOR PNP SILICON	132304
K29	RELAY 24VDC 5A 277VAC	087057	Q57	TRANSISTOR PNP SILICON	132304
K30	RELAY REED SPST-NO 5V 1.2A	087078	Q58	TRANSISTOR N JFET	132318
K31	RELAY REED SPST-NO 5V 1.2A	087078	Q59	TRANSISTOR N JFET	132318
PCB1	PC BD MAIN	129864	Q60	TRANSISTOR PNP SILICON	132304
Q1	TRANSISTOR SI NPN 25V	132257	Q61	TRANSISTOR PNP SILICON	132304
Q2	TRANSISTOR SI NPN 25V	132257	Q62	TRANSISTOR N JFET	132318
Q3	TRANSISTOR SI NPN 25V	132257	Q63	TRANSISTOR N JFET	132318
Q4	TRANSISTOR SI NPN 25V	132257	Q64	TRANSISTOR PNP SILICON	132304
Q5	TRANSISTOR SI NPN 25V	132257	Q65	TRANSISTOR PNP SILICON	132304
Q6	TRANSISTOR SI NPN 25V	132257	Q66	TRANSISTOR N JFET	132318
Q7	TRANSISTOR SI NPN 25V	132257	Q67	TRANSISTOR N JFET	132318
Q8	TRANSISTOR SI NPN 25V	132257	Q68	TRANSISTOR PNP SILICON	132304
Q11	TRANSISTOR SI NPN 25V	132257	Q69	TRANSISTOR PNP SILICON	132304
Q12	TRANSISTOR SI NPN 25V	132257	Q70	TRANSISTOR N JFET	132318
Q13	TRANSISTOR SI NPN 25V	132257	Q71	TRANSISTOR N JFET	132318
Q14	TRANSISTOR SI NPN 25V	132257	R1	RES MF 100K 1% 1/4W	144528
Q15	TRANSISTOR SI NPN 25V	132257	R2	RES MF 100K 1% 1/4W	144528
Q16	TRANSISTOR SI NPN 25V	132257	R3	RES MF 100K 1% 1/4W	144528
Q17	TRANSISTOR SI NPN 25V	132257	R4	RES MF 100K 1% 1/4W	144528
Q18	TRANSISTOR SI NPN 25V	132257	R5	RES MF 10K 1% 1/4W	144504
Q19	TRANSISTOR PNP SILICON	132304	R6	RES MF 10K 1% 1/4W	144504
Q20	TRANSISTOR PNP SILICON	132304	R7	RES MF 10K 1% 1/4W	144504
Q21	TRANSISTOR NPN SILICON	132317	R8	RES MF 10K 1% 1/4W	144504
Q22	TRANSISTOR NPN SILICON	132317	R9	RES MF 100K 1% 1/4W	144528
Q23	TRANSISTOR PNP SILICON	132304	R10	RES MF 100K 1% 1/4W	144528
Q24	TRANSISTOR PNP SILICON	132304	R11	RES MF 100K 1% 1/4W	144528
Q25	TRANSISTOR NPN SILICON	132317	R12	RES MF 100K 1% 1/4W	144528
Q26	TRANSISTOR NPN SILICON	132317	R13	RES MF 10K 1% 1/4W	144504
Q27	TRANSISTOR PNP SILICON	132304	R14	RES MF 10K 1% 1/4W	144504
Q28	TRANSISTOR PNP SILICON	132304	R15	RES MF 10K 1% 1/4W	144504
Q29	TRANSISTOR NPN SILICON	132317	R16	RES MF 10K 1% 1/4W	144504
Q30	TRANSISTOR NPN SILICON	132317	R17	RES MF 47.5K 1% 1/4W	144526

PARTS LIST (Cont'd.)

