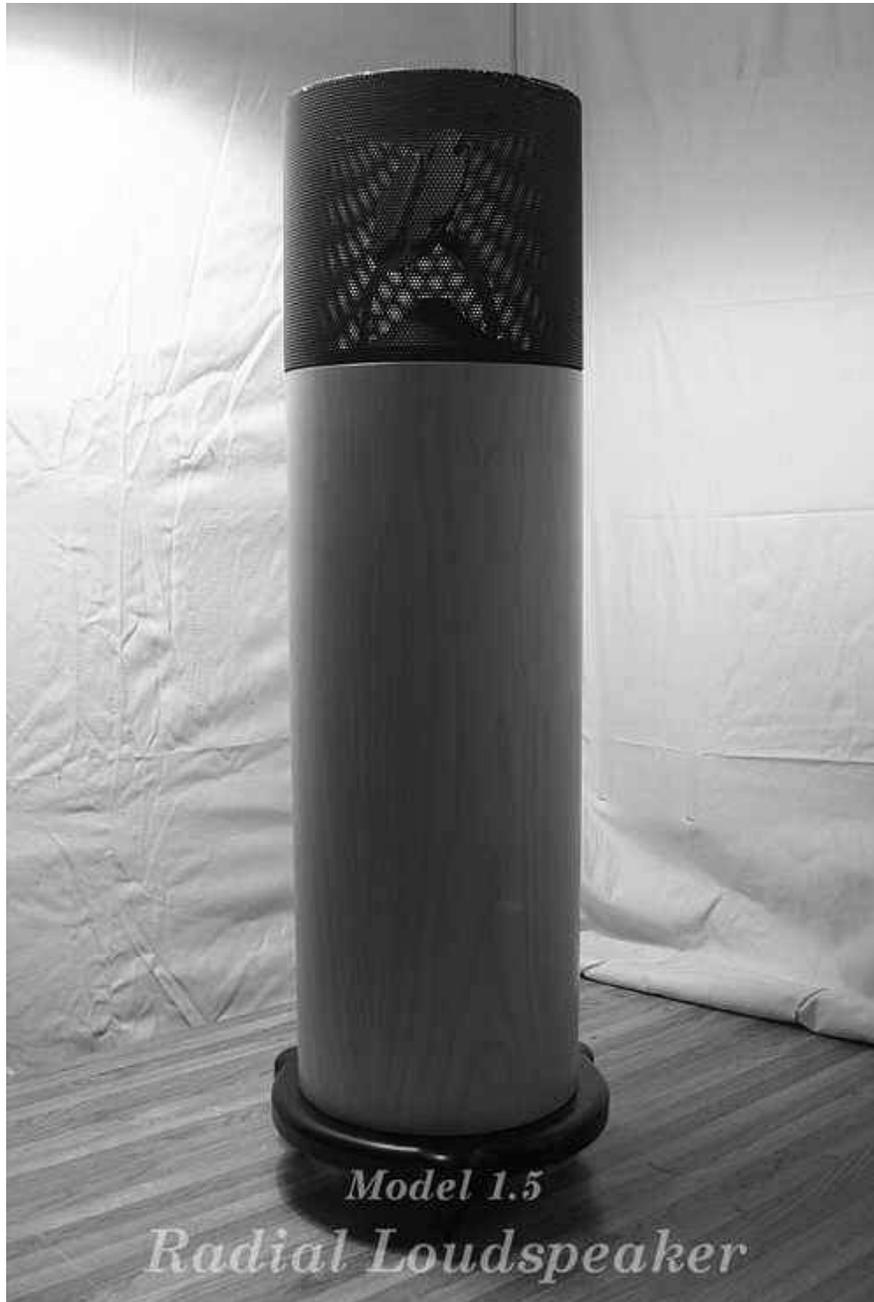


# **OPERATION MANUAL**

Model RL-1.5

*Zen Designed Radial Loudspeakers*



OCT. 2004

# OPERATIONAL GUIDELINES for the RADIAL LOUDSPEAKERS

Congratulations on your purchase of the Radial Loudspeakers! These guidelines will give you a basic understanding of these unique speakers so that you can get the best results possible.

## DESCRIPTION

The Radial Loudspeaker is an eight inch two-way design that stands out as one of the most unique speakers in the industry. It was designed specifically for the serious audiophiles who want timberal accuracy and holographic imaging. It employees Decware's own proprietary radial driver, a horizontally mounted inverted cone design with two MAJOR strengths:

- A) it launches a hemispherical wave front of evenly dispersed energy and
- B) it has a cone weighing in at only 4 grams using a suspension that is so tight you can barely see the driver move.

