MC 7270
POWER AMPLIFIER

McIntosh®

OWNERS MANUAL

Contents

INTRODUCTION	3, 4, 5
INSTALLATION	6
HOW TO CONNECT	7, 8
CONNECTIONS	9
FRONT PANEL CONTROLS	10, 11, 12
REAR PANEL INFORMATION	13
PERFORMANCE LIMITS	14
PERFORMANCE CHARTS	15, 16
TECHNICAL DESCRIPTION	17, 18
BLOCK DIAGRAM	19

Your MC 7270 Stereo Power Amplifier will give you many years of satisfactory performance.
If you have any questions, please contact:

CUSTOMER SERVICE
McIntosh Laboratory Inc.
2 Chambers Street
Binghamton, New York 13903-9990
Phone: 607-723-3512

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

McINTOSH THREE YEAR SERVICE CONTRACT

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

The terms of this contract are:

1. If the instrument covered by this contract becomes defective, McIntosh will provide all parts, materials and labor needed to return the measured performance of the instrument to the original performance limits free of any charge. 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 all McIntosh instruments at normal service rates. To receive the free service under the terms of the service contract, the service contract certificate must accompany the instrument when 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. Units in operation outside the United States and Canada are not covered by the McIntosh Service Contract, regardless of the place of purchase. Nor are units acquired outside the USA and Canada, the purchasers of which should consult with their dealer to ascertain what, if any service contract or warranty may be available locally.

The McIntosh MC 7270 is the first and only amplifier specially designed to fulfill Digital Dynamic Range demands. It outperforms all others when listening to sound derived from digitally recorded tapes, records and compact discs. The MC 7270 has been designed to perform flawlessly because of this capacity for overload: **10 decibels of overstress at less than an average of 0.3% of distortion!** McIntosh amplifiers with POWER GUARD are the only amplifiers which can tolerate 10 decibels of dynamic overload, without severe distortion breakup.

The noise level of digitally recorded sound is 30 decibels below that of conventional analog recordings. Thirty decibels reduction of noise level means that the digital disc noise power is 1000 times less than that on the best analog records. The compact disc is capable of **real life dynamic** range while noise generated from compact discs is inaudible. With the noise restraint removed it is both easier and dramatically more enjoyable to listen to music at much louder levels. To fully enjoy this new capability your amplifier must be able to receive three to ten decibels of over stress from music, and it must do this without severely distorting the sound!

For an amplifier to handle a three-decibel overload, it must have a full time capacity of twice its full power. An over stress demand of 10 decibels is a demand for 10 times the full power capacity of an amplifier. To provide 2500 watts of overload for a 250 watt amplifier is expensive both in the amplifier and in the loudspeaker system as well. This is the real world of Digital Dynamics Range demand. How to achieve the performance demanded, which often lasts from minutes to only a few thousandths of a second, and to achieve the goal economically, is a real achievement. In each McIntosh MC 7270, there is a unique, patented*, **digital sonic overload corrector** which prevents the amplifier from exceeding an average of 0.3% distortion for overload stresses up to 10 decibels!

McIntosh has developed a new method of measuring amplifiers which shows this capability very dramatically. This is a test of the Spectral Fidelity of an amplifier under stress.

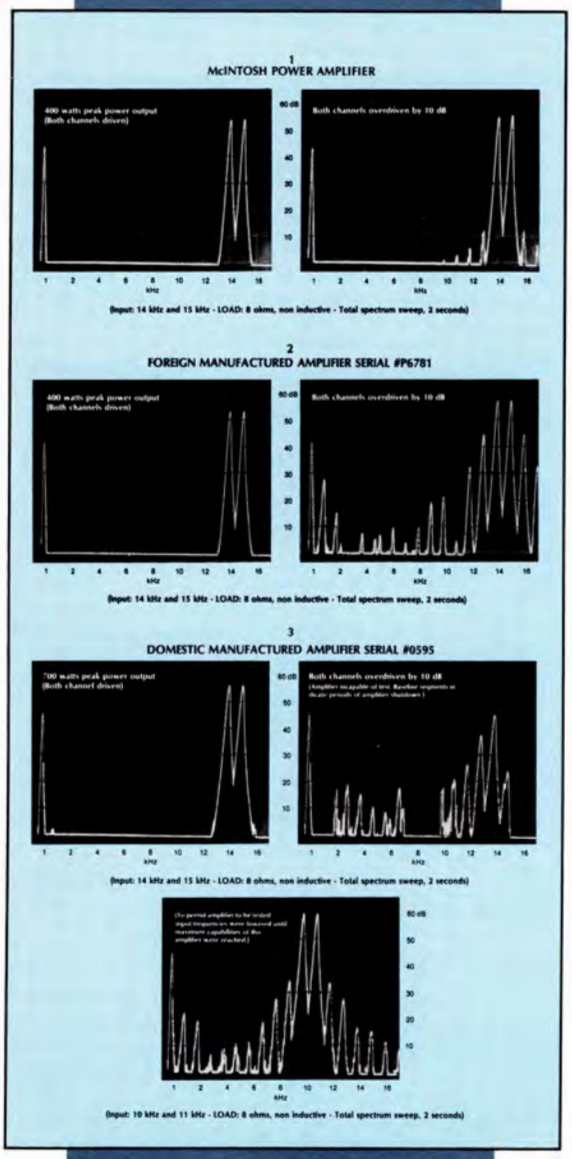
SIMULATING COMPLEX CRESCENDO DEMANDS

Two tones, 14 kHz and 15 kHz, are fed to the input of the amplifier under test. The output of the amplifier is fed to a resistive dummy load across which is an A.C. voltmeter, (to allow computation of the amplifier's output power), and to a spectrum analyzer which displays the magnitude and frequencies of signals at the amplifier output.

