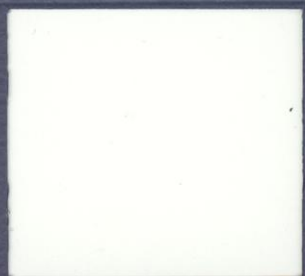
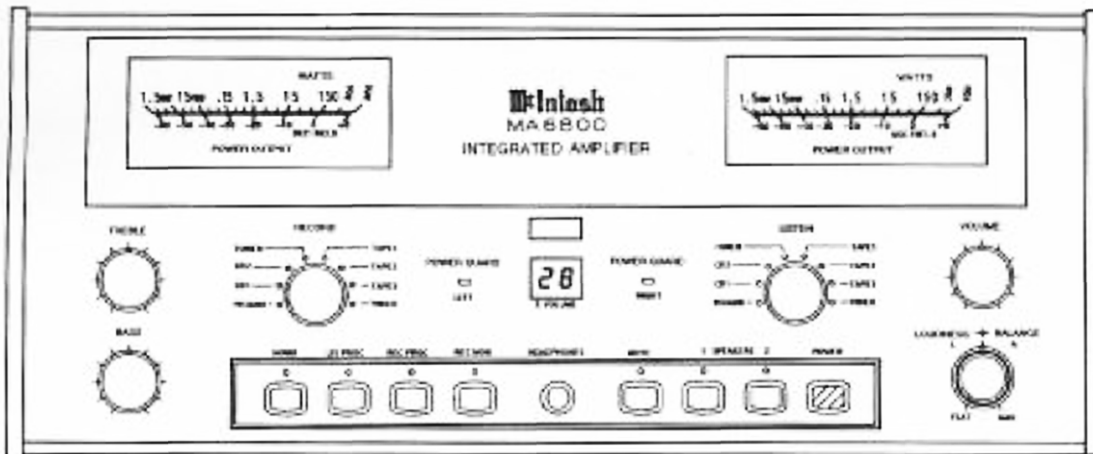


**McIntosh<sup>®</sup>**  
OWNER'S MANUAL

**MA6400  
INTEGRATED  
AMPLIFIER**



OW/ER'S MANUAL



**MA6400  
INTEGRATED  
AMPLIFIER**

**IMPORTANT  
SAFETY  
INSTRUCTIONS**

**THESE  
INSTRUCTIONS  
ARE TO PROTECT  
YOU AND THE  
McINTOSH  
INSTRUMENT.  
BE SURE TO  
FAMILIARIZE  
YOURSELF  
WITH THEM**

1. Read all instructions - Read the safety and operating instructions before operating the instrument.
2. Retain Instructions - Retain the safety and operating instructions for future reference.
3. Heed warnings - Adhere to warnings and operating instructions.
4. Follow Instructions - Follow all operating and use instructions.  
WARNING: TO REDUCE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS INSTRUMENT TO RAIN OR MOISTURE.
5. Power Sources - Connect the power supply only to the type described in the operating instructions or as marked on the unit.
6. Power-Cord Protection - Route power-supply cords so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the instrument.
7. Ventilation - Locate the instrument for proper ventilation. For example, the instrument should not be placed on a bed, sofa, rug, or similar surface that may block ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet, that may impede the flow of air through the ventilation openings.
8. Heat - Locate the instrument away from heat sources such as radiators, heat registers, stoves, or other appliance (including amplifiers) that produce heat.
9. Wall or Cabinet Mounting - Mount the instrument in a wall or cabinet only as described in the owner's manual.
10. Water and Moisture - Do not use the instrument near water - for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
11. Cleaning - Clean the instrument by dusting with a dry cloth. Clean the panel with a cloth moistened with a window cleaner.
12. Object and Liquid Entry - Do not permit objects to fall and liquids to spill into the instrument through enclosure openings.
13. Nonuse Periods - Unplug the power cord from the AC power outlet when left unused for a long period of time.
14. Damage Requiring Service - **Service must be performed by qualified service personnel when:**
  - A. The power supply cord or the plug has been damaged; or
  - B. Objects have fallen, or liquid has been spilled into the instrument; or
  - C. The instrument has been exposed to rain; or
  - D. The instrument does not appear to operate normally or exhibits a marked change in performance; or
  - E. The instrument has been dropped, or the enclosure damaged.
15. Servicing - Do not attempt to service beyond that described in the operating instructions. All other service should be referred to qualified service personnel.
16. Grounding or Polarization - Do not defeat the inherent design features of the polarized plug. Non-polarized line cord adaptors will defeat the safety provided by the polarized AC plug.
17. **CAUTION: TO PREVENT ELECTRICAL SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.**

**ATTENTION: POUR PREVENIR LES CHOCS ELECTRIQUES PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.**



The lightning flash with arrowhead, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



**CAUTION: TO PREVENT THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.**



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Your decision to own this piece of McIntosh Stereo Equipment ranks you at the very top among discriminating music listeners. You now have "The Best". The McIntosh dedication to "Quality", is assurance that you will receive thousands of hours of musical enjoyment from this unit.

Please take a short time to read the information in this manual. We want you to be as familiar as possible with all the features and functions of your new piece of McIntosh. This will ensure that you receive all the performance benefits this instrument can offer you, and that it will become a highly valued part of your home music system.

**THANK  
YOU**

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 them with the Service Contract.

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**McINTOSH  
THREE YEAR  
SERVICE  
CONTRACT**

TAKE ADVANTAGE OF 3 YEARS OF CONTRACT SERVICE . . .  
FILL IN THE APPLICATION NOW.

Your C39 Audio/Video Control Center will give you many years of satisfactory performance. If you have any questions, please contact,

**McIntosh Laboratory Inc.**

2 Chambers Street  
Binghamton, New York 13903-2699  
Phone: 607-723-3512

An application for A THREE YEAR SERVICE CONTRACT is included with this manual. The terms of the 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 Factory Service Contract, irrespective 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.

## INTRODUCTION

The McIntosh MA6800 is an Integrated Amplifier with 150 watts per channel combined with a full featured remote controlled preamplifier section.

Each channel of the MA6800 can produce up to 55 amperes peak current output. The MA6800 power amplifier includes the popular McIntosh performance features such as Power Guard and Sentry Monitor Protection circuits. McIntosh Output Autoformers on each channel provide impedance taps for 2, 4, and 8 ohms for an ideal match to the loudspeakers. Large front panel power output meters read the true power output by measuring both voltage and current output simultaneously.

The preamplifier section includes separate Listen and Record circuits that accommodate eight high level signal sources, or seven high level and one magnetic phono. All switching functions are performed with digital logic switches. Bass and Treble controls as well as an Active Loudness Control give the listener a wide range of options to shape the frequency response to optimum for any listening preferences. All the circuit elements for these controls are removed from the circuit path when the controls are in their flat settings. Signal processing loops are provided for both the Listen and the Record signals, with front panel bypass switches for each.

A front panel digital percentage Volume indicator and Power Guard indicators for each channel are included. Other features include Record Monitor, Mute, headphone jack and switches for two pairs of speakers when the optional SCR-3 Speaker Selector is added.

Refer to the manual section TECHNICAL DESCRIPTION for further circuit information.

The MA6800 can be placed upright on a table or shelf standing on its plastic feet. It can also be custom installed in a piece of furniture or cabinet of your choice.

The required panel cutout, unit dimensions and ventilation cutout are included further back in this manual.

Always provide adequate ventilation for your MA6800. Cool operation insures the longest possible operating life for any electronic instrument. A custom cabinet installation should provide the following recommended minimum spacing dimensions to insure adequate ventilation and cooling. Allow at least 1-1/2 inches (3.8cm) above the unit so airflow is not obstructed. Allow at least 20 inches (50.8cm) behind the mounting panel, which includes clearance for connectors. Allow 1-1/8 inches (2.9cm) in front of the mounting panel for knob clearance.

*In a custom installation, it is essential that the specified cutout be made in the mounting shelf below the rear heat sink section of the MA6800 to provide for adequate convection cooling.*

The MA6800 can be remotely controlled. Most of the operating functions performed at the front panel, also can be done by the MA6800 Hand Held Remote Controller. The following information refers only to the front panel. Another section of this manual explains the functions and operations of the MA6800 Hand Held Remote Controller.

The last page of this manual folds out to show drawings of the front and rear panels of the MA6800. This will help you in identifying and locating the front panel controls, switches, pushbuttons and the rear panel connectors and switches. The letters on the drawings refer to the information that follows.

