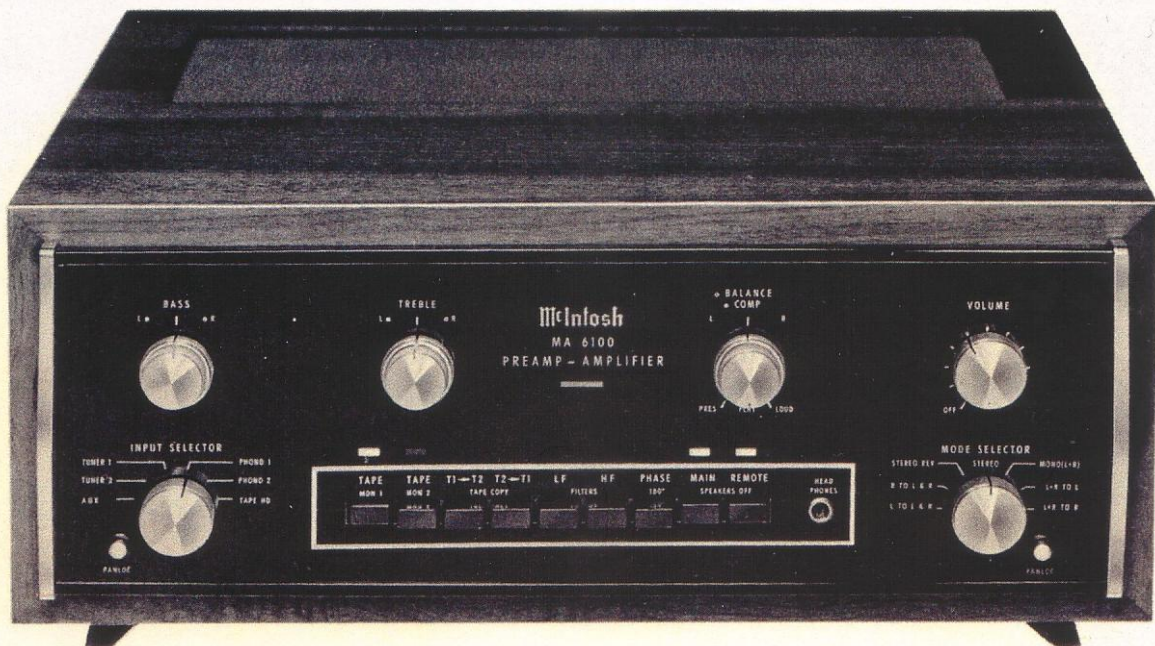


McIntosh  
MA 6100

# OWNER'S MANUAL

THE McINTOSH MA 6100 STEREO PREAMPLIFIER - POWER AMPLIFIER



Reading Time 32 Minutes

Price \$1.25



Your MA 6100 Stereo Preamplifier—Power Amplifier will give you many years of pleasant and satisfactory performance. If you have any questions concerning the operation or maintenance of this instrument, please contact:

## CUSTOMER SERVICE

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

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

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## GUARANTEE

McIntosh Laboratory Incorporated guarantees this instrument to be capable of performance as advertised. We also guarantee the mechanical and electrical workmanship and components to be free of defects for a period of 90 days from date of purchase. If such defects occur, McIntosh Laboratory

or one of its authorized agencies will repair the defect at no cost to the purchaser. This guarantee does not extend to components damaged by improper use nor does it extend to transportation to and from the factory or service agency.

## THREE YEAR FACTORY SERVICE CONTRACT

An application for a FREE THREE YEAR FACTORY 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 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. Instruments damaged by improper use or mishandling are 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. The SERVICE CONTRACT is given to purchasers who live in the 50 United States or Canada only.
6. For your protection McIntosh selects its dealers carefully. Only one dealer in ten qualifies for a McIntosh franchise. To receive the SERVICE CONTRACT your purchase must be made from a McIntosh franchised dealer.
7. Your completely filled in application for a SERVICE CONTRACT must be postmarked within 30 days of the date of purchase of the instrument.
8. 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 at McIntosh Laboratory Incorporated in Binghamton, New York. If the application is not received at McIntosh Laboratory, only the service offered under the 90-day guarantee will apply.

# Installation

With adequate ventilation the MA 6100 may be mounted in any position. Adequate ventilation extends the trouble-free life of electronic instruments. It is generally found that each 18° F rise in operating temperature reduces the life of electrical insulation by one half. In most components if the insulation fails, the component fails. Adequate ventilation is an inexpensive and effective means of preventing insulation breakdown. The direct benefits of adequate ventilation are longer, trouble-free life.

The MA 6100 Preamplifier-Amplifier requires a mounting space that is at least 15 inches deep, 17½ inches wide and 6 inches high. Provide additional space for the air flow across the bottom of the MA 6100 and a means for warm air to escape at the top.

Remove the instrument, PANLOC brackets, parts bag and mounting template from the carton. Remove the MA 6100 from the plastic bag and place it upside down on the shipping pallet. Then remove the four plastic feet fastened to the bottom of the chassis.

Use this procedure to install the MA 6100:

## 1. POSITION TEMPLATE AND MARK

Position the plastic mounting template over the area of the cabinet panel where the MA 6100 is to be installed. Be sure that the edges of the equipment marked on the template clears any shelves, partitions or existing equipment located behind the panel. With the template in place mark the six "A" and "B" holes and four small holes locating the corners of the cutout. Next, join the four corner marks with pencil lines. The edge of the template is used as a straight edge.

## 2. DRILL HOLES

With the drill perpendicular to the panel, drill the six "A" and "B" holes using a 3/16 inch drill.

**THE SIX HOLES MUST BE DRILLED BEFORE MAKING THE CUTOUT.**

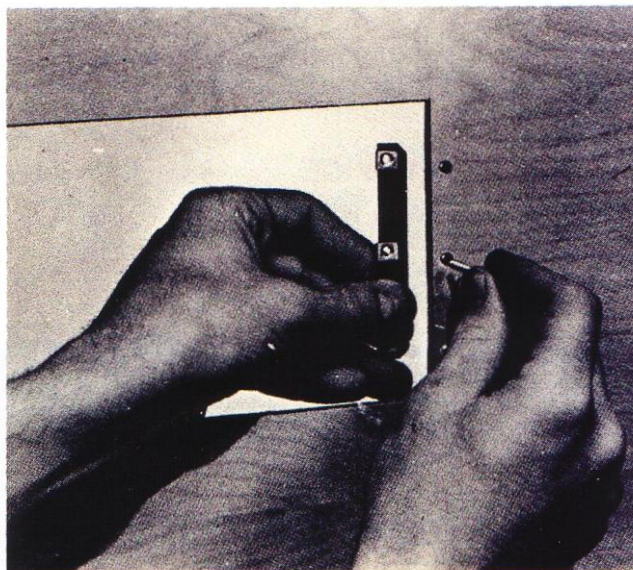
## 3. SAW CUTOUT

Carefully cut the rectangular opening on **the inside** of the penciled rectangle.

## 4. SECURE MOUNTING STRIPS

Install the mounting strips (supplied in the hardware package) on the inside of the cabinet panel. Insert two screws (supplied in the hardware package) into the center holes ("B" holes on the template). Use the ¾-inch long screws for panels under ½-inch thick or 1¼-inch screws for panels ½-inch thick or over. Place a mounting strip on the back of the cabinet panel. Align it with the three holes in the panel and tighten the screw. The screw head

should pull slightly into the wood panel. Attach the other mounting strip by repeating the procedure.

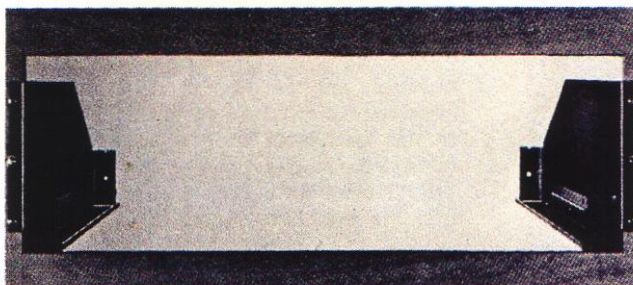


## 5. MOUNT THE PANLOC BRACKETS

Attach the PANLOC brackets to the cabinet panel using four screws of the proper length. Place the template over the mounting screws. The screws should be centered on the "A" and "B" holes in the template. If necessary, loosen the screws and push the mounting brackets into alignment then retighten.

