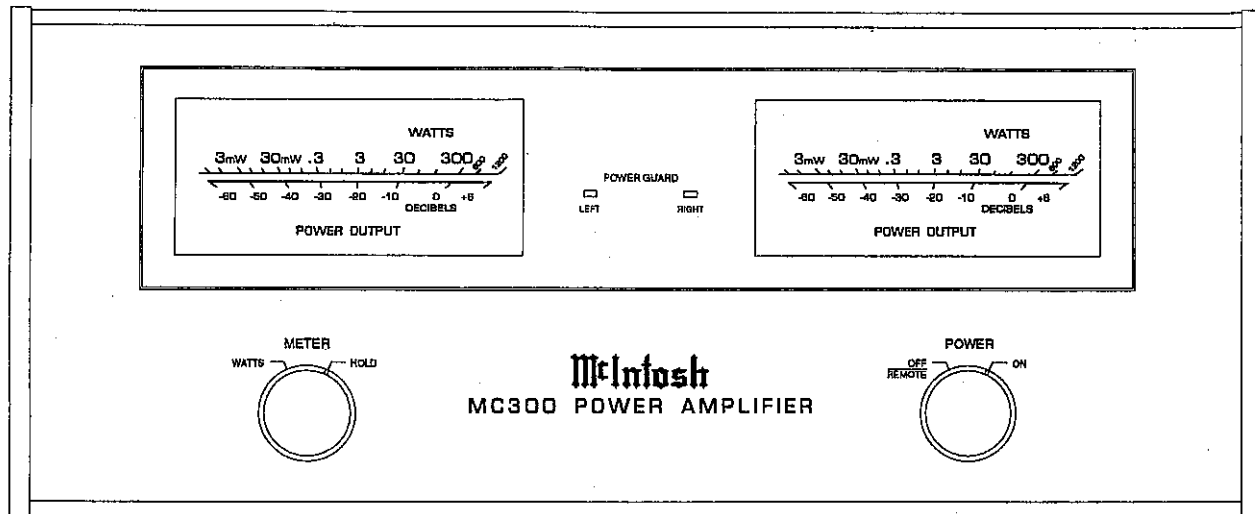


# MC300

## POWER AMPLIFIER



### CONTENTS

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◆ Left Front Panel Illumination	13		

# McIntosh

## Service Manual

# Performance Specifications

## STEREO POWER OUTPUT

300 watts into 8, 4, or 2 ohm loads is the minimum sinewave continuous average power output per channel from 20Hz to 20,000Hz with both channels operating. The output RMS voltage is:

49.0 across 8 ohms  
34.6 across 4 ohms  
24.5 across 2 ohms

## MONO-BRIDGE POWER OUTPUT

600 watts into a 16, 8, or 4 ohm load is the minimum sinewave continuous average power output from 20Hz to 20,000Hz. The output RMS voltage is:

98.0 across 16 ohms  
69.3 across 8 ohms  
49.0 across 4 ohms

## MONO-PARALLEL POWER OUTPUT

600 watts into a 4, 2 or 1 ohm load is the minimum sinewave continuous average power output from 20Hz to 20,000Hz. The output RMS voltage is:

49.0 across 4 ohms  
34.6 across 2 ohms  
24.5 across 1 ohm

## OUTPUT LOAD IMPEDANCE

### STEREO

8, 4 or 2 ohms by connecting to the proper output terminals.

### MONO

16, 8, 4, 2 or 1 ohms by connecting to proper output terminals.

## TOTAL HARMONIC DISTORTION

### STEREO

0.005% minimum harmonic distortion at any power level from 250 milliwatts to rated power per channel from 20Hz to 20,000Hz, both channels operating.

### MONO

0.005% maximum harmonic distortion at any power level from 250 milliwatts to rated power from 20Hz to 20,000Hz.

## INTERMODULATION DISTORTION

### STEREO

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

## MONO

0.005% maximum if instantaneous peak power output does not exceed twice the output rating for any combination of frequencies from 20Hz to 20,000Hz.

## FREQUENCY RESPONSE (at one watt output)

+0, -0.25dB from 20Hz to 20kHz  
+0, -3.0dB from 10Hz to 100kHz

## HUM AND NOISE (A-weighted)

105dB below rated output

## IHF DYNAMIC HEADROOM

1.9dB

## DAMPING FACTOR

Greater than 40

## INPUT IMPEDANCE

20,000 ohms Unbalanced  
40,000 ohms Balanced

## INPUT SENSITIVITY

1.4 with LEVEL Controls at maximum;  
2.5V sensitivity marked.

## POWER REQUIREMENTS

120VAC, 50/60Hz, 3.3 Amperes UL/CSA  
230VAC, 50/60Hz, 1.8 Amperes

## MECHANICAL INFORMATION

**Size:** 17-1/2 inches wide (44.5cm) by 7-1/16 inches high (17.9cm). Depth is 19-3/4 inches (50.17cm) including connectors. Knob clearance required in front of the mounting panel is 1-1/8 inches (2.9cm).

**Finish:** The front panel is a combination of glass and black anodized aluminum. The chassis is black.

**Weight:** 79 pounds (35.8 kg) net, 97 pounds (44 kg) in shipping carton.

# Rear Panel

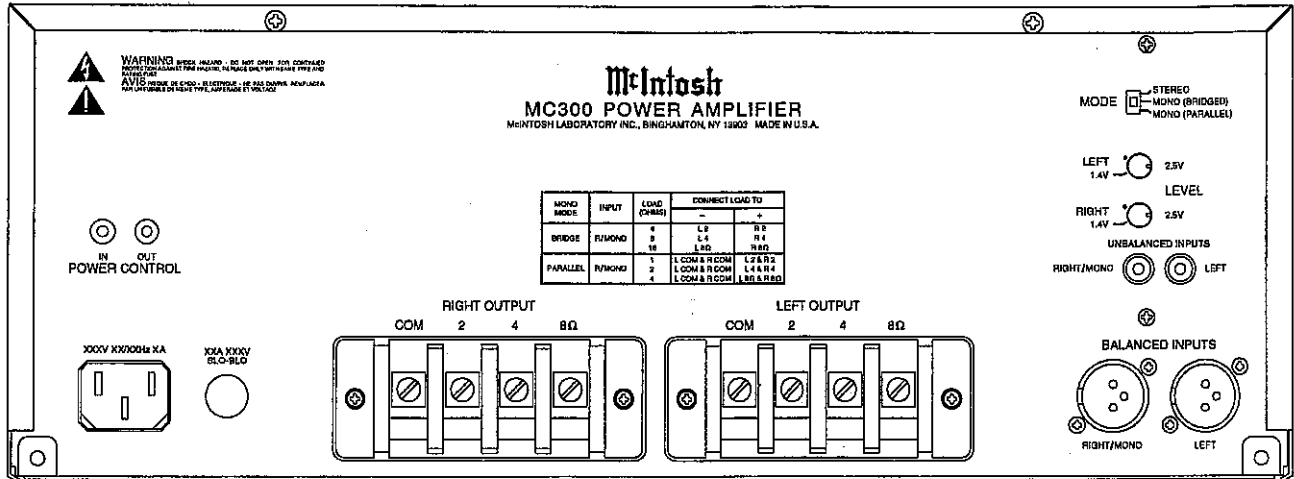



Fig. 1 - Rear view

## FRONT PANEL and TRIM PARTS LIST

Part	Description
018345	End Caps
018451	Bottom Panel Extrusion
018453	Top Panel Extrusion
048704	Front Panel, Complete
090247	Control Knob Serial Nos. LN1001 thru LN1325
090246	Control Knob Serial Nos. LN1326 and Above
104017	Knob Felt Washer, 3/4" Dia

## Notes

- The heavy lines on the schematics denote the primary signal path.
- Unless otherwise noted, all voltages indicated on the schematics are measured under the following conditions:
  - AC input at 120 volts, 50/60Hz.
  - All voltages are  $\pm 10\%$  with respect to ground. A high impedance (10 megohm) voltmeter must be used.
- Unless otherwise specified:
  - Resistor values are in ohms.
  - Capacitor values are in microfarads ( $\mu\text{F}$ ).
  - Inductor values are in microhenries ( $\mu\text{H}$ ).
- The voltages enclosed in a box are signal voltages that are measured with a 1.4V, 1kHz signal connected to both channels at the input jacks.
- On PC Board Drawings, Square Pad Indicates:
  - Polarized Capacitors - Positive
  - Diode - Cathode
  - Others - Pin 1
- WARNING:** Parts marked with the symbol  have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.

