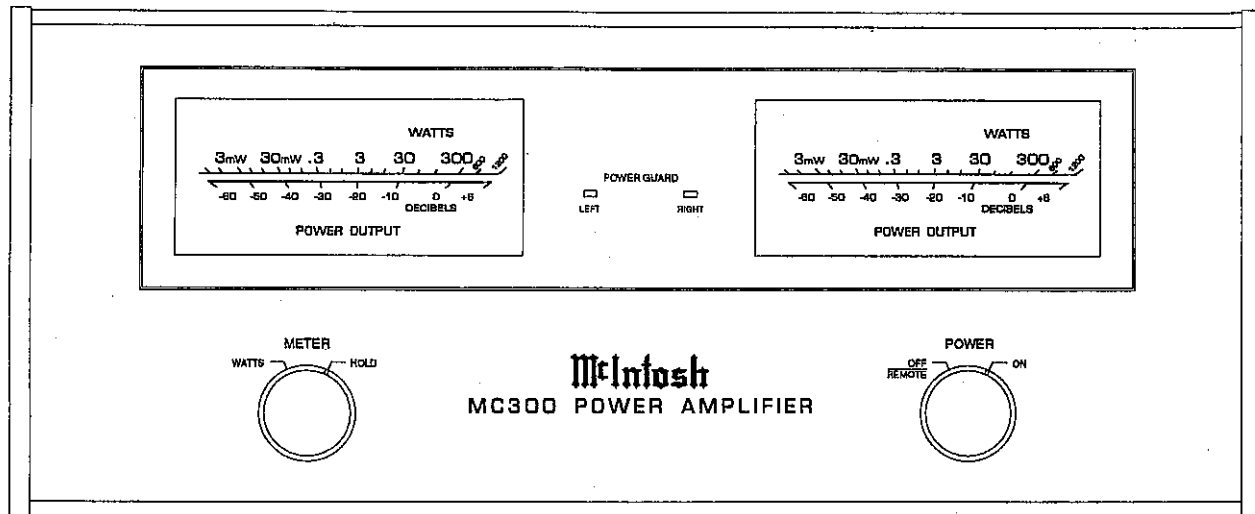


MC300

POWER AMPLIFIER



CONTENTS

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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

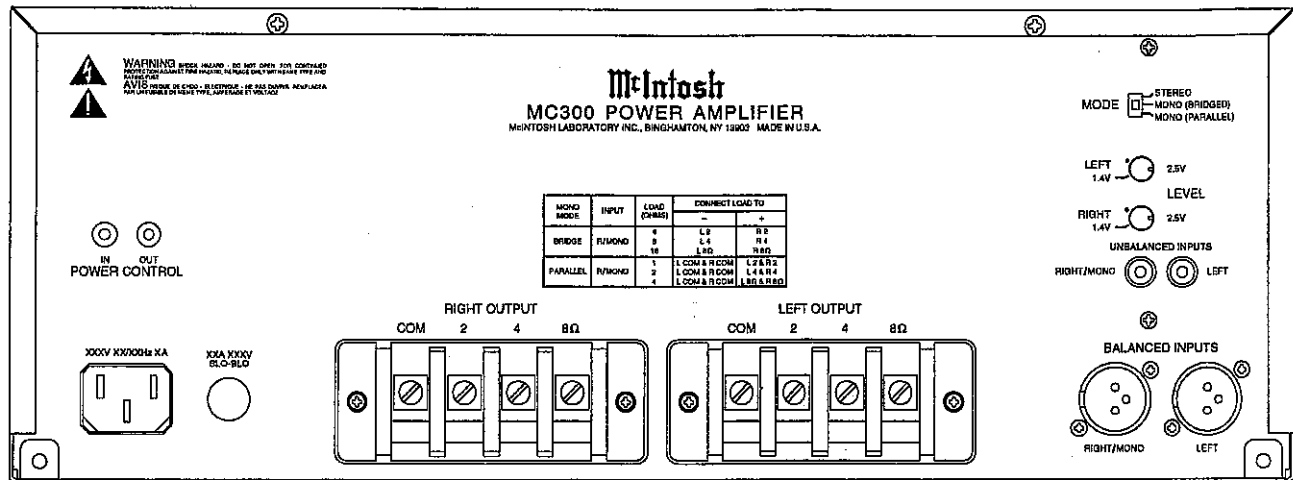



Fig. 1 - Rear view

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 (μF).
 - Inductor values are in microhenries (μH).
- 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

