



# MANTIS SERIES AMPLIFIERS

## Operations Manual

For

Mantis 89 / Mantis Jr models

**Fuchs Audio Technology®**

407 Getty Ave, Clifton, NJ 07015  
(973) 772-4420 (fax) 973-772-4460

Website: [www.fuchsaudio.com](http://www.fuchsaudio.com)

Email: [info@fuchsaudio.com](mailto:info@fuchsaudio.com)



®

## **A Note from Andy,**

First of all, *Thank You* for purchasing a Fuchs Audio Technology™ amplifier!

Due to player demand and customer feedback, Fuchs® developed the popular Casino series amps into a new series of amps, the Fuchs® Mantis 89®. The Mantis 89 is built to deliver killer British M-style tones at a terrific price with high end features and tone that exceeds your expectations. And like all Fuchs® amps and pedals, each Mantis 89® amplifier is precision crafted by the team at Fuchs Audio to the same high standards of excellence found in all Fuchs® products, regardless of price. With over two decades experience in the service, manufacturing, and design of tube audio/music equipment, we at Fuchs Audio are extremely proud of the quality and tremendous musicality of this new series.

*Please read this manual carefully.* Although these amps were created to be simple amplifiers to learn and operate, they will perform to its maximum by your full understanding of the contents of this manual.

Feel free to call or e-mail us (we love emails!) with comments & questions about your amp, or just to find out what's new here at Fuchs Audio.

Lastly, I recommend checking out our website: [www.fuchsaudio.com](http://www.fuchsaudio.com), for product/userupdates, cool links and other info benefiting our customers.

Welcome to the Fuchs family,

**Andy Fuchs**

President

**Fuchs Audio Technology LLC** ®

***Fuchs Audio Technology***

407 Getty Ave, Clifton, NJ 07011

(973) 772-4420 (fax) 973-772-4460

Website: [www.fuchsaudiotechnology.com](http://www.fuchsaudiotechnology.com)

Email: [info@fuchsaudiotechnology.com](mailto:info@fuchsaudiotechnology.com)

("Fuchs Audio Technology" & all product names are registered trademarks of Fuchs Audio Technology)



®

## ***Table of Contents (by section)***

- 1) Introduction to the Fuchs Audio Casino series amplifiers
- 2) ***Please Read before powering up your amp***
- 3) Diagrams- FRONT/REAR panels, Tube bias diagram
- 4) Front Panel Controls, Inputs & Functions
- 5) Rear Panel Controls, Inputs/Outputs
- 6) Biasing The Amplifier Power Tubes, Warnings and Technical Information
- 7) Warranty/repair information & mail-in warranty form

## 1. INTRODUCTION TO THE FUCHS AUDIO MANTIS 89® SERIES™ AMPLIFIERS

Having become one of Fuchs Audio Technology's bestselling amplifiers, the Mantis 89® Series series™ brings the premium build quality and breathtaking tones people expect of Fuchs products into an affordable price range. The Mantis 89® Series are based on a three 12AX7 preamp stage, and each model has its own unique power stage. Unlike other amps in this price range, the Mantis 89® Series features two channels, a gain boost, and a feature set unlike any other boutique "M-style" amp in this price range. They feature a full complement of extremely flexible tone controls. A surprising amount of clean headroom is available before the output stage begins distorting with a sweet British rock edge.

The Mantis 89® Series boasts all the most sought-after Fuchs® amplifier features, including an aircraft grade aluminum chassis, our proven PC board and hand wired construction and top-grade transformers. On these models the preamp tubes and power supply circuitry are on the PC board, while the power tubes and transformers are mounted on the chassis for stability, performance, and easy service. A detachable power cord is standard. And through Fuchs® single point grounding, the amp is quiet and free of hum at all operating levels.

A single instrument input and 3 speaker outputs for 4-8-16 ohms are provided. An effects patch jack is provided as is a dual footswitch jack for channel and gain boost via a dual LED footswitch.