Front panel controls are set at:  
 POWER ..... ON  
 METER ..... WATTS

# Section Locations

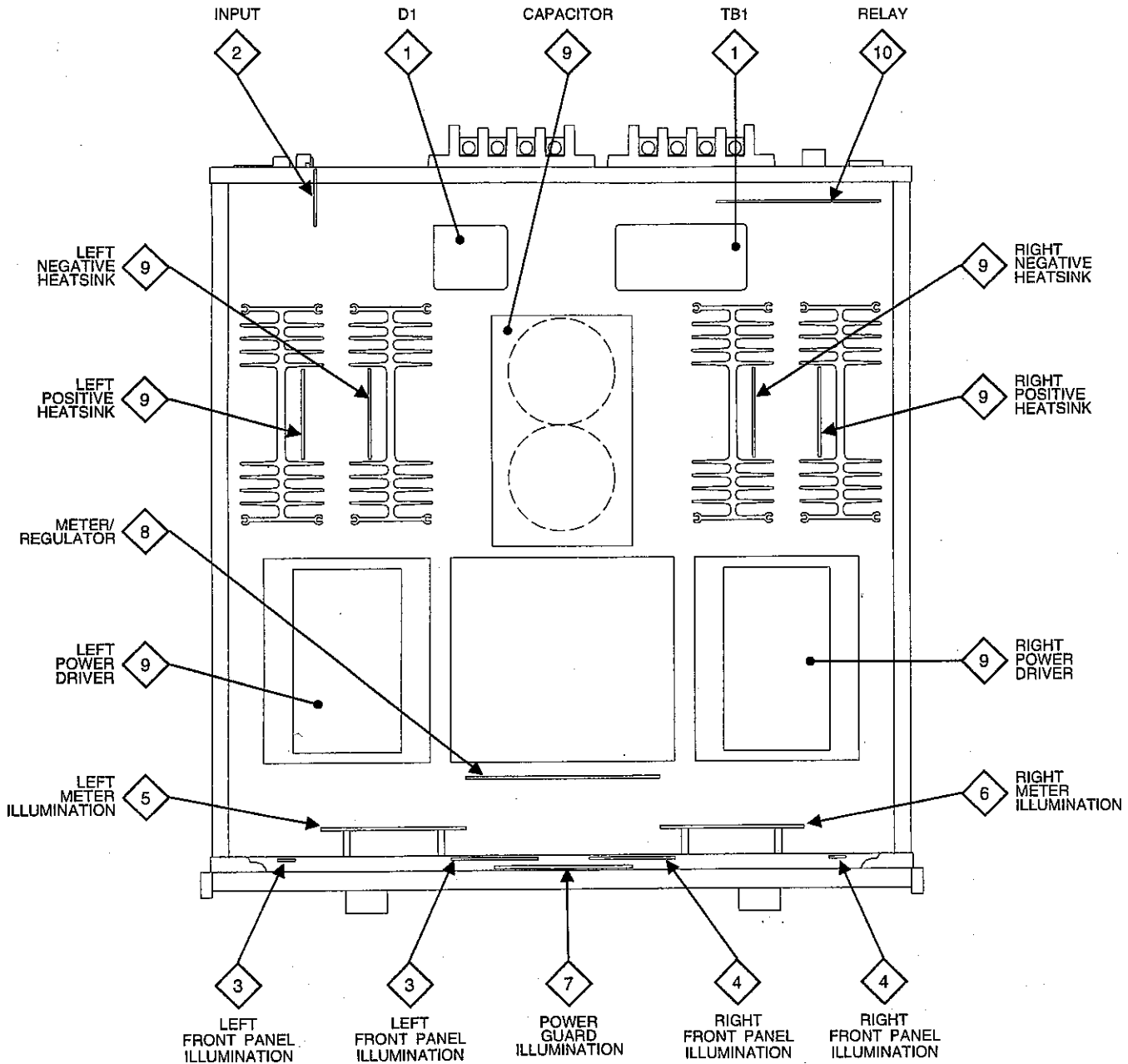
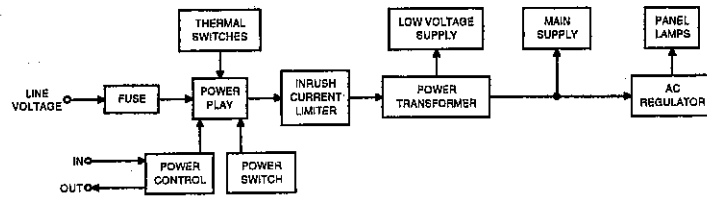
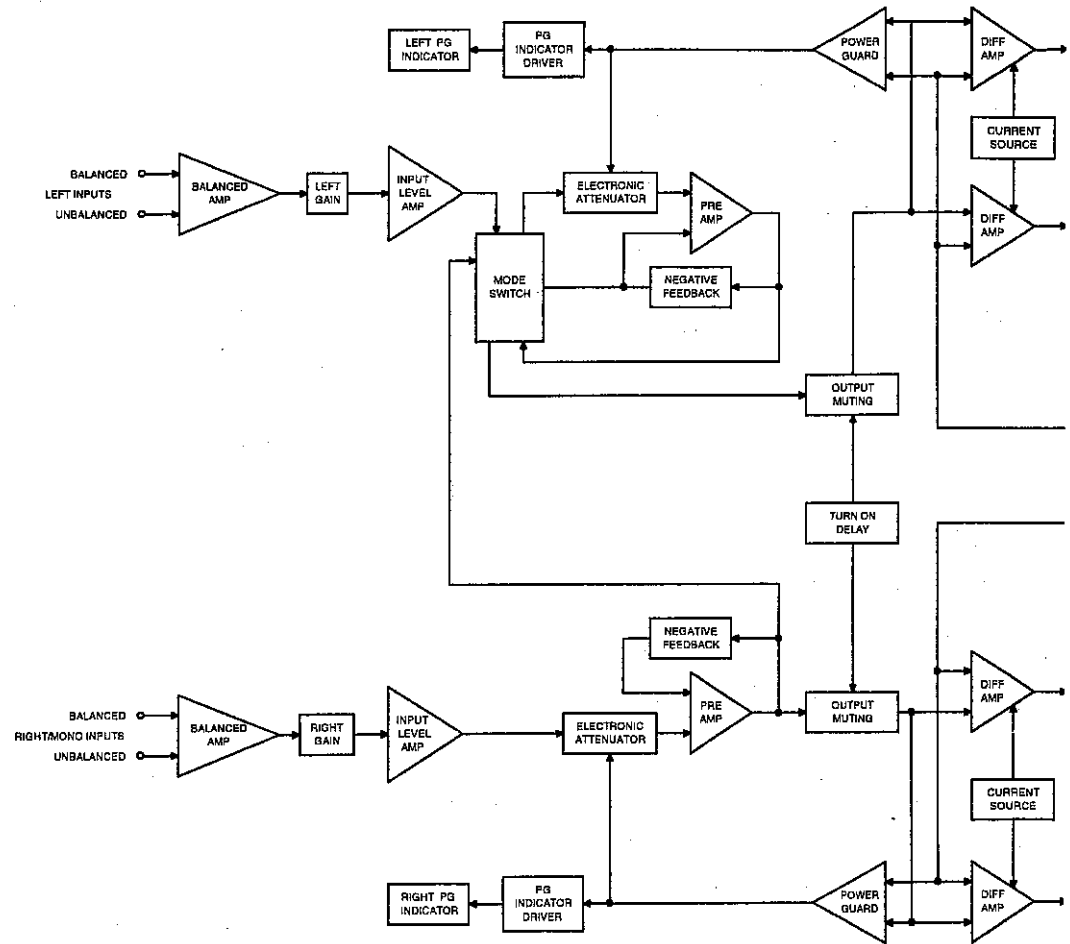
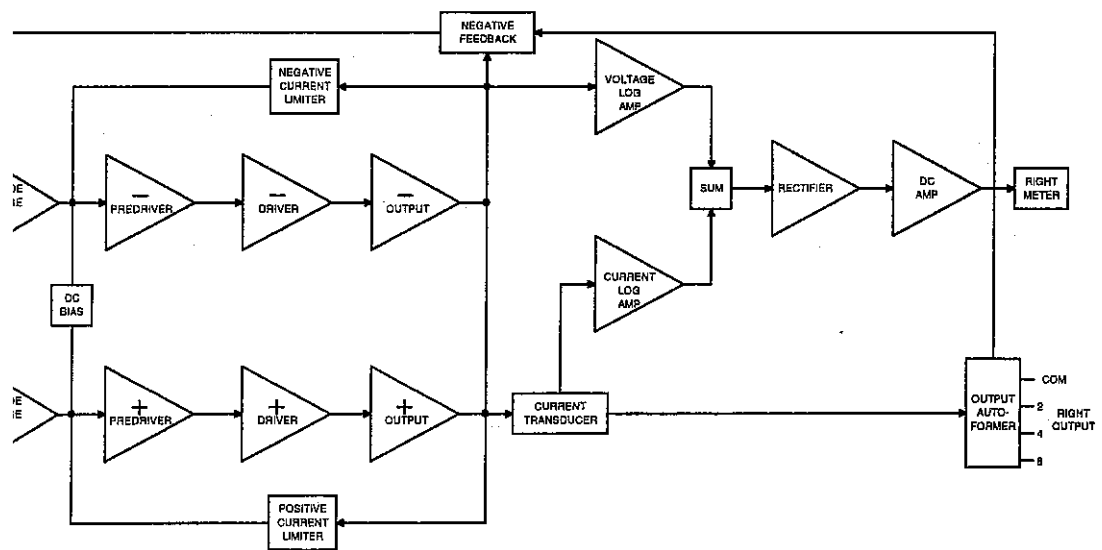
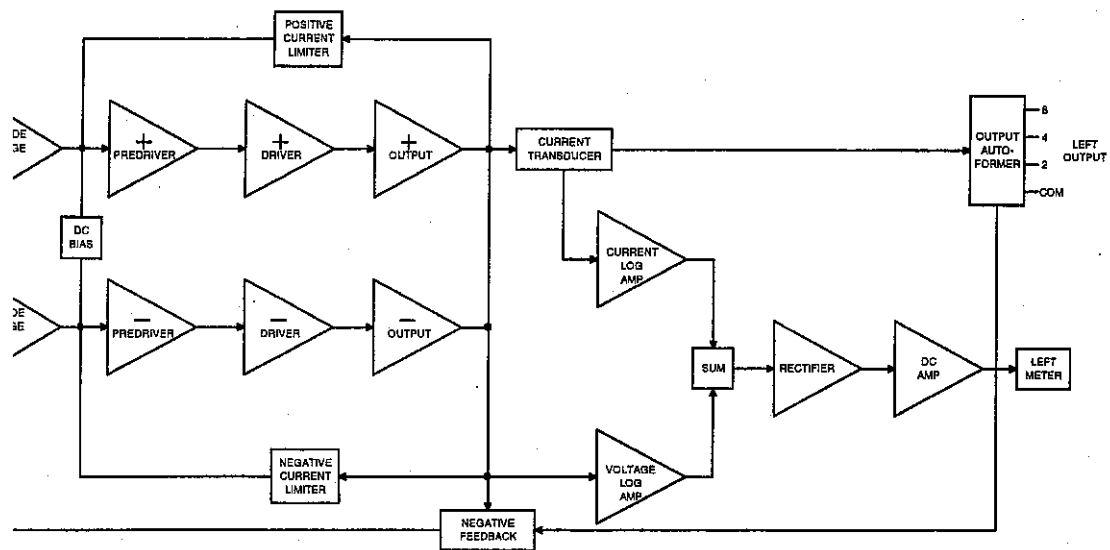


