

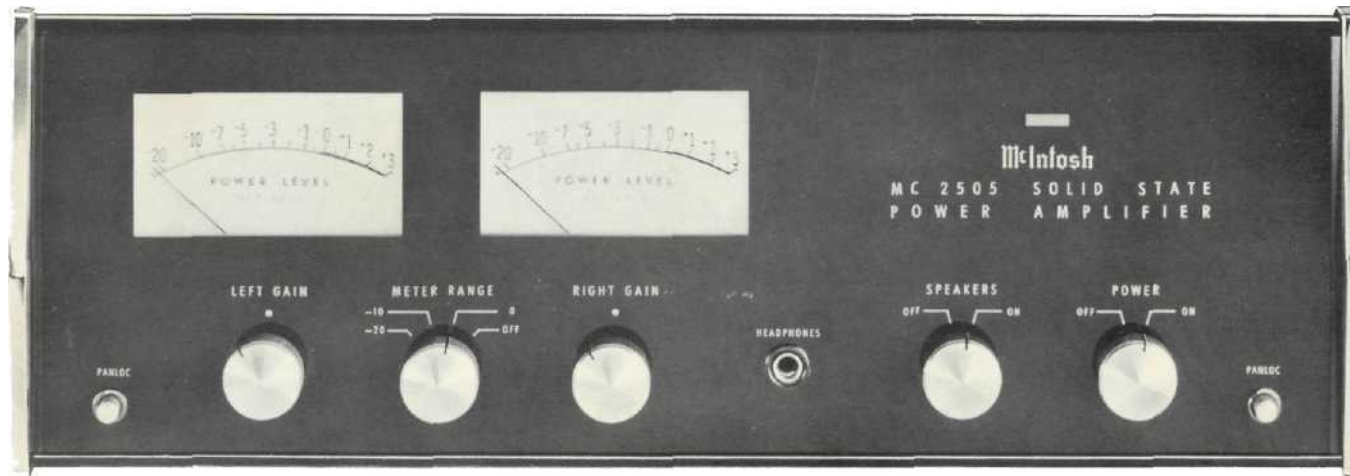
McIntosh

Owner's Manual

STEREO
POWER AMPLIFIER

MC2505

SOLID
STATE



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*McIntosh is the
Standard of Excellence because*

The McIntosh "will to perfection" requires that we probe constantly into the unknown to bring the performance of our electronic equipment closer to perfection than ever before. This requires a constant and relentless search for low noise, broad band conservative design with an ever lower distortion factor. This is not required of ordinary equipment of average designs. It is, for us, a costly but worthwhile scientific and engineering effort. Our continuing research benefits our customers with the almost complete lack of obsolescence and the most reliable equipment ever made. It also means the lowest long-range cost to you. Nearly all of the McIntosh equipment ever made is still useable, or in use, though it may have been made twenty years ago.

Thank You . . .

Your purchase of a McIntosh instrument shows that you are a careful discriminating buyer. One who is interested in quality performance, quality engineering, quality manufacturing, and long trouble-free equipment life. You can protect your investment by spending a few minutes reading this owner's manual.

When you bought a McIntosh, you bought countless hours of musical pleasure and superior performance. Enjoy it!

STEREO
POWER AMPLIFIER

MC2505

SOLID
STATE

GENERAL DESCRIPTION

The dramatic difference in the quality of music reproduced through a McIntosh instrument is due to low distortion. The distortion of your MC2505 is guaranteed to be less than 0.25% at any frequency from 20 Hz to 20 kHz with both channels operating at 50 watts RMS. Distortion is measured at full rated power output with both channels operating. At less than rated power, distortion becomes so small it can be measured only by the most sophisticated laboratory instruments. Only McIntosh gives you this kind of performance.

Your MC2505 passed more than 75 tests before it was ready for you. Each connection, wire, resistor, capacitor is checked and re-checked. All specifications are checked. McIntosh testing takes time. The extra investment in thorough testing assures you of greater musical enjoyment.

The performance of your McIntosh MC2505 is backed by a money back guarantee. Only McIntosh gives you a money back guarantee of performance. Your MC2505 must be capable of meeting its published specifications or you get a refund of your purchase price. McIntosh promises performance. We either meet our promise or you get your money back.

Your MC2505 can be protected by a free three year factory service contract. Take advantage of this service. Fill in the application card found in the owner's packet. The free three year factory service contract covers parts and labor. If anything goes wrong just bring your MC2505 to a factory service station, or return your MC2505 to McIntosh. All parts and labor necessary to repair your MC2505 will be supplied free of charge. Fill in the service contract application found in the owner's packet now.

TECHNICAL DESCRIPTION

A two stage preamplifier with three transistors in each channel increases the input voltage 16 dB.

There are 13 transistors in each power amplifier section. The two stage preamplifier is fed to a pair of matched transistors arranged as an emitter coupled amplifier with two inputs and one output. The signal from the preamplifier section connects to one of these inputs. Both AC and DC negative feedback are applied to the other input. This large quantity of feedback is used to reduce noise and distortion. The signal is then fed to a voltage amplifier. The voltage amplifier is followed by two driver transistors.

The output section is arranged as a series push-pull amplifier. The power transistors used in the output section of your MC2505 are selected for their high power dissipation capability, wide frequency response, and large "safe operating area." In addition, each power transistor is given four separate tests before it is put in your MC 2505. This additional testing makes sure your MC 2505 will deliver its rated power from 20 to 20 kHz with low distortion and complete reliability.

The power transistors are mounted on oversized anodized heat sinks. The heat sinks assure that under normal operation the transistors will operate at a low temperature. If temperatures increase due to a shorted speaker, or restricted ventilation, an automatic temperature sensing device turns off the MC2505. The device operates automatically at a preset temperature. The MC 2505 will turn on again when the temperature has returned to normal limits. This additional feature gives your MC2505 complete reliability under the most extreme operating conditions.

The output stages are matched to the load by the McIntosh autoformer. The McIntosh autoformer is carefully wound using McIntosh trifilar winding and interleaving techniques. Trifilar winding and interleaving gives the transformers exceptional bandwidth. The autoformers properly match the power transistors to 4, 8, and 16 ohm loads at all audio frequencies.

The use of the McIntosh designed trifilar autoformer makes the McIntosh solid state amplifiers the only amplifiers that deliver **FULL POWER AT ALL SPEAKER IMPEDANCES**. You have not been power penalized for your choice of loudspeakers when using the McIntosh MC2505.

