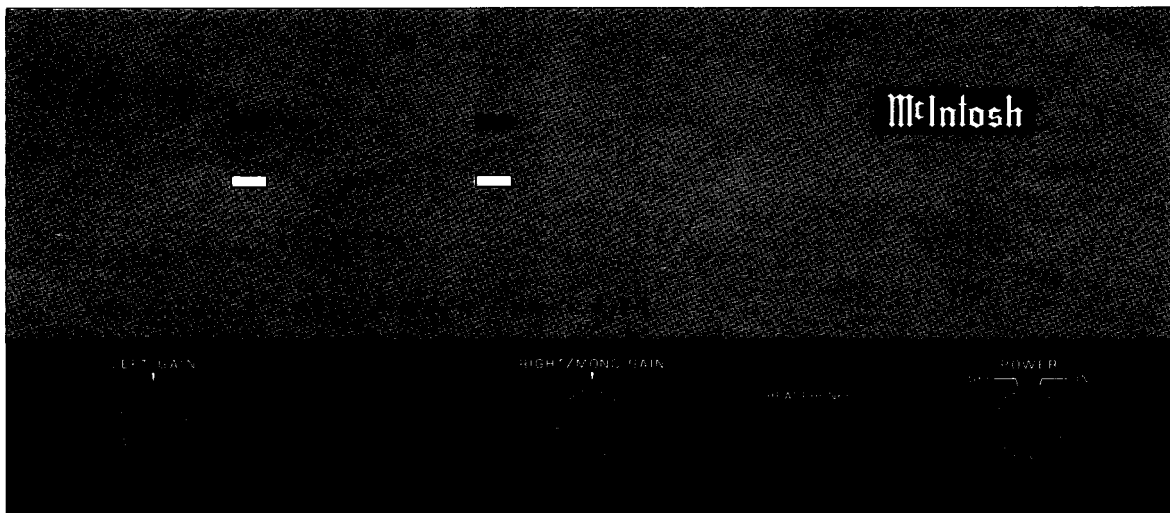


# McIntosh

## MC 2200 POWER AMPLIFIER



## SERVICE INFORMATION

STARTING WITH SERIAL NO. AU1001

MCINTOSH LABORATORY INC BINGHAMTON NEW YORK 13903

038-909  
BE052007

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**PERFORMANCE**


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McIntosh audio power ratings are in accordance with the Federal Trade Commission Regulation of November 4, 1974 concerning power output claims for amplifiers used in home entertainment products.

**POWER OUTPUT**

STEREO: 200 watts minimum sine wave continuous average power output, per channel, both channels operating into 1 ohm, 2 ohms, 4 ohms, or 8 ohms load impedance, which is:

14.1 volts RMS across 1 ohm  
 20.0 volts RMS across 2 ohms  
 28.3 volts RMS across 4 ohms  
 40.0 volts RMS across 8 ohms

MONO: 400 watts minimum sine wave continuous average power output into 0.5 ohm, 1 ohm, 2 ohms, or 4 ohms load impedance, which is:

14.1 volts RMS across 0.5 ohm  
 20.0 volts RMS across 1 ohm  
 28.3 volts RMS across 2 ohms  
 40.0 volts RMS across 4 ohms

**OUTPUT LOAD IMPEDANCE**

STEREO: 1 ohm, 2 ohms, 4 ohms, and 8 ohms; separate terminals are provided for each output

MONO: 0.5 ohm, 1 ohm, 2 ohms, and 4 ohms; obtained by connecting together the appropriate terminals of both channels

**RATED POWER BAND**

20 Hz to 20,000 Hz

**TOTAL HARMONIC DISTORTION**

STEREO: 0.1% maximum harmonic distortion at any power level from 250 milliwatts to 200 watts per channel from 20 Hz to 20,000 Hz, both channels operating

MONO: 0.1% maximum harmonic distortion at any power level from 250 milliwatts to 400 watts from 20 Hz to 20,000 Hz

**INTERMODULATION DISTORTION**

STEREO: 0.1% maximum if instantaneous peak power output is 400 watts or less per channel with both channels operating for any combination of frequencies, 20 Hz to 20,000 Hz

MONO: 0.1% maximum if instantaneous peak power output is 800 watts or less for any combination of frequencies, 20 Hz to 20,000 Hz

**FREQUENCY RESPONSE**

(at one watt output)

20 Hz to 20,000 Hz, +0 -0.25 dB  
 10 Hz to 100,000 Hz +0 -3.0 dB

**NOISE AND HUM**

95 dB below rated output

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**RATINGS**


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**OUTPUT VOLTAGES**

25 volts for distribution lines

**DAMPING FACTOR**

STEREO: 16 at 1 ohm output, 50 at 2 ohms output, 30 at 4 ohms output, 16 at 8 ohms output

