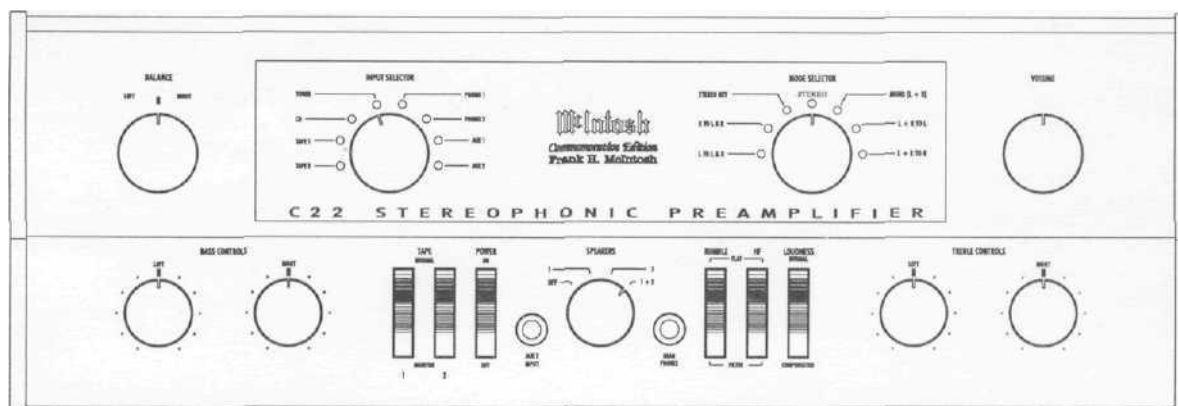


# C22

## PREAMPLIFIER



### CONTENTS

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# McIntosh

## Service Manual

# Performance Specifications

## FREQUENCY RESPONSE

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

## RATED OUTPUT

2.5V at MAIN and SWITCHED 1 and 2, and  
BALANCED OUTPUTS

## MAXIMUM VOLTAGE OUTPUT

More than 8V at all outputs

## TOTAL HARMONIC DISTORTION

0.002% maximum IHF, 0.2% maximum from 20Hz  
to 20,000Hz at rated output

## SENSITIVITY

Phono: 2.2mV for 2.5V rated output, (0.45mV IHF)  
High Level: 250mV for 2.5V rated output, (50mV  
IHF)

## SIGNAL-TO-NOISE RATIO, A-WEIGHTED

Phono: 80dB below 10mV input  
High Level: 90dB below rated output

## VOLTAGE GAIN

Phono To Tape: 41 dB at 1000Hz  
Phono To Main: 61 dB at 1000Hz  
High Level To Tape: 0dB  
High Level To Main: 20dB

## INPUT IMPEDANCE

Phono: 47K ohms and 65pF Capacitance  
High Level: 22K ohms

## TONE CONTROLS

Bass and Treble stepped, 20dB boost to 20dB cut

## AC POWER OUTLETS

4 switched and 1 unswitched, Total capacity 1400  
watts

## POWER REQUIREMENTS

120V, 50/60Hz, 37 watts

## DIMENSIONS

Front Panel: 16 inches (40.6cm) wide by 5-7/16  
inches (13.8cm) high. Chassis depth behind mount-  
ing panel, including clearance for connectors: 14  
inches (35.6cm). Knob clearance required in front of  
mounting panel: 1-1/2 inches (3.8cm).

## FINISH





Anodized gold and black front panel, chassis is black.

## WEIGHT

16 pounds (7.3Kg) net, 25 pounds (11.4Kg) in  
shipping carton

## Notes


1. The four types of heavy lines on the schematics denote the primary signal path in the following manner:

	= LEFT CHANNEL
	= RIGHT CHANNEL
	= LEFT BALANCED
	= RIGHT BALANCED

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  $\pm 10\%$  with respect to ground. A high impedance (10 megohm) voltmeter must be used.
3. Unless otherwise specified:
  - a. Resistor values are in ohms.
  - b. Capacitor values are in microfarads ( $\mu\text{F}$ ).
4. The voltages enclosed in a box are signal voltages that are measured with a 2.2mV, 1kHz signal connected to both channels at the PHONO 1 INPUT JACKS.

FRONT PANEL CONTROLS are set at:

BALANCE	CENTER DETENT
BASS and TREBLE	CENTER DETENT
INPUT SELECTOR	PHONO 1
LOUDNESS	NORMAL
MODE	STEREO
POWER	ON
VOLUME	CLOCKWISE
TAPE MONITOR 1 and 2	NORMAL
RUMBLE and HF FILTERS	FLAT
SPEAKERS	1&2

5. On PC Board Drawings, Square Pad Indicates:
  - a. Polarized Capacitors - Positive
  - b. Diode - Cathode
  - c. Others - Pin 1
6. WARNING:  
Parts marked with the symbol  have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.

# Rear Panel

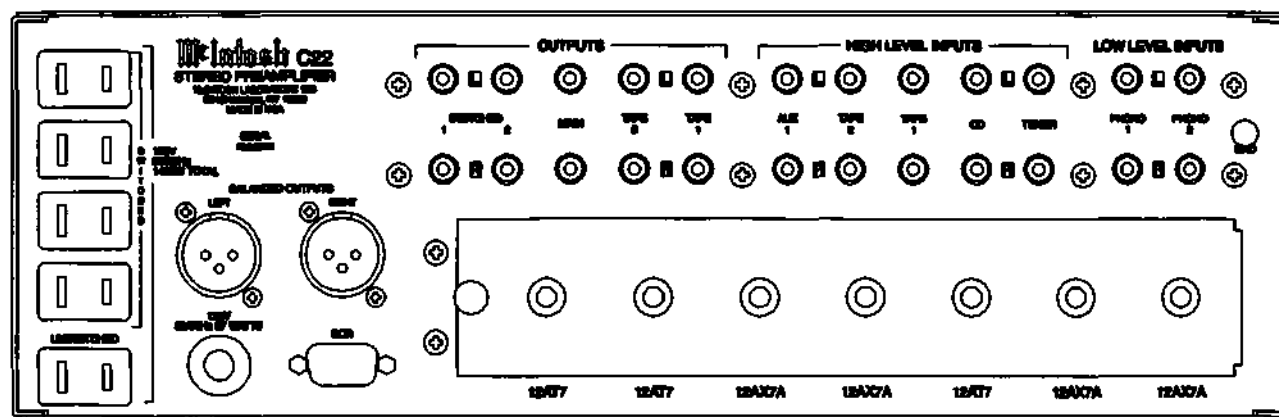


Fig. 1 Rear view

## FRONT PANEL and TRIM PARTS LIST

Symbol	Description
016340	Indicator Glass
016334	Front Panel Glass
018511	Top Panel Extrusion
018512	Lower Panel Extrusion
018520	End Cap Left
018521	End Cap Right
C22-FrontPanel	Front Panel Complete W/Glass
090242	Input/Mode Knob
090243	Balance/Volume Knob
090244	Bass/Speaker/Treble Knob
101035	Screw, 4-40 x 5/16 Fill Head
104143	Felt Washer 3/4" Dia
104144	Felt Washer 5/8" Dia

