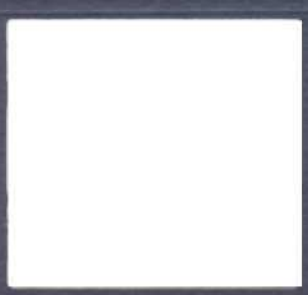
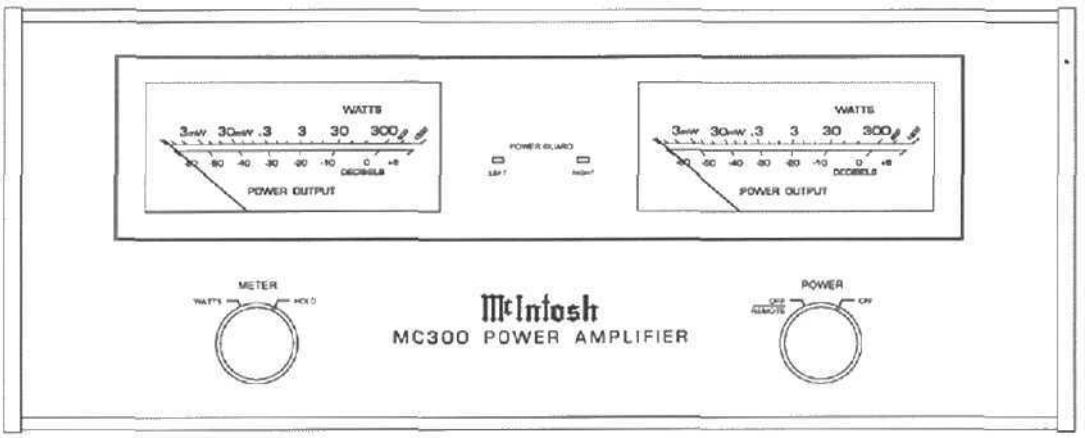
McIntosh®

OWNER'S MANUAL

MC300
POWER
AMPLIFIER





MC300
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 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-SERVICABLE 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.

THANK YOU

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 and purchase date are important to you for possible insurance claim or future service. Record this information here.

Serial Number	Purchase Date

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INTRODUCTION

The electrical and mechanical design of the MC300 power amplifier is the result of the many years of engineering and manufacturing experience of the design staff at McIntosh. This "Know How", along with the meticulous attention to design and production details, makes the MC300 one of the finest amplifiers ever produced by McIntosh Laboratory.

The use of 10 complementary connected output transistors per channel, allows not only full power output into normal loads, but extra high current output to drive uneven speaker loads. Some speaker designs have impedance characteristics that may dip to as low as 1 or 2 ohms at certain frequencies. It is possible for the MC300 to deliver as much as 85 amperes peak current into these lower impedance loads.

The MC300 will supply this extra current output with complete reliability due to the use of McIntosh Sentry Monitor protection circuits. Some power amplifier manufacturers have claimed that their products do not use protection circuits since they compromise performance. The real genius of McIntosh engineering design has recognized these potential problems and completely eliminated them. Properly designed protection circuits assure you an amplifier that will operate under all types of user conditions with maximum reliability and freedom from possible speaker or amplifier damage. The benefits of these designs mean you own an amplifier that will continue to operate safely for many years.

The MC300 output is so distortion free, it is difficult to measure with conventional instruments. The performance limit is 0.005% maximum distortion, yet it is typical for an amplifier to measure less than 0.002% at mid frequencies.

The power output watt meters on the MC300 are peak responding, and indicate the TRUE power output of the amplifier. The MC300 meter circuits are constantly measuring both voltage and current delivered into the speaker loads. A speaker may have a different load impedance at different frequencies, resulting in a change of output current. The MC300 meters properly react to this condition and indicate Real Output power.

Other desirable features are included such as high current gold plated output terminals that will accept cable up to 0.204 inches in diameter. Balanced input connectors are also provided in addition to the normal RCA inputs.

As in all McIntosh power amplifiers, the famous patented McIntosh POWER GUARD circuit is included. You never have to be concerned with amplifier overdrive when playing wide dynamic range program sources such as compact discs.

Refer to the technical description for a full account of all the outstanding circuit and performance features of this superb power amplifier.

INSTALLATION

The MC300 can be placed upright on a table or shelf, standing on its own plastic feet.

