



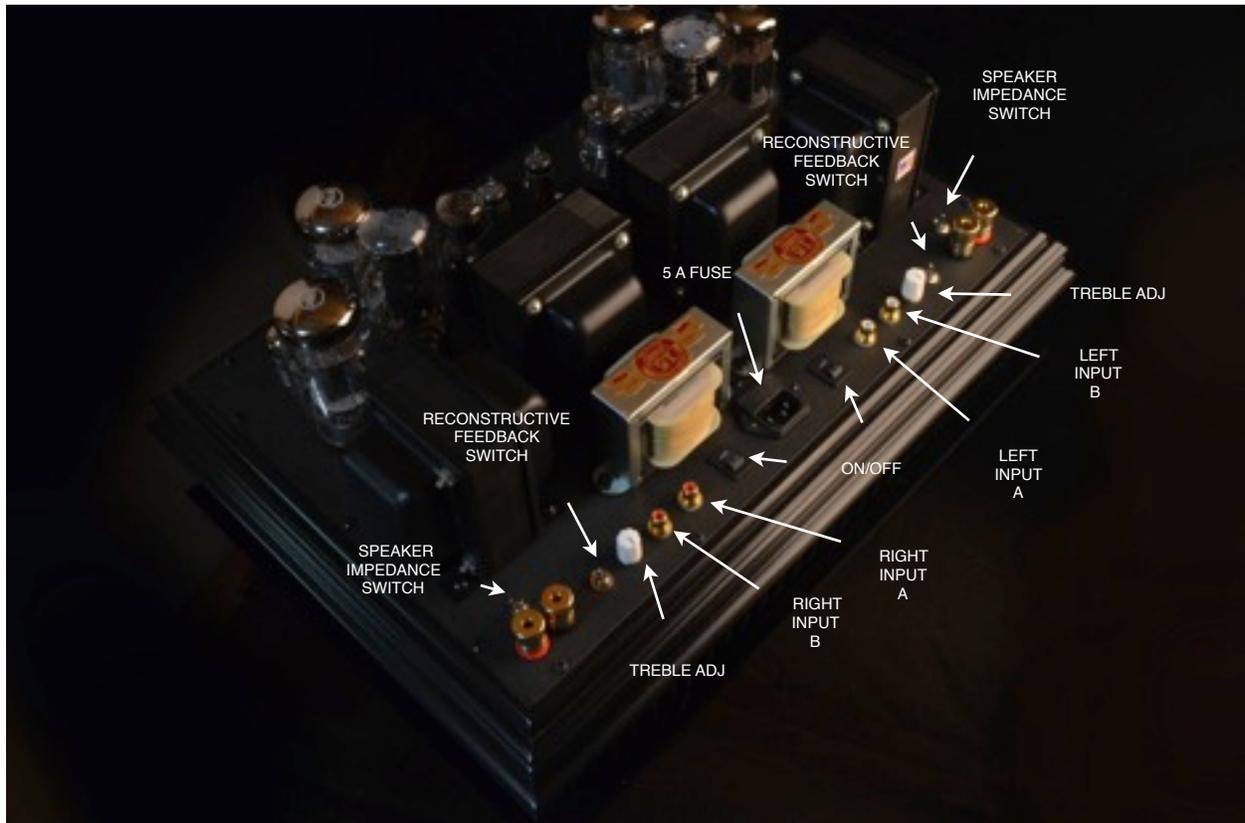
ZEN TORII MK IV

Dual Mono 12 Valve Class A Push Pull Amplifier
zero negative feedback

GETTING STARTED

The TORII MKIV is two completely separate mono amplifiers built side by side into the same chassis. The only common thing they share is the power cord and front mounted gain control.

This amplifier was built in two halves. Each half is a mirror image of the other. This includes the jacks on the back and even all the parts on the inside. There are two power switches, one for each side. Below the switches and jacks have been labeled in the picture.



TORII MK IV- Rear View

Binding Posts

The only thing not labeled is the speaker binding posts. The outside post is marked at the base with a red washer indicating speaker (+). The post next to it marked at the base with a black washer is speaker (-)

Speaker Impedance Switch

The speaker impedance switch may be operated "on the fly" while you listen. Select the setting that sounds best. The amp is wired standard for 4 and 8 ohm speakers.

Speaker Impedance Switch (cont.)

The amplifier is sold with the option of being wired for 8 and 16 ohm speakers. Irregardless of which way you had your amplifier wired at the factory, the higher impedance will always be with the switch towards the front of the amp. Lower impedance will always be with the switch towards the rear of the amplifier.

