



Zen Triode Amplifier

2 watts x 2 or 6 watts x 1
Single-ended Class A stereo amplifier

DECWARE OWNERS MANUAL – MODEL SE84C+



Locations and function of front control

DECWARE OWNERS MANUAL – MODEL SE84C+

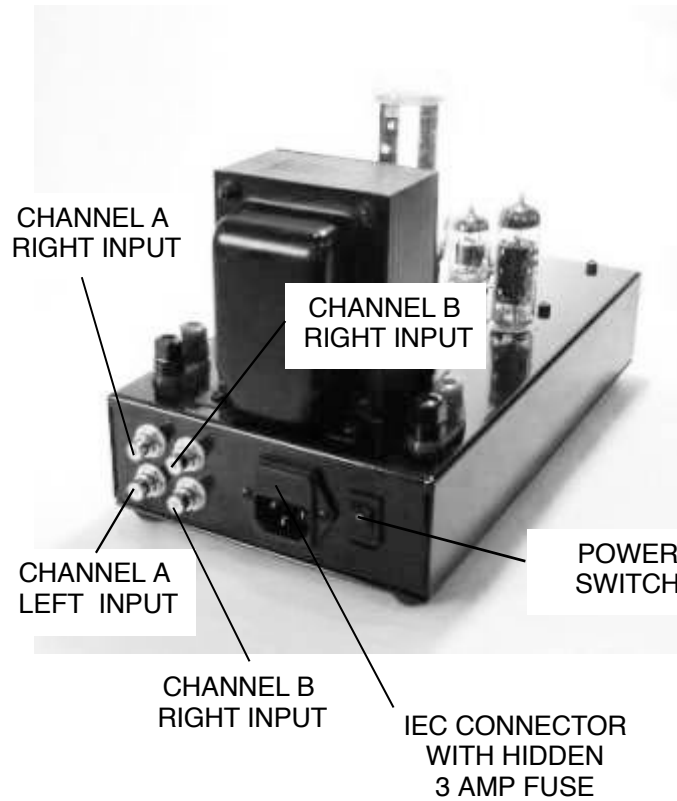


FIGURE 2

Location and function of rear controls and jacks

DECWARE OWNERS MANUAL – MODEL SE84C+

START UP

After unpacking your Zen amp install the tubes as shown in the pictures above.

ABOUT THE TUBES

Your amp is configured as a single ended triode with a single output tube per channel. The output tubes can be your favorite EL84/6BQ5 or SV83/6P15P-EV. The amp has been designed with a common cathode bias circuit so that the two output tubes remain matched during operation even if you use unmatched output tubes. This concept is also referred to as "self-balancing" and ensures perfect image focus even as the tubes age.

The small tube in the front of the amplifier is called the input tube and its purpose is to raise the input signal to a level sufficient to drive the output tubes. This small dual triode is handling both channels. You can use either 6N1P or 6922 or 6DJ8 tubes in this location. This is the tube that will make the biggest difference in how the amplifier sounds. Since the signature of each tube is different, even different brands of the same tube type, using a dual triode is an advantage because it keeps the channels timbre matched.

The last and largest tube is called the rectifier tube and can be your choice of 5U4, 5AR4, and even 5Y3GT. *This amplifier should not be used with 274B rectifiers without first being modified by Decware.* Trying different rectifier tubes will also change how the amplifier sounds.

TUBE LIFE

The output tubes are the main tubes that wear out. We ship the amp with premium mil spec Russian 6P15P-EV tubes with extra thick glass and extended tube life. You can expect 5000 hours from a set. Tubes in this amp are biased to approx 45 mils.

As output tubes wear out, they become softer sounding. Best way to tell if you need new output tubes is to install a new pair and see if the amp sounds stronger. If you hear no change, put the old tubes back in the amp and try again in 6 months.

Input tubes will usually last through 2 or 3 sets of output tubes, but again having spares on hand lets you find out any time you want what the status is. Rectifiers can last up to the life of the amplifier, however they are also the first in line to get hit by power surges during thunder storms, etc., so they can appear to fail for no reason from time to time. Always have a spare rectifier on hand. If a rectifier blows, the fuse will blow. Sometimes rectifiers will simply arc and then work fine. This is not uncommon.