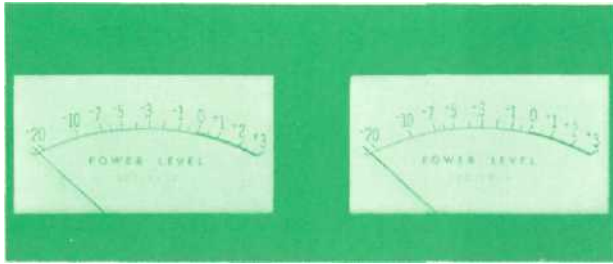
Another of the advantages of the autoformers is the 25 volt output for a constant voltage distribution system. With the MC2505 several sets of speakers can be operated independently throughout your home.

To further insure reliability a special power output **SENTRY MONITORING CIRCUIT** prevents failure of the power output transistors due to excessive mismatch of the output. When your MC2505 operates normally the **SENTRY MONITORING CIRCUIT** has no effect on signals passing through the power amplifier. If the power dissipation should rise above normal operation, the **SENTRY MONITORING CIRCUIT** restricts the drive to the output transistors. The **SENTRY MONITORING CIRCUIT** acts instantaneously for any input signal or load combination. This arrangement assures complete circuit reliability. Only McIntosh gives you this degree of protection.



POWER SUPPLY SECTION

There are three separate power supply sections. One positive and one negative high current supply is used for the output stages. The other positive supply is used for the driving amplifier stages. All supplies are full wave and use silicon rectifiers. Adequate filtering is used to assure an absolute minimum of hum. The power output stage filter capacitors have very high capacity, which allows full power output below 20 Hz. The power transformer is generous in size and runs cool, even under heavy use.



Ordinary meters lack the capability of indicating the short interval power in a sound wave. The mass of the meter movement is too great to respond to instantaneous changes in music program material. McIntosh superior engineering has developed new circuitry that permits the meters on the MC2505 to respond to the short interval power in a sound wave to an accuracy of 98% of the true value. This is another McIntosh development that represents a major step forward in the use of power level meters.

There are two circuits that give these meters the indicating capability of the short interval power in a sound wave. The first circuit is an accelerating circuit that compensates for the inertia characteristics of the meter movement. Because the short interval power fluctuation is so rapid, the eye might not perceive the instantaneous power reading. This caused the development of the second circuit, which is a "time stretching" circuit. The time stretching circuit delays the movement of the meter needle at peak reading for a few milliseconds.

how to use the

With the aid of the CBS test record STR100, the frequency response of your phono cartridge can be measured. The graph on page 5 shows the ideal RIAA curve using the CBS record STR100.

Follow these steps to plot the performance of your phonograph cartridge.

1. Set the "METER RANGE SWITCH" to the -20 position.
2. Play the 1000 Hz test tone recorded on the CBS Test Record STR100 on your phonograph.
3. Turn the "LEFT GAIN" control until the left meter indicates "0."
4. Turn the "RIGHT GAIN" control until the right meter indicates "0."
5. Write down the meter indication at each frequency as the record plays.
6. Transfer the readings by frequency to the graph.
7. The graph shows the ideal RIAA response curve using the CBS #STR100 test record. Compare your curve with the curve on the graph. A deviation of 3 dB from the ideal is acceptable. By making this check at regular intervals, (for instance, every 6 months) any deterioration in the cartridge or system will be quickly detected.

DYNAMIC PEAK LOCKING METERS

A tape recorder can be checked in the same fashion.

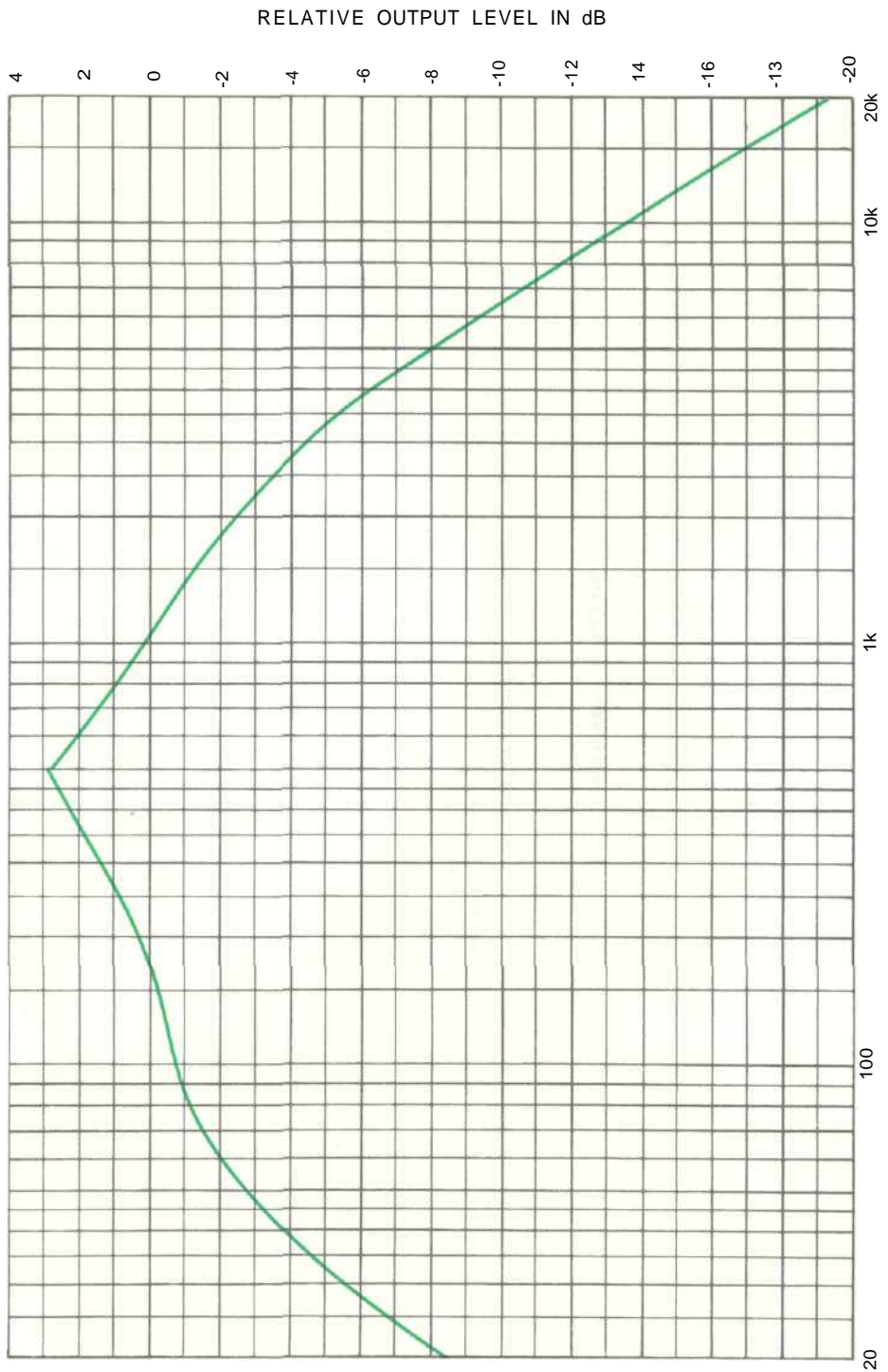
1. Use a standard frequency response tape as the signal source.
2. Complete all steps outlined for phono cartridges.
3. You now have a graph of the playback characteristics of your tape recorder.

