CARVER

Powerful · Musical · Accurate

MODEL M-1.0t

OWNER'S MANUAL

SPECIFICATIONS

Power Output:	200 watts RMS per channel into 8 ohms from 20Hz to 20kHz with no more than 0.15% total harmonic distortion.
Power at Clipping:	350 watts RMS per channel into 8 ohms at 1kHz. 500 watts RMS per channel into 4 ohms at 1kHz. 1000 watts RMS into 8 ohms single channel.
Noise:	Greater than 100dB down IHF A weighted. Harmonically related commutation noise is equal to or less than non-linear distortion components, IHF A weighted.
Intermodulation Distortion:	0.1% SMPTE
Transient Intermodulation Distortion:	Unmeasurable
Frequency Bandwidth:	+0 -3dB 10Hz - 100kHz at 1 watt.
Slew factor:	Greater than 200
Display Tracking:	± 1 dB
Display Ballistics:	Peak responding, 1 millisecond attack, 1 second decay.
Input Impedance:	100k ohms.

INTRODUCTION

Thank you for choosing the Carver Magnetic Field Amplifier. We are particularly proud of this instrument and would like you to know why.

Your Magnetic Field amplifier is a superb performer. Judged against conventional amplifier standards, the M-1.0t is second to none; its sound quality is smooth, sweet and absolutely accurate. It can deliver more than 350 watts RMS per channel into an 8 ohm loudspeaker or **1000 watts** into a single mono loudspeaker! Closed-loop frequency response extends from below 1Hz to beyond 100,000 Hz.

Judged by the standards of its new technology, the M-1.0t stands in a class by itself. Most obvious is its compact size and weight. The magnetic field technology that makes this possible yields performance advantages that go far beyond that of conventional amplifiers.

The M-1.0t is remarkably efficient; considerably more efficient than conventional amplifiers. Its power supply can momentarily "assign" power as required: Unused power from one channel is available to the other by as much as 200 watts.

The M-1.0t can operate safely into any speaker impedance down to 2 ohms without requiring fan-cooling.

PRIOR TO INSTALLATION

Carefully remove the M-1.0t from its packing. It is most important to save the carton and all packing materials for moving or shipping the unit for servicing.

Make a note of the serial number which is located on the back of the M-1.0t. Record it in the space provided here for convenient reference. You will need to refer to this number in the event you require service or if it is stolen. 703000 67

INSTALLATION

The M-1.0t should be located on a smooth surface where it is protected from excessive heat, direct sunlight or moisture. All connections should be made before plugging in its AC power cord.

For normal two channel stereo operation refer to the diagram on the back panel of the amplifier. Speaker connections are made by stripping only ¼" of insulation off each conductor and twisting the strands tightly before inserting in the correct terminals. Make all connections firmly.

It is imperative to use good quality speaker wire. While 22-gauge zip cord can be used, 18-gauge lamp cord is recommended. For runs exceeding 15-20 feet even heavier wire will prevent power loss.

PHASING

Correct phasing is essential to assure that left and right speakers are working in unison rather than opposing each other. Each speaker has red positive (+) and black negative (–) connections. Each should be connected the same way to the M-1.0t. Some wire may use silver and copper colored wires for the conductor.

To audibly check phasing, wait until after you've completed all the hook up and operating instructions. At that time, you may play music rich in bass frequencies and switch between mono and stereo on your preamp. When you are standing midway between the speakers you can identify an out of phase hookup by a weakening of bass when mono is selected. If phasing is correct, the bass is unchanged. To correct, simply reverse the leads for **one** speaker.

Notice

Do not connect any of the speaker terminals from the M-1.0t to each other — either at the amplifier or at the loudspeaker. Make certain no stray strands of exposed wire are touching between the terminals.

MONO HOOKUP

The M-1.0t can be used as an immensely powerful single channel amplifier without use of any special bridging adaptor. Again, refer to the back panel illustration. You will need to feed only the left speaker input jack and switch the Bridging switch to the "bridged mono" position. See back panel instructions for speaker connection. The speaker leads must be connected to the outer terminals only. The two inner terminals are left unconnected. The (+) wire goes to the red (non-inverting), the (-) wire to the black (inverting). The resulting output power is 1000 watts RMS into 8 ohms.

POWER

The M-1.0t is designed to be connected to the convenience

outlet on your preamp. If required, use only a heavy duty extension cord to minimize power loss.