## 6. INSTALL THE UNIT

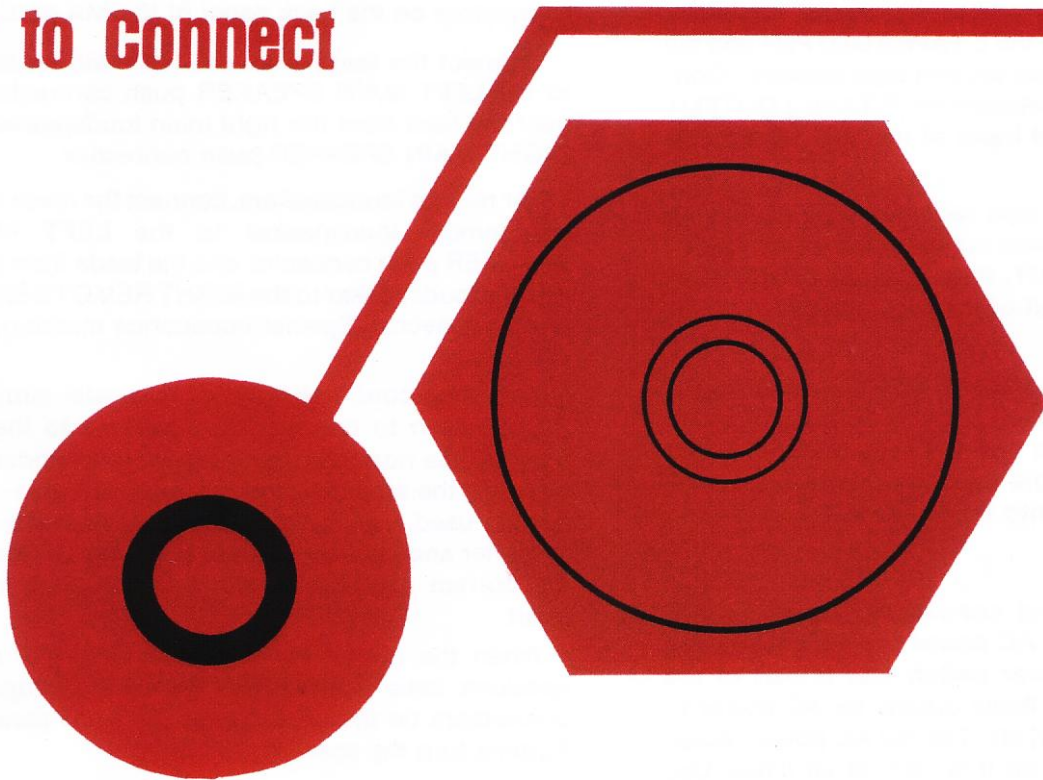
Thread the power cord through the opening in the cabinet panel. Carefully slide the instrument into the opening so the rails on the bottom of the instrument engage the track on the mounting brackets.



Slide the instrument in until it stops at the adjust position latches. Press the latches in and continue to slide the instrument until its front panel is flush with the cabinet panel.

At the bottom front corners are the PANLOC buttons. Depressing the PANLOC buttons will lock the instrument firmly in the cabinet panel. Depressing the PANLOC buttons a second time (as with a ballpoint pen) will release the instrument. You can then slide the instrument forward to the adjust position. Depressing the adjust position latches will allow the instrument to be removed from the cabinet.

# How to Connect



## CONNECTING RECORD PLAYERS

The MA 6100 provides inputs for two record players. To connect a record player, plug a shielded cable from the left channel of the record player into L PHONO 1 INPUT. Plug a shielded cable from the right channel of the record player into R PHONO 1 INPUT.

For a second record player, plug a shielded cable from the left channel of the record player into L PHONO 2 INPUT. Plug a shielded cable from the right channel of the record player into R PHONO 2 INPUT.

## GROUND CONNECTION

A single ground (GND) post is provided. Grounds for turntables, record changers, tape decks, etc., should be connected to this post. The left and right shielded cables of each instrument (turntable etc.) and its own ground wire should be twisted together. To avoid hum, make sure the ground wire does not make any contact to the shields of the left and/or right cables between the program source and the MA 6100 input connectors. The only ground connection should be made at the ground (GND) post on the rear of the MA 6100.

## CONNECTING TUNERS

The MA 6100 provides inputs for two stereo tuners. Plug a shielded cable from the left channel tuner

output into L TUNER 1 INPUT. Plug a shielded cable from the right channel tuner output into R TUNER 1 INPUT.

For a second tuner, plug a shielded cable from the left channel tuner output into L TUNER 2 INPUT. Plug a shielded cable from the right channel tuner output into R TUNER 2 INPUT.

## CONNECTING A TAPE DECK FOR PLAYBACK

To play back from a tape deck (a tape deck is a tape player without its own electronics), plug a shielded cable from the left channel of the tape deck into L TAPE HEAD INPUT. Plug a shielded cable from the right channel of the tape deck into R TAPE HEAD INPUT. It is best to keep the shielded leads as short as is practical. Capacitance introduced by cables over 36" long can affect the playback response.

## CONNECTING TAPE RECORDERS FOR RECORD AND PLAYBACK

The MA 6100 provides outputs to feed two tape recorders (a tape recorder has its own electronics for record and playback). To connect for recording on a tape recorder, plug a shielded cable from the L TAPE 1 OUTPUT of the MA 6100 to the left high level input of the tape recorder. Connect a shielded cable between the R TAPE 1 OUTPUT and the right high level input of the tape recorder.

For recording on a second tape recorder, connect a shielded cable between the L TAPE 2 OUTPUT and the left high level input of the second tape recorder. Connect a shielded cable between the R TAPE 2 OUTPUT and the right high level input of the second tape recorder.

For playback from a tape recorder, plug a shielded cable from the left channel output of the tape recorder into the L TAPE 1 INPUT. Plug a shielded cable from the right channel output of the tape recorder into the R TAPE 1 INPUT.

For playback from a second tape recorder, plug a shielded cable from the left channel output of the second tape recorder into the L TAPE 2 INPUT. Plug a shielded cable from the right channel output on the second tape recorder into the R TAPE 2 INPUT.

### AC POWER OUTLETS

There are 3 black and one red AC power outlets. The power to the black AC power outlets is controlled by the front panel power switch that is part of the VOLUME control. Use these outlets for AC power to the tuner, tape recorder, etc. The red AC power receptacle is not controlled so it is "on" at all times. Use the red AC power outlet for AC power to a turntable or record changer. The turntable or record changer is protected by this arrangement. It is necessary to turn "off" the AC power to the turntable or record changer with its own AC power switch.

### CONNECTING LOUDSPEAKERS

**THE MA 6100 POWER AMPLIFIER IS DESIGNED FOR STEREO CONNECTION ONLY. DO NOT CONNECT THE MA 6100 FOR MONOPHONIC (ONE LOUDSPEAKER) OPERATION. DAMAGE TO THE LOUDSPEAKER OR THE POWER AMPLIFIER MAY RESULT.**

Two pairs of stereo speaker systems can be connected to the MA 6100. One pair of MAIN and one pair of REMOTE speakers are connected to the push

connectors on the back panel of the MA 6100.

Connect the leads from the left main loudspeaker to the LEFT MAIN SPEAKER push connector. Connect the lead from the right main loudspeaker to the RIGHT MAIN SPEAKER push connector.

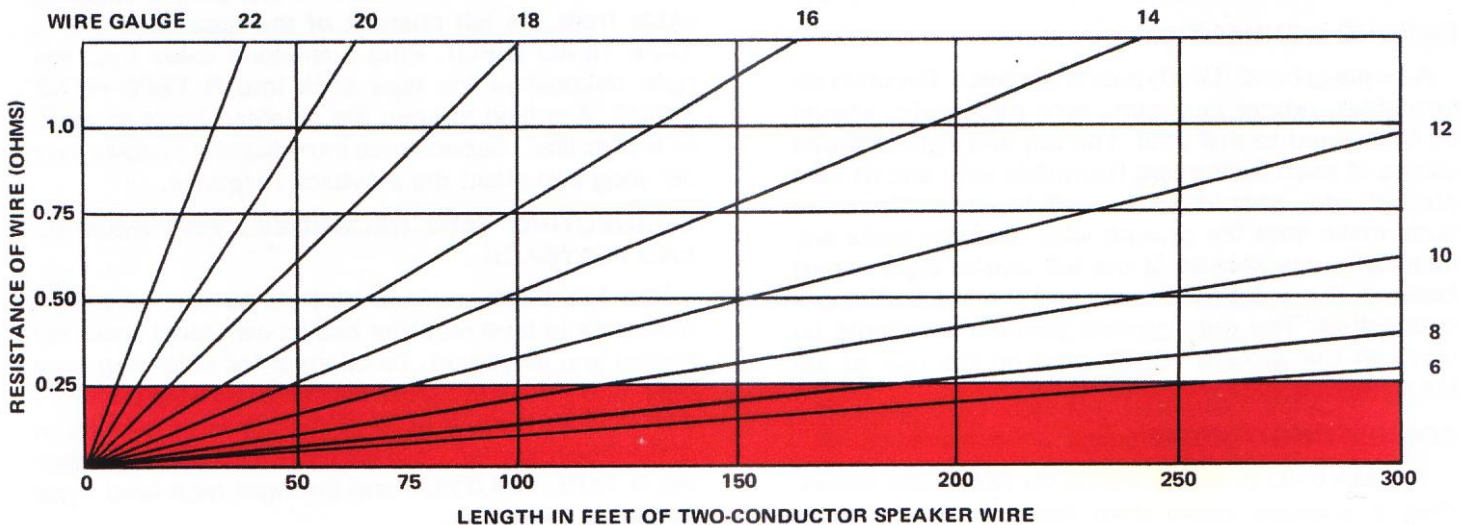
For remote loudspeakers, connect the leads from the left remote loudspeaker to the LEFT REMOTE SPEAKER push connector and the leads from the right remote loudspeaker to the RIGHT REMOTE SPEAKER push connector. Special impedance matching is unnecessary.