MONO: 16 at 0.5 ohms, 50 at 1 ohm, 30 at 2 ohms, and 16 at 4 ohms output

**INPUT IMPEDANCE**

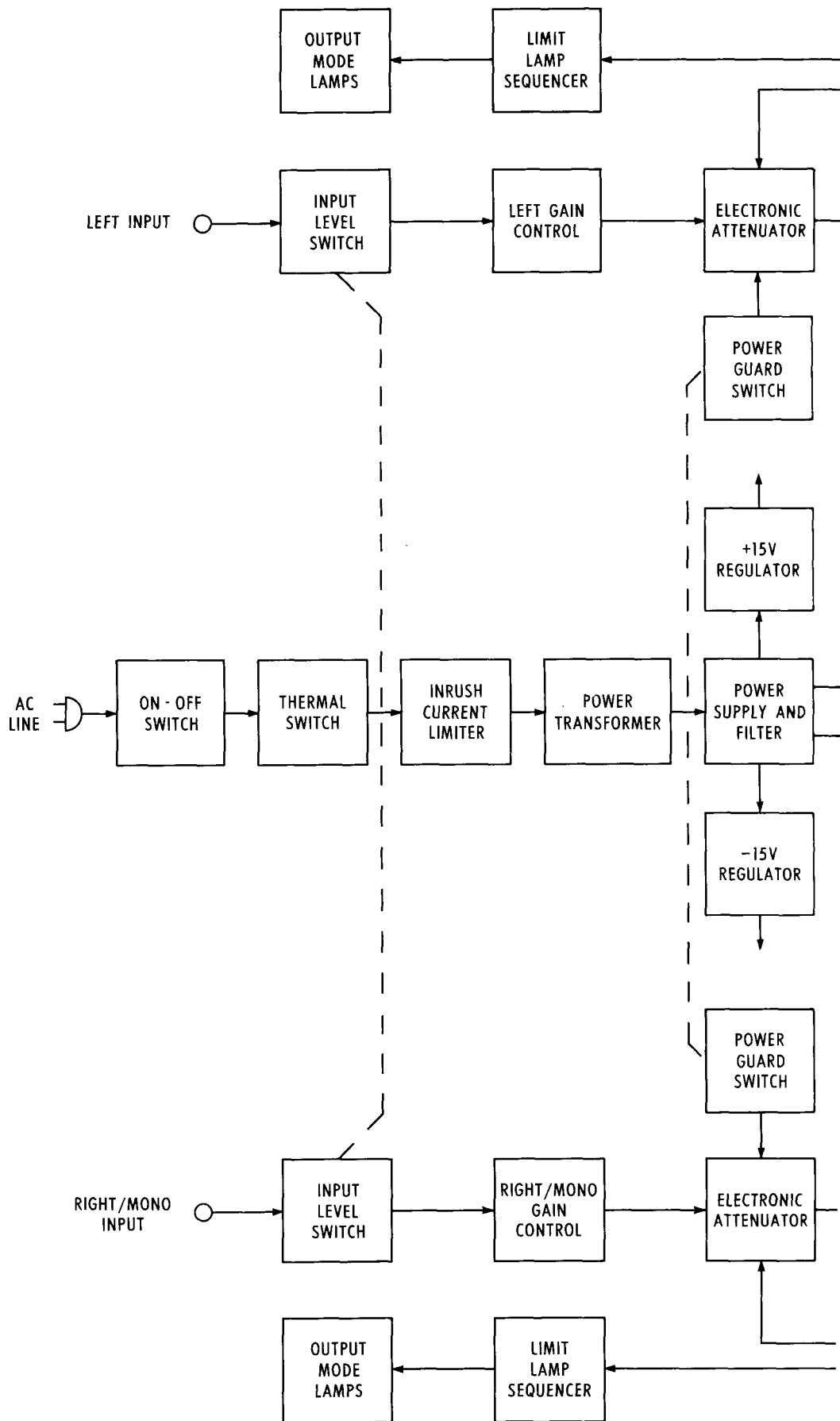
100,000 ohms

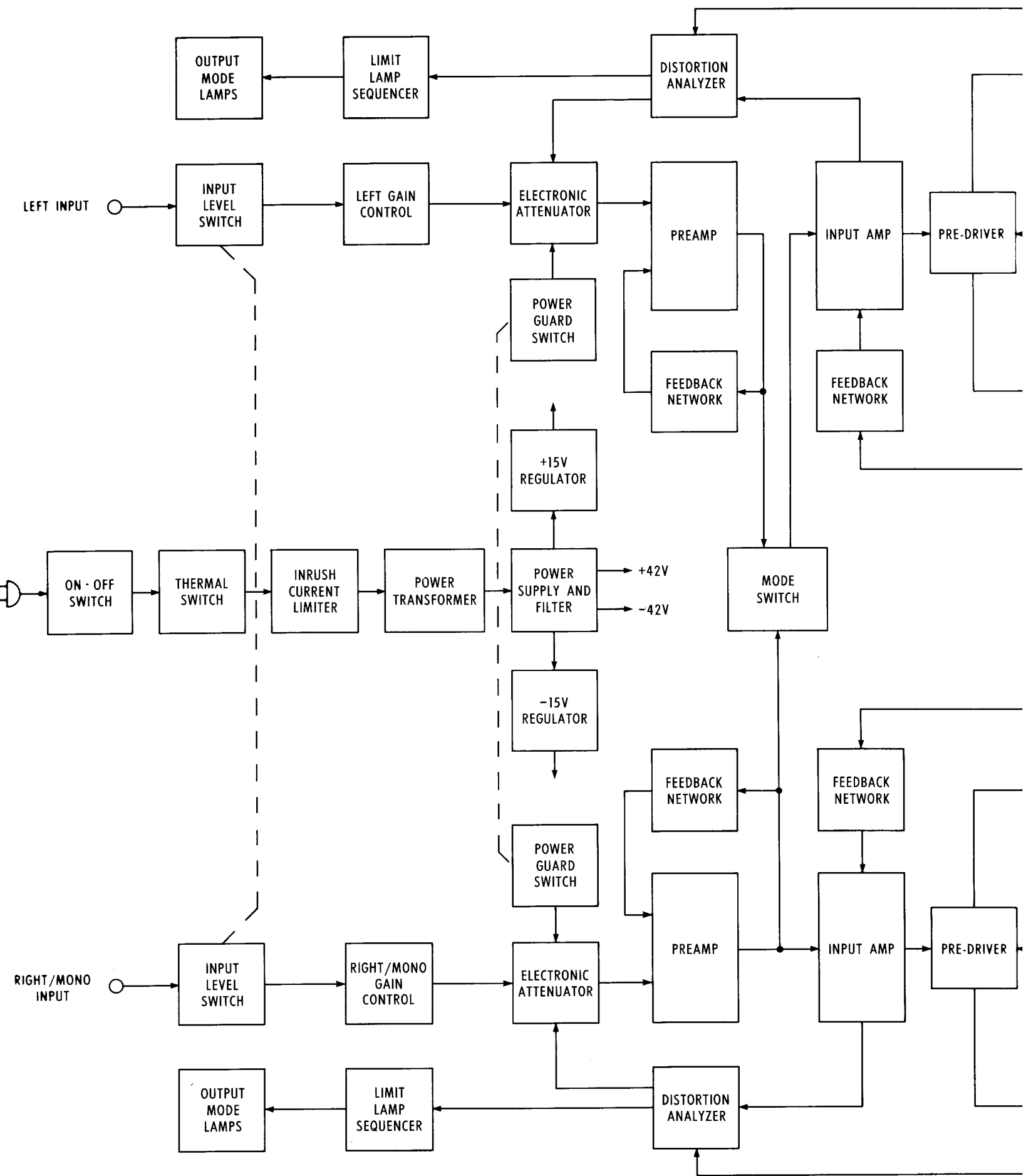
**INPUT SENSITIVITY**

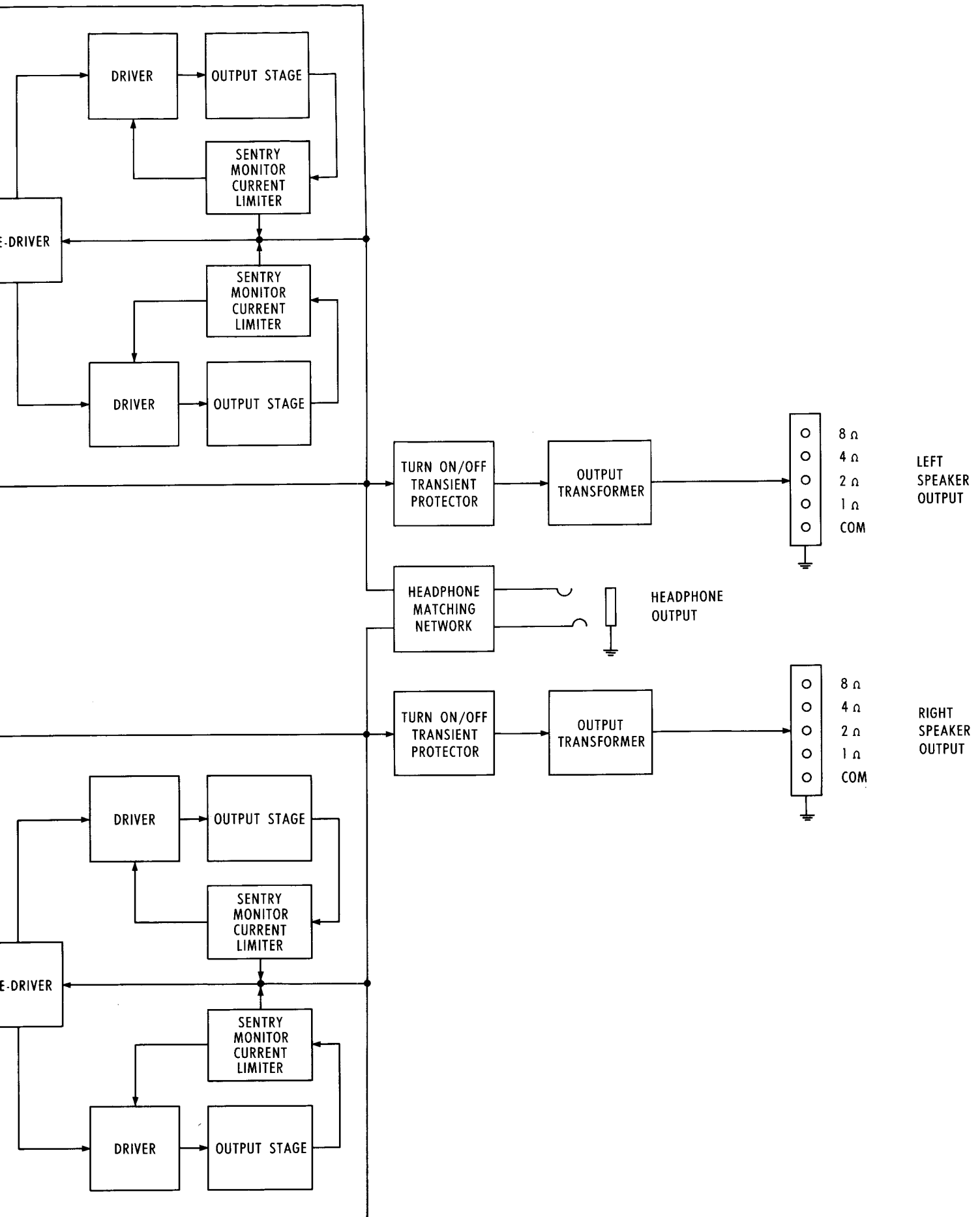
Switchable: 0.75 volt or 2.5 volts-  
 Level control provided for higher  
 input voltages

**POWER REQUIREMENTS**

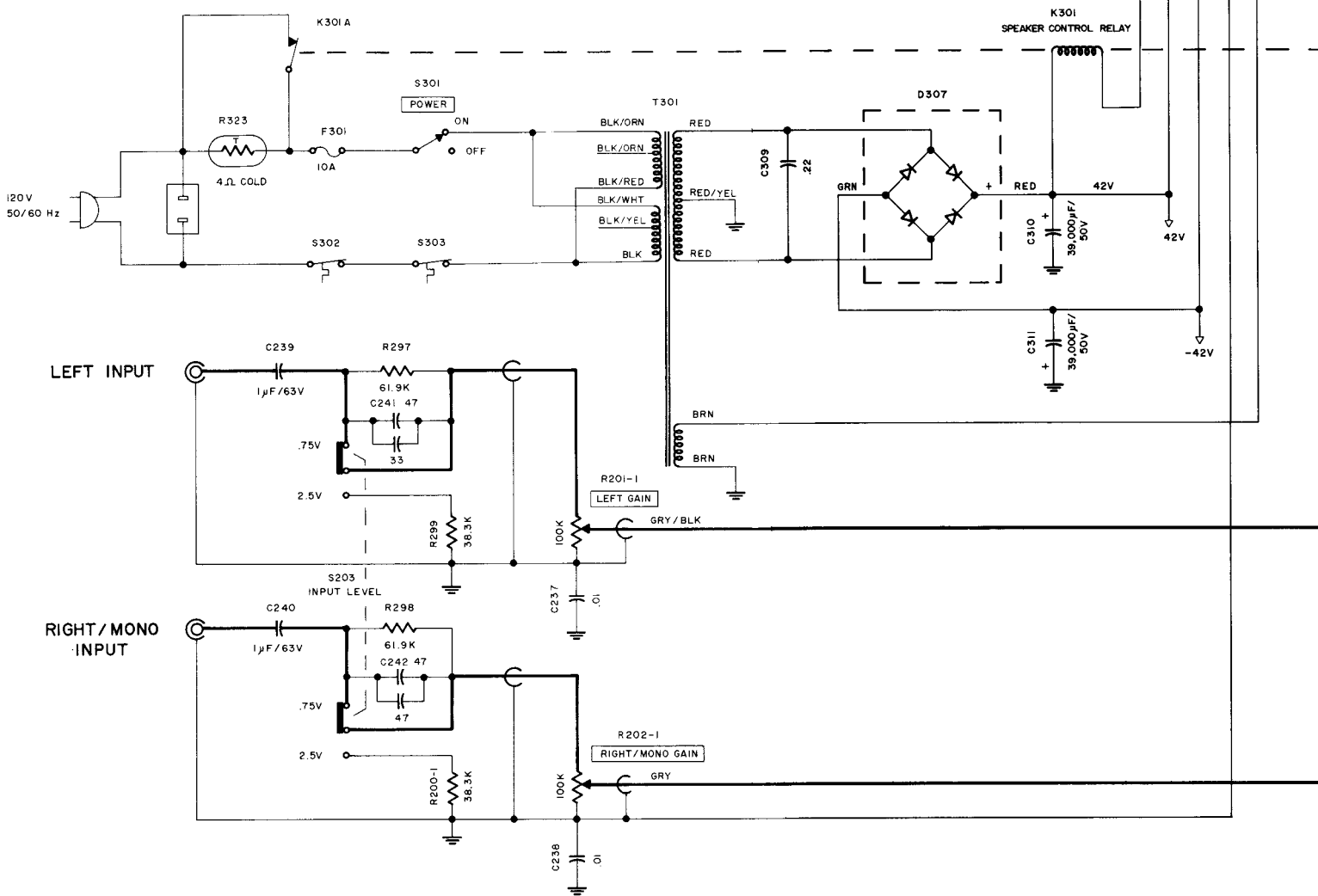
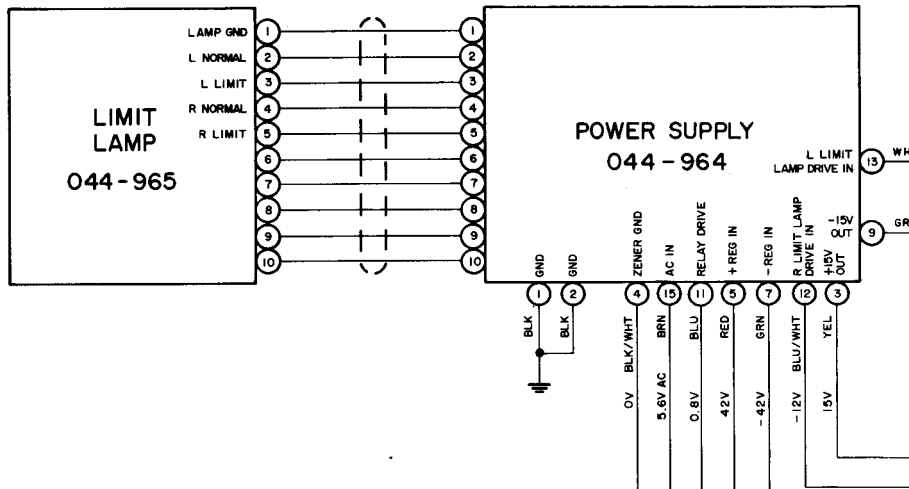
120 volts 50/60Hz, 70 to 550 watts.



