

Fig. 6.1 Circuit Block Diagram

7 Specifications

Note: The following specifications apply to units in Stereo mode with 8 ohm loads and an input sensitivity of 26 dB gain unless otherwise specified.

7.1 General

Hum and Noise: (20 Hz to 20 kHz) 110 dB below rated output.

Phase Response: (DC to 15 kHz) +0/-15 degrees at 1 watt.

Input Impedance: 25 K ohm \pm 30%.

Amplifier Output Protection: Short, mismatch, and open circuit protection. Limiting is instantaneous with no flyback pulses, thumps or cutout. No premature limiting on transients.

Overall Protection: AC line fused. Thermal switch in AC line protects against overheating caused by insufficient ventilation. Controlled slew rate voltage amplifiers protect against RF burnouts. Input overload protection is furnished by internal resistance of amplifier inputs.

DC Output Offset: 10 millivolts or less (shorted input), internally adjustable to zero.

Turn-On: Instantaneous, with minimum thumps and no program delay.

Circuitry: Wideband multiple feedback loop design utilizing a linear IC (dual op-amp) equivalent to 48 transistors, 22 signal diodes, 3 zener diodes and 6 rectifier diodes.

Power Supply: Massive computer grade filter capacitors store over 20 joules of energy. Two regulated supplies for complete isolation and stability.

Power Requirements: Requires 100, 120, 200, 220 or 240 VAC (\pm 10%) at 50 to 400 Hz. Draws 30 watts or less at idle. Maximum AC power draw is 750 watts.

Heat Sinking: The entire amplifier is used as a heat sink, including the $\frac{3}{16}$ inch thick chassis and auxiliary fins.

Chassis: All aluminum construction for maximum heat conduction and minimum weight.

Controls: Independent level controls and power switch

with associated LED are located on the front panel. Non-interacting DC balance controls are mounted on main PC board under electronics cover. A Stereo/Mono switch is located below the input jacks on the rear panel.

Connectors:

Input: $\frac{1}{4}$ inch unbalanced phone jacks.

Output: Color coded binding posts (banana jacks).

AC Line: 3-wire NEMA 5-15 plug and 5 foot cable.

Dimensions: 19 inches (48.3 cm) long; 5 $\frac{1}{4}$ inches (13.3 cm) high; 8 $\frac{3}{4}$ inches (22.2 cm) deep from mounting surface on front panel.

Weight: 24 pounds (10.9 kg).

Finish: Polyester vinyl coated front panel with Lexan overlay.

7.2 Stereo

Output Power: 80 watts per channel minimum RMS (both channels driven) from 1 Hz to 20 kHz at 0.05% THD (also see Figure 7.1).

Frequency Response: \pm 0.1 dB from DC to 20 kHz at 1 watt; \pm 1 dB from DC to 100 kHz.

1 kHz Power: 90 watts RMS per channel with both channels driven and 0.1% THD.

Total Harmonic Distortion (THD): Less than 0.001% from 20 to 400 Hz and increasing linearly to 0.05% at 20 kHz with rated output.

IM Distortion: (S.M.P.T.E. 60 Hz to 7 kHz 4:1) Less than 0.05% per channel from 0.01 to 0.25 watts and less than 0.01% per channel from 0.25 to 80 watts.

Slew Rate: 6 volts per microsecond.

Damping Factor: Greater than 400 from DC to 400 Hz.

Output Impedance: Less than 15 milliohms in series with less than 3 microhenries.

Load Impedance: Rated for 8 ohm usage; safely drives any load, including completely reactive loads.

Voltage Gain: 20.6:1 \pm 2% or 26.3 dB \pm 0.2 dB at maximum gain.

Input Sensitivity: 1.19 volts \pm 2% at rated output.

Output Signal: Unbalanced, dual channel.

7.3 Monaural

Output Power: 160 watts minimum RMS into 16 ohms from 1 Hz to 20 kHz at 0.05% THD (also refer to Figure 7.1).

Frequency Response: ± 0.15 dB from DC to 20 kHz at 1 watt (referenced to 1 kHz) into 16 ohms; ± 1 dB from DC to 60 kHz.