# Section Locations

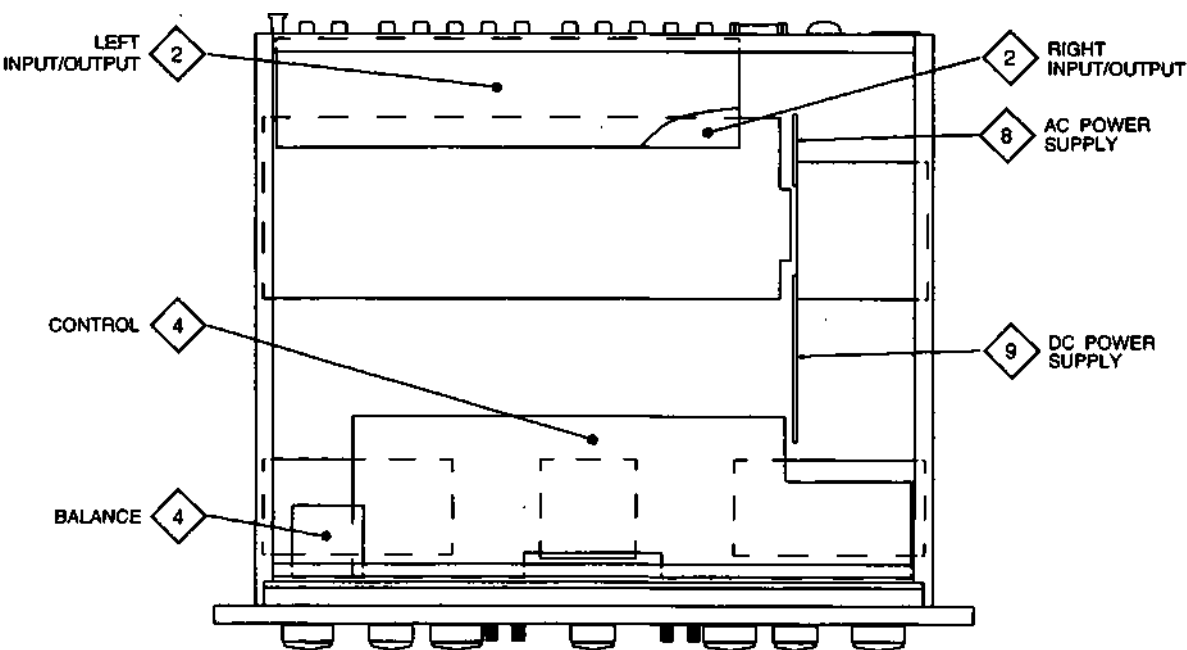


Fig. 2 Top view with cover removed

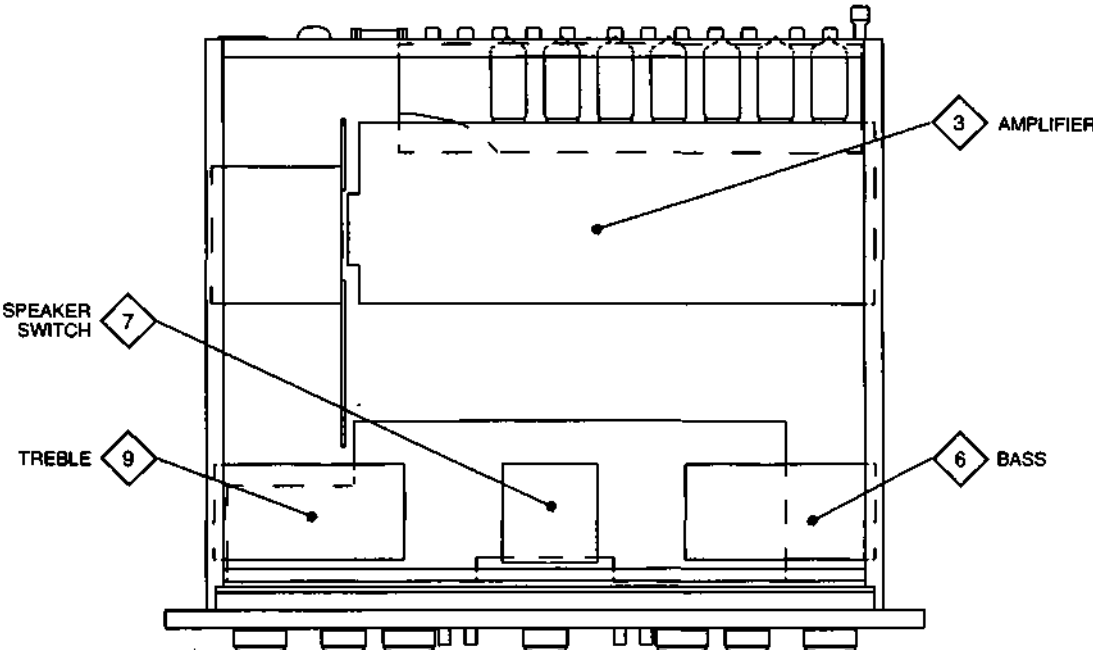
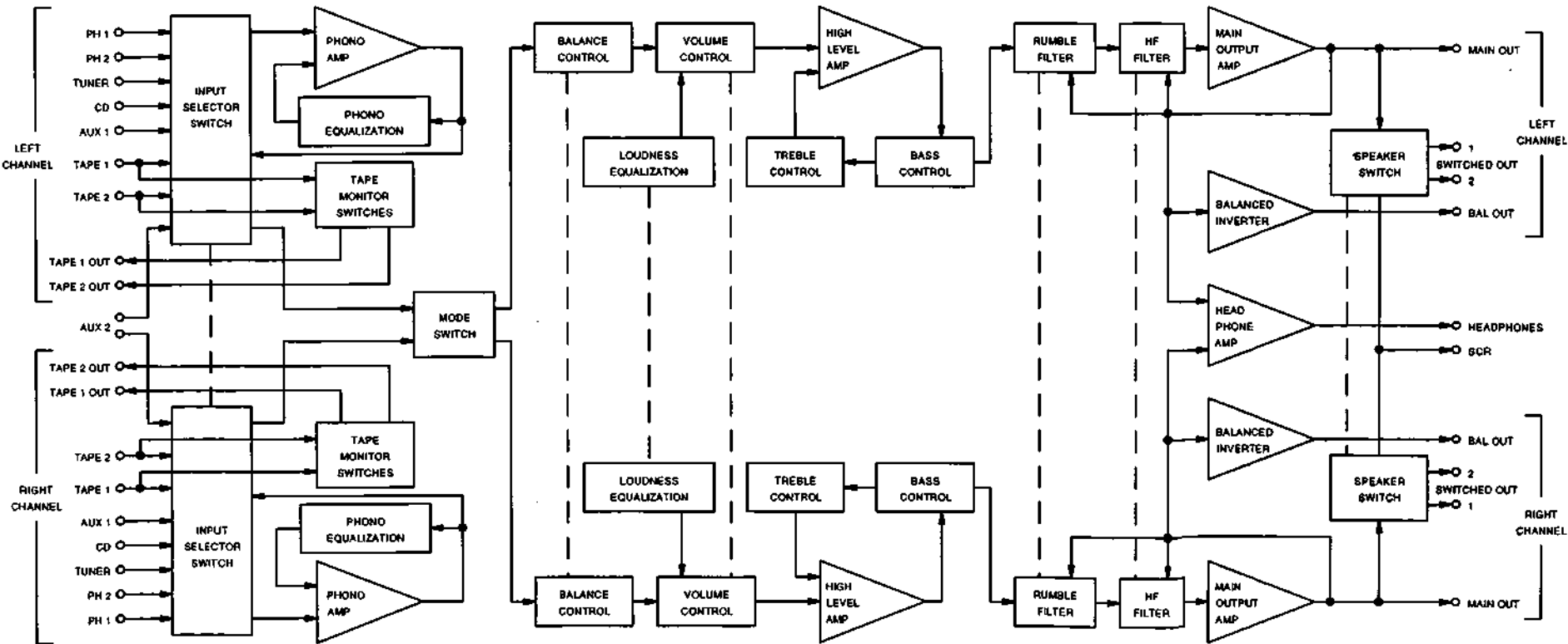


