

**MC7104
POWER
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 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 adapters 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 PEVENIR LES CHOCS ELECRIQUES 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.

WARNING: THIS UNIT IS CAPABLE OF PRODUCING HIGH SOUND PRESSURE LEVELS. CONTINUED EXPOSURE TO HIGH SOUND PRESSURE LEVELS CAN CAUSE PERMANENT HEARING IMPAIRMENT OR LOSS. USER CAUTION IS ADVISED AND EAR PROTECTION IS RECOMMENDED WHEN PLAYING AT HIGH VOLUMES.

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.

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.

**THANK
YOU**

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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

McIntosh Laboratory has earned a world wide reputation for its technical contributions to improved sound reproduction. The technical innovations in McIntosh products have integrity proven by time. The McIntosh "Classic" design is recognized as the most outstanding in the industry.

McIntosh products are designed to be maximum user friendly so anyone can enjoy using them. They are also designed for easy maintenance. The legendary reliability of McIntosh products has been a matter of record since 1949.

The new McIntosh MC7104, Four Channel Power Amplifier will produce 100 watts per channel into 4 ohm speakers. Each pair of channels can be bridged for 300 watts into 4 ohm speakers. The three available output configurations into 4 ohm speakers are, four 100 watt channels, two 100 watt channels and one 300 watt channel, or two 300 watt channels.

The MC7104 is ideal for use in home theater systems, multizone systems, or any application that requires four discrete power amplifier channels. Combine the MC7104 with a stereo power amplifier in a Home Theater System. Use the stereo amplifier for the left and right front speakers. Use the MC7104 with a bridged channel pair with 300 watts for the center channel and the two remaining 100 watt channels for the surround speakers.

A rear panel multi-room connector allows the MC7104 to be operated by a CR10 or CR12 Multi Zone System to power two remote audio zones. A second connector allows a second MC7104 to be added for two additional remote audio zones.

Both balanced and unbalanced inputs, individual channel level controls and Power Control connectors are provided

A front panel stack of LED volume level indicators is included for each of the four channels together with a Power Guard LED at the top. There are also two POWER LED's to indicate when channel pairs are active. The MC7104 includes many of the popular and valuable McIntosh performance features such as Power Guard, Sentry Monitor protection and thermal protection.

The MC7104 front panel is the traditional McIntosh all glass design with illuminated nomenclature.

(The MC7104 has three operating configurations into 4 ohm speaker loads.)

1. Four 100 watt channels.

Use for powering two remote zones of a multizone system. Interconnect a second MC7104 to power two additional remote zones.

2. Two 100 watt channels and one 300 watt bridged pair.

In a Home Theater System, use the bridged 300 watt channel pair for the center front speaker and the two remaining 100 watt channels for the surround speakers.

3. Two 300 watt bridged pairs.

Use in any application requiring two 300 watt channels.

OPERATING CONFIGURATIONS

HOW TO INSTALL THE MC7104

The MC7104 can be placed upright on a table or shelf, standing on its four plastic feet. It can also be installed in a McIntosh L84 cabinet. Follow the installation instructions included with the L84.

The MC7104 is designed to be easily installed in a cabinet of your choice. The front mounting panel cutout, mounting shelf ventilation cutout and amplifier dimensions are shown in the diagrams found on a page further back in this manual.

Always provide adequate ventilation for the amplifier. The trouble free life of any electronic instrument is greatly extended by providing sufficient ventilation for proper cooling. Allow at least 1-1/2 inches (3.8cm) above the heat sink area to allow the free flow of air. The recommended minimum depth for mounting, including clearance for connectors, is 20 inches (51cm) behind the front mounting panel. Clearance required in front of the mounting panel surface is 1 inch (2.54cm).

In a system stack, the power amplifier should always be at the top. If all the components are installed in a single cabinet, a quiet running ventilation fan can be a definite asset in maintaining all the system components at their coolest possible operating temperatures.

If the MC7104 is mounted in a custom cabinet, cut out a ventilation hole in the amplifier mounting shelf according to the recommended dimensions.