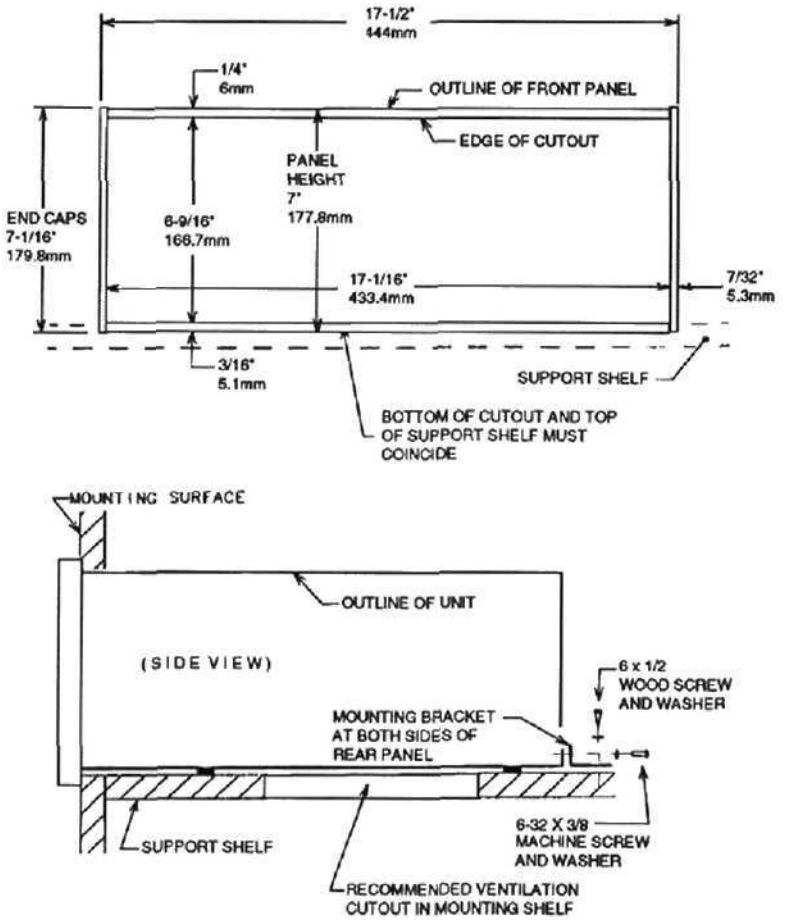
The MC300 can be custom installed in a cabinet of your choice. The mounting panel cutout, mounting shelf ventilation cutout and amplifier dimensions are shown on page 7.

It Is essential to cut out a ventilation hole In the mounting shelf according to the dimensions In the drawing.

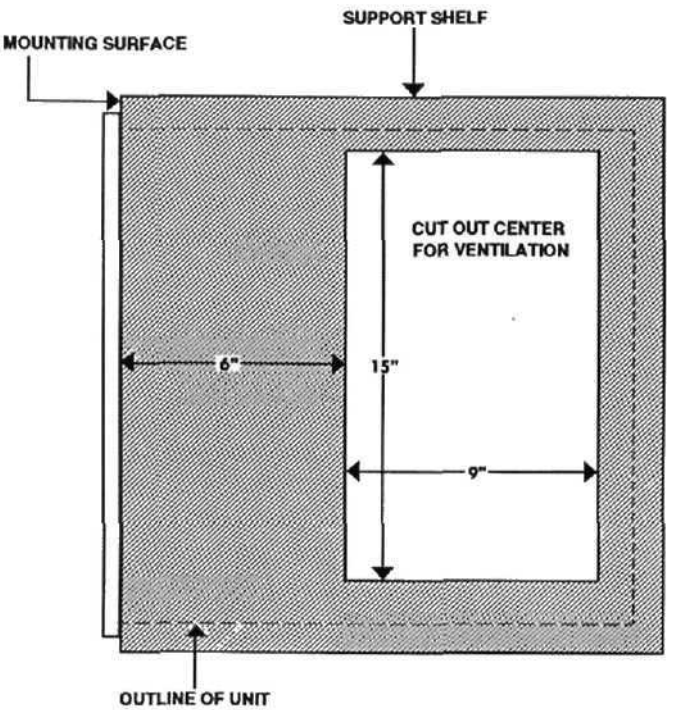
Always provide adequate ventilation for your MC300. The trouble free life of any electronic instrument is greatly extended by providing sufficient ventilation for proper cooling. In a system stack, the power amplifier should always be at the top. If all the components are installed in a single cabinet, a quiet running ventilation fan can be a definite asset in maintaining all the system components at their coolest possible operating temperatures.