### A. BASS AND TREBLE

Provide 12dB boost and cut, with neutral flat response at the center detent position. The

## HOW TO INSTALL THE MA6800

## FRONT PANEL CONTROLS SWITCHES AND PUSHBUTTONS

## FRONT PANEL CONTROLS SWITCHES AND PUSHBUTTONS

bass and Treble controls affect the SPEAKERS, the LISTEN PRE AMP OUT and the HEAD-PHONES. The TAPE 1, TAPE 2 and TAPE 3 RECORD OUTPUTS are not affected by the Bass and Treble controls.

### B. WATTS POWER OUTPUT

Two illuminated WATT meters are provided on the MA6800 front panel. The meters are peak responding and their circuits are constantly reading both voltage and current delivered to the loudspeaker loads and indicate the output power required by the musical information. The load impedance of a loudspeaker may differ at various parts of the audio frequency range, resulting in a change of output current requirements. The MA6800 meters react to these changing current and voltage conditions and indicate the TRUE amplifier power output of each channel at all times. The output meters are extremely accurate, and will respond to 95% of full scale, with only a single cycle of a 2,000Hz tone burst.

Two additional calibration marks above 150 watts are on the meters. These marks are 300 watts, (+3dB), and 600 watts (+6dB). The amplifier cannot produce a continuous 300 or 600 watts of power, but can produce well above 150 watts on program peaks, especially into lower impedance loads.

In MONO operation, the two meters will read identical power levels. The total mono power output of the amplifier will be the sum of these readings.

The upper scale on the meters is calibrated in average watts power, and the lower scale in decibels. The meter calibration lines reading from right to left, starting at the 150 watt indication are as follows.

150	<b>Watts Indicated</b>	15	<b>Milliwatts Indicated</b>
60		6	
30		3	
<b>15</b>	<b>Watts Indicated</b>	<b>1.5</b>	<b>Milliwatts Indicated</b>
6		0.6	
3		0.3	
<b>1.5</b>	<b>Watts Indicated</b>		
0.6			
0.3			
<b>0.15</b>	<b>Watts Indicated</b>		
0.06			
0.03			

### 3. RECORD

Selects any of the 8 high level inputs, (or Phono), that appear at the TAPE 1, TAPE 2 and TAPE 3 RECORD OUTPUTS.

### D. % (Percentage), VOLUME

The selected volume is indicated as a percentage of maximum, with numbers reading from 0 to 99. The Volume control and indicated level do not affect the TAPE 1, TAPE 2, or TAPE 3 RECORD OUTPUTS.

### E. IR SENSOR

The infrared sensor that receives commands from the MA6800 Hand Held Remote Controller.



#### **F. LISTEN**

Selects any of the 8 high level inputs (or Phono), that appear at the SPEAKERS, HEADPHONES and the LISTEN PRE AMP OUT.

#### **G. VOLUME**

Adjusts the Volume at the SPEAKERS, HEADPHONES and the LISTEN PRE AMP OUT. The VOLUME control does not affect the TAPE 1, TAPE 2 or TAPE 3 RECORD OUTPUTS.

#### **H. MONO (Monophonic)**

Press the MONO pushbutton to combine all the Left and Right signals for monophonic operation at the SPEAKERS, HEADPHONES and LISTEN PRE AMP OUT. A Red LED above the pushbutton turns ON to indicate monophonic mode is active. The MONO pushbutton does not affect the TAPE 1, TAPE 2 and TAPE 3 RECORD OUTPUTS. They are always stereo.

#### **I. LIS PROC (Listen Processor)**

Press the LIS PROC pushbutton to activate the rear panel LISTEN PROCESSOR connections. A Red LED above the LIS PROC pushbutton turns ON to indicate the LISTEN PROCESSOR circuits are active. Signals from a signal processor will be then added to the LISTEN signal path. To bypass the Signal Processor, press the LIS PROC again. The Red LED turns OFF and the LISTEN PROCESSOR circuits are deactivated.

#### **J. REC PROC (Record Processor)**

Press the REC PROC pushbutton to activate the rear panel RECORD PROCESSOR connections. A Red LED above the REC PROC pushbutton turns ON to indicate the RECORD PROCESSOR circuits are active. Signals from a signal processor will then be added to the RECORD signal path. To bypass the signal processor, press the REC PROC pushbutton again. The Red LED turns OFF and the RECORD PROCESSOR circuits are deactivated.

#### **REC MON (Record Monitor)**

Press the REC MON pushbutton to monitor the RECORD signals that are fed to the TAPE 1, TAPE 2, and TAPE 3 RECORD OUTPUTS. This allows you to listen to the signals being fed to tape recorders. A Red LED above the REC MON pushbutton turns ON to indicate you are listening to the RECORD signals.

If REC MON is ON, and the MA6800 power is turned off, the REC MON mode will stay ON when the MA6800 power is turned back ON. To turn REC MON OFF, press the front panel REC MON pushbutton again.

The REC MON function can be turned ON or OFF at any time by pressing the MON 1 Pushbutton on the MA6800 Hand Held Remote Controller. If REC MON is ON, it will also turn OFF whenever an INPUT pushbutton is pressed on the Remote Controller.

#### **L. POWER GUARD, LEFT and RIGHT**

Both channels of the MA6800 incorporate the McIntosh POWER GUARD circuit which prevents output clipping with its harsh and damaging distortion. A front panel LED Power Guard indicator is provided for each of the channels. The LED lights whenever the Power Guard circuit is activated for either channel. This indicates that the amplifier is producing its maximum undistorted power output, and that you are being protected from overdrive and clipping. The output level where Power Guard acts will be well above the rated power due to conservative McIntosh design philosophy.

## FRONT PANEL CONTROLS SWITCHES AND PUSHBUTTONS

### M. HEADPHONES

Connect a pair of dynamic headphones to the HEADPHONES jack to listen to any selected LISTEN program on headphones.

### N. MUTE

Press the MUTE pushbutton to mute the LISTEN signals at SPEAKERS and LISTEN PRE AMP OUT. A Red LED above the MUTE pushbutton turns ON, and then blinks ON and OFF to indicate MUTE is active. Press MUTE again to restore normal operation. The HEADPHONES, TAPE 1, TAPE 2 and TAPE 3 RECORD OUTPUTS are not affected by the MUTE mode.

### O. 1 SPEAKERS 2

***The SPEAKERS 1 and 2 pushbuttons operate only when the optional SCR-3 Speaker Control Relay is added to the MA6800. When the SCR-3 and two pairs of loudspeakers are interconnected, the following instructions apply.***

Select SPEAKERS 1, SPEAKERS 2 or both pairs of speakers simultaneously. A Red LED above each SPEAKERS pushbutton turns ON to indicate which Speakers are turned ON. The SPEAKERS pushbuttons do not affect the LISTEN PRE AMP OUT, the HEADPHONES or the TAPE RECORD OUTPUTS.

SPEAKERS 1 usually is used for the loudspeakers in the main listening area. SPEAKERS 2 can be used for loudspeakers in a remote area. Add a WK-2 keypad or In-wall IR sensor in the remote area. You can then select the program source and volume level in the remote area with the keypad or with the MA6800 Hand Held Remote controller. *(The same program source and volume level will also be present in the main listening area loudspeakers if they are selected.)*

### P. POWER

Press the red POWER button to turn the MA6800 system ON. Press again to turn it OFF. The rear panel SWITCHED AC Outlets turn ON and OFF with the MA6800 POWER switch.

### Q. LOUDNESS-BALANCE

BALANCE control (large outer knob): Adjusts the volume of the Left and Right channels relative to each other. The BALANCE control affects only the SPEAKERS, HEADPHONES and LISTEN PRE AMP OUT.

L, (Left): Turn the control to the left to accent the left channels by reducing the volume of the right channels.

R, (Right): Turn the control to the right to accent the right channels by reducing the volume of the left channels.

The TAPE 1, TAPE 2 and TAPE 3 RECORD OUTPUTS are not affected by the BALANCE control.

LOUDNESS control, (small inner knob): Provides frequency response contoured to compensate for the behavior of the human ear at softer listening levels. At the fully counterclockwise detent position, the frequency response is perfectly flat and the loudness circuit components are removed from the signal path. Turn the control clockwise to modify the frequency response in the correct proportion required for softer listening levels. The compensated frequency response is not affected by changes in the volume control settings.

First adjust the VOLUME Control for the desired listening level, then adjust the LOUDNESS Control to the setting you personally prefer.

The LOUDNESS control affects the SPEAKERS, HEADPHONES and LISTEN PRE AMP OUT. The TAPE 1, TAPE 2 and TAPE 3 RECORD OUTPUTS are not affected by the LOUDNESS control.

NOTE: The flat frequency response setting of the LOUDNESS control is at the FULLY COUNTERCLOCKWISE position, not at the center or 12 o'clock position where the BALANCE control is neutral.