### Features:

- ◆ ¾" solid premium plywood cabinet with durable Tolex covering.
- ◆ Anodized aluminum chassis with long lasting silk-screened panel labeling
- ◆ Heavy duty Cliff brand jacks. Solid metal-shaft Alpha potentiometers.
- ◆ Ultra-long-life fuse-lamp pilot lamp and heavy-duty AC power and standby switches.
- ◆ Simple user adjustable fixed output tube bias.

### Specifications:

<i>Amplifier Model</i>	<i>Output Wattage/Tube Complement</i>	<i>Input Impedance</i>	<i>Weight &amp; Dimensions</i>
<b>Mantis 89® 20-watt head</b>	20 watts into 4-8-16 ohms, 2x6V6 power tubes	1Meg.	24 lb 18 7/8 * 11 3/8 * 9 3/4
<b>Mantis 89® 1x12 Combo</b>	20 watts into 4-8-16 ohms, 2x6V6 power tubes	1Meg.	35 lb, 24 3/8 * 11 ¾ * 22 7/8
<b>Mantis 89 50® Head</b>	50 watts into 4-8-16 ohms, 2 x 6L6 power tubes	1Meg.	29 lb, 18 7/8 * 11 3/8 * 9 3/4
<b>Mantis 89 50® 1x12 Combo</b>	50 watts into 4-8-16 ohms, 2 x 6L6 power tubes	1Meg.	40 lb, 24 3/8 * 11 ¾ * 22 7/8
<b>Mantis 89 100® Head</b>	100 watts into 4-8-16 ohms s, 4 x 6L6 power tubes	1Meg.	32 lb 18 7/8 * 11 3/8 * 9 3/4
<b>Mantis 89 100® 1x12 Combo</b>	100 watts into 4-8-16 ohms, 4 x 6L6 power tubes	1Meg.	44 lb, 24 3/8 * 11 ¾ * 22 7/8

## 2. PLEASE READ BEFORE POWERING UP YOUR AMPLIFIER.

**NOTE: Please see Panel Diagrams in Section 3 for assistance.**

- 1) Inspect to make sure power & pre-amp tubes are intact & snugly seated in their sockets.
- 2) Make certain a speaker (load) is plugged into speaker input jack on the back of the amplifier. Failure to have a speaker connected to the amp will result in damage to the output tubes or output transformer! Your amp is supplied with 4,8 and 16 ohm speaker output jacks, select the one which matches your speaker(s) impedance.
- 3) Reduce Front panel GAIN controls to moderate level.
- 4) Install instrument cable from guitar into front panel INPUT
- 5) Be sure both POWER switch (front panel) is in DOWN (Off) position and standby is in off (down) position.
- 6) Install power cord to amplifier (AC POWER IN) and to appropriate AC power source.
- 7) POWER UP amplifier by: 1) flipping POWER switch UP. Allow at least 30 seconds to 1 minute for tubes to heat up. Then switch amp to operate mode via standby switch.
- 8) The Amplifier is now fully on and ready to use. Feel free to adjust all controls as you see fit.
- 9) Provide adequate and unimpeded ventilation.
- 10) Do not expose the unit to drips or splashes.
- 11) Do not to place liquids on the unit.
- 12) Properly ground the unit (i.e. make sure the outlet used is grounded, and ground is not defeated between the outlet and unit).