Harmonic Distortion: Less than 0.001% from 20 to 400 Hz and increasing linearly to 0.05% at 20 kHz (160 watts into 16 ohms).

IM Distortion: (S.M.P.T.E. 60 Hz to 7 kHz 4:1) Less than 0.05% from 0.01 to 0.25 watts and less than 0.01% from 0.25 to 160 watts into 16 ohms.

Slew Rate: 12 volts per microsecond.

Damping Factor: Greater than 400 from DC to 400 Hz into 16 ohms.

Output Impedance: Less than 30 milliohms in series with less than 6 microhenries.

Load Impedance: Rated for 16 ohm usage; safely drives any load, including completely reactive loads.

Voltage Gain: 41.2:1 $\pm 2\%$ or 32.3 dB ± 0.2 dB at maximum gain.

Input Sensitivity: 1.19 volts $\pm 2\%$ at 160 watts into 16 ohms.

Output Signal: Balanced, single channel.

D-150A II											
Configuration & Load (ohms)	FTC Continuous Average Power at 0.1% THD (See note 1)		Max Average Power at 0.1% THD (See note 2)	Single Cycle Tone Burst Watts at <0.05% THD (See note 3)			40 ms Tone Burst Watts at <0.05% THD (See note 4)			EIA Watts at 1% THD (See note 5)	
	20Hz-20kHz	1 kHz		1 kHz	20 Hz	50 Hz	1 kHz	20 Hz	50 Hz		1 kHz
Stereo (both channels powered)	4	125	145	155	115	160	205	115	150	145	160
	8	80	90	95	75	95	110	75	90	85	95
	16	50	50	50	45	50	55	45	50	50	55
Bridge-Mono (balanced output)	8	250	295	315	285	340	415	285	315	300	320
	16	160	180	185	185	195	215	185	185	180	195

Fig. 7.1 Power Matrix (120 VAC, 60 Hz)

Power Specifications

Many manufacturers publish power specifications with a tolerance of ± 1 dB or worse. That means their amplifier can deviate more than 20% in output! A 100 watt amp would meet their spec if it only produced 79.4 watts. Other manufacturers qualify their specs by saying they are "typical" or "subject to manufacturing tolerances," thereby removing any performance guarantee. We take a different approach at Crown—our published specifications are *guaranteed* for three years and can be protected with *Service Plus* for an additional 3 years. Further, because our "in-house" specs are more stringent than our published specs, *every Crown amplifier will exceed its published specs*. We believe you should get what you pay for.

Notes:

1. Continuous power in the context of Federal Trade Commission testing is understood to be a minimum of five minutes of operation. Harmonic distortion is measured at the RMS sum total as a percentage of the fundamental output voltage. This applies for all wattages greater than 0.25 watts.
2. A 1 kHz sine wave is presented to the amplifier and the output monitored for non-linear distortion. The level is increased until the THD reaches 0.1%. At this level the average power per channel is reported.
3. A single cycle of sine wave is presented to the amplifier and monitored for non-linear distortion. The average power during the burst is reported. Speakers must be able to withstand this level if they are to be safely used with this amplifier.
4. A 40 millisecond burst or two cycles of sine wave (whichever is of greater duration) is used and the power computed as the average power during the burst. The duty cycle of this test is 10 percent. This power level is a measure of how loud an amplifier is as perceived by the hearing process.
5. EIA standard RS-490 (both channels driven).