Fig. 3 Bottom view with cover removed

# Block Diagram

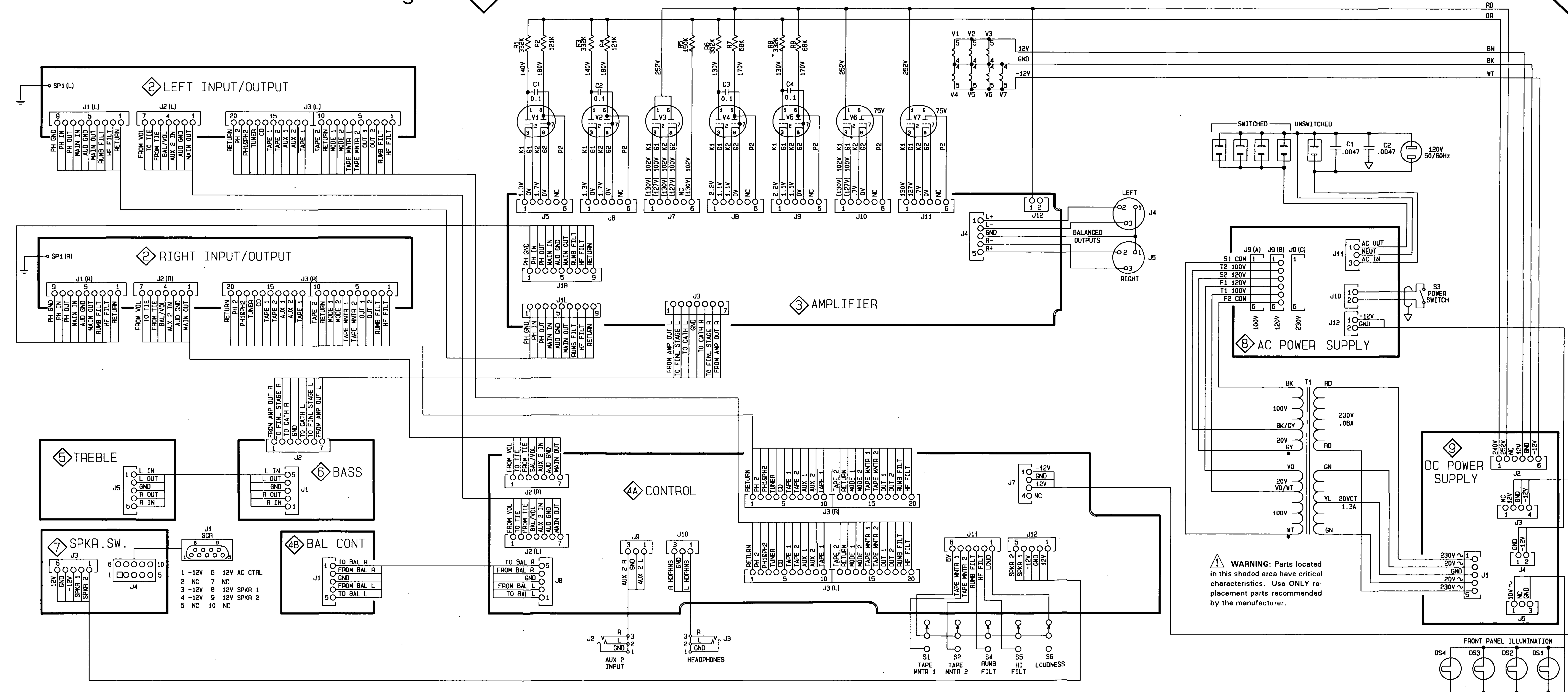


## INTERCONNECTION PARTS LIST

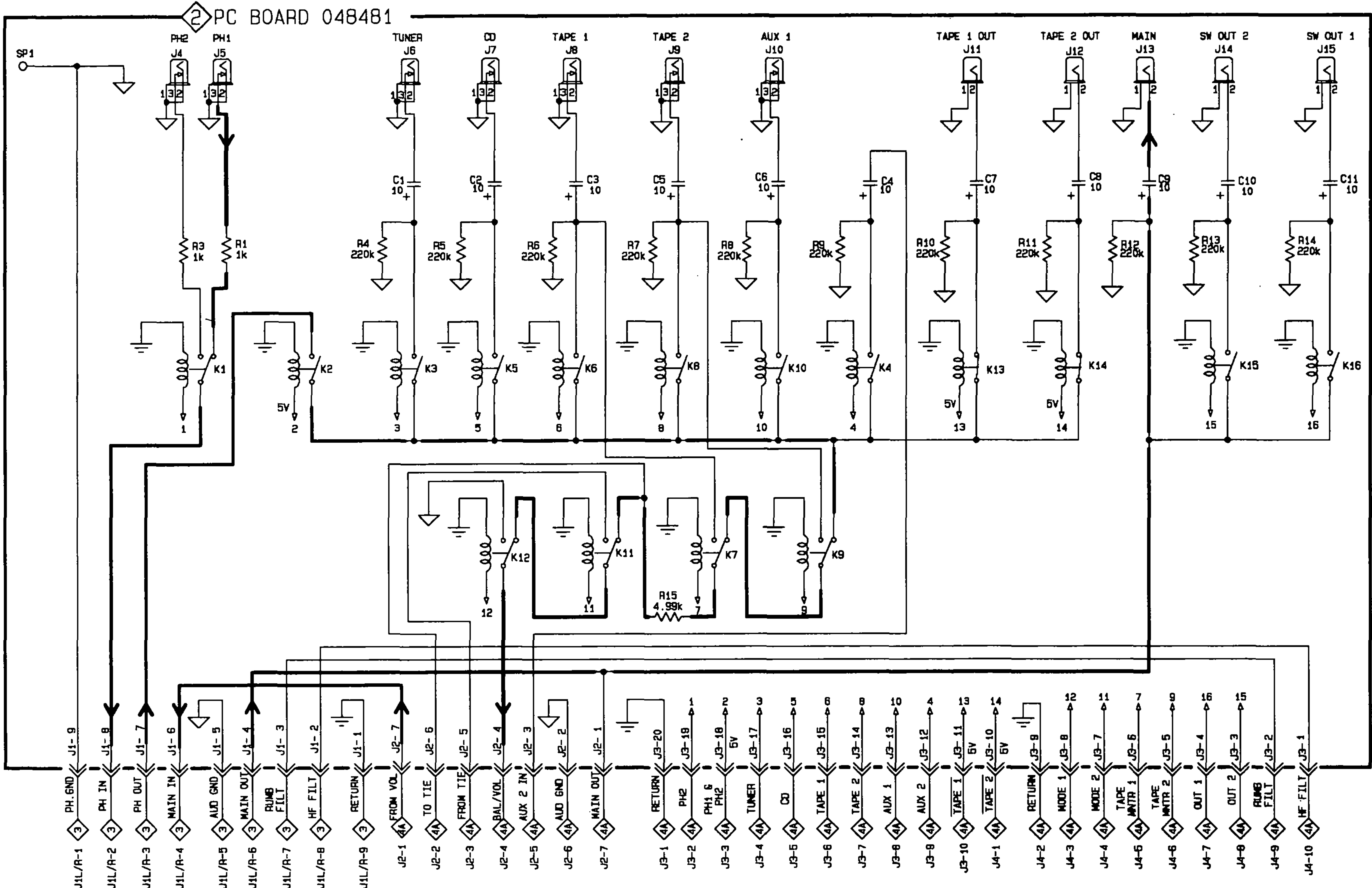
Symbol	Part	Description
<b>CAPACITORS</b>		
C1,C2	061276	DISC CAP, .0047uF, 400VAC
<b>JACKS</b>		
J2,J3	117563	Phone Jack
J4,J5	117437	XLR Connector, Male
<b>LIGHTING DEVICES</b>		
DS1,DS2	058138	Lamp Fuse Style
DS3,DS4	058137	Lamp Disc Indicator
<b>SWITCHES</b>		
S1-S6	148068	Slide Switch (SPDT)
<b>TRANSFORMERS</b>		
T1	159248	Power Transformer