Do not switch Power On and Off with loud music playing. Accessory outlets should be rated at no less than 500W for music applications.

OPERATION

Before plugging in the AC line and turning on Power, double check input and speaker connections. Never change any connections with the AC cord of the M-1.0t plugged in. The resulting transient may blow a fuse or may permanently damage loudspeakers.

POWER LEVEL METERS

The two power meters allow the power output of the left and right channels to be monitored. The power output level is indicated on each meter for each channel. The gradations of the scale are based on an 8-ohm load. When the unit is being used as a single channel amplifier, the correct total power output will be four times that indicated by each meter. When overload

occurs, the yellow top lights will flash. Momentary overload (clipping) is just audible, and under normal use, some action of the yellow lights is permissable. The yellow overload lights are strapped together so overload of either channel will cause both yellow lights to flash.

FUSES

The main fuse is selected to protect the M-1.0t from damage without sacrificing its ability to recreate dynamic range. If the fuse blows, investigate, then replace only with the original value.

Very few loudspeakers can handle the full power of the M-1.0t for more than a brief time period, such as a musical crescendo. Yet, its unclipped, undistorted output is less hazardous than the waveform of a smaller amplifier's clipped output. We strongly recommend separate fusing as per the speaker manufacturer's recommendations. Consult your dealer. Carver Corporation cannot be responsible for damage to loudspeakers connected to the M-1.0t.

OPERATING TEMPERATURE

Under normal conditions your M-1.0t operates with cool efficiency, with huge reserves for voltage and power dynamic headroom. However, even though it is extremely efficient, the M-1.0t will still generate some heat when called upon to produce extremely high power.

Under sustained high power operation, it is normal for this small chassis to dissipate internally generated heat and may be quite warm to the touch. This will not harm the internal components because they are all rated for safe operation under far more extreme ranges than they encounter in the M-1.0t.

Nevertheless, you must provide good ventilation around and beneath the M-1.0t so air can enter underneath and exit out its top, back and sides. Avoid placing on a pile carpet that can impede air flow.

CARE OF THE M-1.0t

Never short circuit the output terminals for the M-1.0t. When connecting the speakers, avoid speaker wires touching at the terminals on the amp or on the speaker.

Protect your amplifier from moisture and excessive dust.

Avoid dropping your amplifier.

Never replace fuse with one other than the specified rating.

The anodized front panel may be cleaned with soft cloth and diluted ammonia to remove fingerprints and film buildup. Never use detergents or abrasives.

If you suspect a problem, try some simple troubleshooting first. Frequently, a problem lies elsewhere in the system or even in the hookup cables. If one channel for the M-1.0t does not respond, turn Off the power and reverse the input cords. If the other channel is inoperative, then you know the problem is not in the M-1.0t. Check speaker hookups.

REPAIR

If the problem still exists contact your Carver Corporation dealer or the factory. We may suggest some further troubleshooting hints. If the amplifier does require service, bring it to your dealer in its original carton. If you must return it directly to us, call or write to advise us before shipping. Refer to your Carver Corporation Warranty for details.

In no case should anyone other than the factory or its designated service station disassemble or attempt repairs to the

M-1.0t. We want to inspect for cause and to assure proper future operation.

PROTECTION MECHANISMS

This unit incorporates a main fuse muting system in order to protect the loud speakers which have been connected to the unit and the unit itself. For further protection, the following additional systems have been included.

HEAT SINK ABNORMALLY HIGH TEMPERATURE DETECTION CIRCUIT

This unit employs fin heat sinks in order to efficiently dissipate the heat generated by the power transistors. Under normal conditions of use, no problems are posed but when the unit is used in a poorly ventilated location or in a position exposed to direct sunlight and high power output, the heat may not be sufficiently dissipated and the temperature may arise abnormally. In cases like this, the protection circuit will be activated once the temperature of the heat sinks rises to more than 100° degrees C.

OVERCURRENT PROTECTION CIRCUIT

Damaging overcurrent may flow through the power transistors when the terminals of the speaker system or this unit's speaker terminals are shorted. If such a circuit occurs, the mute is tripped, protecting both the amplifier and the speakers.