DECWARE OWNERS MANUAL – *MODEL SE84C+*

Now that you have the tubes installed and know what each one is for, hook your speakers and source up to the amplifier and turn it on. Be sure to have the volume control all the way down. After the tubes slowly light up and begin to work (about 20 seconds or so) you can slowly start to raise the volume. If you hear distortion it means the amp is still warming up. 60 seconds is the official warm up time before you should panic.

POWER OUTPUT

Your amplifier will drive almost a dead short – meaning that a 2 ohm speaker won't irritate the amp in any way shape or form. In fact it will like it – a lot. Because of this unique ability for a single-ended amplifier, it is able to drive every speaker with a good frequency balance. The issue is never going to be the amplifiers ability to drive a given speaker but rather how loud it will get and if that volume is satisfactory. Complex, low efficiency speakers typically have a busy crossover network that is sure to spend a good portion of the first watt into heat before it ever reaches the drivers. With only a couple watts to work with, you don't want to waste any power into heat if you don't have to. Ideal speakers are generally simpler designs with higher efficiencies.

INPUT SENSITIVITY

This is the amount of signal required to get full output from the amplifier – or put another way – how much signal it takes to get the amp to clip. For whatever reason the industry has used 1 volt as the standard requirement to bring an amplifier to full power and this is fine. The standard output of CD players, DACs, and most line level sources is 2 volts. We designed the Zen amps to use the full 2 volts in order to come to full power. This means that with a CD player hooked directly to the amplifier you would be able to turn the amplifier volume all the way up and reach the power limit just at the onset of clipping. This makes it very difficult to clip (distort) the amplifier and consequently the amplifier has the world's most graceful clipping – so much so in fact that many people don't even know when or if the amp is distorting when they have it turned all the way up.

CLIPPING

The first thing everyone is going to do when setting up a Zen amp with a given set of speakers is find out what the max volume is going to be and if that volume is going to be enough to satisfy. Because the clipping characteristics of this amplifier are so polite it can be hard to hear exactly when the amp is beginning to run out of power (clip) so here is a secret way to tell:

DECWARE OWNERS MANUAL – MODEL SE84C+

Turn off the lights and look into the output tubes. There are some small square holes in the gray plates inside the tube where if you look through them you can see a blue glow on the internal grids of the tube. This blue plasma is your visual clipping indicator. Simply find the line of sight that lets you see the blue glow inside the tube and raise the volume of the amp until you see the glow start to flicker with the bass line of the music. This is the max clean volume of the amplifier without distortion. You'll likely find this to be at somewhere past $\frac{3}{4}$ on the volume control and on some softer CD's you may find it to be all the way up.

BIAS SWITCH

The switch as seen in the second picture in this manual exists for one reason only – to change the sound of the amplifier, giving you two possible sound signatures at any given point while listening. The switch changes the bias current of the input tube that results in a more laid back signature vs. a more pronounced dynamic and presence. No one agrees on which way sounds best – so it is a function of the source and or preamp you use as well as the type of speakers you have that will determine which way will sound best to you.

The switch can be operated while listening without damage to the amplifier or speakers even though you will hear significant pop when the switch is changed. Don't worry this is normal. At 2 watts the amplifier is incapable of blowing up a speaker (even tweeters). On a similar note, the amplifier itself is impossible to blow up too. For example; shorting the speakers wires together will have no effect. Leaving the speakers unhooked from the amplifier, while usually death to most tube amps, will also have no effect. The output transformers are oversized, and 2 watts is not enough to damage them.

OUTPUT TRANSFORMERS and IMPEDANCE

The Zen amp uses proprietary transformers. Its output transformers are wound on grain oriented silicon steel and nickel cores. They are the result of a few years of R&D and are one of the substantial secrets behind this amplifiers huge success.

A couple things are different when compared to most other tube amps. First the outputs (secondary windings that connect to the speakers) are floating with no reference to ground. The Zen amp will work in either configuration meaning that if you did connect the negative speaker jack of each channel together, or each to ground, the amplifier will still work fine. The advantage of the floating outputs is realized in the holographic way the amplifier images.

The acceptable speakers should fall between 2 and 8 ohms. There is no need to worry about changing the amp when changing speaker loads.