2 MAIN PCB 750761 (Cont'd.)

Ref. No.	Description	Part No.	Ref. No.	Description	Part No.
R18	RES MF 47.5K 1% 1/4W	144526	R77	RES MF 1.5K 1% 1/4W	144539
R19	RES MF 1K 1% 1/4W	144513	R78	RES MF 1.21K 1% 1/4W	144566
R20	RES MF 1K 1% 1/4W	144513	R79	RES MF 1.21K 1% 1/4W	144566
R21	RES NETWORK 2 X 220K ISO	144678	R80	RES MF 1.21K 1% 1/4W	144566
R22	RES NETWORK 2 X 220K ISO	144678	R81	RES MF 1.21K 1% 1/4W	144566
R23	RES NETWORK 2 X 220K ISO	144678	R82	RES MF 475 OHM 1% 1/4W	144509
R24	RES NETWORK 2 X 220K ISO	144678	R83	RES MF 475 OHM 1% 1/4W	144509
R25	RES NETWORK 2 X 220K ISO	144678	R84	RES MF 475 OHM 1% 1/4W	144509
R26	RES NETWORK 2 X 220K ISO	144678	R85	RES MF 475 OHM 1% 1/4W	144509
R27	RES MF 221K 1% 1/4W	144629	R86	RES MF 2.21K 1% 1/4W	144584
R28	RES MF 221K 1% 1/4W	144629	R87	RES MF 2.21K 1% 1/4W	144584
R29	RES MF 1K 1% 1/4W	144513	R88	RES MF 2.21 OHM 1% 1/4W	144607
R30	RES MF 40.2K 1% 1/4W	144525	R89	RES MF 2.21 OHM 1% 1/4W	144607
R31	RES MF 40.2K 1% 1/4W	144525	R90	RES MF 2.21 OHM 1% 1/4W	144607
R32	RES MF 1K 1% 1/4W	144513	R91	RES MF 2.21 OHM 1% 1/4W	144607
R33	RES MF 40.2K 1% 1/4W	144525	R92	RES MF 1K 1% 1/4W	144513
R34	RES MF 40.2K 1% 1/4W	144525	R93	RES MF 1K 1% 1/4W	144513
R35	RES MF 20K 1% 1/4W	144524	R94	RES MF 806 OHM 1% 1/4W	144512
R36	RES MF 20K 1% 1/4W	144524	R95	RES MF 47.5 OHM 1% 1/4W	144642
R37	RES MF 15K 1% 1/4W	144623	R96	RES MF 806 OHM 1% 1/4W	144512
R38	RES MF 15K 1% 1/4W	144623	R97	RES MF 806 OHM 1% 1/4W	144512
R39	RES MF 20K 1% 1/4W	144524	R98	RES MF 100K 1% 1/4W	144528
R40	RES MF 20K 1% 1/4W	144524	R99	RES MF 100K 1% 1/4W	144528
R41	RES MF 100K 1% 1/4W	144528	R100	RES MF 22.1K 1% 1/4W	144564
R42	RES MF 100K 1% 1/4W	144528	R101	RES MF 22.1K 1% 1/4W	144564
R43	RES MF 1K 1% 1/4W	144513	R103	RES MF 100K 1% 1/4W	144528
R44	RES MF 1K 1% 1/4W	144513	R105	RES MF 100K 1% 1/4W	144528
R45	RES MF 1K 1% 1/4W	144513	R106	POT TRIM 100K 10% 3/8" SQ	134505
R46	RES MF 1K 1% 1/4W	144513	R107	POT TRIM 100K 10% 3/8" SQ	134505
R47	RES MF 1K 1% 1/4W	144513	R108	RES MF 100 OHM 1% 1/4W	144568
R48	RES MF 221K 1% 1/4W	144629	R109	RES MF 100 OHM 1% 1/4W	144568
R49	RES MF 221K 1% 1/4W	144629	R110	RES MF 1M 1% 1/4W	144577
R50	RES MF 221 OHM 1% 1/4W	144559	R111	RES MF 1M 1% 1/4W	144577
R51	RES MF 221 OHM 1% 1/4W	144559	R112	RES MF 2.21 OHM 1% 1/4W	144607
R52	RES MF 1K 1% 1/4W	144513	R113	RES MF 2.21 OHM 1% 1/4W	144607
R53	RES MF 1K 1% 1/4W	144513	R114	RES MF 4.75K 1% 1/4W	144520
R54	RES MF 110 OHM 1% 1/4W	144664	R115	RES MF 4.75K 1% 1/4W	144520
R55	RES MF 1K 1% 1/4W	144513	R116	RES MF 10K 1% 1/4W	144504
R56	RES MF 110 OHM 1% 1/4W	144664	R117	RES MF 10K 1% 1/4W	144504
R57	RES MF 1K 1% 1/4W	144513	R118	RES MF 10K 1% 1/4W	144504
R58	RES MF 4.75K 1% 1/4W	144520	R119	RES MF 10K 1% 1/4W	144504
R59	RES MF 4.75K 1% 1/4W	144520	R120	RES MF 100K 1% 1/4W	144528
R60	RES MF 4.75K 1% 1/4W	144520	R121	RES MF 100K 1% 1/4W	144528
R61	RES MF 4.75K 1% 1/4W	144520	R122	RES MF 100K 1% 1/4W	144528
R62	RES MF 51.1 OHM 2% 1/4W	144720	R123	RES MF 100K 1% 1/4W	144528
R63	RES MF 249 OHM 1% 1/4W	144721	R124	RES MF 100K 1% 1/4W	144528
R64	RES MF 51.1 OHM 2% 1/4W	144720	R125	RES MF 100K 1% 1/4W	144528
R65	RES MF 249 OHM 1% 1/4W	144721	R126	RES MF 221 OHM 1% 1/4W	144559
R66	RES MF 4.75K 1% 1/4W	144520	R127	RES MF 221 OHM 1% 1/4W	144559
R67	RES MF 4.75K 1% 1/4W	144520	R128	RES MF 221 OHM 1% 1/4W	144559
R68	RES MF 4.75K 1% 1/4W	144520	R129	RES MF 221 OHM 1% 1/4W	144559
R69	RES MF 4.75K 1% 1/4W	144520	R130	RES MF 221 OHM 1% 1/4W	144559
R70	RES MF 22.1 OHM 1% 1/4W	144554	R131	RES MF 221 OHM 1% 1/4W	144559
R71	RES MF 22.1 OHM 1% 1/4W	144554	R132	RES MF 10K 1% 1/4W	144504
R72	RES MF 22.1 OHM 1% 1/4W	144554	R133	RES MF 10K 1% 1/4W	144504
R73	RES MF 22.1 OHM 1% 1/4W	144554	R134	RES MF 22.1K 1% 1/4W	144564
R74	RES MF 1.5K 1% 1/4W	144539	R135	RES MF 22.1K 1% 1/4W	144564
R75	RES MF 1.5K 1% 1/4W	144539	R136	RES MF 1K 1% 1/4W	144513
R76	RES MF 1.5K 1% 1/4W	144539	R137	RES MF 1K 1% 1/4W	144513

PARTS LIST (Cont'd.)