To find the record characteristics of the tape recorder follow this procedure:

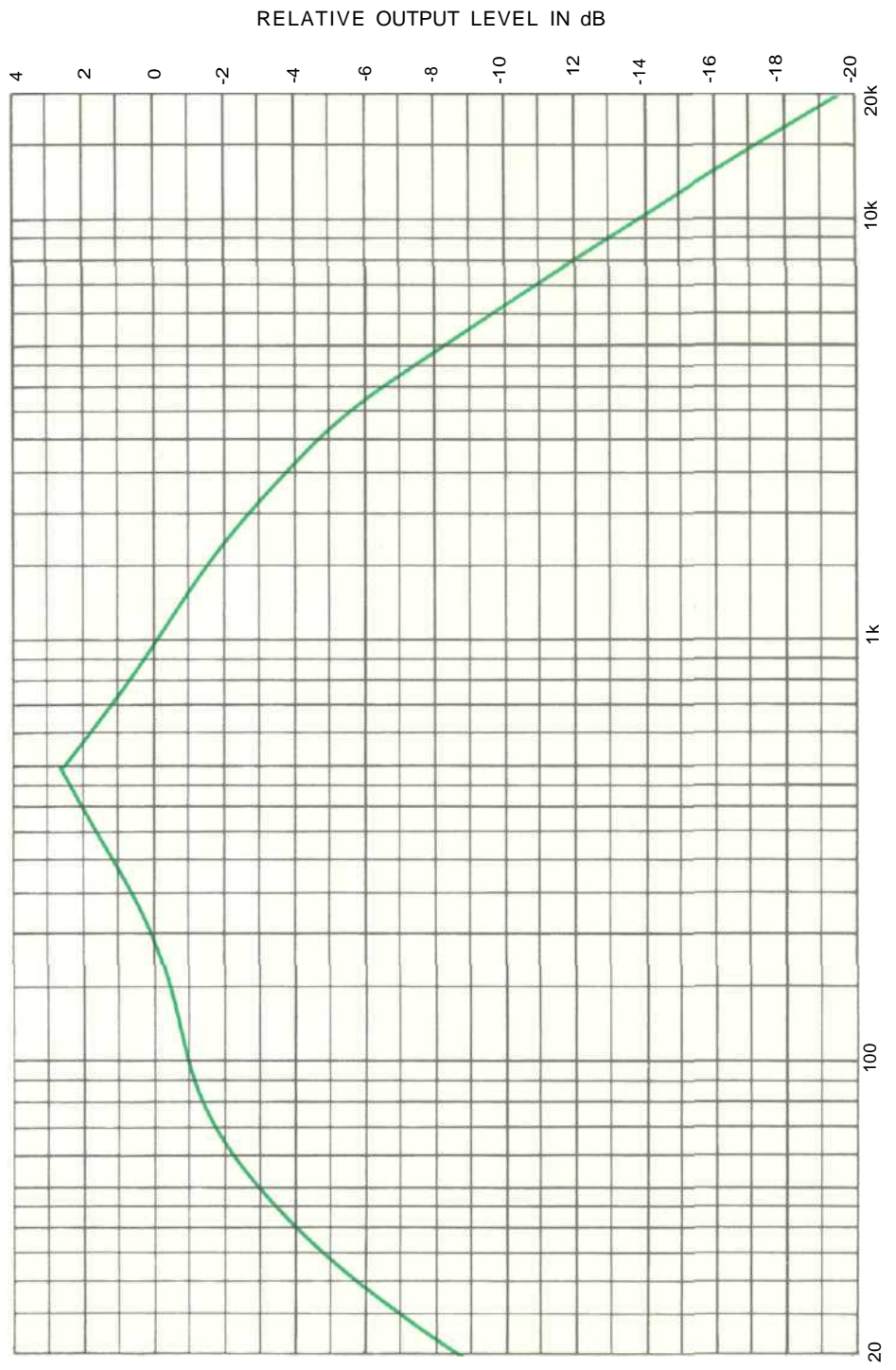
1. Record the CBS Test Record #STR100 on your tape recorder. Adjust the record volume only on the 1000 Hz signal for proper recording level. **DO NOT ADJUST THE RECORD VOLUME CONTROL DURING THE RECORDING.**
2. Play back the tape just recorded. Complete all steps outlined for tape playback characteristics.
3. A comparison of the two curves will give the recording characteristics of your tape recorder. A deviation of 3 dB is acceptable.

Similar checks can be made on all program sources in your stereo system. Follow the same general procedure for any program source for which a standard reference is available.