## **FRONT PANEL CONTROLS SWITCHES AND PUSHBUTTONS**

# HAND HELD REMOTE CONTROLLER

The descriptions and functions of the MA6800 Remote Controller pushbuttons refer to the numbers on the drawings. Several operating functions are designed to be used when the optional RCT-1 Remote Control Translator is added to the MA6800. The RCT-1 is a learning device which allows the MA6800 to remotely control other compatible brands of accessory components.

## SPECIAL NOTE:

*The pushbutton marked in black does not function with the MA6800. It functions only when this Remote Controller is used with another McIntosh model.*

1. Selects any of the 8 high level, (or phono), input signals that appear at the SPEAKERS, HEADPHONES and LISTEN PRE AMP OUT.

2. Select additional audio/video program signal sources when the optional MVS-3 Audio/Video Selector is added to the MA6800 system. First press the Remote Controller VIDEO pushbutton and then the desired pushbutton for any of the five Audio/Video sources connected to the MVS-3.

3. Select CD Player, CD Changer or tape recorder functions.

Using a McIntosh **SINGLE DISC CD PLAYER**, STOP, BACK TRACK (◀◀), NEXT TRACK (▶▶) and PLAY functions can be performed.

Using a McIntosh **CD CHANGER**, STOP, BACK TRACK (◀◀), NEXT TRACK (▶▶) and PLAY functions can be performed while a disc is playing.

When the CD changer is in the STOP position, BACK TRACK (◀◀) selects the SINGLE DISC and NEXT TRACK (▶▶) selects which of the other six discs you wish to play. After pressing STOP, the first time you press NEXT (▶▶), disc number 1 is selected. Press again as desired to select discs 2 through 6.

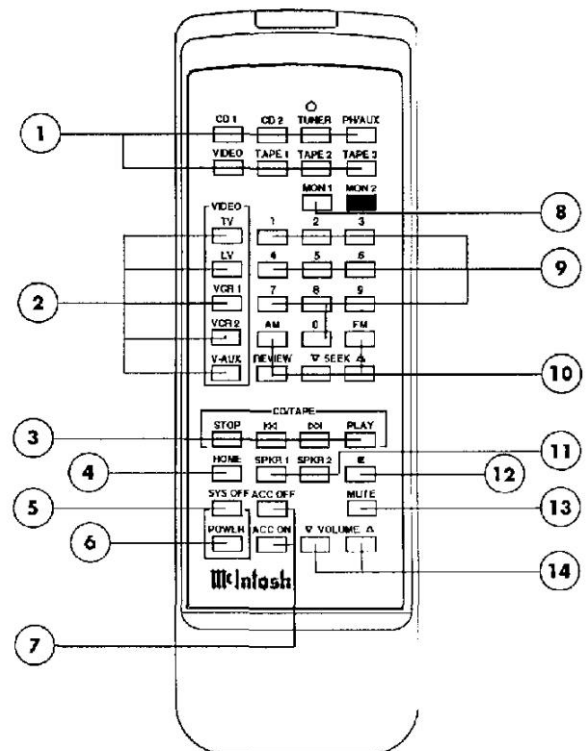
FOR EXAMPLE: To select disc number 6 from the single disc play mode, press STOP and then NEXT (▶▶) six times. To select disc number 2, press STOP and then press NEXT (▶▶) twice. To select the disc in the SINGLE disc slot, press STOP and then press BACK (◀◀) once.

4. Press HOME to operate the HC-1 Home Controller functions. Within five seconds press a pushbutton number from 0 to 9 to control the desired relays on the HC-1. The optional HC-1 is designed to switch low voltage control circuits which in turn can control accessories such as lights or viewing screen motors.

5. Press SYS (System) OFF to turn the entire MA6800 OFF at any time.

6. Press POWER to turn the MA6800 system ON or OFF.

7. The ACC (Accessory) ON or OFF pushbuttons function when the optional RCT-1 Remote Control Translator is being used with the MA6800. They can be programmed to turn AC power of an accessory component, ON or OFF.



## MA6800 HAND HELD REMOTE CONTROLLER

8. Press MON 1 to turn the REC MON (Record Monitor) ON and OFF.

**Pushbuttons listed under Number 9 and Number 10 function when a compatible McIntosh Tuner such as the MR7083 is connected to the MA6800. Pushbuttons listed under Number 9 also function with the HC-1 Home Controller.**

9. Press one of the numbered pushbuttons to select Tuner Station presets.

Press HOME, and then within 5 seconds press one of the numbered pushbuttons to control a specific relay in the HC-1 Home Controller.

10. Select the tuner functions AM, FM, REVIEW, SEEK UP or SEEK DOWN.

Press REVIEW to start the automatic 3 second audition of each of the stations stored in the tuner preset memory. Press REVIEW again to stop on the desired preset. Cancel the automatic REVIEW process by pressing REVIEW a second time, or pressing any other Tuner function pushbutton.

SEEK UP (▲) or SEEK DOWN (▼) cycles tuning through all station frequencies.

11. Select SPEAKERS 1, SPEAKERS 2 or both pairs of speakers simultaneously. **(These pushbuttons operate only when the optional SCR-3 Speaker Control Relay is connected to the MA6800.)**

12. E (ENTER) is used with the optional RCT-1 Remote Control Translator. The RCT-1 is a learning device that allows the MA6800 Hand Held Remote Controller to operate compatible accessory equipment.

13. Press the MUTE pushbutton to mute the LISTEN signals at SPEAKERS and LISTEN PRE AMP OUT. A Red LED above the front panel MUTE pushbutton turns ON, and then blinks ON and OFF to indicate MUTE is active. Press MUTE again, press an UP or DOWN VOLUME pushbutton or press another input pushbutton to restore normal operation. The HEADPHONES, TAPE 1, TAPE 2 and TAPE 3 RECORD OUTPUTS are not affected by the MUTE mode.

14. Press UP (▲) VOLUME to raise the listening volume and DOWN (▼) VOLUME to lower the listening volume at the SPEAKERS, HEADPHONES and PRE AMP OUT. The TAPE 1, 2, and 3 RECORD OUTPUTS are not affected by the remote VOLUME pushbuttons.

### HOW TO INSTALL BATTERIES IN THE MA6800 HAND HELD REMOTE CONTROLLER

Slide open the battery compartment. Insert two type AAA batteries into the compartment, making sure to observe the battery polarities indicated in the battery compartment.

When the batteries are nearing exhaustion, the effective range of the remote controller decreases, and MAY even fail to operate. In this case, replace both batteries with fresh ones.

#### NOTE:

1. Do not mix old and new batteries. Use ONLY batteries that are new.
2. Make sure both batteries are of the same type and identical.
3. To prevent damage caused by possible battery leakage, remove the batteries from the remote controller if it is not going to be used for an extended period of time.
4. Never dismantle batteries or dispose of them in a fire, as they may explode. Dispose of old batteries in an approved method for proper safety.

## THE REAR PANEL AND HOW TO MAKE CONNECTIONS

*The last page of this manual folds out to show drawings of the front and rear panels of the MA6800. This will help you in identifying and locating the rear panel connectors and switches. The numbers on the drawings refer to the information that follows.*

Use good quality cables to interconnect the associated equipment used with the MA6800. The installation of high quality cables will insure the best possible performance from your stereo system. Your McIntosh dealer can advise you on the type and length of cables best suited for your installation.

### **PWR AMP IN**

The PWR AMP IN (Power Amplifier Input) connectors allow you to use the MA6800 power amplifier section as an entirely separate amplifier, to receive input signals from an outside source instead of from the built-in preamplifier section.

The PWR AMP INPUT - EXT / INT switch must be in the EXT (External) position for the PWR AMP IN connectors to be active.

### **2. PWR AMP INPUT — EXT / INT (EXTERNAL/INTERNAL) Switch**

Set the switch to INTERNAL for normal use of the MA6800 power amplifier with its built-in preamplifier. Set switch to the EXTERNAL to use the MA6800 power amplifier and preamplifier sections as separate components.

The EXTERNAL setting activates the PWR AMP IN connectors so they can receive signals other than from the built-in preamplifier. The built-in preamplifier outputs (PRE AMP OUT) can then feed an external power amplifier. This operating mode can be used to insert a signal processor or equalizer into the MA6800 system. Another possible use is to add a second power amplifier to bi-amplify a loudspeaker system.

### **3. PRE AMP OUT**

The PRE AMP OUT (Preamplifier Output) connectors are always active and allow you to use the MA6800 built-in preamplifier to feed signals to external power amplifiers as well as to the built-in power amplifier.

### **4. EXT SENSOR**

Connect a coaxial cable (RG6 or RG59U) from the EXTERNAL SENSOR connector to a WK-2 keypad or R649 wall mounted IR Sensor. This allows the MA6800 hand held remote controller to send control signals to the MA6800 without aiming it at the MA6800 front panel sensor.