Provide at least a 1-1/2" (3.8cm) above the heat sink area to allow the free flow of air. Cutout a ventilation hole in the mounting shelf corresponding to the dimensions in the drawing. The recommended minimum depth for mounting, including clearance for connectors is 17-1/2" (44.5cm). Allow 1-1/8" (2.9cm) in front of the mounting panel for knob clearance.

CUSTOM INSTALLATION DIAGRAM



RECOMMENDED VENTILATION CUTOUT IN MOUNTING SHELF



HOW TO CONNECT INPUTS

CONNECTING CABLES

Use shielded cables to connect the signal from the preamplifier or other signal source to the power amplifier. To minimize the possibility of hum. the cables should be located away from speaker connecting cables and AC power cords.

Use good quality cables. Your dealer can advise you on the type and lengths of cables that will best suit your installation.

STEREO OPERATION (UNBALANCED INPUTS)

Use shielded single conductor cable with RCA type plugs. Connect the cable from the left channel output of a preamplifier to the LEFT UNBALANCED INPUT on the power amplifier. Connect the right channel output to the RIGHT UNBALANCED INPUT

Set the MODE switch to STEREO.

STEREO OPERATION (BALANCED INPUT)

Modern technology has made it possible to build preamplifiers and power amplifiers with the high signal to noise ratio necessary to reproduce the sound quality present on compact discs or any other wide dynamic range signal source.

It is possible for conventional interconnecting cables to pick up electrical interference from other equipment, AC cables or electrical appliances. Using the balanced inputs provides an additional 40dB more protection against such noise pickup.

Use 2 conductor shielded cables with XLR type connectors to connect between the preamplifier and the power amplifier. The maximum effect of balanced cables is realized when both the preamplifier and power amplifier have similar XLR balanced connectors.

Connect the left balanced output cable from a preamplifier to the LEFT BALANCED INPUT on the power amplifier. Connect the right output to the RIGHT BALANCED INPUT.

Pin configuration for the XLR INPUT connectors on the MC300

PIN 1: Shield or ground.
PIN 2: + input.
PIN 3: - input.

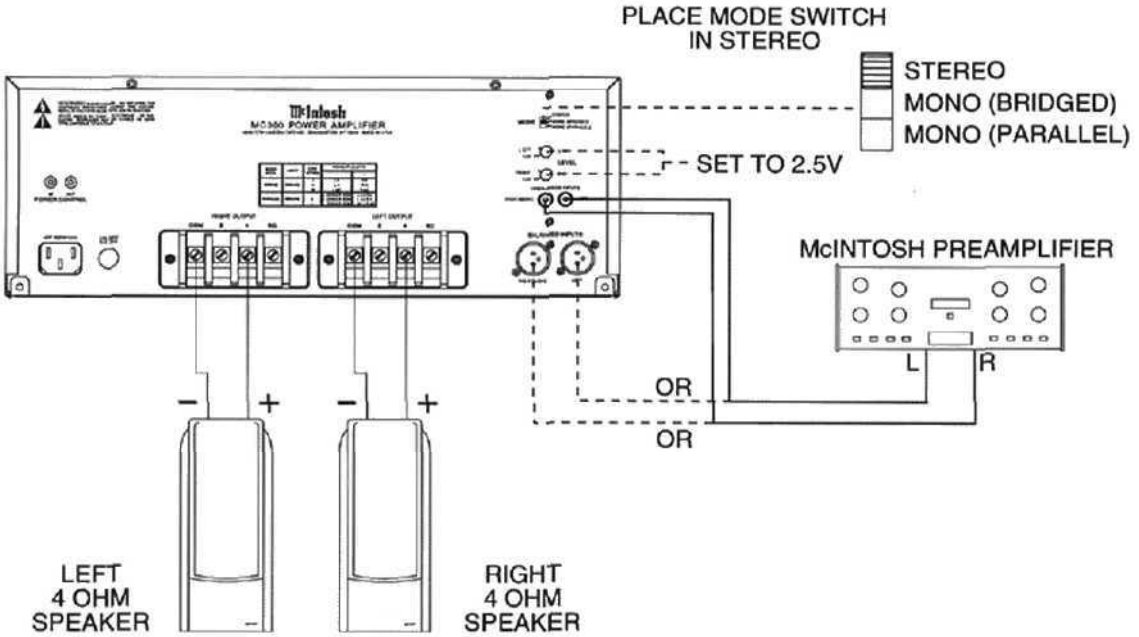
In stereo installations where the amplifier and preamplifier are close to each other and require interconnecting cables of six feet or less, using quality unbalanced connecting cables is usually perfectly satisfactory. If the units are farther apart and require longer interconnecting cables, using balanced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