Ideally, only the two test tones should be reproduced at the amplifier output. Some amplifiers generate a broad intermodulation spectrum of tones corresponding to the sum and difference of the test tones. These spurious tones are called Intermodulation Distortion.

All amplifiers (McIntosh amplifiers with Power Guard are the only exception), produce such a spectrum when they are driven beyond their output capacity. They produce Intermodulation and Harmonic Distortion, the severity of which depends on the amount of overdrive and the design of the amplifier. Distortion of 30% or greater is not uncommon. Most of the spurious frequency components are at high frequencies and can easily destroy the tweeter sections of loudspeakers, while severely distorting the sound.

*U.S. Patent #4048573



In these oscillograms, you can see the difference in Spectral Fidelity between a stressed McIntosh, and other amplifiers.

1. The McIntosh stressed 10 dB above full power
2. An imported amplifier stressed 10 dB above full power
3. A domestically manufactured amplifier which had to be tested "under-stressed" since it would not perform with 10 dB of overdrive.

The McIntosh shows only 3 components, which are 44 for one and 50 dB down for all others, roughly equivalent to 0.3% distortion. The other amplifier shows 17 discords, some of which are only 10 dB down, or 30% distortion, with many less than 30 dB down, or 3% distortion.

This is why McIntosh customers consistently find that their McIntosh alone meets the test for accuracy, the test for clarity, the test for musicality even when a peak of ten times the power demand suddenly smashes into the power amplifier.

When other amplifiers are similarly stressed they generate large quantities of discordant sounds destroying the real musicality of the reproduced instruments.

Note in oscillogram number 3 the complete failure of one of the most popular of American amplifiers. If 14 and 15 kHz are amplified at the same time the amplifier shuts down by "motor boating". It was necessary to lower the frequency of the test signals to 10 and 11 kHz to even complete the test or to perform the test at less than half rated power on this domestically manufactured amplifier.

It is no accident that McIntosh amplifiers sound better.

It is no accident that a McIntosh is a better investment.

- **It sounds better**
- **It is more reliable**
- **It lasts longer**
- **Its resale value is the highest**

If good enough will do, there are at least 100 answers for you. But if the best is what you need then there is only one real answer.

McIntosh---the amplifier that in 40 years has outlived 60 others who have simply faded away.

4 INTRODUCTION

A NEW AMPLIFIER DESIGNED FOR A NEW AGE OF HOME ENTERTAINMENT

The MC 7270 stereo power amplifier is designed to operate with loudspeakers having a nominal impedance of 1, 2, 4, or 8 ohms. The amplifier is rugged and reliable.

The mechanical and electrical design of the MC 7270 is the result of the many years of engineering and manufacturing experience by the designers at McIntosh. This "know how", combined with meticulous attention to design and production details, makes the MC 7270 one of the finest products produced by McIntosh Laboratory.

Some manufacturers of power amplifiers advertise that their products do not 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 which is true of almost any protective circuit design. The real genius of good design recognizes these problems and circumvents them while retaining the real merits of the protective circuits. These are just some of the extra values 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. From such engineering dedication comes the McIntosh reputation for highest sound quality with greatest long term reliability.

The MC 7270 incorporates seven protection circuits which insure its total reliability, seven protection circuits that protect the music and your listening, not interfere with them. These circuits are described in the Technical Description.

The MC 7270 may be installed in a McIntosh cabinet or custom installed in furniture of your choice. Always provide adequate ventilation. Make sure there is 1½ inches (3.8 cm) of space above the amplifier so as not to interfere with a cooling flow of air.

CUSTOM INSTALLATION

The PANLOC system of installing equipment conveniently and securely, is a product of McIntosh research. Turned clockwise, the PANLOC buttons on the front panel lock the chassis firmly in place. A counterclockwise turn of the PANLOC buttons unlocks the chassis from its mounting.

To install the instrument in a McIntosh cabinet, follow the instructions that are enclosed with the cabinet. For any other type of installation follow these instructions:

1. Unpack from Carton

Open the carton and remove the PANLOC brackets, hardware package, and mounting template. Remove the instrument from its plastic bag and place it upside down on the shipping pallet. Unscrew the four plastic feet from the bottom of the chassis.

2. Mark the Cabinet Panel.

Tape the mounting template in position on the cabinet panel where the instrument is to be installed. The broken lines that represent the outline of the rectangular cutout also represent the outside dimensions of the chassis. Make sure these lines clear shelves, partitions, or any equipment. With the template in place, first mark the six A and B holes and the four small holes that locate the corners of the cutout. Then, join the four corner markings with pencil lines, using the edge of the template as a straightedge.

3. Drill Holes

Use a drill with a 3/16 inch (5 mm) bit held perpendicular to the panel and drill the six A and B holes. Then, using a drill bit slightly larger than the tip of your saw blade, drill one hole at each of two diagonally opposite corners. The holes should barely touch the inside edge of the penciled outline. Before taking the next step, make sure that the six A and B holes have been drilled.

4. Saw the Panel Cutout

Saw, carefully, on the inside of the penciled lines. First make the two long cuts and then the two short cuts. After the rectangular opening has been cut out, use a file to square the corners and smooth any irregularities in the cut edges.

5. Install the Mounting Strips

In the hardware package you will find two mounting strips, and two sets of machine screws. For panels that are less than 1/2 inch (12.7 mm) thick, use the 3/4 inch (19.1 mm) screws; for panels that are more than 1/2 inch (12.7 mm) thick, use the 1-1/4 inch (31.8 mm) screws.