2 MAIN PCB 750761 (Cont'd.)

Ref. No.	Description	Part No.	Ref. No.	Description	Part No.
R138	RES MF 10K 1% 1/4W	144504	R197	RES MF 1.5K 1% 1/4W	144539
R139	RES MF 10K 1% 1/4W	144504	R198	RES MF 10M 1% 1/4W	144575
R140	RES MF 33.2K 1% 1/4W	144694	R199	RES MF 10M 1% 1/4W	144575
R141	RES MF 33.2K 1% 1/4W	144694	R200	RES MF 1M 1% 1/4W	144577
R142	RES MF 100 OHM 1% 1/4W	144568	R201	RES MF 200K 1% 1/4W	144531
R143	RES MF 100 OHM 1% 1/4W	144568	R202	RES MF 267K 1% 1/4W	144532
R144	RES MO 100K 5% 2W	144698	R203	RES MF 267K 1% 1/4W	144532
R145	RES MF 475 OHM 1% 1/4W	144509	R204	RES MF 1M 1% 1/4W	144577
R146	RES MF 3.32K 1% 1/4W	144518	R205	RES MF 10M 1% 1/4W	144575
R147	RES MF 3.32K 1% 1/4W	144518	R206	RES MF 10M 1% 1/4W	144575
R148	RES MF 3.32K 1% 1/4W	144518	R207	RES MF 1M 1% 1/4W	144577
R149	RES MF 3.32K 1% 1/4W	144518	R208	RES MF 47.5K 1% 1/4W	144526
R150	RES MF 1.82K 1% 1/4W	144582	R209	RES MF 47.5K 1% 1/4W	144526
R151	RES MF 1.82K 1% 1/4W	144582	R210	RES MF 267K 1% 1/4W	144532
R152	RES MF 1.82K 1% 1/4W	144582	R211	RES MF 267K 1% 1/4W	144532
R153	RES MF 1.82K 1% 1/4W	144582	R212	RES MF 1M 1% 1/4W	144577
R154	RES MF 100K 1% 1/4W	144528	R213	RES MF 10M 1% 1/4W	144575
R155	RES MF 365 OHM 1% 1/4W	144505	R214	RES MF 10M 1% 1/4W	144575
R156	RES MF 365 OHM 1% 1/4W	144505	R215	RES MF 1M 1% 1/4W	144577
R157	RES MF 332 OHM 1% 1/4W	144646	R216	RES MF 33.2K 1% 1/4W	144694
R158	RES MF 332 OHM 1% 1/4W	144646	R217	RES MF 33.2K 1% 1/4W	144694
R159	RES MF 1M 1% 1/4W	144577	R218	RES MF 267K 1% 1/4W	144532
R160	RES MF 1.5K 1% 1/4W	144539	R219	RES MF 267K 1% 1/4W	144532
R161	RES MF 15 OHM 1% 1/2W	144555	R220	RES MF 2.21M 1% 1/4W	144576
R162	RES MF 200K 1% 1/4W	144531	R221	RES MF 2.21M 1% 1/4W	144576
R163	RES MF 10 OHM 1% 1/4W	144553	R222	RES MF 1M 1% 1/4W	144577
R164	RES MF 20K 1% 1/4W	144524	R223	RES MF 10M 1% 1/4W	144575
R165	RES MF 267K 1% 1/4W	144532	R224	RES MF 10M 1% 1/4W	144575
R166	RES MF 200K 1% 1/4W	144531	R225	RES MF 1M 1% 1/4W	144577
R167	RES MF 33.2K 1% 1/4W	144694	R226	RES MF 24.9K 1% 1/4W	144639
R168	RES MF 100K 1% 1/4W	144528	R227	RES MF 267K 1% 1/4W	144532
R169	RES MF 1K 1% 1/4W	144513	R228	RES MF 24.9K 1% 1/4W	144639
R170	RES MF 1K 1% 1/4W	144513	R229	RES MF 267K 1% 1/4W	144532
R171	RES MF 267K 1% 1/4W	144532	R230	RES MF 1M 1% 1/4W	144577
R172	RES MF 267K 1% 1/4W	144532	R231	RES MF 10M 1% 1/4W	144575
R173	RES MF 10K 1% 1/4W	144504	R232	RES MF 10M 1% 1/4W	144575
R174	RES MF 10K 1% 1/4W	144504	R233	RES MF 1M 1% 1/4W	144577
R175	RES MF 221 OHM 1% 1/4W	144559	R234	RES 16.5K 1% 1/4W	144700
R176	RES MF 12.1K 1% 1/4W	144550	R235	RES 16.5K 1% 1/4W	144700
R177	RES MF 12.1K 1% 1/4W	144550	R236	RES MF 332 OHM 1% 1/4W	144646
R178	RES MF 1K 1% 1/4W	144513	R237	RES MF 332 OHM 1% 1/4W	144646
R179	RES MF 8.25K 1% 1/4W	144549	R238	RES MF 100K 1% 1/4W	144528
R180	RES MF 1K 1% 1/4W	144513	R239	RES MF 1K 1% 1/4W	144513
R181	RES MF 47.5K 1% 1/4W	144526	R240	RES MF 1K 1% 1/4W	144513
R182	RES MF 267K 1% 1/4W	144532	R241	RES MF 1K 1% 1/4W	144513
R183	RES MF 267K 1% 1/4W	144532	R242	RES MF 221 OHM 1% 1/4W	144559
R184	RES MF 267K 1% 1/4W	144532	R243	RES MF 221 OHM 1% 1/4W	144559
R185	RES MF 267K 1% 1/4W	144532	R244	RES MF 1.1K 1% 1/4W	144514
R186	RES MF 4.99K 1% 1/4W	144521	R245	RES MF 1.1K 1% 1/4W	144514
R187	RES MF 4.99K 1% 1/4W	144521	R249	RES MF 806 OHM 1% 1/4W	144512
R188	RES MF 1K 1% 1/4W	144513	R250	RES MF 806 OHM 1% 1/4W	144512
R189	RES MF 1K 1% 1/4W	144513	R251	RES MF 221K 1% 1/4W	144629
R190	RES MF 150K 1% 1/4W	144627	R252	RES MF 221K 1% 1/4W	144629
R191	RES MF 150K 1% 1/4W	144627	R253	RES MF 1K 1% 1/4W	144513
R192	RES MF 20K 1% 1/4W	144524	R254	RES MF 1K 1% 1/4W	144513
R193	RES MF 20K 1% 1/4W	144524	R255	RES MF 221K 1% 1/4W	144629
R194	RES MF 1K 1% 1/4W	144513	R256	RES MF 221K 1% 1/4W	144629
R195	RES MF 1K 1% 1/4W	144513	R247	RES POLYSWITCH RXE030	144670
R196	RES MF 1.5K 1% 1/4W	144539	R248	RES POLYSWITCH RXE300	144681

PARTS LIST (Cont'd.)