Use lamp cord, bell wire, or wire with similar type of insulation to connect the speakers to the amplifier. For the normally short distances of under 20 feet between the amplifier and speaker, #18 wire or larger can be used. For distances over 20 feet between the amplifier and speaker use larger diameter wire. Select the correct size wire for the wire distance from the chart.

When the output of the power amplifier and the speakers have been connected to the proper push connectors on the back panel, the front panel push-buttons turn the speakers ON or OFF.

### CONNECTING McINTOSH LOUDSPEAKERS WITH A McINTOSH ENVIRONMENTAL EQUALIZER

The McIntosh Environmental Equalizer uses the jacks that are connected by the jumpers between the back panel jacks, PREAMP-OUTPUT and POWER AMP INPUT. Remove the jumpers. With a pair of shielded cables, connect the PREAMP-OUTPUT jacks to the input jacks on the McIntosh Environmental Equalizer. With another pair of shielded cables, connect the Environmental Equalizer output jacks to the POWER AMP INPUT jacks on the MA 6100. The loudspeakers are connected in the conventional manner. The McIntosh Environmental Equalizer should be used with McIntosh loudspeakers only. Use of the McIntosh Environmental Equalizer with ordinary loudspeakers can result in high distortion and severe damage to the loudspeaker.

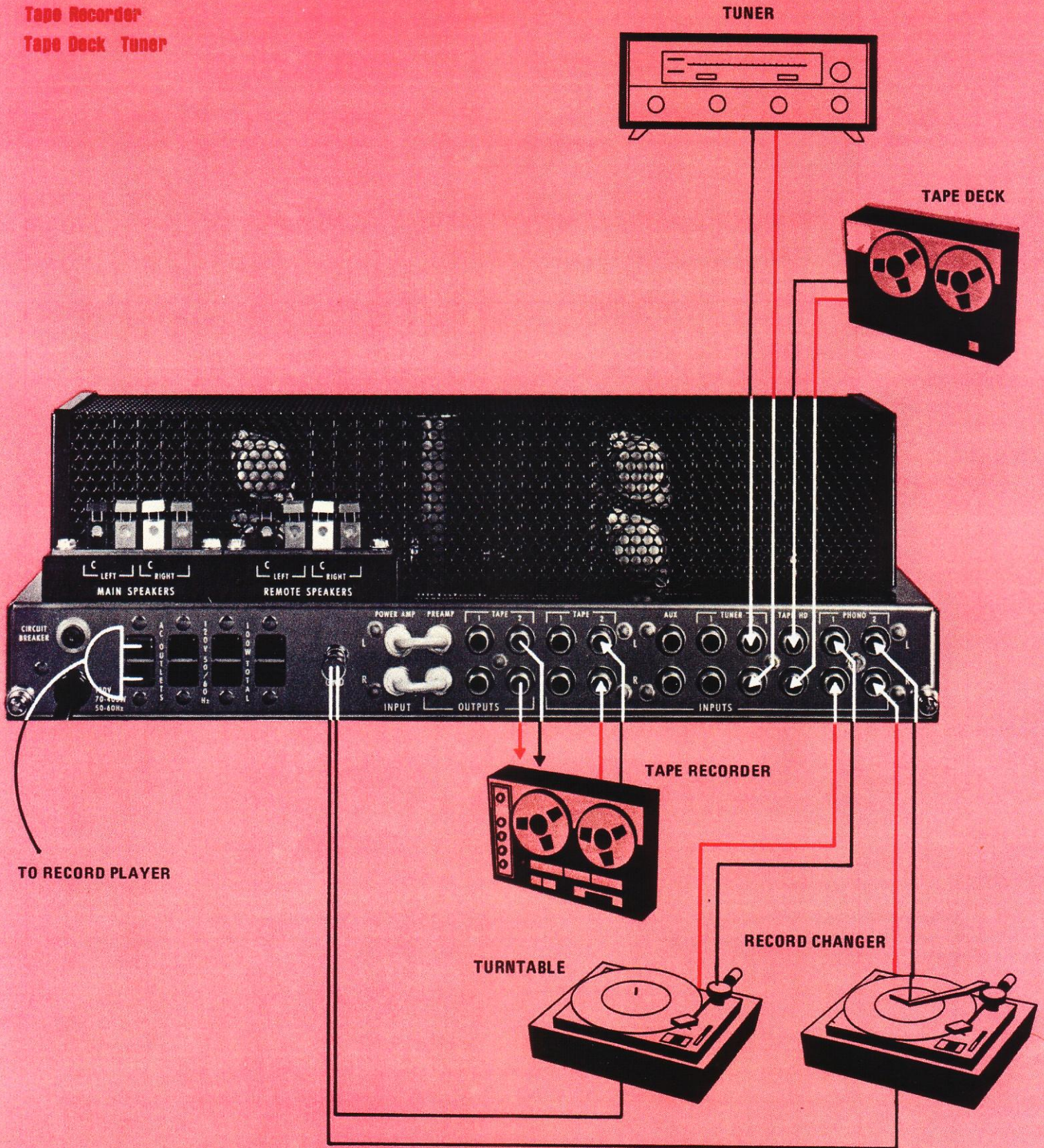


# Connecting Inputs—

Record Players

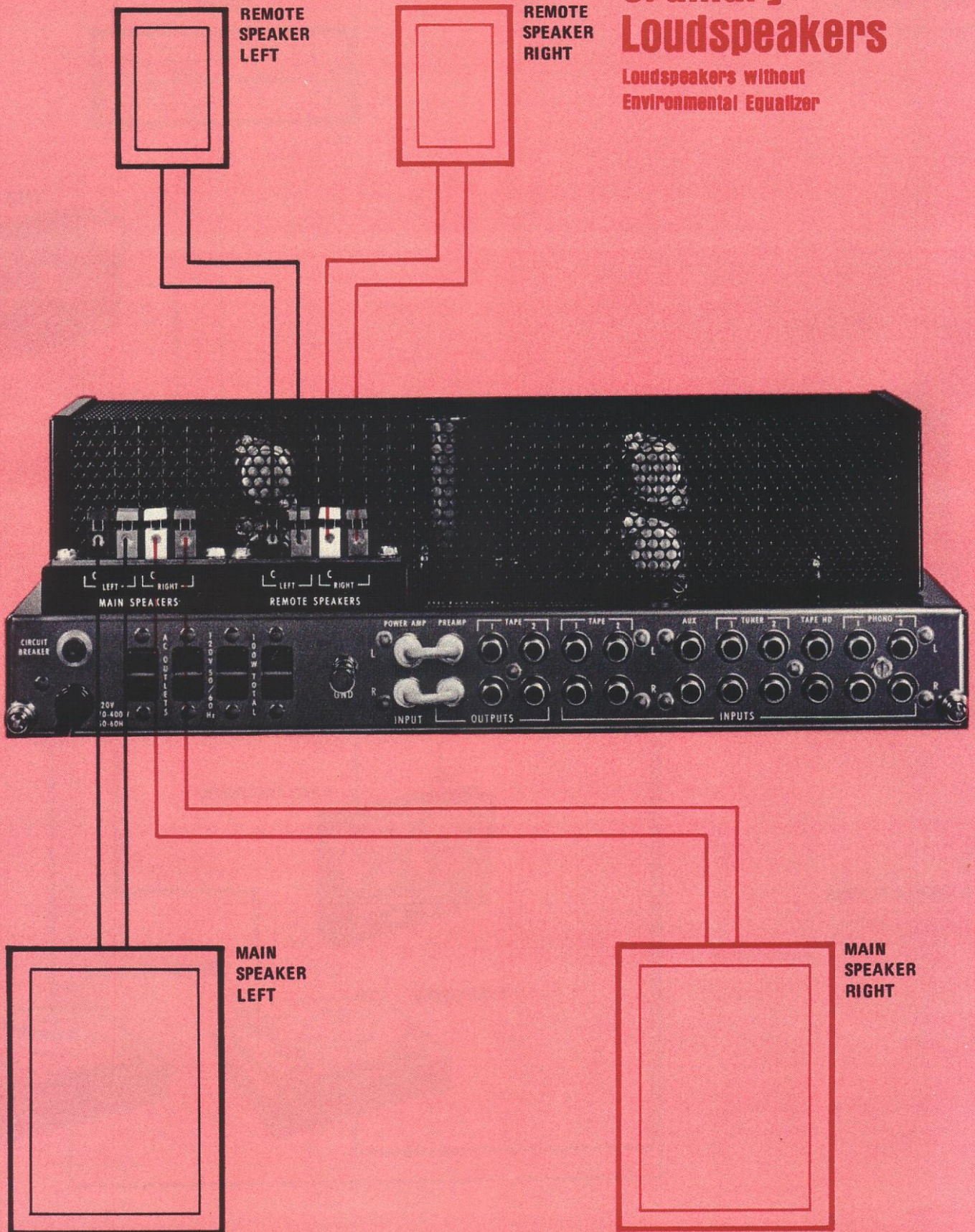
Tape Recorder

Tape Deck Tuner



# Connecting Ordinary Loudspeakers

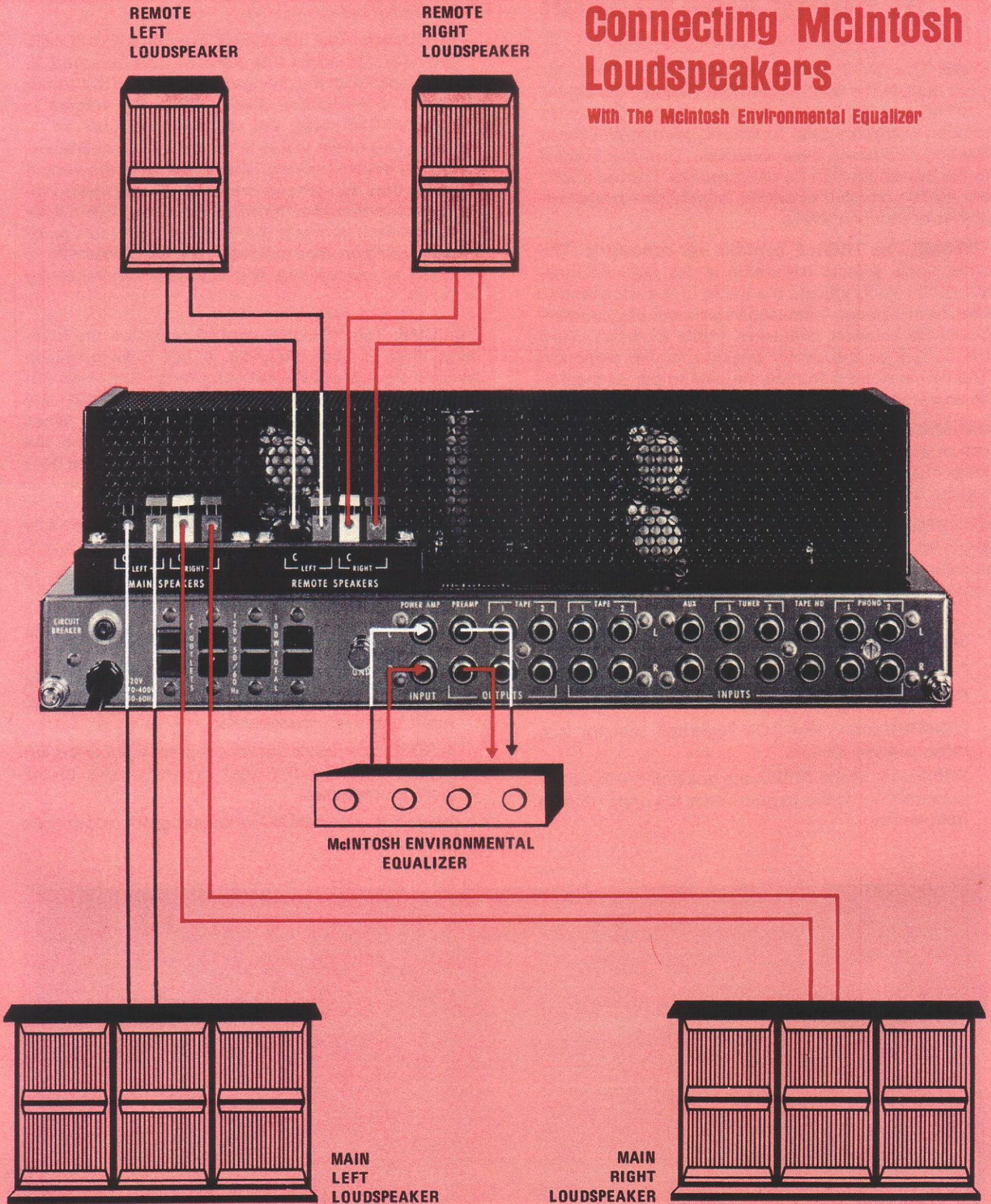
Loudspeakers without Environmental Equalizer





# Connecting McIntosh Loudspeakers

With The McIntosh Environmental Equalizer



# Front Panel Information

**BASS:** The BASS controls are concentric. The outer knob adjusts the bass in the right channel; the center knob adjusts the bass in the left channel. Clockwise rotation increases bass loudness; counter-clockwise rotation decreases bass loudness. Turn the control to the center position for flat response. The two knobs are friction coupled to permit them to be adjusted together or independently.

**TREBLE:** The TREBLE controls are concentric. The outer knob adjusts the treble in the right channel; the center knob adjusts the treble in the left channel. Clockwise rotation increases treble loudness; counter-clockwise rotation decreases treble loudness. Turn the control to the center position for flat response. The two knobs are friction coupled to permit them to be adjusted together or independently.

**BALANCE/COMPensation:** The BALANCE/COMPensation controls are concentric. The outer knob adjusts channel to channel balance; the center knob selects from three modes of compensation.

**BALANCE CONTROL:** The BALANCE control adjusts the channels for equal loudness. The loudness of one speaker can be varied relative to the other while their combined loudness level is maintained constant.

L . . . turning the control to the left accents the left channel by reducing the right channel loudness.