This makes the Radial Loudspeakers sound similar to electrostatic or planar magnetic panel speakers in that they are fast. Unlike panel speakers, you won't need to put your head in a vise to find the ideal sweet spot. These speakers as you might imagine are not beamy.

## SOUND

If you are used to box speakers (no mater how exotic) you are used to a relatively high mass speaker resulting in slow, somewhat bloated bass. Of course it won't sound slow to you until you hear a very low mass speaker that is fast. The absence of bloated bass on the Radials may at first come off sounding dry. Extended listening will reveal that these speakers do in fact have significant bass response and good low frequency extension. We recommend that you put your old speakers away for the 30 days you spend auditioning your new Radials. Let yourself get used to this new sound. Towards the end of the 30 days, un-install the Radials and re-install your previous set of speakers. Then when you listen to your old speakers again you will hear how slow and thick they are and hopefully realize how this typical coloration destroys detail.

## SETUP

Setting up your Radial Loudspeakers is fairly simple. First you will need to install the spikes that came with the speakers. These screw into the base of the loudspeaker. The spikes are adjustable if you have an uneven floor. The distance between the base of the speaker and the floor has been preset by the length of the supplied spikes. This distance effects the signature of the bass. In most cases carpet is recommended as an ideal surface under the loudspeaker.

## REAR BINDING POSTS

There are two sets of binding posts on the Radial Loudspeakers. The **lower set** is what you will **hook your speakers wires to**. The **top set** of binding posts are to accommodate **your choice of resistor** for the purpose of attenuating the tweeter.

## TWEETER ADJUSTMENT- ELECTRICAL

Installing different values of 5 watt resistors in the top set of binding posts will adjust the output level of the tweeter. For example, using a 16 ohm resistor in this location will attenuate the tweeter more than using a 10 ohm resistor. Using a 6 ohm will get the tweeter louder yet and using a piece of wire (zero ohms) will make the tweeter play as loud as possible. You may use any value you see fit. Some sample values have been provided with your speakers so that you can experiment.

## GRILLS

These speakers ship with the grills installed to protect the driver from shipping damage. As you can see they are heavy duty steel grills with a 51% perf. They are held in place by a rubber o-ring. Removing them can be accomplished by slowly and firmly pulling them up at a slight angle. You can also pry them off with a table knife. These grills are acoustically transparent. They also further diffuse the sound from the drivers so besides offering excellent protection, there are sonic reasons for leaving them on once you have your speakers set up.

## TWEETER ADJUSTMENT - PHYSICAL

The tweeter of the Radial Loudspeaker is mounted on a metal strap that was designed to be flexible enough so that you could bend it. This is how you adjust the angle of the tweeter. Determining the proper angle is simple. Just aim them directly at the listeners head when he or she is sitting down in the listening chair. This angle usually ends up being somewhere between 5 and 15 degrees. Use the photo on the front of this manual as a guide and make sure your tweeter is in approx. the same position as the one in the photo as a starting point. NOTE: Sometimes this bracket will bend from being shipped so it may not be in the same position as the one in the photo when you first unpack your speakers.

## TUNING - PLACEMENT

The only tuning there is has already been covered as far as things you can do with the speaker itself. (Tweeter and floor surface) The remainder of the tuning process involves finding the best location in your listening room to place the speakers. Most listening rooms are anything but acoustically perfect, so speaker placement can and will effect frequency response. Start with the speakers spaced between 6 and 10 feet apart with the tweeters pointing directly at you. Experiment with placement. The more you do the more likely you are to find the optimal setup.

## **BREAK-IN**

These speakers have only been played for about 1 hour when you receive them. We do not sell returned speakers as new. Because of the extremely tight radial driver, these speakers unfortunately take several hundred hours to fully break-in. As they do, they will become less dry, more relaxed, and smoother. We expect the first week to sound pretty bad compared to a well seasoned pair. However this does not mean un-listenable. If for some reason they sound un-listenable there is probably something wrong. Things like incompatibility with certain amplifiers, improper room placement, incorrect speaker cable, improper hook-up i.e., one channel out of phase, or just that the tremendous resolution these speakers have is letting you hear deeper into your electronics than you are used too. In any case, make sure you call us (309) 671 2428 right away so we can consult you on proper set up.