2 MAIN PCB 750761 (Cont'd.)

Ref. No.	Description	Part No.	Ref. No.	Description	Part No.
T1	TRANSFORMER R-CORE POWER	159348	DS2	LED GREEN 5MM HI-INT VF[V] 3.5	058165
U1	IC OCTAL DARLNGTON TRANS ARRAY	133629	(DS2)	SPACER LED	112108
U2	IC OCTAL DARLNGTON TRANS ARRAY	133629	DS3	LED GREEN 5MM HI-INT VF[V] 3.5	058165
U3	IC DUAL OPERATIONAL AMPLIFIER	133578	(DS3)	SPACER LED	112108
U4	IC SHFT REG SER-PAR	133594	DS4	LED GREEN 5MM HI-INT VF[V] 3.5	058165
U5	IC SHFT REG SER-PAR	133594	(DS4)	SPACER LED	112108
U6	IC SHFT REG SER-PAR	133594	DS5	LED GREEN 5MM HI-INT VF[V] 3.5	058165
U7	IC SHFT REG SER-PAR	133594	(DS5)	SPACER LED	112108
U8	IC OPERATIONAL AMP LOW NOISE	133565	DS6	DISPLAY VF 13 DIGITS	058183
U9	IC OPERATIONAL AMP LOW NOISE	133565	(DS6)	TAPE MTG DBL COATED 1/8 THK	094332
U10	IC DUAL OPERATIONAL AMPLIFIER	133578	J1	CONN FFC 18PIN	117908
U11	IC QUAD OP AMP TLC074CN	133419	J2	CONN FFC 18PIN	117908
U13	IC DUAL OPERATIONAL AMPLIFIER	133578	J3	CONN 12 PIN FFC	117907
U14	IC DUAL OPERATIONAL AMPLIFIER	133578	J4	CONN 12 PIN FFC	117907
U15	IC DUAL OPERATIONAL AMPLIFIER	133578	K1	RELAY REED FORM 1A 5V 500 OHMS	087050
U16	IC REGULATOR +5V	133569	PCB1	PCB DISPLAY	129824
(U16)	HEATSINK TO-218	080020	Q1	TRANSISTOR NPN SILICON	132317
U17	IC VOLTAGE REGULATOR VERI NEG	133602	Q2	TRANSISTOR PNP SILICON	132304
(U17)	HEATSINK TO-218	080020	U3	IC CMOS EPROM	133646
U18	IC VOLTAGE REGULATOR VARI POS	133601	U4	IC PROGRAMMED C2300 V1.01	133667
(U18)	HEATSINK TO-218	080020	Q3	TRANSISTOR NPN SILICON	132317
U19	IC VOLTAGE REGULATOR VERI NEG	133602	Q4	TRANSISTOR NPN SILICON	132317
(U19)	HEATSINK TO-218	080020	R1	RES MF 1K 1% 1/4W	144513
U20	IC VOLTAGE REGULATOR VARI POS	133601	R2	RES NETWORK 9X-1-223	144498
(U20)	HEATSINK TO-218	080020	R3	RES MF 100K 1% 1/4W	144528
U21	IC 2 INPUT X 4	133591	R4	RES MF 475 OHM 1% 1/4W	144509
U22	IC REGULATOR 5V	133597	R5	RES MF 475 OHM 1% 1/4W	144509
U23	IC REGULATOR -5V	133598	R6	RES MF 324 OHM 1% 1/4W	144597
U24	IC DUAL OPERATIONAL AMPLIFIER	133578	R7	RES MF 324 OHM 1% 1/4W	144597
U25	IC STEREO DGTL VOLUME CONTROL	133637	R8	RES MF 324 OHM 1% 1/4W	144597
(U25)	SOCKET IC DIP 16 PIN DUAL	178182	R9	RES MF 324 OHM 1% 1/4W	144597
U26	IC TONE CONTROL 3-BAND	133668	R10	RES MF 324 OHM 1% 1/4W	144597
U27	IC SHFT REG SER-PAR	133594	R11	RES MF 324 OHM 1% 1/4W	144597
U28	IC VOLTAGE REGULATOR VARI POS	133601	R12	RES NETWORK 9X-1-223	144498
U29	IC VOLTAGE REGULATOR VERI NEG	133602	R13	RES NETWORK 9X-1-223	144498
	INSULATOR ISOSTRATE TO 220	084133	R14	RES MF 100 OHM 1% 1/4W	144568
	SCR MS 4-40 X 1/4 PH PN BLK	400121	R15	RES MF 100 OHM 1% 1/4W	144568
	SCR TT 6-32 X 1/4 SEMS PH PAN	401222	R16	RES MF 2.21K 1% 1/4W	144584
			R17	RES MF 100 OHM 1% 1/4W	144568
			R18	RES MF 10 OHM 1% 1/4W	144553
			R19	RES MF 221 OHM 1% 1/4W	144559
			R20	RES MF 100 OHM 1% 1/4W	144568
			R22	RES NETWORK 9X-1-223	144498
			R23	RES MF 100 OHM 1% 1/4W	144568
			R25	RES MF 10K 1% 1/4W	144504
			R26	RES MF 47.5K 1% 1/4W	144526
			R27	RES MF 47.5K 1% 1/4W	144526
			R28	RES MF 10K 1% 1/4W	144504
			R29	RES MF 2.21K 1% 1/4W	144584
			R31	POT TRIM 200 OHM HORIZ AD 20%	134506
			R32	POT TRIM 200 OHM HORIZ AD 20%	134506
			R33	POT TRIM 200 OHM HORIZ AD 20%	134506
			R34	POT TRIM 200 OHM HORIZ AD 20%	134506
			R36	RES WW 100 OHM 2W 10%	139134
			R37	RES MF 8.25K 1% 1/4W	144549
			R35	RES MF 324 OHM 1% 1/4W	144597
			R21	RES MF 475K 1% 1/4W	144604
DS1	LED GREEN 5MM HI-INT VF[V] 3.5	058165	R24	RES NET 10K X8 RES B	144675
(DS1)	SPACER LED	112108	S1	ENCODER INCREMENTAL	146261

3 DISPLAY PCB 750641

C1	CAP MONO .1UF 50V 20%	061346			
C2	CAP MONO 220PF 200V 10% NPO	061342			
C3	CAP ELECT 10UF 50V	066445			
C4	CAP ELECT 10UF 50V	066445			
C5	CAP MONO .1UF 50V 20%	061346			
C6	CAP MONO .1UF 50V 20%	061346			
C7	CAP MONO .1UF 50V 20%	061346			
C8	CAP ELECT 47UF 35V	066446			
C9	CAP ELECT 10UF 50V	066445			
C10	CAP MONO .1UF 50V 20%	061346			
C13	CAP MONO .1UF 50V 20%	061346			
D1	DIODE ZENER 6.2V 5% 500MW	070184			
D2	DIODE SILICON	070174			
D3	DIODE SILICON	070174			
D4	DIODE SILICON	070174			
D5	DIODE SILICON	070174			

PARTS LIST (Cont'd.)