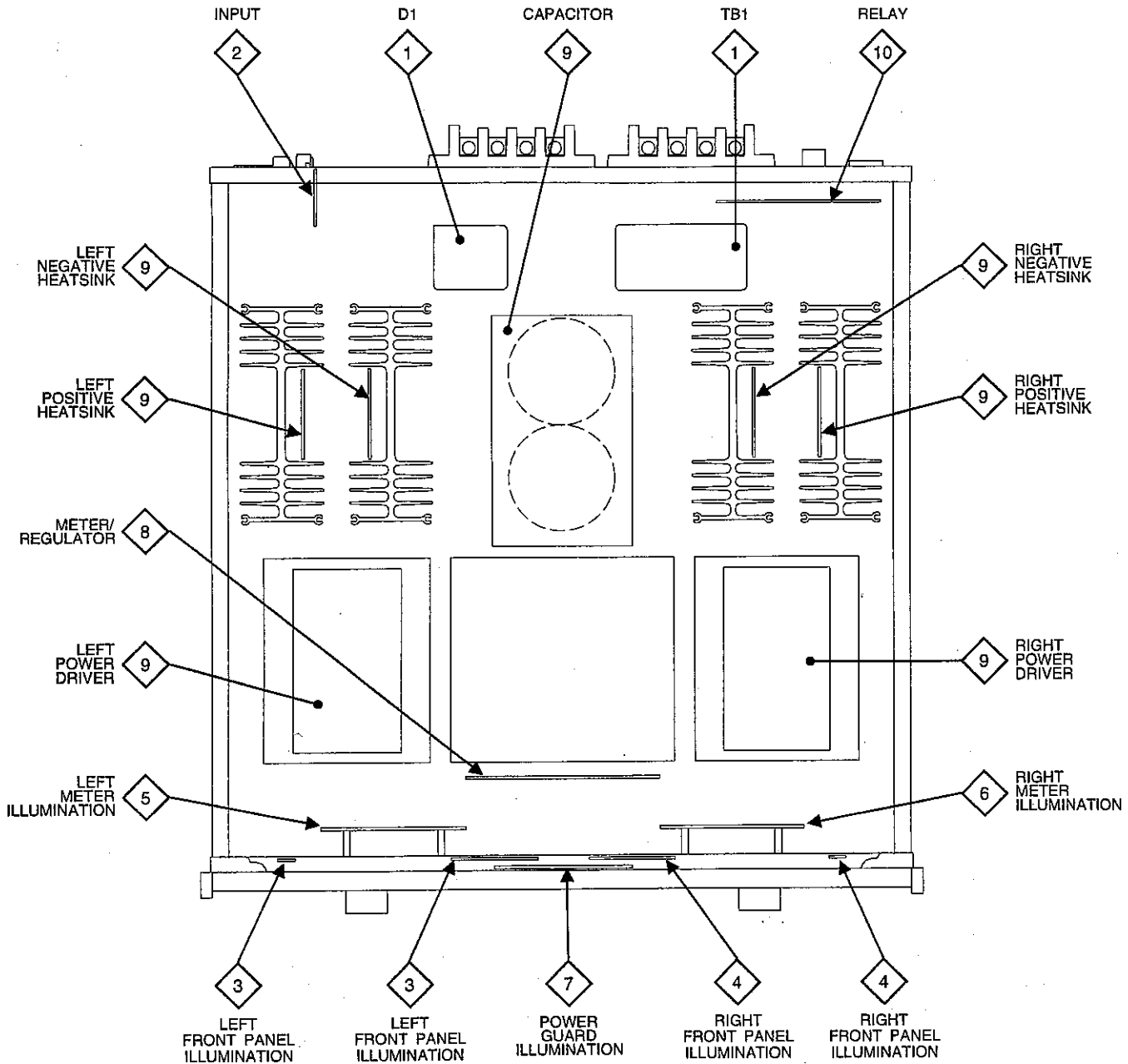
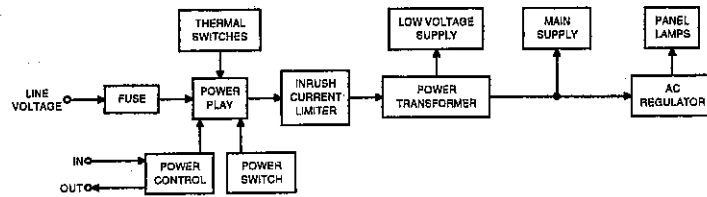
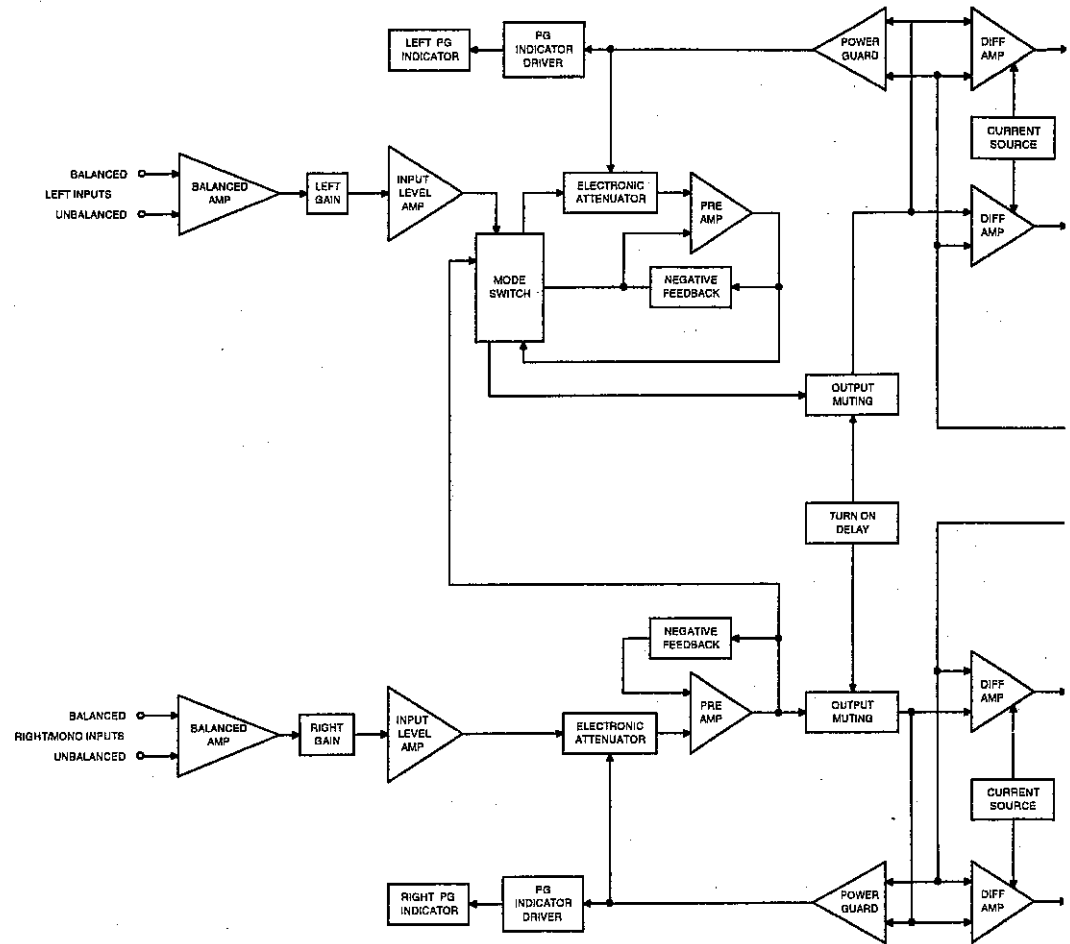
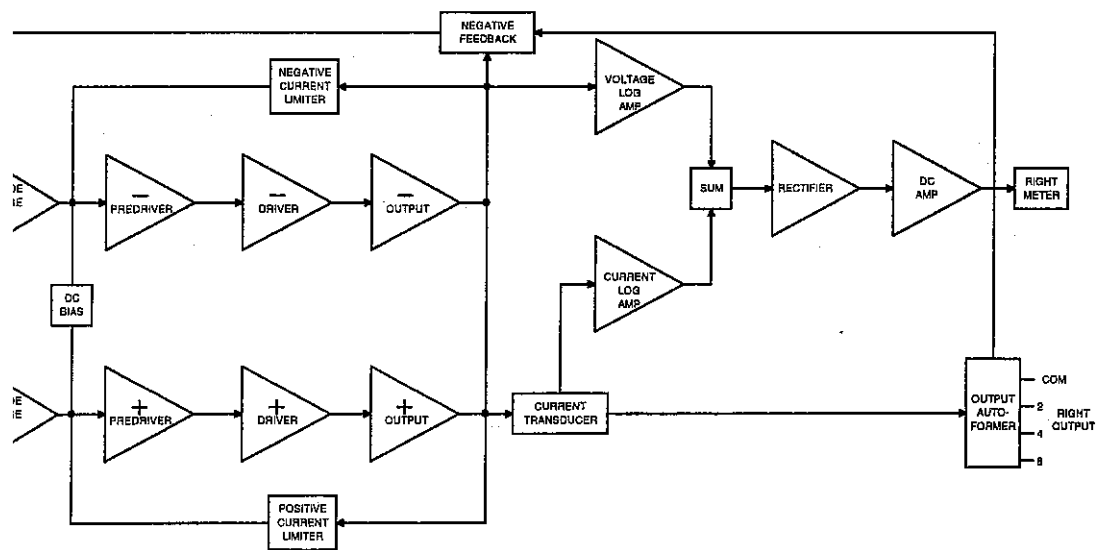
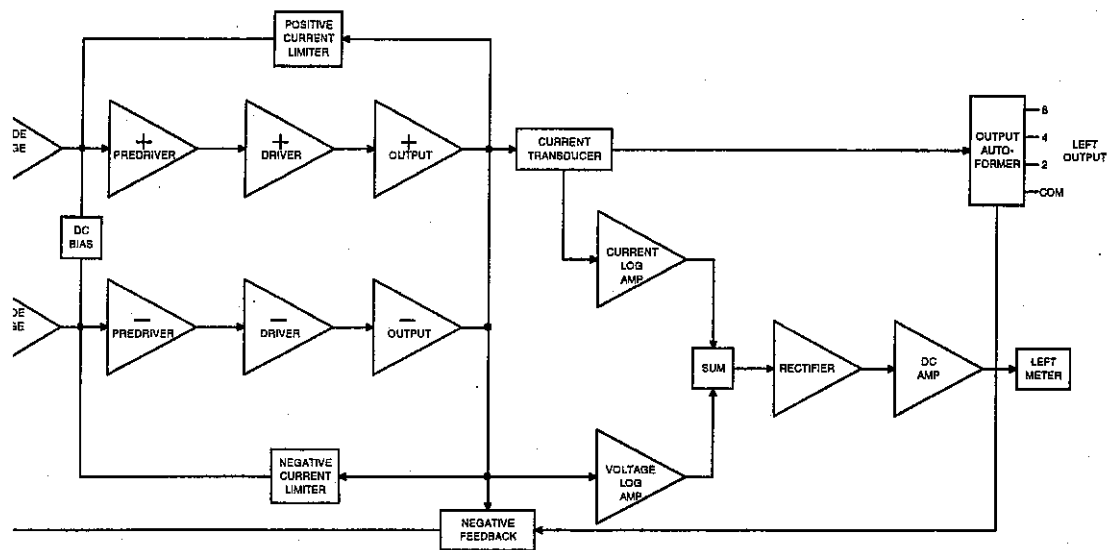