R . . . turning the control to the right accents the right channel by reducing the left channel loudness.

**COMPensation:** The COMPensation selector is a three position switch.

**PREsence:** In the PREsence position the MA 6100 response is shaped to emphasize the upper middle frequencies.

**FLAT:** In the FLAT position the MA 6100 response is unmodified.

**LOUDness:** The LOUDness control automatically provides the correct amount of bass required to compensate for the change in response of the human ear at low-loudness levels. When the volume is reduced, the music will seem to lose much of its bass. This effect is due to the sensitivity characteristic of human hearing. The response of the human ear to bass decreases more rapidly than its response to pitch centered in the mid-tonal range. The LOUDness switch converts the volume control to a loudness compensated control. Use LOUDness-IN to listen at low volume and still hear full-frequency range.

**VOLUME:** The VOLUME control regulates the loudness level of both channels. It has been precision tracked throughout the listening range (0 to -65 dB) for accurate stereo balance. Turning the VOLUME control clockwise increases the loudness level. When rotated to the counter-clockwise position the MA 6100 and the three black AC power outlets on the back panel are turned off.

**MODE SELECTOR:** The MODE SELECTOR connects the program to the loudspeakers in seven ways:

**L TO L & R:** connects the left program input to both loudspeakers.

**R TO L & R:** connects the right program input to both loudspeakers.

**STEREO REV:** connects the left program input to the right loudspeaker and the right program input to the left loudspeaker.

**STEREO:** connects the left program input to the left loudspeaker and the right program input to the right loudspeaker.

**MONO (L + R):** adds the left program to the right



program and then connects the combined (L + R) program to both amplifiers and loudspeakers.

L + R TO L: connects the left plus right programs to the left loudspeaker only.

L + R TO R: connects the left plus right program to the right loudspeaker only.

## INPUT

**AUX:** Connects the output from any high level program source requiring flat amplification to the high level input stage. Such a source could be a television set or another tape recorder, etc. In the AUX position the gain is 0 dB to the TAPE outputs. The input impedance is 250,000 ohms.

**TUNER 1:** Connects the output from any AM, FM or FM STEREO tuner to the high level input stage. The TUNER position has flat amplification. In the TUNER position the gain is 0 dB to the TAPE outputs. The input impedance is 250,000 ohms.

**TUNER 2:** Same as TUNER 1.

**PHONO 1:** Connects the output of any magnetic phono cartridge to the low level input stage. The frequency response has been shaped to compensate for the characteristics of the response of the magnetic phono cartridge. In the PHONO position the gain at 1,000 Hz is 42 dB to the TAPE outputs.

The input impedance is 47,000 ohms.