Starting at the right-hand side of the panel, insert a screw of the proper length into the center hole in the panel, marked B on the template. On the back of the panel, align a mounting strip with the holes in the panel and tighten the screw until the screwhead is pulled into the wood.

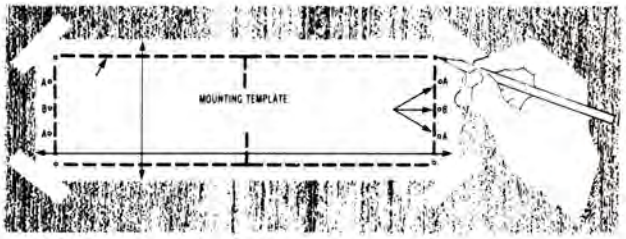
Repeat this procedure to attach the mounting strip to the left side of the panel.

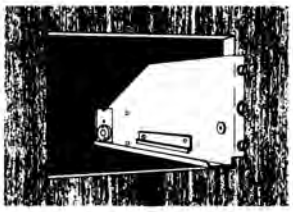
6. Attach the PANLOC Brackets

Using two screws of the proper length in the A holes on each side, attach the PANLOC brackets to the cabinet panel; the short flange is mounted against the front (face) of the cabinet panel. The screws pass through the PANLOC bracket flange, the cabinet panel, and then through the mounting strips previously mounted.

7. Install the Instrument

Guide the AC power cord through the panel opening to the back of the cabinet; then, slide the instrument into the opening carefully so that the rails on the bottom of each side of the chassis engage the tracks on the mounting brackets. Continue to slide the instrument into the cabinet until the front panel is flush with the cabinet panel. Turn the PANLOC buttons at the lower left and right corners of the instrument panel clockwise to lock the unit firmly in the cabinet. Turn the PANLOC buttons counterclockwise to unlock the instrument. It can then slide outward to permit the removal of the instrument from the cabinet.





6 INSTALLATION

Use shielded cables to connect the signal from the preamplifier or signal source to the power amplifier. To minimize the possibility of hum, the shielded cables should be of parallel construction or loosely twisted together, located away from speaker connecting cables and AC power cords. Be certain to use good quality shielded cables for all interconnections. Your dealer can advise you on the kind and length of cable that will best suit your installation.

The appropriate length and size of loudspeaker cable for your installation will help to preserve the quality of sound for which the loudspeakers have been designed. If undersize wire is use, resistance is added to the amplifier/loudspeakers combination which adversely affects the performance. Added resistance reduces the damping factor, modifies the frequency response and reduces the power output. Your dealer's advice will serve you best for your installation. The cables to and from the speaker should be of parallel construction or be loosely twisted together. The chart shows the recommended minimum wire size for the length of wire between the amplifier and the loudspeakers.

SPEAKER CABLE LENGTHS AMPLIFIER TO SPEAKER

For 4 Ohm Load		For 8 Ohm Load		Wire
Feet	Meters	Feet	Meters	Gauge
15	4.6	30	9.1	18
25	7.6	50	15.2	16
40	12.2	80	24.4	14
60	18.3	120	36.6	12
100	30.48	200	60.0	10

These speaker cable lengths represent a wire resistance equal to 5% of the speaker impedance.

CONNECTING FOR STEREO OPERATION

Plug the left output of the preamplifier into the Left input jack of the power amplifier. Plug the right output of the preamplifier into the Right (Mono) input jack of the power amplifier.

Set the MODE switch to the STEREO position.

Connect a speaker cable from the common terminal of the left speaker to the amplifier LEFT OUTPUT terminal strip COMmon screw. Connect another speaker cable from the other loudspeaker terminal to the correct speaker impedance terminal on the LEFT OUTPUT terminal strip. The right channel speaker is connected in the same manner to the RIGHT OUTPUT terminal strip.

When multiple speakers are to be connected to either or both outputs, the combined impedance must be calculated. The combined impedance must be connected to the appropriate impedance tap. Use this table to aid in selecting the correct impedance match:

Combined impedance in ohms:	Connect for:
0.8 to 1.6	1 ohm output
1.6 to 3.2	2 ohm output
3.2 to 6.4	4 ohm output
6.4 and up	8 ohm output

If the load impedance used is lower than the output impedance tap, reduced power and possible distortion will result. If the load impedance used is higher than the output impedance tap, neither the quality of sound nor the amplifier will be harmed, only the available power is reduced. For multiple speaker operation, run separate speaker cables from the amplifier to each speaker.

The MC 7270 will feed a constant voltage line as is often used in background music applications, paging systems and the like. For constant voltage of 25 volts connect output leads to the 4 ohm connectors on each channel.

Because the crosstalk between channels is almost non existent, each channel can be used as a separate amplifier. (Example; use one channel for mono background program in one area and the other channel for paging in a separate area.)

CONNECTING FOR MONOPHONIC BRIDGE OR SINGLE CHANNEL OPERATION

When the MC 7270 is used as a monophonic or single channel power amplifier, the two channels are added in a bridge configuration to produce output up to 540 watts. For monophonic operation using the MONO-BRIDGE mode, the amplifier can supply full power to output impedances of 2, 4, 8 and 16 ohms.

Plug a shielded cable from the signal source or preamplifier to the RIGHT (MONO) input jack only. Change the MODE switch on the back panel of the amplifier to the MONO-BRIDGE position. The MONO-BRIDGE switch internally connects the output of the right channel input amplifier to both left and right channel power amplifiers with the phase of the left channel inverted to achieve bridge operation and increased power output.

BE CERTAIN THE MC 7270 IS NEVER OPERATED WITH THE BACK PANEL MODE SWITCH IN THE STEREO POSITION WITH THE AMPLIFIER CONNECTED FOR MONO BRIDGE.

