

MC 752 POWER AMPLIFIER

VARIOUS REGULATORY AGENCIES REQUIRE THAT WE BRING THE FOLLOWING INFORMATION TO YOUR ATTENTION. PLEASE READ IT CAREFULLY.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THE (POLARIZED) PLUG ON THIS UNIT WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

The serial number, purchase date, and McIntosh Laboratory Service Contract number are important to you for possible insurance claim or future service. Record this information here.

Serial Number

Purchase date

Service Contract Number

Upon application, McIntosh Laboratory provides a Service Contract to the original purchaser. Your McIntosh Authorized Service Agency can expedite repairs when you provide the Service Contract with the instrument for repair.

MC 752 POWER AMPLIFIER

Your MC 752 Stereo Power Amplifier will give you many years of pleasant and satisfactory performance. If you have any questions, please contact:

CUSTOMER SERVICE

McIntosh Laboratory Inc.
2 Chambers Street
Binghamton, New York 13903
Phone: 607-723-3512

**Take Advantage of 3 years
of Contract Service . . .
Fill in the Application NOW.**

Contents

INTRODUCTION . . .	3
HOW TO CONNECT . . .	4
INSTALLATION . . .	5
CONNECTIONS . . .	6
PERFORMANCE LIMITS and RATINGS . . .	7
TECHNICAL DESCRIPTION . . .	8
BLOCK DIAGRAM . . .	9
PERFORMANCE CHARTS . . .	10

McINTOSH THREE YEAR SERVICE CONTRACT

An application for A THREE YEAR SERVICE CONTRACT is included with this manual.

The terms of the contract are:

1. McIntosh will provide all parts, materials and labor needed to return the measured performance of the instrument to the original performance limits. The SERVICE CONTRACT does not cover any shipping costs to and from the authorized service agency or the factory.
2. Any McIntosh authorized service agency will repair McIntosh instruments at normal service rates. To receive service under the terms of the SERVICE CONTRACT, the SERVICE CONTRACT CERTIFICATE must be presented when the instrument is taken to the service agency.
3. Always have service done by a McIntosh authorized service agency. If the instrument is modified or damaged as a result of unauthorized repair, the SERVICE CONTRACT will be cancelled. Damage by improper use or mishandling is not covered by the SERVICE CONTRACT.
4. The SERVICE CONTRACT is issued to you as the original purchaser. To protect you from misrepresentation, this contract cannot be transferred to a second owner.
5. To receive the SERVICE CONTRACT, your purchase must be made from a McIntosh franchised dealer.
6. Your completely filled in application for the SERVICE CONTRACT must be postmarked within 30 days of the date of purchase of the instrument.
7. To receive the SERVICE CONTRACT, all information on the application must be filled in. The SERVICE CONTRACT will be issued when the completely filled in application is received by McIntosh Laboratory Incorporated in Binghamton, New York.
8. Units in operation outside the United States and Canada are not covered by the McIntosh Factory Service Contract, irrespective of the place of purchase. Nor are units acquired outside the U.S.A. and Canada, the purchasers of which should consult with their dealer to ascertain what, if any, service contract or warranty may be available locally.

Introduction

FEATURES

The MC 752 is a direct coupled stereo power amplifier designed to operate with loudspeakers having a nominal impedance of 4 ohms to 8 ohms. The amplifier is rugged and reliable.

The mechanical and electrical design of the MC 752 is the result of the many years of engineering and manufacturing experience of the designers at McIntosh. This "know how", combined with meticulous attention to design and production details, makes the MC 752 one of the finest products ever produced by McIntosh Laboratory.

Some manufacturers of power amplifiers advertise that their products do not require or use protection circuits and that such circuits compromise performance. It is indeed possible for such circuits to cause substantial amounts of distortion and undesirable listening effects. But this is true of almost any and every design. The real genius of good design recognizes these problems and circumvents them while retaining the real merits of the protective circuits. These are the extra values that you receive when you invest in McIntosh equipment. It is precisely for this reason that it takes longer to complete a McIntosh engineering design task. But from such engineering dedication comes the

McIntosh reputation for highest sound quality with greatest long term reliability.