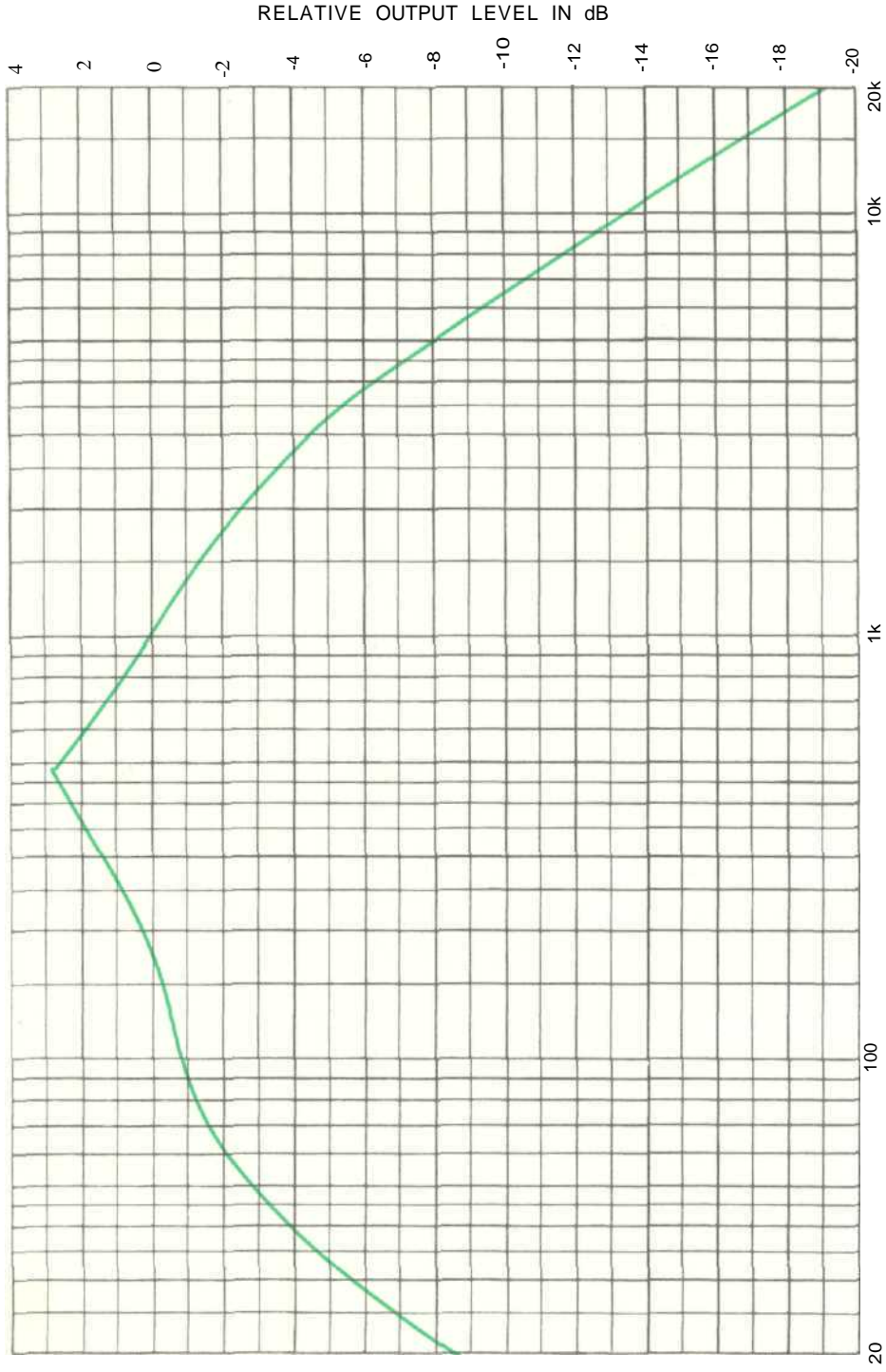
IDEAL RIAA SYSTEM RESPONSE USING CBS STR 100 TEST RECORD



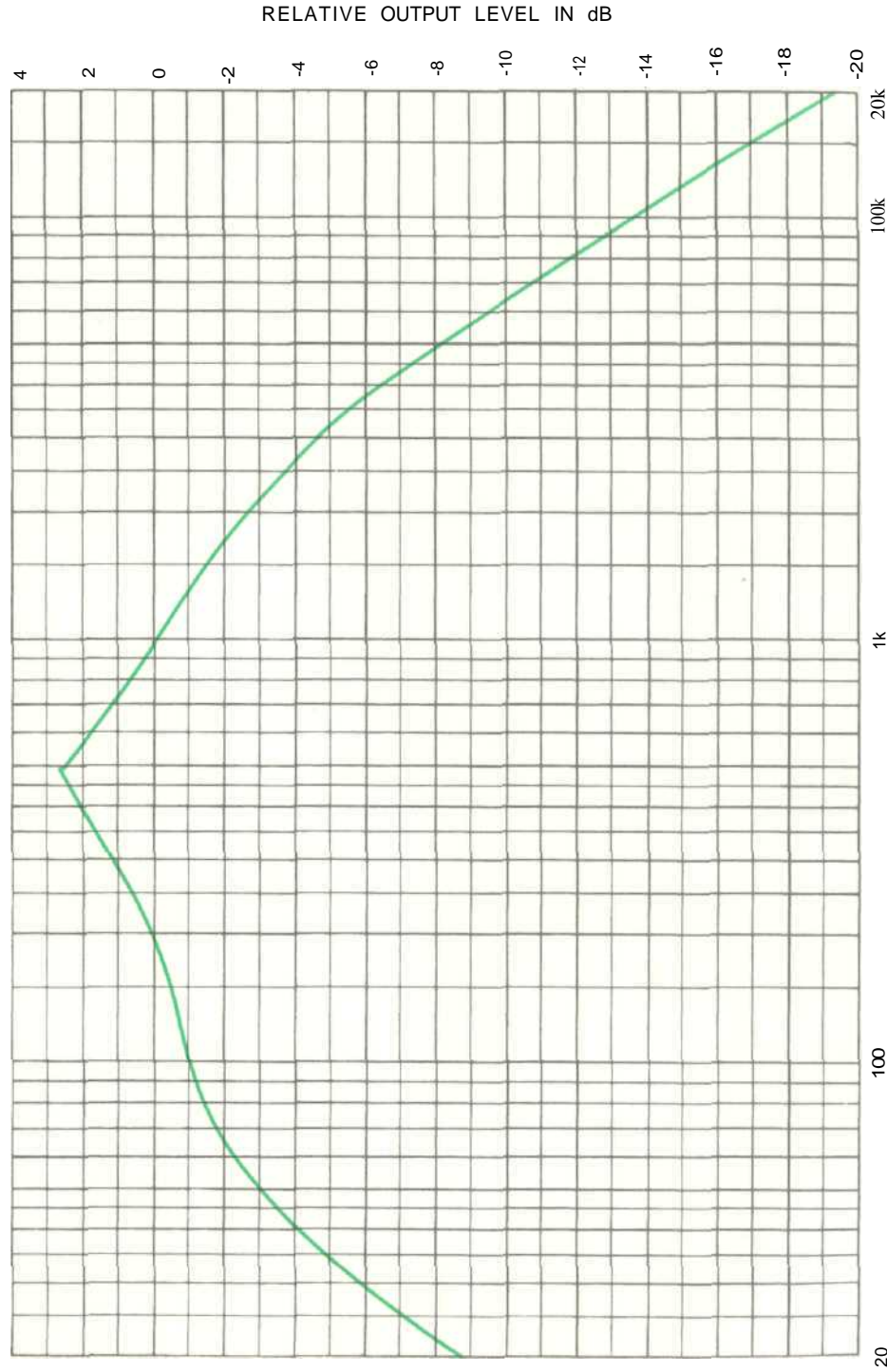
IDEAL RIAA SYSTEM RESPONSE USING CBS STR 100 TEST RECORD



IDEAL RIAA SYSTEM RESPONSE USING CBS STR 100 TEST RECORD

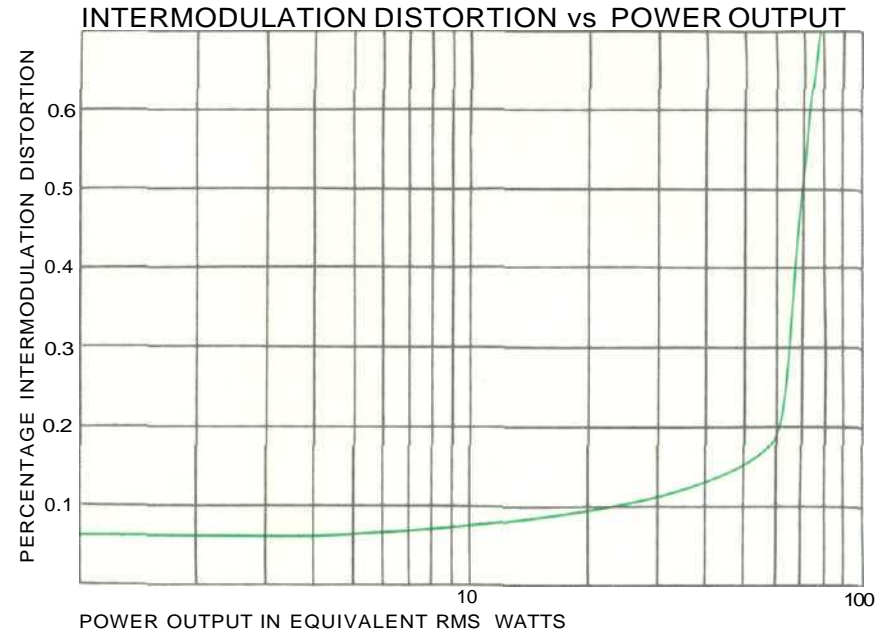
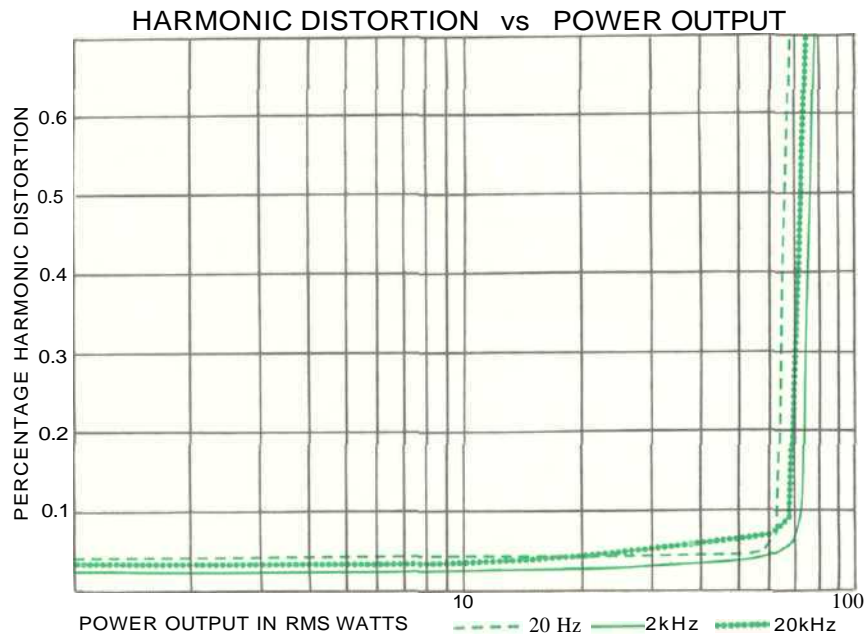
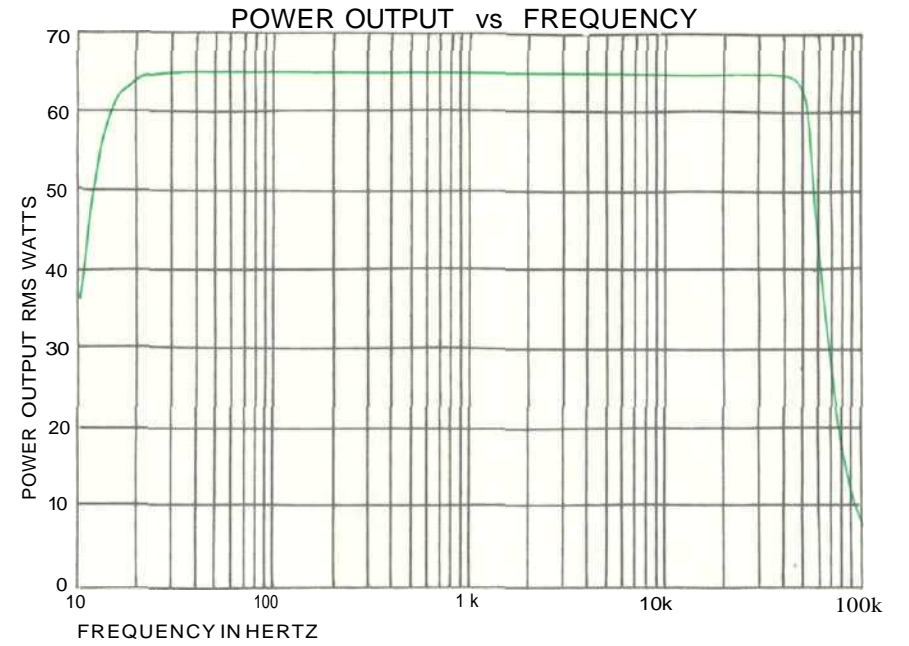


IDEAL RIAA SYSTEM RESPONSE USING CBS STR 100 TEST RECORD





TYPICAL PERFORMANCE DATA



SPECIFICATIONS

ELECTRICAL SPECIFICATIONS:

POWER OUTPUT:

STEREO— 50 RMS watts continuous per channel into 4, 8, or 16 ohms both channels operating.

HARMONIC DISTORTION:

STEREO—Less than 0.25% at 50 watts output from 20 Hz to 20 kHz both channels operating. Typical performance is less than 0.1% at rated power. Distortion decreases as output power is reduced.

INTERMODULATION DISTORTION:

STEREO—Less than 0.25% if instantaneous peak power output is 100 watts or less per channel with both channels operating for any combination of frequencies 20 Hz to 20 kHz.

FREQUENCY RANGE:

20 Hz to 29kHz +0, -0.1 dB at rated power.
15 Hz to 60 kHz +0, -0.5 dB at rated power.
10 Hz to 100 kHz +0, -3.0 dB at one-half of rated power.

NOISE AND HUM:

90 dB or more below rated output.

OUTPUT IMPEDANCE:

STEREO—4, 8, and 16 ohms

OUTPUT VOLTAGES:

25 volts STEREO

DAMPING FACTOR:

14 at 4 ohms output
27 at 8 ohms output
13 at 16 ohms output

INPUT IMPEDANCE:

200,000 ohms

INPUT SENSITIVITY:

0.5 volt. Level control provided for higher input voltage.

POWER REQUIREMENTS:

117 volts AC 50/60 Hz, 75 watts at zero signal output.
250 watts at rated output.