Operated with the MODE switch in the MONO-BRIDGE position, the circuit subtracts the left channel from the right channel L-R). The remaining difference signal is all that is then fed to the speaker.

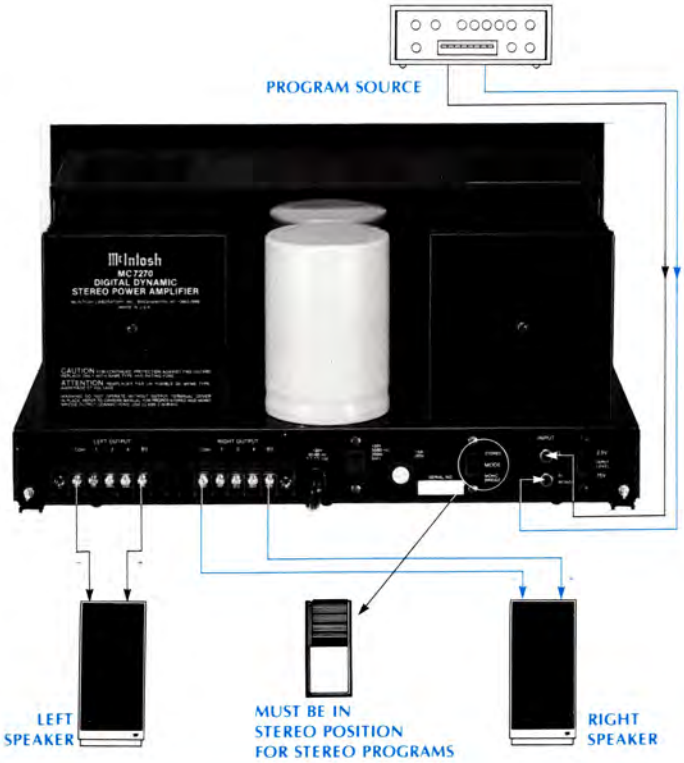
The MONO-BRIDGE operation of the MC 7270 amplifier always requires the speaker load to be connected between two opposite channel impedance terminals. The common terminals are not used. Do not connect leads independently between left and right channel impedance taps as this will cause high circulating currents and overheating. Connect the speaker leads to the output terminals as listed in this chart:

Load Impedance In Ohms	**Connect the** −Speaker Cables to:	**Connect the** +Speaker Cables to:
2	Left 1 Ohm Terminal	Right 1 Ohm Terminal
4	Left 2 Ohm Terminal	Right 2 Ohm Terminal
8	Left 4 Ohm Terminal	Right 4 Ohm Terminal
16	Left 8 Ohm Terminal	Right 8 Ohm Terminal

Neither output terminal is at ground potential.

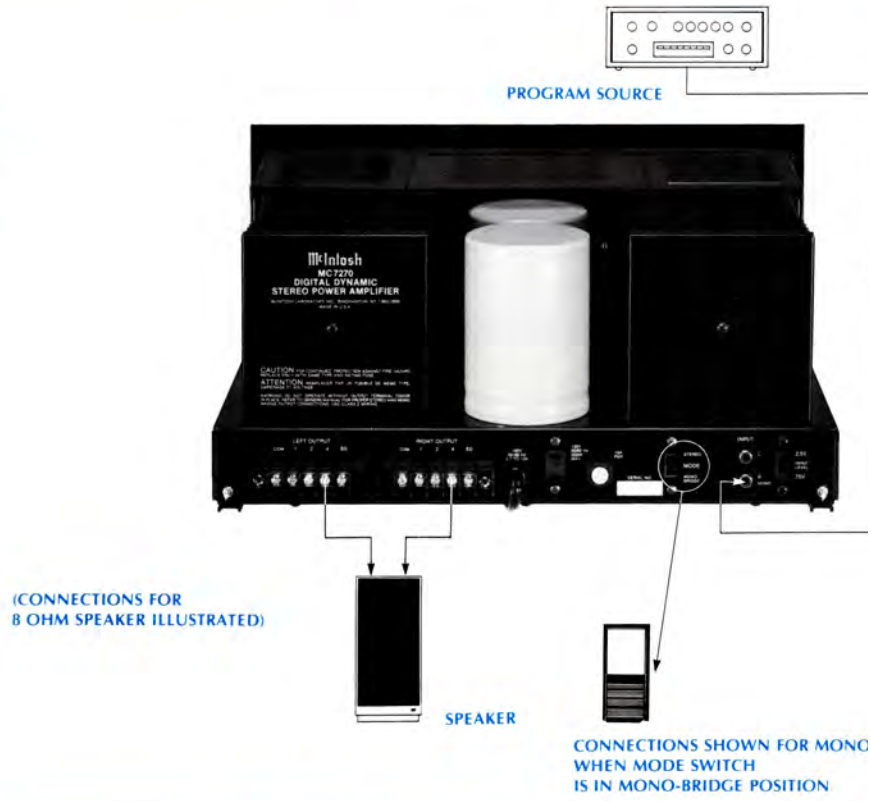
To use the MC 7270 to feed a line whose constant voltage is 25 volts, connect the speaker cables for 2 ohm MONO-BRIDGE output.