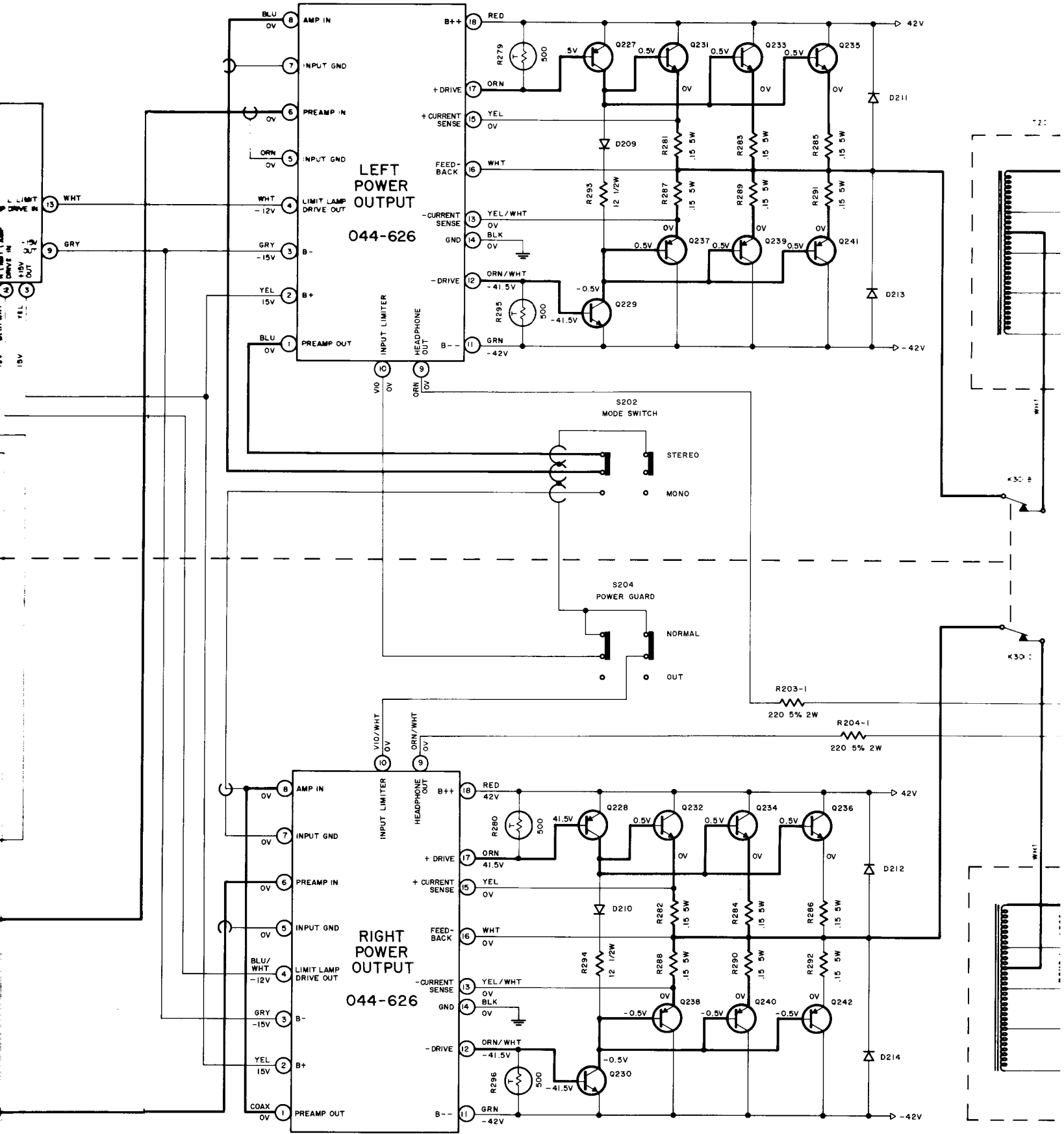




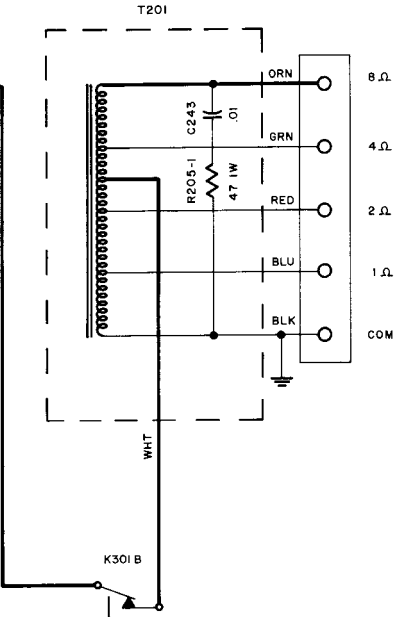
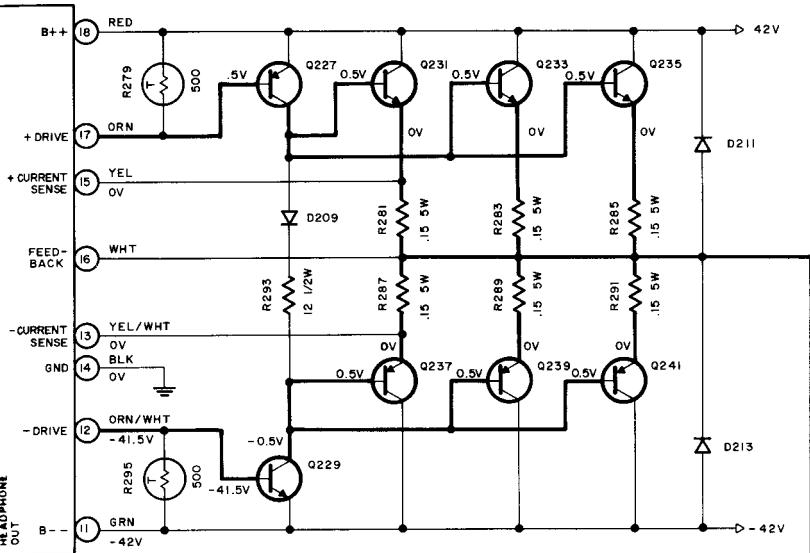
BLOCK DIAGRAM