FRONT PANEL DISPLAYS

On the upper section of the front panel there is a Red POWER LED indicator for each pair of channels. An indicator turns on when the speaker relays for that specific pair of channels turn on. The relays respond to control signals sent from a McIntosh Control Center to the POWER CONTROL IN, or a McIntosh Multizone System fed to the MULTI-ROOM IN connector. If the MULTI-ROOM IN connector is not being used, both sets of speaker relays turn on simultaneously when the main power is turned on.

There is a vertical row of LED power output indicators for each of the four channels. There are also calibration indications for watts output from 0.01 watt to 100 watts. This calibration in watts is valid when the amplifier is feeding 4 ohm loads. If the amplifier is connected to speakers with a higher impedance, the indications refer to percentage of rated power output.

All four channels of the MC7104 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 four channels. The LED lights whenever the Power Guard circuit is activated for any particular 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.

(If the POWER GUARD indicators turn on and stay on continuously for any given pair of channels, it indicates a problem is present. If this condition occurs, contact your McIntosh dealer for assistance.)

REAR PANEL AND HOW TO MAKE CONNECTIONS

Use high quality input and output connecting cables. Proper cables will insure receiving the best possible performance from your McIntosh system. Your McIntosh dealer can advise you on the types and lengths of cables that will work best in your installation.

Hookup drawings are included which give graphic information on how to connect the inputs and outputs for each installation configuration. Pay special attention to the polarities of the speaker hookups.

Refer to the numbers on the rear panel drawing for the descriptions of the MC7104 connections and controls.

1. MULTI-ROOM, (IN - OUT)

Connect an optional cable with DIN connectors on each end, (McIntosh Part No. (170-147) from the MULTI-ROOM, IN connector to a McIntosh CR10 or CR12 Remote Control System. When Zone 1 is selected on the Remote Control System, signals are sent to the MC7104 that turns on the speaker relays for channels 1 and 2. When Zone 2 is selected, the speaker relays for channels 3 and 4 are turned on. This allows a single MC7104 to supply audio power to remote zones 1 and 2.

Add a second MC7104 amplifier to supply power to two additional remote zones. Connect another DIN cable from the first MC7104, MULTI - ROOM OUT connector to the MULTI - ROOM IN connector on the second MC7104. When Zone 3 is selected, speaker relays for channels 1 and 2 of the second amplifier are turned on. When Zone 4 is selected, channels 3 and 4 are selected. The second MC7104 can then be used to supply audio power to remote zones 3 and 4.

When the MULTI-ROOM connections are used on the MC7104, only the AC Power and Speaker Control Relays are activated. Separate audio cables must be connected from the Remote Control System to feed audio to the MC7104.

2. POWER, (ON - OFF/ REMOTE)

ON position turns the MC7104 AC power On.

OFF / REMOTE allows the MC7104 AC power to be turned on by a Power Control signal from a McIntosh Control Center or similar compatible accessory sent to the POWER CONTROL IN connector, or by a similar signal sent from a Remote Control System to the MULTI - ROOM IN connector.

3. POWER CONTROL, (IN - OUT)

The MC7104 AC power can be turned on and off by a control signal fed to the POWER CONTROL IN connector from the POWER CONTROL OUT connector on compatible McIntosh products. The MC7104 POWER CONTROL OUT jack will feed the same AC power control signal out, delayed 0.2 seconds, to turn on and off another power amplifier or accessory component with a compatible Power Control input.

The MC7104 POWER switch must be in the OFF/REMOTE setting for the power control signals to turn the MC7108 On and Off.

The POWER CONTROL connectors are standard 1/8 inch mini phone plugs. Only the tip (+) and sleeve (-) are used for connecting the plugs to a single conductor shielded cable.