MONOPHONIC BRIDGED OR PARALLEL

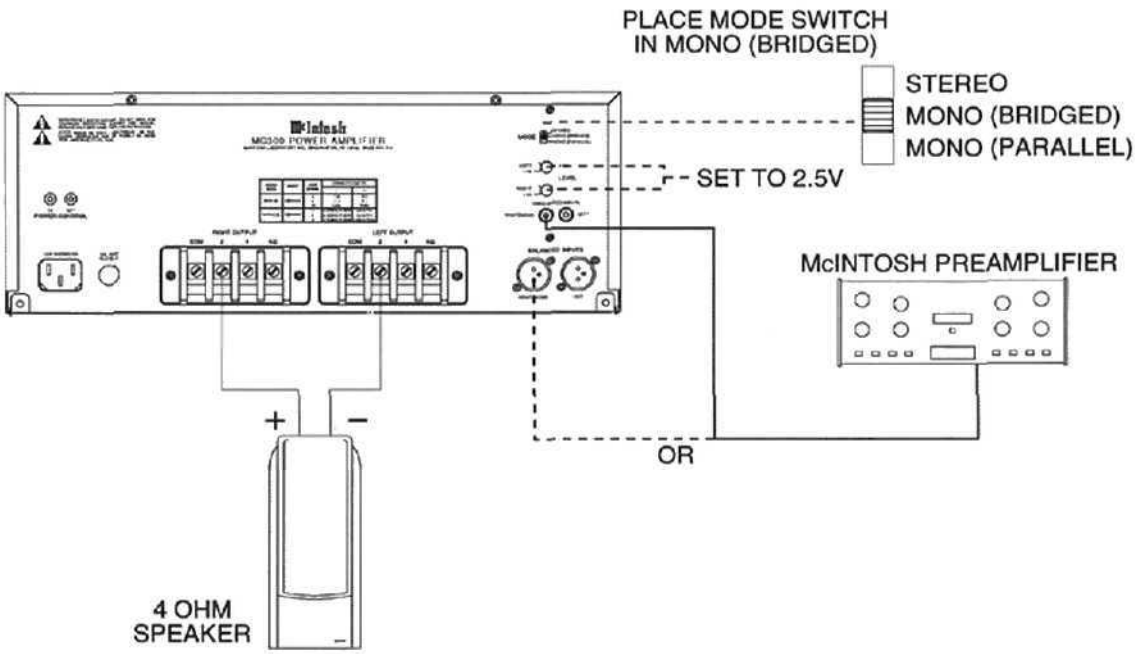
A rear panel MODE switch allows the amplifier to be used in normal STEREO. MONO (BRIDGED) or MONO (PARALLEL). When switched to either MONO (BRIDGED), or MONO (PARALLEL) operation, the RIGHT BALANCED and UNBALANCED inputs are the only ones used for the mono input signal. The LEFT inputs are automatically disconnected.

Connect the appropriate cable from a preamplifier or other mono source to the appropriate RIGHT UNBALANCED or BALANCED amplifier input.