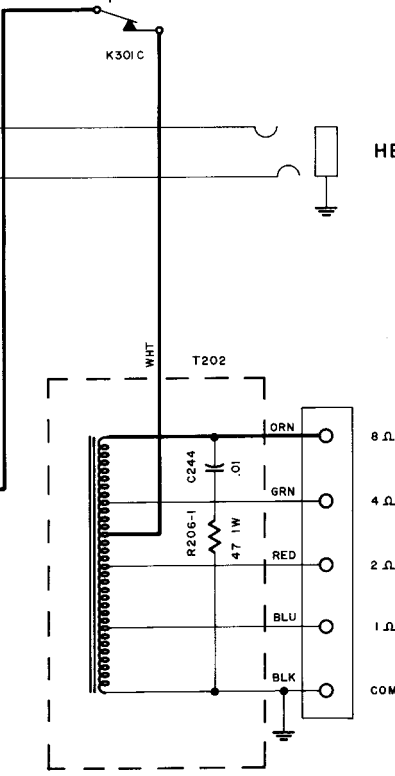
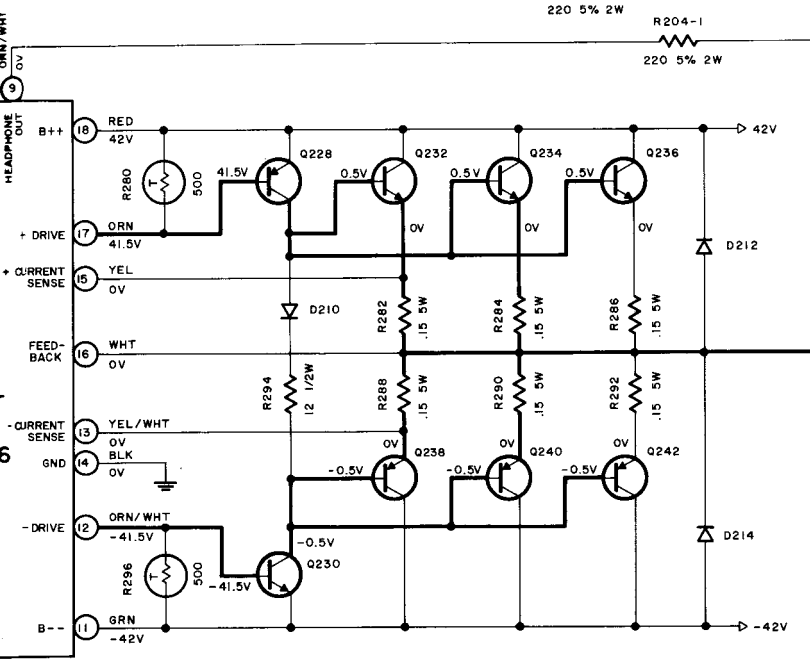
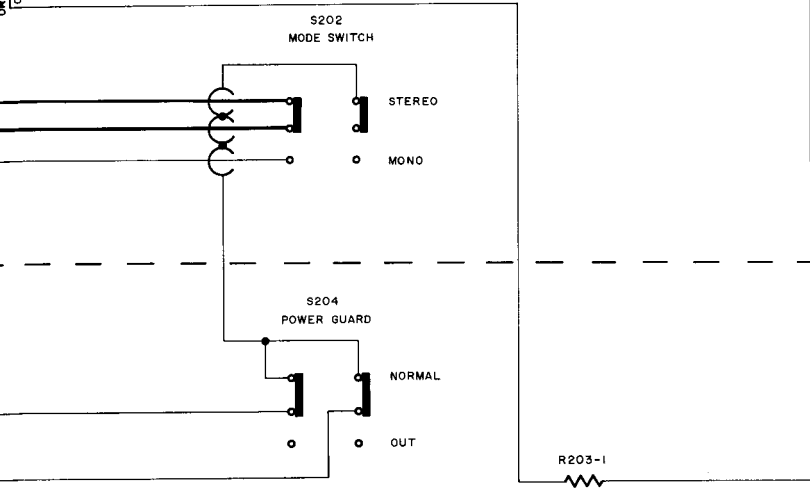
INTERCONNECTION



# MC2200



LEFT CHANNEL OUTPUT



RIGHT CHANNEL OUTPUT

HEADPHONE



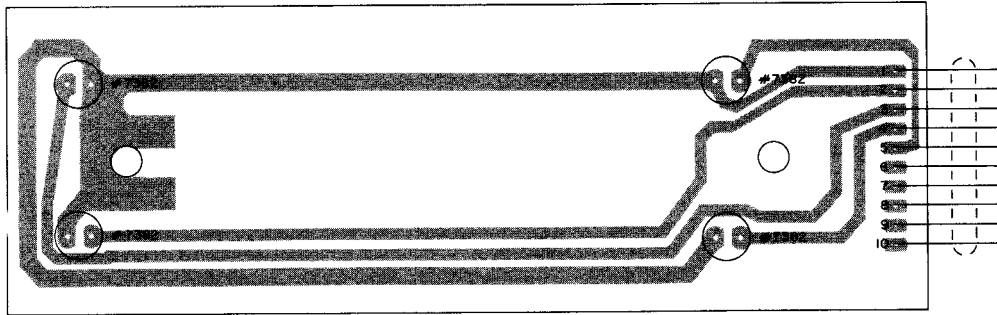
## SCHEMATIC NOTES

1. Unless otherwise specified: Resistance values are in ohms, 1/4 watt, and 10% tolerance; capacitance values smaller than 1 are in microfarads ( $\mu\text{F}$ ); capacitance values greater than 1 are in picofarads ( $\text{pF}$ ); inductors are in microhenries ( $\mu\text{H}$ ).
2. Printed circuit board components are outlined on the schematics by dotted lines. The circled numbers on the dotted lines correspond to the numbers on the PC board layouts.
3. The heavy lines on the schematics denote the primary signal path.
4. The terminal numbering of rotary switches is for reference only.
5. All voltages indicated on the schematics are measured under the following conditions:
  - a. Use of an 11 megohm impedance VTVM.
  - b. All voltages  $\pm 10\%$  with respect to chassis ground.
  - c. No signal at input terminals.
  - d. AC input at 120 volts AC, 50/60Hz.
  - e. Front panel controls at:
 

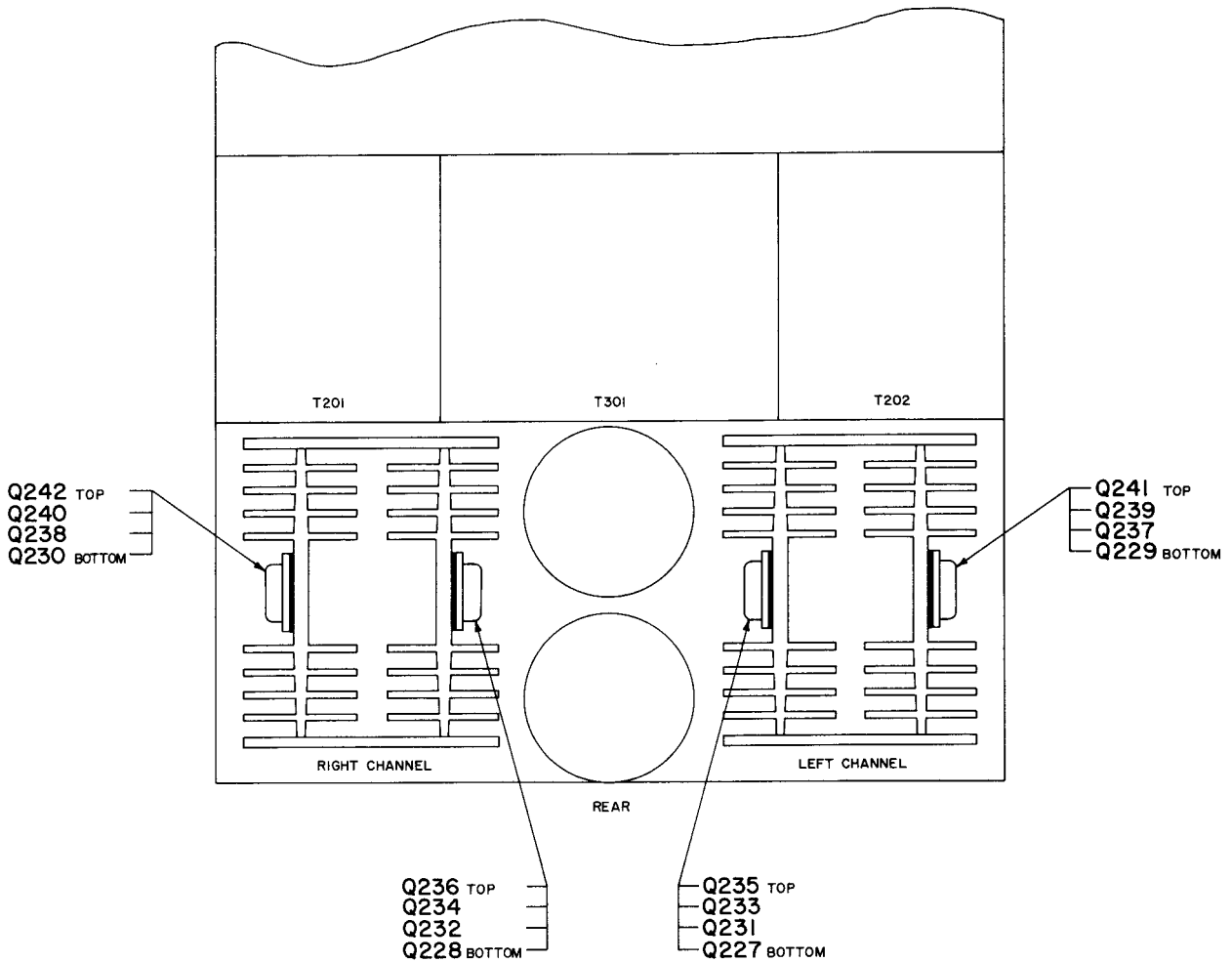
|                 |           |                         |        |
|-----------------|-----------|-------------------------|--------|
| Left Gain       | FULLY CCW | Rear panel switches at: |        |
| Right/Mono Gain | FULLY CCW | Input Level             | 0.75V  |
| Power           | ON        | Mode                    | Stereo |
|                 |           | Power Guard             | Normal |
6. Relay K301 shown in energized position.
7. Power amplifier bias adjustment:
 

Operate MC 2200 at 120 volts line input with no input signal. Measure the input power (approximately 50 watts) or current (approximately 0.4 amps). The bias potentiometers R241 & R242 are located on the power output PC boards.