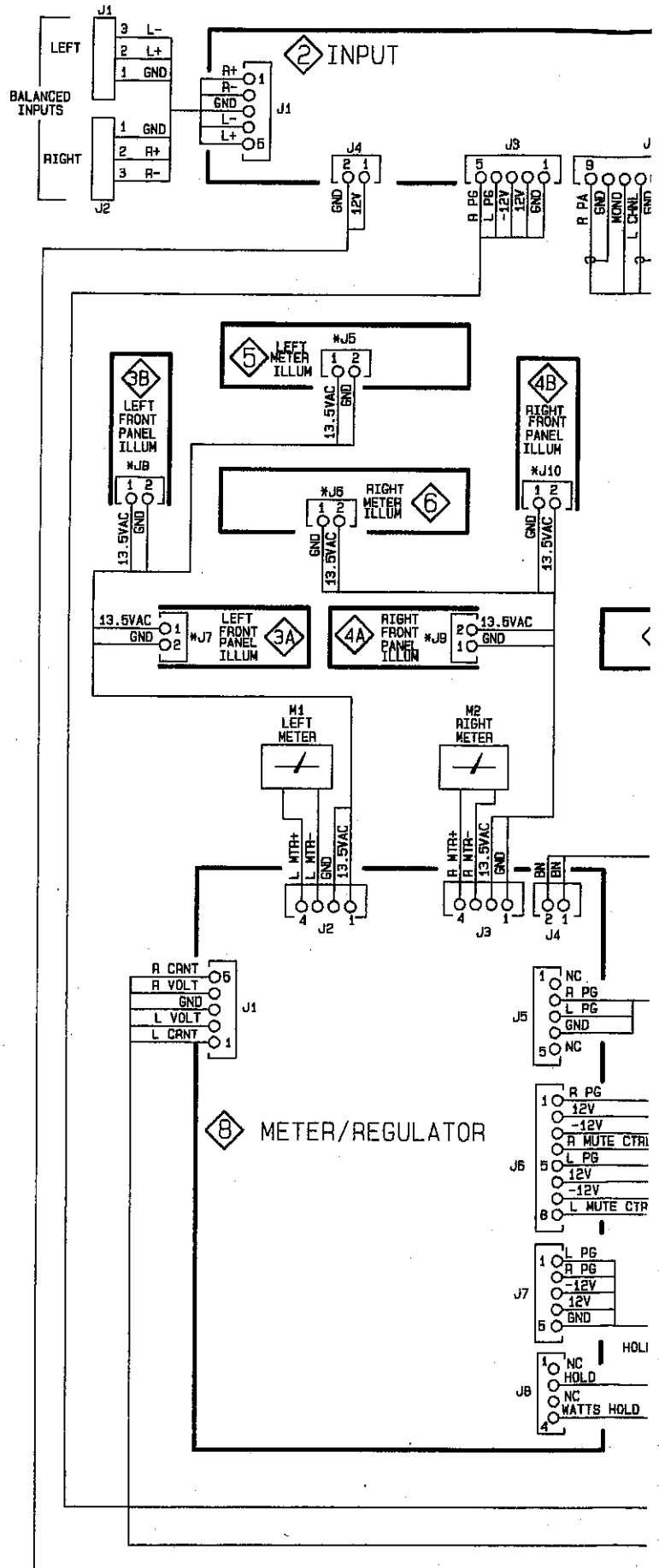
Fig. 2 - Top view with cover removed

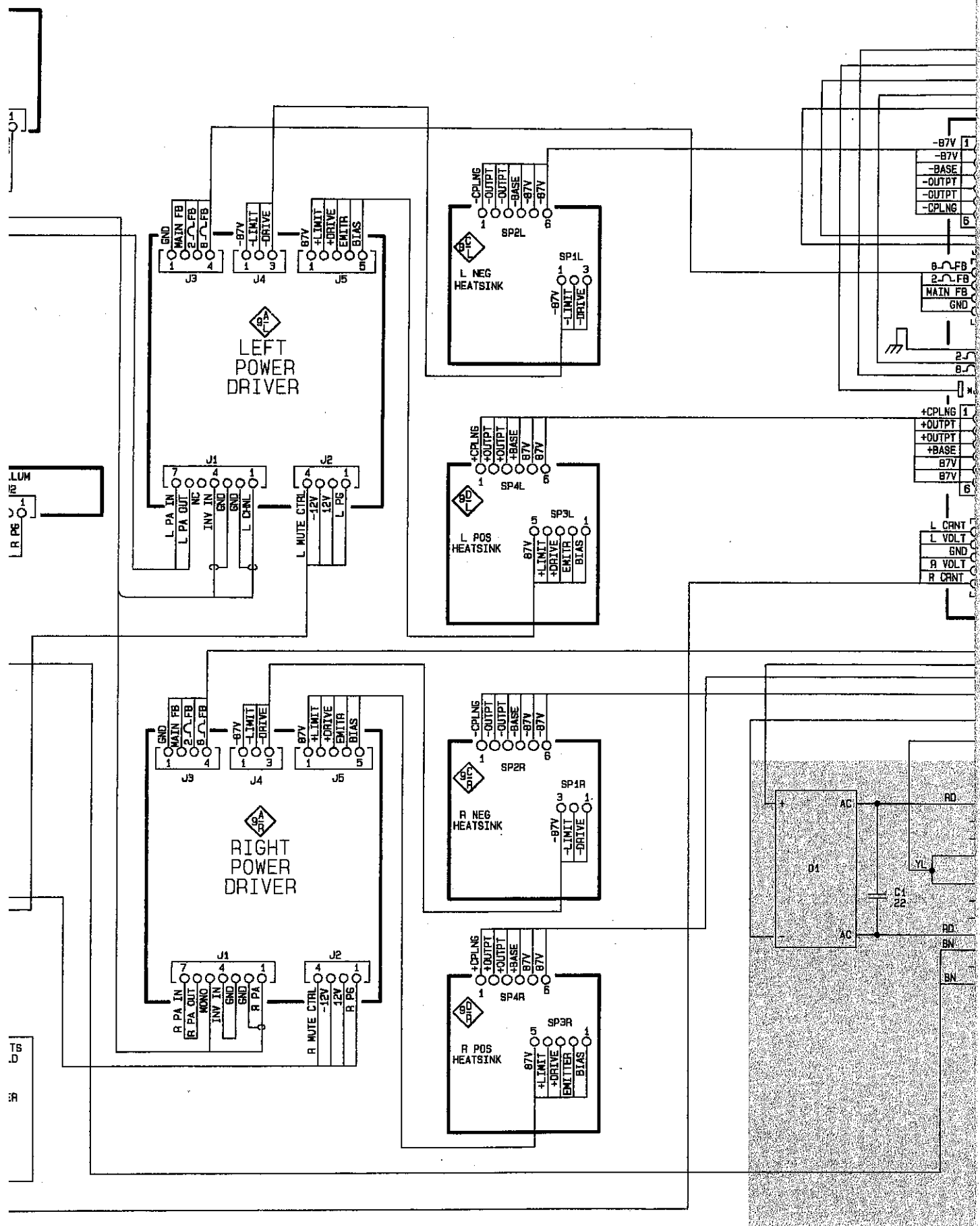
# Block Diagram





# 1 Interconnection Diagram







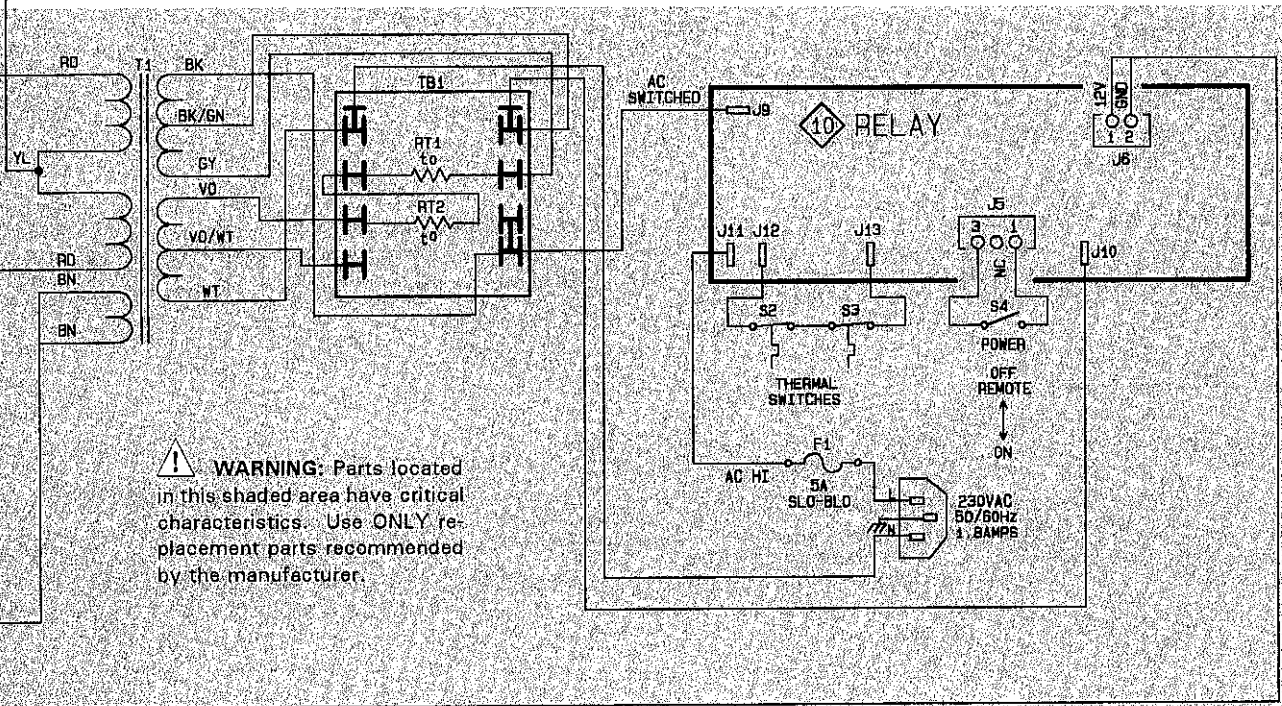




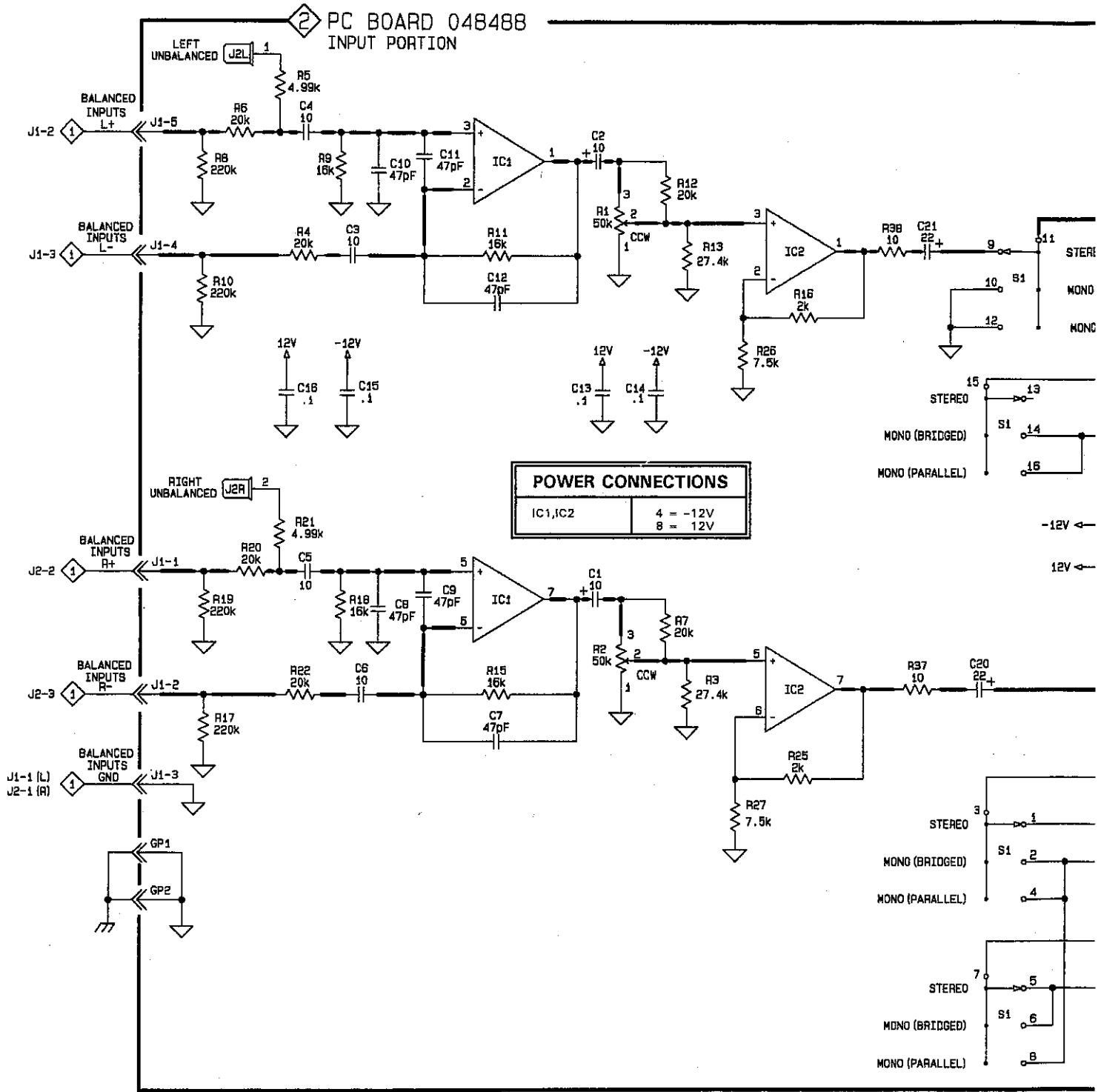
### INTERCONNECTION PARTS LIST

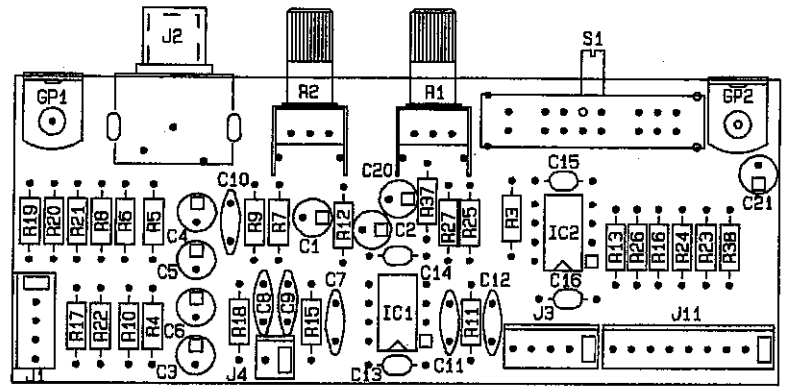
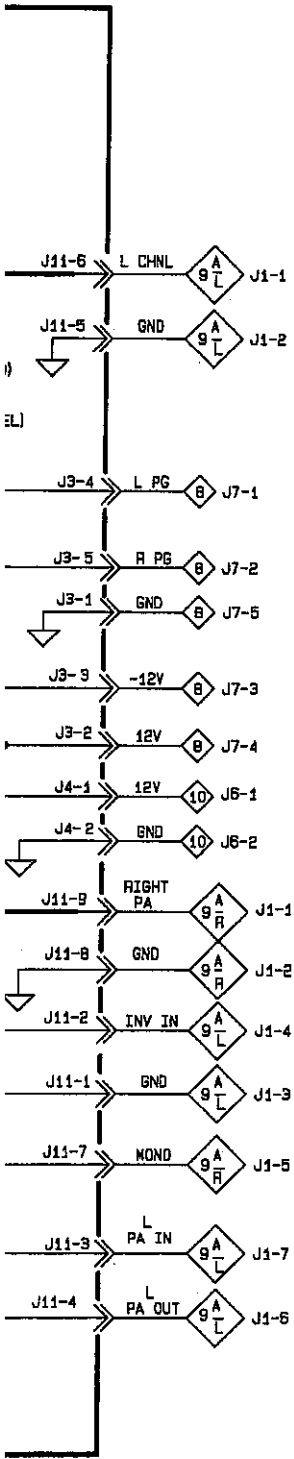
Symbol	Part	Description
<b>INTERCONNECTION</b>		
C1	052005	Capacitor Assy
<b>DIODES</b>		
D1	070139	BRID, RECT, GBPC3504
<b>FUSES</b>		
F1	089065	FUSE, 10A, 250V, S.B.
F1 (EXPORT VERSION)	089076	FUSE, 5A, 250V, S.B.
<b>SWITCHES</b>		
S1,S4	146237	Power Switch
S2,S3	153017	Thermal Switch
<b>THERMISTORS</b>		
RT1,RT2	052008	Thermistor, 5 ohm
<b>TRANSFORMER</b>		
T1	048505	Power
T2(L&R)	047187	Audio