4. UNBALANCED INPUTS, (4 - 3 MONO / BRIDGED)

NORMAL (Stereo) Mode: Connect shielded unbalanced cables from the unbalanced outputs of

REAR PANEL AND HOW TO MAKE CONNECTIONS

two channels of a Preamplifier, Control Center, Remote Control System or other similar component to UNBALANCED INPUTS, 4 and 3. *(The MODE Switch must be in the NORMAL position).*

MONO / BRIDGED Mode: Connect a shielded unbalanced cable from the unbalanced output of a single or mono channel of a Preamplifier, Control Center, Remote Control System or similar component to the MONO / BRIDGED 3, UNBALANCED INPUT. The UNBALANCED INPUT 4 is inactive in the **BRIDGED / MONO** Mode. *(The MODE Switch must be in the MONO / BRIDGED position).*

5. LEVEL, (4 - 3 MONO / BRIDGED)

NORMAL (STEREO) Mode: Adjust the individual channel level controls to the 2.5 Volt setting when the MC7104 is used with McIntosh Preamplifiers, Control Centers or Remote Control Systems. For other applications you may wish to increase or decrease the settings as desired. *(The MODE Switch must be in the NORMAL position).*

MONO / BRIDGED Mode: Adjust the volume level of the combined MONO / BRIDGED channels 4 and 3, using only the MONO / BRIDGED 3 Level control. (The channel 4 Level Control is inactive in the MONO / BRIDGED mode.) Set the control to the 2.5 Volt position when used with McIntosh accessory components. *(The Mode switch must be in the MONO / BRIDGED position).*

6. MODE, (NORMAL - MONO / BRIDGED)

Set the MODE switch to the desired operating mode for channels 4 and 3.

7. BALANCED INPUTS, (4 - 3 MONO / BRIDGED)

NORMAL (Stereo) Mode: Connect balanced cables from the balanced outputs of two channels of a Preamplifier, Control Center or Remote Control System to the BALANCED INPUTS, 4 and MONO / BRIDGED 3. *(The MODE switch must be in the NORMAL position).*

MONO BRIDGED Mode: Connect a balanced cable from the balanced output of a Preamplifier, Control Center or Remote Control System to the BALANCED INPUT, MONO / BRIDGED 3. The BALANCED 4 INPUT is inactive in BRIDGED / MONO Mode. *(The MODE switch must be in the MONO/BRIDGED position).*

8. BALANCED INPUTS, (2 - 1 MONO / BRIDGED)

NORMAL (Stereo) Mode: Connect balanced cables from the balanced outputs of two channels of a Preamplifier, Control Center or Remote Control System to the BALANCED INPUTS, 2 and MONO / BRIDGED 1. *(The MODE switch must be in the NORMAL position).*

MONO BRIDGED Mode: Connect a balanced cable from the balanced output of a Preamplifier, Control Center or Remote Control System to the BALANCED INPUT, MONO / BRIDGED 1. The BALANCED 4 INPUT is inactive in BRIDGED / MONO Mode. *(The MODE switch must be in the MONO/BRIDGED position).*

BALANCED CABLES

Use 2 conductor shielded cables with XLR type connectors for balanced connections. The MC7104 BALANCED INPUTS use Female XLR connectors installed on the amplifier back panel. The balanced connecting cable requires a Male XLR connector.

Pin configuration for the XLR BALANCED INPUT connectors on the MC7104.

PIN 1: Shield or ground.

PIN 2: + input.

PIN 3:-input.

In stereo installations where the amplifier and accessory component are close to each other and require interconnecting cables of six feet or less, using quality unbalanced connecting cables is usually satisfactory. If the units are farther apart and require longer interconnecting cables, using balanced cables will give extra protection from noise or interference.

9. UNBALANCED INPUTS, (2 - 1 MONO / BRIDGED)

NORMAL (Stereo) Mode: Connect shielded unbalanced cables from the unbalanced outputs of two channels of a Preamplifier, Control Center, Remote Control System or other similar component to UNBALANCED INPUTS, 2 and 1. *(The MODE Switch must be in the NORMAL position).*

MONO / BRIDGED Mode: Connect a shielded unbalanced cable from the unbalanced output of a single or mono channel of a Preamplifier, Control Center, Remote Control System or similar component to the MONO / BRIDGED 1, UNBALANCED INPUT. The UNBALANCED INPUT 2 is inactive in the BRIDGED / MONO Mode. *(The MODE Switch must be in the MONO / BRIDGED position).*