3 DISPLAY PCB 750641 (Cont'd.)

Ref. No.	Description	Part No.	Ref. No.	Description	Part No.
S2	ENCODER INCREMENTAL	146261	J1	XLR FEMALE VERTICAL WITH LATCH	117813
S3	ENCODER OPTICAL ROTARY	146259	J2	XLR FEMALE VERTICAL WITH LATCH	117813
S4	ENCODER INCREMENTAL	146261	J3	XLR FEMALE VERTICAL WITH LATCH	117813
U1	IC SHFT REG SER-PAR	133594	J4	XLR FEMALE VERTICAL WITH LATCH	117813
U2	IC 8BIT DRIVER	133461	J5	XLR FEMALE VERTICAL WITH LATCH	117813
U3	IC CMOS EPROM	133646	J6	XLR FEMALE VERTICAL WITH LATCH	117813
U4	IC PROGRAMMED C2300 V1.01	133667	J7	XLR FEMALE VERTICAL WITH LATCH	117813
(U4)	SOCKET IC 40-PIN	178133	J8	XLR FEMALE VERTICAL WITH LATCH	117813
U5	IC MICRO RESET POS	133241	J9	CONN FFC 18PIN	117908
U6	IC NOR 2 INPUT X 4	133592	J10	RECEPTACLE XLR MALE	117669
U7	IC NAND 2 INPUT X 4	133575	J11	RECEPTACLE XLR MALE	117669
U8	VFD Controller 16 Seg x 14 digit	133633	J12	RECEPTACLE XLR MALE	117669
Y1	RESONATOR CERAMIC 12.0MHZ W/CAP	180059	J13	RECEPTACLE XLR MALE	117669
	NUT 3/8-32 HEX BRASS NICKEL PL	402008	J14	RECEPTACLE XLR MALE	117669
	WASHER LOCK INT STAR 5/16 IN	404013	J15	RECEPTACLE XLR MALE	117669
	WASHER INT STAR 3/8 IN	404014	J16	CONN FFC 18PIN	117908
	NUT CONTROL M7 X .75	410004	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
			K4	RELAY REED FORM 1A 5V 500 OHMS	087050
			K5	RELAY REED FORM 1A 5V 500 OHMS	087050
			K6	RELAY REED FORM 1A 5V 500 OHMS	087050
			K7	RELAY REED FORM 1A 5V 500 OHMS	087050
			K8	RELAY REED FORM 1A 5V 500 OHMS	087050
			K9	RELAY REED FORM 1A 5V 500 OHMS	087050
			K10	RELAY REED FORM 1A 5V 500 OHMS	087050
			K11	RELAY REED FORM 1A 5V 500 OHMS	087050
			K12	RELAY REED FORM 1A 5V 500 OHMS	087050
			K13	RELAY REED FORM 1A 5V 500 OHMS	087050
			K14	RELAY REED FORM 1A 5V 500 OHMS	087050
			K15	RELAY REED FORM 1A 5V 500 OHMS	087050
			K16	RELAY REED FORM 1A 5V 500 OHMS	087050
			K17	RELAY REED FORM 1A 5V 500 OHMS	087050
			K18	RELAY REED FORM 1A 5V 500 OHMS	087050
			K19	RELAY REED FORM 1A 5V 500 OHMS	087050
			K20	RELAY REED FORM 1A 5V 500 OHMS	087050
			K21	RELAY REED FORM 1A 5V 500 OHMS	087050
			K22	RELAY REED FORM 1A 5V 500 OHMS	087050
			K23	RELAY REED FORM 1A 5V 500 OHMS	087050
			K24	RELAY REED FORM 1A 5V 500 OHMS	087050
			K25	RELAY REED FORM 1A 5V 500 OHMS	087050
			K26	RELAY REED FORM 1A 5V 500 OHMS	087050
			PCB1	PCB BALANCED	129825
			R1	RES MF 267K 1% 1/4W	144532
			R2	RES MF 267K 1% 1/4W	144532
			R3	RES MF 267K 1% 1/4W	144532
			R4	RES MF 267K 1% 1/4W	144532
			R5	RES MF 267K 1% 1/4W	144532
			R6	RES MF 267K 1% 1/4W	144532
			R7	RES MF 267K 1% 1/4W	144532
			R8	RES MF 267K 1% 1/4W	144532
			R9	RES MF 267K 1% 1/4W	144532
			R10	RES MF 267K 1% 1/4W	144532
			R11	RES MF 267K 1% 1/4W	144532
			R12	RES MF 267K 1% 1/4W	144532
			R13	RES MF 267K 1% 1/4W	144532
			R14	RES MF 267K 1% 1/4W	144532
			R15	RES MF 267K 1% 1/4W	144532
			R16	RES MF 267K 1% 1/4W	144532

4 BALANCED PCB 750642

C1	CAP ELECT 10UF 50V	066445			
C2	CAP ELECT 10UF 50V	066445			
C3	CAP ELECT 10UF 50V	066445			
C4	CAP ELECT 10UF 50V	066445			
C5	CAP ELECT 10UF 50V	066445			
C6	CAP ELECT 10UF 50V	066445			
C7	CAP ELECT 10UF 50V	066445			
C8	CAP ELECT 10UF 50V	066445			
C9	CAP ELECT 10UF 50V	066445			
C10	CAP ELECT 10UF 50V	066445			
C11	CAP ELECT 10UF 50V	066445			
C12	CAP ELECT 10UF 50V	066445			
C13	CAP ELECT 10UF 50V	066445			
C14	CAP ELECT 10UF 50V	066445			
C15	CAP ELECT 10UF 50V	066445			
C16	CAP ELECT 10UF 50V	066445			
C17	CAP ELECT 10UF 50V	066445			
C18	CAP ELECT 10UF 50V	066445			
C19	CAP ELECT 10UF 50V	066445			
C20	CAP ELECT 10UF 50V	066445			
C21	CAP ELECT 47UF 35V	066446			
C22	CAP ELECT 47UF 35V	066446			
C23	CAP ELECT 47UF 35V	066446			
C24	CAP ELECT 47UF 35V	066446			
C25	CAP ELECT 47UF 35V	066446			
C26	CAP ELECT 47UF 35V	066446			
C27	CAP ELECT 47UF 35V	066446			
C28	CAP ELECT 47UF 35V	066446			
C29	CAP ELECT 47UF 35V	066446			
C30	CAP ELECT 47UF 35V	066446			
C31	CAP ELECT 47UF 35V	066446			
C32	CAP ELECT 47UF 35V	066446			
D1	DIODE SILICON	070174			
D2	DIODE SILICON	070174			
D3	DIODE SILICON	070174			
D4	DIODE SILICON	070174			
D5	DIODE SILICON	070174			
D6	DIODE SILICON	070174			
D7	DIODE SILICON	070174			

PARTS LIST (Cont'd.)