SEMICONDUCTOR COMPLEMENT:

26 silicon transistors.
27 silicon rectifiers and diodes.

MECHANICAL SPECIFICATIONS:

SIZE: 5-7/16 inches high, 16 inches wide, 13 inches deep.

CHASSIS: Chrome and black.

WEIGHT: 38 pounds net, 53 pounds in shipping carton.

SPECIAL FEATURES

The amplifier is completely stable when connected to any loudspeaker system or even to any reactive loads. The MC 2505 has special circuits to prevent damage by short circuit or open circuit of the output loads, or by any amount of output impedance mismatch.

Thermal cutouts are mounted on the output transistor heat sinks to provide protection in the event of inadequate ventilation.

IF YOU'RE IN A HURRY

POWER

OFF ON

Turns the amplifier on/off.

SPEAKER

OFF ON

Turns the speaker on/off.

HEADPHONE

To connect a set of low impedance stereo headphones.

METER RANGE

Adjust meter readings to power output level.



INSTALLATION

Adequate ventilation extends the trouble-free life of electronic instruments. It is generally found that each 10° centigrade (18° F) rise in temperature reduces the life of electrical insulation by one half. Adequate ventilation is an inexpensive and effective means of preventing insulation breakdown that results from unnecessarily high operating temperatures. The direct benefit of adequate ventilation is longer, trouble-free life.

The suggested minimum space for mounting the MC2505 is 14 inches long x 16½ inches wide x 6 inches high. Always allow for air flow by either ventilation holes or space next to the bottom of the amplifier and a means for the warm air escape at the top.

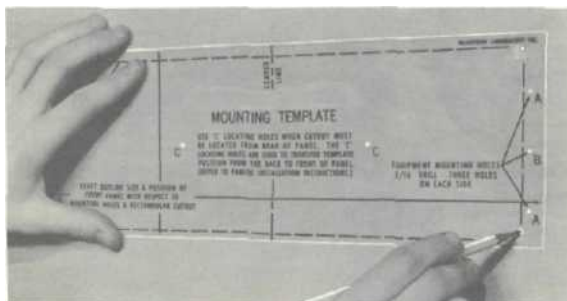
It is recommended that the MC2505 be mounted in a normal or horizontal position. However, with adequate ventilation the amplifier can be mounted in any position.

To prepare the MC2505 for installation remove the plastic protective covering. Turn the MC 2505 upside down so that it rests on its top on the shipping pallet. Remove the four plastic feet fastened to the bottom of the chassis.



Next place the mounting brackets, the parts bag and the mounting template for easy accessibility.

The professional mounting design eliminates the need for any shelf or bracket to support the MC2505. It is completely supported by its own mounting brackets.



Position the plastic mounting template over the area

of the cabinet panel to be cut out for installation.

The design of the mounting template allows you to position or locate the cutout from the front or rear of the panel to which the instrument is to be mounted.

If the cutout is to be located from the rear of the panel, the following steps will help you.

On the back of the cabinet panel, scribe a vertical centerline through the exact center of the area in which the cutout is to be made.

Place the template against the back of the panel and match the template centerline with the centerline on the cabinet panel.

Make sure that there is at least ¼ inch clearance between the bottom of the dashed line of the cutout area on the template and any shelf or brace below the proposed cutout.

Mark the two locating holes ("C" holes on the mounting template).

Drill the two locating holes. Be certain the drill is perpendicular to the panel.

Now position the template on the front of the panel by aligning the "C" locating holes on the template with the drill holes.

With the template in place against the cabinet panel, mark the "A" and "B" drill holes and the four small holes that identify corners of the cutout. Join the corner marks with a pencil. The edge of the template can be used as a straight edge.

IMPORTANT: DRILL THE 6 HOLES BEFORE MAKING THE CUTOUT

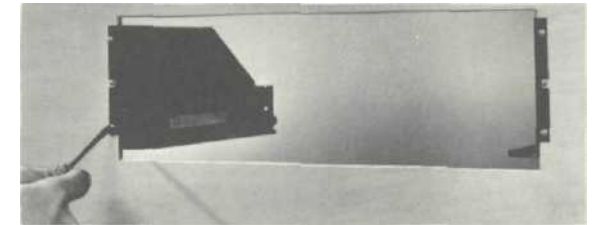
Accurately drill the three holes on each side of the cutout area with a $\frac{3}{16}$ inch drill.

With the saw on the **INSIDE OF THE PENCIL LINES** carefully cut out the rectangular opening.



Secure the mounting strips to the rear of the cabinet panel using two screws from the hardware package.

Insert the screws in the center holes of the cabinet panel ("B" holes on the template) and tighten. The screw head should pull into the wood slightly. (Use two ¾ inch long screws for panels under ½ inch, or two 1¼ inch long screws for panels ½ inch thick and larger.)



Attach the mounting brackets to the cabinet panel using four screws.

Place the template over the mounting screws. The mounting screws should be centered in the "A" and "B" holes on the template. The sides of the mounting brackets should match the vertical dash lines on the template. If necessary, loosen the screws and push the brackets into alignment and retighten.

Insert the power cord through the opening. Carefully slide the MC 2505 into the opening so the rails on the bottom of the equipment slide in the track of the mounting brackets. Continue to slide the instrument in until the front panel is against the cabinet panel.

At the bottom front corners of the PANLOC instruments are the PANLOC buttons.

Depressing the PANLOC buttons will lock the instrument firmly in the installation.

Depressing the PANLOC buttons a second time (as with a ball-point pen) will release the instrument. You can then slide the instrument forward to the inspection-adjustment position.