# Interconnect on Diagram 1

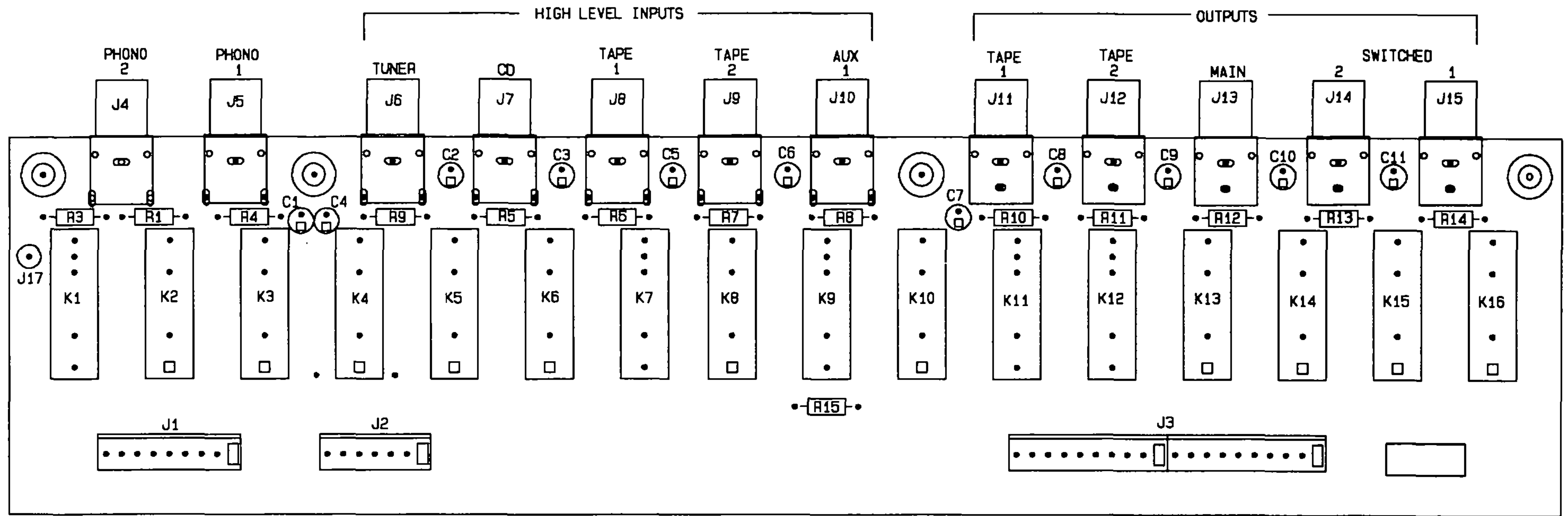
1



2 Input/Output Left and Right

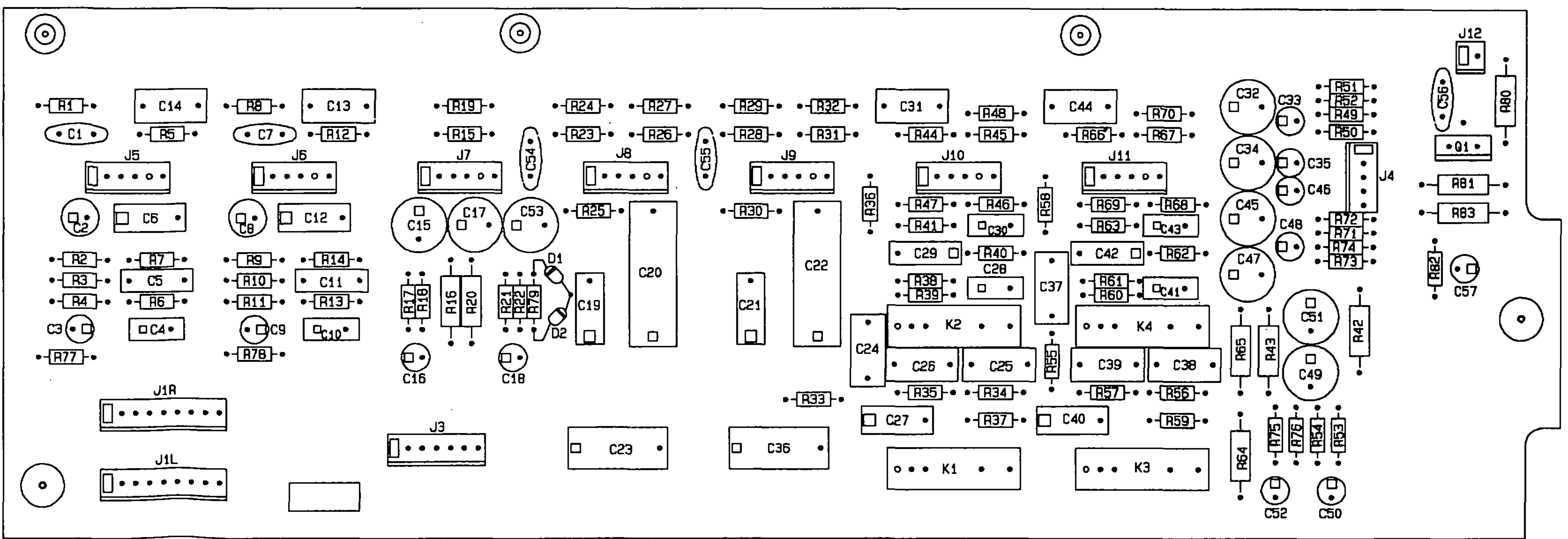


2



LEFT INPUT / OUTPUTS PCB 04 481			RIGHT INPUT / OUTPUTS PCB 0 84 6			AMPLIFIER PCB 04 474		
IN UT OUT UT			PAR S I T			PAR S I T		
Sy b l	at	D s i t n				S m b l	at	D t
RE AYS						RE A S		
K1 K K9	87 56	F 1C 5 DC R d				K1 K4	87 56	F 1C 5V C R d
K11 12		H 33 1 05 0						E3 2 C0 00
K2 K6 8	8 050	SP T VDC R d				DOD S		
K10 13 K 6		H 33 1 04 0				D1 D2	70 02	Z 5 V % 4 0 W
						TR NSS ORS		
						Q1	1 2 48	PN 30 V SC 7 0D E