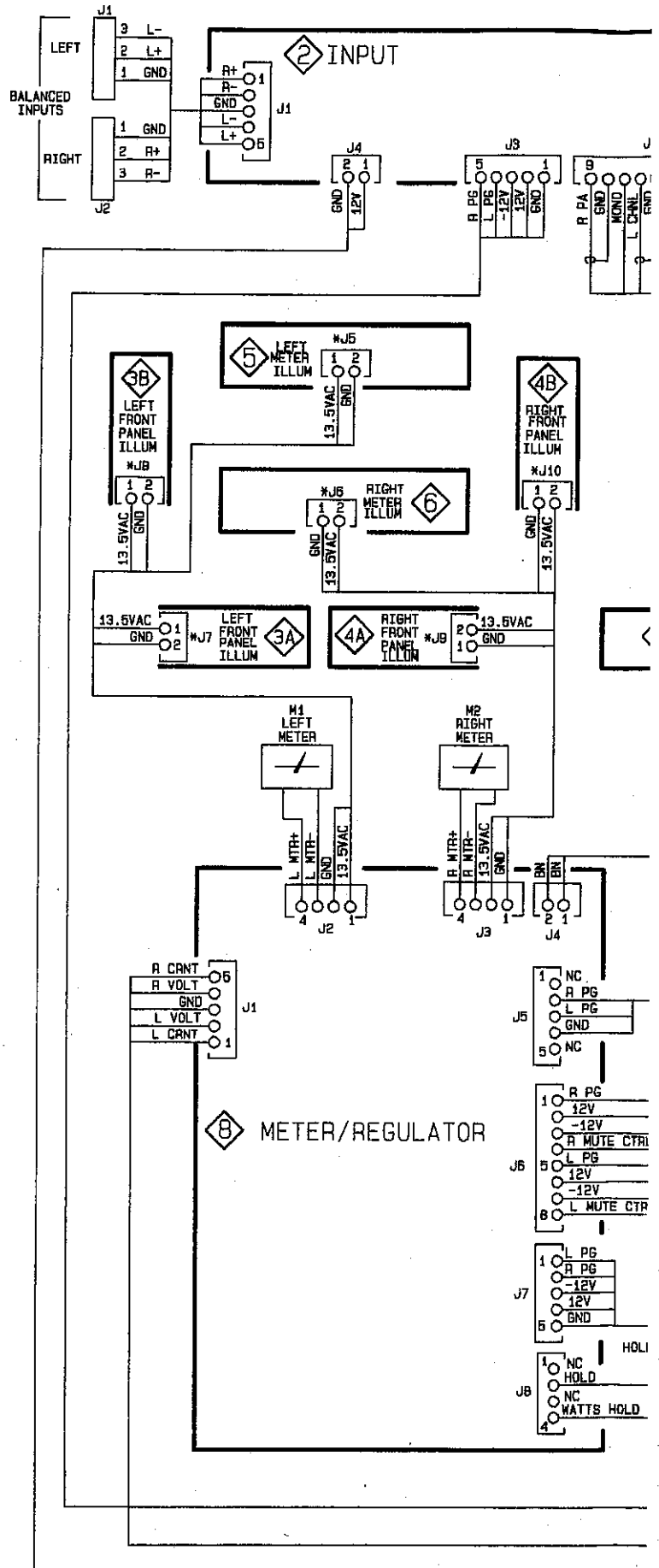
Fig. 2 - Top view with cover removed

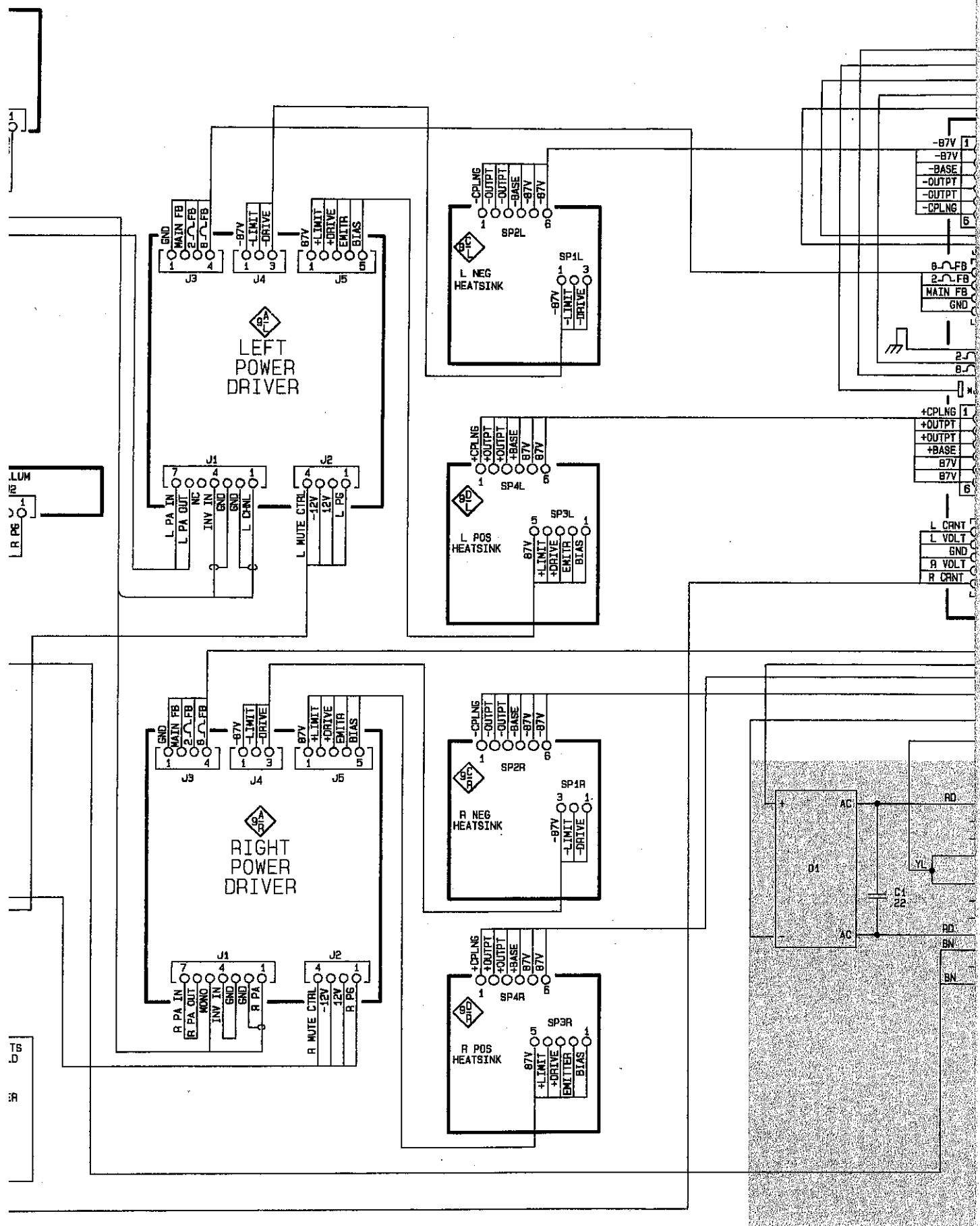
Block Diagram

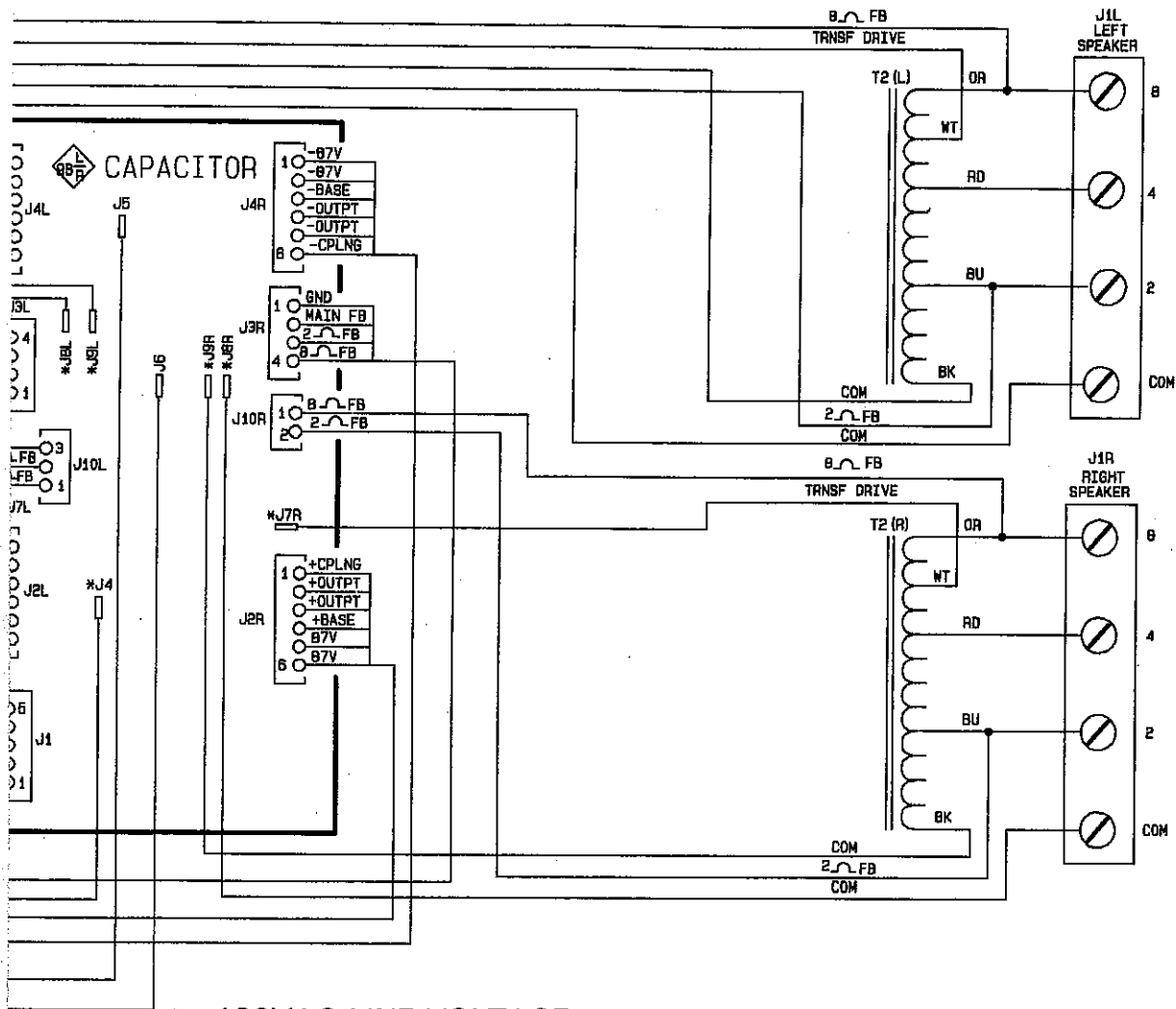




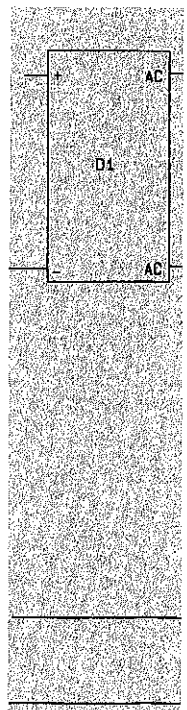
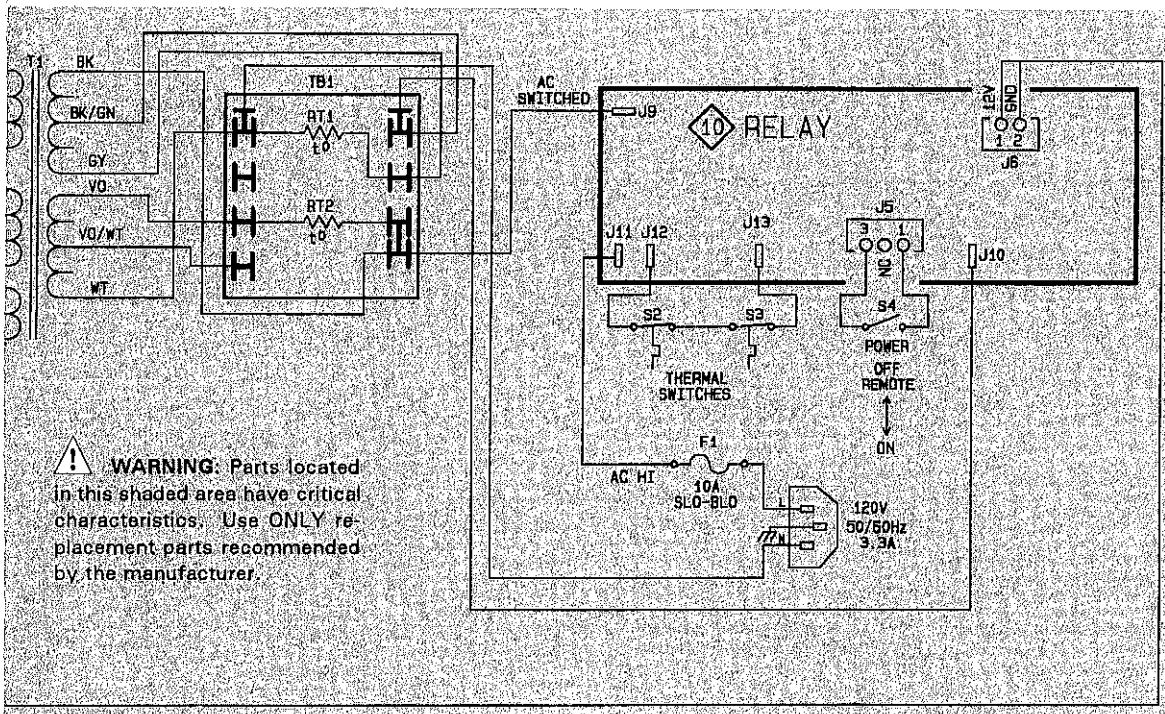
1 Interconnection Diagram