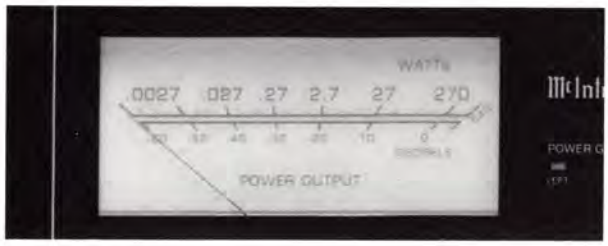
8 HOW TO CONNECT



STEREOPHONIC CONNECTIONS

MONO-BRIDGED CONNECTIONS





METERS

Output power monitor meters calibrated in both watts and decibels, indicate the output power of each channel. The upper scale on the meter has been calibrated to show average watts and the lower scale, decibels. Reading from right to left, the marks between the numbers indicating watts are (from the indicated 270 watts): first mark, 108 watts. Second 54 watts, the indicated 27 watts, 10.8 watts, 5.4 watts, the indicated 2.7 watts, 1.08 watts, 0.54 watts, the indicated 0.027 watts, 0.0108 watts, .0054 watts, the indicated 0.0027 watts, 0.00108 watts and 0.00054 watts.

The meters respond to the peak output of each channel. Ordinary meters lack the capability of indicating the short interval information in a sound wave. The mass of the meter movement is too great to respond to the nearly instantaneous changes in music program material. Short interval information can have a duration as short as half a thousandth of a second. Ordinarily, a meter pointer moving over its scale in such a short time could not be seen. McIntosh has developed circuits that drive the meters to respond to the short interval information in a sound wave to an accuracy of 90%. The electrical pulse that drives the meter pointer is time stretched so that the peak position of the pointer can register in the persistence of vision characteristic of the retina of the human eye. The pointer can be locked at the peak indication by switching to the HOLD position of the METER range switch.

LEFT GAIN

Use the LEFT GAIN control to adjust the output in the left channel to the desired listening level. Turn the control clockwise to increase the output.

RIGHT/MONO GAIN

Use the RIGHT/MONO GAIN control to adjust the output in the right channel to the desired listening level. Turn the control clockwise to increase the output.

When connected for monophonic operation use the RIGHT/MONO GAIN to adjust the total output to the desired listening level. The rear panel MODE SWITCH must be in the MONO-BRIDGE position.

10 FRONT PANEL CONTROLS

METER RANGE

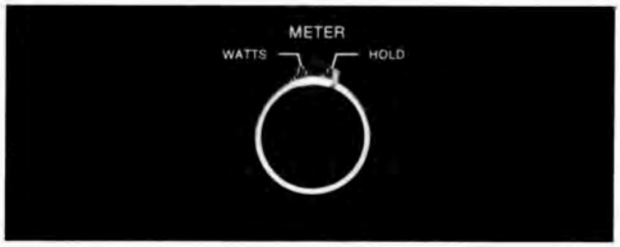
The METER RANGE switch has two positions: WATTS and HOLD.

WATTS

In the WATTS position, the meter needle indicates the variations in program loudness. Although the primary output calibration of the meters is from 0.0027 watts (2.7 milliwatts) up to 270 watts, the rated power output of the MC 7270, the additional indication to the right of the 270 watts mark, is 540 watts. While the MC 7270 cannot reach this power level continuously it is possible for short interval peaks to considerably exceed the 270 watts continuous rating.

HOLD

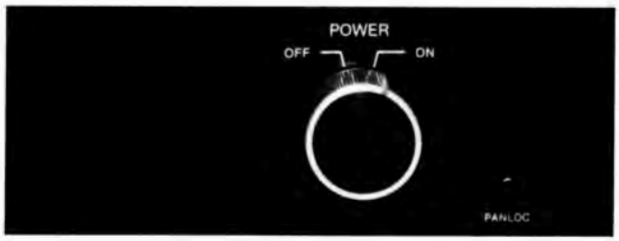
In the HOLD position, the meter needle locks to the highest power peak in a sequence of peaks. The meter is driven to maximum power, electronically held there until a higher peak passes through the amplifier, which moves the meter needle to a new indication. If no further peaks are reached the meter needle will very slowly return to its rest position (decay rate: 6 dB per minute).



POWER

The power switch turns the MC 7270 ON or OFF. The switch does not control the power outlet on the back panel. If you wish to control the AC power from a preamplifier control center, leave the switch in the ON position. Be sure the AC cord of the MC 7270 is plugged into the controlled outlets on the rear of the preamplifier control center.

OFF: In the OFF position the AC power to the amplifier is turned off.



THE McINTOSH (EXCLUSIVE) POWER GUARD DIGITAL DYNAMICS PROTECTION CIRCUIT

Improved recordings and recording techniques have imposed higher power demands on today's amplifiers. Poorly designed amplifiers can present music listeners with a form of harsh unpleasant distortion due to amplifier overload (hard clipping). Clipping, which looks and acts like non musical square waves, is caused when the amplifier is asked to produce more power output with low distortion than it is capable of or designed to deliver. Amplifiers, when driven to clipping, can deliver up to 40% harmonic and intermodulation distortion that decreases the pleasure and enjoyment you get from listening. This form of distortion (clipped signal) also produces extra heat energy which will damage most speakers. McIntosh leadership in engineering has developed the Power Guard circuit which - (1) dynamically prevents power amplifiers from being overdriven into hard clipping - (2) assures that the amplifier will produce its maximum output without increased distortion - (3) protects your speaker from excessive heating. Power Guard is a patented McIntosh design (U.S. patent #4048573).

The MC 7270 has a circuit that compares the wave shape of the output signal to the input signal. If the disparity between the two signals, due to overdrive, exceeds an average of 0.3% (equivalent to 0.3% total harmonic distortion) an amber POWER GUARD indicator illuminates. With any further increase in distortion the POWER GUARD circuit operates to limit the amplifier input dynamically so that the amplifier cannot be overdriven. POWER GUARD eliminates amplifier output clipping. POWER GUARD only operates when the amplifier is asked to deliver more power than that for which it was designed. While the power output remains within these limits the POWER GUARD indicators do not illuminate.