One example of a need for this feature would be if the MA6800 were installed behind a cabinet door that would block the front panel IR sensor.

Another use for this feature is to place a keypad or sensor in the remote area where a second pair of loudspeakers is installed. You can select program sources and control volume in the remote area. *(The same program source and volume level will also be present in the main listening area loudspeakers if they are selected.)*

### **5. LISTEN PROCESSOR, FROM AND TO**

An external signal processor can be added to the MA6800 that will affect only the SPEAKERS, HEADPHONES and PRE AMP OUT. Activate the LISTEN PROCESSOR circuits by pressing the front panel LIS PROC switch. The Red LED above the switch will turn ON to indicate the processor circuits are active.

When an external processor is properly connected, the program signals feed to the processor from the LISTEN PROCESSOR-TO jacks, and return to the MA6800 at the LISTEN PROCESSOR-FROM jacks.

## REAR PANEL AND HOW TO MAKE CONNECTIONS

Connect a cable from the left channel processor output to the MA6800 left channel LISTEN PROCESSOR-FROM jack. Connect a cable from the right channel processor output to the MA6800 right channel LISTEN PROCESSOR-FROM jack.

Connect a cable from the MA6800 left channel LISTEN PROCESSOR-TO jack to the signal processor left channel input. Connect a cable from the MA6800 right channel LISTEN PROCESSOR-TO jack to the right channel signal processor input.

**WHEN AN EXTERNAL SIGNAL PROCESSOR IS CONNECTED TO THE MA6800 LISTEN PROCESSOR JACKS WITH THE PROCESSOR CIRCUITS ACTIVATED, THE PROCESSOR MUST BE TURNED ON AND OPERATING, OR IN BYPASS MODE, FOR A PROGRAM TO BE HEARD THROUGH THE SYSTEM.**

### 6. SCR (Speaker Control Relay)

Add the optional SCR-3 Speaker Control Relay to allow switching two pairs of speakers with the front panel SPEAKERS 1 and 2 switches or the Hand Held Remote Controller SPKR 1 and 2 pushbuttons. Use the following connections for the SCR-3.

1. Insert the SCR-3 Control Cable plug into the SCR connector socket.
2. Connect cables from the MA6800 LEFT and RIGHT SPEAKERS C (Common) terminals, and the 2, 4, or 8 terminals (whichever apply for the speakers being used), to the SCR-3 AMPLIFIER terminals.
3. Connect pair of speakers to each of the SCR-3 SPEAKERS 1 and 2 terminals.

#### SCR-3 / AMPLIFIER IMPEDANCE CONNECTIONS FOR TWO SPEAKER PAIRS

1. Two 8 ohm speaker pairs.  
Use the Amplifier C and 4 terminals.
2. One 8 ohm pair and one 4 ohm pair.  
Use the Amplifier C and 2 ohm terminals.
3. Two 4 ohm pairs.  
Use the C and 2 ohm terminals.

**Be sure to maintain the proper left and right, Common and Hot polarity, for all connections. Refer to the hookup drawings for details.**

### 7. TAPE 1, TAPE 2, TAPE 3 RECORD OUTPUTS

These outputs provide signals to feed the high level inputs of three separate tape recorders. The program that appears at the TAPE RECORD OUTPUTS is determined by the setting of the front panel RECORD switch.

Connect a cable from the MA6800 Left channel TAPE 1 RECORD OUTPUT to the left channel high level input of a tape recorder. Connect a cable from the MA6800 Right channel TAPE 1 RECORD OUTPUT to the right channel high level input of the tape recorder. Connect a second and third tape recorder in a similar manner, to the TAPE 2 and TAPE 3 RECORD OUTPUTS.

### 8. CD1 and CD2 CONTROL

Connect a McIntosh CD control cable from the CD1 or CD2 CONTROL connector to a matching connector on a McIntosh CD player or changer. This allows you to control CD player functions with the MA6800 hand held remote controller transmitting to the MA6800 IR sensor. You could use CD1 for a single play CD player and CD2 for a CD changer.

**A CD Control cable is included with each McIntosh CD player or changer.**

### 9. RECORD PROCESSOR, FROM and TO

An external signal processor can be added to the MA6800 that will affect only the TAPE 1,

## **THE REAR PANEL AND HOW TO MAKE CONNECTIONS**

TAPE 2 and TAPE 3 RECORD OUTPUTS. Activate the RECORD PROCESSOR circuits by pressing the front panel REC PROC switch. The Red LED above the switch will turn ON to indicate the processor circuits are active.

When an external processor is properly connected, the program signals feed to the processor from the RECORD PROCESSOR TO jacks, and return to the MA6800 at the RECORD PROCESSOR-FROM jacks.

Connect a cable from the left channel processor output to the MA6800 left channel RECORD PROCESSOR-FROM jack. Connect a cable from the right channel signal output to the MA6800 right channel RECORD PROCESSOR-FROM jack.

Connect a cable from the MA6800 left channel RECORD PROCESSOR-TO jack to the signal processor left channel input. Connect a cable from the MA6800 right channel RECORD PROCESSOR-TO jack to the right channel signal processor input.

***WHEN AN EXTERNAL SIGNAL PROCESSOR IS CONNECTED TO THE MA6800 RECORD PROCESSOR JACKS AND THE PROCESSOR CIRCUITS ARE ACTIVATED, THE PROCESSOR MUST BE TURNED ON AND OPERATING, OR IN BYPASS MODE, FOR A PROGRAM SIGNAL TO BE FED TO THE RECORD OUTPUTS.***

### **10. VIDEO**

Use these inputs for the audio signals from accessories such as a Laser Disc Player, VCR, or TV receiver. Connect a cable from the left channel audio output of the video unit to the MA6800 L (Left) channel VIDEO INPUT. Connect a cable from the right channel audio output to the MA6800 R (Right) VIDEO INPUT.

Use the VIDEO input when an optional MVS-3 Audio/Video Selector is added to the MA6800. This allows you to switch up to five Audio/Video signal sources and a TV monitor connected to the MVS-3. The MVS-3 must also be connected to the MA6800 VIDEO DATA PORT.

### **11. TAPE 1, TAPE 2, TAPE 3 INPUTS**

Connect a cable from the left channel output of a tape recorder to the MA6800 L (Left) channel TAPE 1 INPUT. Connect a cable from the right channel output to the corresponding R (Right) TAPE 1 INPUT. Connect a second and third tape recorder in a similar manner to the TAPE 2 and TAPE 3 INPUTS.

The TAPE INPUTS can also be used for other accessory equipment with similar output levels.

### **12. TUNER**

Connect cables from the left and right channel outputs of a tuner to the MA6800 L (Left) and R (Right) TUNER INPUTS.

**Be sure to connect the McIntosh Tuner Control cable between your McIntosh MR7083 Tuner and the MA6800 TUNER CONTROL connector so the MA6800 Hand Held Remote Controller will operate the Tuner.**

### **13. CD1 and CD2**

Connect a cable from the left channel output of a CD player to the MA6800 L (Left) CD1 INPUT. Connect a cable from the right channel output to the MA6800 R (Right) CD 1 INPUT. Connect a second CD player to the MA6800 CD2 inputs in a similar manner. For example, CD1 inputs could be used for a single play CD player, and the CD2 inputs for a CD changer.

**Be sure to connect the McIntosh CD Control Cables between your McIntosh CD units and the MA6800 CD Control connectors so the MA6800 Hand Held Remote Controller will operate them.**



## THE REAR PANEL AND HOW TO MAKE CONNECTIONS

### 14. / 15. / 16. AUX (Auxiliary) - AUX / PH SELECTOR - PH (Phono) - GND

*Both the PHono and AUXiliary input jacks are selected by the same position on the front panel LISTEN and RECORD switches. One or the other pair of inputs can be used, but not both simultaneously. The setting of the AUX/PH SELECTOR switch determines which pair of inputs are active.*

#### AUX/PH SELECTOR

Set the SELECTOR switch to AUX if you wish to use the high level Auxiliary inputs. Set the selector to PH if you wish to use the PHono inputs for a moving magnet phono cartridge.

#### AUX

Connect the left channel high level output of any audio accessory unit to the MA6800 L (Left) Auxiliary INPUT. Connect the right channel accessory output to the MA6800 R (Right) Auxiliary INPUT.

#### PH

Connect a cable from the left channel turntable output to the MA6800 L (Left) PHono INPUT. Connect a cable from the right channel to the MA6800 R (Right) PHono INPUT.

The MA6800 input circuit is designed to accept the signals from a standard moving magnet phono cartridge. The input impedance is 47K ohms and 65pF capacitance.