## **SPEAKER WIRE**

Because of the VERY revealing nature of these speakers many of you could be rudely shown just how weak some of the other components in your system really are. This of course includes speaker wire. If ever a speaker was designed to honestly demonstrate the differences in speaker cables, these would certainly qualify. These speakers are every bit as worthy of expensive high end speaker cables as the most expensive speakers. This does not mean you should spend more on the cables than you did on the speakers. If you need help wading through the mass of confusion when cable shopping please feel free to contact us and talk to Steve Deckert, the Radial Loud-speaker's designer and owner of DECWARE. He will make sure you don't make costly mistakes.

## **BI-WIRING**

No, the Radials are not designed to be bi-wired. Bi-wiring is not automatically superior and is in fact many times detrimental to the very things it tries to preserve, like coherency. If you wanted to modify the Radials to accommodate bi-wiring you would have to remove the cabinet base, and rewire the binding posts by lifting the jumper between the two red jacks and permanently soldering the resistor of your choice in series with the tweeter leads. Obviously this should not be attempted unless you know how to solder and have decided to keep the speakers past the 30 day trial. If you have questions about bi-wiring or bi-amping these speakers please call us.

## **AMPLIFIERS**

The Radials are pushing an efficiency of 93 dB with one watt with a very flat impedance of 10 ohms gradually dropping to 4 ohms at 30 cycles. This makes them good candidates for our Zen Triode amplifiers as well as other tube gear with minimal or zero negative feedback. If you are satisfied with a modest listening level and are in a fairly small room, our lowest power amplifier at 2 watts is ideal. If you have a large space to fill and or just like to occasionally play your speakers loud, you can go up in

power from 2 watts all the way to 100 watts.

## **HOW THEY WORK**

The Radials create a radial wave front that emanates from the speaker and expands into the room across all 360 degrees. Since room reflections are what destroy focus and coherent imaging, many audiophiles have to resort to expensive and ugly wall mounted diffusers to bust up these reflections. That is because these audiophiles use a conventional speaker with forward firing drivers. Conventional speakers emit all of their energy into a 30 degree dispersion pattern or beam directly at the listener. That means that all of the speakers output (that misses you head) reflects off the back wall in a concentrated beam or pattern. By using quadratic diffusers these beams can be phase grated into a hemi-disk that radiates into a 180 degree pattern that greatly reduces the adverse effects of those reflections. In stark contrast the Radials have 90 percent less energy hitting that same surface. They also load all wall surfaces evenly so that the sound is already diffused. This makes it possible to have imaging that normally is only possible after spending 1000's of dollars on a dedicated and treated listening space.

## **POINT SOURCE**

Unlike the original Ohm Walsh speakers that radiated sound into a 360 degree pattern, the Radials do NOT try to shoot high frequencies off in all directions. We have found that there is a point in the overall frequency response around 2500 cycles where the advantages of having 360 degree wave fronts start to work against you. In other words you do not want to spit high frequencies all over the room. Using a specially selected ribbon tweeter the Radials gradually become a point source starting around 2500 cycles. They become predominately a point source by the time they reach 4500 cycles on up to 25000 cycles. This combination is what makes the Radial loudspeakers *OWN* the term "holographic".

## **CARE and HANDLING**

The Radials are finished in REAL wood. The finish can be cared for just as you would other furniture in your home. Do not try to clean the cone of the Radial speaker. Even touching it is risky. Make SURE the grills are ON when there are KIDS in the house.

## **WARRANTY**

The Radial Loudspeakers are warranted against defects in material and workmanship for 5 years from date of purchase. Should you have a problem with one, call us and we'll make arrangements to have it returned for prompt service.

## **PARTS**

All of the parts for the Radials are available and for sale for those who enjoy building their own speakers. Please call for prices.

#### **CUSTOM FINISHES**

All Radials come standard in natural finished cherry. Custom woods are also available. Since Radials are not sold in stores we have a trade-up program that extends for 1 year from the date of purchase. You may at any time during that first year trade your speakers in for a custom finished pair and expect up to the full purchase price if your speakers are still in mint condition.

#### **SUPPORT**

We have a special **support forum** on our web site for Radial Loudspeakers that is open to the general public. You can find it on [www.decware.com](http://www.decware.com)  
Please feel free to use it for questions and comments about your new speakers. In addition, you are welcome to call during business hours Monday-Thursday between the hours of 10am and 5pm CST USA.

#### **MANUFACTURED BY:**

***DECWARE / High Fidelity Engineering Co.***

1202 N.E. Adams Street, Peoria IL 61603

(309) 671 2428 fax (309) 672-1060

[www.decware.com](http://www.decware.com)

[Steve@Decware.com](mailto:Steve@Decware.com)