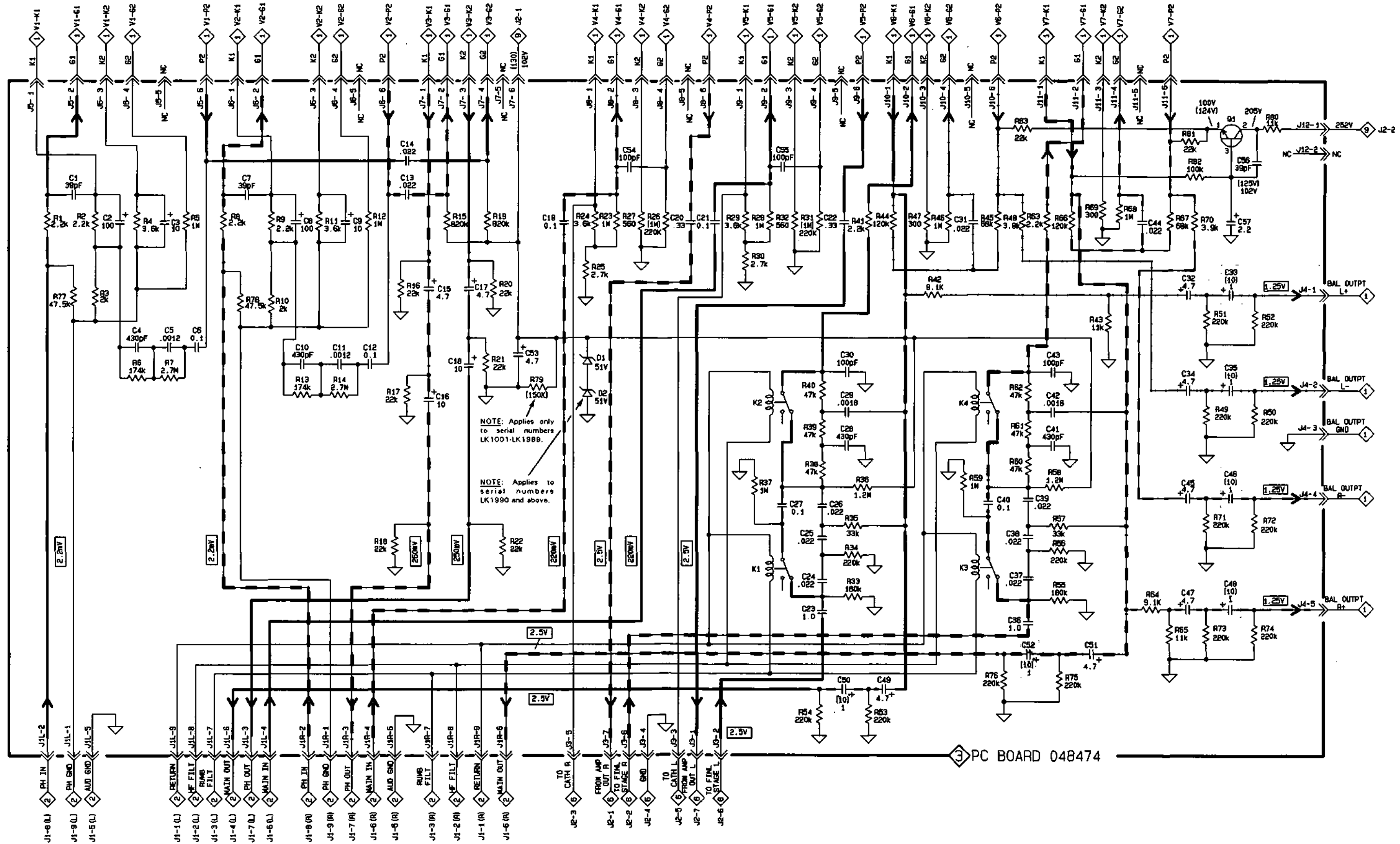
3



AMPLIFIER PCB 04 474

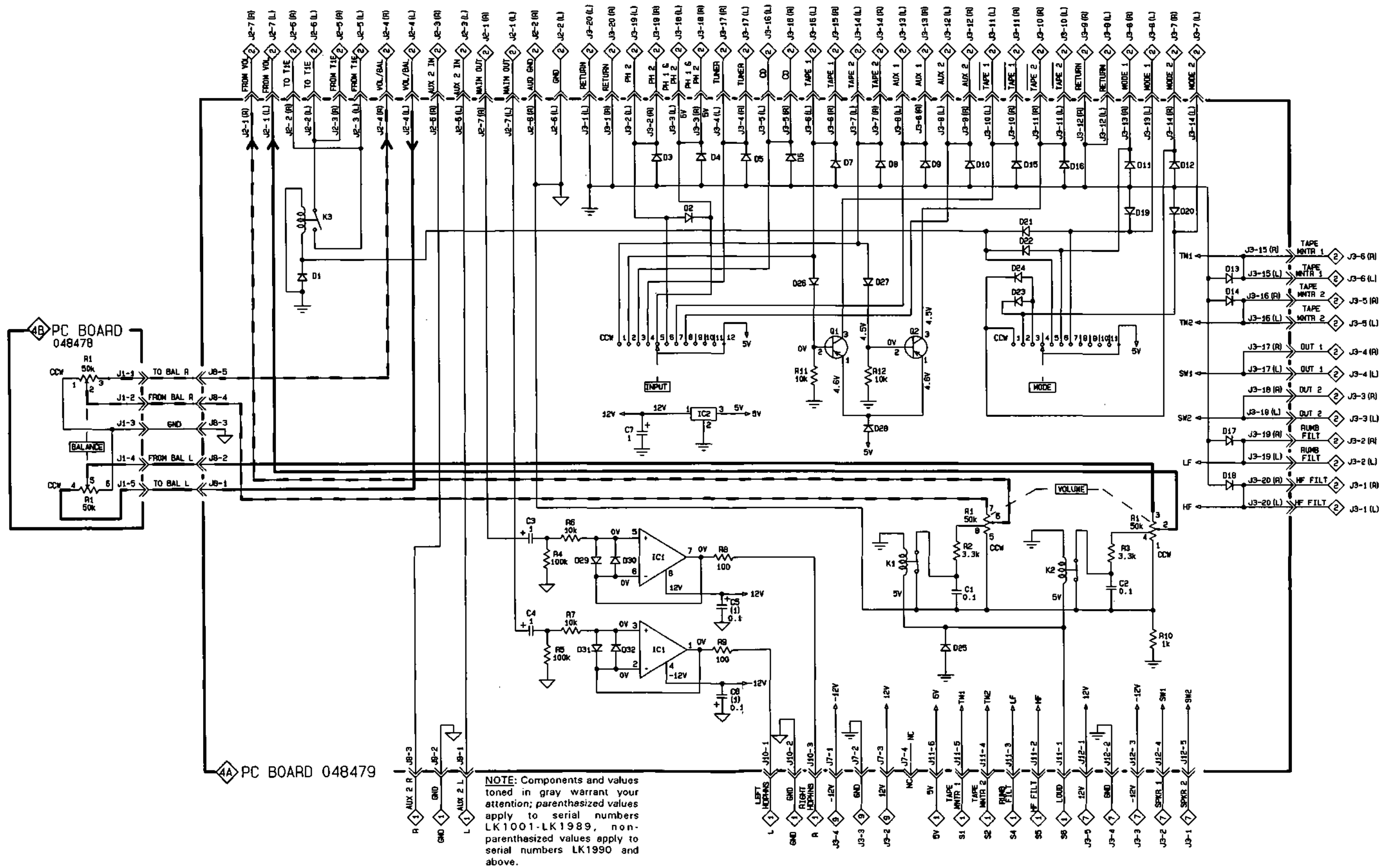
NOTE: Components and values  
toned in gray warrant your  
attention; parenthesized values  
apply to serial numbers  
LK1001-LK1989. non-  
parenthesized values apply to  
serial numbers LK1990 and  
above.