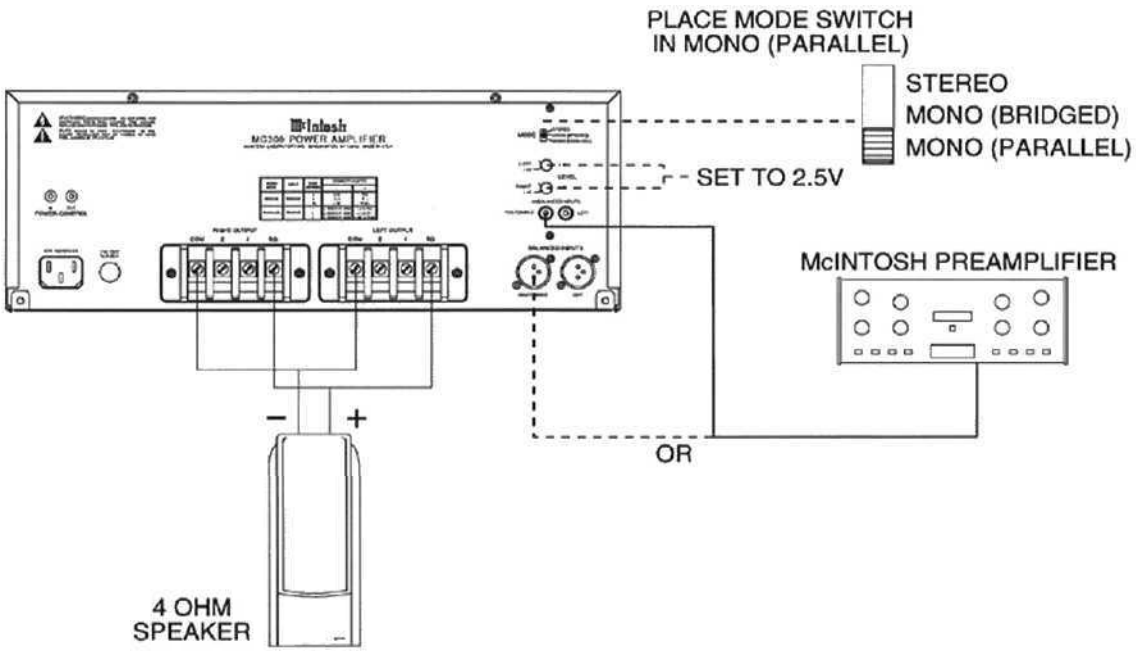
STEREO CONNECTIONS



MONO (BRIDGED CONNECTIONS)



MONO PARALLEL CONNECTION



HOW TO CONNECT OUTPUTS

The McIntosh output circuit, superior in its performance, demands a superior method of coupling the amplifier output to the loudspeaker load. The MC300 incorporates McIntosh designed and manufactured Autotransformers to insure peak performance and protection, as well as outstanding compatibility between amplifier and speakers.

The MC300 Output Autotransformers have 3 different output impedance tapes for optimum matching to the particular speaker or combination of speakers being used. Use the following table to determine which tap should be used. It may be desirable to consult your dealer, or the manufacturer of your speaker for the best impedance tap to use.

SPEAKER IMPEDANCE IN OHMS	AMPLIFIER OUTPUT CONNECTIONS
2 to 4	COMmon and 2 ohm outputs
4 to 8	COMmon and 4 ohm outputs
8 and up	COMmon and 8 ohm outputs

Use high quality speaker cables. The total resistance of the cables must be as low as possible, so larger diameter, (lower gauge number), cables are most desirable. The longer the speaker cable is, the lower the gauge number must be to keep resistance low.

RECOMMENDATIONS FOR SPEAKER CABLE LENGTHS AND GAUGE (SIZE)

These speaker cable lengths represent a resistance equal to approximately 5% of the speaker impedance. The cable sizes are the minimum that should be used. If there is a choice, the larger diameter cables, (Lower gauge number), should be used.

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

STEREOPHONIC OPERATION

Connect a cable from the left speaker common terminal to the amplifier LEFT OUTPUT COM terminal. Connect a cable from the left speaker hot terminal to the amplifier LEFT OUTPUT (impedance tap desired) terminal.

Connect the right speaker in an identical manner to the amplifier right output terminals of the correct impedance for your speakers.

If the actual load impedance of a speaker is lower than the specified impedance, particularly at different parts of the frequency range, it will cause no problems. The high current output capacity of the MC300 will produce the extra current necessary to properly drive the speaker under these conditions.

If the impedance of the speaker is higher than the 8 ohm tap, no change in performance quality will occur. The available power output will simply be slightly less.

The common and hot terminals of both speakers In a stereo Installation must be connected in an Identical manner to the proper amplifier output terminals. This is essential for keeping both speaker systems operating IN PHASE. This means that the driving surfaces of each channel speaker system will move back and forth together. Almost all speakers have their hot and common terminals color coded, with red usually as hot.

BE SURE THE REAR PANEL MODE SWITCH IS SET TO STEREO.

HOW TO CONNECT OUTPUTS

The MC300 can be used to feed a constant voltage line, often used in background music applications. For a 25 volt line, use the 2 ohm outputs on the amplifier.

Because the crosstalk between channels on the MC300 is almost non existent, each channel can be used as a separate monophonic amplifier. An example would be one channel feeding background music to a given area, and the other channel used for paging in a different area.

MONOPHONIC BRIDGED OPERATION

The MC300 can be used as a single channel monophonic power amplifier in bridge configuration. The two amplifier channel outputs add together in series when used in mono (BRIDGED). The MODE switch connects the right channel inputs to both power amplifiers, with the phase of the left channel inverted to get bridge operation. The speaker connections, both common and hot, should be connected only to the left and right amplifier output impedance taps as shown. The common amplifier output connections are not used in MONO (BRIDGED) configuration. For example, the two 8 ohm outputs will add together to become 16 ohms.