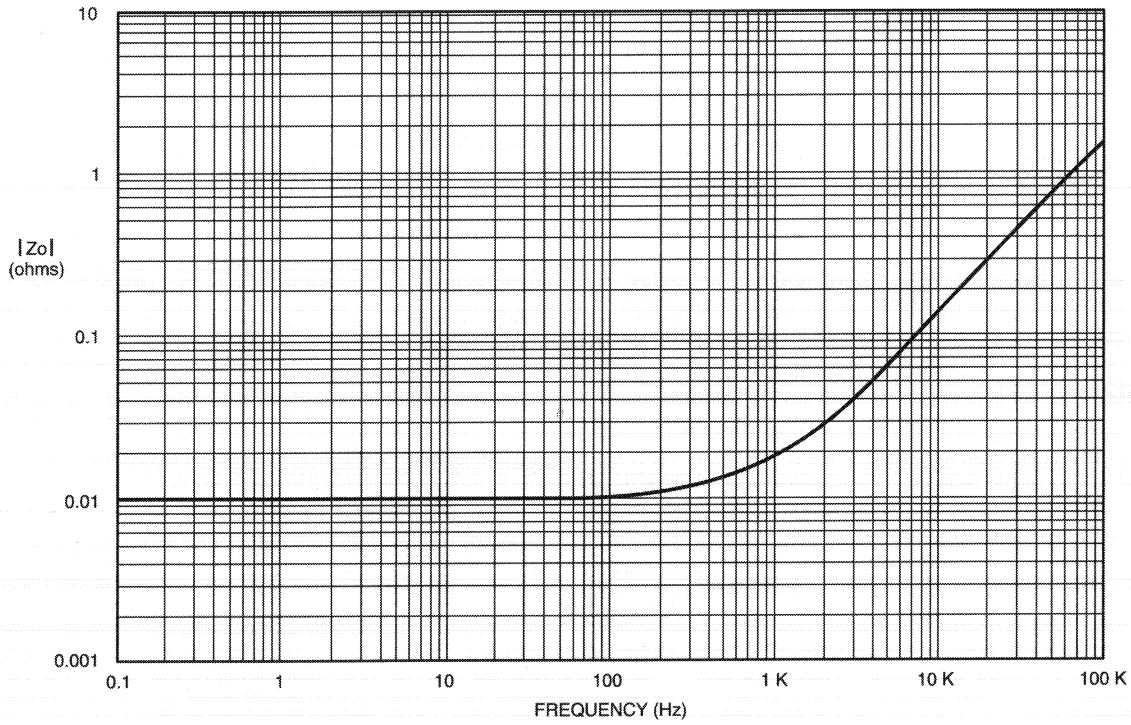


Fig. 7.2 Nominal Output Impedance

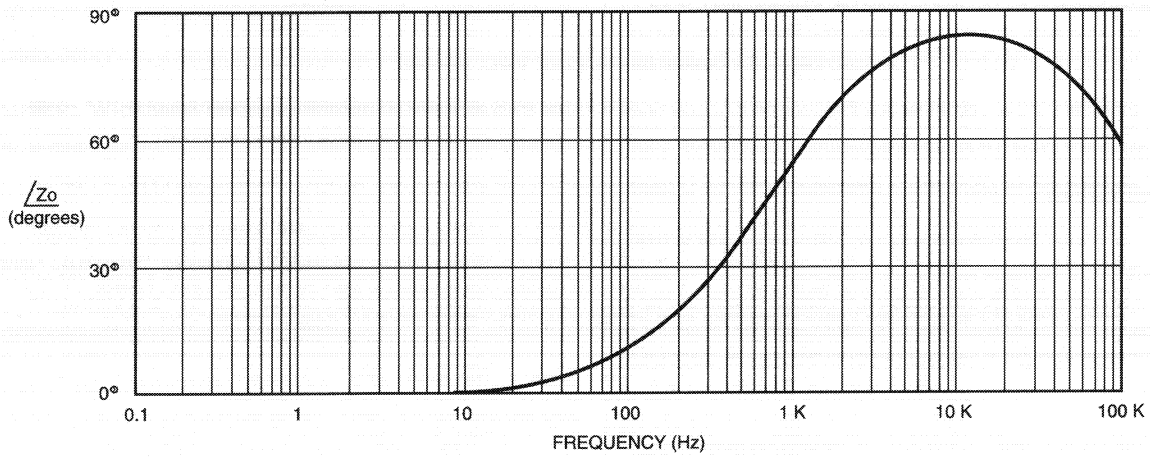


Fig. 7.3 Nominal Output Phase Angle
(1 amp test)