120VAC LINE VOLTAGE

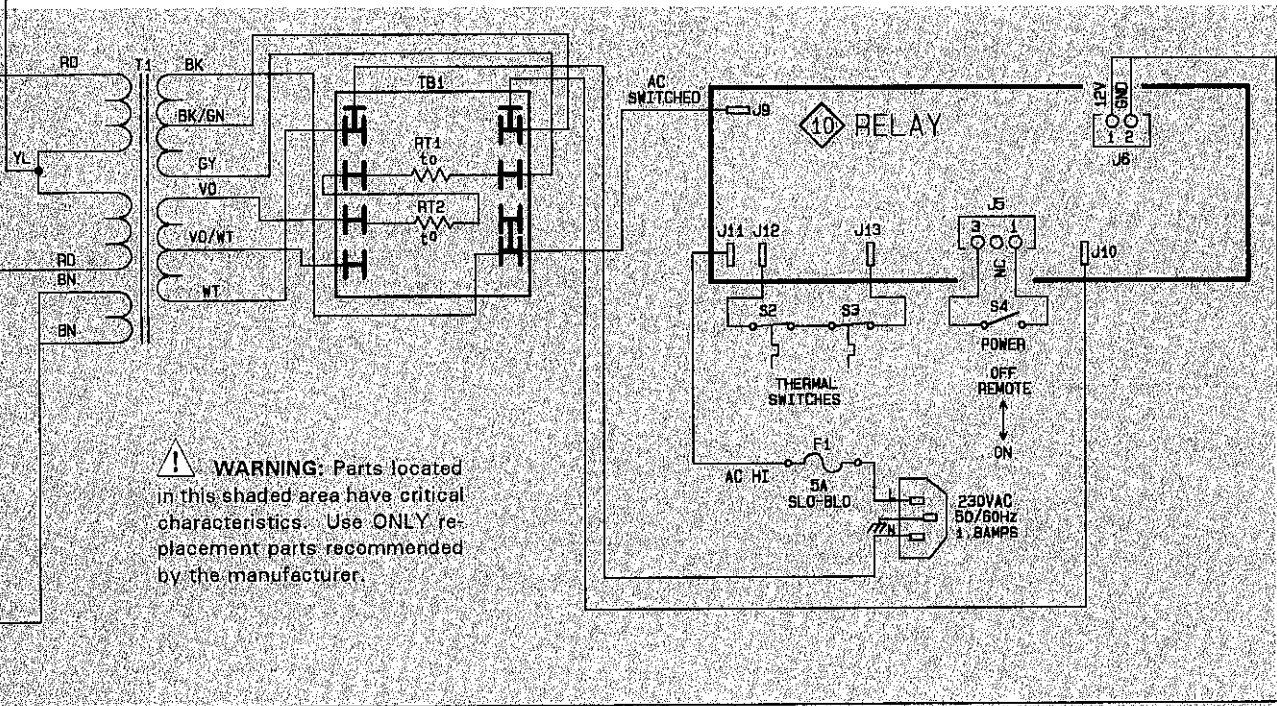


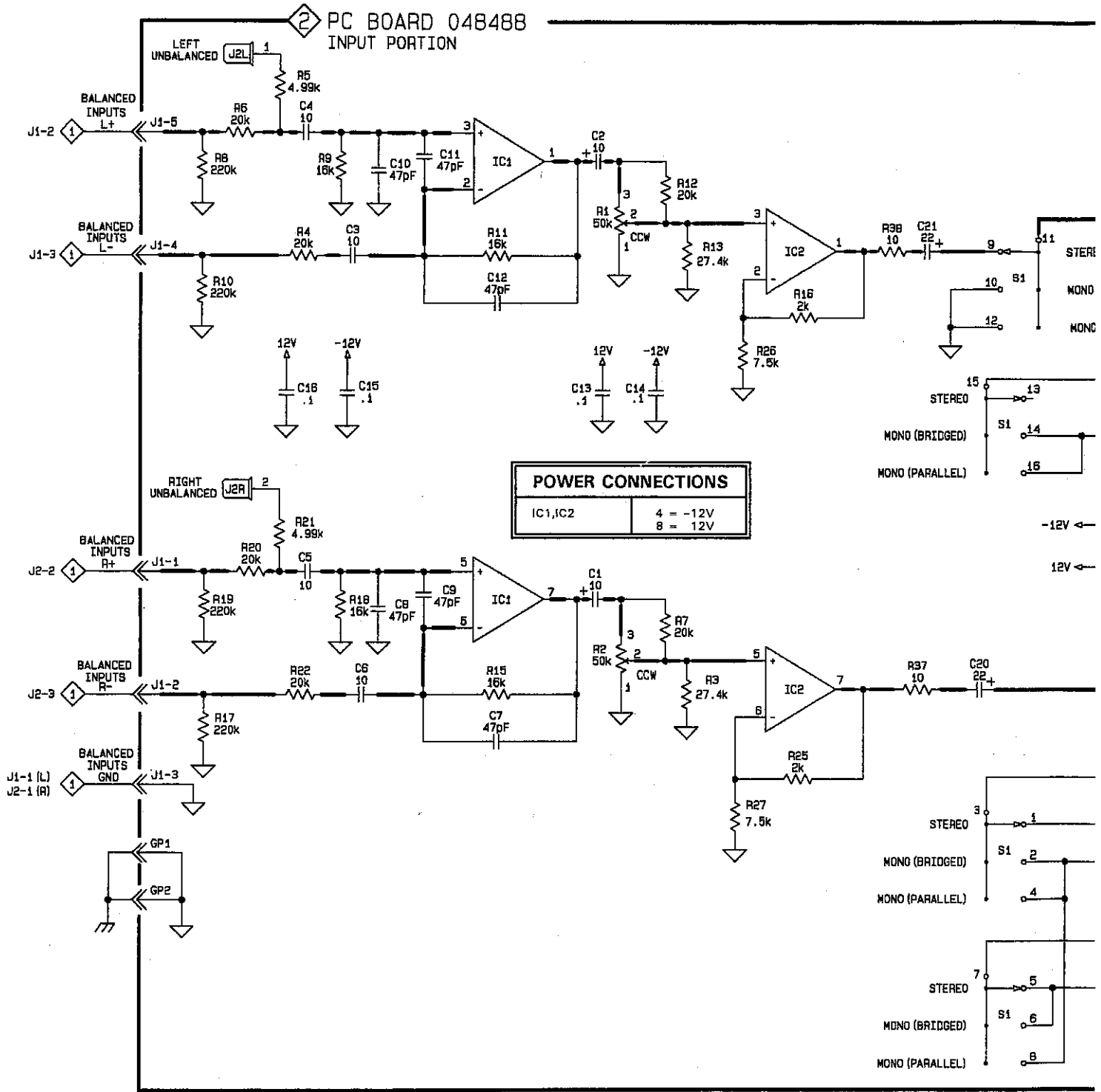


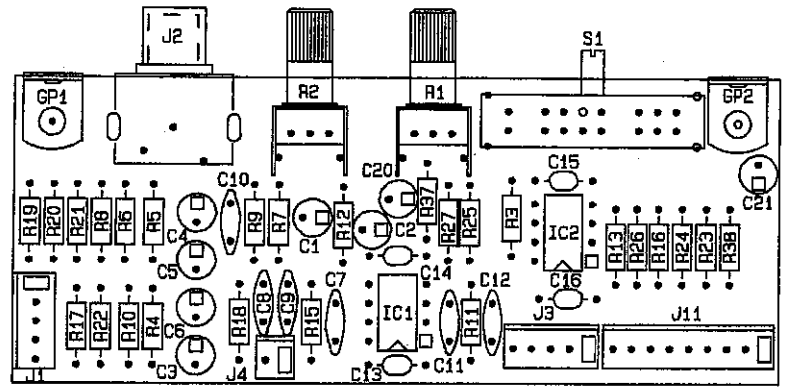
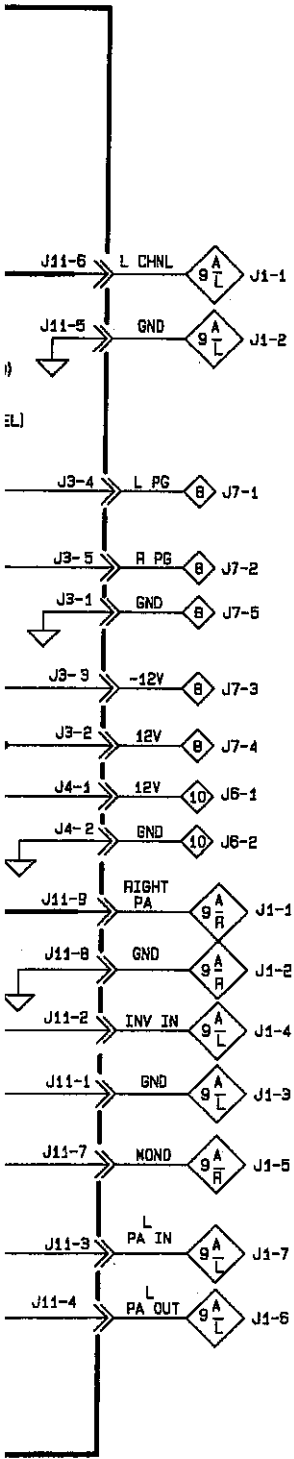
INTERCONNECTION PARTS LIST

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

230VAC LINE VOLTAGE





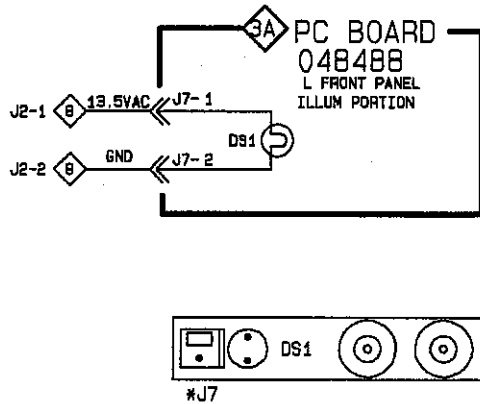


INPUT PORTION OF
PCB 048488

INPUT PARTS LIST

| Symbol | Part | Description |
|----------------------------|--------|----------------------|
| INTEGRATED CIRCUITS | | |
| IC1, IC2 | 133094 | Dual Op Amp, NE5532N |
| SWITCHES | | |
| S1 | 148069 | MODE |