4 BALANCED PCB 750642 (Cont'd.)

Ref. No.	Description	Part No.	Ref. No.	Description	Part No.
R17	RES MF 267K 1% 1/4W	144532	C33	CAP ELECT 1UF 50V	066510
R18	RES MF 267K 1% 1/4W	144532	C34	CAP ELECT 1UF 50V	066510
R19	RES MF 267K 1% 1/4W	144532	C37	CAP ELECT 10UF 250V	066558
R20	RES MF 267K 1% 1/4W	144532	C40	CAP MPF 0.1UF 630VDC	064431
R21	RES MF 100K 1% 1/4W	144528	C41	CAP MPF 0.1UF 630VDC	064431
R23	RES MF 100K 1% 1/4W	144528	C42	CAP MONO 47PF 200V 10% NPO	061340
R24	RES MF 100K 1% 1/4W	144528	C43	CAP MONO 47PF 200V 10% NPO	061340
R25	RES MF 221 OHM 1% 1/4W	144559	C44	CAP MONO 47PF 200V 10% NPO	061340
R26	RES MF 221 OHM 1% 1/4W	144559	C45	CAP MONO 47PF 200V 10% NPO	061340
R27	RES MF 221 OHM 1% 1/4W	144559	C47	CAP MPF 0.22UF 400VDC	064438
R28	RES MF 221 OHM 1% 1/4W	144559	C48	CAP MPF 0.22UF 400VDC	064438
R29	RES MF 221 OHM 1% 1/4W	144559	C49	CAP ELECT 1UF 50V	066510
R30	RES MF 221 OHM 1% 1/4W	144559	C50	CAP ELECT 1UF 50V	066510
R31	RES MF 221 OHM 1% 1/4W	144559	C51	CAP ELECT 1UF 50V	066510
R32	RES MF 221 OHM 1% 1/4W	144559	C52	CAP ELECT 1UF 50V	066510
R33	RES MF 221 OHM 1% 1/4W	144559	C53	CAP MPF 0.22UF 400VDC	064438
R34	RES MF 221 OHM 1% 1/4W	144559	C54	CAP MPF 0.22UF 400VDC	064438
R35	RES MF 221 OHM 1% 1/4W	144559	C55	CAP MONO 220PF 200V 10% NPO	061342
R36	RES MF 221 OHM 1% 1/4W	144559	C56	CAP MONO 220PF 200V 10% NPO	061342
R37	RES MF 100K 1% 1/4W	144528	C57	CAP MONO 220PF 200V 10% NPO	061342
R38	RES MF 100K 1% 1/4W	144528	C58	CAP MONO 220PF 200V 10% NPO	061342
R39	RES MF 100K 1% 1/4W	144528	DS1	LED GREEN 3MM HI-INTENSITY	058172
R41	RES MF 100K 1% 1/4W	144528	DS2	LED GREEN 3MM HI-INTENSITY	058172
R42	RES MF 100K 1% 1/4W	144528	DS3	LED GREEN 3MM HI-INTENSITY	058172
R43	RES MF 100K 1% 1/4W	144528	DS4	LED GREEN 3MM HI-INTENSITY	058172
R44	RES MF 100K 1% 1/4W	144528	DS5	LED GREEN 3MM HI-INTENSITY	058172
			DS6	LED GREEN 3MM HI-INTENSITY	058172

5 TUBE PCB 750643

C1	CAP MONO 47PF 200V 10% NPO	061340	J1	HEADER 2 PIN LATCHING	117766
C2	CAP MONO 47PF 200V 10% NPO	061340	J2	HEADER 2 PIN LATCHING	117766
C3	CAP ELECT 100UF 25V	066573	J3	CONN 12 PIN FFC	117907
C4	CAP ELECT 100UF 25V	066573	J4	CONN 12 PIN FFC	117907
C5	CAP MPF 0.1UF 630VDC	064431	J5	CONN 12 PIN FFC	117907
C6	CAP MPF 0.1UF 630VDC	064431	J6	CONN 12 PIN FFC	117907
C7	CAP ELECT 10UF 250V	066558	PCB1	PCB TUBE	129826
C8	CAP PF 0.001UF 5% 63VDC	064453	Q1	TRANSISTOR PNP	132326
C9	CAP PF 0.001UF 5% 63VDC	064453	Q2	TRANSISTOR PNP	132326
C10	CAP MPF 0.0033UF 5% 63VDC	064455	Q3	TRANSISTOR PNP	132326
C11	CAP MPF 0.0033UF 5% 63VDC	064455	Q4	TRANSISTOR PNP	132326
C12	CAP ELECT 100UF 25V	066573	Q5	TRANSISTOR PNP	132326
C13	CAP ELECT 100UF 25V	066573	Q6	TRANSISTOR PNP	132326
C14	CAP POLYPROP 1UF 20% 250VDC	064433	Q8	TRANSISTOR NPN SILICON	132317
C15	CAP POLYPROP 1UF 20% 250VDC	064433	R1	RES MF 953 OHM 1% 1/4W	144661
C16	CAP ELECT 1UF 50V	066510	R2	RES MF 1.82K 1% 1/4W	144582
C17	CAP ELECT 1UF 50V	066510	R3	RES MF 953 OHM 1% 1/4W	144661
C18	CAP ELECT 10UF 250V	066558	R4	RES MF 1.82K 1% 1/4W	144582
C19	CAP MONO 47PF 200V 10% NPO	061340	R5	RES MF 221K 1% 1/4W	144629
C20	CAP MONO 47PF 200V 10% NPO	061340	R6	RES MF 221K 1% 1/4W	144629
C21	CAP ELECT 100UF 25V	066573	R7	RES MF 75K 1% 1/4W	144552
C22	CAP ELECT 100UF 25V	066573	R8	RES MF 75K 1% 1/4W	144552
C23	CAP MPF 0.1UF 630VDC	064431	R9	RES MF 1M 1% 1/4W	144577
C24	CAP MPF 0.1UF 630VDC	064431	R10	RES MF 1M 1% 1/4W	144577
C25	CAP PF 0.001UF 5% 63VDC	064453	R11	RES MF 100K 1% 1/4W	144528
C26	CAP PF 0.001UF 5% 63VDC	064453	R12	RES MF 1.5K 1% 1/4W	144539
C27	CAP MPF 0.0033UF 5% 63VDC	064455	R13	RES MF 1.5K 1% 1/4W	144539
C28	CAP MPF 0.0033UF 5% 63VDC	064455	R14	RES MF 200K 1% 1/4W	144531
C31	CAP POLYPROP 1UF 20% 250VDC	064433	R15	RES MF 1M 1% 1/4W	144577
C32	CAP POLYPROP 1UF 20% 250VDC	064433	R16	RES MF 200K 1% 1/4W	144531
			R17	RES MF 1M 1% 1/4W	144577
			R18	RES MF 1K 1% 1/4W	144513

PARTS LIST (Cont'd.)