The MC 752 incorporates seven protection circuits to insure its total reliability. These circuits are described in the Technical Description on page 8. Two circuits, Power Guard, for the left and right channels deserve special mentioning here.

POWER GUARD

Power Guard, a unique and patented feature of McIntosh power amplifiers, assures that each channel of the MC 752 will deliver full power, free of clipping distortion. Clipping is caused when an amplifier is asked to produce more clean power output than its design characteristics can deliver. Conventional amplifiers that are overdriven are capable of delivering large quantities of power when they are clipping, but the output will also have up to 40% harmonic distortion. The sound will be grossly distorted and the extra energy content of the clipped signal will damage most loudspeakers, particularly high frequency drivers. The McIntosh Power Guard circuit protects your ears and speakers from this kind of damage.



How to Connect

INPUT

Use shielded cables to connect the signal from the preamplifier or signal source to the power amplifier inputs. To minimize the possibility of hum the shielded cables should be run parallel to each other or loosely twisted together. Locate the cables away from speaker leads and AC power cords.

Connect the left output of the preamplifier to the Left input jack of the power amplifier. Connect the right output of the preamplifier to the Right input jack of the power amplifier.

OUTPUT

Selection of the proper gauge wire to connect the loudspeakers preserves the quality of sound reproduction for which the loudspeakers have been designed. If undersize wire is used, resistance is added to the amplifier/loudspeaker combination which adversely affects the performance. Added resistance causes reduction of damping characteristics, modification of frequency response and reduction in power output.

Use ample size wire to connect the speakers to the amplifier. In all cases, the leads to and from the speaker should be twin conductor or twisted together. When using 8 ohm speakers and for the normally short distances of under 30 feet between the amplifier and speaker, No. 18 wire or larger can be used. For distances over 30 feet use larger diameter wire. Select the correct size wire for the distance from the chart.

MAXIMUM WIRE LENGTHS AMPLIFIER TO SPEAKER

Wire Gauge	For 4 Ohm Load		For 8 Ohm Load	
	Feet	Meters	Feet	Meters
18	15	4.6	30	9.1
16	25	7.6	50	15.2
14	40	12.2	80	24.4
12	60	18.3	120	36.6
10	100	30.5	200	61.0

Wire lengths above represent the wire resistance equal to 5% of the speaker impedance.

For multiple speaker operation, run separate leads from the amplifier to each speaker.

CONNECTING LOUDSPEAKERS

Connect the leads from the left loudspeakers to the left, L and common C terminals. Connect the leads from the right loudspeakers to the right, R and common, C terminals

AC POWER

Plug the amplifier AC power cord into a 120 volt 50/60 Hz switched outlet on the preamplifier.

FUSE

A 4-amp fuse protects the MC 752 circuits. The fuse does not protect additional equipment connected to the rear panel AC power outlet.

Installation and Operation

INSTALLATION

The compact design of the McIntosh MC 752 allows it to be easily placed in a variety of ways. The typical installation is to simply place it directly on a shelf or cabinet. The bottom feet must be left in place since they raise the amplifier above the mounting shelf to allow the circulation of air through the bottom panel and up through the heat sinks. The mounting space must be left sufficiently open at the back or top to allow what heat that may be generated to easily ventilate.

CONTROLS AND PANEL INFORMATION

INPUT LEVEL

The maximum input sensitivity of the MC 752 is 1.4 volts, with the input level controls at maximum (turned fully clockwise). With 1.4 volts fed in, the MC 752 will produce its rated output power. All McIntosh preamplifiers have been designed to deliver 2.5 volts output with their rated inputs. For best system signal-to-noise ratio when using McIntosh source equipment, set the MC 752 input LEVEL controls to the 2.5 volt position.

For source equipment other than McIntosh set the level controls nearest to the stated output rating of the source equipment.