3 Left Front Panel Illumination

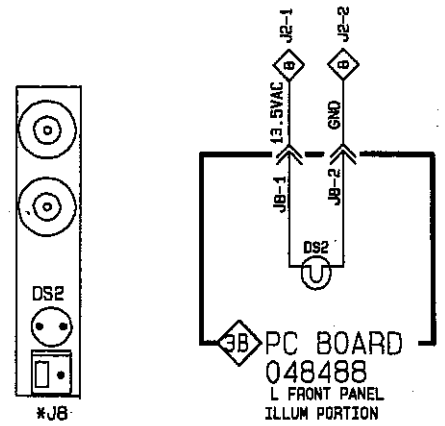


FRONT PANEL ILLUMINATION PORTION OF PCB 048488

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

LEFT FRONT PANEL ILLUMINATION PARTS LIST

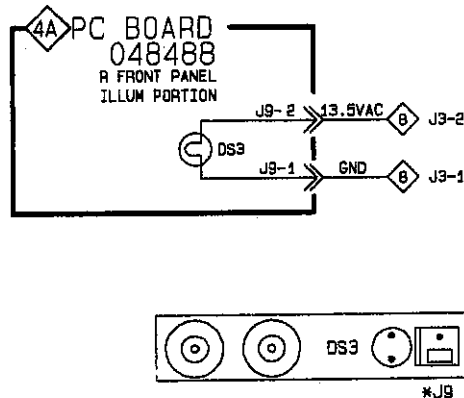
| Symbol | Part | Description |
|-------------------------|--------|----------------|
| LIGHTING DEVICES | | |
| DS1 | 058120 | INC, 14V, 7373 |



LEFT FRONT PANEL ILLUMINATION PARTS LIST

| Symbol | Part | Description |
|-------------------------|--------|----------------|
| LIGHTING DEVICES | | |
| DS2 | 058120 | INC, 14V, 7373 |

4 Right Front Panel Illumination

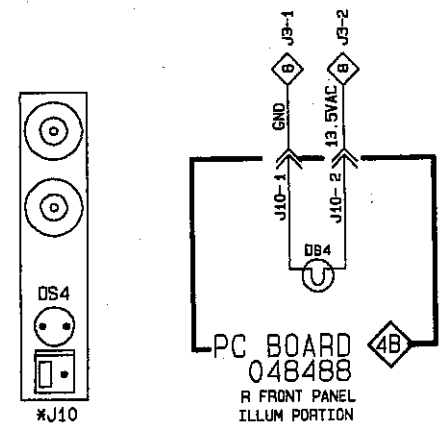


FRONT PANEL ILLUMINATION PORTION OF PCB 048488

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

RIGHT FRONT PANEL ILLUMINATION PARTS LIST

| Symbol | Part | Description |
|-------------------------|--------|----------------|
| LIGHTING DEVICES | | |
| DS3 | 058120 | INC, 14V, 7373 |

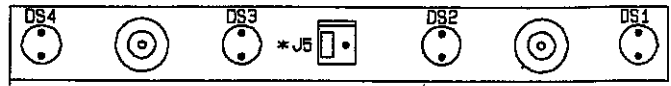
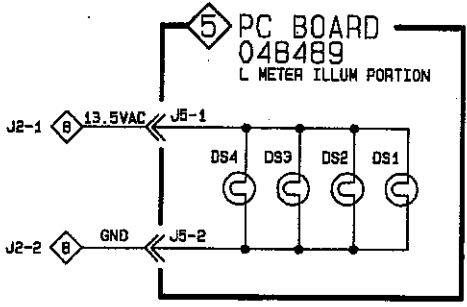


RIGHT FRONT PANEL ILLUMINATION PARTS LIST

| Symbol | Part | Description |
|-------------------------|--------|----------------|
| LIGHTING DEVICES | | |
| DS4 | 058120 | INC, 14V, 7373 |

5 Left Meter Illumination

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



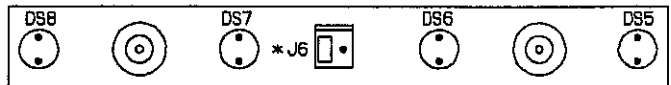
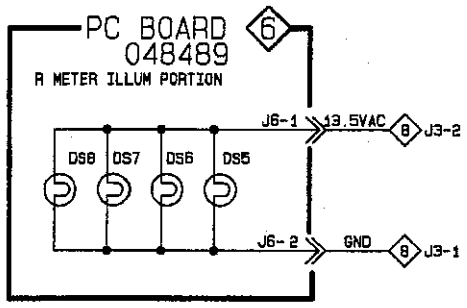
METER ILLUMINATION PORTION OF PCB 048489

LEFT METER ILLUMINATION PARTS LIST

| Symbol | Part | Description |
|-------------------------|--------|----------------|
| LIGHTING DEVICES | | |
| DS1-DS4 | 058120 | INC, 14V, 7373 |

6 Right Meter Illumination

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



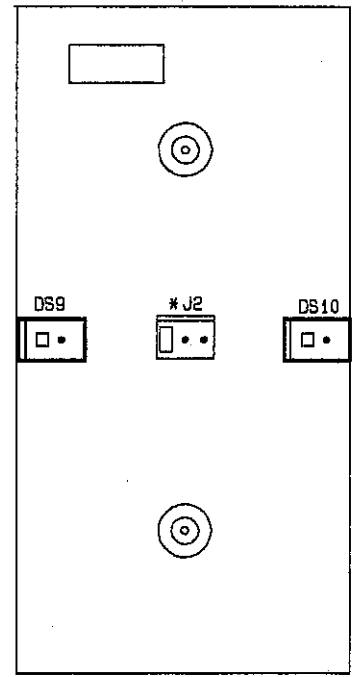
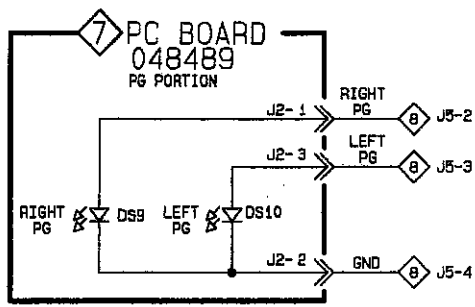
METER ILLUMINATION PORTION OF PCB 048489

RIGHT METER ILLUMINATION PARTS LIST

| Symbol | Part | Description |
|-------------------------|--------|----------------|
| LIGHTING DEVICES | | |
| DS5-DS8 | 058120 | INC, 14V, 7373 |

7 Power Guard Illumination

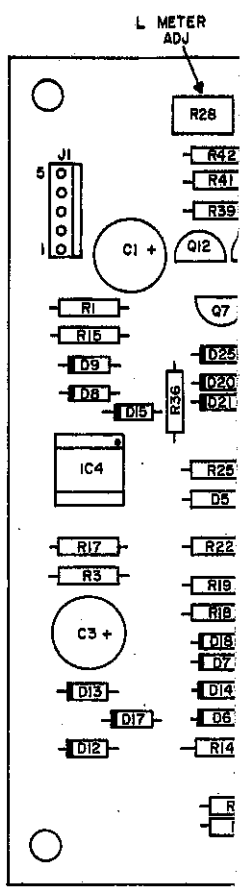
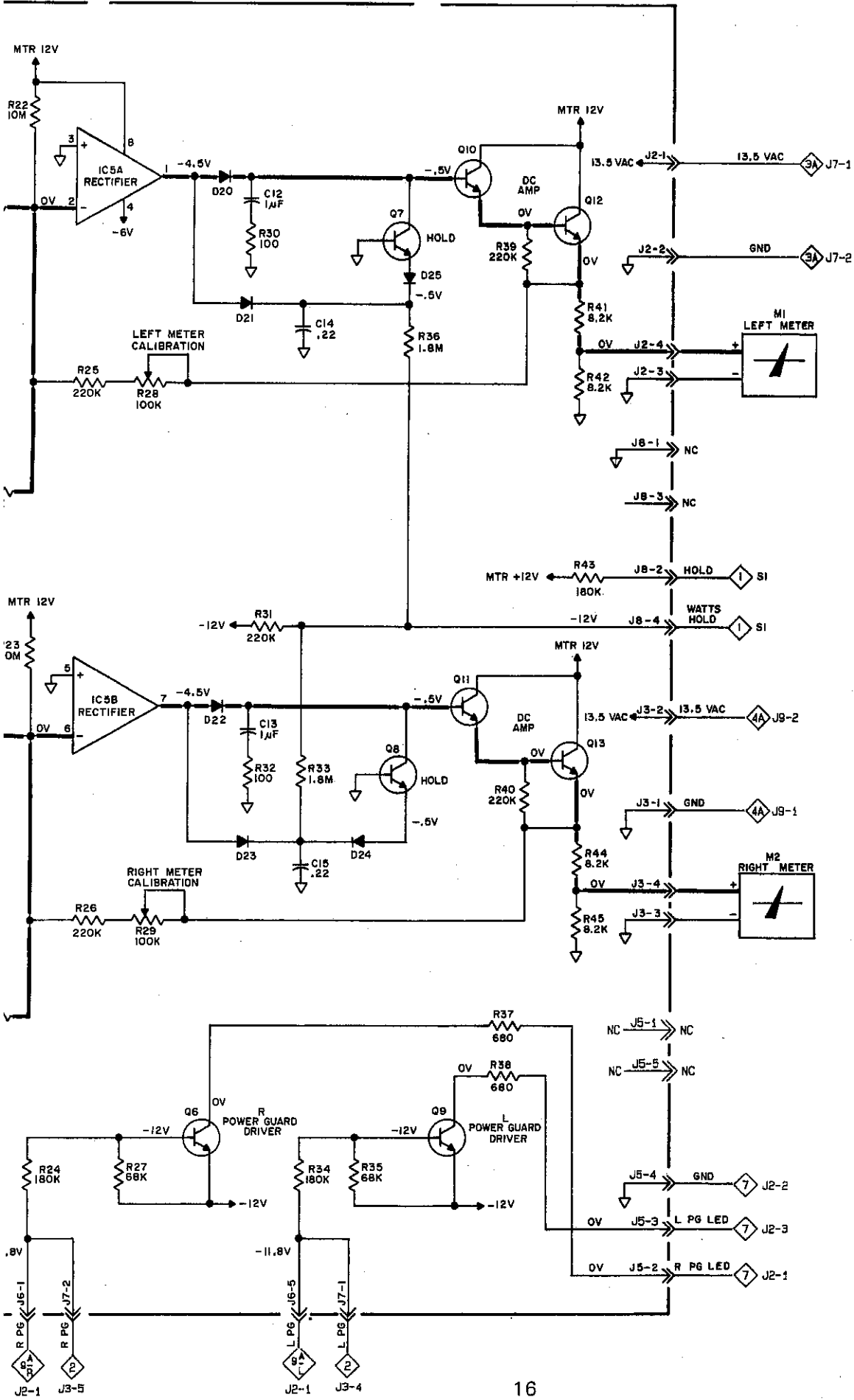
COMPONENTS MARKED WITH AN ASTERISK (*) ARE ON REVERSE SIDE OF BOARD

