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Sonic Farm Masternaut

Pentode Line Preamplifier/Signal Conditioner and Soft Clipper

USER MANUAL



Dear Audio Professional,
Thank you for purchasing the Masternaut. We hope it will deliver exceptional performance for many years into the future.
Please take the time to read this manual. It describes Masternaut's design philosophy as well as its most important functions.

DESIGN PHILOSOPHY

Our intention behind the Masternaut was to create a unique device that could favorably change the sound of music mixed or produced with digital audio gear. It was conceived on the heels of our very popular Creamliner III, which has found its place in many FOH engineers racks, as well as in many Mastering studios. One of our faithful users, Mastering engineer Maor Appelbaum, based in California, wanted to collaborate with us to create a unit that would go a few steps beyond the Creamliner, useful in particular in Mastering applications. He wanted a device that offered varied amounts of gain, controlled soft clipping, and a choice of 2 different output transformers. The Masternaut is the result of this collaboration. That being said, the Masternaut is also very convenient for live use, and has more ways to enhance the sound over Creamliner.

Since the inception of digital audio, Recording Engineers have been commenting on its lack of warmth and weight. It always left something to be desired. Many plugins have been designed to remedy this condition, but none has been 100% effective. The Creamliner was able to change all that, and now the Masternaut has set out to push the boundaries and the flexibility even further, especially so in Mastering rooms. It can also be inserted into the mixing chain during a live performance or a studio session to “glue” those nasty digital artifacts and impart warmth and softness to the mix.

To achieve this, the Masternaut, just like the Creamliner, uses a pentode, an input and a pair of output transformers. The latter can be bypassed and replaced with a solid-state balanced driver. The pentode tube has a purpose to impart pleasant even-order harmonics to the sound, while the transformers tame down the fast digital overshoots and thereby give “warmth” to the sound.

An EF86 pentode operating in class A is Masternaut’s only active gain stage. It can be configured to work in either triode or pentode mode. There are 3 selectable gain levels that affect both tube modes, albeit in a slightly different way. Please see the explanation of controls for details.

Bypassing cathode selectively using inductors and capacitors yields a subtle, but very musical tone control. This circuit exhibits a certain non-linearity (coloration); the harmonic distortion may exceed 1% before the soft clipping occurs. To preserve it, we purposely refrained from using transformer tap negative feedback, found in many circuits. Instead, the tube stage is followed by a solid-state buffer and the output level control. Finally, a modern discrete transistor complementary buffer with extremely low distortion is used to drive the output transformer and the load.

The 2 pairs of output transformers use different alloys for the laminated cores for 2 different flavors. This, along with a switchable solid-state balanced output, gives the final tone coloring.

SOME REMINDERS REGARDING TUBES

Tubes work with very high supply voltages. There are points inside Masternaut that measure in excess of 350V DC. If touched, those voltages could be lethal!

Make sure that no pointed objects (especially metal) or liquids penetrate the inside of the unit through its cooling grilles or otherwise. If that accidentally occurs, immediately pull the plug out of the power socket and wait for the unit to discharge. Masternaut must not be operated if moisture penetrates inside.

Before opening the unit (to change tube, wipe off moisture, etc) one must disconnect the mains cord and then wait several minutes for the internal capacitors to discharge.

When mounting in a rack enclosure, always leave an empty space above the Masternaut to ensure proper cooling.
Please do not replace the mains fuse with one of a higher value: use only 600mA@115V (500mA also works fine)
(250 to 300mA@220-240V)

Legal Disclaimer: Neither Sonic Farm nor anybody associated with it can take any liability for damage to persons or property caused by either use, modification or servicing this unit.

HOW TO CHANGE TUBES

This only applies to a functional unit. Please entrust any repairs to qualified service personnel.