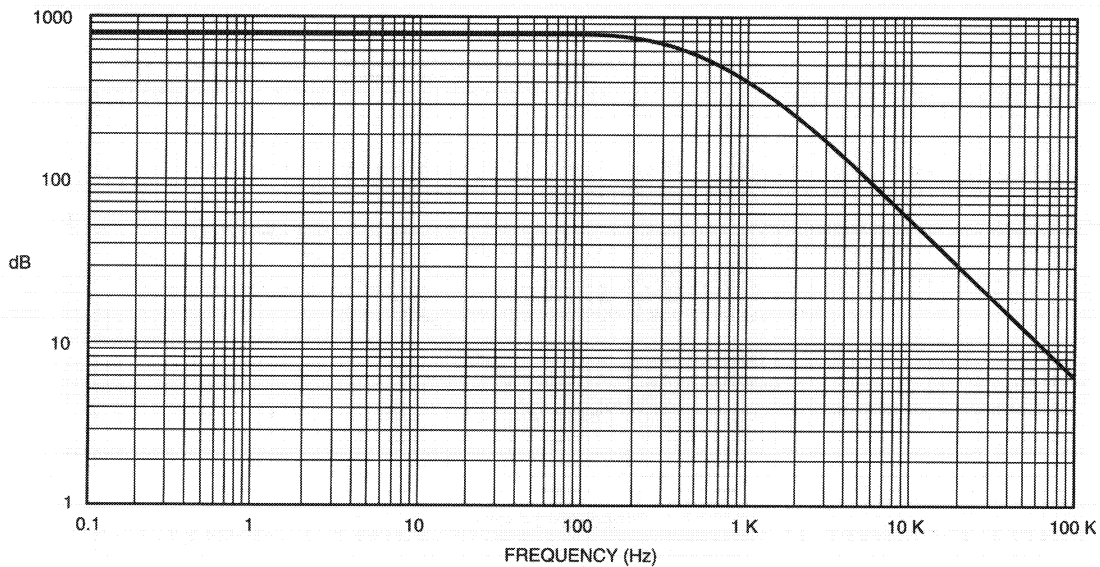


Fig. 7.4 Nominal Damping Factor (8 ohms)