12 FRONT PANEL CONTROLS

MODE SWITCH

The MC 7270 will operate in two modes, Stereo and Mono Bridge.

LEFT AND RIGHT OUTPUT TERMINALS

For stereo operation, output impedances of 1, 2, 4 and 8 ohms have been provided on a secure, screw type barrier strip. For monophonic operation proper interconnection provides 2, 4, 8, and 16 ohms at the same barrier strips. See page 7 for connecting instructions.

INPUT JACKS

In the stereo mode of operation, both Left and Right input jacks function. In the mono mode of operation only the Right (MONO) channel input jack accepts signal. In mono, the Left channel input jack is disconnected.

INPUT LEVEL

The input sensitivity of the MC 7270 is 0.75 volts or 2.5V depending on the position of the INPUT LEVEL switch. For the best signal to noise ratio when using McIntosh source equipment, place the INPUT LEVEL switch in the 2.5V position and the front panel LEFT and RIGHT/MONO GAIN controls in the fully clockwise position. If more gain is desired the 0.75V position may be used. All McIntosh preamplifiers have been designed to deliver 2.5 volts output with rated input. For source equipment other than McIntosh, set the switch in the position nearest to the stated output rating of the source equipment.

AC POWER

The input to the MC 7270 is 120 volts 50/60 Hz at up to 12 amps. The primary circuit is protected by a 15 Amp Fuse.

PERFORMANCE GUARANTEE

Performance Limits are the maximum deviation from perfection permitted for a McIntosh instrument. We promise you that when you purchase a new MC 7270 from a McIntosh franchised dealer, it will be capable of or can be made capable of performance at or exceeding these limits or you can return the unit and get your money back. McIntosh is the only manufacturer that makes this statement.

PERFORMANCE

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

270 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:
16.4 volts RMS across 1 ohm
23.2 volts RMS across 2 ohms
32.9 volts RMS across 4 ohms
46.5 volts RMS across 8 ohms

MONO-BRIDGE

540 watts minimum sine wave continuous average power output into 2 ohms, 4 ohms, 8 ohms, or 16 ohms load impedance, which is:
32.9 volts RMS across 2 ohms
46.5 volts RMS across 4 ohms
65.7 volts RMS across 8 ohms
93.0 volts RMS across 16 ohms

OUTPUT LOAD IMPEDANCE

STEREO

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

MONO-BRIDGED

2 ohms, 4 ohms, 8 ohms, or 16 ohms, balanced to ground.

RATED POWER BAND

20 Hz to 20,000 Hz

TOTAL HARMONIC DISTORTION

STEREO

0.02% maximum harmonic distortion at any power level from 250 milliwatts to 270 watts per channel from 20 Hz to 20,000 Hz, both channels operating.

MONO

0.02% maximum harmonic distortion at any power level from 250 milliwatts to 540 watts from 20 Hz to 20,000 Hz.

INTERMODULATION DISTORTION

STEREO

0.02% maximum if instantaneous peak power output is 600 watts or less per channel with both channels operating for any combination of frequencies, 20 Hz to 20,000 Hz.

MONO

0.02% maximum if instantaneous peak power output is 600 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 100,00 Hz +0 −2 dB.

NOISE AND HUM

100 dB below rated output.

RATINGS

DAMPING FACTOR

Greater than 30

INPUT IMPEDANCE

20,000 ohms.

INPUT SENSITIVITY

Switchable: 0.75 volt or 2.5 volts—level control provided for higher input voltages.

POWER GUARD

Clipping is prevented and THD does not exceed 2% with up to 20 dB overdrive a 1 kHz.

GENERAL INFORMATION

POWER REQUIREMENTS

120 volts 50/60 Hz; 13 amps.

SEMICONDUCTOR COMPLEMENT

79 silicon transistors
31 silicon rectifiers and diodes
7 integrated circuits

MECHANICAL INFORMATION

SIZE

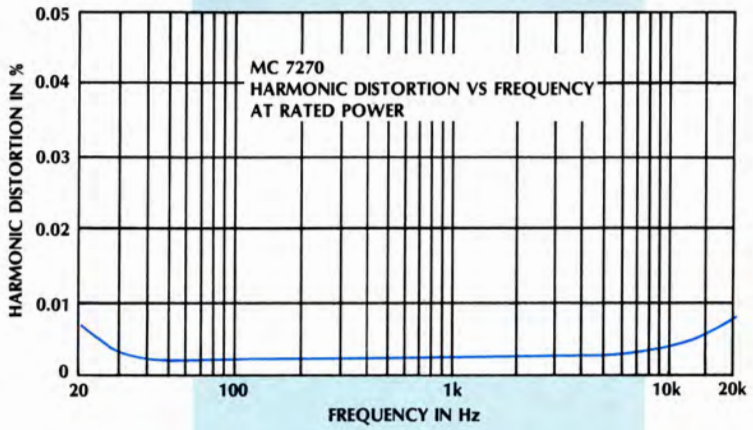
16 3/16 inches wide (41.1 cm) by 7 1/8 inches high (18.1 cm) by 14 1/2 inches deep (36.8 cm), including connectors. Knob clearance required is 1 1/4 inches (3.2 cm) in front of mounting panel.