5 TUBE PCB 750643 (Cont'd.)

Ref. No.	Description	Part No.
R19	RES MF 1K 1% 1/4W	144513
R20	RES MF 22.1K 1% 1/4W	144564
R21	RES MF 22.1K 1% 1/4W	144564
R22	RES MF 22.1K 1% 1/4W	144564
R23	RES MF 22.1K 1% 1/4W	144564
R24	RES MF 221K 1% 1/4W	144629
R25	RES MF 221K 1% 1/4W	144629
R26	RES MF 100K 1% 1/4W	144528
R27	RES MF 47.5K 1% 1/4W	144526
R28	RES MF 47.5K 1% 1/4W	144526
R29	RES MF 1.82K 1% 1/4W	144582
R30	RES MF 1K 1% 1/4W	144513
R31	RES MF 1.82K 1% 1/4W	144582
R32	RES MF 1K 1% 1/4W	144513
R33	RES MF 221K 1% 1/4W	144629
R34	RES MF 221K 1% 1/4W	144629
R35	RES MF 75K 1% 1/4W	144552
R36	RES MF 75K 1% 1/4W	144552
R37	RES MF 1M 1/4W	144577
R38	RES MF 1M 1/4W	144577
R39	RES MF 1.5K 1% 1/4W	144539
R40	RES MF 1.5K 1% 1/4W	144539
R41	RES MF 200K 1% 1/4W	144531
R42	RES MF 1M 1/4W	144577
R43	RES MF 200K 1% 1/4W	144531
R44	RES MF 1M 1/4W	144577
R47	RES MF 22.1K 1% 1/4W	144564
R48	RES MF 22.1K 1% 1/4W	144564
R49	RES MF 22.1K 1% 1/4W	144564
R50	RES MF 22.1K 1% 1/4W	144564
R51	RES MF 221K 1% 1/4W	144629
R52	RES MF 221K 1% 1/4W	144629
R55	RES MF 100K 1% 1/4W	144528
R56	RES MF 3.32K 1% 1/4W	144518
R57	RES MF 221K 1% 1/4W	144629
R58	RES MF 3.32K 1% 1/4W	144518
R59	RES MF 221K 1% 1/4W	144629
R60	RES MF 1M 1/4W	144577
R61	RES MF 1M 1/4W	144577
R62	RES MF 15K 1% 1/4W	144623
R63	RES MF 15K 1% 1/4W	144623
R64	RES MF 1.5K 1% 1/4W	144539
R65	RES MF 200K 1% 1/4W	144531
R66	RES MF 1.5K 1% 1/4W	144539
R67	RES MF 200K 1% 1/4W	144531
R69	RES MF 22.1K 1% 1/4W	144564
R70	RES MF 22.1K 1% 1/4W	144564
R71	RES MF 22.1K 1% 1/4W	144564
R72	RES MF 22.1K 1% 1/4W	144564
R74	RES MF 2.21K 1% 1/4W	144584
R75	RES MF 2.21K 1% 1/4W	144584
R76	RES MF 2.21K 1% 1/4W	144584
R77	RES MF 10K 1% 1/4W	144504
R78	RES MF 1K 1% 1/4W	144513
R79	RES MF 1K 1% 1/4W	144513
V1	TUBE 12AX7A MCINTOSH	165065
(V1)	SOCKET 9 PIN TUBE CERAMIC	178170
V2	TUBE 12AX7A MCINTOSH	165065
(V2)	SOCKET 9 PIN TUBE CERAMIC	178170

6 DATA PCB 750762

Ref. No.	Description	Part No.
V3	TUBE 12AX7A MCINTOSH	165065
(V3)	SOCKET 9 PIN TUBE CERAMIC	178170
V4	TUBE 12AX7A MCINTOSH	165065
(V4)	SOCKET 9 PIN TUBE CERAMIC	178170
V5	TUBE 12AX7A MCINTOSH	165065
(V5)	SOCKET 9 PIN TUBE CERAMIC	178170
V6	TUBE 12AX7A MCINTOSH	165065
(V6)	SOCKET 9 PIN TUBE CERAMIC	178170
C1	CAP MONO .1UF 50V 20% Z5U	061346
C2	CAP MONO 1000PF 50V 10% NPO	061344
C3	CAP MONO .1UF 50V 20% Z5U	061346
C4	CAP MONO .1UF 50V 20% Z5U	061346
C5	CAP ELECT 220UF 25V	066507
D1	DIODE SILICON	070174
D2	DIODE SILICON	070174
D3	DIODE SILICON	070174
J3	JACK HEADPHONE STEREO 1/8IN	117945
J4	JACK HEADPHONE STEREO 1/8IN	117945
J5	JACK HEADPHONE STEREO 1/8IN	117945
J6	JACK HEADPHONE STEREO 1/8IN	117945
J7	JACK HEADPHONE STEREO 1/8IN	117945
J8	JACK HEADPHONE STEREO 1/8IN	117945
J11	JACK HEADPHONE STEREO 1/8IN	117945
J9	CONN GOLD F RIGHT ANGLE	117661
J10	CONN 18 PIN FFC	117908
J12	JACK HEADPHONE STEREO 1/8IN	117945
J13	JACK HEADPHONE STEREO 1/8IN	117945
J14	JACK HEADPHONE STEREO 1/8IN	117945
J15	JACK HEADPHONE STEREO 1/8IN	117945
PCB1	PC BD DATA	129865
Q1	TRANSISTOR NPN SILICON	132317
R3	RES MF 1K 1% 1/4W	144513
R4	RES MF 100 OHM 1% 1/4W	144568
R5	RES MF 1K 1% 1/4W	144513
R6	RES MF 1K 1% 1/4W	144513
R7	RES MF 100 OHM 1% 1/4W	144568
R8	RES MF 100 OHM 1% 1/4W	144568
R9	RES MF 100 OHM 1% 1/4W	144568
R10	RES MF 100 OHM 1% 1/4W	144568
R11	RES MF 1K 1% 1/4W	144513
R12	RES MF 100 OHM 1% 1/4W	144568
R13	RES MF 221 OHM 1% 1/4W	144559
R14	RES MF 20K 1% 1/4W	144524
R15	RES MF 10 OHM 1% 1/4W	144553
R16	RES MF 15K 1% 1/4W	144623
R17	RES MF 182 OHM 1% 1/4W	144579
R18	RES MF 182 OHM 1% 1/4W	144579
R19	RES MF 100K 1% 1/4W	144528
R20	RES MF 182 OHM 1% 1/4W	144579
R21	RES MF 182 OHM 1% 1/4W	144579
R22	RES MF 182 OHM 1% 1/4W	144579
R23	RES MF 182 OHM 1% 1/4W	144579
R24	RES MF 182 OHM 1% 1/4W	144579
R25	RES MF 182 OHM 1% 1/4W	144579
R26	RES MF 10 OHM 1% 1/4W	144553
R27	RES MF 10K 1% 1/4W	144504

PARTS LIST (Cont'd.)