**PHONE 2:** Same as PHONO 1.

**TAPE HD:** Connects the output of any tape head (a tape deck without its own electronics) to the low level input stages. The response has been shaped to compensate for the characteristics of the response of the tape head. In the TAPE HEAD position the gain at 1,000 Hz is 42 dB to the TAPE outputs. The input impedance is 500,000 ohms.

## USING THE PUSHBUTTONS

The MA 6100 is designed to be used with one, two or three tape recorders. It can be connected to playback from a tape deck (one without its own electronics) and record, playback and monitor on two complete tape recorders. The tape deck playback is controlled by the INPUT SELECTOR. The front panel pushbuttons control the two complete tape recorders. The pushbuttons permit normal playback of either recorder, monitor of either recorder as recordings are being made, or copy tapes from one recorder to another while listening to a separate program.

### TAPE 1

Pushbutton OUT . . . The program source selected by the INPUT SELECTOR is fed to the power amplifiers and heard through the loudspeakers.

Pushbutton IN . . . The program source becomes the recorded tape on the tape recorder connected to

TAPE INPUT 1. The recorded program from tape recorder 1 is fed to the power amplifiers and heard from the loudspeakers.

With the TAPE 1 pushbutton in MONITOR, a rectangle is lighted in amber above the pushbutton. When the amber light is on only the tape recorder connected to TAPE 1 can be heard. To listen to any other program sources the TAPE 1 pushbutton must be out and the amber light off.

### TAPE 2

The second complete tape recorder is operated by the use of the TAPE 2 pushbutton.

Pushbutton OUT . . . The program source selected by the INPUT SELECTOR is fed to the power amplifiers and heard through the loudspeakers.

Pushbutton IN . . . The program source becomes the recorded tape on the tape recorder connected to TAPE INPUT 2. The recorded program from tape recorder 2 is fed to the power amplifiers and heard from the loudspeakers.

With the TAPE 2 pushbutton in MONITOR, a rectangle is lighted in amber above the pushbutton. When the amber light is on only the tape recorder connected to TAPE 2 can be heard. To listen to any other program sources the TAPE 2 pushbutton must be out and the amber light off.

Use the front panel pushbutton TAPE 2 to record on or playback from a tape recorder plugged into the front panel jacks.

**IMPORTANT:** When the MA 6100 is operated with either MONITOR pushbutton at the IN position, signal from any other source will not be heard from the loudspeakers. To hear any other source, make sure the pushbuttons are OUT and the amber lights are off.

The TAPE MONITOR switches are mechanically interlocked to prevent simultaneous monitoring from two tape recorders. If one button is at the IN position, it must be pushed again to release it to the OUT position before the other button can be pushed.

### TAPE COPY 1 → 2

This pushbutton, when pushed IN, connects the TAPE 1 OUTPUT jacks to the TAPE 2 INPUT jacks without affecting the program being heard from the speakers. In this position a copy of the program on tape recorder 1 can be made on tape recorder 2.

To monitor the tape copy use the TAPE 1 MONITOR pushbutton.

### TAPE COPY 2 → 1

This pushbutton, when pushed IN, connects the TAPE 2 OUTPUT jacks to the TAPE 1 INPUT jacks without affecting the program heard from the speakers. In this position a copy of the program on tape

recorder 2 can be made on tape recorder 1.

To monitor the tape copy use the TAPE 2 MONITOR pushbutton.

### **L F (LOW FREQUENCY FILTER)**

Use the L F filter switch to reduce objectionable low-frequency noise created by a turntable or record changer or acoustically coupled feedback.

OUT . . . filter disconnected.

IN . . . low-frequency rumble and noise below 50 Hz are reduced.

### **H F (HIGH FREQUENCY FILTER)**

OUT . . . filter disconnected

IN . . . rolls off response sharply above 7000 Hz

### **SPEAKER PUSHBUTTONS**

If the program is to be heard from the MAIN speakers only, the MAIN speaker pushbutton must be OUT, and the REMOTE pushbutton must be pressed IN. The MAIN speakers are then on and the remote speakers are off. In this mode of operation a rectangle is lighted in blue above the MAIN pushbutton. This blue indicator light shows that the MAIN speakers are on.

If the program is to be heard from the REMOTE speakers only the REMOTE pushbutton must be OUT, and the MAIN pushbutton must be pressed IN. The REMOTE speakers are then on and the main speakers are off. In this mode of operation a rectangle is lighted in blue above the REMOTE pushbutton. This light above the REMOTE pushbutton shows that the REMOTE speakers are on.

To hear program from both main and remote speakers, both the MAIN and REMOTE pushbuttons must be OUT and the blue indicator lights must be on.

### **HEADPHONES**

The output of the front panel HEADPHONE jack has been designed to feed low impedance dynamic headphones. Electrostatic headphones generally require higher power than dynamic headphones. They must be connected to the LEFT and RIGHT MAIN SPEAKER push connectors on the back of the MA 6100.

Plug dynamic headphones into the front panel HEADPHONE jack. Adjust the front panel VOLUME control for comfortable headphone listening.

The HEADPHONE output is not affected by the SPEAKER switches.

## **Balancing Your Stereo**

The performance and enjoyment of a stereo system is greatly increased when the sound is properly balanced. The balance of the stereo system is affected by many things including room acoustics, furniture placement, room shape, small differences in loudspeakers, etc. Factors that affect proper stereo balance are correct phase for both channels and equal program loudness.

### **TO ADJUST PHASE**

1. ALL pushbuttons must be out.
2. Set MODE SELECTOR switch to MONO (L+R) position.
3. Set the BASS and TREBLE controls to FLAT.
4. Set BALANCE control to the 12 o'clock position.
5. Set the COMPensation switch to the FLAT position.
6. Stand about 10 feet in front of and midway between the loudspeakers. The sound should appear to come from directly in front of you. If the sound is not directly in front of you with the PHASE switch in the 0° reverse the leads on one loudspeaker. When the sound comes from the mid-point between the speakers they are in PHASE.

### **TO BALANCE LOUDNESS**

1. ALL pushbuttons must be out.
2. Set MODE SELECTOR switch to MONO (L+R) position.
3. Set the BASS and TREBLE controls to FLAT.
4. Set BALANCE control to the 12 o'clock position.
5. Set the COMPensation Switch to the FLAT position.
6. Play a familiar recording.
7. While the program is playing, stand between the two loudspeakers. Listen for a difference in loudness between speakers. If there is a difference in loudness turn the BALANCE control toward the speaker that is not as loud. Adjust the BALANCE control until the sound is balanced between both speakers.

# Listening to Your Stereo

## LISTENING TO A STEREO RECORD

Turn the INPUT SELECTOR to PHONO 1 or PHONO 2, whichever is connected to the record player you wish to hear. Set the MODE SELECTOR to STEREO. Adjust the VOLUME control to the desired volume. The other controls are adjusted to suit your taste and listening room.

## LISTENING TO A MONOPHONIC RECORD

Turn the INPUT SELECTOR to PHONO 1 or PHONO 2, whichever is connected to the record player you wish to hear. Set the MODE SELECTOR to MONO (L+R) position. Adjust the VOLUME control to the desired volume. The other controls are adjusted to suit your taste and listening room.

## LISTENING TO A TUNER

Turn the INPUT SELECTOR to TUNER 1 or TUNER 2, whichever you wish to hear. Set the MODE SELECTOR to STEREO. Adjust the VOLUME control to the desired volume. The other controls are adjusted to suit your taste and listening room.

## LISTENING TO A STEREO TAPE RECORDER

### TAPE MONITOR SWITCHES

The TAPE MONitor 1 and TAPE MONitor 2 switches make possible instantaneous comparison of recorded material with the source signal from either of two tape recorders. The tape recorders must have separate record and playback heads and separate record and play amplifiers.

With either TAPE MONitor button pushed in, the signal source becomes the program as recorded on the tape. It is fed through the main preamplifier to the power amplifiers and loudspeakers.

The TAPE MONitor 1 and TAPE MONitor 2 switches are mechanically interlocked to prevent simultaneous monitoring from two tape recorders. If one button is at the IN position, it must be pushed again to release it to the OUT position before the other button can be pushed.

### USING ONE TAPE RECORDER

The output of a tape recorder can be connected to either the TAPE 1 or TAPE 2 input. The corresponding tape output of the MA 6100 should then be connected to the tape recorder input. Any source selected by the INPUT SELECTOR switch can be recorded without being affected by the tone control or volume control settings. The playback of a tape recording can be heard by pushing the TAPE MONitor pushbutton to which the tape recorder is connected.

## TWO TAPE RECORDERS

Two tape recorders can be used with the MA 6100. Recordings can be made from recorder 1 to recorder 2, or from recorder 2 to recorder 1.