10. LEVEL, (2 - 1 MONO / BRIDGED)

NORMAL (STEREO) Mode: Adjust the individual channel level controls to the 2.5 Volt setting when the MC7104 is used with McIntosh Preamplifiers, Control Centers or Remote Control Systems. For other applications you may wish to increase or decrease the settings as desired. *(The MODE Switch must be in the NORMAL position).*

MONO / BRIDGED Mode: Adjust the volume level of the combined MONO / BRIDGED channels 2 and 1, using only the MONO / BRIDGED 1 Level control. (The channel 2 Level Control is inactive in the MONO / BRIDGED mode.) Set the control to the 2.5 Volt position when used with McIntosh accessory components. *(The Mode switch must be in the MONO / BRIDGED position).*

11. MODE, (NORMAL - MONO / BRIDGED)

Set the MODE switch for the desired operating modes for channels 1 and 2.

12. AC POWER CABLE

Connect the MC7104 power cable to a 50/60Hz , 120 volt AC wall outlet or a Power Control Relay. The power outlet should be capable of handling up to 8 amperes or 960 watts. Do not connect the cable to an AC outlet on the rear panel of a Preamplifier or Control Center. The most convenient method for turning the MC7104 power on and off is with a Power Control signal sent to the POWER CONTROL IN connector or to the MULTI-ROOM IN connector.

13. 8A 250V SLO BLO

CAUTION: For continued protection against fire hazard, replace only with the same type 8A (Ampere) - 250 volt SLO BLO fuse.

**REAR PANEL
AND HOW
TO MAKE
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14. / 15. OUTPUTS 1, 2, 3 and 4 (LOUDSPEAKER CONNECTIONS)

Refer to the connecting diagrams.

4 CHANNEL CONFIGURATION *{Set both channel pair MODE switches to the NORMAL position}*

1. Connect a cable from the negative or (-) terminal of each of four loudspeakers to a (-) speaker OUTPUT terminal on each of the four channels.
2. Connect a cable from the positive (+) terminal of each of the same loudspeakers to the matching (+) speaker OUTPUT terminal on each of the four channels.

3 CHANNEL CONFIGURATION

(Set one of the channel pair MODE switches to the NORMAL position, and the other MODE switch to the MONO/BRIDGED position. The output markings for BRIDGED MONO connections are placed above the markings for the separate channel output connections. The example shown in the connecting diagram shows channels 1 and 2 as bridged, and 3 and 4 as normal.)

1. **MONO/BRIDGED channel pair (1 and 2):** Connect a cable from the negative or (-) terminal of the loud-speaker to the (-). Connect a cable from positive (+) terminal of the loudspeaker to the (+) MONO/BRIDGED OUTPUT terminal for channel pairs 1 and 2.
2. **NORMAL channel pair 3 and 4:** Connect a cable from the negative (-) terminal of each of the two loud-speakers used with channels 3 and 4, to the negative (-) OUTPUT terminals for the same channels. Connect a cable from the positive (+) terminal of each of the two loudspeakers to the matching (+) OUTPUT terminals.

2 CHANNEL CONFIGURATION

(Set both rear panel MODE switches to the MONO/BRIDGED position).