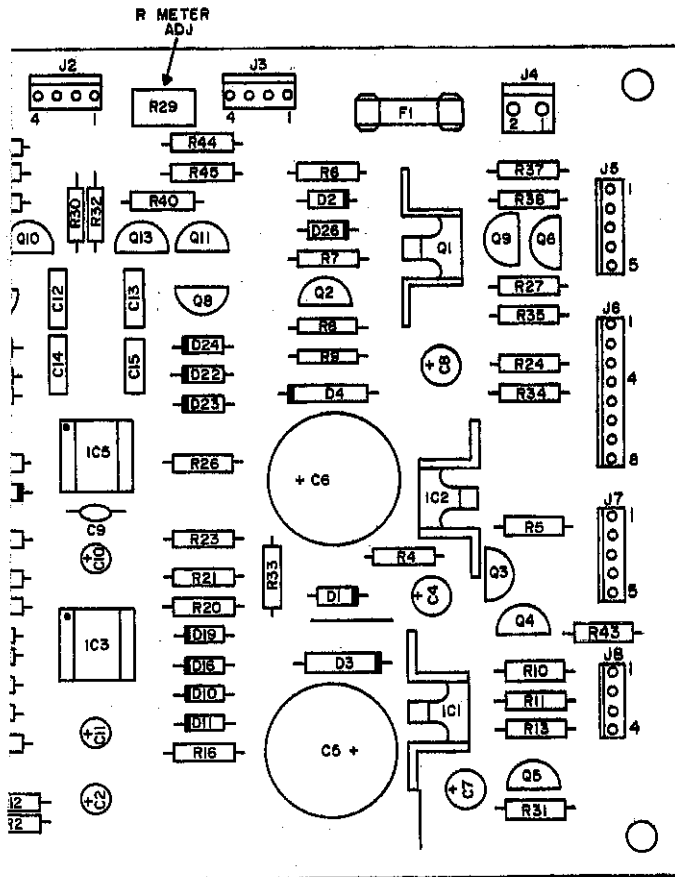


POWER GUARD ILLUMINATION PARTS LIST

| Symbol | Part | Description |
|-------------------------|--------|---------------------------|
| LIGHTING DEVICES | | |
| DS9-DS10 | 058121 | LED, Amber Bar, MV15-3101 |

POWER GUARD PORTION OF PCB 048489



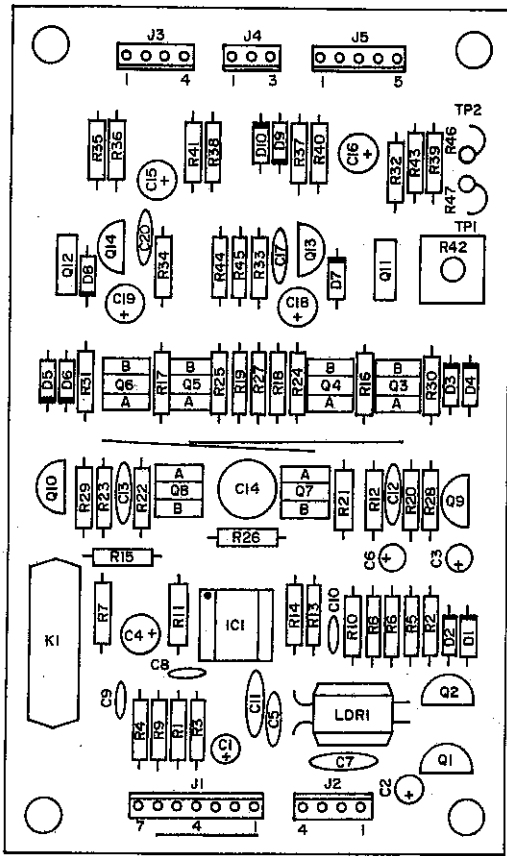


**METER/REGULATOR
PCB 047190**

**METER/REGULATOR
PARTS LIST**

| Symbol | Part | Description |
|----------------------------|--------|--|
| DIODES | | |
| 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 |
| FUSES | | |
| F1 | 089064 | Fuse, SB, 2A, 250V, 2AG |
| INTEGRATED CIRCUITS | | |
| 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 |
| METERS | | |
| M1,M2 | 124047 | METER |
| TRANSISTORS | | |
| 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

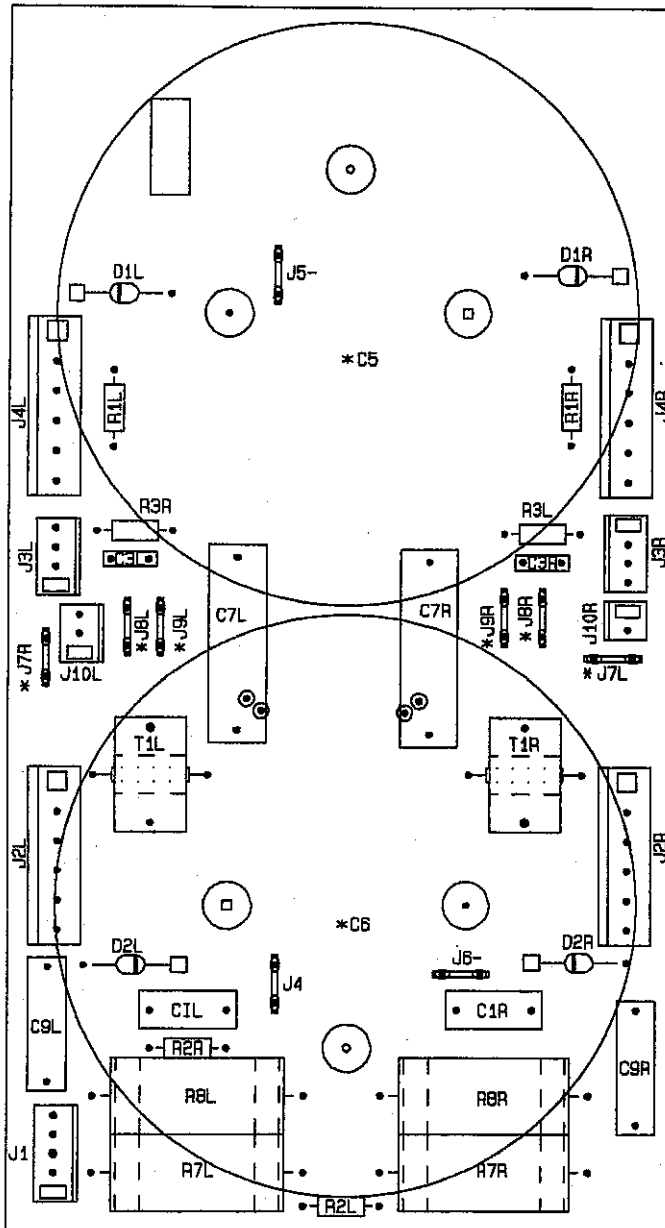


**LEFT & RIGHT
POWER DRIVER
PCB 047360**

**POWER DRIVER
PARTS LIST**

| Symbol | Part | Description |
|----------------------------------|--------|-------------------------------|
| DIODES | | |
| D1-D10 | 070047 | SIG, 75V, 150mA, 1N4148 |
| INTEGRATED CIRCUITS | | |
| IC1 | 133094 | Dual Op Amp, NE5532N |
| LIGHT DEPENDENT RESISTORS | | |
| LDR1 | 144179 | LDR, VTL5C9 |
| RELAYS | | |
| K1 | 087050 | SPST, 5VDC, Reed, HE3321A0400 |
| TRANSISTORS | | |
| 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 |