To maintain the mono output of the amplifier in phase with the input signal in MONO (BRIDGED) operation, connect the hot speaker terminal to the RIGHT channel impedance tap and the common speaker terminal to the LEFT channel Impedance tap.

SPEAKER IMPEDANCE IN OHMS	AMPLIFIER OUTPUT CONNECTIONS
4 to 8	LEFT 2 and RIGHT 2 (4 ohm total)
8 to 16	LEFT 4 and RIGHT 4 (8 ohms total)
16 and up	LEFT 8 and RIGHT 8 (16 ohms total)

MAKE SURE THAT REAR PANEL MODE SWITCH IS SET TO MONO (BRIDGED) AND USE ONLY A RIGHT INPUT.

MONOPHONIC PARALLEL OPERATION

The MC300 also can be used as a single channel monophonic power amplifier in parallel configuration. The amplifier output taps are now connected in parallel and the impedances will be exactly half what is stated at the terminals.

Connect a cable from the speaker common terminal to either the LEFT OUTPUT COM terminal or the RIGHT OUTPUT COM terminal. (These terminals are wired together inside the amplifier.) connect the cable from the hot speaker terminal to the impedance output desired on either channel. Also wire across to the other channel identical impedance tap. In each case, the chosen outputs of each channel must be wired together.

SPEAKER IMPEDANCE IN OHMS	AMPLIFIER OUTPUTS
1 to 2	LEFT COM + RIGHT COM and LEFT 2 + RIGHT 2, (1 ohm)
2 to 4	LEFT COM + RIGHT COM and LEFT 4 + RIGHT 4, (2 ohms)
4 and up	LEFT COM + RIGHT COM and LEFT 8 + RIGHT 8, (4 ohms)

MAKE SURE THE REAR PANEL MODE SWITCH IS SET TO MONO (PARALLEL) AND USE ONLY A RIGHT INPUT. ALWAYS BE CERTAIN TO PLACE THE MODE SWITCH IN THE CORRECT POSITION FOR THE MODE OF OPERATION BEING USED.

HOW TO CONNECT OUTPUTS

HOW TO CONNECT AC POWER

The MC300 is designed to operate on 120 volts 50/60 Hz. Plug the AC power cord directly into a wall outlet or into an AC power control strip. Make certain that the AC power outlet used has at least 12 amperes capacity available. Turn on the MC300 power by turning the front panel POWER switch to on.

You can also turn the MC300 power on with a Power Control signal from an accessory McIntosh component or Control Center that includes a Power Control Out. Plug the MC300 power cable into a live AC outlet. Connect a data cable from the accessory component Power Control OUT to the MC300 Power Control IN and set the POWER switch to OFF-REMOTE. When the accessory component turns on, it will send a control signal to the amplifier causing it to turn on.

FUSE (10A-250V SLO BLO)

CAUTION: For continued protection against fire hazard, replace only with the same type 10A-250V SLO BLO fuse.

FRONT PANEL

POWER OUTPUT METERS

The MC300 power output meters respond 95% full scale to a single cycle of a 2.000Hz tone burst. Both voltage and current are electronically measured and fed to a special circuit that accelerates the pointer movement in the upward direction. When the meter pointer reaches its peak, it is time stretched to pause just long enough to be read, and then drops.

The upper scale on the meters is calibrated in average watts power, and the lower scale in decibels. The meter calibration marks reading from right to left, starting at the 300 watt indication, are as follows:

300	Watts Indicated	0.3	(Indicated)
120		0.12	
60		0.06	
30	(Indicated)	30	Milliwatts (Indicated)
12		12	
6		6	
3	(Indicated)	3	(Indicated)
1.2		1.2	
0.6		0.6	

Two additional calibration marks above 300 watts are on the meters. The first is 600 watts, (+3dB), and the second is 1200 watts, (+6dB). The power amplifier cannot produce a continuous 1200 watts of power, but can produce well beyond 300 watts on program peaks, especially into lower impedance speaker 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.

METER WATTS/HOLD

In the METER WATTS position, the meters respond to all the musical information being produced by the amplifier and read to an accuracy of at least 95% of the power output of either amplifier channel.

In the METER HOLD position, the meter pointer is locked to the highest power peak in

FRONT PANEL

a sequence of peaks. The meter is electronically held to this power level until another higher power peak passes through the amplifier. The meter pointer will then rise to the newer higher indication. If no further power peaks are reached, the meter pointer will very slowly return to its rest position or lower power level. The decay rate is approximately 6dB per minute.