Example; Connect the output of recorder 1 to TAPE 1 INPUT on the MA 6100. Connect the TAPE 1 OUTPUT on the MA 6100 to the input of recorder 1. In the same way, connect the output of recorder 2 to TAPE 2 INPUT on the MA 6100. Connect TAPE 2 OUTPUT of the MA 6100 to the input of recorder 2.

The MA 6100 can be used with one recorder for recording any program selected by the INPUT SELECTOR while playing a tape from a second recorder.

Example: Connect the output of tape recorder 1 to the TAPE 1 INPUTS of the MA 6100. Connect the outputs of tape recorder 2 to the TAPE 2 INPUTS of the MA 6100. Connect the TAPE 2 OUTPUTS of the MA 6100 to the inputs of tape recorder 2.

A recording from AUX, TUNER 1, TUNER 2, PHONO 1, PHONO 2 or TAPE HD can be made on tape recorder 2 if the INPUT SELECTOR is set to the source desired. The recorded tape can be monitored in the usual fashion by the use of TAPE MONitor 2 pushbutton.

At the same time, the MA 6100 can play a tape from tape recorder 1 by pushing the MONitor for TAPE 1. The signal of tape recorder 1 will then go to the amplifiers and loudspeakers without affecting the recording being made on tape recorder 2.

Tape recordings can be made simultaneously on two tape recorders by using AUXiliary, TUNER 1, TUNER 2, PHONO 1, PHONO 2, or TAPE HD as a program source and recorded on both tape recorders. Set the input selector switch to the desired source. The recording on either tape recorder can be monitored by pushing the appropriate tape monitor button.

**CAUTION:** When recording with two tape recorders at the same time from the same program source, mutual interference of the recorder bias oscillators can result. This can be heard as a howl or squeal in the background when the recordings are played back. This noise is caused by insufficient filtering of the bias oscillator circuits in the tape recorders. A test run should be made for the particular recorders intended for this use.

### LISTENING TO TAPE DECK

To listen to tape playback from a tape deck, turn the INPUT SELECTOR to TAPE HD, turn the MODE SELECTOR to MONO (L+R) or STEREO, depending on the program on the tape, and adjust the VOLUME control to the desired volume. The other controls are adjusted to suit your taste and listening room.

# Performance Limits

## PERFORMANCE GUARANTEE

Performance Limits are the maximum deviation from perfection permitted for a McIntosh instrument. We promise you that your MA 6100 must be capable of performance at or exceeding these limits or you get your money back. McIntosh is the only manufacturer that makes this guarantee.

**POWER OUTPUT:** 70 watts continuous per channel, both channels operating, which is  
16.7 volts RMS across 4 ohms  
23.7 volts RMS across 8 ohms, or  
40 watts continuous, both channels operating, which is  
25.3 volts RMS across 16 ohms

**HARMONIC DISTORTION:** Will not exceed 0.20% at any power level up to rated power from 20 Hz to 20,000 Hz, both channels operating. Typical performance is less than 0.1% at rated power. Distortion decreases as output power is reduced

**INTERMODULATION DISTORTION:** Will not exceed 0.20% if instantaneous peak power output is twice rated power or less per channel with both channels operating for any combination of frequencies 20 Hz to 20,000 Hz

**OUTPUT IMPEDANCE:** 4, 8, or 16 ohms

**DAMPING FACTOR:** 25 at 4 ohms, 50 at 8 ohms, 100 at 16 ohms

**FREQUENCY RESPONSE:** 20 Hz to 20,000 Hz  
+0.5 dB at rated power

**INPUT SENSITIVITY:** AUXiliary, TAPE, and TUNER: 300 mV; PHONO 1 and PHONO 2: 2.5 mV at 1000 Hz; TAPE HD: 3 mV at 500 Hz, and POWER AMPLIFIER: 3 volts

**INPUT IMPEDANCE:** AUXiliary, TAPE and TUNER: 250,000 ohms; PHONO 1 and PHONO 2: 47,000 ohms; TAPE HD: 500,000 ohms; and POWER Amplifier: 100,000 ohms

**TOTAL HUM AND NOISE:** AUXiliary, TAPE and TUNER: 90 dB below rated output; PHONO and TAPE HD: 76 dB below rated output when adjusted for 10 mV input at 1000 Hz; and POWER AMPLifier: 95 dB below rated output

**TAPE OUTPUT:** AUXiliary, TAPE and TUNER: 300 mV with rated input; PHONO: 300 mV with rated input; 1.2 volts with 10 mV input at 1,000 Hz; and TAPE HD: 300 mV at 500 Hz with rated input

**BASS CONTROLS:** +16 dB to -16 dB at 20 Hz



**TREBLE CONTROLS:** +16 dB to -16 dB at 20,000 Hz

**LF FILTER:** Active filter, 12 dB per octave rolloff below 50 Hz; 20 dB down at 20 Hz

**HF FILTER:** Active filter, 12 dB per octave rolloff above 7000 Hz; 20 dB down at 20,000 Hz

### GENERAL INFORMATION

**SEMICONDUCTOR COMPLEMENT:** 36 Silicon Transistors, 22 Silicon Rectifiers and Diodes, 2 Silicon Bilateral Switches, 2 Triac

**POWER REQUIREMENTS:** 120 Volts, 50/60 Hz, 50 watts at zero signal output, 380 watts at rated output

### MECHANICAL INFORMATION

**SIZE:** Front panel measures 16 inches wide (40.64) by 5-7/16 inches high (13.8 cm). Chassis measures 15 inches wide (38.1 cm) by 13 inches deep (33.02 cm), including Panloc shelf and back panel connectors. Knob clearance required is 1½ inches (3.81 cm) in front of mounting panel.

**WEIGHT:** 34 pounds (15.42 kg) net, 46 pounds (20.87 kg) in shipping carton

**FINISH:** Front Panel: Anodized gold and black with special gold/teal panel nomenclature illumination  
Chassis: Chrome and Black

**MOUNTING:** McIntosh developed professional PANLOC

### FACILITIES AND FEATURES

**BASS CONTROLS:** Separate concentric controls for each channel, +16 dB to -16 dB at 20 Hz, with friction clutch for independent adjustment of each channel

**TREBLE CONTROLS:** Separate concentric controls for each channel, +16 dB to -16 dB at 20,000 Hz, with friction clutch for independent adjustment of each channel

**BALANCE CONTROL:** Normal balance at center position, attenuation of left or right channel by rotating control

**COMPENSATION SWITCH:** Three position switch for FLAT, LOUDness, or PREsence. LOUDness boosts low frequencies for low level listening. PREsence boosts mid frequencies 4 dB to increase "presence" effect. Compensation is relative to the position of the VOLUME control. Full compensation is obtained at lower volume levels and flat response is obtained at full volume.

**VOLUME CONTROL:** Precision "tracked" at all listening levels. (0 to -65 dB). Does not change stereo balance as loudness is changed. The power

ON/OFF switch is coupled with the VOLUME control.

**INPUT SELECTOR:** Six positions: AUXiliary, TUNER 1, TUNER 2, PHONO 1, PHONO 2, and TAPE HD

**MODE SELECTOR:** Seven positions: Left channel only to both speakers, Right channel only to both speakers, Stereo Reverse, Stereo, Mono, L + R to left speaker only, and L + R to right speaker only

**TAPE INPUT/MONITOR SWITCHES:** Two pushbutton switches. Either of two tape recorders can be played or monitored by selecting the TAPE 1 pushbutton or TAPE 2 pushbutton. They are mechanically interlocked to accept only one pushbutton at the IN position at one time

**TAPE COPY SWITCH:** Two pushbutton switches. Two tape recorders can be connected to copy from tape machine 1 to tape machine 2 or vice versa. They are mechanically interlocked to accept only one pushbutton at the IN position at one time.