# Amplifier



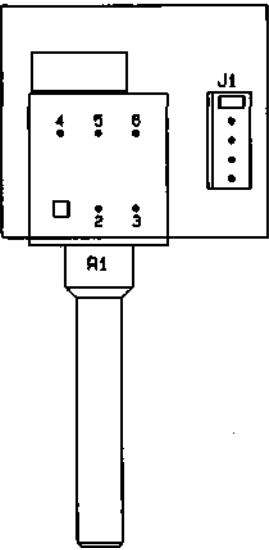


# 4 Control and Balance Control





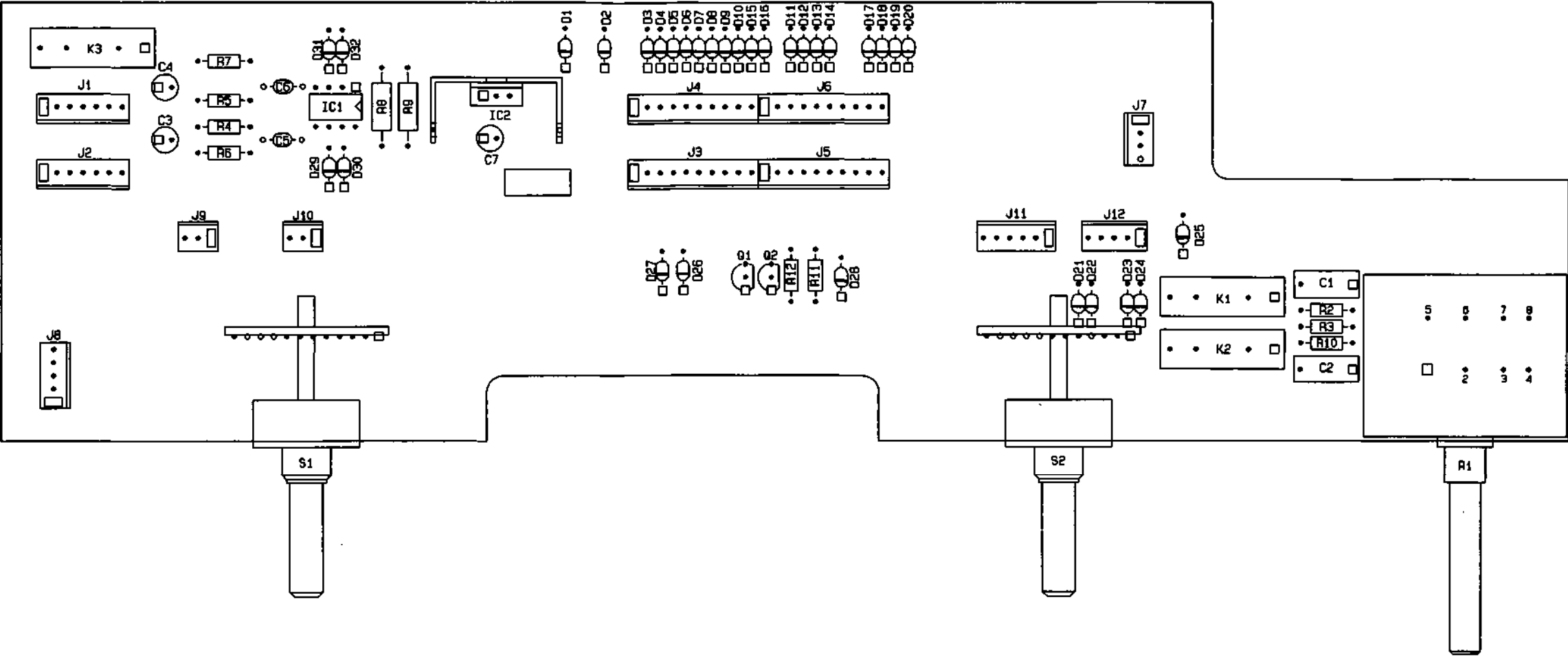
# Control and Balance Control 4



BALANCE CONTROL  
PCB 048478

BALANCE CONTROL  
PARTS LIST

Symbol	Part	Description
RESISTORS and POTENTIOMETERS		
R1	134475	Balance Control

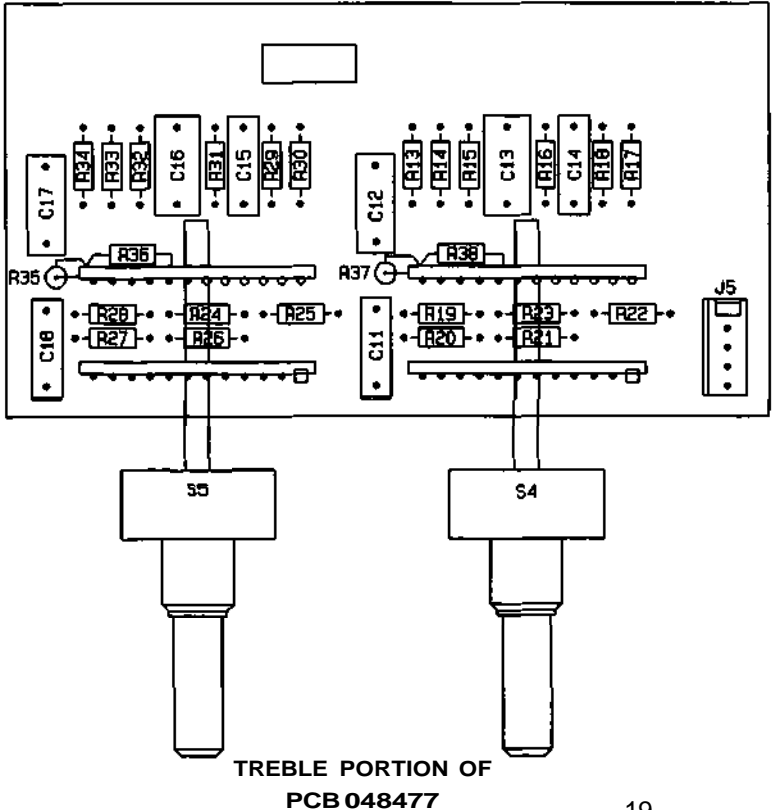
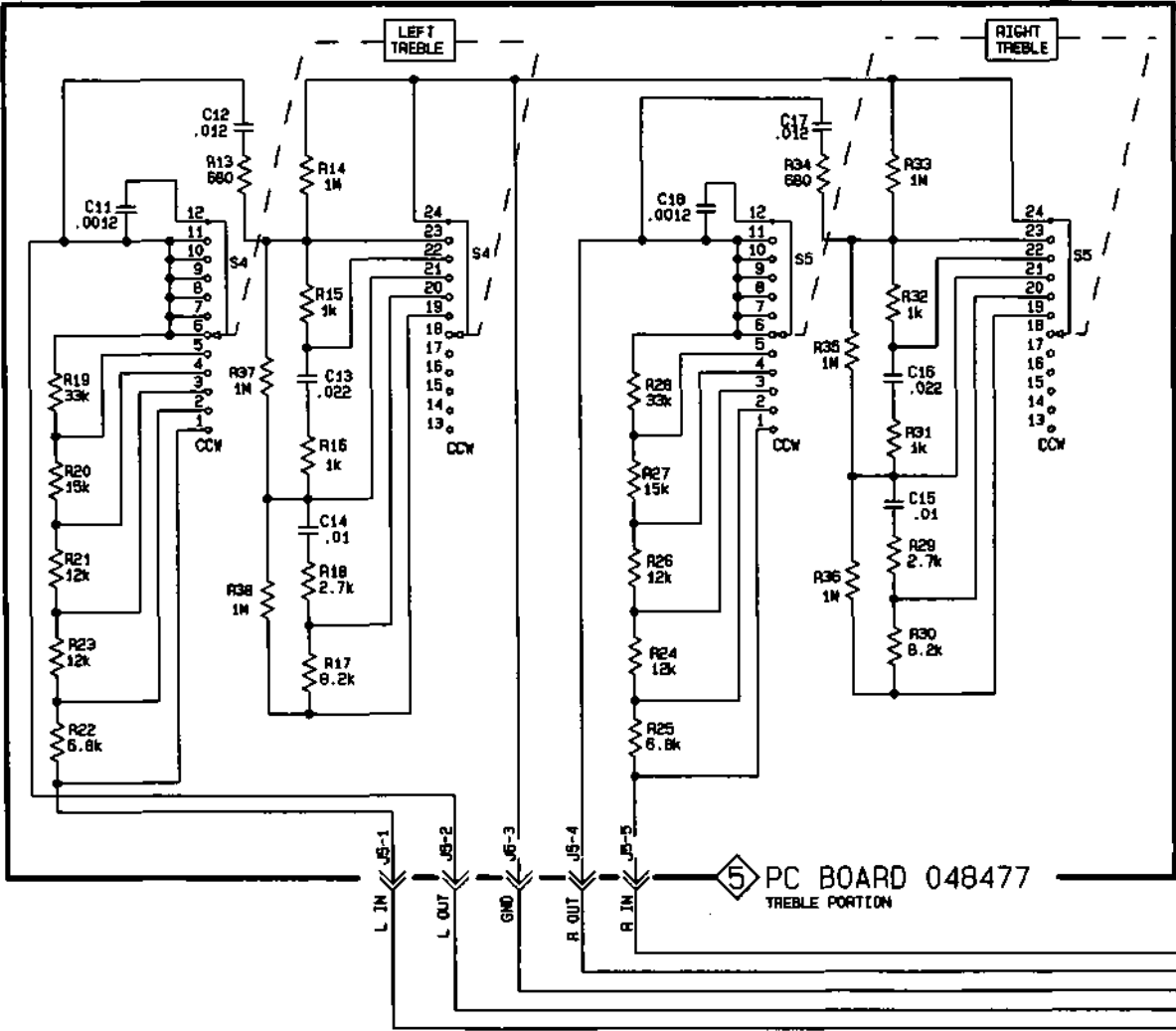


CONTROL PCB 048479

CONTROL  
PARTS LIST

Symbol	Part	Description
DIODES		
D1-D32	070047	SIG, 75V, 150mA, 1N4148
INTEGRATED CIRCUITS		
IC1	133189	Dual Op-Amp. MC33178P
IC2	133108	5V Regulator MC7805CT
RELAYS		
K1-K3	087050	SPST, 5VDC, Reed, HE3321A0400
RESISTORS		
R1	134476	Volume Control
SWITCHES		
S1	146238	Input Switch
S2	146239	Mode Switch
TRANSISTORS		
Q1,Q2	132224	PNP, MPS4126

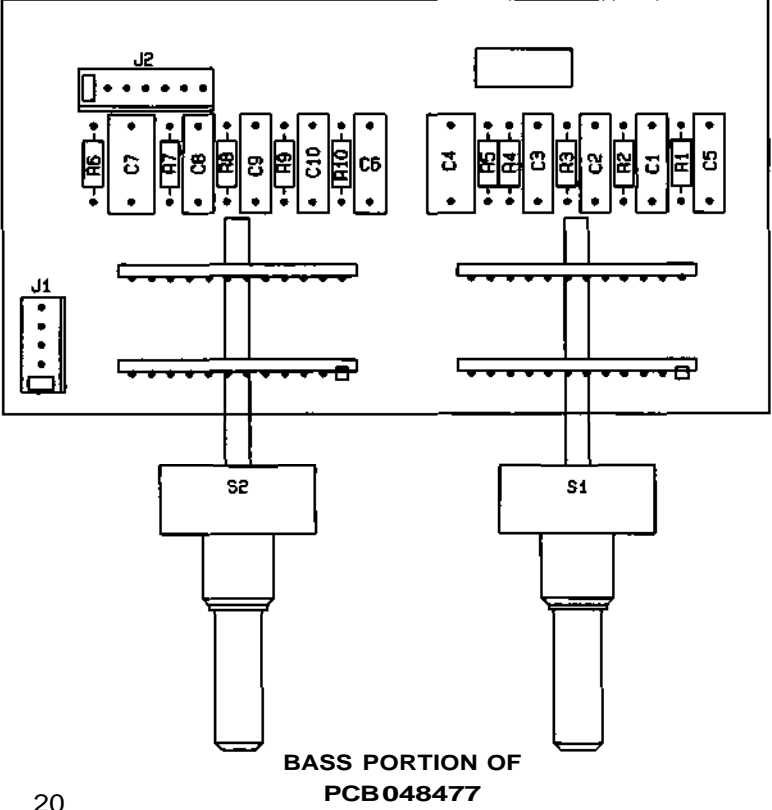
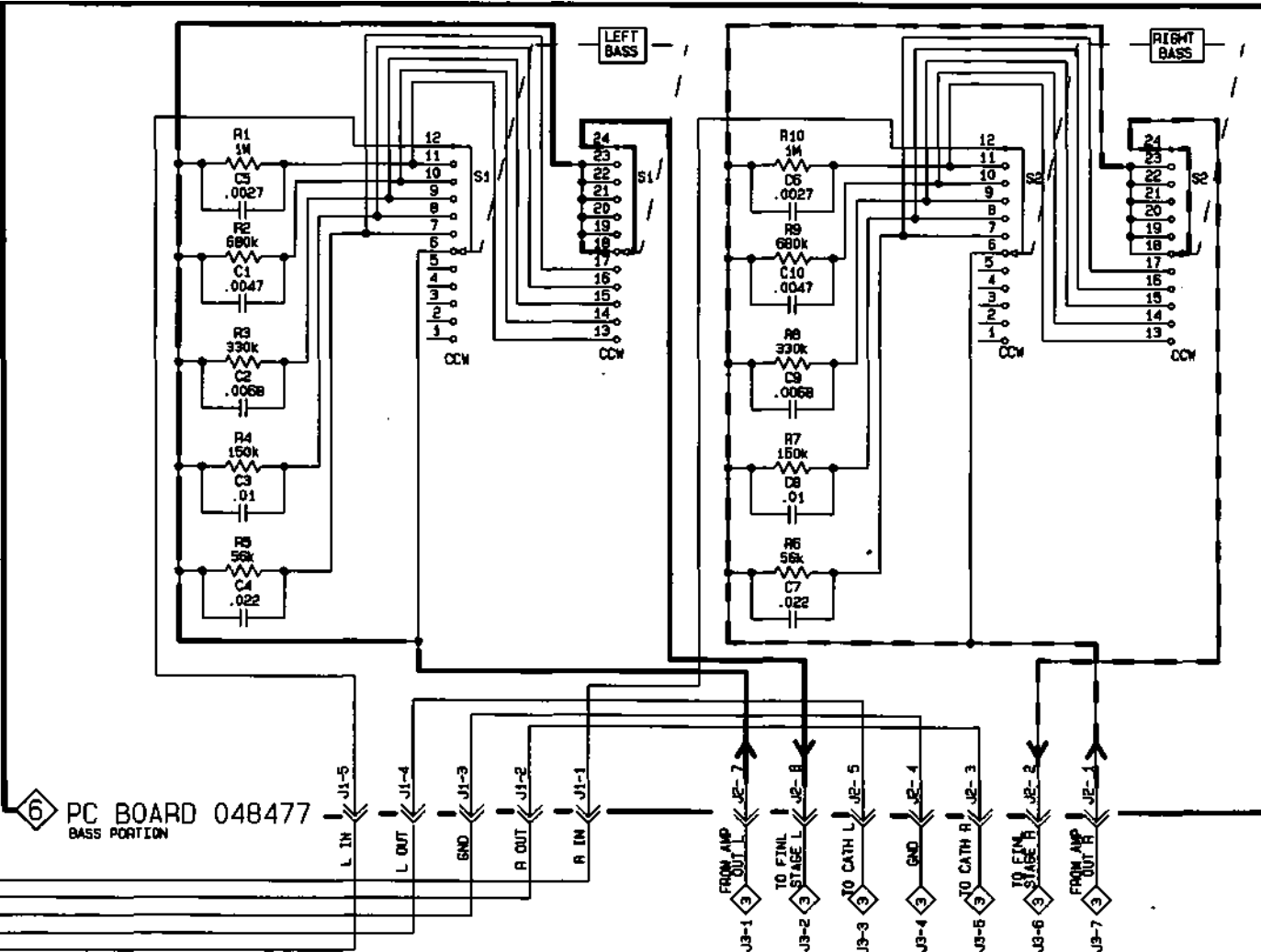
5 Treble