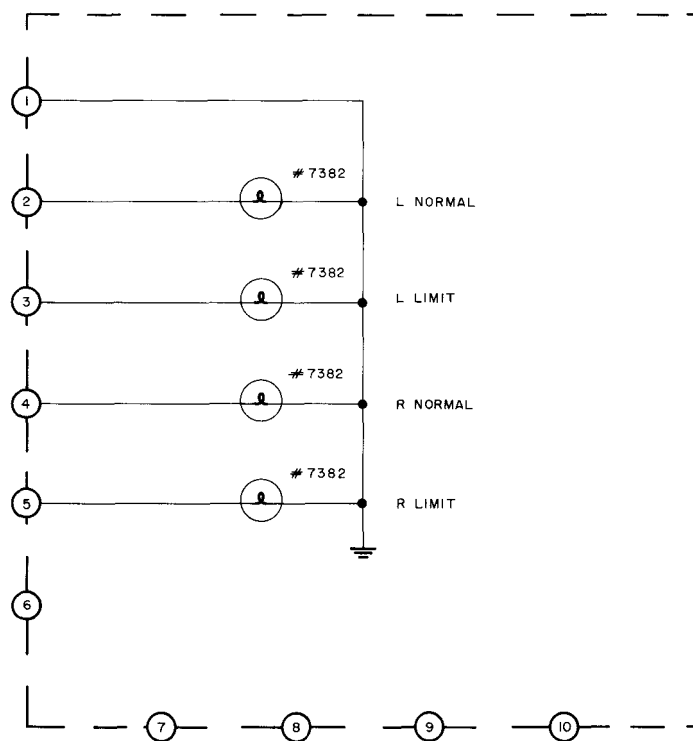
  - a. Turn both bias potentiometers full ccw
  - b. Rotate bias adjustment cw to the point where the line input power or current increases by 6 watts or .05 amps.
  - c. Repeat step b for each channel independently.