Treble Adjust

This control adjusts the high treble above 8kHz by around 3dB - although that figure can be higher or lower depending on the impedance curve of the actual loudspeaker the amp is hooked up to. The adjustment is intended to be subtle.

Reconstructive Feedback Switch - Whistling Sound

This switch can be operated "on the fly" to turn on or off the reconstructive (positive) feedback. A rare feature to have on any amplifier because it is so difficult to define a window of stability that works on everyone's speakers. Therefore, we do not claim this feature will work with everyone's speakers. You'll know if this feature is compatible with your speakers if you don't hear the amp start to whistle when the switch is ON.

The reconstructive feedback switch has an ON and OFF. When facing the front of the amplifier, reaching over it and flipping the switch towards the back of the amplifier is ON, while the switch pointing towards the front of the amplifier is OFF. It is important to keep this switch off any time speakers are disconnected as damage could occur.

If you hear the amplifier start to whistle, turn the reconstructive feedback switch OFF until the cause has been corrected. While we don't anticipate many if any speaker incompatibilities, if you have a pair of speakers that are not compatible with this feature just contact us and we can discuss one of several possible solutions.

Input Jacks

The Torii Mk IV is set up with two pair of inputs. The pair on the left side of the amplifier when looking at it from the front, are marked in white. The pair on the right side are marked in red. These are standard RCA jacks with high quality construction featuring teflon insulators and gold plating.

Selector Switch

The two pair of inputs can be selected with the "Source Switch" located between the two small 7 pin tubes in the front of the amp. These tubes (OC2) do not get hot, so a finger can slip between the tubes easily to access the switch.

ON/OFF SWITCHES

There is a rocker switch located on either side of the IEC (power cord connector) socket to turn each side of the amplifier ON or OFF. Being a true dual mono amplifier, you may use either side by itself without issues.

FUSE LOCATION

The fuse is located inside the IEC (power cord connector) along with a spare. These are 20mm glass fuses rated at 5 amps for those in the USA, CANADA, MEXICO, JAPAN or anywhere else the voltage ranges between 100 and 125 volts. The fuse size is 2.5 amps for voltages ranging between 200 and 250 volts.

WHAT TO DO IF A FUSE BLOWS

The most common cause of a blown fuse is a bad tube. If you have a fuse blow, go ahead and replace it, but before turning on the amplifier, remove both rectifier tubes. Turn on the left side of the amplifier and wait to see if the two output tube and the input tube light up... remember it will take up to 30 seconds to see the red glowing filaments inside the tubes. If the tubes light up it means the power transformer for that side of the amp is OK. Turn on the right side and see if the same tubes on the right side also light up. If they do, that means the transformer on this side is also OK. Should either side cause the fuse to blow it means the power transformer for that side is bad and the amp will have to be serviced.

Assuming everything was successful in the paragraph above, it is time to see which tube is bad. Start by installing the rectifier tube back into the left side of the amp and turn the amp back on. If you don't see the tubes light up within 30 seconds, the rectifier tube is probably bad and the fuse has probably been blown again. Fuses blowing right away tell us that it is not the output tubes because it takes about 30 seconds for the output tubes to heat up enough to draw current. If an output tube was shorted, it would draw excessive current after about 30 seconds and depending on the severity of the short, blow the fuse.

Repeat for the right side of the amp and you should have discovered either a bad rectifier or bad pair of output tubes to be the cause.

Fuses rarely blow for no reason unless they are too small to handle the turn on surge when powering up the amplifier. The 5 amp fuse for 120 volt use is sized to handle the turn on surge of both power supplies being turned on at the exact same time.

Rectifier tubes typically last for many years, but current production rectifier tubes are not typically the same quality as N.O.S. (New Old Stock from the 50's, 60's, 70's) so it IS possible for one to fail for no apparent reason. Nearby lightning strikes or power surges can cause a rectifier tube to arc internally and thus blow the fuse. If this happens the rectifier tube may still work or may not.

BASS CONTROL SWITCHES

The two switches on either side of the volume control are used to control how tight the bass is at any given time and can be operated "on the fly" while you listen.



There are two of these switches, one for each side or channel. When looking at the amplifier from the front, like the picture above, the switches are OFF when they are towards the front (you) and ON when they are pointing towards the rear of the amplifier. When turned ON, you will hear the low bass get tighter. The reason for two of these switches is for situations when you have one speaker in a corner and the other out in the room with no wall to load it. The speaker in the corner is going to have more bass and boomer bass. Turning the bass switch ON for that speaker will make it sound more like the other one giving you better overall balance.