### 3. DIAGRAMS OF FRONT & REAR PANELS, TUBE BIAS DIAGRAM

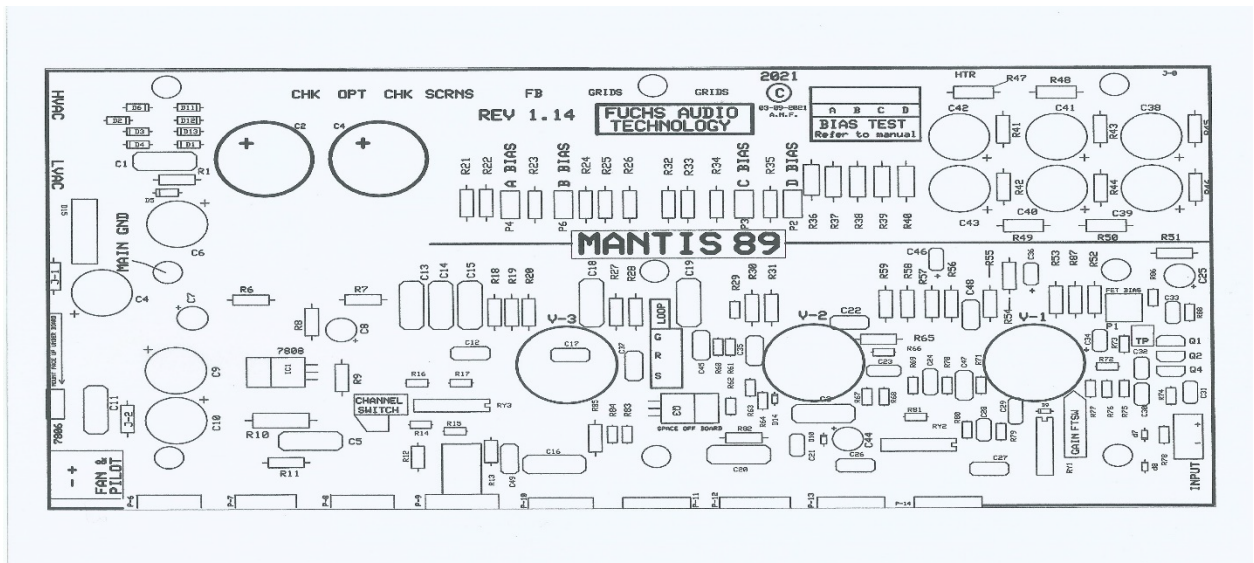
#### Front Panel



#### Rear Panel



#### Tube Bias Diagram



## PREAMP TUBES AND THEIR FUNCTIONS:

V-1 12AX7 (nearest to input jack). Main input preamp, first clean and overdrive preamp (premium tube recommended)

V-2 12AX7 (middle tube) Gain stage/ tone stack

V-3 V-3 12AX7 Phase inverter/driver tube

## 4. FRONT PANEL CONTROLS, INPUTS & THEIR FUNCTIONS



### Input Jack:

Input jack is a 1/4" phone plug, designed for 1-Meg impedance, guitar-level signal. This input will readily accept pedals/effects without any loss in performance. Pedals/effects input is also inserted to this input in series with your guitar.

### Gain Control:

The 800 gain control sets the overall gain/volume for the amplifier in the clean (channel-1) mode. Adjust to volume /tone taste. This is the lower gain channel. This channel with gain boost ON, brings it to the level of the 900 channel without boost.

### 900 Gain Control:

The 900 gain control sets the overall gain for the amplifier in the 900 channel. Adjust to volume /tone taste. This channel is about 10 db more gain (without boost) as the 800 channel. This channel with boost, takes the amp over the top with shred level gain.

### High Control:

Adjust the high control to taste, it controls adjusts the high frequency spectrum of your amplifier.

### Mid Control:

Adjust the Mid control to taste, it controls adjusts the mid frequency spectrum of your amplifier.

**Low Control:**

Adjust the Low control to taste, it adjusts the low frequency spectrum of your amplifier.

**800 Master:**

The 800-Master sets the volume for the 800 channel. This control pulls out to switch to the 900 channel manually. The footswitch is disengaged when the control is pulled.

**900-Master:**

The 900-Master controls the volume of the amp in channel-2 (high gain) mode. The input gain sets the amount of distortion, and the master sets the volume at which this channel operates.

**Thrust Control:**

The thrust control works on the power amp section on the low end and raises low end gain and provides a bass boost and a looser overall feel and affects both channels.

**Accent Control:**

The accent control adds highs to the power amp section, altering the overall bite of the amp and presence of the power stage on both channels.