### 230VAC LINE VOLTAGE



# Input 2



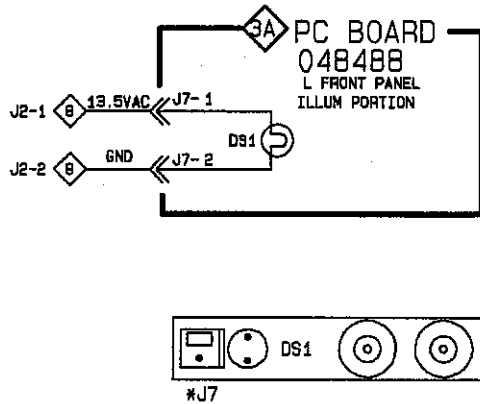


INPUT PORTION OF  
PCB 048488

**INPUT PARTS LIST**

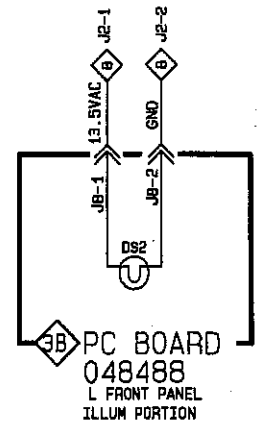
Symbol	Part	Description
<b>INTEGRATED CIRCUITS</b>		
IC1, IC2	133094	Dual Op Amp, NE5532N
<b>SWITCHES</b>		
S1	148069	MODE

# 3 Left Front Panel Illumination



FRONT PANEL ILLUMINATION PORTION OF PCB 048488

COMPONENTS MARKED WITH AN ASTERISK (\*) ARE ON REVERSE SIDE OF BOARD



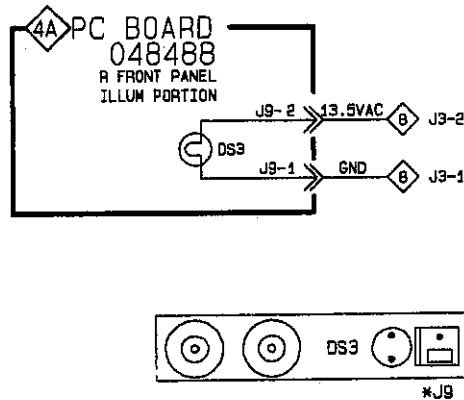
## LEFT FRONT PANEL ILLUMINATION PARTS LIST

Symbol	Part	Description
<b>LIGHTING DEVICES</b>		
DS1	058120	INC, 14V, 7373

## LEFT FRONT PANEL ILLUMINATION PARTS LIST

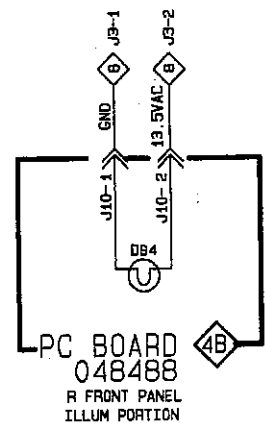
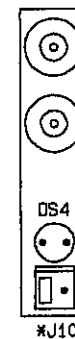
Symbol	Part	Description
<b>LIGHTING DEVICES</b>		
DS2	058120	INC, 14V, 7373

