



*Reference Vacuum Tube Amplifier
Owners Manual*

 **DECWARE**

lightning flash with arrowhead, within an equilateral triangle, is intended to alert the user to the presence of uninstalled "dangerous voltage" within the product's enclosure that may be of risk of electric shock to persons.



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.

AVIS RISQUÉ DE CHOC ELECTRIC-NE PASOVRIR.

WARNING- TO REDUCE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.

To prevent the risk of electrical shock, do not remove cover or bottom. No user serviceable parts inside.

IMPORTANT SAFETY INSTRUCTIONS!

PLEASE READ THESE BEFORE OPERATING THIS EQUIPMENT.

1. Read and Follow these instructions.
2. Do not plug your amplifier in or attempt to turn it on until you have read and followed the steps in this complete manual.
3. **Never leave this preamplifier powered ON while unattended or at night when sleeping.**
4. Do not use this preamplifier near water or in damp locations.
5. Do not place this preamplifier near any heat sources such as radiators, heat registers, stoves, or directly above other amplifiers that produce heat.
6. Do not defeat the safety of the three-prong power cord by attempting to lift the ground. If you only have two-prong outlets in your home, have a licensed electrician install a grounded outlet near the preamplifier.
7. Protect the removable power cord from being walked on or pinched at either end.
8. Do not attempt to move this preamplifier until after it has been turned off and cooled down to room temperature.
9. Unplug the preamplifier during lightning storms or when unused for long periods of time.
10. Refer all service to Decware or a Decware authorized service tech. Do not attempt to fix internal problems. There are no user serviceable parts inside.
11. **WARNING HIGH VOLTAGES PRESENT** - This preamplifier stores up to 500 volts in the capacitors. Do not open the amplifier under any conditions.
12. Never touch a vacuum tube while it is operating. Some can reach temperatures near 400 degrees F.
13. **ALWAYS** place preamplifier on a solid sturdy clean and level surface that can support its weight.

Thank You

By purchasing this preamplifier you are helping to preserve the art of finely crafted audio products with absolute world class reference fidelity.

Please Take a Moment

The serial number and date of your amplifier are recorded on the bottom. Take a moment to write them down here so you don't have to move your amplifier once it is installed.

Serial Number: _____

Date (Month/Year): _____

Model Number: _____

Technical Assistance

You can get help by calling us directly or you by e-mail.

If you have any issues, check the web site's contact page for up to date e-mail addresses and phone hours.

We also have a strong online support forum that is very active. This can be a handy way of getting help during off hours or weekends when our office is closed.

DECWARE/High Fidelity Engineering

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Unpacking

Your amp should be carefully inspected upon receipt for any damages that may have occurred in shipping. If you detect any issues please contact us right away.