DC DETECTION CIRCUIT

This circuit is activated when DC components are applied to the input, amplified and made to appear at the output or when one of the elements inside the amplifier malfunctions and DC components appear in the output. What happens is that the mute is tripped and the unit is shut down. This circuit is activated when a DC voltage of more than ± 4.5V is detected.

SPECIAL NOTE

As with any powerful amplifier, avoid placing the unit too close to other high sensitivity electronic instruments in order to prevent unwanted hum pickup. At least three feet is adequate for most installations.

TECHNICAL INFORMATION-BENCH TESTING

The Carver M-1.0t Magnetic Field Amplifier utilizes technology that requires test procedures markedly different than for conventional amplifiers. Failure to observe these differences may abuse the amplifier and result in measurement error. The following are the differences:

1. The input AC line **current** is in quadrature phase with the input AC line **voltage**. The input power is thus the product of the **in phase** voltage component and **in phase** current component.

   When input current begins to flow, the line voltage will drop, causing the "input" AC waveform to distort. Accurate measurement of the M-1.0t depends on a sufficiently "stiff" AC supply. The 60Hz AC line distortion must be below I.H.F. specification.

2. THD measurements must separate the non-linear distortion products from the thermal noise and commutation noise products of the M-1.0t power supply. At low levels, a spectrum analyzer must be used because a standard THD instrument cannot distinguish between distortion products and noise.

At high levels, a phase meter must be used at the output of the conventional THD instrument. This is to account for cummutation noise products that are harmonically related to the non-linear distortion components, but are in quadrature phase with them. Without the phase meter, small but observable measurement will result.

An appropriate alternative is to use an IHF "A" weighting network at the input to the standard THD instrument.

WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE. TO AVOID ELECTRICAL SHOCK, DO NOT OPEN CHASSIS. NO USER-SERVICEABLE PARTS INSIDE. REFER ALL SERVICING TO QUALIFIED PERSONNEL.

CAUTION:

Read and follow all safety and operating instructions.

CARVER CORPORATION LIMITED WARRANTY

NOTE: The following warranty is exclusive to the United States only. Please see your Carver dealer or distributor for the correct warranty information in your area or locale.

Carver Corporation is proud of its products which have been built with care using advance technology and premium parts. Your unit has been crafted to perform properly for many years. Carver Corporation offers to you, the owner of a new Carver product, the following limited warranty:

Carver Corporation warrants this product to be free from defective parts and workmanship for a period of three (3) years from the date of original retail purchase. In the event of a failure due to a defect in part or workmanship during the three (3) year period, the liability of Carver Corporation shall be limited to the repair or replacement, at the option of Carver Corporation, of any defective part.

This limited warranty does not extend to: (1) damage caused by shipment; (2) damage caused by accident, misuse, abuse or operation contrary to the instructions in the Carver Corporation owner's manual; (3) units on which the serial number has been defaced, modified or removed; (4) damage resulting from modification or attempted repair by any person other than authorized by Carver Corporation.

The Carver Corporation Limited Warranty extends to the original owner or subsequent owner(s) during the three (3) year warranty period so long as the original dated purchase receipt is presented whenever warranty service is required.

If your Carver Corporation product ever requires service, write to Carver Corporation (Attention: Customer Service Department), P.O. Box 1237, 20121- 48 Avenue West, Lynnwood, WA 98046 or call the Customer Service Department directly at (206) 775-6245. You will be directed to an Authorized Carver Corporation Service Station or receive instructions to ship the unit to the factory. Please save the original shipping carton and packing materials in case shipping is required. Please do not ship Parcel Post. Include a complete description of the problem, the associated components and connections, and a copy of the purchase receipt. Initial shipping costs are not paid by Carver Corporation; return shipping costs will be pre-paid if repairs were covered by the scope of this Warranty.

ALL WARRANTIES, EXPRESS OR IMPLIED, FOR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE THREE (3) YEAR LENGTH OF THIS WARRANTY, UNLESS OTHERWISE PROVIDED BY STATE LAW. IN NO EVENT SHALL CARVER CORPORATION BE LIABLE FOR PROPERTY OR ANY OTHER INCIDENTAL OR

CONSEQUENTIAL DAMAGES WHICH MAY RESULT FROM THE FAILURE OF THIS PRODUCT.
SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS AND/OR DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL AND/OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

We suggest that you attach your purchase receipt to this Warranty and keep both documents in a safe place. Thank you for your choice of a Carver Corporation product.

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