**5. REAR PANEL CONTROLS, INPUTS/OUTPUTS****AC power cord input:**

Using a standard IEC power cord. Connect to AC POWER IN on the amplifier and to AC power source. Please note the voltage on the chassis, and make sure you are supplying the correct AC voltage to the unit. Damage from incorrect voltages is not covered by warranty.

**AC power Fuse:**

This fuse protects the amplifier if any malfunction occurs. Use **ONLY** the stock fuse rating as supplied by factory and shown on the rear panel for the voltage and current in your location.

**Speaker outputs:**

4, 8, 16-ohm outputs. Use the same impedance as the speaker you are using for maximum power and performance and use *only one speaker output at a time*.



**Standby/Play switch:**

Up is play mode. When amp is not being used, but being warmed up, place amp into standby mode.

**Effects Loop Patch jack:**

This is a stereo ¼". The tip is the return to the power amp. The ring is the send from the preamp. This may be used with an outboard effect loop like the Plush Tube FX loop, or various other aftermarket devices for this purpose. Depending on the outboard unit you are using, an effects loop device may not be needed. You can try any unit you like and see if the tone and performance is acceptable to you without damage to the unit.

**6. BIASING THE AMPLIFIER POWER TUBES, WARNINGS AND TECHNICAL INFO**

The circuit board is shown in Section 4 of the manual should be viewed as having the chassis sitting on its transformers, and front panel facing the user.

**Biasing Information for Various Models:**

*Refer to diagram above for location of bias trimmers and test points*

20-watt : Set for .02 volts on each test point (20-mA per tube Class-AB-1)

50-watt : Set for .036 volts on each test point (36 mA per tube Class AB-1)

100-watt : Set for .036 volts on each test point (36 mA per tube Class AB-1)

Bias is tested at the respective test point for each tube and set by the (ten turn) trimmer for each power tube. There may be interaction between the tubes, so adjusting in order and returning to the first tube and so forth, until all tubes are at the same bias level.

**!!! WARNING – ELECTRICAL SHOCK HAZARD!!!**

**THERE ARE EXPOSED POTENTIALLY DEADLY HIGH-VOLTAGES IN THIS AMPLIFIER,  
EVEN WITH THE AMPLIFIER SHUT-OFF!**

If you are not familiar with servicing tube amplifiers and/or high voltages, ***do not attempt*** to remove the chassis from its cabinet or to attempt to service this amplifier. ***Do not attempt to service, repair or conduct tube biasing on your amplifier unless you are qualified to do so.*** Refer servicing to the factory or to someone with experience servicing these types of amplifiers.

**DISCLAIMER:** Fuchs Audio Technology, LLC®, its subsidiaries, affiliates and/or agents shall have no responsibility for, nor shall they be held liable for **any** harm of any kind to any person/s or property (including damage to this amplifier) as a result of improper and/or unauthorized service, repair or internal adjustments made to this amplifier.

**FCC COMPLIANCE STATEMENT:** This equipment has been tested and found to comply with the limits of Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



### DISCLAIMERS:

Δ Read, retain, and follow all instructions. **Heed all warnings.**

Δ Only connect the power supply cord to an earth grounded AC receptacle in accordance with the voltage and frequency ratings listed under INPUT POWER on the rear panel of this product.

Δ **WARNING:** To prevent damage, fire or shock hazard, do not expose this unit to rain or moisture.

Δ Unplug the power supply cord before cleaning the unit exterior (use a damp cloth only). Wait until the unit is completely dry before reconnecting it to power.

Δ Maintain at least 6 inches (15.25 cm) of unobstructed air space behind the unit to allow for proper ventilation and cooling of the unit.

Δ This product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.

Δ This product may be equipped with a polarized plug (one blade wider than the other). This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician to replace your obsolete outlet. *Do not defeat the safety purpose of this plug.*

Δ Protect the power supply cord from being pinched, cut or abraded.

Δ This product should only be used with a cart or stand that is recommended by the manufacturer.

Δ The power supply cord of this product should be unplugged from the outlet when left unused for a long period of time, or during electrical storms.