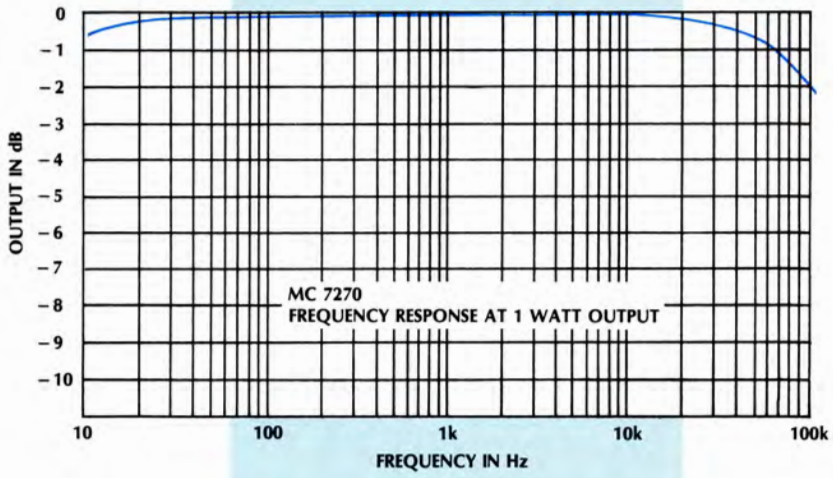
FINISH

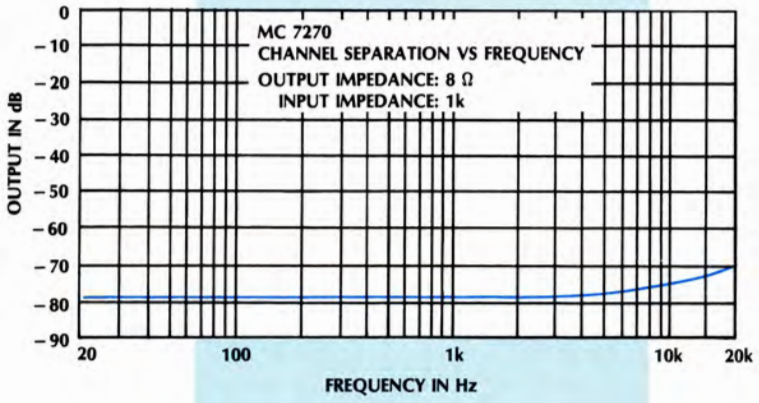
The front panel is a combination of glass and black anodized aluminum. The chassis is black.

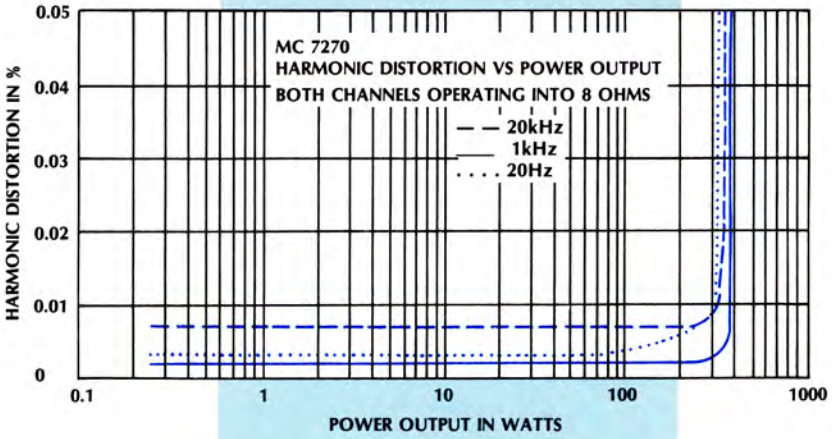
WEIGHT

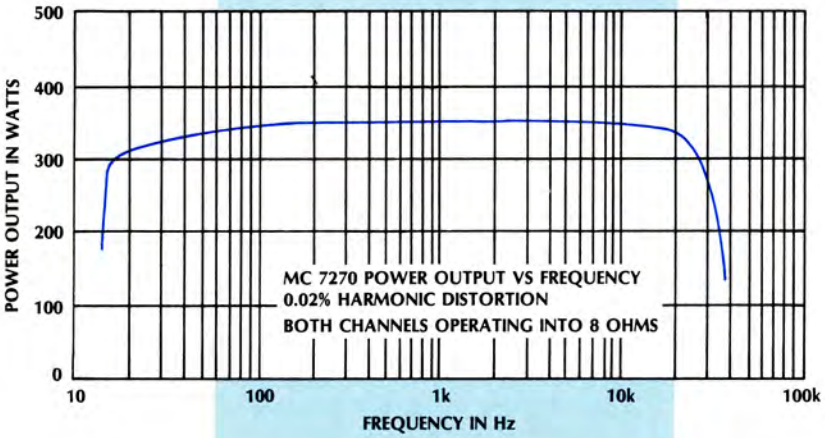
82 pounds (37.2 kg) net, 96 pounds (43.5 kg) in shipping carton.

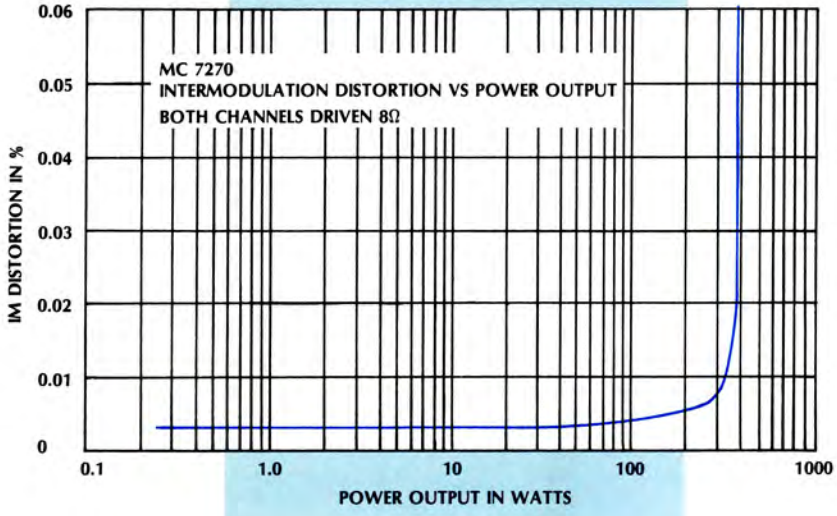

MC 7270
HARMONIC DISTORTION VS FREQUENCY
AT RATED POWER
HARMONIC DISTORTION IN %
0.05
0.04
0.03
0.02
0.01
0
20
100
1k
10k
20k
FREQUENCY IN Hz