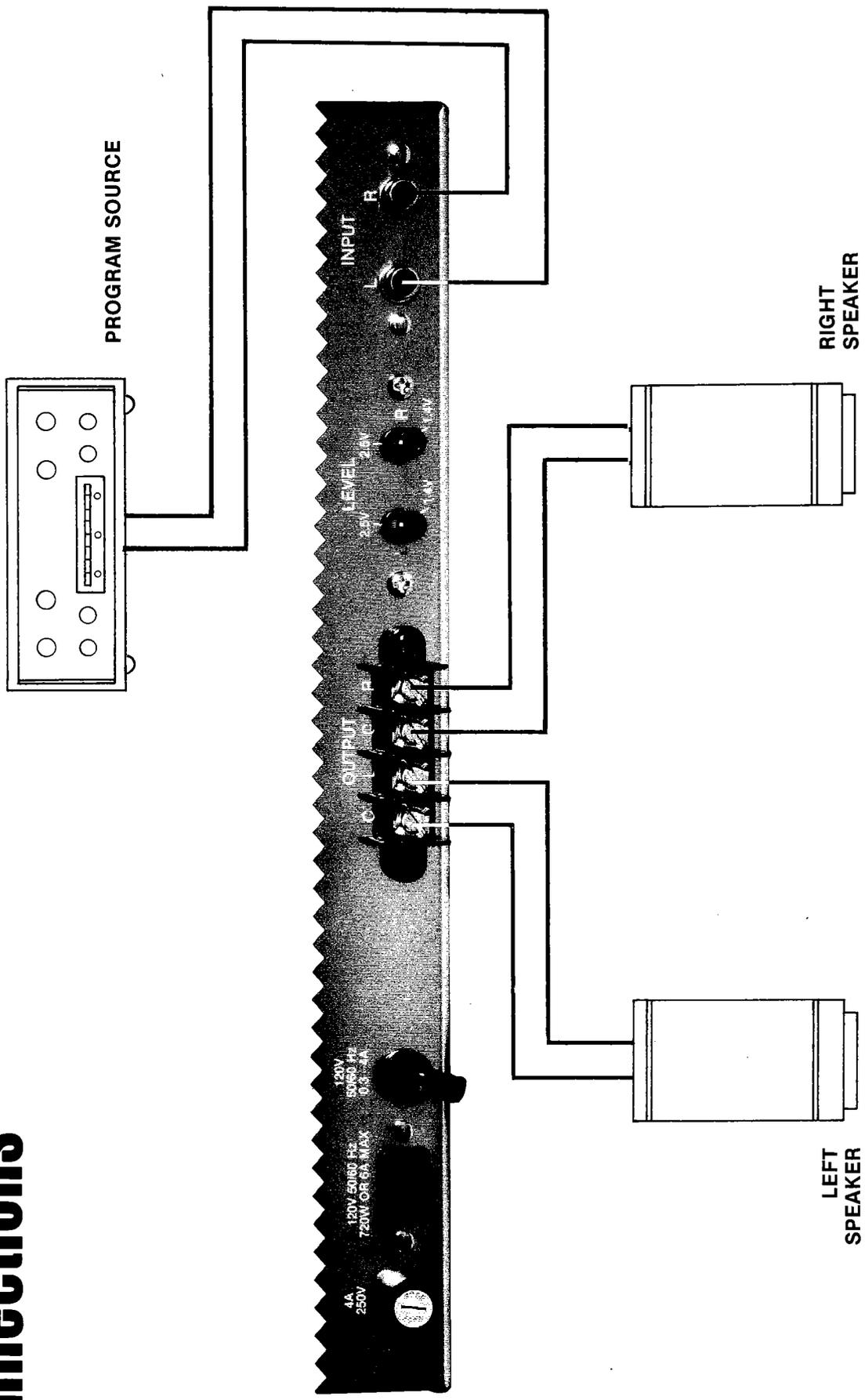
POWER GUARD INDICATOR LAMPS

POWER GUARD assures that the power output section of the MC 752 cannot be overdriven, and amplifier clipping is eliminated. The amber POWER GUARD lamps turn on when the amplifier reaches its maximum distortion free output, well above the rated power. If the POWER GUARD lamps come on continuously, lower the volume control on the preamplifier slightly to retain the full dynamic range of the program material.

AC POWER

The red POWER lamp indicates whenever AC power is supplied to the amplifier. The MC 752 is rated for 120 volts 50/60 hertz. There is no power switch on the MC 752 as it is designed to be supplied with power from one of the switched AC outlets on the rear panel of a McIntosh preamplifier. The rear panel AC outlet is provided to supply power to an accessory unit that may be used in the system. It turns on and off with the amplifier.