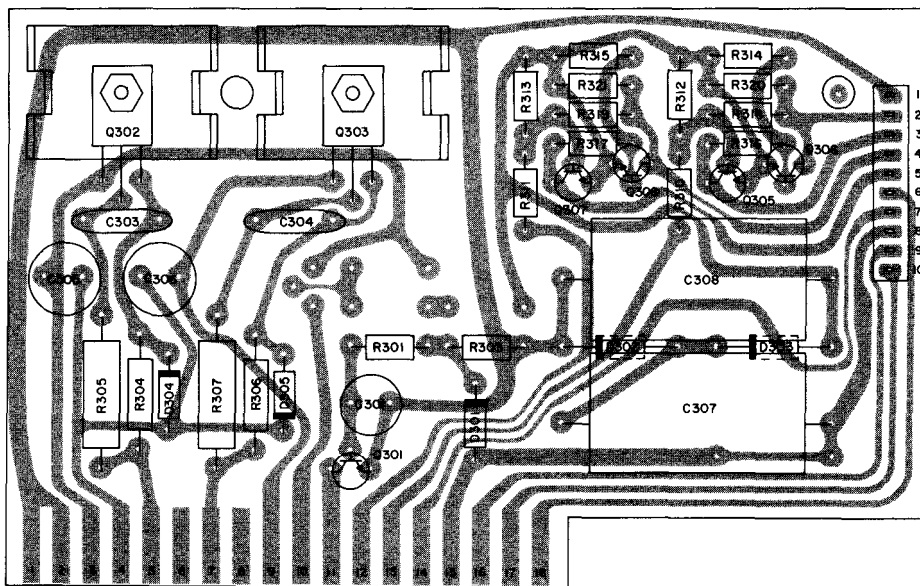
LIMIT LAMP PC BOARD 054-486



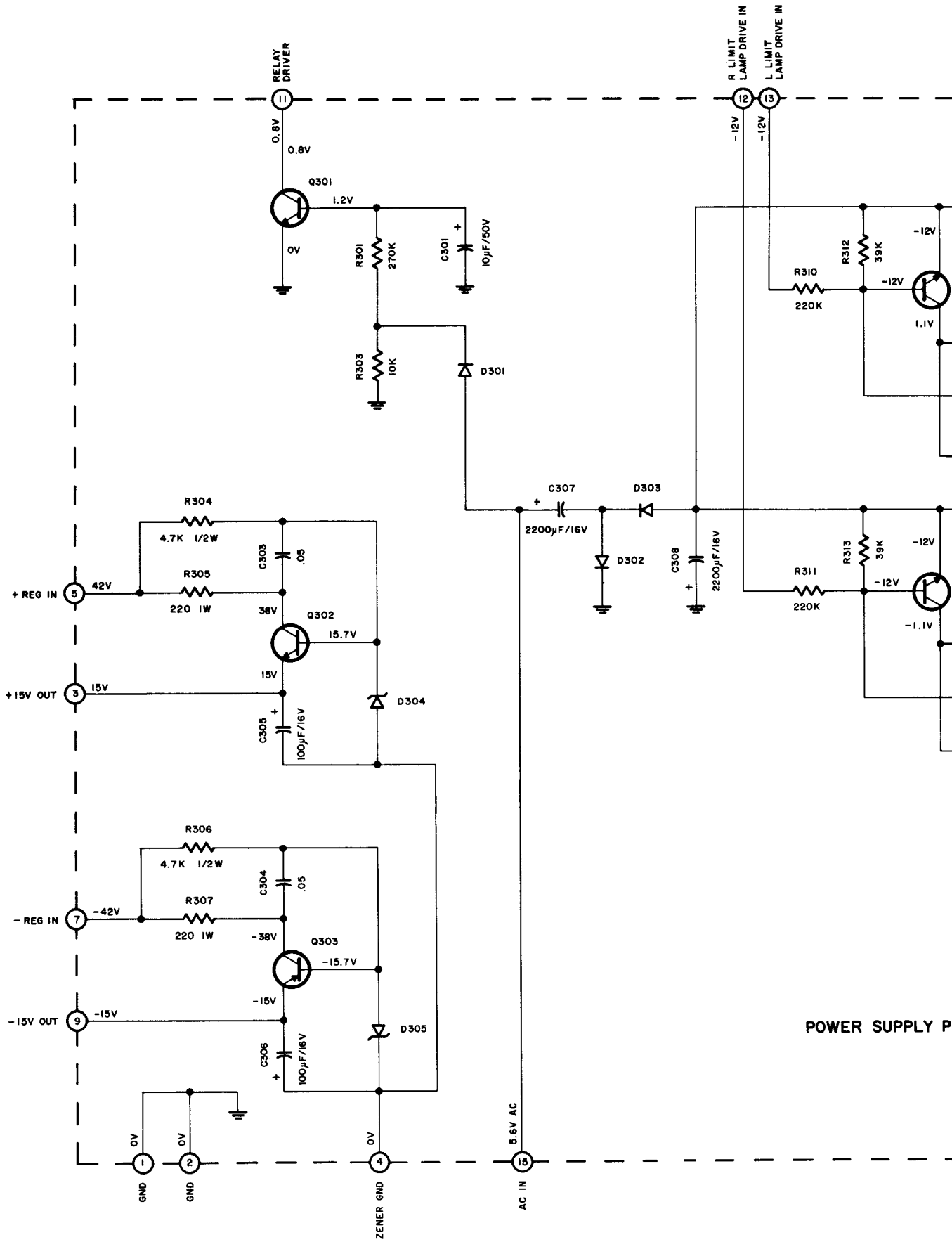
LOCATION OF TRANSISTORS NOT ON PC BOARD



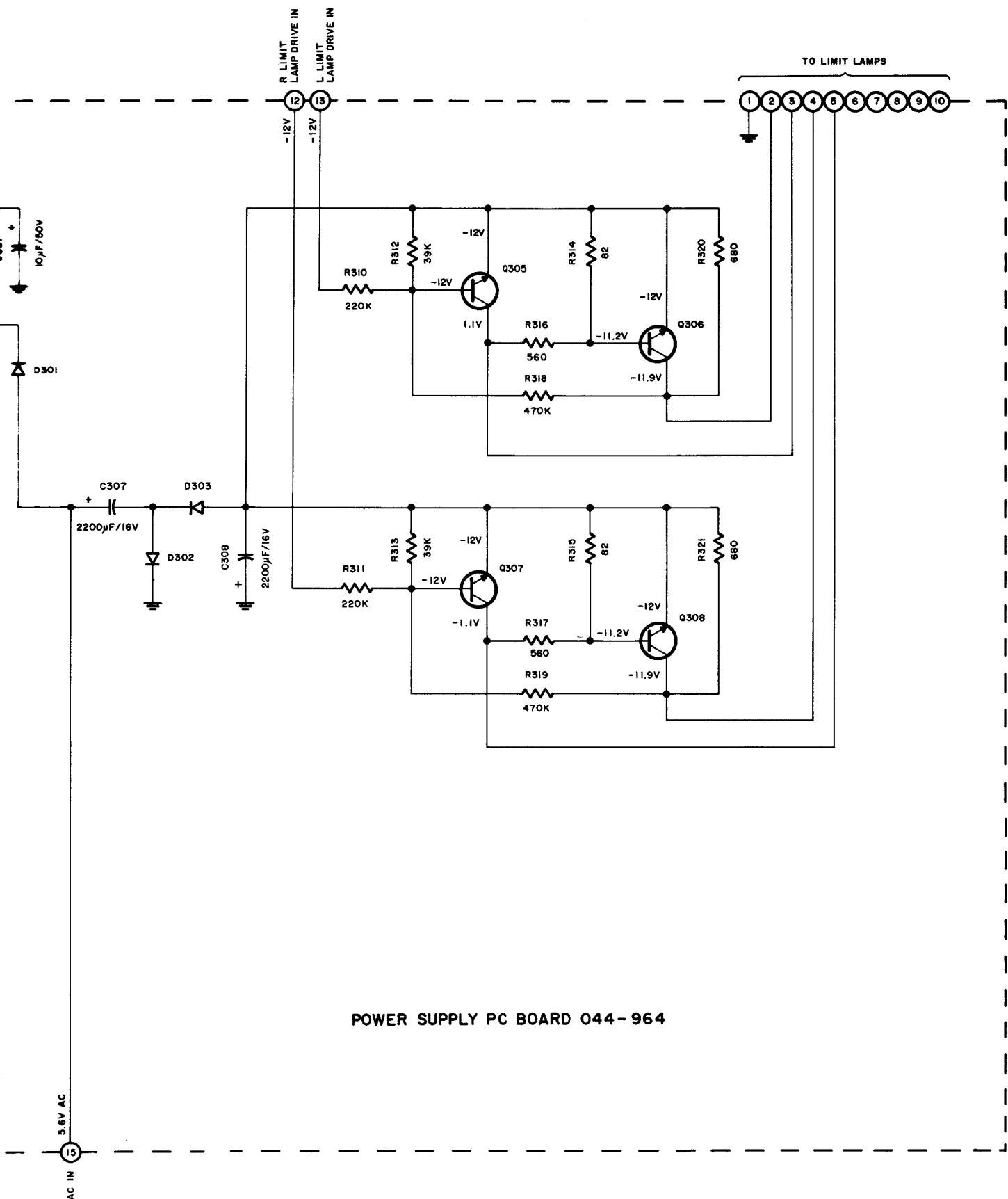
LIMIT LAMP PC BOARD 044-965



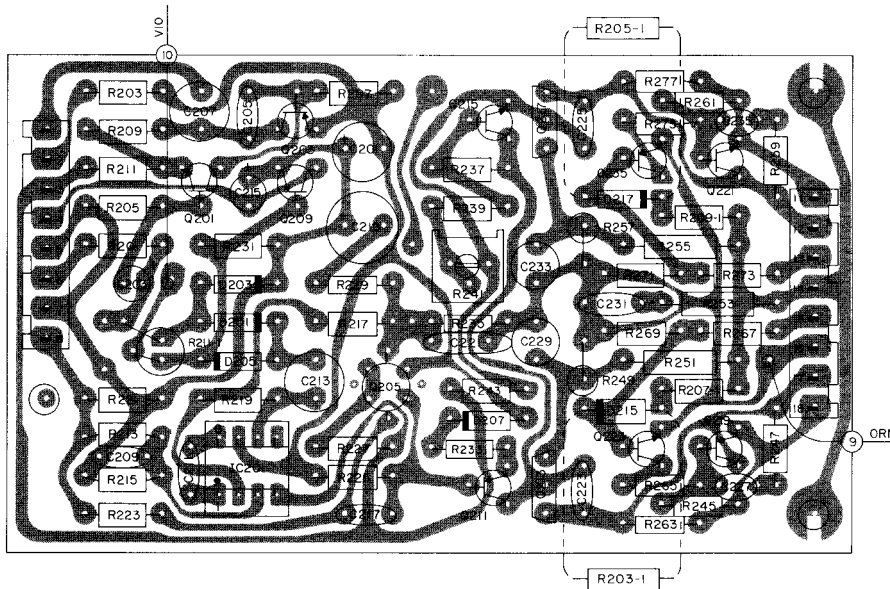
POWER SUPPLY PC BOARD 044-964



POWER SUPPLY P

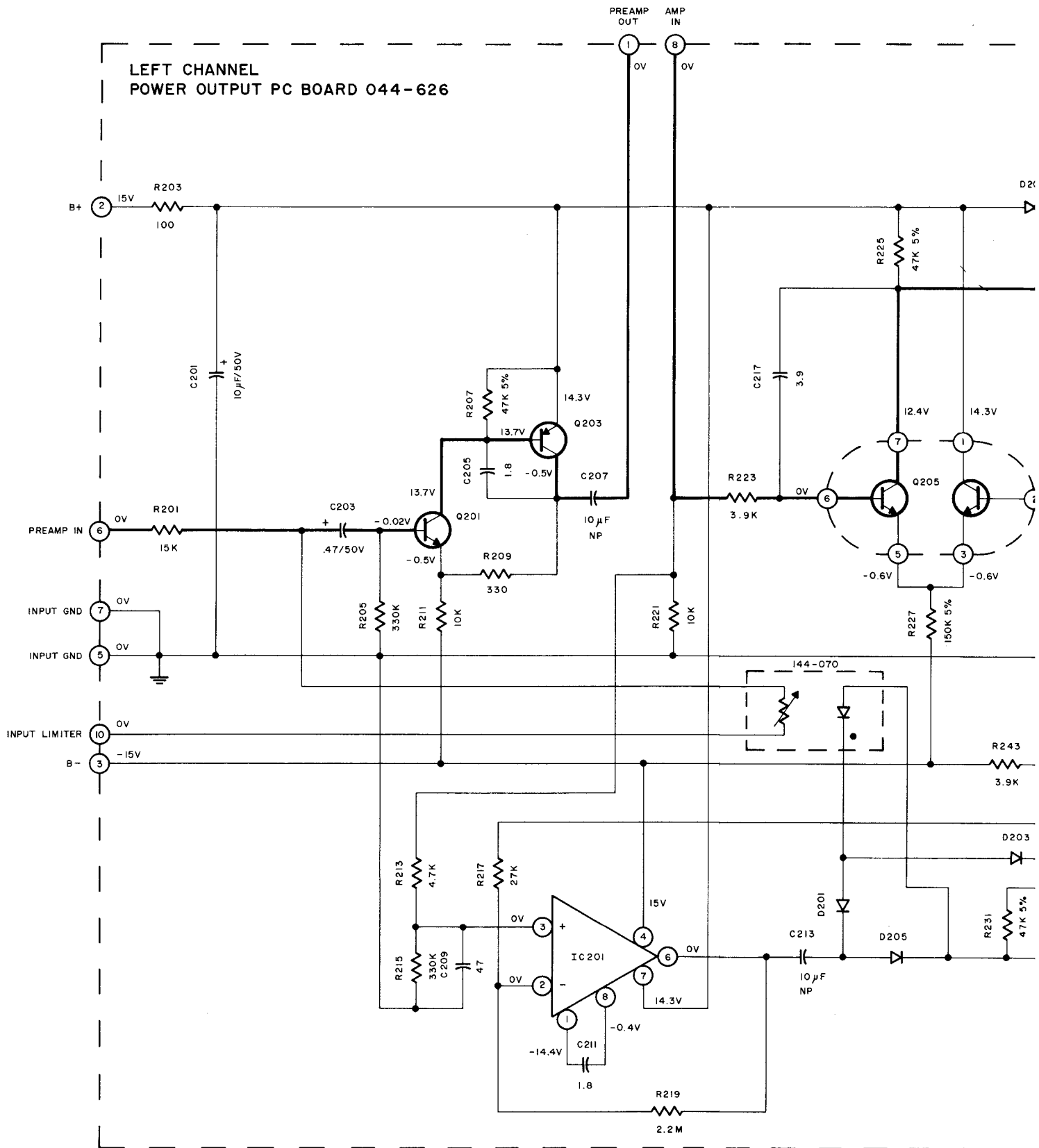


POWER SUPPLY PC BOARD 044-964

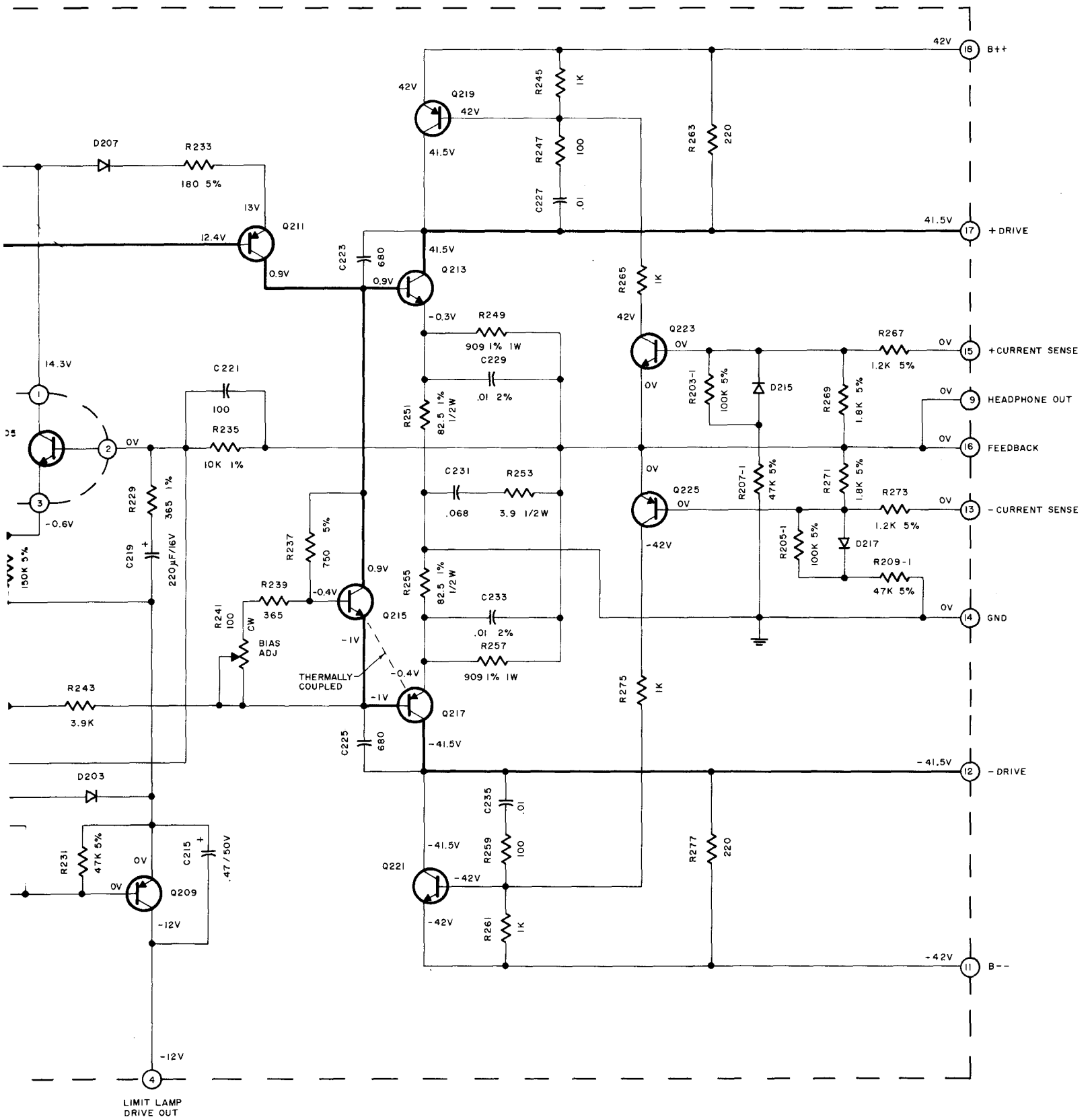


LEFT CHANNEL POWER OUTPUT PC BOARD O44-626

LEFT CHANNEL  
POWER OUTPUT PC BOARD 044-626

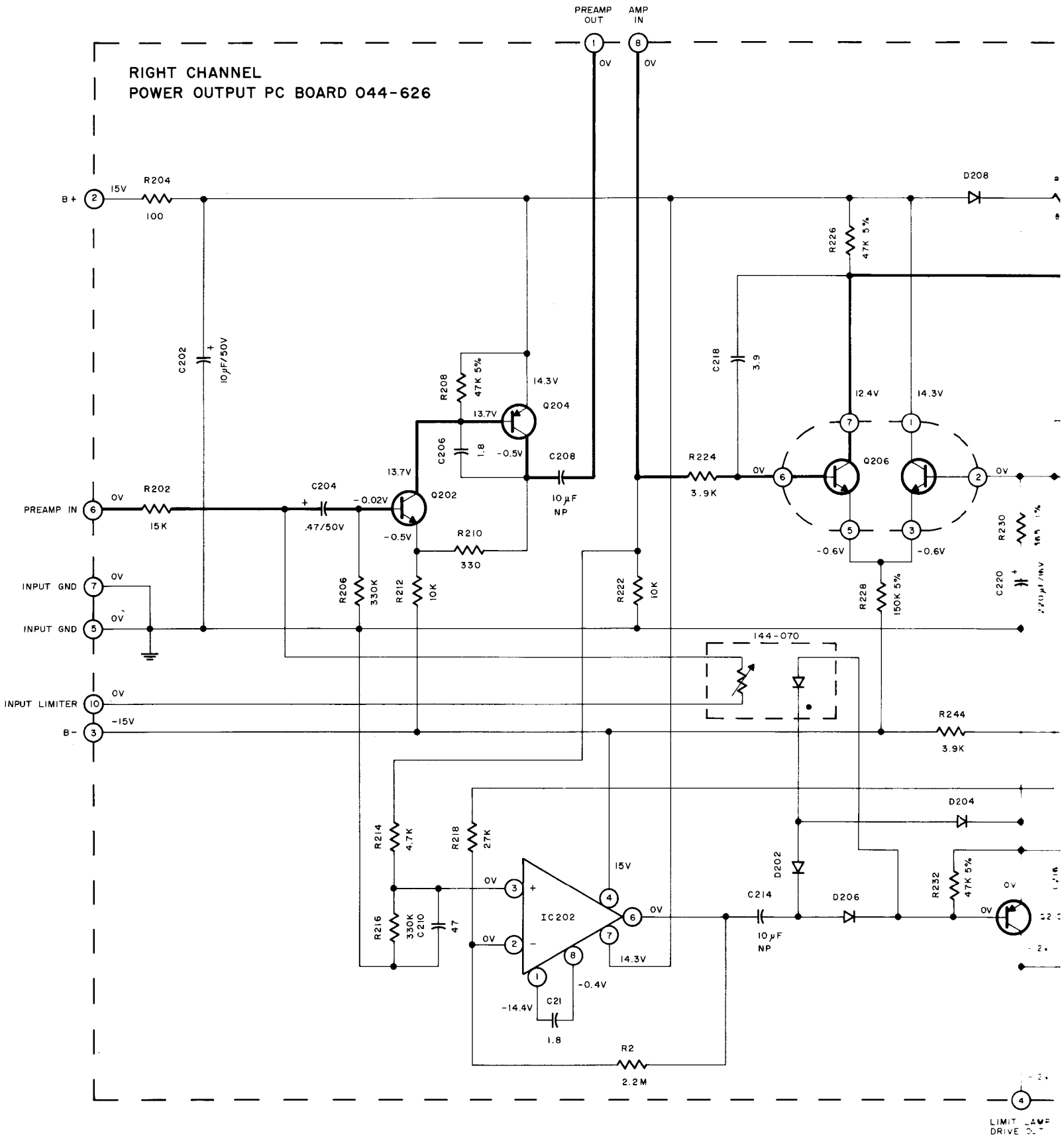


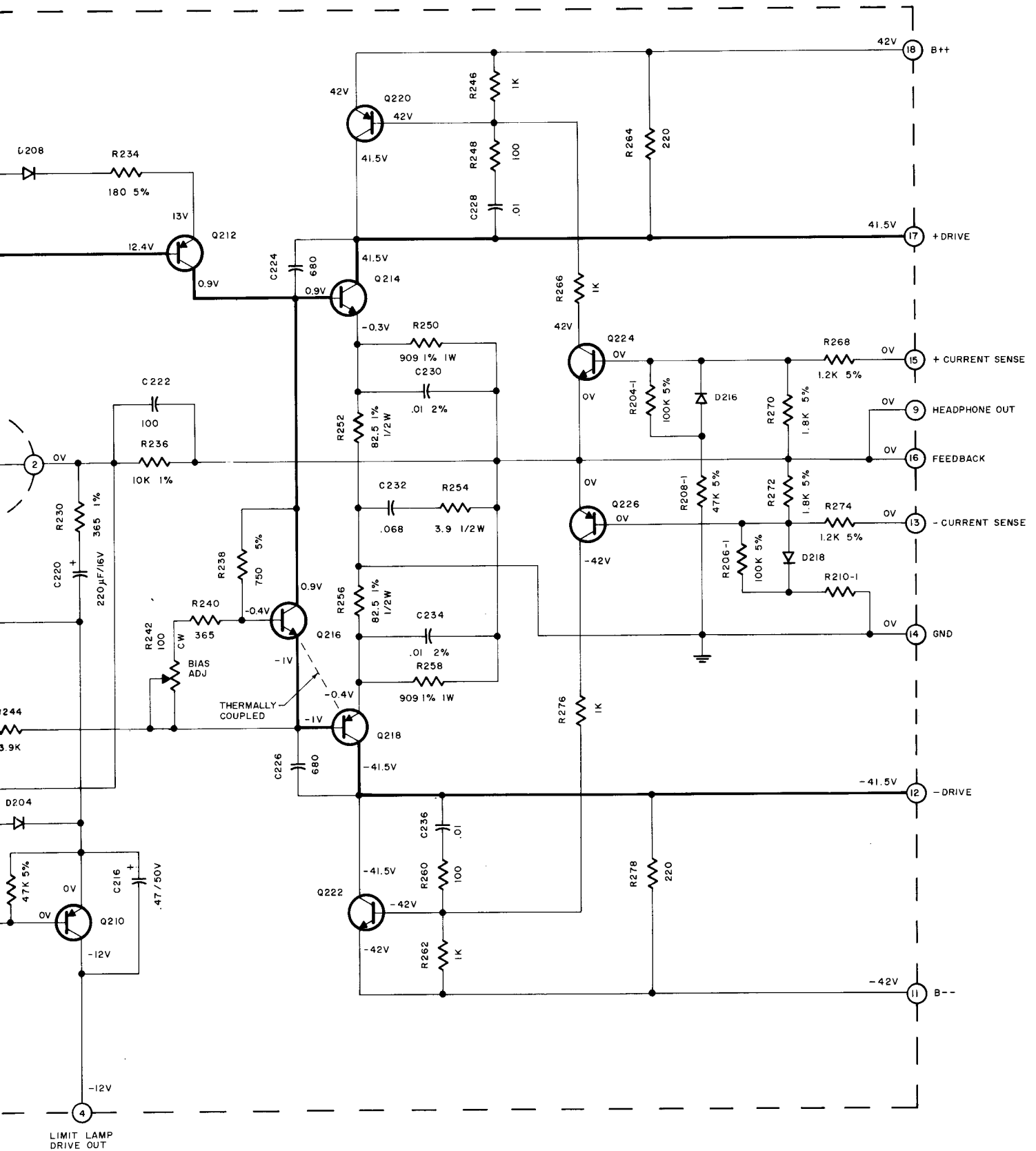


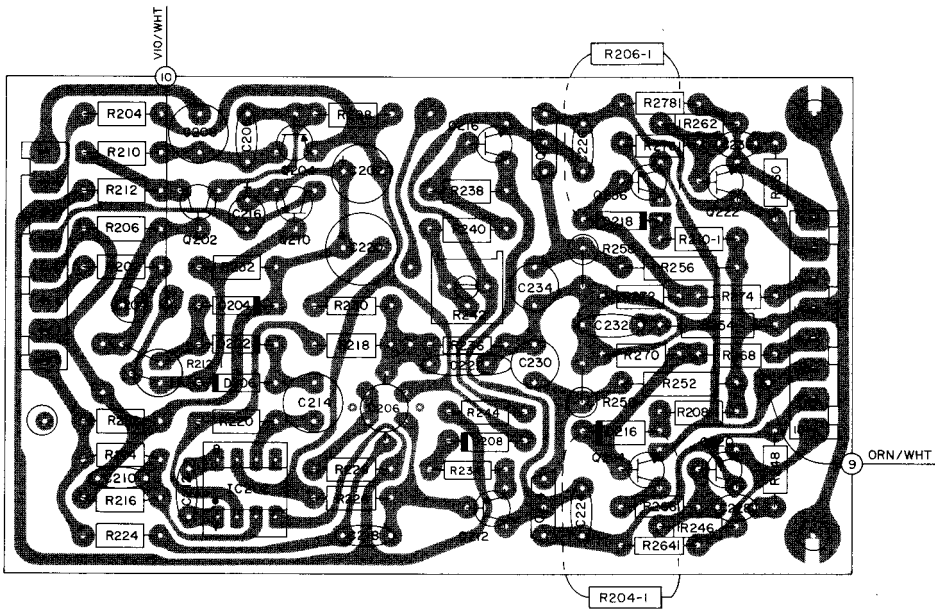


POWER OUTPUT

RIGHT CHANNEL  
POWER OUTPUT PC BOARD 044-626







RIGHT CHANNEL POWER OUTPUT PC BOARD O44-626

## REPLACEMENT PARTS

All parts not listed are common items obtainable from radio parts jobbers.

Replacement parts may be obtained when ordered by PART NUMBER from:

McIntosh Laboratory, Inc.  
Customer Service Department  
2 Chambers Street  
Binghamton, New York 13903  
(Telephone 607-723-3512)

## CAPACITORS

| Symbol Number | Description               | Part Number |
|---------------|---------------------------|-------------|
| C201,202      | Elect 10 $\mu$ F 50V      | 066-221     |
| C203,204      | Elect .47 $\mu$ F 50V     | 066-244     |
| C207,208      | Elect 10 $\mu$ F 35V      | 066-173     |
| C213,214      | Elect 10 $\mu$ F 35V      | 066-173     |
| C215,216      | Elect .47 $\mu$ F 50V     | 066-244     |
| C219,220      | Elect 220 $\mu$ F 16V     | 066-218     |
| C227,228      | Mylar .0047 $\mu$ F 100V  | 064-132     |
| C229,230      | Poly .01 $\mu$ F 2.5% 63V | 064-142     |
| C231,232      | Mylar .068 $\mu$ F 100V   | 064-136     |
| C233,234      | Poly .01 $\mu$ F 2.5% 63V | 064-142     |
| C235,236      | Mylar .0047 $\mu$ F 100V  | 064-132     |
| C239,240      | Elect 1 $\mu$ F 63V       | 066-248     |
| C301          | Elect 10 $\mu$ F 50V      | 066-221     |
| C305,306      | Elect 100 $\mu$ F 16V     | 066-203     |
| C307,308      | Elect 2200 $\mu$ F 16V    | 066-247     |
| C309          | Mylar .22 $\mu$ F 630V    | 064-052     |
| C310,311      | Elect 39000 $\mu$ F 50V   | 066-225     |

## DIODES

|          |                  |         |
|----------|------------------|---------|
| D201,202 | Si. signal diode | 070-047 |
| D203,204 | Si. signal diode | 070-047 |
| D205,206 | Si. signal diode | 070-047 |
| D207,208 | Si. signal diode | 070-047 |
| D209,210 | Si. rectifier    | 070-031 |
| D211,212 | Si. rectifier    | 070-031 |
| D213,214 | Si. rectifier    | 070-031 |
| D215,216 | Si. signal diode | 070-047 |