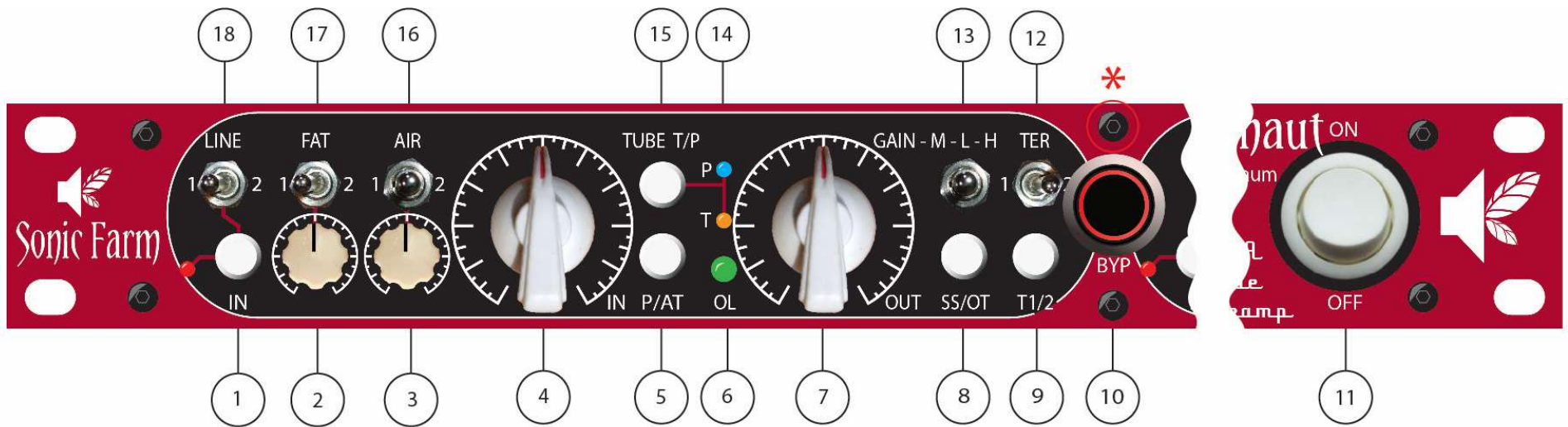
Only an EF-86 (or equivalent, like 6267, 6CF8 or Russian 6J32P) pentode can be used.

Pull out the power cord. Wait for at least 10 minutes for all the capacitors to discharge.

Remove Masternaut's cover by loosening screws encircled **red** and marked with an **asterisk** (3 on the rear panel and the middle one on the front panel) as well as all side screws (4 on either side). You will need an Allen wrench (some models will have Phillips screws).

While pressing on the edge of the vertical PC board (the one containing the tube) with your right hand, pull out the tube with your left hand. Small, but fast forward-reverse motion may be needed to loosen the tube from a tight socket. Do not bend the tube much out of the axis because you can break the pins or cause air to enter the tube and destroy it. Paying attention to the pin alignment, push the replacement tube into the socket using same motions but in the opposite direction. Make sure it goes in all the way. Due to electric shock danger, testing the preamp with the lid removed is not recommended. Screw the cover back in place and you're done.

MASTernaut's FRONT PANEL CONTROLS:



- 1** Enable switch. Only an enabled channel will be active when taken out of bypass. Otherwise always bypassed. The corresponding LED shows an active channel.
- 2 and 3** Pots used to adjust the level of fat and air boost. Maximum boost for Fat (bass) is around 6dB and around 9 dB for the Air control. The current Masternaut version uses pots with 11 detents here, for easier recall. See **15** and **16**, the switches that enable the boost.
- 4** Input level control, 41 detents for easier recall. Normally keep this fully clockwise when not overdriving the unit. Otherwise adjust as needed when switch (**5**) is out. Roll back as needed to adjust the level of saturation when overdriving.
- 5** When depressed, the output level in Pentode mode will be matched to that of Triode by introducing an attenuation prior to the tube. For level-matched operation, the input control must be fully clockwise, and the output control at 12-noon position. When overdriving the unit, choose the pentode mode (by pressing switch **14**), take this switch out and adjust the input and output controls as desired. Gain levels L, M and H will apply progressively more drive to the tube. The unit will exhibit soft clipping. This switch is in fact enabling the input to output calibration when depressed. If you work in a live situation, it should be in.
- 6** Bi-color LED (green/red) signal presence/overload indicator. Red indicates clipping distortion, which starts softly. This indicator normally turns red when overdriving is desired. Adjust the input level to get the desired tone. Compensate the output level with the output level control (see **7**)