Stereophonic Connections



Performance Limits and Ratings

PERFORMANCE LIMITS

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

POWER OUTPUT

100 watts minimum sine wave continuous average power output per channel, both channels operating across 4 ohms from 20 to 20,000Hz.

75 watts minimum sine wave continuous average power output per channel, both channels operating across 8 ohms from 20 to 20,000Hz.

OUTPUT LOAD IMPEDANCE

4 ohms to 8 ohms

POWER BANDWIDTH

20 to 20,000Hz

TOTAL HARMONIC DISTORTION

0.02% maximum at any power level from 250 milliwatts to rated power per channel, 20 to 20,000Hz, both channels operating.

INTERMODULATION DISTORTION

0.02% maximum at any power level from 250 milliwatts to rated power per channel, any combination of frequencies from 20 to 20,000Hz, with both channels operating.

FREQUENCY RESPONSE

+0, -0.25dB from 20 to 20,000Hz at rated power

SIGNAL TO NOISE RATIO, A-WEIGHTED

110dB below rated output (91dB IHFA)

Ratings

IHF DYNAMIC HEADROOM

1.4 dB at 8 ohm load (105 watt music peaks)

2.6 dB at 4 ohm load (182 watt music peaks)

DAMPING FACTOR

Greater than 40

INPUT SENSITIVITY

1.4 volts. Level control provides for higher input voltages, 2.5 volt position indicated.

INPUT IMPEDANCE

22k ohms

General Information

SEMICONDUCTOR COMPLEMENT

27 Silicon Diodes

43 Bipolar Transistors

2 Integrated Circuits

POWER REQUIREMENTS

120 volts, 50/60Hz, 0.3-4 amps

Mechanical Information

SIZE

13-1/8" (33.3 cm) wide by 9-5/8" (24.4 cm) deep by 5-9/16" (14.1 cm) high

FINISH

Chrome chassis with black ventilating cover

WEIGHT

21 pounds (9.5 kg) net

25 pounds (11.3 kg) in a shipping carton

Technical Description

POWER AMPLIFIER

The MC 752 requires 1.4 volts RMS to drive the amplifier to rated output. The input impedance is 22,000 ohms. The input stage of the amplifier uses two transistors connected as a differential amplifier. The two input signals to the differential pair are the input signal and the negative feedback signal from the power amplifier output. The differential amplifier permits the best use of negative feedback to enhance low noise and low distortion performance. The outputs of the differential amplifier are combined in a current mirror to form a single output. This combined signal feeds a linear voltage amplifier which drives two medium power driver transistors. The driver transistors feed the output stage.

The output stage is arranged as a fully complementary, direct coupled push/pull amplifier. The power transistors used are selected for their high power dissipation capability, wide frequency response, and large safe operating area. All power transistors have limits for the maximum amount of heat they can tolerate. The MC 752 uses a highly efficient amplifying circuit which produces relatively little heat for the output power produced. The amplifier has 4 oversized heat sinks to dissipate transistor generated heat. Under normal conditions, the output transistors operate well below their safe temperature limits. If ventilation is restricted by improper mounting or if amplifier efficiency is destroyed by operating it into a short circuit or a very low impedance, extra heat will be produced. If this abnormal condition occurs, thermal switches on either channel heat sinks will turn off the AC power to the amplifier. This prevents the output transistors from producing life reducing heat. Look for restricted ventilation, a short across the amplifier output terminals or improperly matched outputs. The thermal switches will automatically turn the power back on when the problem is corrected and the heat sink temperatures return to normal. This additional protection assures you of reliability even under the most extreme operating conditions.

All power transistors have limits for the maximum amount of electrical current they can handle. The MC 752 output transistors and power supply have been designed to allow very high current flow into properly matched load impedances. If, however, a short circuit or very low value of load impedance is applied to the output of the MC 752, destructive currents could be reached if they were not controlled by the SENTRY MONITOR circuit. This circuit senses the dynamic operating conditions of the amplifier output stages and controls the current flow, confining it to safe limits. The SENTRY MONITOR circuit does not limit the power output available from the amplifier nor does it have any effect on normal signals passing through the amplifier.