**PHASE CONTROL:** Electronically reverse phase in the left channel to correct "out of phase" program sources

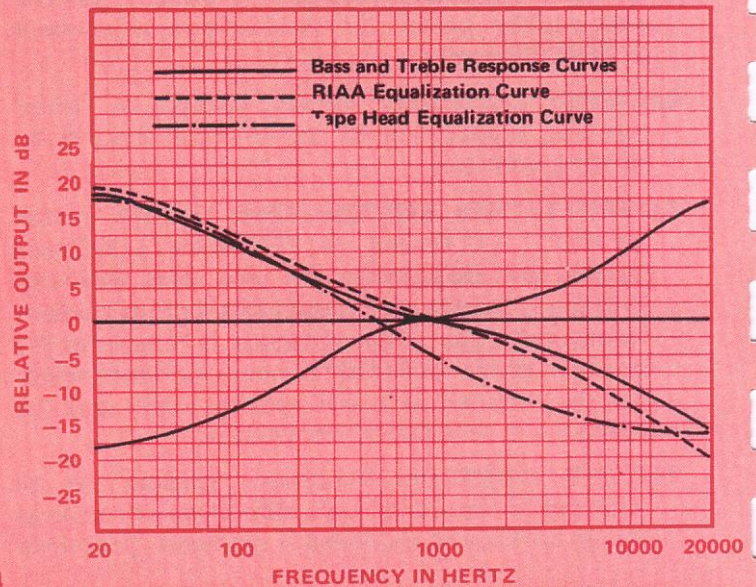
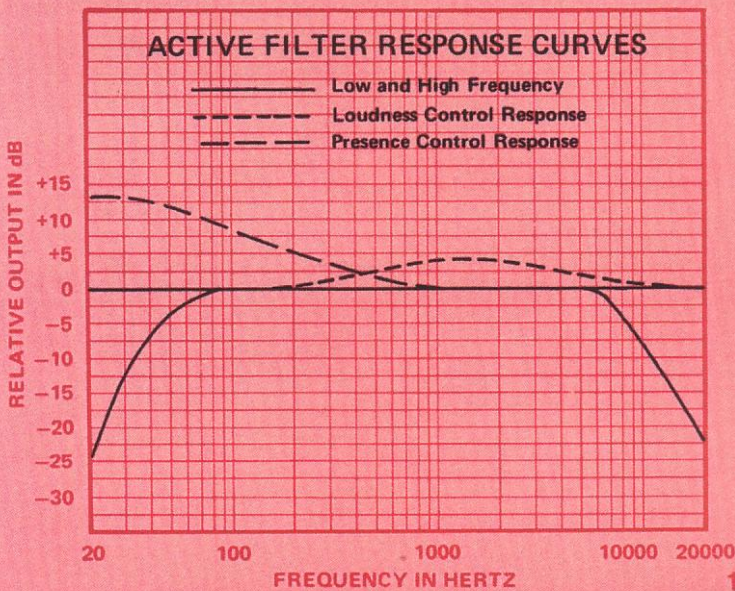
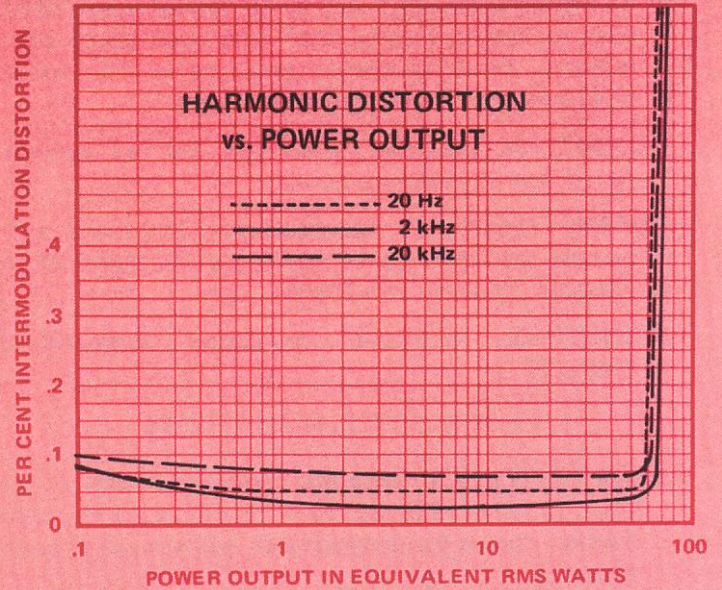
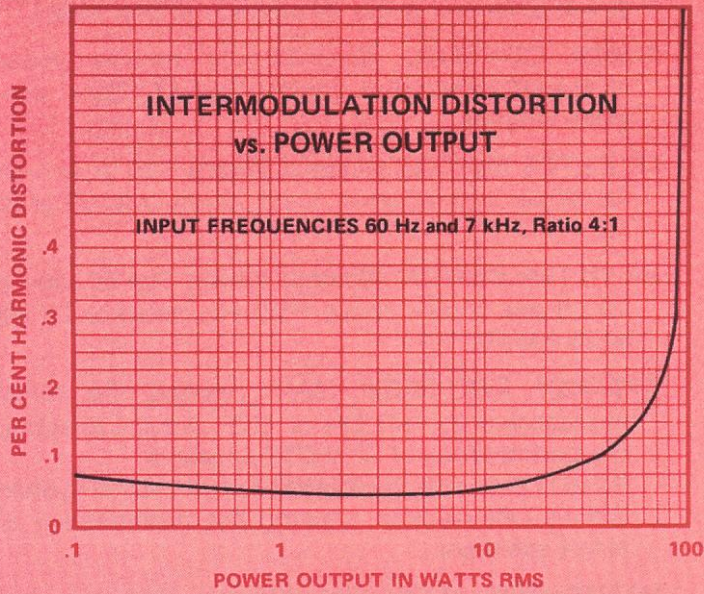
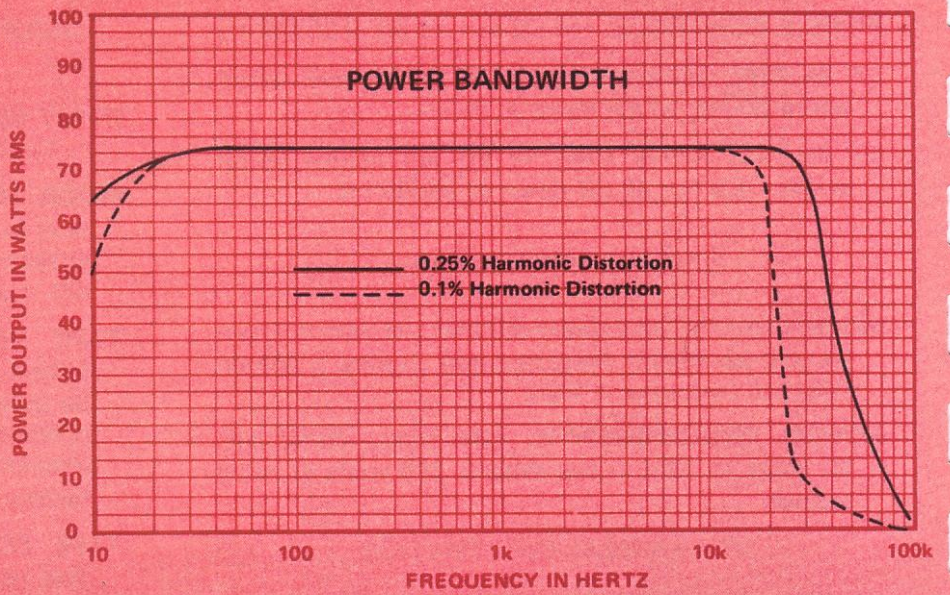
**LF FILTER SWITCH (Rumble Filter):** Flat or roll-off 12 dB per octave below 50 Hz, down to 20 dB at 20 Hz

**HF FILTER SWITCH (Scratch Filter):** Flat or roll-off 12 dB per octave above 7000 Hz, down to 20 dB at 20,000 Hz

**SPEAKER SWITCHES:** MAIN: Switch the MAIN loudspeaker system ON or OFF without affecting the performance of REMOTE speakers  
REMOTE: Switch the REMOTE loudspeaker system ON or OFF without affecting the performance of MAIN speakers

**HEADPHONE JACK:** For listening with low impedance dynamic stereo headphones

# Typical Performance Charts





# Technical Description

Each channel of MA 6100 has four basic sections. They are: phono preamplifier, control preamplifier, HF and LF active filters, and power amplifier.

## PHONO PREAMPLIFIER

The phono preamplifier circuits in the MA 6100 have three transistors in each channel. The input selector switch connects the phono input jacks to the first voltage gain stage of the preamplifier. The input stage has high voltage gain and very low noise. The next stage, an emitter follower, acts as an impedance converter that matches the input stage to the second voltage amplifier. The emitter follower is directly coupled to the second voltage amplifier.

Negative feedback is used around the low level section to reduce noise and distortion to an absolute minimum. The negative feedback also provides precise frequency compensation for magnetic phono cartridges and tape heads. The feedback remains in effect throughout the entire audio bandwidth, even at 20 Hz where gain is the highest. This kind of careful McIntosh engineering assures you of lowest distortion performance.

The tape head input impedance is 500,000 ohms. High tape head input impedance permits uniform high frequency performance from typical tape deck playback heads.

The MA 6100 is ideal for tape recording. With an input signal from a phono cartridge of 10 millivolts, there is 1.4 volts available at the tape output jacks.

Phono input signal overload is virtually impossible. At 1000 Hz the phono input will accept greater than 125 millivolts without overloading. This is more than four times the output from most phono cartridges when playing a low distortion phonograph record.

The phono input impedance is 47,000 ohms to match contemporary magnetic phono cartridges.

The preamplifier output is connected by the input selector switch to the tape output and from the normal side of the tape monitor switch to the control preamplifier input. This arrangement permits recording of program material without interruption and provides the ability to monitor either the program being recorded or the recorded tape.