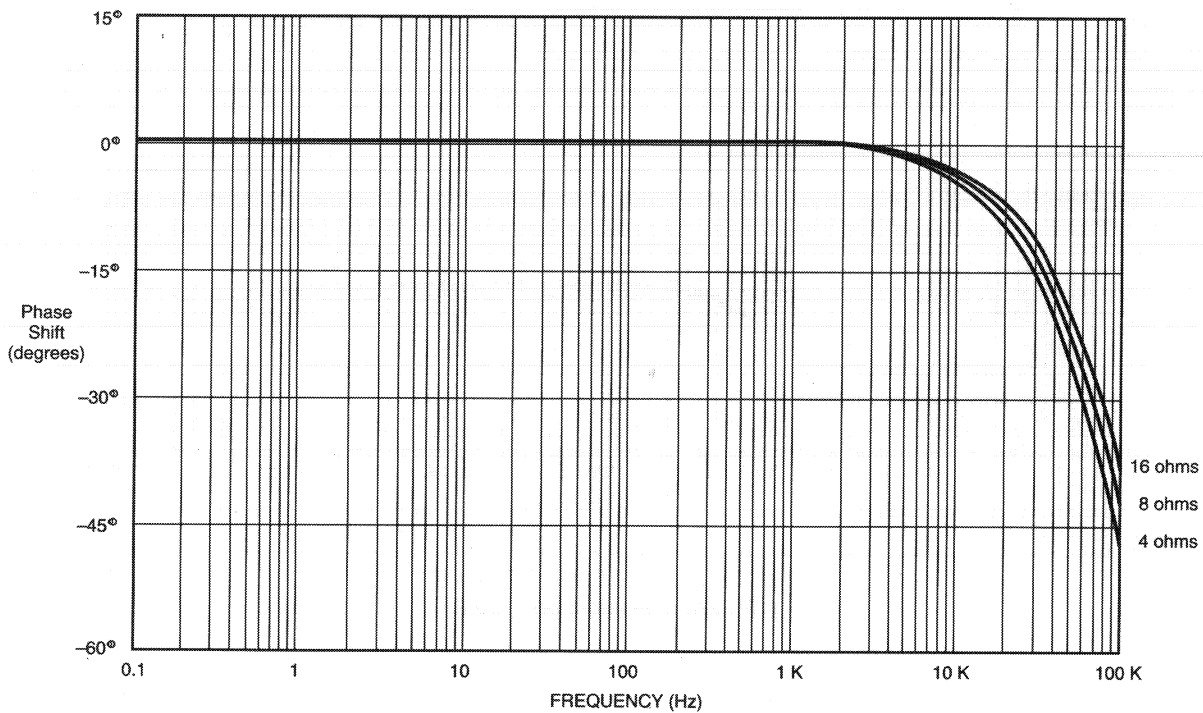
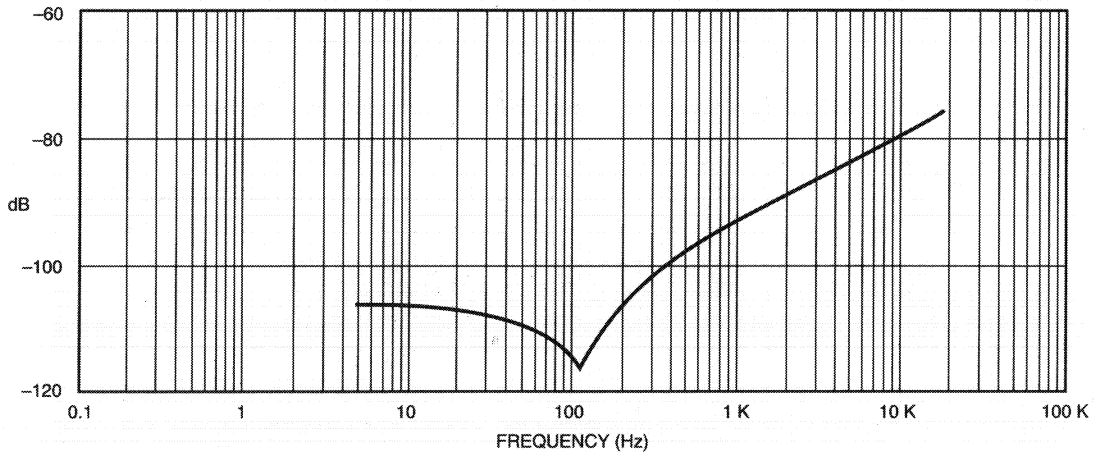
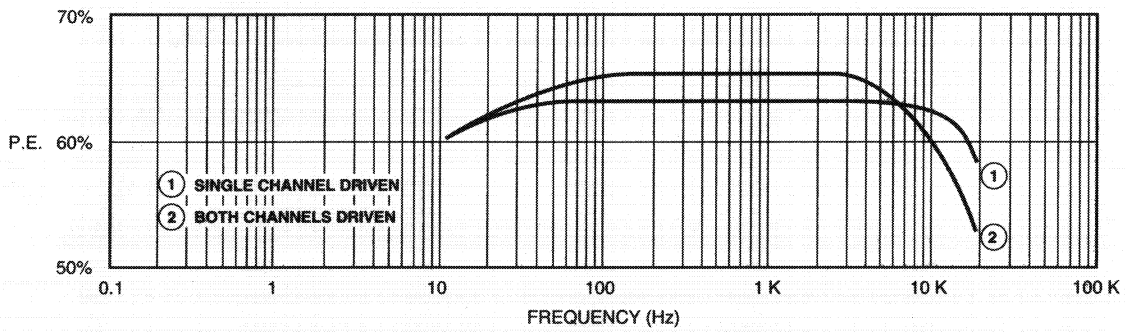