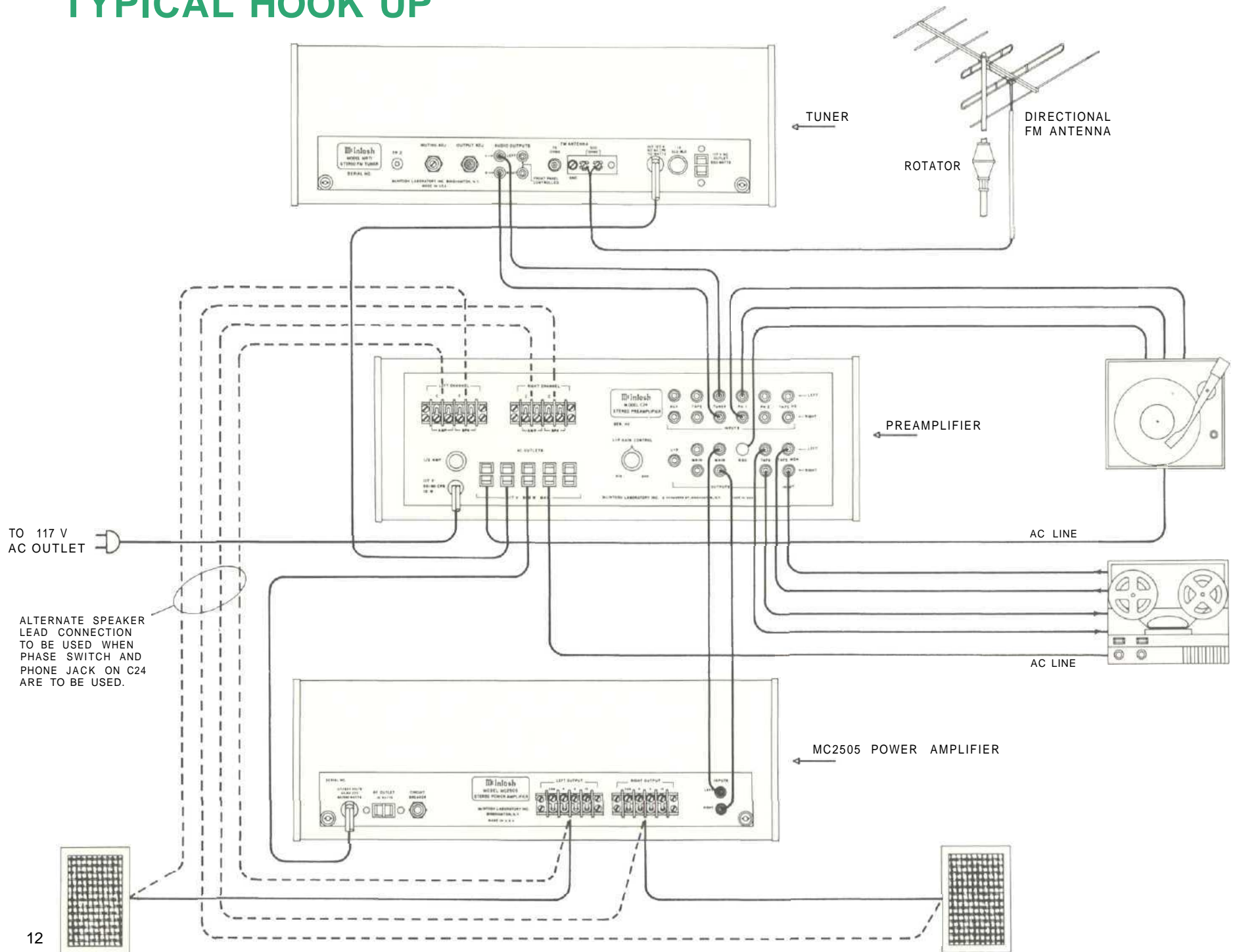
Depressing the inspection-adjustment position latches will allow the instrument to be slid completely out of the installation.

VERTICAL INSTALLATION

In the hardware packet are two helical springs. Fasten the springs to the small flanges at the rear of the PANLOC brackets. The flange has a notch and a hole to mount the spring. The springs assist in the removal of vertically mounted PANLOC equipment.

DO NOT USE THE SPRINGS ON HORIZONTALLY MOUNTED EQUIPMENT.

TYPICAL HOOK UP



CONNECTING THE MC2505



INPUT-STEREO

The shielded cable from the left output of the McIntosh preamplifier is plugged into the left jack. The shielded cable from the right output of the McIntosh preamplifier is plugged into the right jack.

SPEAKERS

Speakers are connected at the barrier strips marked OUTPUT on the back panel of the amplifier. Use lamp cord, bell wire, or wire with similar type of insulation to connect the speakers to the amplifier. For the normally short distances of under 50 feet between the amplifier and speaker, #18 wire or larger can be used. For distances over 50 feet between the amplifier and speaker use larger wire.

The loudspeaker impedance is usually identified on the loudspeaker itself. Connect one of the leads from the left loudspeaker to the screw marked COM on the LEFT OUTPUT barrier strip. Connect the other lead from the left loudspeaker to the screw marked with the number corresponding to the speaker impedance on the LEFT OUTPUT barrier strip. Connect one of the leads from the right loudspeaker to the screw marked COM on the RIGHT OUTPUT barrier strip. Connect the other lead from the right loudspeaker to the screw marked with the number corresponding to the speaker impedance on the RIGHT OUTPUT barrier strip.

The only adverse effect on the operation of a McIntosh amplifier when it is improperly matched is a reduction in the amount of distortion-free power available to the loudspeaker. Close impedance matching is desirable for maximum distortion-free power.

SPEAKER CONNECTIONS

Use this table to determine proper speaker connection:

If the speaker impedance is between:	Connect the speaker leads between COM and:
3.2 to 6.5 ohms	4 ohms
6.5 to 13 ohms	8 ohms
13 to 26 ohms	16 ohms

Connect as follows:

If the speaker impedance is:	Connect one left speaker to screw LEFT-COM and other to:	Connect one right speaker lead to the screw marked RIGHT-COM and the other to:
4 ohms	LEFT-4	RIGHT-4
8 ohms	LEFT-8	RIGHT-8
16 ohms	LEFT-16	RIGHT-16