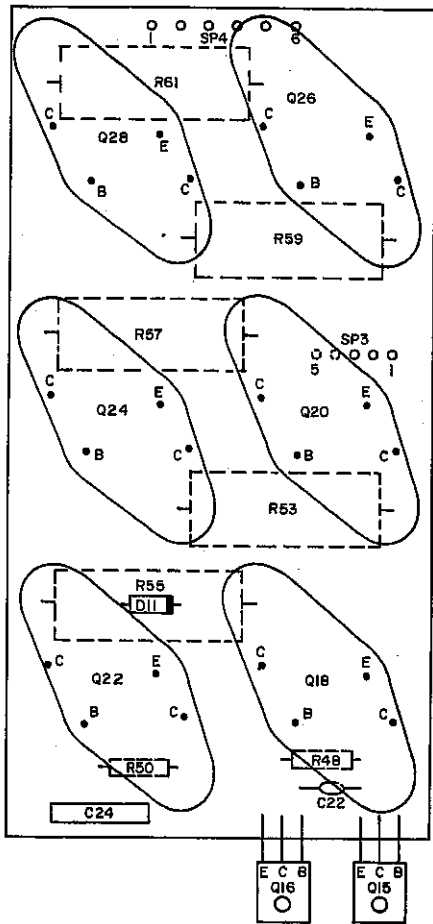
COMPONENTS MARKED WITH AN ASTERISK (*) ARE ON REVERSE SIDE OF BOARD



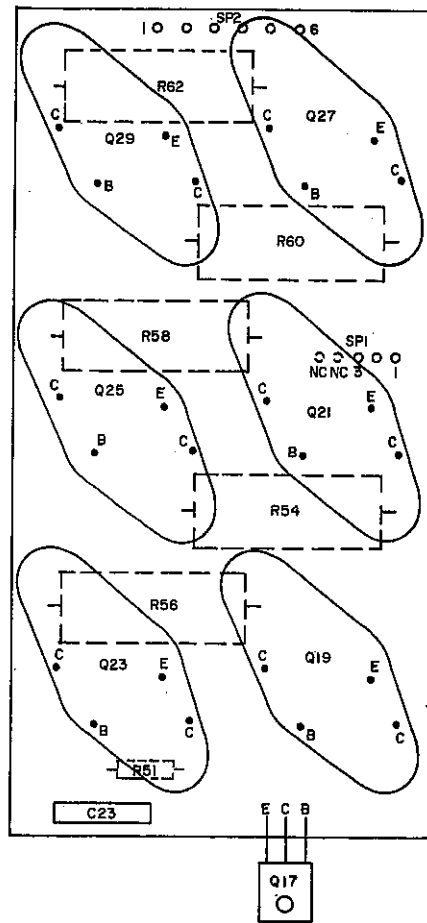
**CAPACITOR
PCB 048489**

**CAPACITOR
PARTS LIST**

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



**LEFT & RIGHT
POSITIVE HEATSINK
PCB 047188**



**LEFT & RIGHT
NEGATIVE HEATSINK
PCB 047188**

**POSITIVE HEATSINK
LEFT AND RIGHT
PARTS LIST**

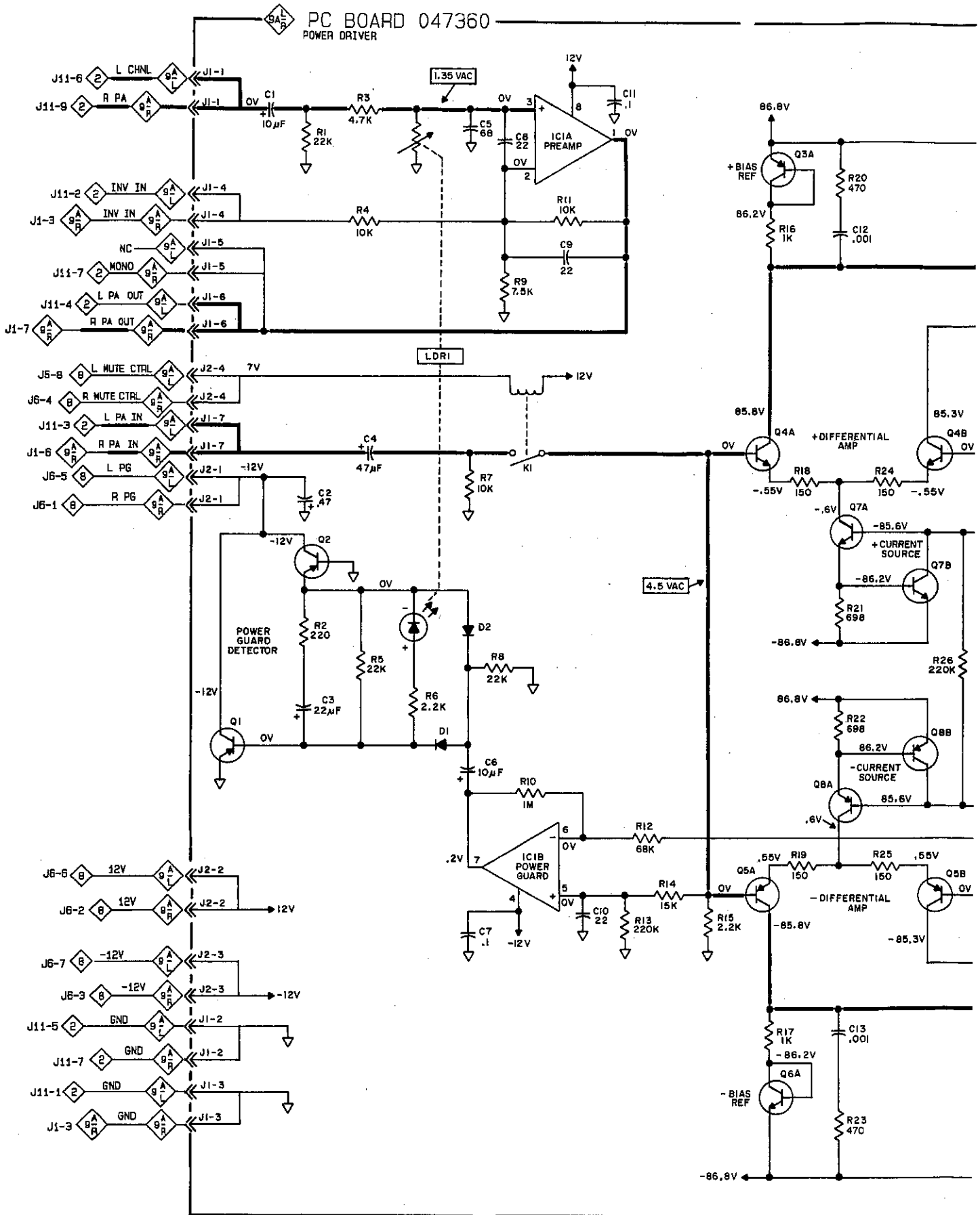
| Symbol | Part | Description |
|-------------------------|--------|--------------------|
| TRANSISTORS | | |
| Q15, Q16 | 132248 | NPN, 2SC3790D or E |
| Q18 | 132246 | NPN, MJ15020 |
| Q20, Q22, Q24, Q26, Q28 | 132212 | NPN, MJ15024 |