#### GND (Ground).

If there is a separate ground wire from the turntable, connect it to the GND terminal.

### 17. AC POWER CORD

Connect the MA6800 Power Cord to a 120 volt, 50/60Hz AC wall outlet.

*(If your MA6800 is configured for a specific power line voltage necessary for your particular geographic location, connect the Power Cord to the appropriate outlet. The lettering above the Power Cord outlet on the back panel of your MA6800 will list the voltage requirements for your particular unit.)*

#### CAUTION WHEN USING A POLARIZED POWER PLUG

**TO PREVENT ELECTRIC SHOCK, DO NOT CONNECT THE POLARIZED AC PLUG ON THIS UNIT TO AN EXTENSION CORD OR OTHER AC OUTLET THAT IS NOT DESIGNED TO ACCEPT POLARIZED PLUGS. THE PLUG MUST BE FULLY INSERTED TO PREVENT BLADE EXPOSURE AND MAINTAIN LINE POLARITY.**

### 18. 6.25A-250V SLO-BLO (Fuse)

CAUTION: For continued protection against fire hazard, replace only with the same type 6.25A-250V SLO BLO fuse.

### 19. UNSWITCHED and SWITCHED AC OUTLETS

The UNSWITCHED AC outlet stays on continuously as long as the MA6800 AC power cord is connected to a live AC outlet. This outlet can be used for an accessory that stays on all the time such as a clock or VCR that may be programmed to record when the main system is turned off.

Six SWITCHED AC receptacles are provided for accessory components used with the MA6800. These receptacles turn ON and OFF with the MA6800 Power switch.

To expand the current capability of any of the AC outlets, a power control relay such as the R612 or PC-2 can be used.

## THE REAR PANEL AND HOW TO MAKE CONNECTIONS

**THE TOTAL POWER CONSUMPTION OF ALL THE ACCESSORIES CONNECTED TO THE MA6800 BACK PANEL OUTLETS MUST NOT EXCEED 5 AMPERES OR 600 WATTS.**

### 20. TUNER CONTROL

Connect a McIntosh Tuner Control Cable from the TUNER CONTROL connector to a matching connector on a compatible McIntosh tuner such as the MR7083. This allows you to select and control tuner operating functions with the MA6800 hand held remote controller transmitting to the MA6800 IR sensor.

**A Tuner Control cable is included with each McIntosh MR7083 Tuner.**

### 21. PWR CTL (Power Control)

This connector supplies a 5 volt DC, Logic 1 control signal that will turn the AC power of a compatible Accessory component, ON and OFF.

**The interconnect cable from the MA6800 Power Control connector to the Amplifier or accessory component POWER CONTROL connector uses single conductor shielded wire with 1/8 inch mini phone plugs. Connections are to the sleeve (-) and tip (+) of the plug.**

## HOW TO CONNECT SPEAKER OUTPUTS

### 22. LEFT SPEAKER / RIGHT SPEAKERS

#### SPEAKER CABLES

Use high quality cables, since this is an important link in your stereo system. Selection of the proper size and type of speaker cable is necessary for you to receive the best possible performance from your amplifier and loudspeaker combination. The high power output capability of the MA6800 requires heavy gauge cable to handle the current requirements. A size of 14 gauge or heavier is recommended. Your McIntosh dealer can advise you on the type of cable that will work best in your installation.

#### STEREO OUTPUTS

The MA6800 incorporates the legendary McIntosh designed and manufactured Output Autoformers, to ensure peak performance, speaker protection and outstanding amplifier-loudspeaker compatibility. The MA6800 autoformer used on each channel has three different output impedance connections for optimum matching to the particular loudspeaker, or combination of loudspeakers being used. The following table will help determine which impedance connection will be best for your loudspeakers. You may find it desirable to consult your McIntosh dealer or the manufacturer of your loudspeaker for further information on the correct impedance to use.

#### SPEAKER IMPEDANCE IN OHMS

1 to 3 ohms  
3 to 6 ohms  
6 ohms and up

#### MA6800 SPEAKER OUTPUT TERMINAL CONNECTIONS

C (Common) and 2, (L and R)  
C (Common) and 4, (L and R)  
C (Common) and 8, (L and R)

*If your loudspeaker is rated with a range of impedances, choose the nominal listed impedance.*

Connect cables from each loudspeaker Common or minus terminal to the MA6800 **C (Common) SPEAKER** terminals. Connect cables from each loudspeaker Hot or Plus terminal to the desired MA6800 **2, 4, or 8 (LEFT and RIGHT) SPEAKER** terminals.

## THE REAR PANEL AND HOW TO MAKE CONNECTIONS

Most loudspeakers have their input terminals both marked and color coded. Usually the Common or (-) terminal is BLACK, and the Hot or (+) terminal is RED.

The actual load impedance of some loudspeakers may drop below the specified impedance at some points in the audio frequency range. This will be no problem. The high current output of the MA6800 will produce the extra current necessary to properly drive the loudspeaker under these conditions.

If the impedance of a loudspeaker system is higher than 8 ohms, no change in the quality of performance will occur. The available power output directed to the loudspeakers will simply be slightly less.

***The MA6800 Output signals are IN PHASE with the Input signals.***

### 23. DATA PORTS

The DATA PORTS provide data signals to be fed to compatible audio and video accessories. This allows you to control the accessory components with their own remote controllers transmitting to the MA6800 front panel IR sensor.

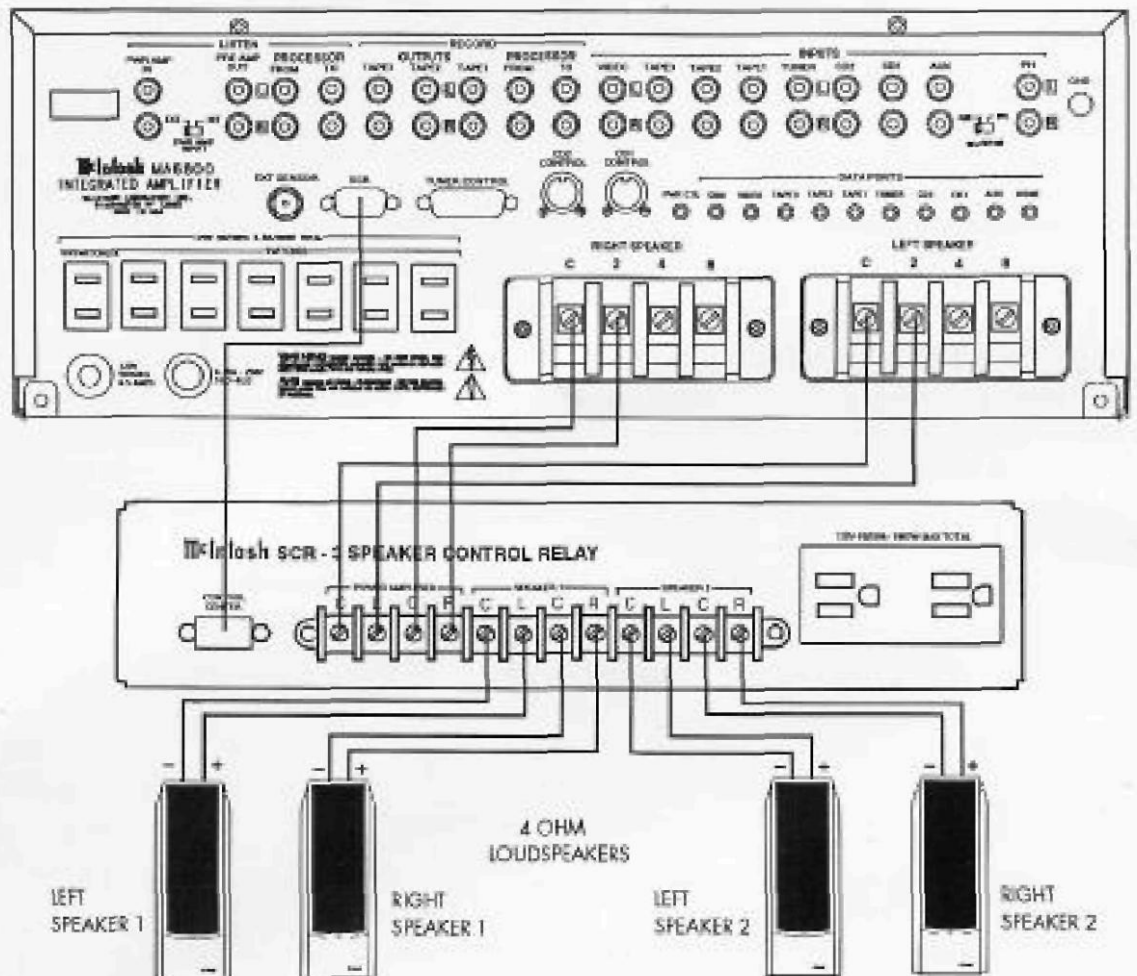
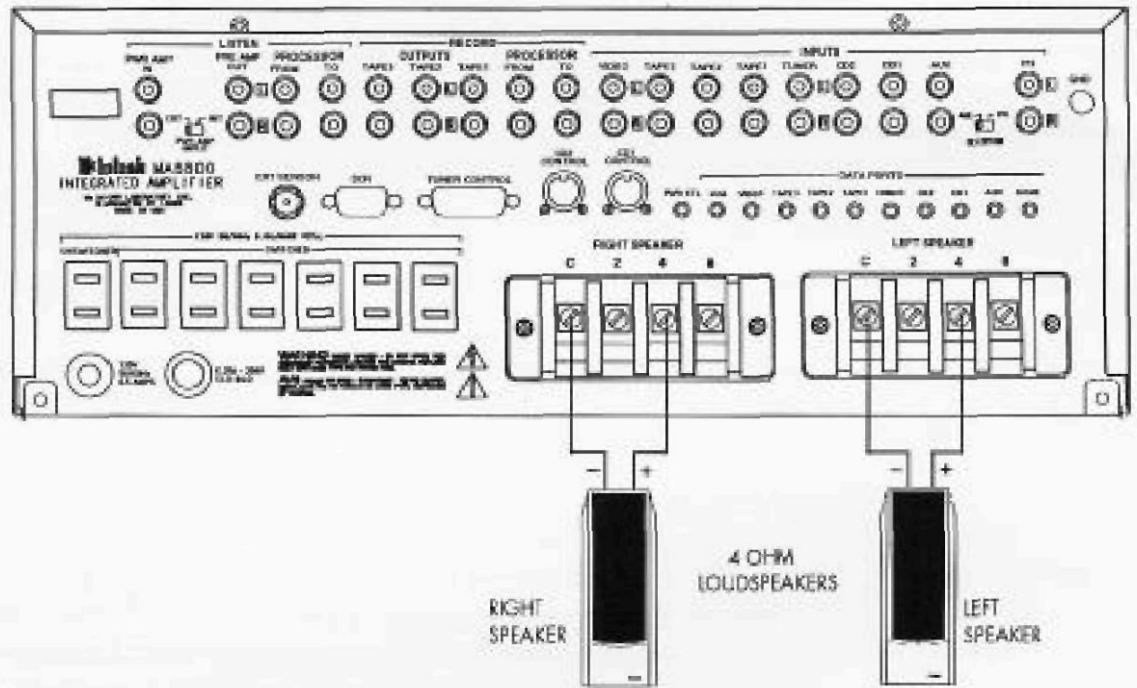
The HOME DATA port is provided for connecting to the HC-1 Home Controller. This allows you to control accessories such as lights or viewing screen motors.