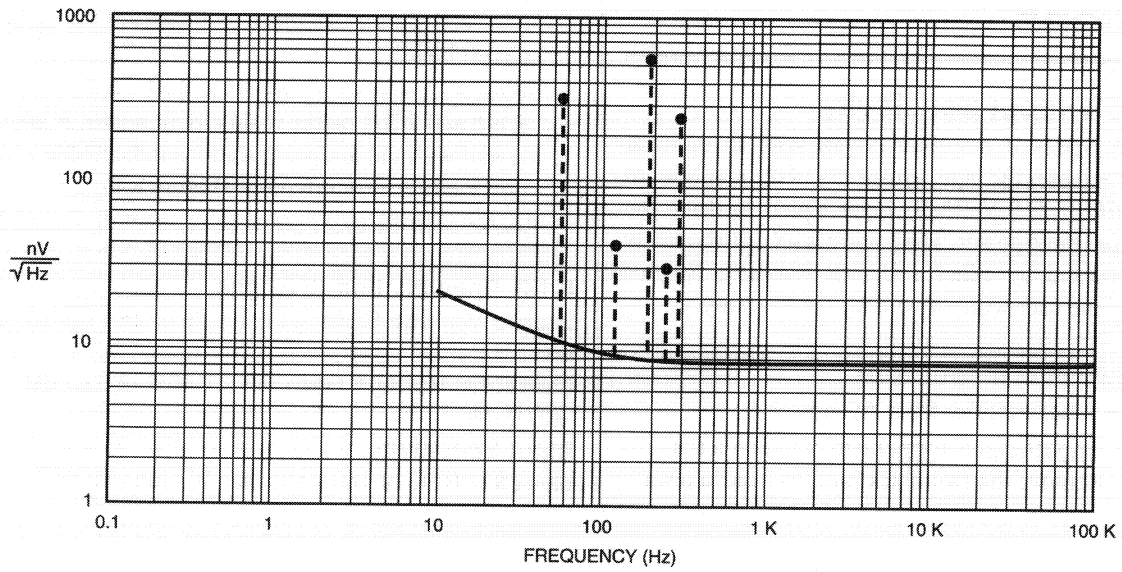
Fig. 7.5 Nominal Phase Response



*Fig. 7.6 Nominal Crosstalk
(75 watts into 8 ohms with one channel driven)*



*Fig. 7.7 Nominal Power Efficiency
(120 VAC line into 8 ohm load)*



Line frequency harmonics plotted to the fifth order.
Spectrum total is equivalent to 1.25 μV input noise over a 20 Hz to 20 kHz bandwidth.

Fig. 7.8 Nominal Noise Spectrum

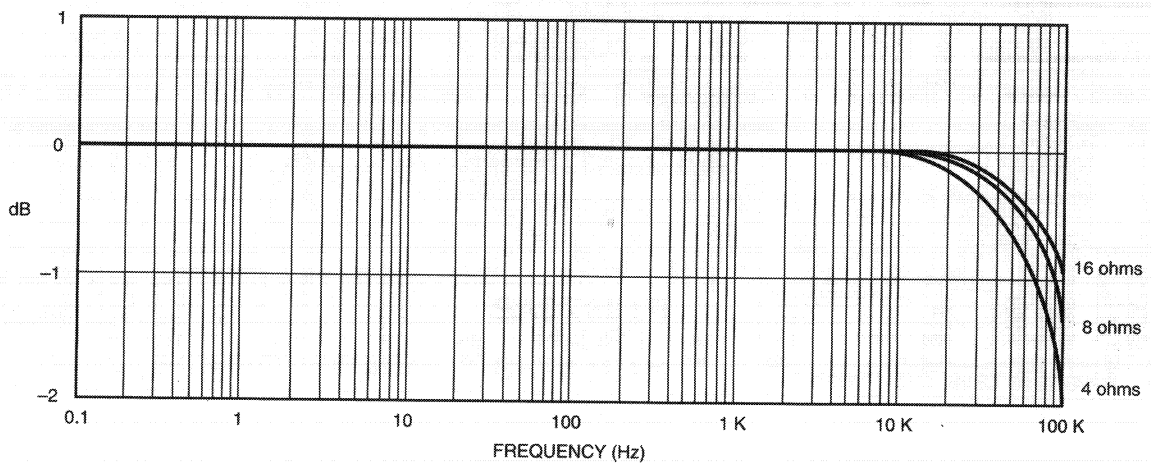


Fig. 7.9 Nominal Frequency Response

8 Options

8.1 0.775 V Input Sensitivity

The D-150A Series II amplifier comes with an optional feature that increases the input sensitivity of the amplifier to allow a 0 dBm (.775 V RMS) input signal to drive the amplifier to full rated power. The feature is set up to be easily field implemented by either a Crown Warranty Service Station or by the user without voiding the warranty.