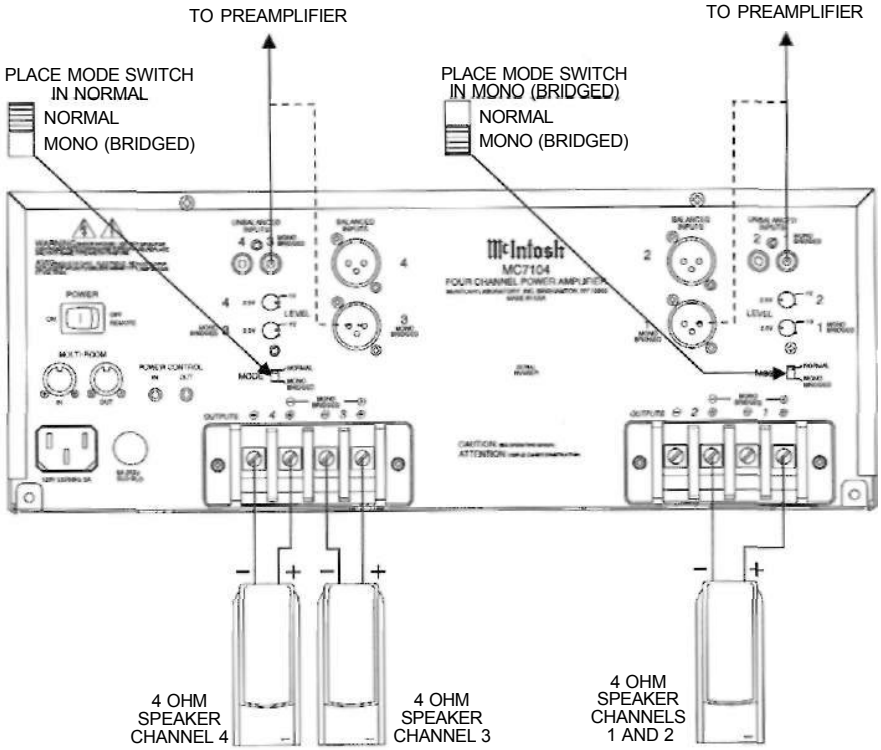
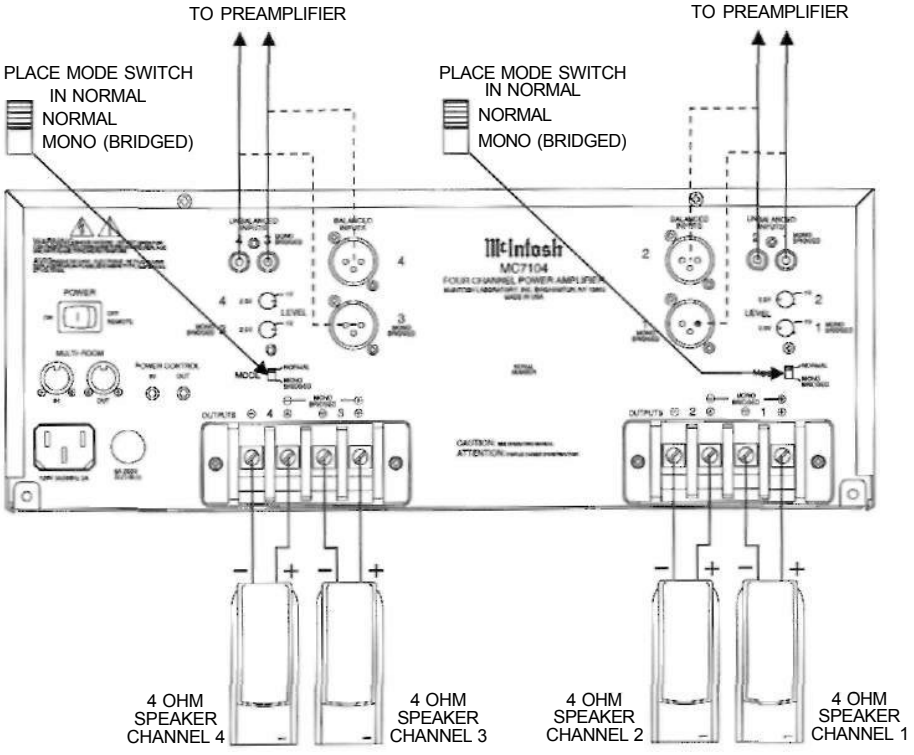
MONO/BRIDGED CHANNELS 1 and 2:

Connect a cable from the negative (-) terminal of the loudspeaker being used with bridged pair channels 1 and 2, to the MC7104 negative (-) MONO/BRIDGED terminal for channels 1 and 2. Connect a cable from the positive (+) loudspeaker terminal to the MC7104 positive (+) MONO/BRIDGED OUTPUT terminal.