The SUM DATA port is used for connecting to the McIntosh Model RCT-1 Remote Control Translator. Any IR signal transmitted to the front panel MA6800 sensor results in data signals at this port. The RCT-1 is a learning device that will allow the MA6800 to remotely control most major brands of accessory components.

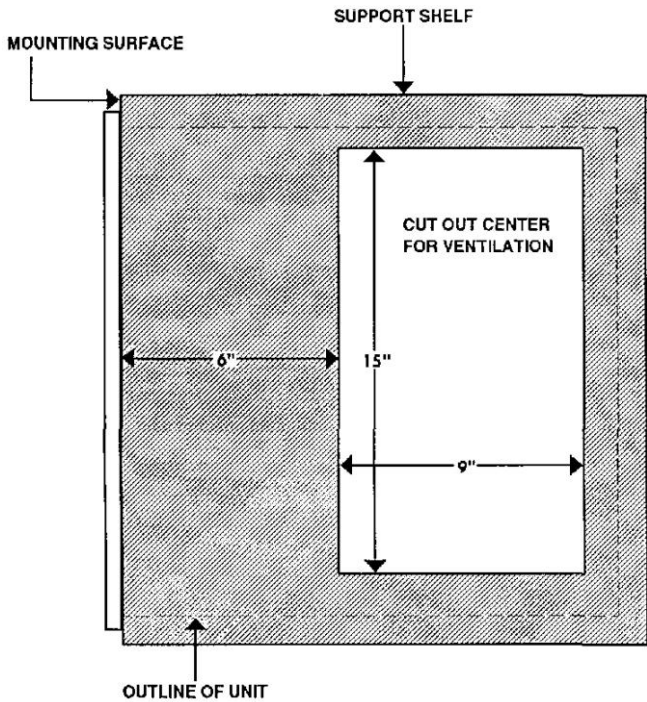
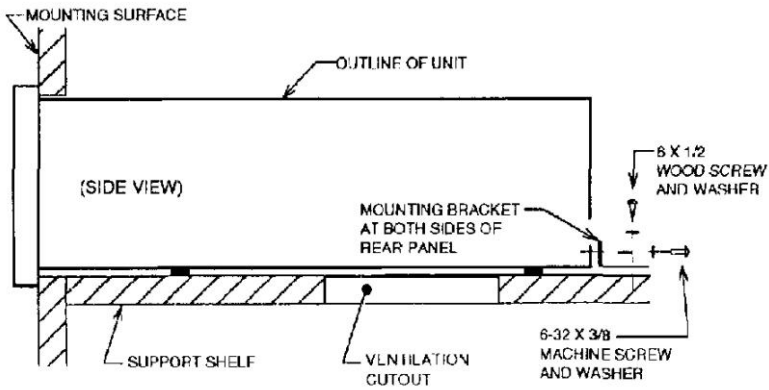
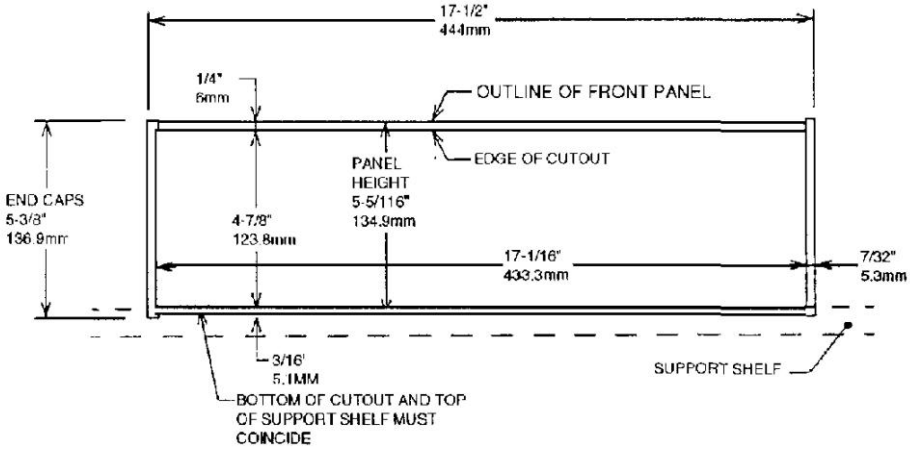
The VIDEO DATA port is used to connect to the optional McIntosh MVS-3 Audio/Video Selector. This allows you to switch both audio and video signals from five audio/video signal sources and a TV monitor connected to the MVS-3.

**All cables connected from the DATA ports use shielded wire with 1/8 inch mini phone plugs. Connections are to the sleeve (-) and tip (+) of the plug.**

# HOOK UP DIAGRAMS



# CUSTOM INSTALLATION DIAGRAM



# RECOMMENDED VENTILATION CUTOUT IN MOUNTING SHELF

## **TECHNICAL DESCRIPTION**

### **DESIGN PHILOSOPHY**

The design philosophy incorporated in the MA6800 involved many different techniques, all based on sound scientific logic. Every stage of voltage or current amplification is designed to be as linear as possible. Negative feedback is then utilized to enhance the performance. McIntosh engineers know how to properly design negative feedback circuits so they contribute to the extremely low distortion performance expected from a McIntosh amplifier. The typical McIntosh owner would never accept the approximately 100 times higher distortion of many so called non feedback designs.

All transistors are selected to have nearly constant current gain (BETA) over the entire current range they must cover. Output transistors in particular, must have matched uniform current gain, high current-bandwidth product and large active region safe operating area.

Resistors and capacitors in the signal path are carefully selected to have exceedingly low voltage coefficients, (change of resistance or reactance with applied voltage). Precision metal film resistors, low dielectric absorption film capacitors and premium audio grade electrolytics are used in all critical circuit locations.