| D217,218 | Si. signal diode | 070-047 |
| D301     | Si. signal diode | 070-047 |
| D302,303 | Si. signal diode | 070-031 |
| D304,305 | Zener diode 16V  | 070-084 |
| D306     | Zener diode 16V  | 070-084 |
| D307     | Rectifier bridge | 070-050 |
| D308     | Si. rectifier    | 070-031 |

## FUSES

|      |          |         |
|------|----------|---------|
| F301 | Fuse 10A | 089-034 |
|------|----------|---------|

## TRANSISTORS

|                     |                            |         |
|---------------------|----------------------------|---------|
| Q201,202            | Si. NPN transistor         | 132-093 |
| Q203,204            | Si. PNP transistor         | 132-096 |
| Q205,206            | Dual NPN transistor        | 132-155 |
| Q209,210            | Si. PNP transistor         | 132-096 |
| Q211,212            | Si. PNP transistor         | 132-096 |
| Q213,214            | Si. NPN transistor         | 132-149 |
| Q215,216            | Si. NPN transistor         | 132-093 |
| Q217,218            | Si. PNP transistor         | 132-148 |
| Q219,220            | Si. PNP transistor         | 132-150 |
| Q221,222            | Si. NPN transistor         | 132-143 |
| Q223,224            | Si. NPN transistor         | 132-136 |
| Q225,226            | Si. PNP transistor         | 132-147 |
| Q227,228            | Si. PNP transistor         | 132-151 |
| Q229,230            | Si. NPN transistor         | 132-152 |
| Q231,232            | Si. NPN transistor         | 132-164 |
| Q233,234            | Si. NPN transistor         | 132-164 |
| Q235,236            | Si. NPN transistor         | 132-164 |
| Q237,238            | Si. PNP transistor         | 132-165 |
| Q239,240            | Si. PNP transistor         | 132-165 |
| Q241,242            | Si. PNP transistor         | 132-165 |
| Q301                | Si. NPN transistor         | 132-090 |
| Q302                | Si. NPN transistor         | 132-078 |
| Q303                | Power transistor           | 132-079 |
| Q304                | Si. PNP transistor         | 132-096 |
| Q305                | Si. NPN transistor         | 132-090 |
| Q306                | Si. NPN transistor         | 132-143 |
| Q307                | Si. NPN transistor         | 132-090 |
| Q308                | Si. NPN transistor         | 132-143 |
| INTEGRATED CIRCUITS |                            |         |
| IC201,202           | Integrated circuit         | 133-037 |
| POTENTIOMETERS      |                            |         |
| R241,242            | Bias Adjust                | 134-298 |
| R201-1,202-1        | Gain controls              | 134-273 |