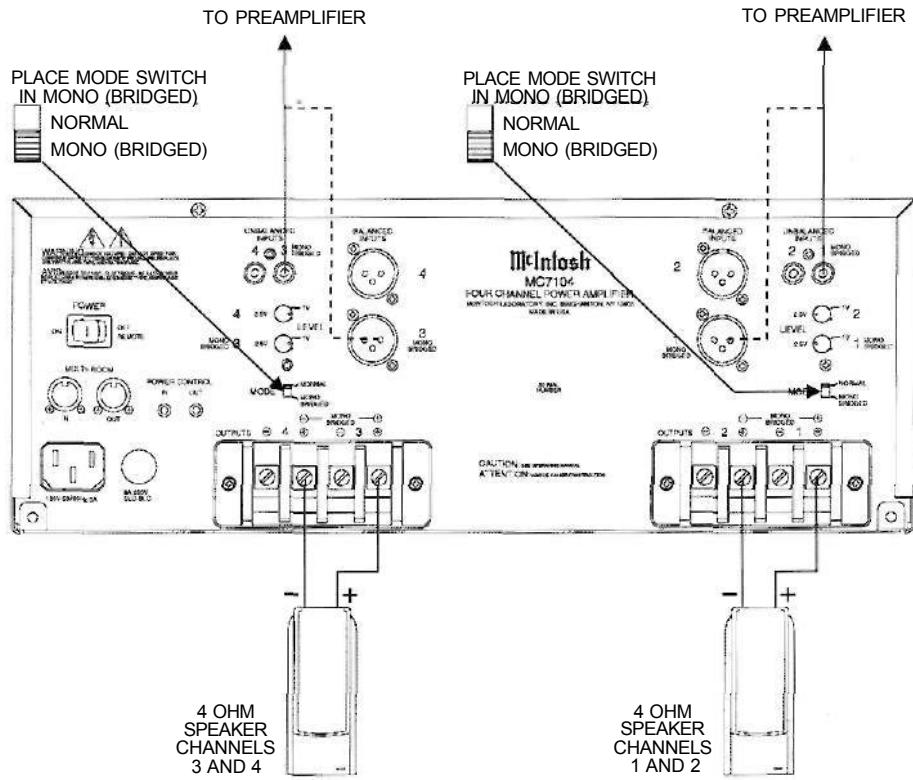
MONO/BRIDGED CHANNELS 3 and 4:

Connect a cable from the negative (-) terminal of the loudspeaker being used with bridged pair channels 3 and 4, to the MC7104 negative (-) MONO/BRIDGED terminal for channels 3 and 4. Connect a cable from the positive (+) loudspeaker terminal to the MC7104 positive (+) MONO/BRIDGED OUTPUT terminal.

SPEAKER-AMPLIFIER CONNECTION DIAGRAMS



SPEAKER-AMPLIFIER CONNECTION DIAGRAMS



SPECIFICATIONS

POWER OUTPUT, 4 CHANNELS

100 watts into 4 ohm loads, minimum sine wave continuous average power output per channel, all channels operating. The RMS voltage is 20V across 4 ohms.

POWER OUTPUT, MONO/BRIDGED PAIRS

200 watts into 8 ohm loads, minimum sine wave continuous average power output per channel pair. The RMS voltage is 40V across 8 ohms.

OUTPUT LOAD IMPEDANCE

NORMAL, (4 channels): 8, 4 or 2 ohms

BRIDGED/MONO pairs: 8 or 4 ohms

RATED POWER BAND

20Hz to 20,000Hz

TOTAL HARMONIC DISTORTION

0.005% maximum harmonic distortion at any power level from 250 Milliwatts to rated power per channel from 20Hz to 20,000Hz, all channels operating.