# 4 Right Front Panel Illumination



FRONT PANEL ILLUMINATION PORTION OF PCB 048488

COMPONENTS MARKED WITH AN ASTERISK (\*) ARE ON REVERSE SIDE OF BOARD



## RIGHT FRONT PANEL ILLUMINATION PARTS LIST

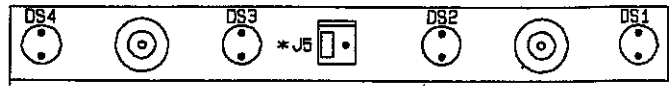
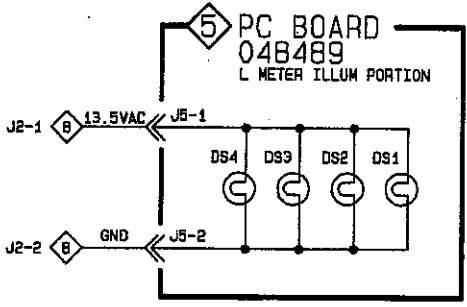
Symbol	Part	Description
<b>LIGHTING DEVICES</b>		
DS3	058120	INC, 14V, 7373

## RIGHT FRONT PANEL ILLUMINATION PARTS LIST

Symbol	Part	Description
<b>LIGHTING DEVICES</b>		
DS4	058120	INC, 14V, 7373

# 5 Left Meter Illumination

COMPONENTS MARKED WITH AN ASTERISK (\*) ARE ON REVERSE SIDE OF BOARD



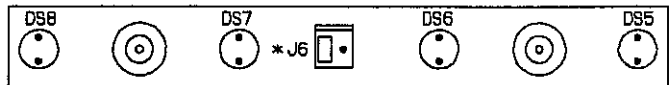
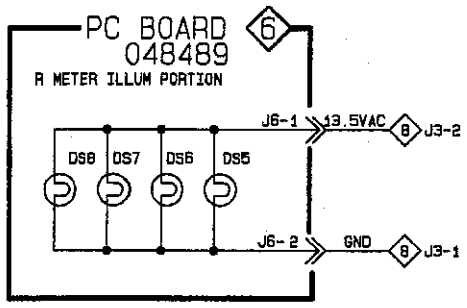
METER ILLUMINATION PORTION OF PCB 048489

## LEFT METER ILLUMINATION PARTS LIST

Symbol	Part	Description
<b>LIGHTING DEVICES</b>		
DS1-DS4	058120	INC, 14V, 7373

# 6 Right Meter Illumination

COMPONENTS MARKED WITH AN ASTERISK (\*) ARE ON REVERSE SIDE OF BOARD



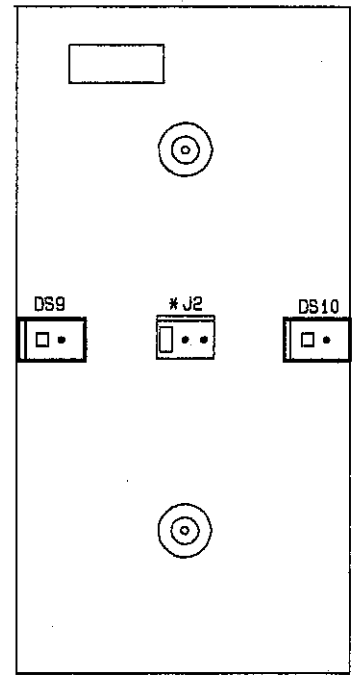
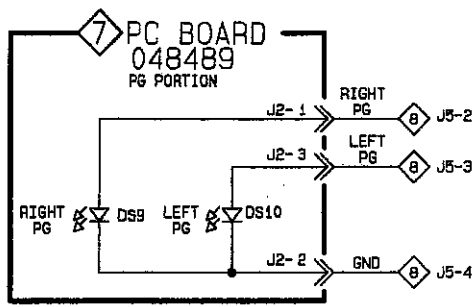
METER ILLUMINATION PORTION OF PCB 048489

## RIGHT METER ILLUMINATION PARTS LIST

Symbol	Part	Description
<b>LIGHTING DEVICES</b>		
DS5-DS8	058120	INC, 14V, 7373

# 7 Power Guard Illumination

COMPONENTS MARKED WITH AN ASTERISK (\*) ARE ON REVERSE SIDE OF BOARD

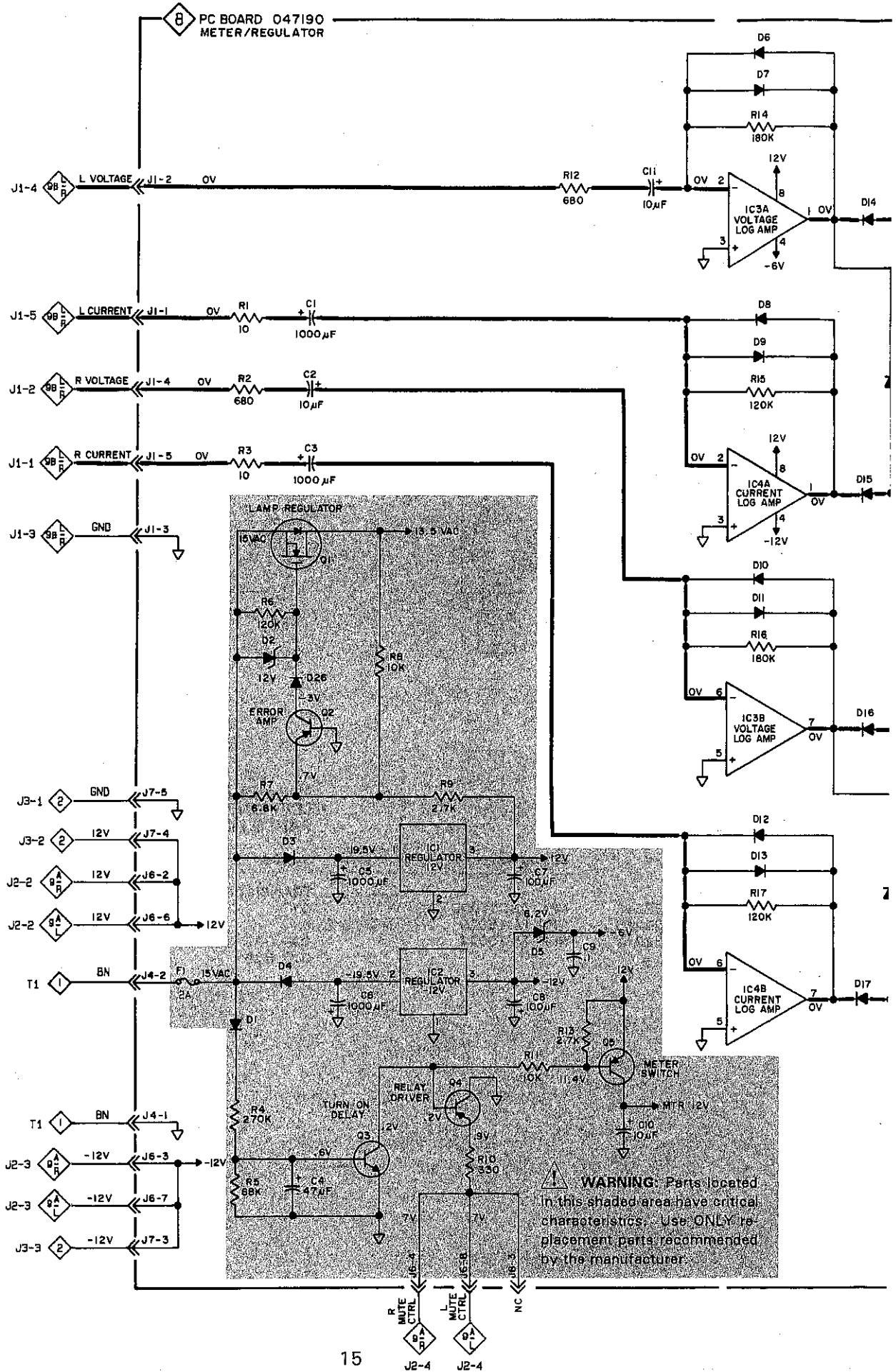


## POWER GUARD ILLUMINATION PARTS LIST

Symbol	Part	Description
<b>LIGHTING DEVICES</b>		
DS9-DS10	058121	LED, Amber Bar, MV15-3101