TREBLE PARTS LIST

Symbol	Part	Description
SWITCHES S4,S5	146240	Bass/Treble Switch

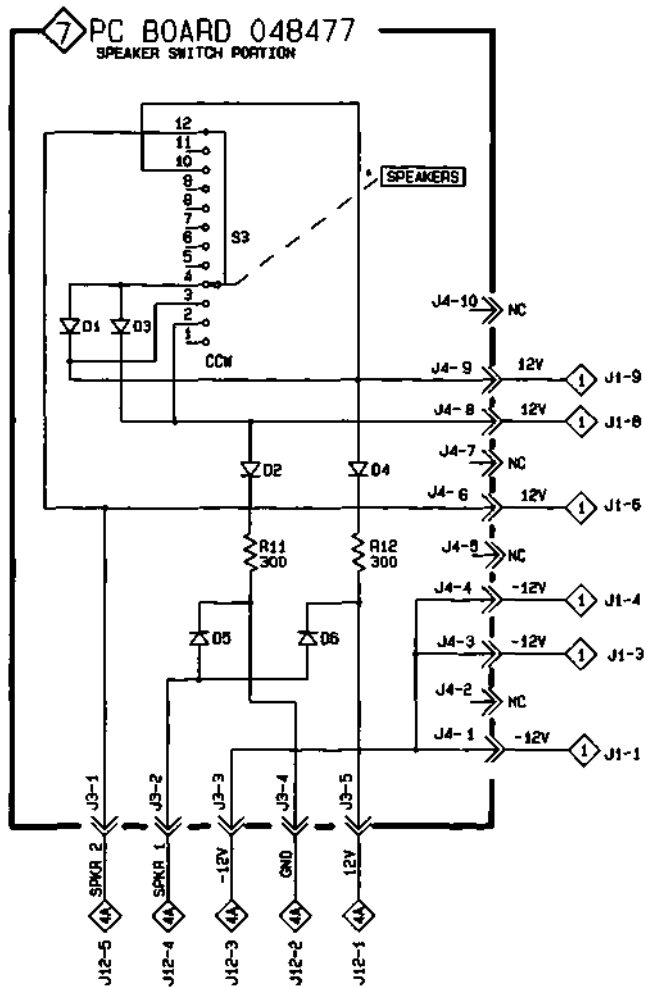
6 Bass



BASS PARTS LIST

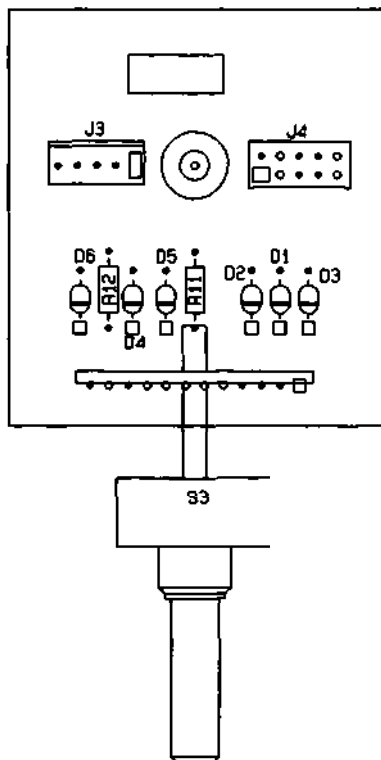
Symbol	Part	Description
SWITCHES S1,S2	146240	Bass/Treble Switch

# Speaker Switch 7



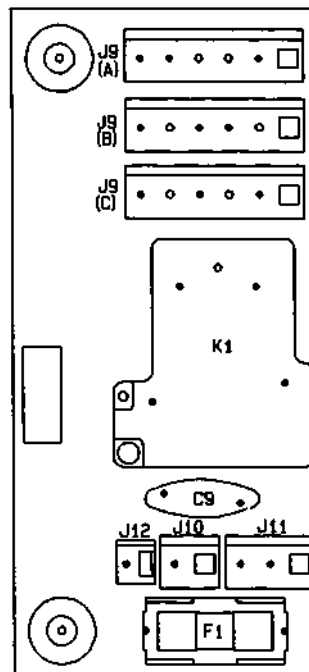
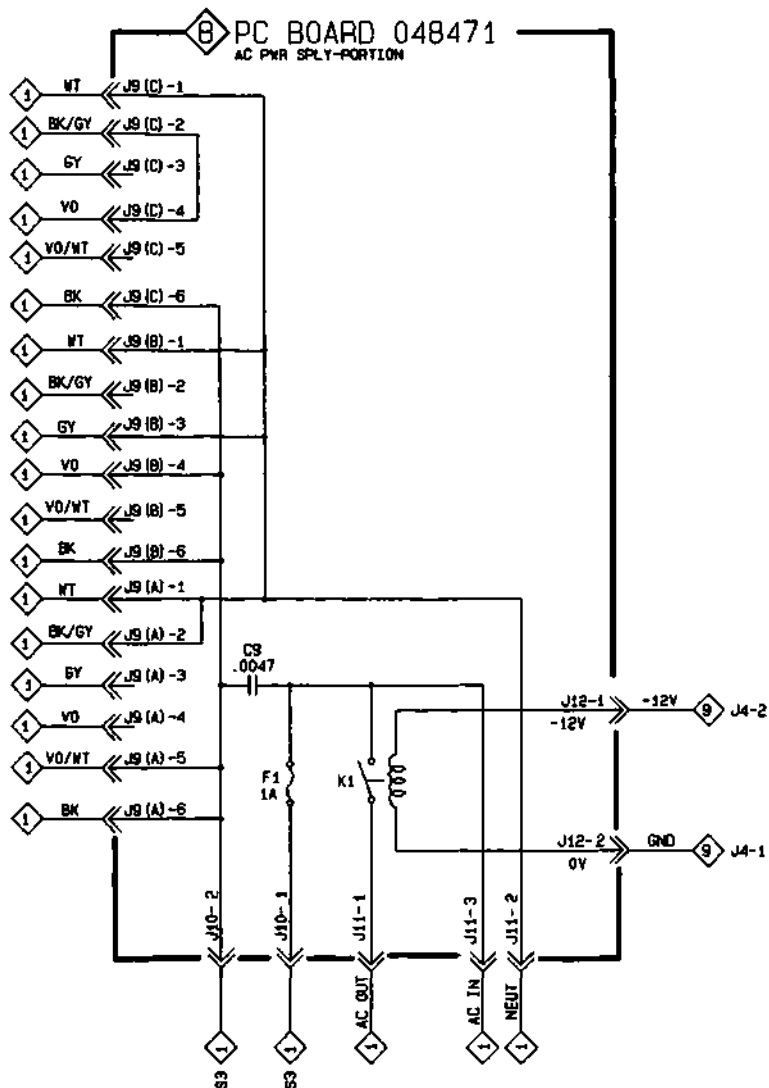
## SPEAKER SWITCH PARTS LIST