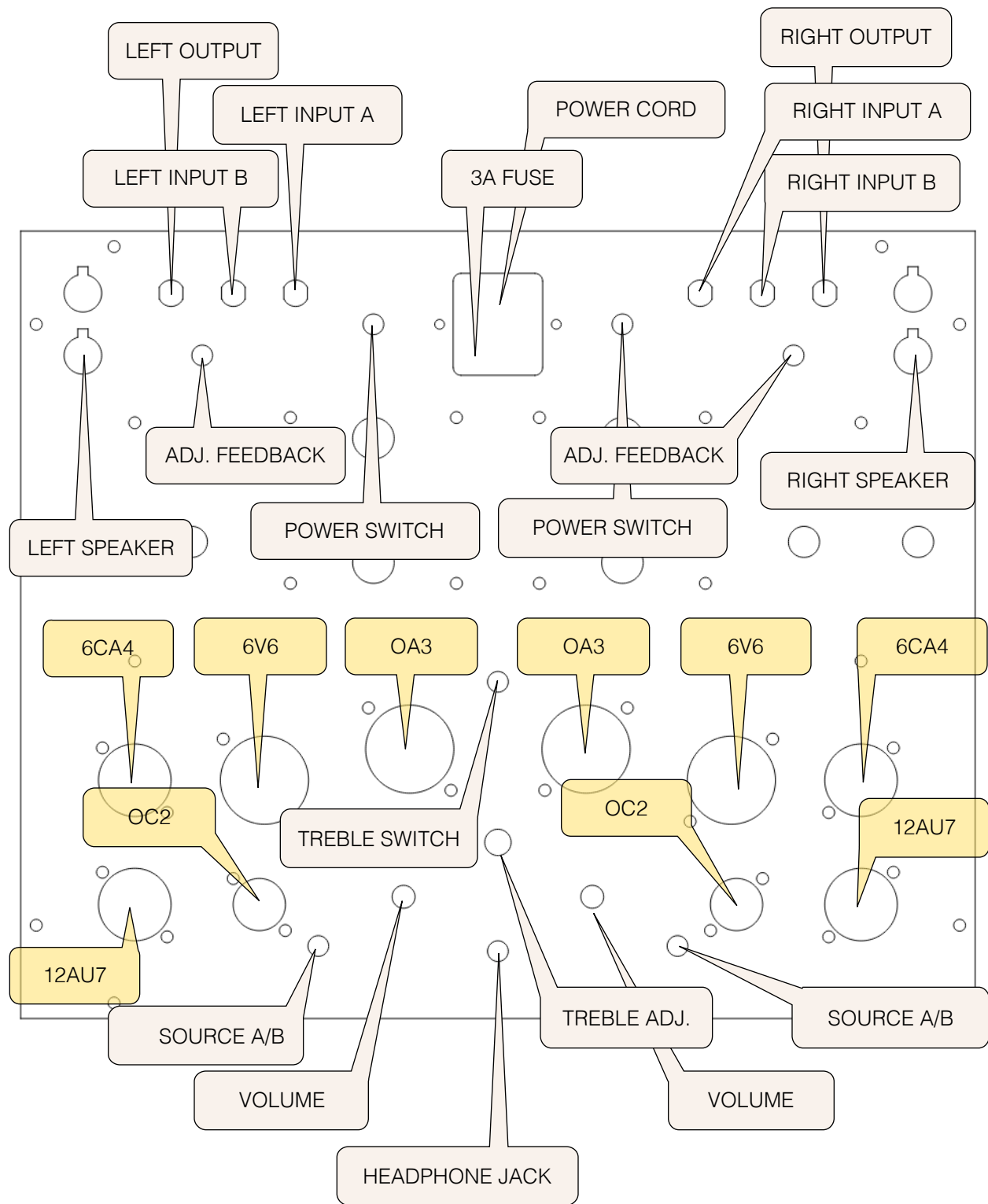
Getting Started

If you have taken delivery of your amp during cold weather please allow it to come to room temperature before you plug it in and try to use it.

You will need three pair of high quality interconnects and a power cord as well as the supplied tubes.

On the following page you will see diagram of your amp. Please familiarize yourself with it as well as refer back to it frequently as you become familiar with how this amp operates.

What's what



Connections

The cables and jacks should be kept clean for optimal fidelity. The easiest way to do this is to clean the male pins on your interconnects and headphone cables with contact cleaner or 99% pure alcohol BEFORE you plug them into the amp.

Doing this will keep the insides of the jacks clean. A serious audiophile will do this every few times the cables are removed and installed.

Tube pins are equally important and should be cleaned every time a tube is installed. Once again, this will keep the tube sockets clean which is critical for maintaining top fidelity. Tube pins can be cleaned with 99% pure alcohol or a pencil eraser.

In addition to keeping tube pins clean, the smaller 9 pin tubes have thinner pins that must be kept straight. If you notice the pins are bent they must be straightened prior to inserting the tube into the socket. A simple way to accomplish this is to have a tube pin straightener available from Decware.



tube pin straightening tool from Decware

Input Connections

Your Mini Torii can accommodate two line-level sources such as a CD player and a Phono-Stage for listening to LP's.

The switches to select inputs are on the front the amp near the controls. If you require more than two sources we make a high quality switch-box that can be used to extend the total number of sources to five.



Your Mini Torii contains a silver input selector switch and the switch-box shown above is also using silver switching and silver / Teflon internal wiring. This component is called the ZSB and available on the Decware web site.