### **PROTECTION CIRCUITS**

Some power amplifier manufacturers claim that their products do not need or do not use protection circuits and that such circuits compromise performance. McIntosh feels that protection circuits are desirable and necessary to prevent amplifier or loudspeaker damage due to abnormal circumstances. The genius of McIntosh engineering has resulted in protection circuits which do not effect or compromise the normal performance of a power amplifier.

Six different types of protection circuits are incorporated in the MA6800 to insure it a long, safe and trouble free operating life. This is just one of the characteristics of McIntosh power amplifiers that have made them world famous. The SENTRY MONITOR circuit is a good example.

### **SENTRY MONITOR CIRCUIT**

All power transistors have limits for the maximum amount of power they can handle. The MA6800 output transistors and power supply have been designed to allow very high current flow into properly matched load impedances. However, if a short circuit or very low load impedance were connected to the MA6800 outputs, destructive current levels could be reached if it was not controlled by the McIntosh SENTRY MONITOR circuit. This circuit senses the dynamic operating time, voltage and current of the output stage, and controls it to safe operating limits. The SENTRY MONITOR circuit does not limit the power output available from the amplifier.

There is absolutely no compromise in sonic performance and it ensures safe operation of the amplifier under even the most extreme operating conditions.

### **THERMAL CONTROL**

All power transistors have limits to the maximum amount of heat they can safely tolerate. The MA6800 uses highly efficient amplifying circuits which produces relatively little heat from the power transistors for the output power produced. The amplifier uses large area heat sinks to efficiently dissipate the transistor heat. Natural convection air flow is sufficient for safe, cool operation.

If the cooling air is blocked, or the amplifier operating temperature is forced too high, thermal cutout switches will turn off the AC power to the amplifier. When the problem is corrected and the amplifier cools to its normal operating temperature, the AC power will turn back on.

**POWER GUARD**

The MA6800 includes the unique patented McIntosh POWER GUARD circuit on each channel. POWER GUARD eliminates the possibility of ever overdriving the amplifier into clipping. Clipping occurs when an amplifier is overdriven past its output design capabilities. An overdriven amplifier can produce both audible and ultrasonic distortion levels approaching 40%. The audible distortion is certainly unpleasant, but the ultrasonic distortion is also undesirable, since it can damage tweeter loudspeakers. The McIntosh POWER GUARD circuit acts as a waveform comparator, monitoring both the input and output signal waveforms. Under normal operating conditions there are no differences between these waveforms. When an amplifier is overdriven beyond its maximum distortion free output, there will be a difference between the two signal waveforms. If the difference exceeds 0.3% (equivalent to 0.3% harmonic distortion), the amber POWER GUARD indicator will light. If the difference continues to increase, the POWER GUARD circuit controls an electronic attenuator at the input of the amplifier to reduce the gain just enough to prevent any further increase in distortion. Distortion will not exceed 2% with as much as 14dB overdrive. Without POWER GUARD, the distortion could easily reach 40% for the same operating conditions.

A McIntosh power amplifier with POWER GUARD will always deliver its maximum distortion free output. This power is always well above the rated power due to the McIntosh philosophy of conservative design. You will never experience the harsh and damaging distortion due to clipping when using a McIntosh MA6800 amplifier with POWER GUARD.

**THE VERSATILE McINTOSH OUTPUT AUTOFORMER**

All transistor power output circuits work best into what is called an optimum load. Depending on the number and configuration of transistors used, this optimum load may vary considerably from what a loudspeaker requires. In the case of more than one loudspeaker connected in parallel, the impedance load reflected to the power amplifier may drop to two ohms or even less.

A power amplifier connected to a load that is lower than optimum causes extra current to flow and extra heating of the power transistors. This means the amplifier will run much hotter, with a corresponding reduction in operating life.

The output signals from the two channels in the MA6800 are coupled into the autoformers at the point on the windings that is an optimum impedance match for the transistors in the output circuit. The Autoformers include output impedance taps for exact loudspeaker matches of 2 ohms, 4 ohms and 8 ohms. Loudspeaker performance will always be at its best and the MA6800 amplifier output circuits are always operating at at their highest possible efficiency. Any McIntosh power amplifier with an autoformer is especially well suited for stereo installations that require multiple speakers, since it is possible to have a very close impedance match.

The frequency response of a McIntosh autoformer exceeds that of the output circuit itself, and extends well beyond the audio range. It's distortion level is so low it is virtually impossible to measure. The McIntosh Autoformer is, quite simply, a significant engineering advance in power amplifier performance and reliability. The unequalled expertise of McIntosh in the design and manufacturing of autoformers is legendary in the high fidelity industry.

In the rare event of output circuit failure, the McIntosh autoformer will conduct any speaker damaging DC (direct current), directly to circuit ground. This will protect your valuable loudspeakers from possible damage.

## **TECHNICAL DESCRIPTION**

### **TRUE POWER OUTPUT WATTMETERS**

Two illuminated wattmeters are provided on the MA6800 front panel. The meters are peak responding and their circuits are constantly reading both voltage and current delivered to the loudspeaker loads. The load impedance of a loudspeaker may differ at various parts of the audio frequency range, resulting in a change of output current requirements. The MA6800 meters react to these changing current and voltage conditions and indicate the true amplifier power output of each channel at all times.

### **LOGIC DRIVEN CONTROL**

All Inputs, Outputs, CD Tuner and SCR selector lines are controlled by logic circuits in the MA6800. This logic is changed by front panel switches or by two microprocessor IR decoders, one for LISTEN and one for RECORD. These microprocessors are programmed with exclusive McIntosh software. They receive data from the MA6800 front panel IR sensor and provide the command signals for all switching functions. A third microprocessor decodes the CD1, CD2, and TUNER Control commands.

The logic circuits activate Electro-Magnetic switches for the final step in all signal switching.

### **ELECTRO-MAGNETIC SWITCHING**

All signal switching in the MA6800 is done by ELECTRO-MAGNETIC methods. ELECTRO-MAGNETIC switching is an old and proven technology that has been upgraded with modern materials and manufacturing techniques.

Each switch consists of a sealed glass tube filled with an inert oxygen free atmosphere. Tiny connecting leads protrude from either end. These leads extend into the tube and overlap one another with a separation of a few thousandths of an inch. The leads are made from a ferrous material that is influenced by a magnetic field. They are first plated with gold as a base material, then with rhodium and ruthenium. Ruthenium is the best contact material known. The glass assembly is then placed in the center of a multi-layer coil of copper wire. The entire assembly is molded together in a tough shock absorbing plastic. The switch and coil connections extend from the bottom in the form of printed circuit board terminals.

When a DC voltage is applied to the coil, current flows and creates a magnetic field. The force of the field causes the leads to bend and contact one another inside the sealed glass tube. The inert oxygen free atmosphere eliminates corrosion of the contacts, insuring a low resistance, distortion free switch. The switching control signals come from the MA6800 logic circuits.

### **PHONO PREAMPLIFIER**

The phono preamplifier uses a high technology integrated circuit operational amplifier that has an extremely wide frequency range capability. Its differential input stage has been optimized for low noise and low distortion. The open loop gain for this circuit is 100,000. With high open loop gain, a large amount of negative feedback can be used around this preamplifier section to reduce noise and distortion to an extremely low value. The feedback network also provides precision RIAA frequency equalization which follows the required response curve very accurately throughout the entire audio range. The network uses 1% tolerance metal film resistors and 5% tolerance polypropylene capacitors.

To achieve low-noise performance, it is essential that the feedback network have very low impedance. A circuit design of this type acts as a small power amplifier. This preamplifier section will actually produce more than 100 milliwatts output power. This extra margin of performance results in a phono preamplifier with extremely low distortion and noise.



## TECHNICAL DESCRIPTION

This preamplifier circuit has a very wide dynamic range. It will accept up to 90 millivolts of input signal without overload. This is far greater than the maximum output voltage capability of any current model magnetic phono cartridge.

The sensitivity of this circuit is 2.5 millivolts for 150 watts at the SPEAKERS Outputs. 10 millivolts input results in 1 volt at the Tape Outputs. The Tape Output source impedance of the phono preamplifier section is less than 100 ohms, and will drive a load impedance of 100 ohms or higher.