6 DATA PCB 750762 (Cont'd.)		
Ref. No.	Description	Part No.
R28	RES MF 221K 1% 1/4W	144629
R29	RES MF 221K 1% 1/4W	144629
R30	RES MF 10 OHM 1% 1/4W	144553
R31	RES MF 182 OHM 1% 1/4W	144579
R32	RES MF 47.5 OHM 1% 1/4W	144642
SP1	TERMINAL PC SCREW	117975
SP2	TERMINAL PC SCREW	117975
U1	IC SHFT REG SER-PAR	133594
U2	IC 8 LN DRIVER ARRAY	133180
U3	IC OPERATIONAL AMPLIFIER	133626
U4	IC AND 2 INPUT X 4	133577
U5	IC AND 2 INPUT X 4	133577

7 PUSHBUTTON PCB 750645		
Ref. No.	Description	Part No.
C11	CAP ELECT 47UF 16V	066380
C12	CAP MONO .1UF 50V 20%	061346
DS1	LED SQUARE RED	058109
DS2	LED SQUARE RED	058109
DS3	LED SQUARE RED	058109
DS4	LED SQUARE RED	058109
DS5	LED SQUARE RED	058109
DS6	LED SQUARE RED	058109
DS7	LED SQUARE RED	058109
	TUBING SHRINK 1/4ID BLK	077041
J1	CONN FFC 18PIN	117908
MT1	SENSOR IR 38KHZ	121046
R30	RES MF 100 OHM 1% 1/4W	144568
S1	SWITCH PB TACT	150058
S2	SWITCH PB TACT	150058
S3	SWITCH PB TACT	150058
S4	SWITCH PB TACT	150058
S5	SWITCH PB TACT	150058
S6	SWITCH PB TACT	150058
S7	SWITCH PB TACT	150058
S8	SWITCH PB TACT	150058
	PCB PUSHBUTTON	129828

8 HEADPHONE PCB 750332		
Ref. No.	Description	Part No.
J2	CONN 12 PIN FFC	117907
J1	HEADPHONE JACK 1/4 PC BD HEADPHONE	117881 129674

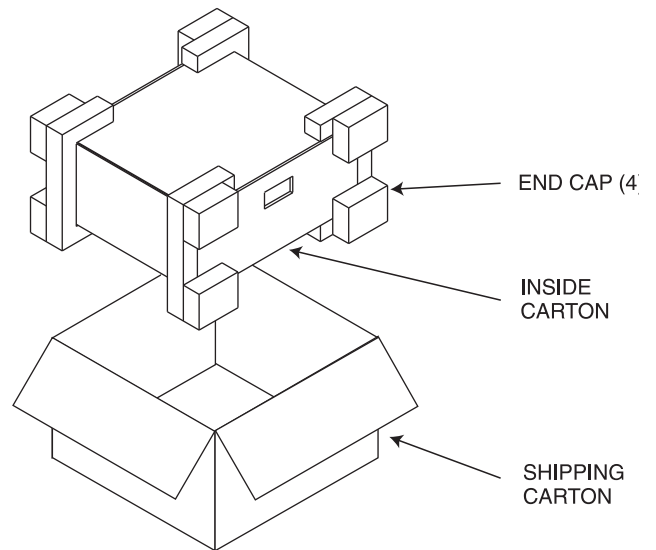
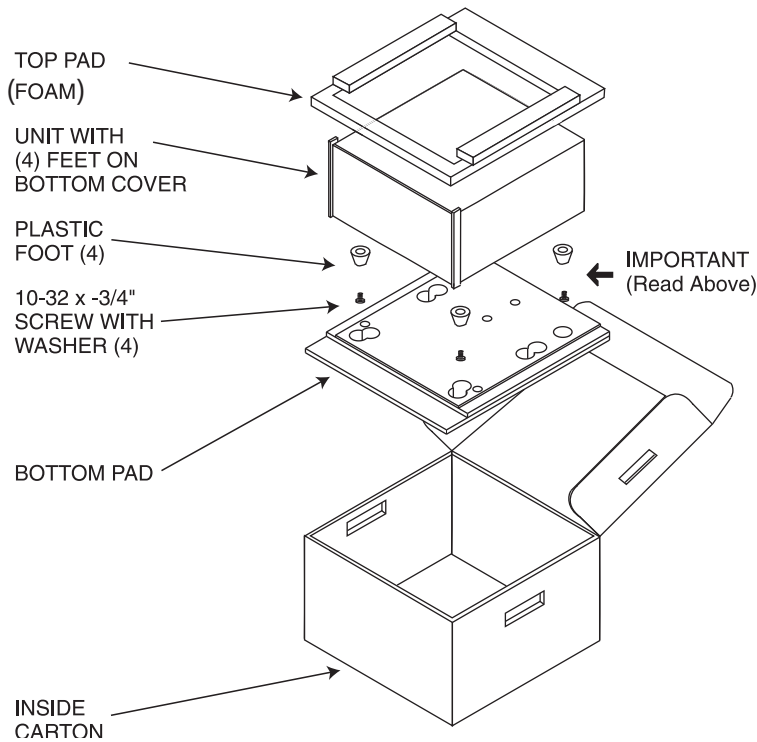
9 METER LAMP PCB 750846		
Ref. No.	Description	Part No.
D1	LED RGB SURFACE MOUNT	058178
D2	LED RGB SURFACE MOUNT	058178
D3	LED RGB SURFACE MOUNT	058178
D4	LED RGB SURFACE MOUNT	058178
D5	LED RGB SURFACE MOUNT	058178
D6	LED RGB SURFACE MOUNT	058178
J1	CONN 8 PIN FFC SMT RA PCB METER LIGHT	117990 129945
R1	RES SMD0805 332 1/8W 1%	145006
R2	RES SMD0805 332 1/8W 1%	145006
R3	RES SMD0805 1K 1/8W 1%	145007
R4	RES SMD0805 1K 1/8W 1%	145007
R5	RES SMD0805 332 1/8W 1%	145006
R6	RES SMD0805 332 1/8W 1%	145006
R7	RES SMD0805 1K 1/8W 1%	145007
R8	RES SMD0805 1K 1/8W 1%	145007
R9	RES SMD0805 332 1/8W 1%	145006
R10	RES SMD0805 332 1/8W 1%	145006
R11	RES SMD0805 1K 1/8W 1%	145007
R12	RES SMD0805 1K 1/8W 1%	145007

REPACKING INSTRUCTION

Packing Instructions

In the event it is necessary to repack the equipment for shipment, the equipment must be packed exactly as shown below. It is very important that the four plastic feet are attached to the bottom of the equipment. This will ensure the proper equipment location on the bottom pad. Failure to do this will result in shipping damage. Use the original shipping carton and interior parts only if they are all in good serviceable condition. If a shipping carton or any of the interior part(s) are needed, please call or write Customer Service Department of McIntosh Laboratory. Refer to page 4. Please see the Part List for the correct part numbers.

Quantity	Part Number	Description
1	033888	Shipping carton only
4	033887	End cap
1	033697	Inside carton only
1	034414	Top pad (foam)
1	034301	Bottom pad
4	017937	Plastic foot
4	400159	#10-32 x 3/4" screw
4	404080	#10-7/16" Flat washer



C2300

TUBE PREAMPLIFIER

SERVICE MANUAL

SERIAL NO. YA1001 And Above



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