Symbol	Part	Description
DIODES D1-D6	070047	SIG DIODE 1N4148
SWITCHES S3	146241	Speaker Switch



SPEAKER SWITCH  
PORTION OF  
PCB 048477

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

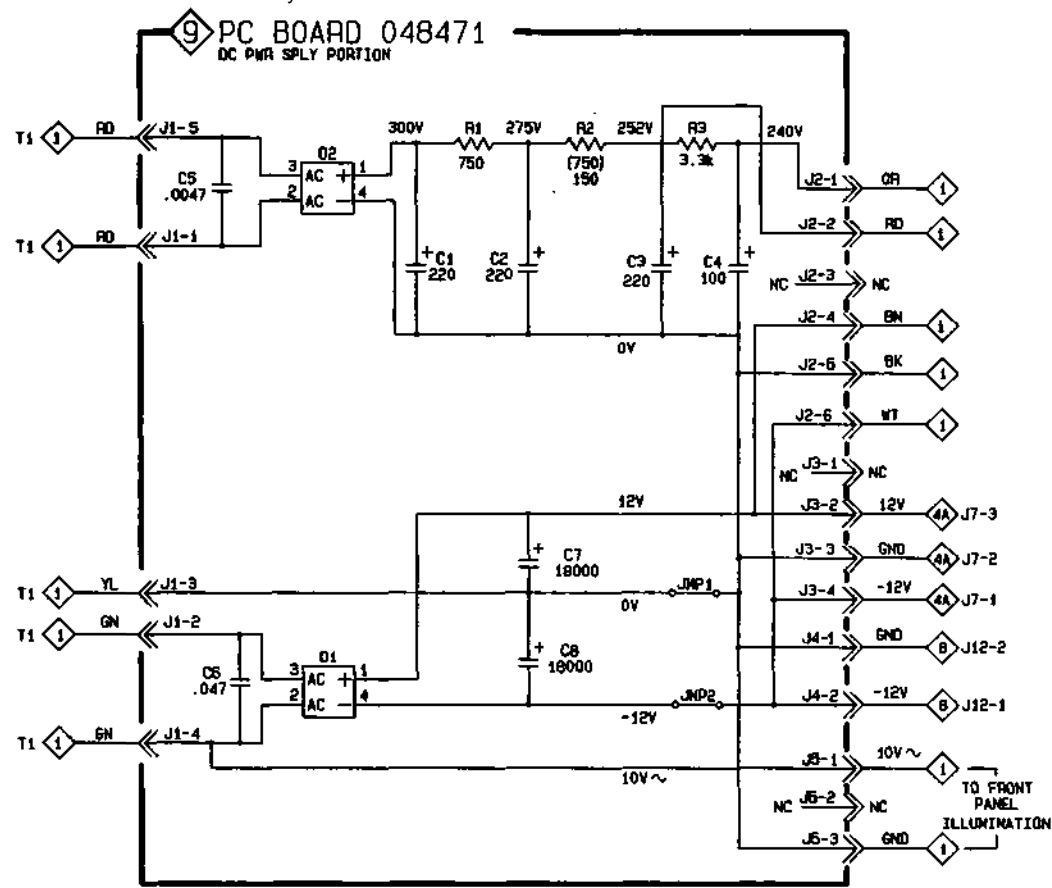


**AC POWER SUPPLY  
PORTION OF PCB 048471**

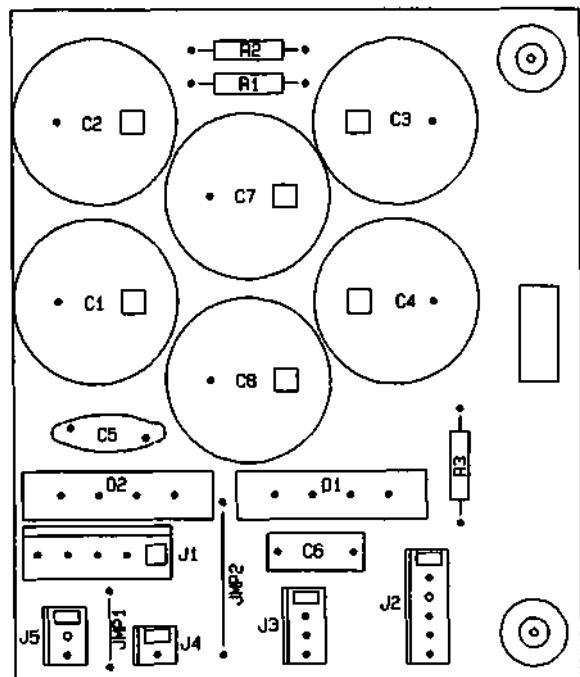
### AC POWER SUPPLY PARTSLIST

Symbol	Part	Description
<b>CAPACITOR</b>		
C9	061276	Disc Cap, .0047uF, 400VAC
<b>FUSES</b>		
F1	089081	Fuse 1A, 2AG
<b>RELAYS</b>		
K1	087054	SPST, 12VDC

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



**NOTE:** Components and values toned in gray warrant your attention; parenthasized values apply to serial numbers LK1001-LK1989, non-parenthasized values apply to serial numbers LK1990 and above.



DC POWER SUPPLY  
PORTION OF PCB 048471

## DC POWER SUPPLY PARTS LIST

Symbol	Part	Description
<b>DIODES</b>		
D1.D2	070044	BRIDGE, 400V, 2A

# Repacking Instructions

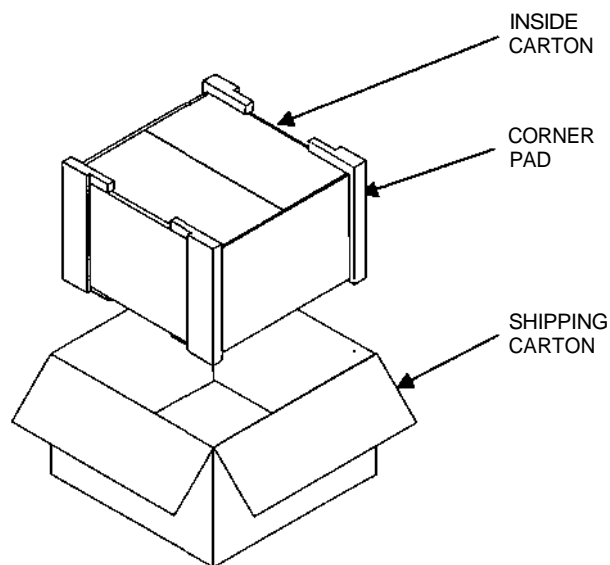
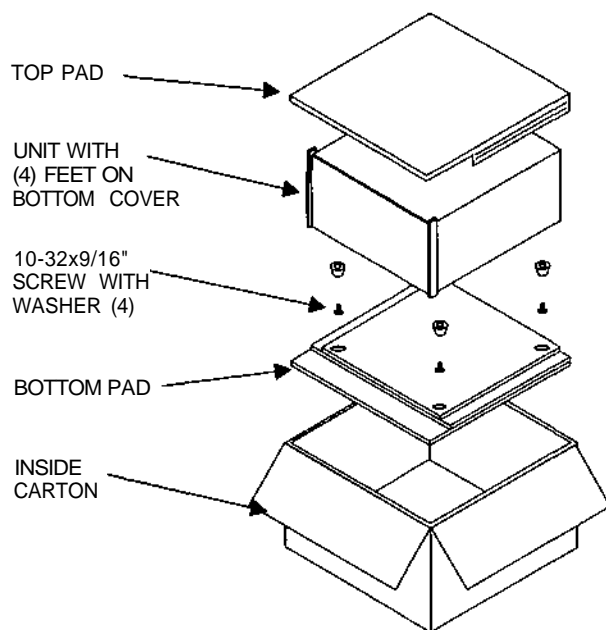
In the event it is necessary to repack the unit for shipment, the unit must be packed exactly as shown below.

*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. 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	033870	Shipping carton only
2	033884	Corner pad
1	033883	Inside carton only
1	033885	Top pad
1	033886	Bottom pad
4	017156	Plastic foot
4	100160	#10-32 x 9/16" Screw
4	104080	#10 Flat washer
1	033915	Shipping carton complete with all the above parts



**McIntosh**  
C22 PREAMPLIFIER