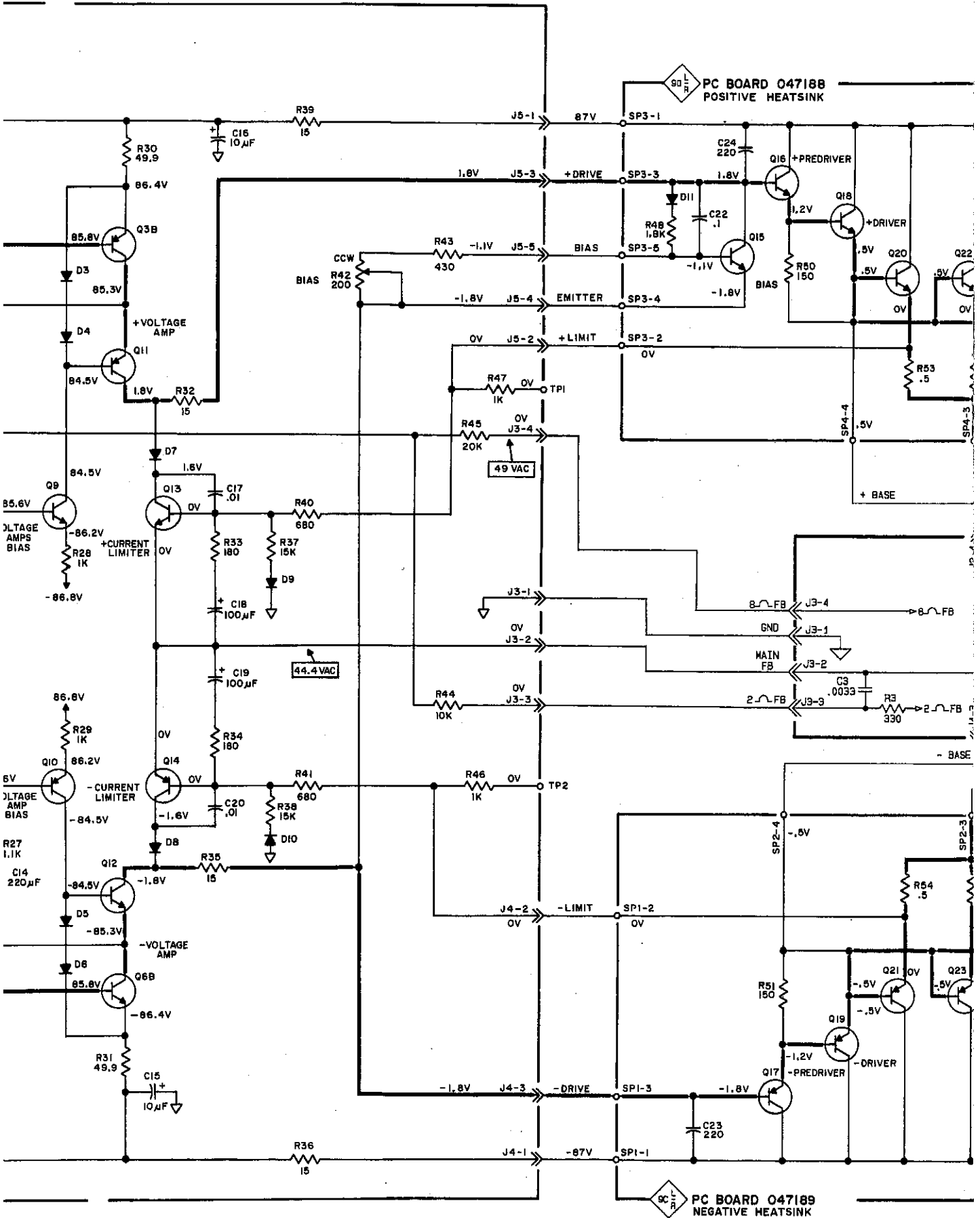
**NEGATIVE HEATSINK
LEFT AND RIGHT
PARTS LIST**

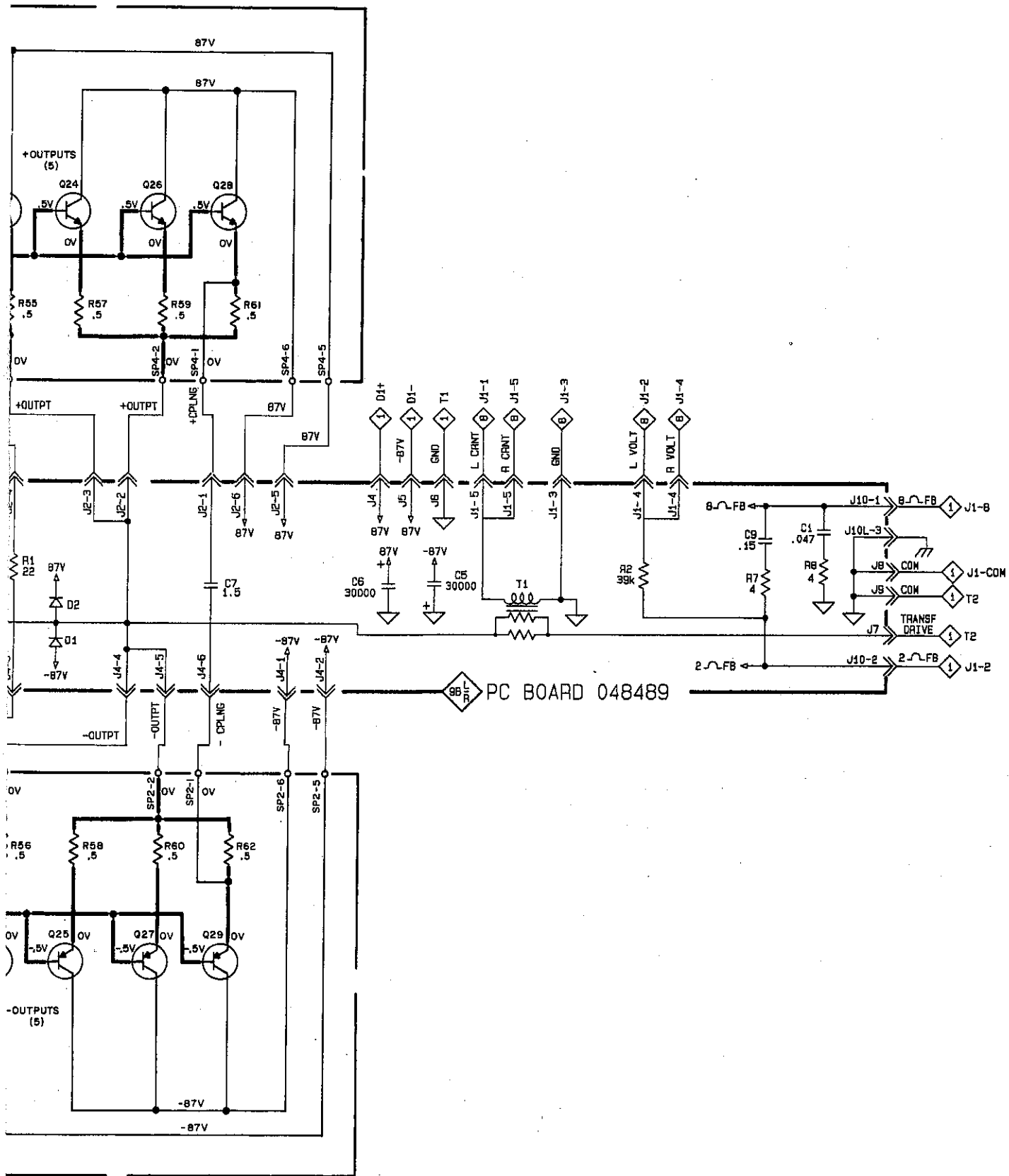
| Symbol | Part | Description |
|-------------------------|--------|--------------------|
| TRANSISTORS | | |
| Q17 | 132249 | PNP, 2SA1480D OR E |
| Q19 | 132247 | PNP, MJ15021 |
| Q21, Q23, Q25, Q27, Q29 | 132213 | PNP, MJ15025 |

Amplifier

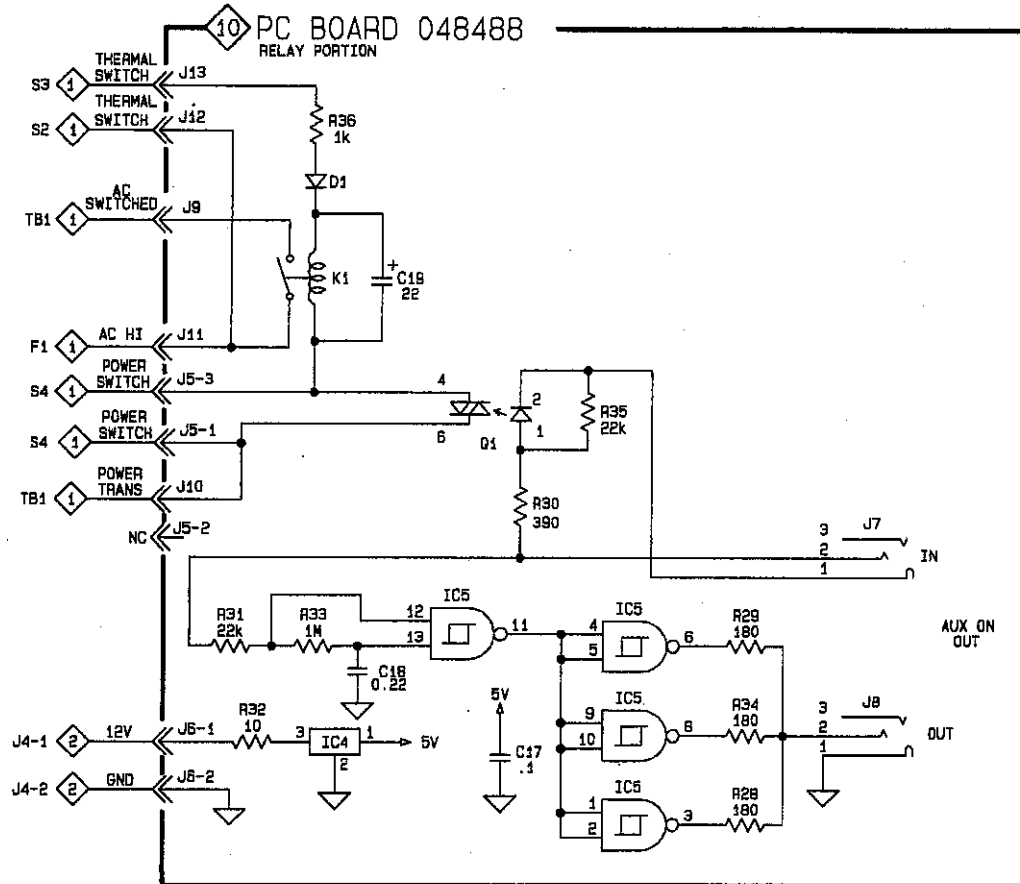
9



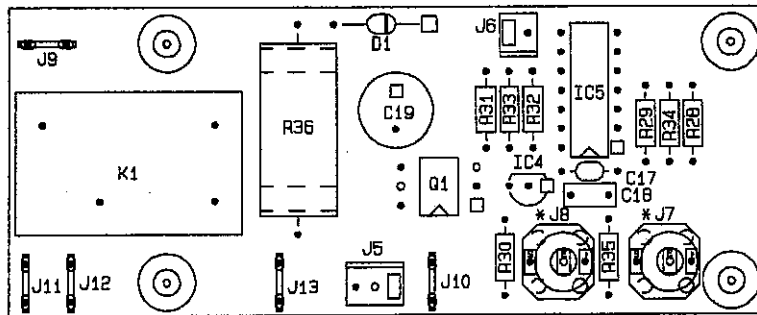




10 Relay



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

Repacking Instructions

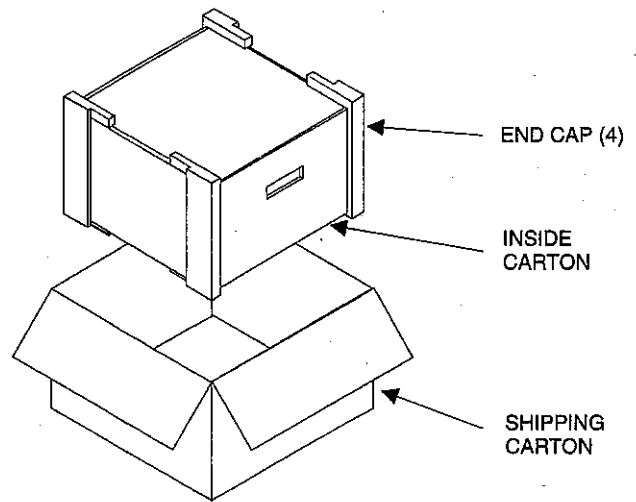
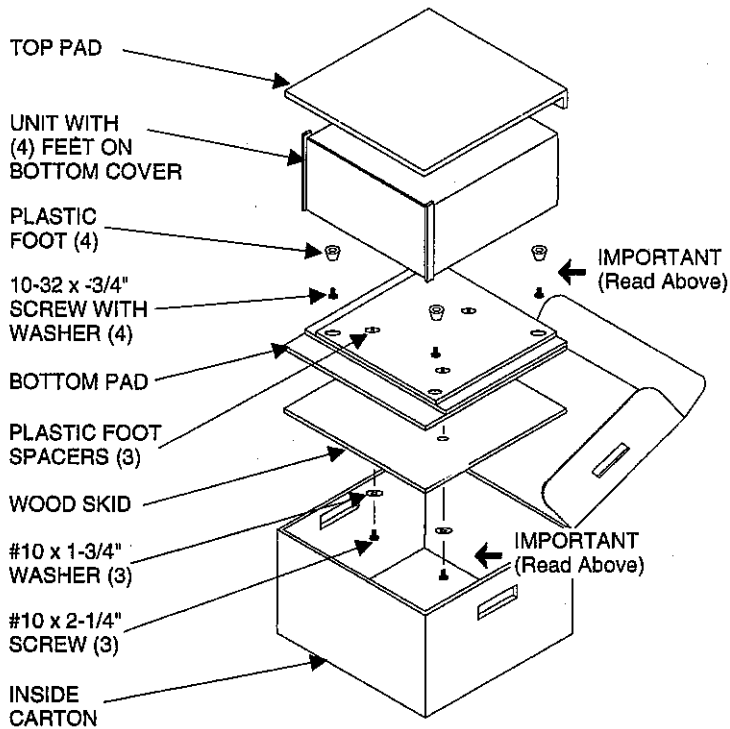
In the event it is necessary to repack the unit for shipment, the unit must be packed exactly as shown below.

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

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