## CONTROL PREAMPLIFIER

At the input to this preamplifier the signal passes through the mode selector switch, then through the balance control and volume control to the power amplifier input. A loudness tap is provided on the volume control. With the loudness switch in the circuit, the low frequency output (below 400 Hz) is increased when the volume control is below 50% rotation.

The transistors at the input of the control preamplifier are used in a differential amplifier configuration. The tone controls are in a negative feedback loop around the amplifier stages to give excellent low noise and low distortion characteristics. With the tone controls in the feedback loop, the negative feedback remains in effect even at the maximum boost setting of either bass or treble controls. These controls provide smooth gradual boost or rolloff. With the controls in the center position the gain of the control preamplifiers is 20 dB. The output of this preamplifier feeds directly to the active filters.

## HI AND LOW FILTERS

Each active filter has two transistors connected in compound emitter follower configuration. To maintain low distortion and noise and to present a uniform input impedance the resistive and reactive elements which make up the filters are in a feedback loop. The low frequency (LF) filter starts to roll off at 50 Hz at a rate of 12 dB per octave. The output is reduced 18 dB at 20 Hz.

The high frequency (HF) filter starts to roll off at 7,000 Hz at a rate of 12 dB per octave. The output is reduced 18 dB at 20,000 Hz. The values of the filter components have been selected to give the desired frequency roll off characteristics. Uniformity in filter response is assured by the use of close tolerance components. The active filter output is an emitter follower with a source impedance of 200 ohms. The output is fed to the PREAMP OUT jacks on the rear panel of the MA 6100. In normal operation with both filters out, the filter section has a gain of 0 dB.

## POWER AMPLIFIER

The jumpers in the rear of the MA 6100 connect the filter amplifier output (PREAMP OUT) and power amplifier input (AMP IN). The input impedance of the power amplifier is 100,000 ohms and requires 3.0 volts RMS to drive the amplifier to the rated output.

At the input of the power amplifier, two transistors are connected as a differential amplifier. The two input signals to the differential amplifier are the input signal and the negative feedback signal from the output of the power amplifier. The use of a differential amplifier permits the best use of larger amounts of negative feedback to maintain low noise and distortion. The combined output of the differential amplifier feeds a linear voltage amplifier which in turn drives two medium power driver transistors. The driver transistors drive the output stages.

The output section is arranged as a direct coupled series push-pull amplifier. The power transistors used in the output circuit are selected for their high power dissipation capability, wide frequency response and large "safe operating area."

The power transistors are mounted on oversized black anodized heat sinks to assure that the transistors will operate at a low temperature. If operating tem-

temperature should increase due to a shorted speaker, or restricted ventilation, an automatic sensing device turns the AC power to the MA 6100 off. Power will be restored when the temperature has returned to normal limits. This additional protection assures you of greater reliability even under the most extreme operating conditions.

To further insure reliability the MA 6100 uses a special power output SENTRY MONITORING CIRCUIT to prevent failure of the power output transistors due to excessive mismatch or when the output is shorted. When the MA 6100 operates normally the SENTRY MONITORING CIRCUIT has no effect on signals passing through the power amplifier. If the power dissipation in the output transistors should rise above normal design limits, the SENTRY MONITORING CIRCUIT restricts the drive to the output stage which reduces the dissipation in the output transistors. The SENTRY MONITORING CIRCUIT acts instantaneously for any input signal or load combination. This arrangement assures complete circuit reliability. Only McIntosh gives you this degree of protection.

The direct coupled series push-pull amplifier circuit places the output at ground potential when there is no signal input. This design eliminates the use of a coupling capacitor in the output circuit. One of the disadvantages of circuits that require a coupling capacitor in the output is a reduction in the available low frequency power output. The MA 6100 power amplifier is all direct coupled to insure maximum low frequency performance. In direct coupled circuits the failure of a power amplifier transistor could cause a DC potential to appear in the output.

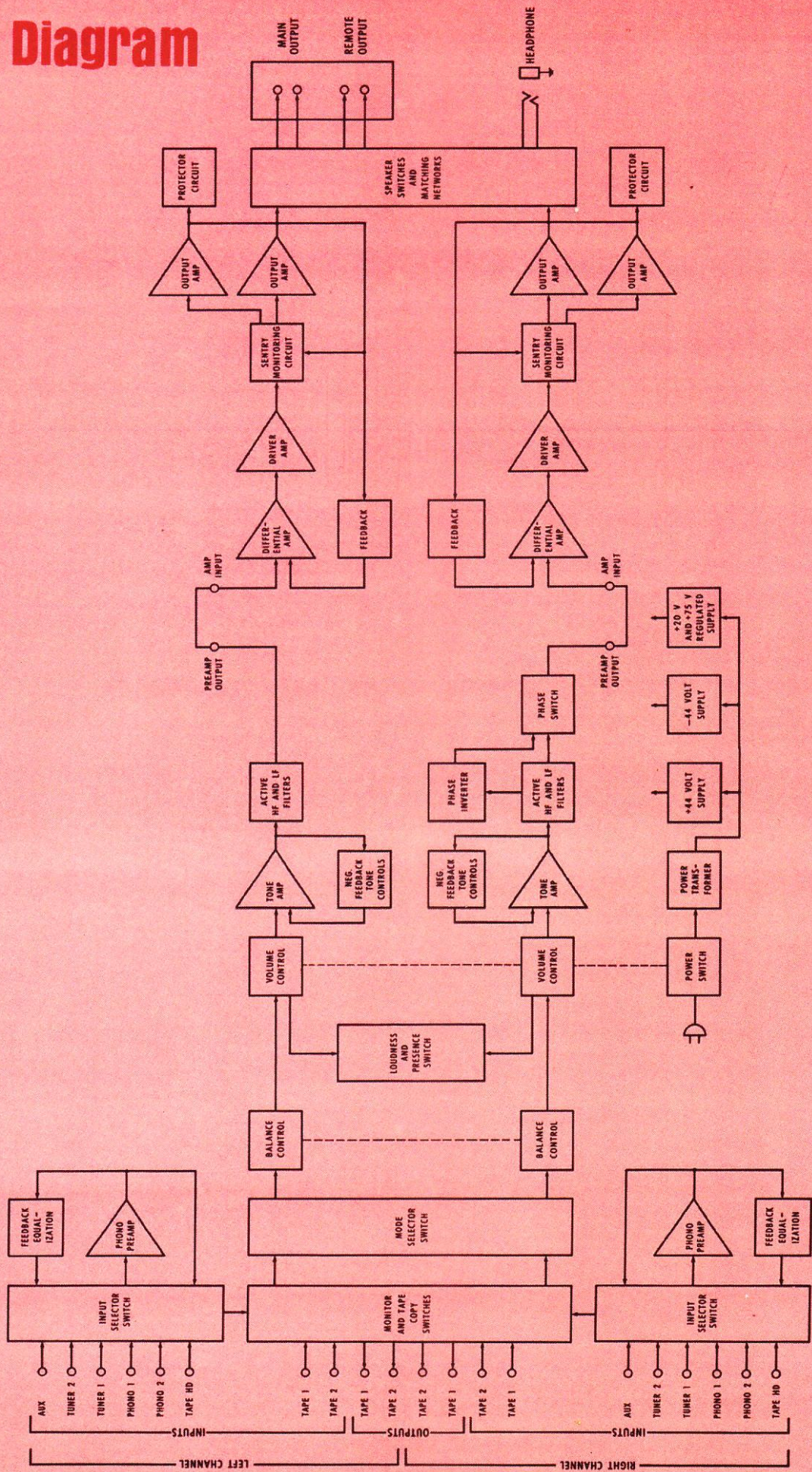
McIntosh protects you with a patented protection circuit. The protection circuit constantly monitors the output. If at any time a constant DC level appears, the circuit "crowbars" a short across the output to ground. The protection circuit is extremely fast (it reacts in milliseconds). The short will remain across the output until the cause has been removed. Under normal operating conditions the protection circuit has no effect on the operation of the amplifier.

#### **POWER SUPPLIES**

Two high current power supplies, a positive 44 volt and negative 44 volt DC, are used to drive the output power amplifier. Very large capacitors (9300 microfarads) are used to store a large amount of energy to provide good filtering, and excellent voltage regulation. Good low frequency response and the absence of low frequency distortion in the power amplifier stages depends on the power supply and its regulation.

A regulated 75 volt power supply with an accessory filter chain provides 75VDC and 20VDC to the phono and tape amplifier circuits. Both electronically regulated power supplies are low impedance series regulated transistor circuits using tight tolerance zener diodes as references.

# Block Diagram



# McIntosh

**McINTOSH LABORATORY INC.**

**2 CHAMBERS ST., BINGHAMTON, N. Y. 13903**

**607-723-3512**

Design subject to change without notice.

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