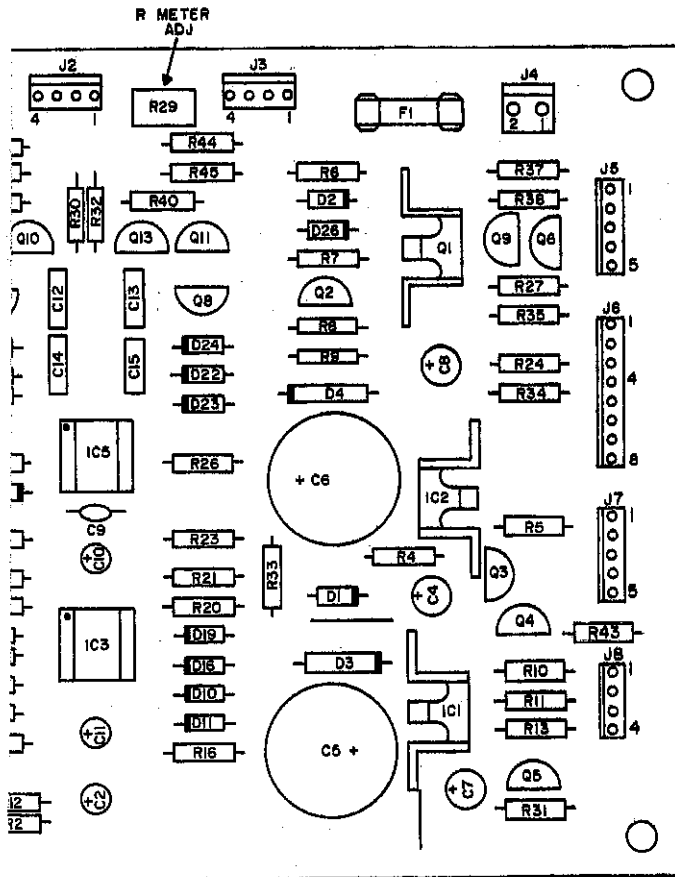
POWER GUARD PORTION OF PCB 048489

# Meter/Regulator 8







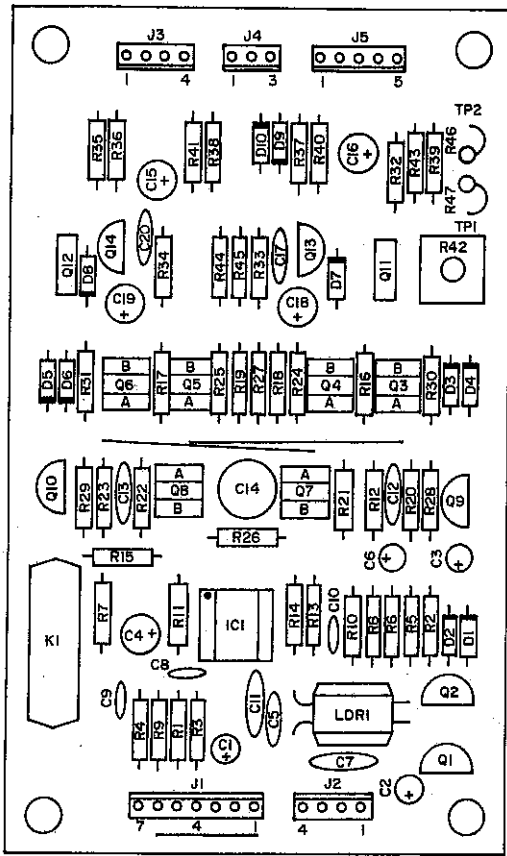


**METER/REGULATOR  
PCB 047190**

**METER/REGULATOR  
PARTS LIST**

Symbol	Part	Description
<b>DIODES</b>		
D1	070047	SIG, 75V, 100mA, 1N4148
D2	070099	ZN, 12V, 5%, 500mW, 1N5242B
D3,D4	070131	RECT, 400V, 1A, 1N4004
D5	070085	ZN, 6.2V, 5%, 500mW, 1N5234B
D6-D19	070047	SIG, 75V, 150mA, 1N4148
D20,D22	070136	SIG, Low Leakage, FDH300
D21	070047	SIG, 75V, 150mA, 1N4148
D23-D26	070047	SIG, 75V, 150mA, 1N4148
<b>FUSES</b>		
F1	089064	Fuse, SB, 2A, 250V, 2AG
<b>INTEGRATED CIRCUITS</b>		
IC1	133156	+ 12V Regulator, MC78M12CT
IC2	133155	-12V Regulator, MC79M12CT
IC3,IC4	133028	Dual Hi-speed Operational Amp, MC4558CP1
IC5	133094	Dual Operational Amp, NE5532N
<b>METERS</b>		
M1,M2	124047	METER
<b>TRANSISTORS</b>		
Q1	132242	N, FET, BUZ71A
Q2	132224	PNP, MPS4126
Q3	132223	NPN, MPS4124
Q4,Q5	132224	PNP, MPS4126
Q6	132090	NPN, DAR, MPSA25
Q7,Q8	132223	NPN, MPS4124
Q9	132090	NPN, DAR, MPSA25
Q10-Q13	132254	NPN, 2SC2362KG

# 9 Amplifier

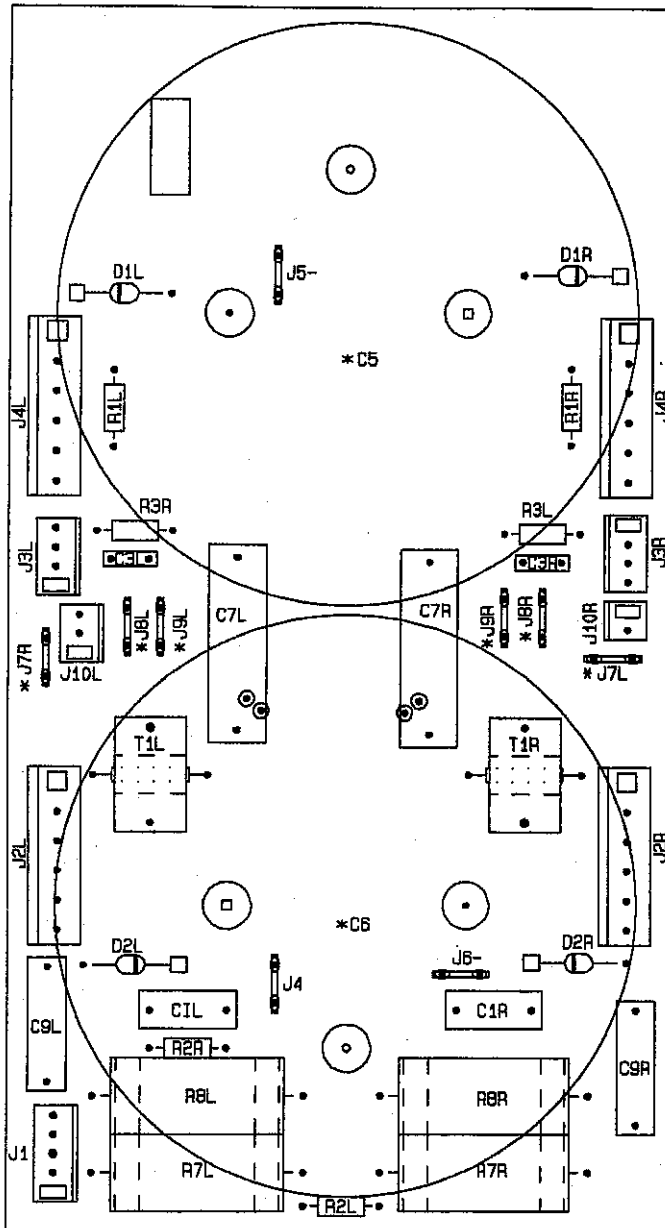


**LEFT & RIGHT  
POWER DRIVER  
PCB 047360**

**POWER DRIVER  
PARTS LIST**

Symbol	Part	Description
<b>DIODES</b>		
D1-D10	070047	SIG, 75V, 150mA, 1N4148
<b>INTEGRATED CIRCUITS</b>		
IC1	133094	Dual Op Amp, NE5532N
<b>LIGHT DEPENDENT RESISTORS</b>		
LDR1	144179	LDR, VTL5C9
<b>RELAYS</b>		
K1	087050	SPST, 5VDC, Reed, HE3321A0400
<b>TRANSISTORS</b>		
Q1, Q2	132224	PNP, MPS4126
Q3	132253	PNP, Dual, 2SA1237G
Q4	132250	NPN, Dual, 2SC3066G
Q5	132251	PNP, Dual, 2SA1239G
Q6	132252	NPN, Dual, 2SC3064G
Q7	132250	NPN, Dual, 2SC3066G
Q8	132251	PNP, Dual, 2SA1239G
Q9	132136	NPN, MPSA42
Q10	132147	PNP, MPSA92
Q11	132249	PNP, 2SA1480D or 2SA1480E
Q12	132248	NPN, 2SC3790D or 2SC3790E
Q13	132171	NPN, MPSA05
Q14	132172	PNP, MPSA55

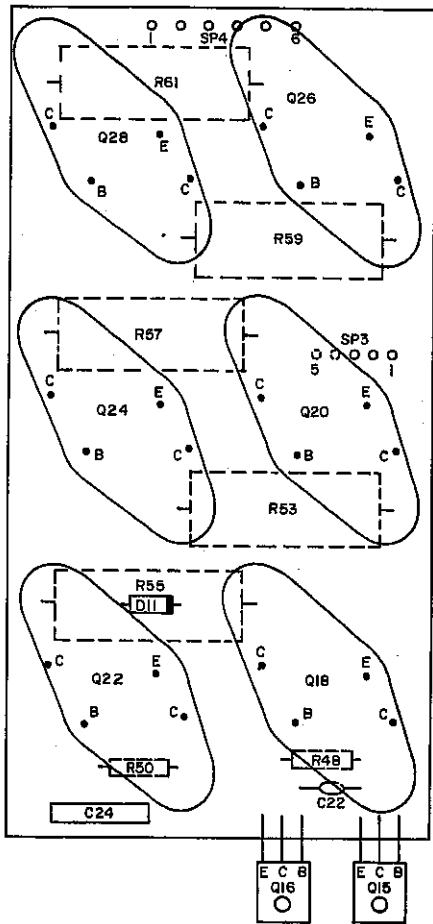
COMPONENTS MARKED WITH AN ASTERISK (\*) ARE ON REVERSE SIDE OF BOARD



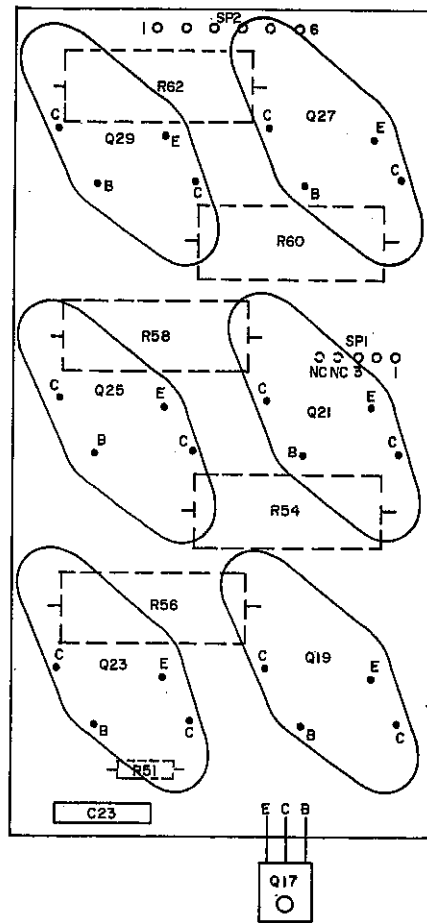
**CAPACITOR  
PCB 048489**

**CAPACITOR  
PARTS LIST**

Symbol	Part	Description
<b>CAPACITORS</b>		
C5,C6	066401	ELECT, 30,000uF 100V
<b>DIODES</b>		
D1,D2	070031	RECT, 400V, 1.5A
<b>TRANSFORMERS</b>		
T1	159215	Current