All power amplifiers which do not use output transformers to bypass DC (direct current), can destroy loudspeakers should there be a failure within the amplifier. Safety circuits are necessary to protect loudspeakers. The MC 752 has a DC detecting circuit connected to the output of each channel. Should there be DC present, this circuit reacts in milliseconds to open the speaker relay. The speakers remain disconnected until the cause has been corrected. Under normal operating conditions the DC protective circuit has no effect on the operation of the output circuit.

POWER GUARD

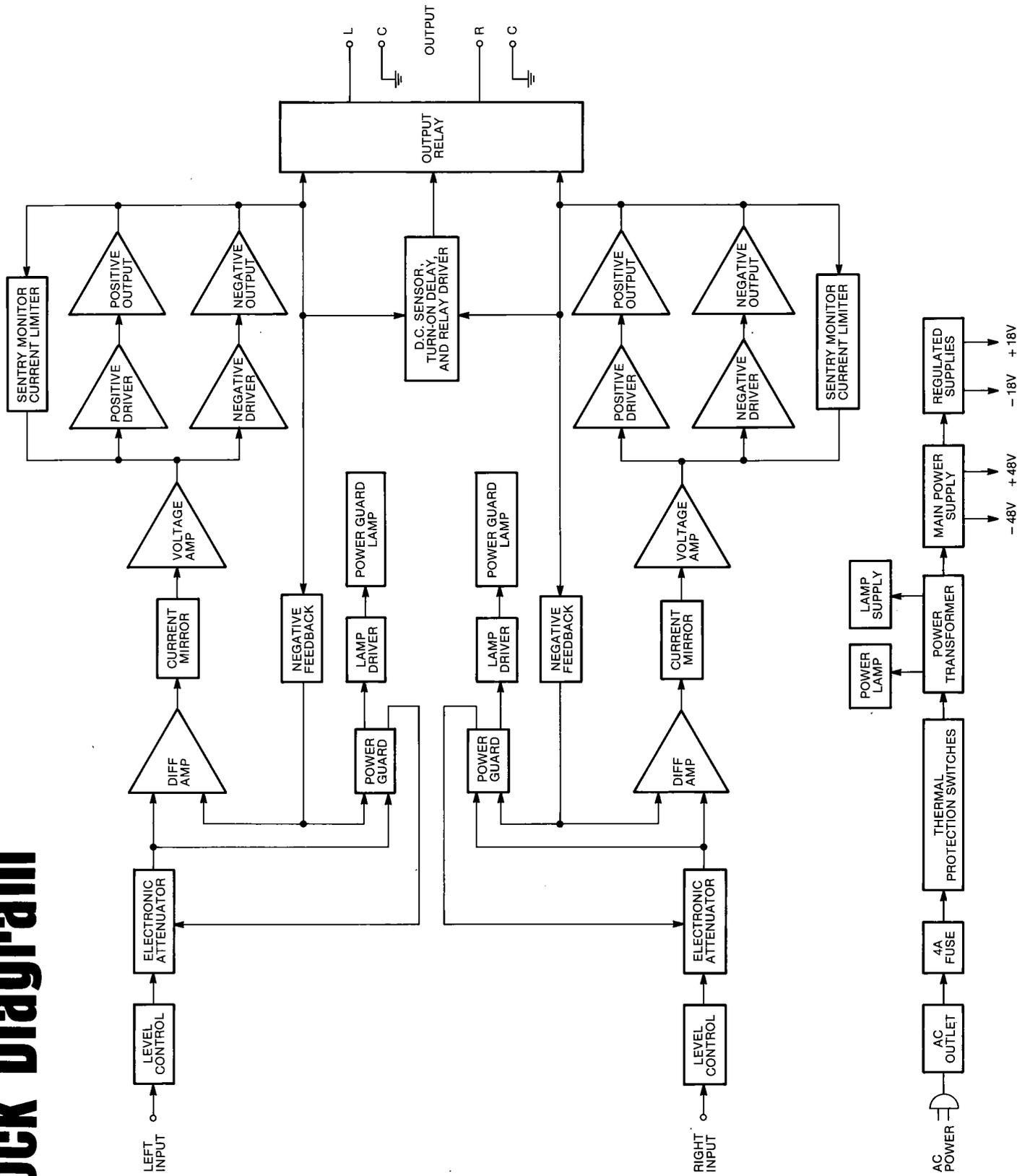
POWER GUARD, a unique feature of McIntosh amplifiers, assures that each channel of the MC 752 will deliver full power free of clipping distortion. Clipping is caused when an amplifier is asked to produce more clean power output than its design characteristics can deliver with low distortion. Amplifiers that are overdriven are capable of delivering large quantities of power when they are clipping but they have more than 40% harmonic distortion. In this mode, the sound is grossly distorted and the extra energy content of the clipped signal will damage most loudspeakers, particularly high frequency speakers. The McIntosh POWER GUARD circuit protects your ears and your speakers from this kind of damage.