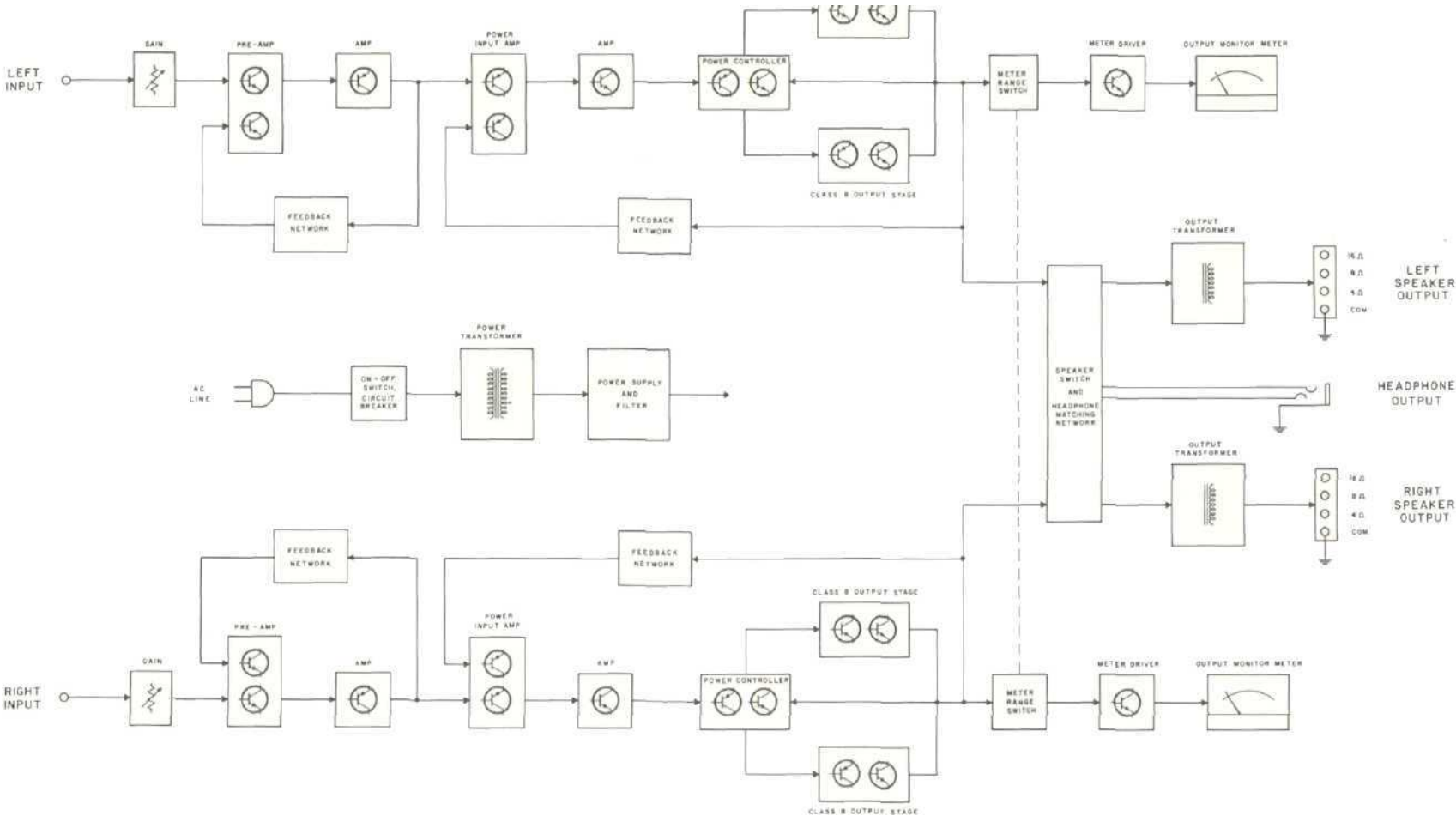
**DO NOT CONNECT
A MONOPHONIC LOUDSPEAKER
TO BOTH TERMINALS.
THE LOUDSPEAKER CAN BE DAMAGED.**

For 25 volt line operation connect one of the left leads to the screw marked COM on the LEFT OUTPUT barrier strip. The other left lead is connected to the screw marked 16 on the LEFT OUTPUT barrier strip. Connect the right leads in the same manner on the RIGHT OUTPUT barrier strip.

AC POWER:

The MC2505 operates on 117 to 130 volt, 50/60 Hz. The amplifier will be turned on and off if its power cord is plugged in one of the auxiliary AC outlets on the program source.

BLOCK DIAGRAM



OPERATING THE MC 2505 STEREO AMPLIFIER



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

RIGHT GAIN Use the right gain control to adjust the volume in the right channel to the desired listening level. Turn the control clockwise to increase the volume.

METER RANGE The meter switch has four positions. The first position is off. With the switch in the OFF position there is no indication on the meters.

-20: In this position of the meter range switch, the amplifier will deliver $\frac{1}{4}$ watt (250 milliwatts) when the meter indicates "0." With a meter indication or -3 dB, the amplifier delivers $\frac{1}{2}$ watt (125 milliwatts) and a -10 dB meter indication the amplifier delivers 25 milliwatts.

-10: In this position of the meter range switch, the amplifier will deliver $2\frac{1}{2}$ watts output when the meter indicates "0." With a meter indication of -3 dB, the amplifier delivers $1\frac{1}{4}$ watts output and a -10 dB meter indication, the amplifier delivers $\frac{1}{4}$ watts.

—0: In this position of the meter range switch, the amplifier will deliver 50 watts when the meter indicates $+3$ dB, with meter indication of "0," the amplifier delivers 25 watts, with a meter indi-

cation of -3 dB, the amplifier delivers $12\frac{1}{2}$ watts; and a meter indication of -10 dB, the amplifier delivers $2\frac{1}{2}$ watts.

HEADPHONE Use the jack for low impedance stereo headphones. Any headphones with 4, 8, 16 ohms may be used with this jack. The headphone jack is on at all times.

SPEAKERS OFF: The loudspeakers are turned off when the SPEAKER switch is in the OFF position. You can listen to headphones in private. THIS SWITCH MUST BE IN THE "ON" POSITION TO HEAR MUSIC FROM THE LOUD-SPEAKERS.

ON: Music will be heard through the loudspeakers. Use this as the normal listening position.

POWER The power switch turns the MC 2505 on or off. The switch does not control the power outlet on the back panel. If you wish to control the operation of the on/off switch from a preamplifier control center leave the switch in the ON position. In this case be sure to plug the AC cord of the MC 2505 into the controlled outlets on the rear of the preamplifier control center.

OFF: In the OFF position the amplifier is turned off.

Your MC2505 stereo power amplifier will give you many years of pleasant and satisfactory performance. If you have any questions concerning operation or maintenance please contact the dealer from whom you purchased this instrument or: —

CUSTOMER SERVICE

McIntosh Laboratory Inc.
2 Chambers Street
Binghamton, N. Y. 13903
Our telephone number is
607-723-3512

GUARANTEE

McIntosh Laboratory Incorporated guarantees this equipment to be capable of performance as advertised. We also guarantee the mechanical and electrical workmanship and components of this equipment to be free of defects for a period of 90 days from date of purchase. This guarantee does not extend to components damaged by improper use nor does it extend to transportation to and from the factory.

3 YEAR FACTORY SERVICE CONTRACT

An application for a FREE 3 YEAR FACTORY SERVICE CONTRACT is included in the pack with this manual. The FREE 3 YEAR FACTORY SERVICE CONTRACT will be issued by McIntosh Laboratory upon receipt of the completely filled out application form. The terms of the contract are:

1. Transportation charges are excluded.
2. This agreement is given to the original purchaser only and is not transferable.
3. The application for the contract must be filled out completely.
4. If the instrument has been modified or damaged by unauthorized repair the contract will be cancelled.
5. To receive free service, the contract must be presented to the factory authorized service agency, when the equipment is presented for repair.

If the application is not received at McIntosh Laboratory, only the service offered under the standard 90 day guarantee will apply on this equipment.

McIntosh

MC2505

**TAKE ADVANTAGE OF 3 YEARS OF FREE FACTORY
SERVICE BY FILLING IN THE APPLICATION NOW**

McIntosh

**McINTOSH LABORATORY INC.
2 CHAMBERS ST., BINGHAMTON, N. Y. 13903
607-723-3512**

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