**LEFT & RIGHT  
POSITIVE HEATSINK  
PCB 047188**



**LEFT & RIGHT  
NEGATIVE HEATSINK  
PCB 047188**

**POSITIVE HEATSINK  
LEFT AND RIGHT  
PARTS LIST**

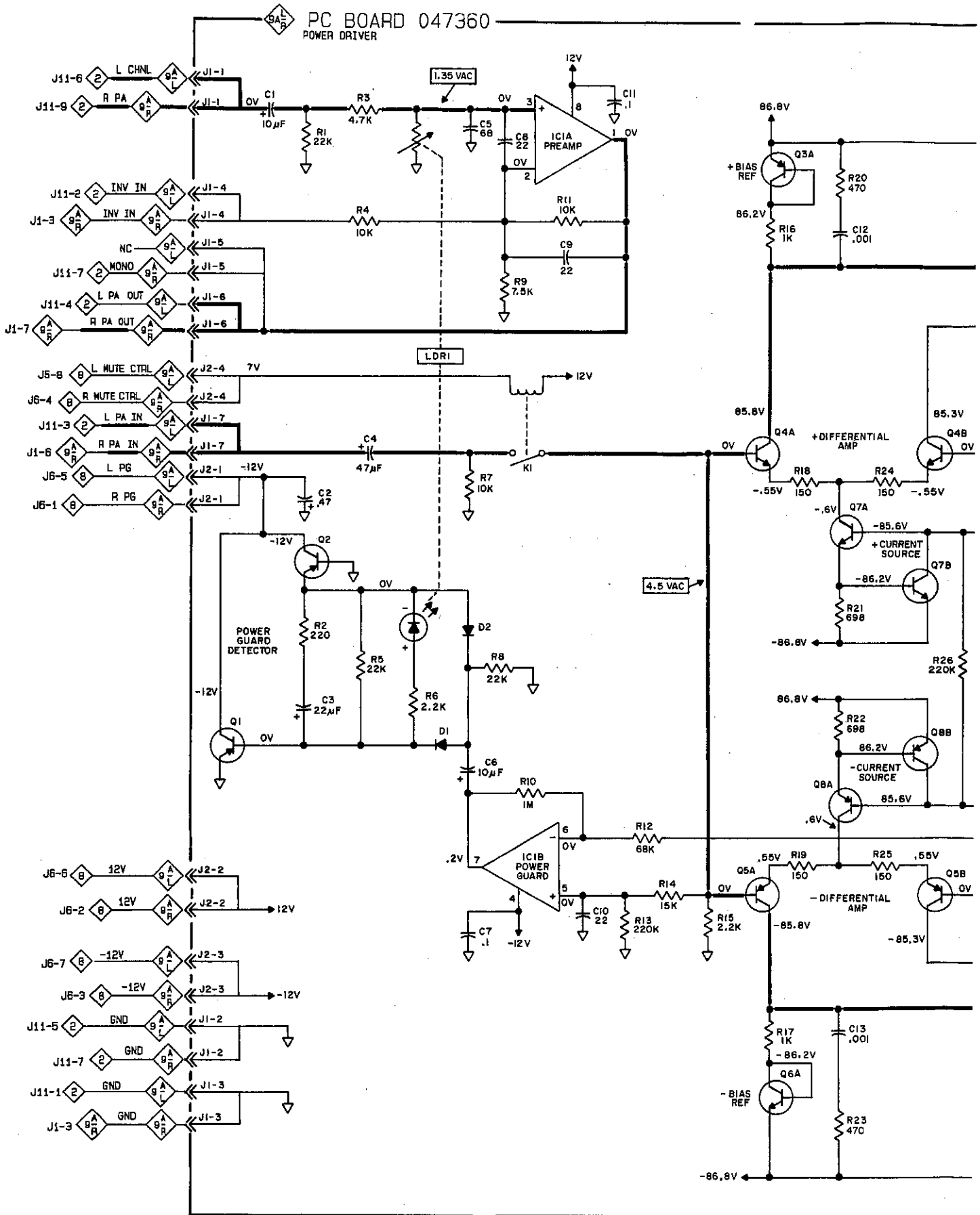
Symbol	Part	Description
<b>TRANSISTORS</b>		
Q15, Q16	132248	NPN, 2SC3790D or E
Q18	132246	NPN, MJ15020
Q20, Q22, Q24, Q26, Q28	132212	NPN, MJ15024

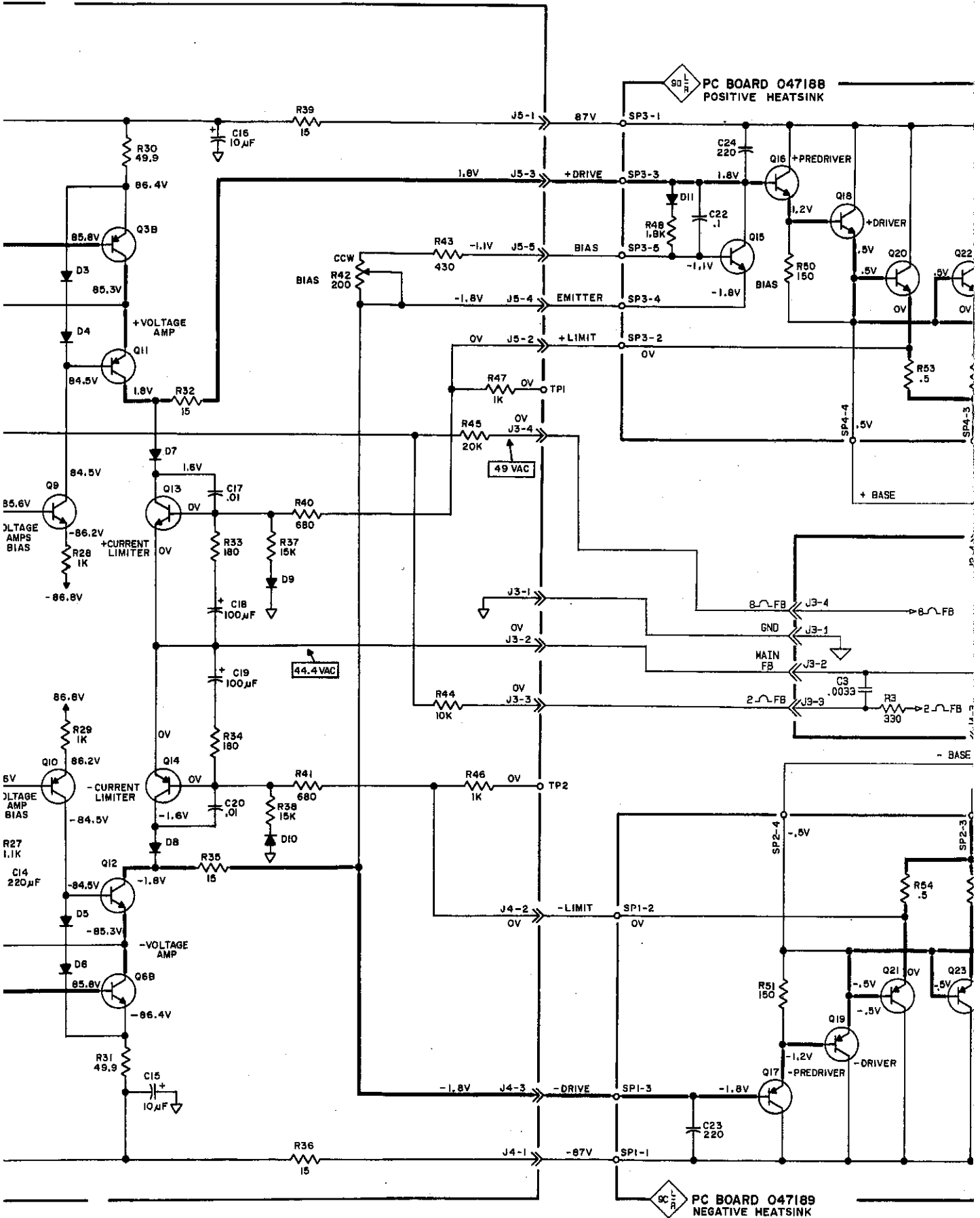
**NEGATIVE HEATSINK  
LEFT AND RIGHT  
PARTS LIST**

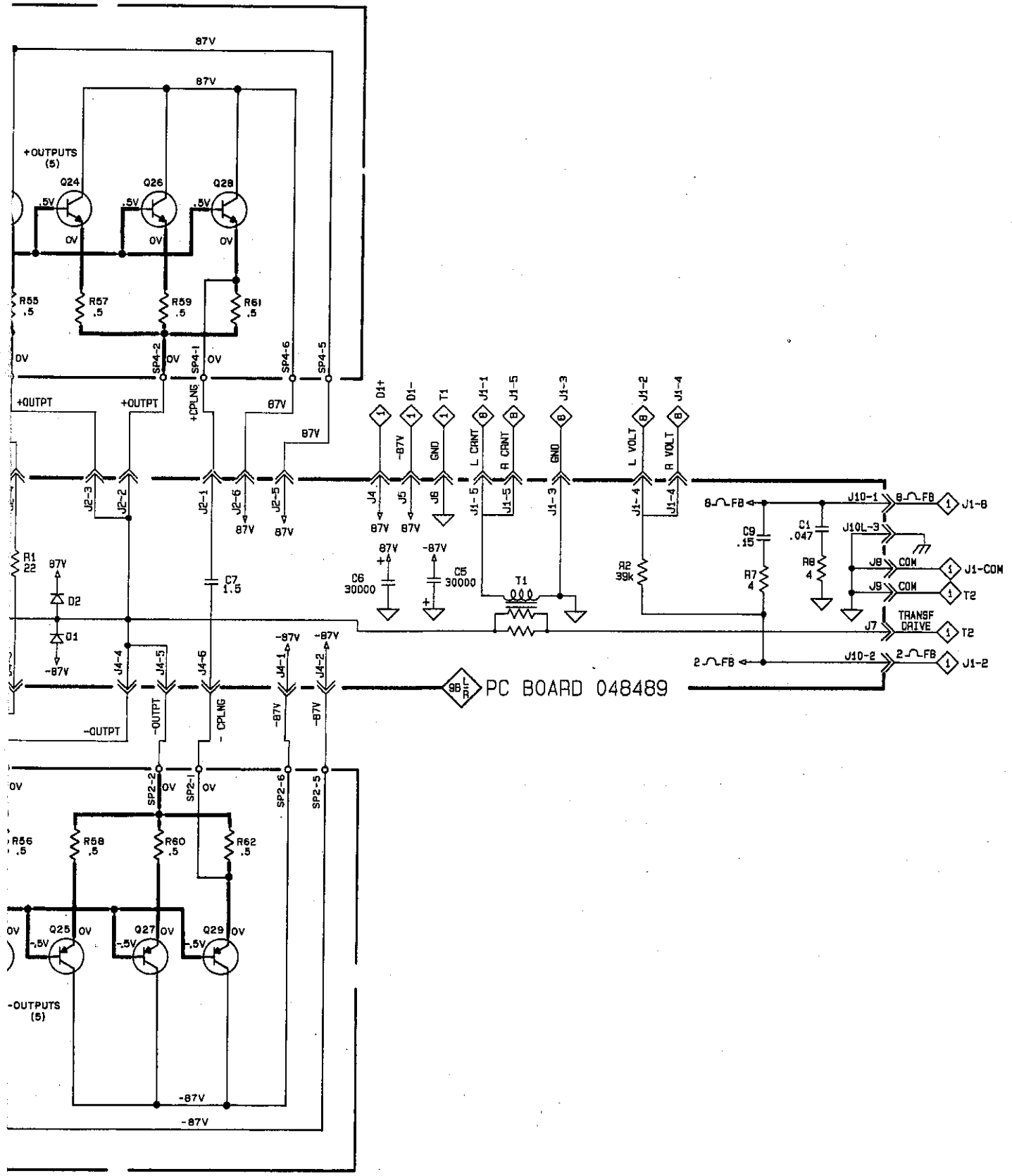
Symbol	Part	Description
<b>TRANSISTORS</b>		
Q17	132249	PNP, 2SA1480D OR E
Q19	132247	PNP, MJ15021
Q21, Q23, Q25, Q27, Q29	132213	PNP, MJ15025