Δ This product should be serviced by qualified service personnel when: the power supply cord or the plug has been damaged; or objects have fallen, or liquid has been spilled onto the product; or the product has been exposed to rain; or the product does not appear to operate normally or exhibits a marked change in performance; or the product has been dropped, or the enclosure damaged.

Δ Do not drip nor splash liquids, nor place liquid filled containers on the unit.

**Δ CAUTION: No user serviceable parts inside, refer servicing to qualified personnel only.**

Δ Fuchs ® amplifiers and loudspeaker systems are capable of producing very high sound pressure levels which may cause temporary or permanent hearing damage. Use care when setting and adjusting volume levels during use.



®

## 7. Warranty Information

### The Fuchs Audio Technology™ Amplifier Warranty

Fuchs Audio Technology® guarantees our products to be free from defective workmanship or material failure for a period of FIVE years (tubes excluded) from date of new purchase to the original purchaser. This excludes tubes, which are covered for 90 days by Fuchs, and whatever period the manufacturer of the tube provides. This does not apply to Fuchs amplifiers that have been tampered with, damaged by shipping carriers, reverse engineered, or modified. Your warranty form/information must be returned to Fuchs Audio Technology® within 30 days of purchase, or your warranty will not be in effect. Fuchs Audio Technology® reserves the right to suspend or terminate the above warranty at our sole discretion, should damage from any of the above limitations and or exclusions be detected upon examination.

*Keep the information on this page for your records.*

FUCHS MODEL : \_\_\_\_\_

SERIAL NUMBER: \_\_\_\_\_

OPTIONS INCLUDED: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### **Fuchs Audio Technology**

407 Getty Ave, Clifton, NJ 07011  
(973) 772-4420 (fax) 973-772-4460

Website: [www.fuchsaudiotechnology.com](http://www.fuchsaudiotechnology.com)

Email: [info@fuchsaudiotechnology.com](mailto:info@fuchsaudiotechnology.com)



®

## WARRANTY REGISTRATION FORM

This completed form must be returned to Fuchs Audio Technology or the (Fuchs distributor where you are located) within 30 days of purchase alongwith a copy of your receipt from your authorized dealer. Keep a copy for your records and you may send a copy to Fuchs US so we may add you to our customer e-mail list.

Please fill in all requested information on this form so we may register you for future warranty repairs or future upgrades, should they become available.

Purchasers Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ Country: \_\_\_\_\_

Phone Number: \_\_\_\_\_ E-Mail address: \_\_\_\_\_

Model: \_\_\_\_\_ Serial Number: \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

Dealer Name: \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Please return this form to:  
**Fuchs Audio Technology**  
407 Getty Ave, Clifton, NJ 07011  
(973) 772-4420 (fax) 973-772-4460  
Website: [www.fuchsaudiotechnology.com](http://www.fuchsaudiotechnology.com)  
Email: [info@fuchsaudiotechnology.com](mailto:info@fuchsaudiotechnology.com)



**All Fuchs Products are Manufactured in the United States  
from Domestically and Internationally Sourced Components.**

**Fuchs Audio Technology  
407 Getty Ave, Clifton, NJ 07015  
(973) 772-4420 (fax) 973-772-4460  
Website: [www.fuchsaudiotechnology.com](http://www.fuchsaudiotechnology.com) Email: [info@fuchsaudiotechnology.com](mailto:info@fuchsaudiotechnology.com)**

***All Fuchs Products are Distributed in the EU through Audiowerk Distribution and Logistics.***

**AUDIOWERK e.Kfm. | Schulstrasse 30 | 55595 Hargesheim - Germany | Tel +49 (0)  
671 - 2135420 | Fax +49 (0) 671 - 2135419  
[www.audiowerk.eu](http://www.audiowerk.eu) | [info@audiowerk.eu](mailto:info@audiowerk.eu)**

***Thank you for choosing Fuchs!***

**Fuchs Audio Technology. © 2000-2021  
All rights reserved.**