| RESISTORS           |                            |         |
| R229,230            | Film 365 $\Omega$ 1% 1/4W  | 144-071 |
| R249,250            | Film 909 $\Omega$ 1% 1/4W  | 144-073 |
| R251,252            | Film 82.5 $\Omega$ 1% 1/4W | 144-072 |
| R255,256            | Film 82.5 $\Omega$ 1% 1/4W | 144-072 |
| R257,258            | Film 909 $\Omega$ 1% 1/4W  | 144-073 |

|              |            |              |      |         |
|--------------|------------|--------------|------|---------|
| R279,280     | Thermistor |              |      | 144-074 |
| R281,282     | Wirewound  | .15 $\Omega$ | 5W   | 139-105 |
| R283,284     | Wirewound  | .15 $\Omega$ | 5W   | 139-105 |
| R285,286     | Wirewound  | .15 $\Omega$ | 5W   | 139-105 |
| R287,288     | Wirewound  | .15 $\Omega$ | 5W   | 139-105 |
| R289,290     | Wirewound  | .15 $\Omega$ | 5W   | 139-105 |
| R291,292     | Wirewound  | .15 $\Omega$ | 5W   | 139-105 |
| R295,296     | Thermistor |              |      | 144-074 |
| R297,298     | Film 61.9K | 2%           | 1/4W | 144-077 |
| R299         | Film 38.3K | 2%           | 1/4W | 144-076 |
| R323         | Thermistor |              |      | 144-012 |
| R200-1       | Film 38.3K | 2%           | 1/4W | 144-076 |
| R203-1,204-1 | Wirewound  | 220 $\Omega$ | 2W   | 139-076 |

## SWITCHES

|          |                     |  |  |         |
|----------|---------------------|--|--|---------|
| S301     | Power On-Off Switch |  |  | 146-184 |
| S302,303 | Thermal cutout      |  |  | 153-017 |

## RELAY

|      |                 |  |  |         |
|------|-----------------|--|--|---------|
| K301 | Speaker control |  |  | 087-017 |
|------|-----------------|--|--|---------|

## TRANSFORMERS

|          |                    |  |  |         |
|----------|--------------------|--|--|---------|
| T201,202 | Output transformer |  |  | 044-636 |
| T301     | Power transformer  |  |  | 044-637 |

## FRONT PANEL &amp; TRIM

|  |                      |  |  |         |
|--|----------------------|--|--|---------|
|  | Front panel          |  |  | 044-968 |
|  | Knobs (all controls) |  |  | 090-156 |

## LAMPS

|       |                |  |  |         |
|-------|----------------|--|--|---------|
| #7382 | Normal & limit |  |  | 058-061 |
|-------|----------------|--|--|---------|

## MISCELLANEOUS ITEMS

|  |                 |  |  |         |
|--|-----------------|--|--|---------|
|  | Plastic feet    |  |  | 017-218 |
|  | Shipping carton |  |  | 045-910 |
|  | Owners manual   |  |  | 038-910 |
|  | Line cord       |  |  | 170-019 |
|  | Audio cable     |  |  | 170-015 |
|  | Fuse holder     |  |  | 178-001 |