# Amplifier

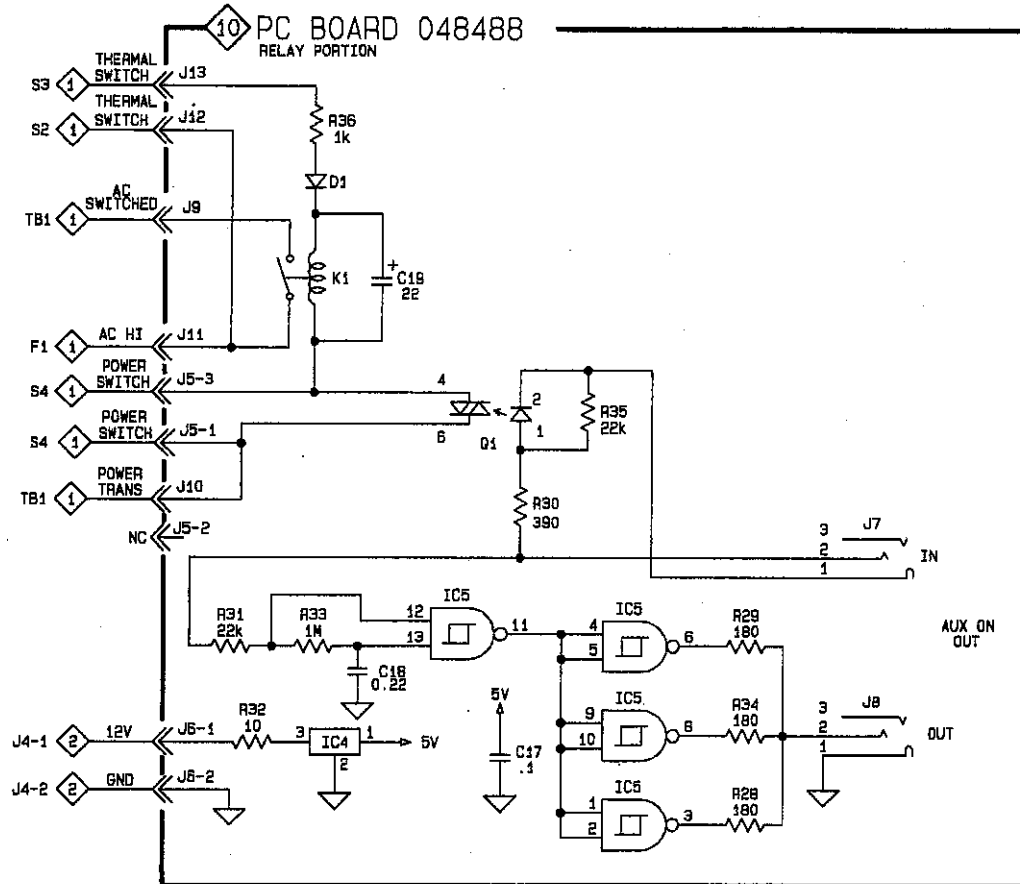
9





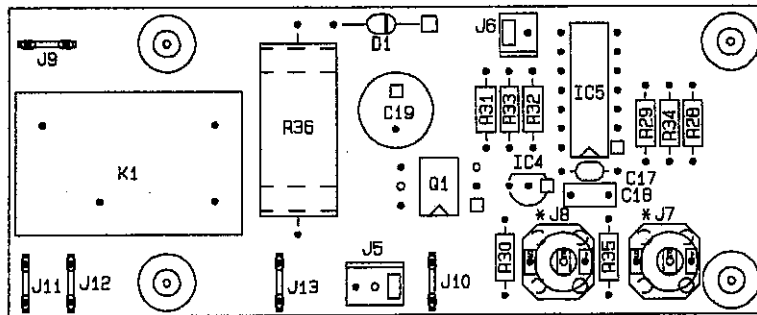


# 10 Relay



POWER CONNECTIONS	
IC6	7 = GND
	14 = 5V





COMPONENTS MARKED WITH AN ASTERISK (\*) ARE ON REVERSE SIDE OF BOARD

RELAY PORTION OF  
PCB 048488

**RELAY  
PARTS LIST**

<i>Symbol</i>	<i>Part</i>	<i>Description</i>
<b>DIODES</b>		
D1	070131	RECT, 400V, 1A, 1N4004
<b>INTEGRATED CIRCUITS</b>		
IC4	133093	5V Regulator, MC78L05ACP
IC5	133192	CMOS, Quad 2-Input NAND Gate, MC74HC132
<b>RELAYS</b>		
K1	087052	SPST, TV-8, 48VDC, JC1A-DC48V-TV
<b>TRANSISTORS</b>		
Q1	131020	OPTO ISO, MOC3023

# Repacking Instructions

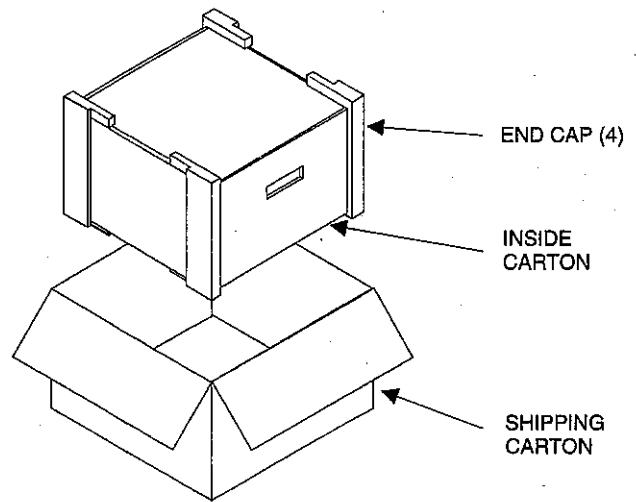
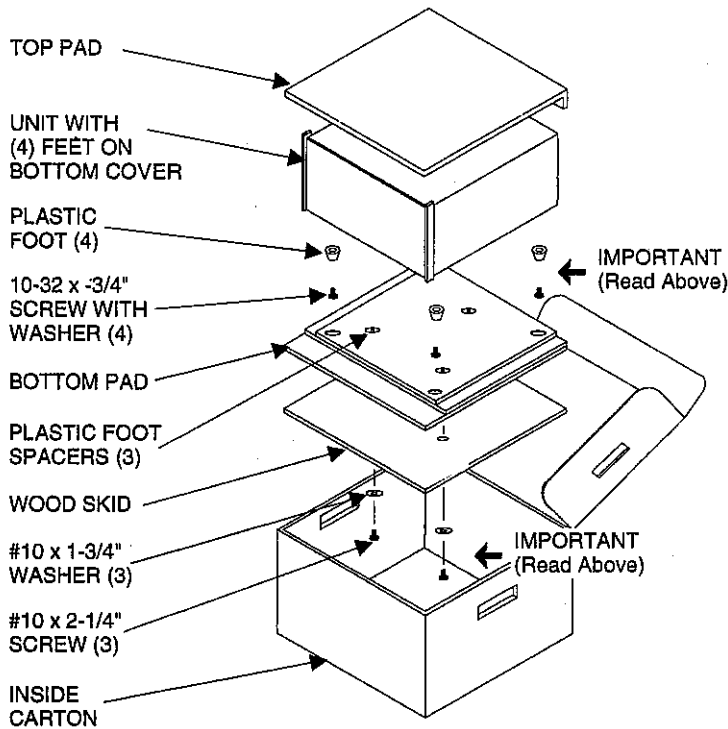
In the event it is necessary to repack the unit for shipment, the unit must be packed exactly as shown below.

**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. Two #10 x 2-1/4" screws and washers must be used to fasten the unit securely to the bottom pad and wood skid. Failure to do this will result in shipping damage.

If a shipping carton or any of the interior parts is needed, please call or write the Customer Service Department of McIntosh Laboratory. Order parts from the accompanying list by part number.

Use the original shipping carton and interior parts only if they are in good serviceable condition.

Qty.	Part No.	Description
1	033888	Shipping carton only
4	033887	End cap (Foam pad)
1	033697	Inside carton only
1	033725	Top pad
1	033698	Bottom pad
3	017218	Plastic foot (spacer)
1	033699	Wood skid
3	101169	#10 x 2-1/4" Wood screw
3	104033	#10 x 1-3/4" Flat washer
4	017218	Plastic foot
4	100159	#10-32 x 3/4" Machine screw
4	104083	#10 x 7/16" Flat washer
1	048572	Shipping carton complete with all the above parts



# McIntosh

## MC300 POWER AMPLIFIER

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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Telephone (607) 723-3512

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