Connecting Subwoofers

The Mini Torii can be built with transformer-driven outputs, one for each channel, that can be used to feed another amplifier, or powered subwoofer.

Because the RCA output jack is driven by the output transformers, all the harmonics as well as the entire amplifier's signature is embedded into the signal coming from those jacks. This will greatly assist the odds of making the solid state subwoofer blend in and disappear.

Installing Tubes

There is nothing particularly special about installing the tubes other than making sure they are the correct ones! Please refer to page 5 for tube locations.

The OA3 and the OC2 regulator tubes do not get hot and it is common for them to flash a few times when turning on and again when turning off.

Make sure tubes are OFF and COOL before you remove or install them. Contrary to popular misinformation you can touch the tubes without having to clean your finger oil from the glass. Your finger oil will have no effect on the operation or the life of the tubes.

Tube Matching

Matching the tubes is not required in this amp since the channels can be individually adjusted, however it is nice to install the output tubes as well as the input tubes in matched pairs whenever possible so that you do not have to correct for channel imbalances that might otherwise result.

There are two output tubes (6V6) and two input tubes (12AU7) that you should purchase in matched pairs. These are the audio tubes. All the remaining tubes are power supply tubes.

Tube Substitutions

The 6V6 output tubes can be substituted with 6Y6, 6K6, 6F6, 6L6

The 12AU7 can be substituted with 5963.

The OA3 can be substituted with OB3 OC3 and OD3, although the highest power and lowest distortion will come from the OA3.

The OC2 and 6CA4 should not be substituted.

Biassing Your Tubes

There is no biasing to adjust on this amp. All the tubes are cathode biased which makes them naturally self adjusting and always in the optimal range for this amplifier.

Tube Life

If the recommended 9-pin tubes are used the tube life will be whatever the advertised lifespan is on the tube data sheet. In most cases this will be around 6000 hours for a new tube.

Rectifier tubes are the first line of defense against power spikes and can fail as a result of this for what would seem like no apparent reason. Using the recommended rectifier (6CA4) it is possible for one to last for up to four or five years before it starts getting tired.

If a rectifier tube sparks internally when you first turn on the amp, it is a sign that the tube may fail in the near future when the amp is first turned on.

Always have a pair of good working spare rectifier tubes on hand at all times.

Operation and Setup

To operate your amp, carefully install the tubes and hook up the output jacks to the speakers. Once you are sure the speakers and amp are securely connected together with a high quality RCA cable you may then plug the amplifier into the wall outlet.

Before you turn it on make sure that both volume controls are turned all the way down.

Turn on the amplifier. The amplifier will come on after about a 20 second warm up. As it warms up turn the adjustable feedback control fully clockwise on each channel. Your system is now on and at idle. Any noise or hum that you hear is your system reference. Make a note of it so that later when we connect the sources we can see if they added any additional noise or hum.

It is now time to connect your first source component to one of the input pairs on the amp. You can do this while the amplifier is on and at idle, but be sure you haven't turned either volume control up yet.

If you didn't hear any hum or noise increase when you connected your first source that means that A) your cables are probably good and B) there is no ground loop happening in the cables between the two components.

Now add your second source if you have one and again listen for any increase in the noise or hum.

If with either source you DO notice an increase in noise or hum then it likely comes from cables, small ground loops between the amp and source or the source component itself. If you have to put your face in front of the loudspeaker to hear the noise and hum then it's acceptable. If on the other hand you can hear it from the listening chair then it's not acceptable and should be corrected before going further.

Once everything is connected and warmed up and you are happy that there is no excessive amounts of noise or hum you can proceed to listen to some music. If you have only one source on and you don't hear music when you raise the volume, flip the source switches.

You should be able to listen to music at this point. Once you have listened to it for awhile you can experiment with the adjustable feedback controls. Counter clockwise rotation lowers feedback and raises gain simultaneously. The effect is more detail and more brightness. Usually one or two clicks will do it. There is no additional effect past four or five clicks.

Whatever the background level of noise and hum is it will increase as you lower feedback. So lowering the feedback increases gain and noise and hum along with it so it is not recommended for headphone use.