The MC 752 has a built in "waveform comparator" that compares the waveshape of the amplifier output signal to the input signal. If the distortion content between the two signals exceeds 0.5%, the POWER GUARD circuit operates automatically to prevent the normal increase to 40% or more distortion. Operation is indicated when the amber left or right POWER GUARD lamps turn on. At the same time, an electronically controlled attenuator reduces the gain of the amplifier just enough to prevent clipping. As long as the amplifier operates without overload, the indicators remain off. POWER GUARD assures that you get the maximum undistorted power output available from the amplifier, and it makes sure that you hear the full rated power of the amplifier at low distortion.

TURN ON DELAY

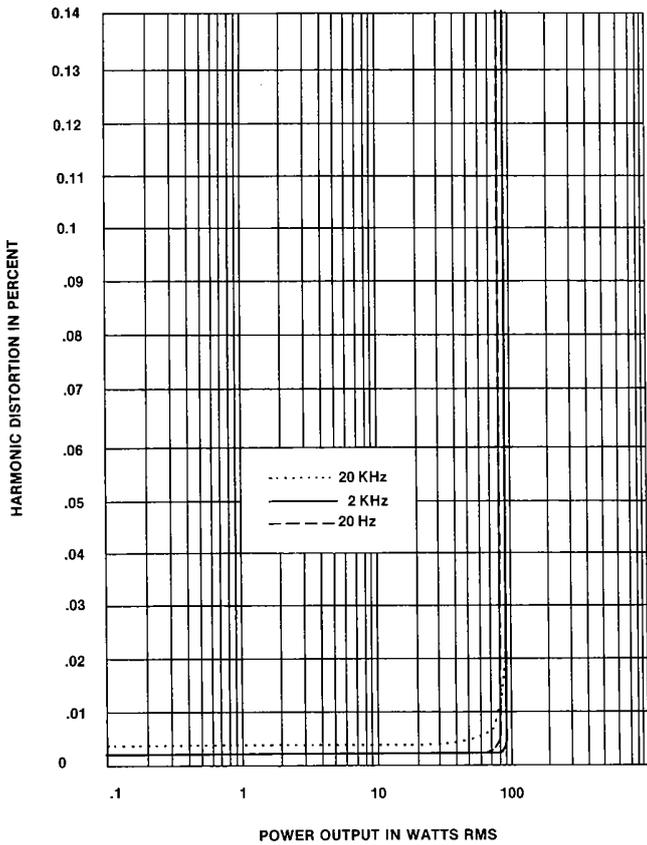
The MC 752 has transient-free turn on and turn off characteristics. A heavy duty relay, time-controlled by a transistor switch, connects the output to the speakers. The control to the transistor switch is derived from a long time constant capacitor charging network that turns the relay on approximately one second after the power switch is turned on. The same circuit has a short turnoff time constant and the relay drops out before the amplifier's main power supply has a chance to discharge.