POWER: OFF/REMOTE-ON

ON position turns the MC300 AC power on. OFF/REMOTE allows the MC300 AC power to be turned on by a DC Power Control signal from a McIntosh Control Center or similar compatible accessory, sent to the POWER CONTROL IN CONNECTOR.

The ON position turns on the MC300 as long as its power cord is connected to a live AC outlet.

POWER GUARD

The patented McIntosh POWER GUARD circuit prevents the MC300 from ever being driven into clipping. This protects you from distortion and possible speaker damage. The POWER GUARD LED near each meter will light whenever POWER GUARD is activated on either channel, and indicates that you are being protected.

REAR PANEL

POWER CONTROL: IN/OUT

The MC300 can be turned ON and OFF remotely by means of a DC POWER CONTROL signal from a compatible McIntosh Control Center or Power Amplifier. Connect a cable from the POWER CONTROL OUT on the accessory McIntosh unit, to the POWER CONTROL IN on the MC300. When the accessory unit is turned on, the Power Control signal will then turn on the MC300. The POWER CONTROL OUT on the MC300 will feed the same turn on control signal out, time delayed, to an additional McIntosh Power Amplifier or compatible accessory.

A POWER CONTROL cable uses single conductor shielded wire with 1/8" mini phone plugs on each end. Connections are to the sleeve (-) and tip (+) of each plug.

MODE SWITCH

Provides Stereo, MONO (Bridged) or MONO (Parallel) OPERATION.

LEFT LEVEL

Use the LEFT LEVEL control to adjust the output in the left channel to the desired listening level.

RIGHT LEVEL (MONO)

Use the RIGHT LEVEL control to adjust the output in the right channel to the desired listening level.

When the amplifier is connected for either bridged or parallel monophonic operation, the RIGHT LEVEL control is used to control the combined monophonic level of both channels.

FOR THE BEST SIGNAL TO NOISE RATIO WHEN USING McINTOSH PREAMPLIFIERS OR CONTROL CENTERS, TURN THE INPUT LEVEL CONTROL ON THE REAR PANEL OF THE AMPLIFIER TO THE 2.5V POSITION.

If your needs require more or less input sensitivity from the amplifier, turn the LEVEL controls up or down as needed.

BALANCED AND UNBALANCED INPUTS; SPEAKER OUTPUTS; FUSE

Refer to other sections of this manual for the proper connections and operation of the inputs and outputs.

SPECIFICATIONS

STEREO POWER OUTPUT

300 watts into 8, 4, or 2 ohm loads is the minimum sine wave continuous average power output per channel from 20Hz to 20,000Hz with both channels operating. The output RMS voltage is:

4.90 across 8 ohms

34.6 across 4 ohms

24.5 across 2 ohms

MONO-BRIDGE POWER OUTPUT

600 watts into a 16, 8, or 4 ohm load is the minimum sine wave continuous average power output from 20Hz to 20,000Hz. The output RMS voltage is:

98.0 across 16 ohms

69.3 across 8 ohms

49.0 across 4 ohms

MONO-PARALLEL POWER OUTPUT

600 watts into a 4, 2 or 1 ohm load is the minimum sine wave continuous average power output from 20Hz to 20,000Hz. The output RMS voltage is:

49.0 across 4 ohms

34.6 across 2 ohms

24.5 across 1 ohm

OUTPUT LOAD IMPEDANCE

STEREO

8, 4 or 2 ohms by connecting to the proper output terminals.

MONO

16, 8, 4, 2 or 1 ohms by connecting to proper output terminals.

TOTAL HARMONIC DISTORTION

STEREO

0.005% maximum harmonic distortion at any power level from 250 milliwatts to rated power per channel from 20Hz to 20.000Hz, both channels operating.

MONO

0.005% maximum harmonic distortion at any power level from 250 milliwatts to rated power from 20Hz to 20,000Hz.

INTERMODULATION DISTORTION

STEREO

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

MONO

0.005% maximum if instantaneous peak power output does not exceed twice the output rating for any combination of frequencies from 20Hz to 20,000Hz.

FREQUENCY RESPONSE

(at one watt output)

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

+0. -3.0dB from 10Hz to 100kHz

HUM AND NOISE (A-weighted)

105dB below rated output

IHF DYNAMIC HEADROOM

1.9dB

DAMPING FACTOR

Greater than 40

INPUT IMPEDANCE

20,000 ohms Unbalanced

40,000 ohms Balanced

INPUT SENSITIVITY

1.4 with LEVEL Controls at maximum;

2.5V sensitivity marked.