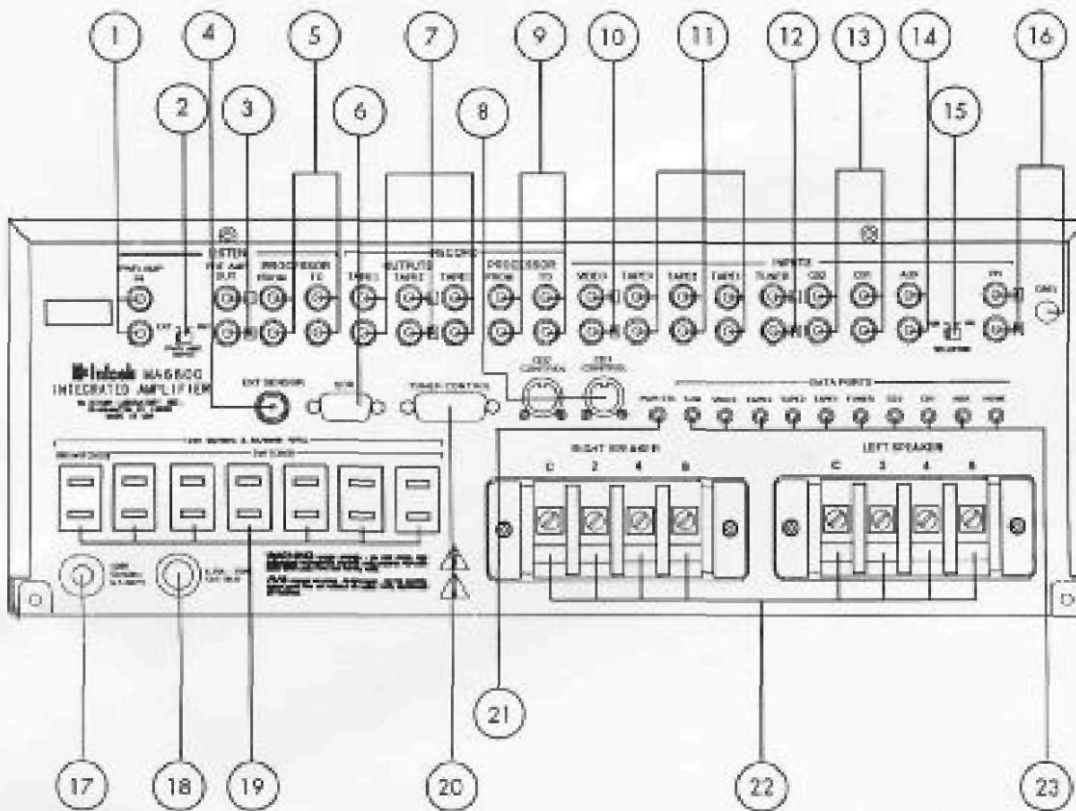
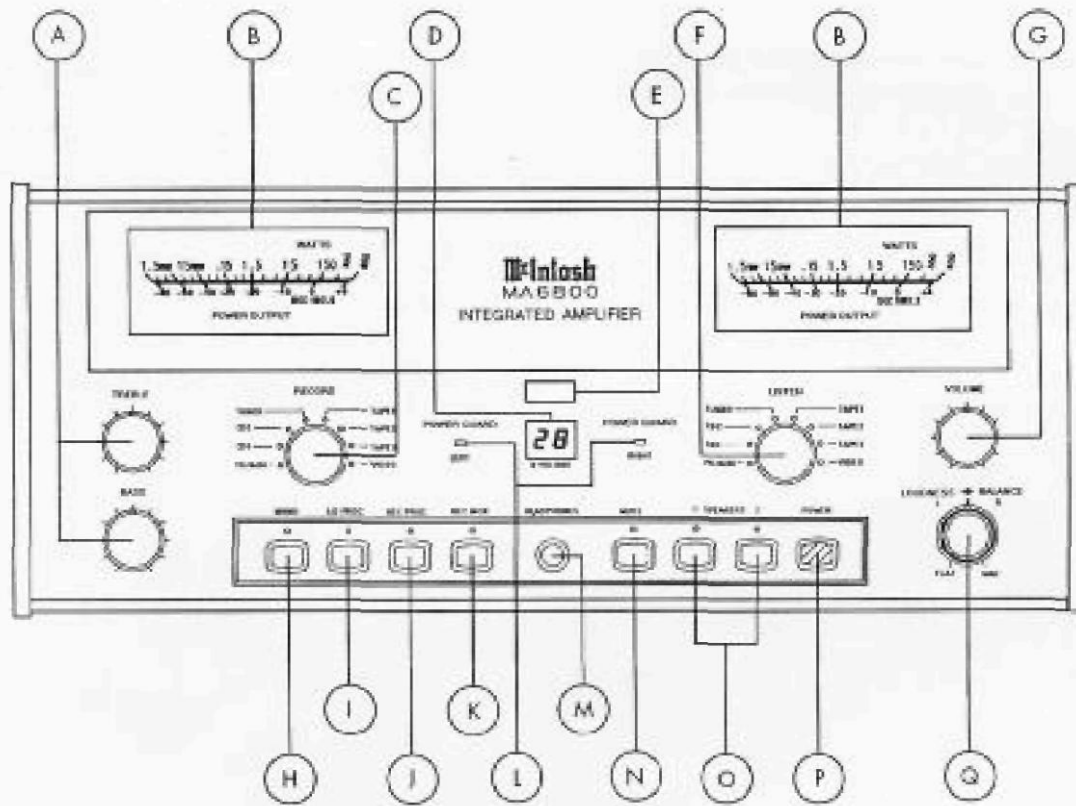
### **LOUDNESS AMPLIFIER**

High level signals feed into the preamplifier past the input and mode switching, through the volume control and then into the loudness amplifier. The MA6800 uses an active loudness control circuit design. An integrated circuit operational amplifier is used with two separate feedback circuits. One feedback loop has flat frequency response, and the other loop has loudness compensation. A potentiometer placed between these two feedback loops makes it possible to select any degree of frequency response from flat, to full loudness compensation. The overall gain of the loudness circuit is 14dB, which remains constant at mid frequencies, regardless of the position of the loudness control. The frequency compensation increases from the reference gain, and the desired amount of loudness compensation can be selected at any volume control setting.

### **tone CONTROL AMPLIFIER**

The tone control amplifier uses high technology integrated circuit operational amplifiers. The output stages have been optimized for optimum transient performance and minimum distortion. Another set of operational amplifiers are arranged in a circuit configuration equivalent to series tuned circuits. The series tuned circuits can be inserted into either the input, or the feedback loop by means of a potentiometer. The proper choice of circuit components results in a 12dB boost or cut at the desired bass and treble frequencies. When the tone control potentiometers are at their center or detent positions, all tone control elements are removed from the signal path, and the frequency response is perfectly flat.

The letters and numbers refer to the paragraphs on pages 5 - 9 and pages 12 - 17.



## SPECIFICATIONS

### POWER OUTPUT, STEREO

150 watts minimum sine wave continuous average power output per channel, both channels operating, into 2 ohms, 4 ohms, or 8 ohms load impedance.

### OUTPUT LOAD IMPEDANCES

2 ohms, 4 ohms and 8 ohms. Separate terminals are provided for each impedance output.

### RATED POWER BAND

20Hz to 20,000Hz

### TOTAL HARMONIC DISTORTION

0.005% maximum harmonic distortion at any power level from 250 milliwatts to 150 watts per channel from 20Hz to 20,000Hz, both channels operating.

### INTERMODULATION DISTORTION

0.005% maximum if instantaneous peak power output is 300 watts or less per channel with both channels operating for any combination of frequencies from 20Hz to 20,000Hz.

### FREQUENCY RESPONSE

+0, -0.5dB from 20Hz to 20,000Hz.

### HUM AND NOISE, (A WEIGHTED)

(Power Amplifier): 110dB below rated output.

(Preamplifier) Phono: 90dB below 10mV input, (84dB IHF)

High Level: 100dB below rated output, (90dB IHF)

### IHF DYNAMIC HEADROOM

1.8dB

### DAMPING FACTOR

Greater than 40

### POWER GUARD

Clipping is prevented and THD does not exceed 2% with up to 14dB overdrive at 1000Hz.

### INPUT IMPEDANCE

Phono: 47K ohms and 65pF capacitance

High Level: 22K ohms

PWR AMP IN: 20,000 ohms

### INPUT SENSITIVITY

Phono: 2.5mV for 150 watts output, (0.5mV IHF)

High Level: 250mV for 150 watts output, (50mV IHF)  
(1.4V at PRE AMP OUT)

Power Amplifier at PWR AMP IN:

1.4V for 150 watts output.

### MAXIMUM INPUT SIGNAL

Phono: 90mV.

High Level: 10V

### tone controls

Bass and Treble variable, 12dB boost to 12dB cut.

### POWER REQUIREMENT

120V, 50/60Hz, 6.25 amperes UL/CSA

### DIMENSIONS

17-1/2 inches (44.5cm) wide, by 7-1/16 inches (17.9cm) high, by 20 inches (50.8cm) depth, (Includes clearance for connectors). Knob clearance required in front of mounting panel, 1-1/8 inches (2.9cm)

### WEIGHT

70 lbs. (31.8Kg) net, 89 lbs. (40.4Kg) shipping.

WELLS

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