INSTALLING TUBES

Using the diagram above you should be able to install the tubes in their correct locations. Remember the left side is a mirror image of the right side. On the smaller tubes it is wise to visually inspect the pins to be sure they are not bent. Inserting tubes with bent pins can damage your amplifier.

TUBE SUBSTITUTIONS

The 5U4 rectifiers can be replaced with 5AR4 and 5Y3GT. 5U4 and 5AR4 typically give the best performance.

The Voltage regulation tubes OA3 (aka VR75) can be replaced with only another brand of OA3/VR75 if the sound of the amp is not to change. However you can experiment with VR90's and VR150's as this will alter the grid voltage of the output tubes and change how they sound. The overall gain of the amplifier will drop slightly with these alternates.

The Voltage regulation tubes OC2 are used to feed the input stage of the amplifier, and can not be changed except to another brand without changing the sound of the amp. However, just like before, you can substitute OB2 and others with some interesting results.

The input tube (6922) can be substituted with a 6N1P-EB (Russian Tube) if a warmer sound is desired AND a potentially huge drop in power output before distortion is agreeable. Otherwise there are endless brands of N.O.S. (New Old Stock) tubes available that you can try... each will sound slightly different and each will effect the overall noise floor of the amp slightly as well.

OUTPUT TUBES

The Torii MK IV has again been improved by a small increase in gain from the input stage over prior models. This makes the EL34 output tubes it was originally designed around sound even more dynamic and louder than before. In fact, with EL34's the amp will get as loud at the 1/2 volume mark as it did at the 3/4 volume mark in prior models. It will of course be easier to clip the amp now, since the amp will be at max power when the volume is just past the 1/2 way point. The Hazen Grid Technology that we implemented in prior models is also in the Torii Mk IV to make EL34's more transparent sounding.

The alternate tube for the TORII MK IV is now the KT-66. This is a superior sounding tube that can now be used in the amplifier in place of the EL34's. With the KT66's higher gain requirements, the extra gain we put into the amp is now needed to drive the KT66. That means that with the KT66's installed, a TORII MK IV will have a similar overall gain as the prior models had when EL34's were installed. This means the volume control will have to be at the 3/4 mark or higher to reach full power.

MATCHING

It is important to run a matched PAIR of output tubes in each side of the TORII MK IV. To prevent mix-ups, we ship every amp with matched QUADS of output tubes.

TUBE FAILURE

If an output tube fails or becomes weak from excessive use, the channel with the weak tube will distort early, even if the pairing output tube is perfect. It only takes one tube to go bad in a push pull pair to ruin the sound.

BIAS SWITCH

In prior models, there was a bias switch located on the front top of the amplifier that was used to adjust the local negative feedback of the output tubes ON or OFF. This has been eliminated in the TORII MK IV and the output stage is permanently wired with local negative feedback OFF.

START UP

Before starting your amp for the first time, be sure all the tubes are installed in the correct locations. Hook up your speakers to the amplifier. Do not hook anything to the inputs of the amplifier at this time. Power up one side of the amp first and then power up the other side. Listen for noise and hum from each speaker. Whatever sound you hear should be about the same on both channels. New tubes can make noise intermittently on start up while the impurities burn off the plates. This is normal and should go away within the first hour.

Now that amplifier is on, and the gain control is all the way down, hook up your source or preamp to the inputs. Start your recording and slowly raise the gain control until you reach the desired volume.

PREAMPS

If you plan to use an active preamp with your TORII MK IV, you may find the best sound is with the gain control on the TORII somewhere below "all the way up". This is especially true if you use EL34 output tubes. With EL34's we recommend setting the volume at the 1/2 way point.

As a general rule you can add weight to a recording by turning the preamp up higher and the gain (volume control) on the amp lower. The reverse is also true if a recording is too thick, just turn the gain on the amp higher and the volume on the preamp lower.

Many users will find the transparency of the TORII MK IV to be so spectacular that only the finest preamps will preserve it... this is why we designed the amp with a gain control so that it can be used without a preamp.

BREAK-IN

During the first few hours or days with your amplifier you will no doubt wonder about break-in, if for no other reason than hearing about it constantly every time you read about new amplifiers.

If you're new to tube gear the amp will sound *so good right out of the box* that you will have a hard time worrying about break-in, so don't.

BREAK-IN (cont.)

If you've been around the block a few times, the fastest way to break in the amp is 5 hours on with music and 5 hours off. Repeat this process 5 times. This process will speed the seating of the dielectric in the coupling caps and you can then expect the amp to bloom in the very near future.