POWER REQUIREMENTS

120 volts, 50/60 Hz, 6 amperes US/CSA

DIMENSIONS

17-1/2" wide (44.5cm) by 7-1/16" high (17.9cm) by 19-3/4" deep (50.2cm), including connectors. Knob clearance required is 1-1/8" (2.9cm) in front of mounting panel.

FINISH

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

WEIGHT

79 lbs. (35.8 kg) net, 97 lbs. (44 kg) in shipping carton.

TECHNICAL DESCRIPTION

POWER GUARD

Power Guard, a unique feature of McIntosh amplifiers, assures that each channel of the MC300 will deliver full power free of clipping distortion. Clipping is caused when an amplifier is asked to produce more power output than its design is capable of delivering with low distortion. Amplifiers that are overdriven may deliver large quantities of power when they are clipping, but they may have more than 40% harmonic distortion. In this mode, the sound is grossly distorted and the extra energy content of the clipped signal will damage most loudspeakers. The McIntosh Power Guard circuit protects your ears and your speakers from this kind of damage.

The Power Guard circuit consists of a waveform comparator which monitors the wave shape of the amplifier input and output signals. Normally, there is no disparity between these signals and the comparator produces no output. When the amplifier is driven beyond its maximum power capacity, a difference will develop. If the disparity exceeds 0.3% (equivalent to 0.3% total harmonic distortion), the comparator output causes the amber Power Guard indicator to light. If there is a further increase in the disparity, the comparator output controls an electronic attenuator at the amplifier input to reduce the amplifier gain, thus holding the amplifier output to a low distortion value. Overdrive by 14dB is possible before the output distortion exceeds *2%.*

SENTRY MONITOR

All power transistors have limits for the maximum amount of power they can handle. The MC300 output transistors and power supply have been designed to allow very high current flow into properly matched load impedances. If, however, a short circuit or very low value of load impedance is applied to the output of the MC 300, destructive current levels could be reached if it was not controlled by the Sentry Monitor circuit. This circuit senses the dynamic operating time, voltage, and current of the amplifier output stage and controls the current flow confining it to nondestructive limits. Sentry Monitor does not limit the power output available from the amplifier.

THERMAL CONTROL

All power transistors have limits for the maximum amount of heat they can tolerate. The MC300 uses a highly efficient amplifying circuit which produces relatively little heat for the output power produced. The amplifier has 4 oversized heatsinks to dissipate transistor generated heat. Natural convection air flow is sufficient for cool operation. Should the cooling air be blocked or should the amplifier operating temperature become too high, thermal cutouts within the amplifier will turn off the power to the amplifier. When the amplifier has cooled, it will automatically turn on again.

TURN-ON DELAY

The MC300 has a turn-on delay circuit that delays amplifier operation for about 2 seconds after power turn-on. This prevents pops or thumps generated in other equipment from causing annoying noises or damaging your loudspeakers.

DIRECT CURRENT FAILURE PROTECTION

The autotransformer protects speakers from damage in the event of amplifier failure. Should a direct current component appear in the output, it is shunted by the autotransformer and DC cannot reach the speaker.

POWER LINE INRUSH PROTECTION

Turn-on inrush current is cushioned by thermistors in the power transformer primary

circuit. A soft start is achieved that eliminates component stress during turn-on.

CIRCUIT OPERATION

The audio input passes through the gain control to a preamplifier. The output amplifier is driven by the preamplifier.

The power output amplifier uses two stages of voltage amplification followed by three stages of current amplification. All stages are complementary balanced. Even number harmonics are canceled by the balanced circuits. This means that the amplifying stages have less total harmonic distortion and less negative feedback is required to achieve ultra low distortion.

The signal is fed to one input of the balanced differential stage. Feedback from the amplifier output is applied to the other input. The differential amplifiers drive a balanced cascode connected voltage amplifier stage. Current mirrors are also used to improve bandwidth and linearity.

The cascode voltage amplifier output feeds complementary Darlington connected driver transistors. These supply the signal to 10 complementary connected output transistors per channel. Ancillary components for Power Guard, Sentry Monitor, Power Output Meters and other protection circuits inter connect with the amplifier circuits. The power supply uses a massive power transformer, full wave bridge rectifiers, and large filter capacitors having 227 joules of energy storage. Four large heatsinks provide cooling for the 20 power output transistors.

The mechanical and electrical design of the MC300 is the result of the many years of engineering and manufacturing experience held by the staff at McIntosh. This "know how", the meticulous attention to design and production details, makes the MC300 one of the finest amplifiers ever produced by McIntosh Laboratory.

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