- 7** Output level, 41 detents. Does not affect tube gain or overload level, just determines how hard the output buffer, transformer, and ultimately the load is driven. If used with a live PA system, this control will typically be set to match the level when unit is bypassed. At the 12 O'clock or noon position (provided the input level **(4)** is maxed and switch **(5)** is in), the unit will have a 0dB gain, so that no audible change of loudness will occur when bypassing or engaging it. Of course, if some equalization is applied, the output level will start picking up some extra gain, so one may need to compensate for this by rolling back the output level control. The Masternaut may drive your next unit into clipping even though the red light doesn't indicate any distortion. In that case, reduce the output level.
- 8** Output select: low-distortion solid-state IC or transformer (driven by a discrete buffer). Solid-state mode will sound somewhat cleaner, and the transformer rounder and fatter. Masternaut is fitted with 2 different transformers.
- 9** Use this switch to select transformer 1 or 2. Transformer 1 is a very transparent Ni/Fe one, whereas transformer 2 is 100% Fe for a more rounded tone.
- 10** Bypass switch. If engaged, the red ring light will be on. With power off, the unit will automatically go into hard bypass and select line 1. This tactile switch will bypass both channels if enabled, or only the active one when the other is disabled.
- 11** Power switch. In a rare case of the unit failing during a live performance, turning the unit off will take it into hard bypass for line 1.
- 12** Transformer termination switch. When the output of a transformer is terminated by a resistor, the tone is more natural and rounded, and When it is unterminated, the tone is a bit more aggressive in the upper mids, which benefits some mixes. The switch can terminate either transformer 1 or 2, or neither of them (middle position).
- 13** Gain switch. Choose between 3 different gain levels to drive the tube progressively more. When switch **(5)** is depressed, Input control **(4)** at max (fully CW) and the output level at 12-noon, all 3 gain levels are compensated at the output both in triode and pentode modes. The signal indicator **(6)** will glow more intensely with higher gain, but the loudness will be the same, only the tone will differ. When the gain is low (L), the unit will sound very transparent, even more than the Creamliner. If you want more coloration, use the M or H setting.
- 14** The "P" or "T" LED indicator will indicate the tube mode.
- 15** Triode/Pentode mode switch. Pentode mode has a somewhat different tonal character, due to a higher even order harmonic content.
- 16 and 17** Bass boost peaking at 60 or 90Hz with a very broad bell curve, and a high frequency shelving boost starting at 4.4kHz or 9kHz. Mid position is flat. This is a subtle tone control meant for a gentle boost, adding depth or air to the signal. The boost level can be adjusted by 2 pots, (marked **2** and **3**).
- 18** Input line pair select. Use to switch between 2 different stereo lines. Useful at live work when switching between 2 different consoles. Always use line 1 first.

MASTERNAUT'S REAR PANEL CONTROLS:



20 AC power inlet. Always operate the unit on the mains voltage it was designed for (110-120VAC or 220-240VAC).

21 Mains fuse. Please replace it only with the one of value indicated. (600mA@110-120VAC, 300mA@220-240VAC)

22 Ground lift switch. It should normally be kept in "Gnd On" position. However, if you encounter hum when the unit is patched into your system, switch it over to "Gnd Lift". This will remove hum due to ground loops only; it will not help eliminate hum that comes in with the signal! To avoid an electric shock, do not disconnect the ground wire on your 3-prong mains plug!

23 and 24 Outputs. Balanced connection only! (XLR pin connection: 1=GND, 2=HOT, 3=COLD).

25 and 26 Line 2 inputs. Balanced connection only! (XLR pin connection: 1=GND, 2=HOT, 3=COLD)

27 and 28 Line 1 inputs. Balanced connection only! (XLR pin connection: 1=GND, 2=HOT, 3=COLD)

29 Mains AC voltage selector: push it to the right for 110-120VAC, left for 220-240V.

TECHNICAL SPECIFICATIONS:

2 channels

Frequency response: 10Hz-50kHz +/- 3dB

Operating level: +4dBu

Maximum gain: 20dB

Harmonic distortion: <2% before clipping level quickly decreases if driven less.

Maximum output level: 32dBu

Minimum output load: 600Ω

Connectors: XLR line and output, balanced only

Power consumption: 30W

WARRANTY INFORMATION

Sonic Farm gives a one-year warranty on parts and labor from the date of purchase.

Should you need to send in your unit for warranty-covered service, please contact us for an RMA number first.

We will also tell you where to send the unit.

Any Modification of the unit voids the warranty.

CONTACT INFORMATION:



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