DECWARE OWNERS MANUAL – MODEL SE84C+

It is also possible to get excellent results from some 16 ohm high efficiency drivers as well. However, if you try this and find the amp to sound a bit weak or thin, we can change the output transformers to what we call the "EX" transformers that will target the amps power band towards a higher impedance adding power, weight and body to high impedance speakers.

Just remember that in the stock configuration the amp will increase in power as the speaker load drops. That means if you take a pair of 4 ohm speakers and 8 ohm speakers of the same efficiency, the 4 ohm speakers are going to get louder on a Zen amp than the 8 ohm speakers will.

Unlike a solid state amplifier, it is OK to short the speaker wires together accidentally or on purpose.

BRIDGING THE AMP INTO MONO

The SE84C+ can be bridged mono without the typical smearing you get from bridging most stereo tube amps. Using two of these amps, one per channel, will give you 6 watts per channel instead of 2 watts. Getting back to speakers for a minute, the stereo amp by itself will actually drive 2 ohm speakers and like it. In fact some manufactures have made 2 ohm speakers just for this amp. If, however, you bridge the amps into mono it is best to have speakers rated at 4 ohms or higher (all way up to 16 ohms is OK).

To bridge the amp into mono you simply series the output jacks. To do this, take a piece of wire and connect the left positive speaker jack to the right negative speaker jack. The two remaining jacks will be used to power the speaker.

Also, it is important to feed a signal into both the left and right input jacks simultaneously. This can easily be done with a Y-Adapter cable with two male RCA jacks on one end and a single female RCA jack on the other.

BREAK-IN

During the first few hours of 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.

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

DECWARE OWNERS MANUAL – *MODEL SE84C+*

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 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 Zen 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.

Input jacks can also be cleaned with an alcohol soaked Q-Tip inserted into the jack and

DECWARE OWNERS MANUAL – *MODEL SE84C+*

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 Zen amps have required service since the amps were launched in 1998.

DECWARE OWNERS MANUAL – *MODEL SE84C+*

GETTING THE MOST FROM YOUR ZEN

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 please feel free to contact us. Talk to Steve (the designer) directly. He is always pleased to offer some free consulting in the interest of making your stereo sound better. The advise is always honest even if it means recommending someone else's gear.

There are also over 100 articles written on the web site to this effect and active support forums for you to meet like minded audiophiles and share experiences.

SPEAKERS

You'll find that if you don't require loud listening levels, the Zen amp will drive most speakers without issue. Finding speakers that are more efficient will lift this restriction. We find 94 ~ 96 dB at 1 watt to be ideal for unrestricted playback in medium to larger size rooms. Decware manufactures a nice selection of ideal speakers for these and other tube amplifiers. Decware speakers have the speed and openness to really show off what is possible with this amplifier.

MODIFICATIONS

Your amp was built with top grade audiophile parts and requires no tweaks or upgrades to improve the sound. When asked, we will often approach improving the sound of your amplifier by identifying and eliminating weak links in other components so you can hear what the amp is actually capable of.

DECWARE OWNERS MANUAL – *MODEL SE84C+*

SPECIFICATIONS

Weight	17lbs
Dimensions	8"H x 6.125" W x 12"D
Circuit type	Single ended class A triode
Power output	2.3 watts RMS into 4 ohms 5 watts RMS into 8 ohms bridged
Input sensitivity	2.0 volts for full output
Input impedance	100K Ohms
Inputs	2 pair for 2 sources
Noise /Hum	Less than 1.5 millivolts
Response	20Hz ~ 20kHz
Feedback	No negative feedback used
Rectifiers	5U4
Outputs	SV83 / EL84
Ground	Star ground with silver wire.
Interconnect	Mogami
Signal tube	6N1P / 6922 / 6DJ8
Transformers	9800 ohm Decware EM406
Power	World voltage compatible 150ma Decware
Switches	Silver contacts
Biasing	Self-biasing
Resistors	Dale, Vishay
Caps	Nichicon, Sprague ATOM
Signal Cap	Polyester film
IEC	Fused with removable power cord
Consumption	65 watts
Input jacks	RCA
Output jacks	5-Way binding posts – up to #8 bare wire
Chassis	Steel with baked on high gloss powder coat
Speakers	Ideal is 96dB or higher / Minimum is 89dB
Warranty	Lifetime to original owner