Beyond this, the amplifier will continue to improve and become more and more refined over the next 200 hours or so. After that, the output transformers and wire will continue to season with age. That means that an amplifier that is 5 years old will always sound better than an amplifier that is 1 year old. Yes, it just keeps getting sweeter as time goes by.

WEAK LINKS

Please, if even only for an evening, lift some of the handicaps you've placed on your new amplifier so you can hear more of it's inner magic. The fidelity of your amplifier is limited by the weakest sounding link in your system. The quality of your source component and interconnect cables is of paramount importance because you now have an amplifier so good it will never become the weak link. You can't spend enough money on a source to hear how good the amplifier actually is, so each time you upgrade your source the amp will blow your mind all over again.

Make sure you pull your speakers well out into the room set up in a triangle with the listening chair. In this arrangement you will be able to hear the music go holographic with outrageous depth and width. Amuse yourself with how well your speakers disappear.

Statistically most owners of Decware amps have never heard the real potential and inner magic the amp is capable of. Because it sounds better than what they had, they stop exploring. Room acoustics are what create the boundary between potentials with this amplifier. Even with a 7 figure DAC as your source, you will not get to the magic place I'm talking about in an un-treated room unless by sheer luck.

It is possible to take a spare bedroom of smallish size and create a dedicated listening space that literally sounds like it's 8 times larger than it really is. Imagine perfectly rendered 3D space throughout as if your walls didn't exist. If more people realized this is possible with diffusion and absorption I think you would see a lot more treated listening spaces and a lot less equipment swapping.

MAINTENANCE

Cleaning should be done with the amplifier OFF and at room temperature. Tubes should be removed prior to cleaning. A damp towel with alcohol is ideal for removing any smudge marks.

MAINTENANCE (cont.)

Input jacks can also be cleaned with an alcohol soaked Q-Tip inserted into the jack and rotated. If the Q-Tip comes out with dark stains on it, your jacks were dirty. Jacks can get dirty after only a single insertion of a non-cleaned interconnect cable. Having clean connections is important. Finger oils do not help the sound. Products like Caig DeOxit, ProGold and other contact cleaners/enhancers can also be used as a part of a regular maintenance program. The volume control should not need cleaning as the chassis for this amp is sealed to keep dust and smoke out of the inside of the amplifier.

The amp is self-biasing so there is no maintenance or adjustments to make after you install new tubes.

POWER CORDS and CONDITIONING

Upgraded power cords can and do make a difference when the overall strength of the audio chain begins to show a sock power cord as the weak link. We hear nice improvements with the use of silver/Teflon DHC-1 power cords.

TWEAKS

The biggest thing regarding tweaking the amplifier itself is going to be tubes. Every tube will sound a bit different. Rolling tubes, in particular the input tube, with your favorite NOS (New Old Stock) can yield some very synergistic effects. Beyond tubes, a good power cord and clean power, the only thing left is vibration control. This amp will suffer from vibration less than most due to the heavy steel it's built from. Things like tube dampers and high mass stands can further improve focus.

SERVICE and REPAIR

Your amp is covered parts and labor for the lifetime of the original owner. Should it ever need repair or you just want it checked, contact us or fill out the RA form on our web site and include it with your amp when you ship. We'll contact you after it has arrived and let you know what we've found and determine exactly what caused it. So far less than 1% of Decware amps have required service since they started shipping in 1998.

GETTING THE MOST FROM YOUR ZEN TORII MK III

Your amplifier comes with a lifetime warranty. Probably one of the only amplifiers in production that has one. Decware is a small enough company to consider these hand built amplifiers to be like our pets. We like to keep tabs on them and make sure their healthy and happy at all times. We don't want to see one get stuffed in a closet and go unused.

If you're not getting the sound you're after or grow tired of your amp we already know the 26 reasons that could have created this effect and would be pleased to offer some free consulting.

There are also over 100 articles written on the web site to this effect and active support forums for you to participate in.

SAFETY

You can't get the most from your amp if your not around to hear it! Never remove the amplifier from it's wood base. There are no user serviceable parts inside. **With all tube amplifiers it is wise to turn them off when you go to bed or are away from home. Tube amps are high voltage devices and tubes are in themselves imperfect devices so failures are possible even when the amp is just on not playing any music.** Keep children away, tubes are too hot to touch. Specifically the 5U4, EL34/ KT66 and 6922 will burn you. The remaining tubes that glow bright orange (OA3 and OC2) do not create any heat and are safe to touch while on. Keep water away from amplifier at all times, especially when on. A single drop of water hitting a hot tube will make the tube break and short out in the process. Keep flammable items a safe distance from your amplifier and make sure the removable power cord you use is in top condition.