8.1.1 Modification Instructions

1. Disconnect the amplifier from AC power.
2. Place the amplifier transformer end down on a flat surface. Remove the two black phillips head screws

adjacent to the input jacks. The dress plate and perforated main board cover can now be easily removed. This will expose both sides of the main circuit board.

3. Solder #22 buss wire jumpers at the locations marked R146 and R264 on the main circuit board. A board layout with the jumpers locations indicated is provided for easy reference (Figure 8.1).
4. Reassemble the unit in reverse order of disassembly.

8.1.2 Specification Changes

Stereo Voltage Gain: 21.6:1 $\pm 2\%$ or 26.7 dB ± 0.02 dB.

Monaural Voltage Gain: 43.2:1 $\pm 2\%$ or 32.7 dB ± 0.02 dB.

Input Sensitivity: 0.775 volts $\pm 2\%$ for 80 watts into 8 ohms STEREO or 160 watts into 16 ohms MONO.

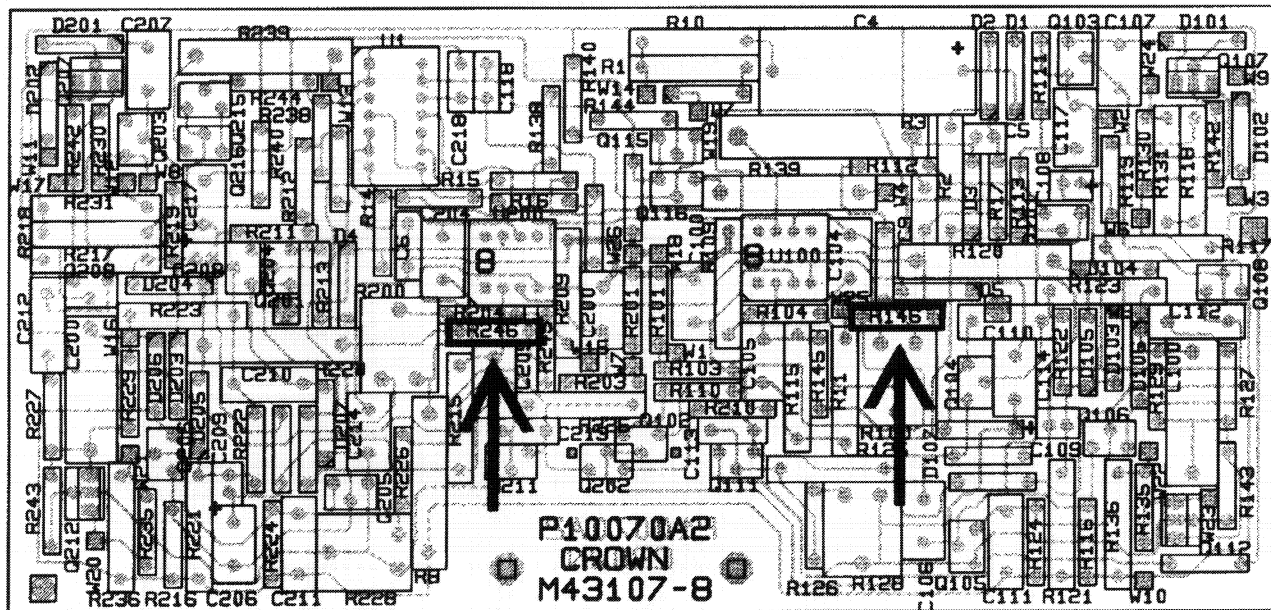


Fig. 8.1 Circuit Block Layout
(0.775 V Input Sensitivity Jumpers)