MC 7270
FREQUENCY RESPONSE AT 1 WATT OUTPUT
OUTPUT IN dB
0
–1
–2
–3
–4
–5
–6
–7
–8
–9
–10
10
100
1k
10k
100k
FREQUENCY IN Hz


MC 7270
CHANNEL SEPARATION VS FREQUENCY
OUTPUT IMPEDANCE: 8 Ω
INPUT IMPEDANCE: 1k
OUTPUT IN dB
0
–10
–20
–30
–40
–50
–60
–70
–80
–90
20
100
1k
10k
20k
FREQUENCY IN Hz







16 PERFORMANCE CHARTS

INPUT AMPLIFIER

Each channel input contains a complete seven transistor low power amplifier. A differential transistor pair provides high input impedance with low noise. The differential signals are combined in a current mirror circuit which drives a class A amplifier stage. The following output stage is a complimentary pair of transistors with class AB biasing. The output signal drives the metering circuit and the high power output amplifier. This discrete transistor input amplifier design has low noise, low distortion and freedom from turn-on/turn-off transients.

The INPUT LEVEL selector and GAIN controls (as passive attenuators) which precede the input amplifier, prevent input overloaded when the controls are correctly set.

In the MONO BRIDGE mode of operation the input signal feeds only the right input amplifier using the RIGHT/MONO GAIN control. The output of the right input amplifier feeds both output power amplifier sections with the left input amplifier as a phase inverter to the left output amplifier. The phase inversion puts the output amplifiers 180° out of phase with respect to each other to provide a bridge output. The channels, of course, operate in phase for the STEREO mode.

OUTPUT POWER AMPLIFIER

The output of the input amplifier is fed to the power amplifier input through a junction FET electronic switch. The control signal to the switch is held for about one second to eliminate turn-on/turn-off transients and prevent transients that may originate in the source equipment from being amplified and fed to the loudspeakers.

The first stage of the output power amplifier is a differential transistor pair biased for best linearity. The offset to the differential pair is adjustable. Correct adjustment assures the lowest possible distortion at low frequencies. In each channel, current mirror circuit combines the differential outputs into one signal which is amplified by a class A voltage amplifier. Both the differential transitors and the voltage amplifier are supplied by active current sources. The results are lower distortion and cleaner turn-on characteristics.

The driver stage consists of a complimentary pair of power transitors biased class AB. Three complimentary pairs of rugged power transistors mounted on over-sized anodized aluminum heat sinks, make up the power output stage. A unique design of the bias network permits the output transistors to operate class B but prevents the crossover distortion associated with class B operation. The heat sinks remain cool when there is no output.

The amplifier output signal is fed to the output terminals through the output autotransformer. The McIntosh designed interleaved multifilar wound autotransformer is used to properly match the amplifier to stereo output load taps for 1, 2, 4 and 8 ohms. The MC 7270 will deliver full power over the entire audio frequency range at any of these impedances. The autotransformer also protects speakers from damage in the event of amplifier failure. Should a direct current component appear in the output it is shunted to ground by the autotransformer. DC cannot damage the speaker.

A McIntosh patented Sentry Monitoring circuit constantly monitors the output signal and instantly reacts to prevent overload of the output transistors. At signal levels up to design maximum the circuit has high impedance and has no effect upon the output. Should the power output exceed design maximum, the Sentry Monitoring circuit operates to limit the signal to the output transistors. In the event of a short circuit across the amplifier output or severe impedance mismatch the Sentry Monitoring circuit will protect the output transistors from failure. Positive and negative halves of the output signal are independently monitored and protected.

POWER GUARD PROTECTION CIRCUIT

The McIntosh patented Power Guard circuit eliminates amplifier clipping due to overdrive. The circuit illuminates amber POWER GUARD indicator lamps when the amplifier drive trys to exceed the maximum output capacity. Power Guard prevents loudspeaker damage and eliminates harsh output distortion caused by amplifier clipping.

In the Power Guard circuit, the output waveform is compared to the input waveform. As long as there isn't any disparity between these signals, the circuit hasn't any influence on the performance of the amplifier. Should the amplifier drive try to exceed the amplifier's maximum power capacity, a difference will develop. If the disparity exceeds 0.03% on the average, (equivalent to 0.3% total harmonic distortion) the difference causes the amber POWER GUARD indicators to light. A further increase in the disparity, controls an electronic attenuator at the amplifier input to reduce the amplifier gain, thus holding the amplifier output to its maximum undistorted value regardless of the degree of overdrive to the amplifier.

The difference signal is fed to a specially compensated operational amplifier integrated circuit. Its output is detected by a full wave bridge that feeds signals to the control circuitry for the POWER GUARD indicators and to the electronic attenuator at the amplifier input. The attenuator is a light emitting diode/light dependent resistor network selected specially for its low distortion and time constant characteristics.

McINTOSH LABORATORY INC.
2 CHAMBERS ST., BINGHAMTON, NY 13903-2699
607-723-3512

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

Printed in U.S.A.

039625