DYNAMIC HEADROOM

1.8dB

FREQUENCY RESPONSE

+0, -0.25dB from 20Hz to 20,000Hz

+0, -3.0dB from 10Hz to 100,000kHz

INPUT SENSITIVITY

1 volt, (2.5V at level control center detent)

INPUT IMPEDANCE

20,000 ohms

A-WEIGHTED SIGNAL TO NOISE RATIO

88dB, (108dB below rated output)

INTERMODULATION DISTORTION

0.005% maximum if instantaneous peak power output does not exceed twice the output rating per channel, with all channels operating, for any combination of frequencies from 20Hz to 20,000Hz

SPECIFICATIONS

WIDE BAND DAMPING FACTOR

8 ohm loads, 200

4 ohm loads, 100

POWER REQUIREMENTS

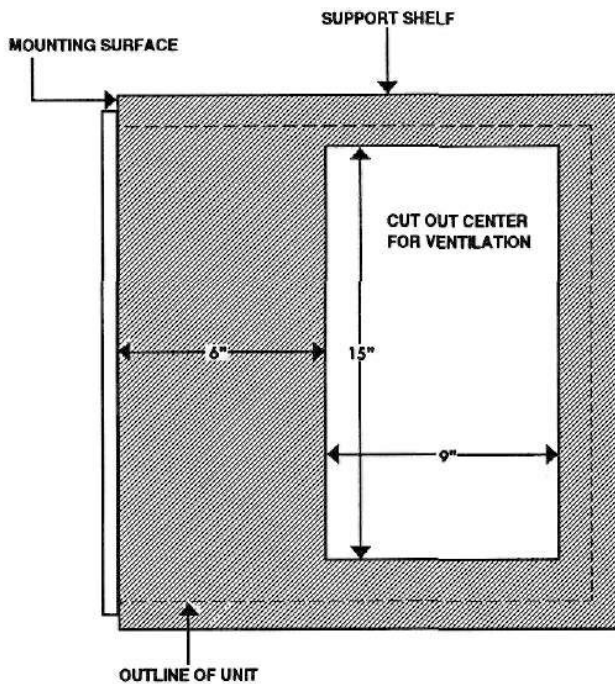
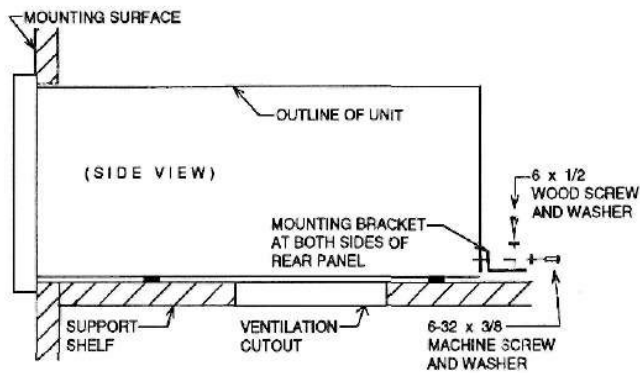
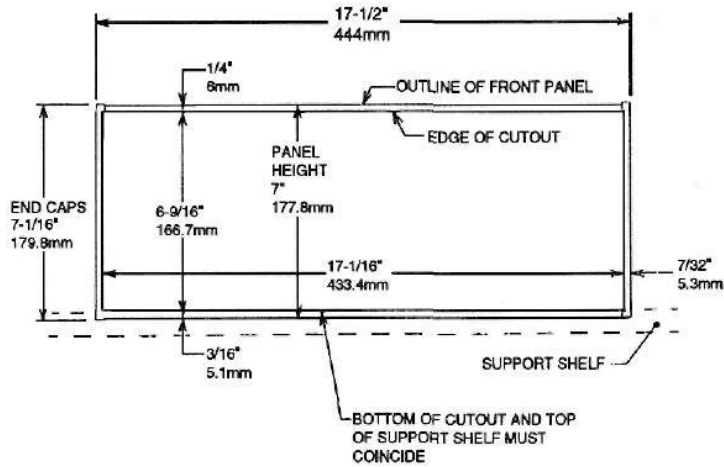
120 volts, 50/60HZ, 3 Amperes UL/CSA

DIMENSIONS

17-1/2 inches (44.5cm) W x 7-1/16 inches (17.9cm) H x 20 inches (50.8cm) D

WEIGHT

48 pounds (21.8Kg) net, 67 pounds (30.4Kg) shipping



CUSTOM INSTALLATION DIAGRAM

RECOMMENDED VENTILATION CUTOUT IN MOUNTING SHELF

The numbers refer to the paragraphs on pages 7 through 10.