Clipping

Clipping is another term for distortion during playback. The amplifier has an input sensitivity of just under 1 volt. That means that connected to an industry standard source like a CD player (which is 2 volts) the amp will run out of power around the half-way point on the volume controls. With a 1 volt source you will have to turn the volume control much higher to achieve that same listening level.

Headphones

The Mini Torii when built with a headphone jack is a very respectable planar and dynamic headphone amplifier. In some cases with super-efficient headphones, the attenuation resistor in series with the headphone jack will have to be increased in value to maintain hum-free sound in the headphones. If this is the case, Decware will fine tune the headphone output specifically for your phones.

Burn-in

When your amp is new it will require at minimum 200 hours of use to reach what we a term "burned-in" state which is to say a state where the sound is pretty much where it's going to be from then on out. During the 200 hour burn-in period the amp and the tubes will season and you will hear the sound continue to improve. The biggest differences happen in the first 40 hours.

Design

The Mini Torii has an interesting design behind it. It is a dual-mono single-ended pentode amplifier based on the popular 8-pin octal 6V6 output tube.

We gave the amplifier an extra stage of gain so that it could be used with low output sources like smart phones, iPods, tablets and so on. The extra gain stage gives these low output sources some real kick which is what they lack, so it's a great desktop amplifier even when you're not running a high-end DAC to it.

Additionally, we used individual regulator tubes to filter the high voltage feeding the input and output tubes for a total of four. This removes all the power supply grain and noise resulting in liquidity that usually only comes as the result of expensive power regeneration devices.

Design cont'd.

There are precious few parts in the audio circuit and the entire amplifier is wired point-to-point with no circuit boards.

Voicing

The amplifier can be voiced through the use of its treble control and through tube rolling. To voice with tubes, we recommend starting with output tubes. Get yourself three or four different compatible pairs to try and settle on a favorite. After the rectifier tube you can then experiment with different input tubes, which is the shortest 9-pin tubes in the front.

For headphone users, voicing can mean the difference between liking and disliking a pair of headphones.

Maintenance

There is no real maintenance on the amplifier other than to keep it and the jacks clean. The best tool for dusting your Mini Torii is a 2 inch paint brush. If you have to really clean it, remove the tubes and spray some windex (*window cleaner*) on a cloth rag and wipe the surfaces clean. When dry, clean and re-install the tubes.

Tubes should be replaced every couple years on average, but it is dependent upon use.

Since tubes wear out slowly it is hard to hear when to change them. The trick is simple. You have a complete new set of tubes on hand and every 6 months you install them to see if the sound gets better. If it does it's probably time for new tubes. If not, put the new tubes back in the boxes and store them away for another 6 months.

The tubes that wear out the fastest are the output tubes (6V6), followed by the input tubes. The remaining tubes usually last several years.

NOTE: the level controls and the volume controls are designed to be used, so it is good to periodically turn them throughout their full range before the amp is turned on just to work the dust out of them. This is especially true if the amp has sat for any length of time (months) without use.

Specifications

Weight	16 lbs
Dimensions	5.5" H x 11" W x 9" D
Circuit	Single-ended pentode Class A
Power	4 watts RMS
Design	Dual Mono
Input Voltage	Adjustable
Noise/Hum	-70dB
Input Impedance	100k Ohms
Feedback	Variable
Rectification	Tube 6CA4
Regulation	Tube OA3, OC2
Signal Tubes	12AU7
Biasing	Cathode Bias - no adjustments needed
Resistors	1% metal film and carbon composition
Signal Caps	Film and Foil
Filter caps	F&T 500V 47uf
AC Cord	Fused IEC 3A fuse and removable cord included
Consumption	65 watts
Input jacks	RCA
Output jacks	RCA
Headphone jacks	1/4"
Warranty	lifetime to original owner, 90 days on tubes

Service

For service please contact us by phone or by email. You can find both on the contact form of our web site, www.decware.com

We can help you troubleshoot your system and help you determine what is causing the issue that you're having. Everyone can save themselves a lot of trouble by having a spare set of known good replacement tubes on hand. Most problems are tube related. For example, noise or hum problems could be a tube. Channel balance issues are likely a tube. Sound quality issues are likely a tube.