SPECIFICATIONS

INPUT TUBE CHOICES: 6922, 6DJ8, 6N1P
OUTPUT TUBE CHOICES: EL34 KT66

INPUTS: 2 RCA TYPE INPUT JACKS FOR EACH CHANNEL
OUTPUTS: 1 PAIR HEAVY Gold BINDING POSTS PER CHANNEL

OUTPUT STAGE TOPOLOGY: GND-CATHODE TRANSFORMER

RK LOAD PLATE TO PLATE: 6600 OHMS
IDLE CURRENT: 47 MILS PER OUTPUT TUBE

HIGH B+ VOLTAGE: 410 VDC CHOKE REGULATED PER CHANNEL
INPUT IMPEDANCE: 100 K OHMS
INPUT SENSITIVITY: FULL POWER @ 2.0 VOLTS WITH KT66
INPUT SENSITIVITY: FULL POWER @ 1.0 VOLTS WITH EL34

POWER OUTPUT 24.6 WATTS RMS PER CHANNEL

NOISE: -80dB

OPERATION: CLASS A1
GRID REGULATION: ONE OA3-OD3 PER CHANNEL
INPUT STAGE REGULATION: ONE VR75~VR150 PER CHANNEL
RECTIFICATION: ONE 5Y3GT or 5AR4 or 5U4 PER CHANNEL

INPUT STAGE: ONE 6N1P or 6922 or 6DJ8 PER CHANNEL

OUTPUT STAGE: TWO MATCHED EL34 or KT66 PER CHANNEL
SIZE: 19-1/8 "WIDE x 13-3/4 "DEEP x 7-3/4 "HIGH
NET WEIGHT: 39.8 lbs.

WARRANTY: LIFETIME TO ORIGINAL OWNER / 90 DAYS ON TUBES
SHIPS WITH:
PREMIUM MATCHED OUTPUT TUBES

SELECTED 5U4 RECTIFIERS
6922 INPUT TUBES
N.O.S. VOLTAGE REGULATION

REMOVABLE POWER CORD

SILVER LEADED CRYO TREATED BEESWAX CAPS ARE STANDARD for ALL COUPLING

COMMENTS FROM THE DESIGNER

The TORII MKIV is the latest in a long lineage of TORII amplifiers and is our best yet.

TORII is the Zen term describing a gate to enlightenment or enhanced consciousness. We name it this for reason we think you'll find obvious once you have owned one for awhile.

Where did the TORII come from? Well, when you hear one of our 2 watt Zen Triode amplifiers, you leave knowing the only thing that could possibly be better than that is MORE OF IT. Meaning, the same sound, more power. What makes the sound so good is among other things, transparency. Transparency is directly tied to the number of parts used in the circuit. More parts less transparency. Problem is, amps with more power require more parts. This is what makes this now 22 year effort so unique... the TORII design is special, it allows you to have your cake and eat it too by giving you that same sound with enough power to have some real fun.

The MK IV compared to prior models takes everything to a slightly higher level, a side effect of building thousands of amps by hand and always coming up with ways to improve them. This time it is the ability to use KT66 output tubes combined with a carefully tuned reconstructive feedback switch that make it special. The linearity of the KT66 is superior to the EL34 on problematic speakers and has a more refined sound. The feedback switch works the opposite of negative feedback which smears the sound. The phase angle of the amplifier is reduced when this switch is turned on giving you even more transparency. This is of course again TABOO territory from a circuit perspective, but that's why it sounds so good. The music becomes more animated, more like it really was when recorded.

I hope you enjoy the fidelity of this amplifier as much as I do, and invite you to call me directly anytime you have questions about it, or just about how to eliminate the next weakest links in your audio chain.

-Steve Deckert

P.S.

Please view my tips for using the amp on the following page.

Dear Audiophile,

Here are some tips for adjusting your MK IV.

On a given set of speakers, especially at low to normal listening levels, the amp will sound good but different with both settings on the 4/8 ohm switch. One setting will always be louder and richer than the other. Good for low volumes. At high volumes or if bass output seems excessive the lower setting is usually best. You should adjust this switch on the fly while you listen and visit it frequently at different playback levels.

A similar thing happens with the feedback switch, in that in one position it is louder than in the other. The feedback switch in combination with the 4/8 ohm switch gives the amplifier 4 different sound combinations. Combined with the bass tightness switch on the front of the amp you actually have 8 possible sound combinations with EL34's and 8 more possible sound combinations with KT66.

It's a wide range of adjustment worth exploring... it's literally 16 different amplifiers at your fingertips.

Thanks,

Steve Deckert