Block Diagram

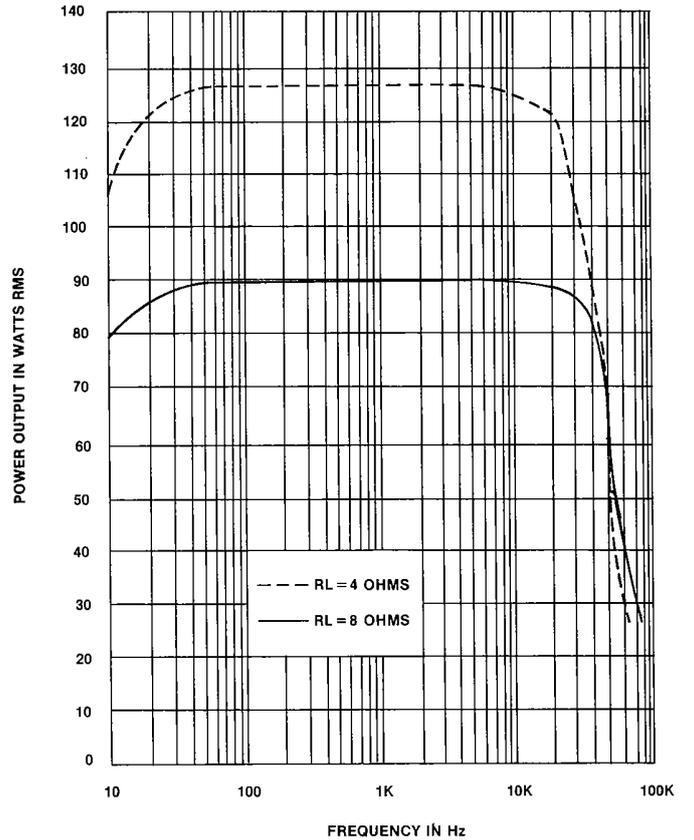


Performance Charts

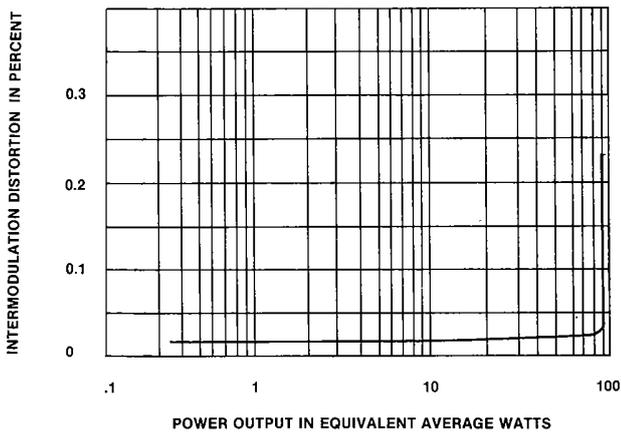
HARMONIC DISTORTION VS POWER OUTPUT
 RL = 8 OHMS, BOTH CHANNELS OPERATING



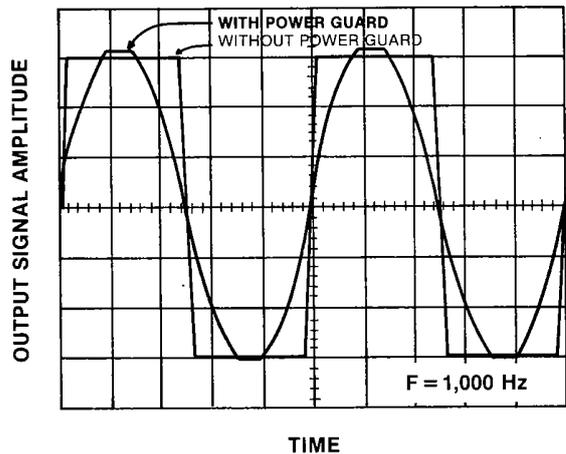
0.02% THD POWER BANDWIDTH
 BOTH CHANNELS OPERATING



INTERMODULATION DISTORTION
 vs.
 POWER OUTPUT
 8 OHM OUTPUT
 INPUT FREQUENCIES 60 Hz AND 7 kHz
 INPUT RATIO: 4:1



OUTPUT SIGNAL WAVEFORM SHOWING ACTION OF POWERGUARD TO ELIMINATE OUTPUT SIGNAL CLIPPING. AMPLIFIER INPUT IS OVERDRIVEN BY 20 dB FOR BOTH OSCILLOGRAM TRACES.



McIntosh[®]

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The continuous improvement of its products is the policy of McIntosh Laboratory Incorporated who reserve the right to improve design without notice.

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