Subject: Start with a standard Pi ...
Posted by Maxjr on Tue, 09 Aug 2011 10:41:58 GMT
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Ok, I've been thinking alot about my future 4Pi build. I have a very interesting question I'd like to pose to you, Wayne. I'm thinking of starting out with the standard 3Pi and 12" Eminence Delta 12LF. This is to save on initial costs (until I can save more money). I'd eventually like to upgrade to the JBL 2226H 15" driver. Here's my question:

Since they share the same CD and WG, can I build the 3Pi to the 4Pi cabinet specs so that I can later cut the baffle and drop in the JBL 2226H driver? I know the 3Pi cabinet is somewhat larger than the 4Pi. How much will this affect the performance of the 3Pi in a 4Pi cabinet? I would also use the 4Pi Port and Horn setup. The only change will be the 12" driver in it for the time being until I can afford the 2226H.

I'm trying to save time and materials in having to rebuild the speaker cabinet at the time that I can afford the 2226H. What are your thoughts?

Subject: Re: Start with a standard Pi ...
Posted by Maxjr on Tue, 09 Aug 2011 11:02:38 GMT
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I just had an idea that might make this idea more realistic. It sort of goes back to my other post about modifying the 3Pi box while keeping the same internal volume and vertical alignment with woofer and waveguide.

What do you think if I make the width and height of the 3Pi box the same as the 4Pi, and make the depth longer to make up for the larger volume of the 3Pi. Then, when I have money saved for the JBL 2226H, I can just cut off the entire baffle and excess part of the box on a table saw. This will allow me to reuse 3/4's of the box (the sides and back). This will also allow me to make the 3Pi baffle closely along the same lines of the standard 3Pi with the same vertical alignment/distance of the waveguide to woofer and port.

Subject: Re: Start with a standard Pi ...
Posted by Maxjr on Tue, 09 Aug 2011 11:04:51 GMT
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I'll then just need to make a new baffle with the 4Pi specifications.

I really hope this is feasible because it would allow me to financially start on the box this week and order parts right away

Subject: Re: Start with a standard Pi ...

Posted by Wayne Parham on Tue, 09 Aug 2011 13:09:32 GMT
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Forget the mods unless you want to go through a complete design/test/refine/retest design cycle. I've spent literally hundreds of hours refining each model, and that's after three decades of developing this design type. It just doesn't make sense to throw all that out the window unless you want to experiment with measurements, crossover design and standing wave modal analysis of the cabinet. Untested mods throw away what amounts to thousands of dollars of R&D labor just to make a box a little different shape/size or try a different driver.

PSD2002 and upgrade it later. But again, don't modify unless you're comfortable with a redesign and test cycle. These are mature designs that have been optimized for the drivers chosen. Their shapes and sizes and the positions of the drivers and port are as important as the crossover components where smoothness and overall performance are concerned.

One last suggestion: Save up for subs before upgrading the woofers and tweeter, whichever model you choose. All models are designed to take advantage of multisubs, two flanking and perhaps one or two more distant. The subs provide extension and modal smoothing.
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Subject: Re: Start with a standard Pi ...
Posted by Maxjr on Tue, 09 Aug 2011 23:05:46 GMT
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Thank you, Wayne for such an in depth response. It looks like tending toward th stock 4Pi and purchasing the kit direct through you. With the kit, do the printed plans come with cutsheet dimensions for each wood panel?

Also, I know in the back of my mind I'll always be wondering what if. What if I had the upgraded JBL and B&C and how much different it would sound. Can you give an opinion on the sound differences between the upgraded and stock 4Pi?

Lastly I have 2 huge front loaded 15" horns via lilmike of AVS. This is actually why I now need to upgrade my mains. The bass is so dynamic an powerful that my mains can't keep up. The awesome fellas at AVS recommended you and your Pi designs. Again, thanks for your helP and I look forward to your opinions.

Cheers!
Joel

Subject: Re: Start with a standard Pi ...
Posted by Wayne Parham on Wed, 10 Aug 2011 00:23:52 GMT

copy of the plans. For larger speakers that incorporate a compression tweeter and crossover network, kits also include the crossover, Zobel woofer damper, and all cable assemblies are completed and ready to install. Every kit containing a compression driver also includes the horn flare and the bolts to mount the driver to the horn.

As for the differences between the stock and upgraded drivers, the higher-end compression driver is smoother and the upgraded midwoofer is both smoother and lower distortion. This is largely because of the use of shorting rings in the magnet structure.
Magnet structuresThe reduced distortion is measureable, but don't take this to mean there is a huge difference. It's a subtle diference, but it is audible.

One of the effects of distortion is listener fatigue. It becomes irritating, and even causes temporary tinnitus. It seems to be a function of SPL/time, in that high sound levels cause irritation fairly soon, but the same irritation can be felt at low sound levels if experienced over a longer period of time. These are my own personal observations but I have also heard comments from many other people that make me believe they experience the same things.

This is what I perceive where distortion is concerned:
1. In main speakers, lower distortion speakers tend to sound clearer to me, all other things being equal. However, the audibility is a function of SPL, and below a certain level, I cannot detect the distortion.
2. At high power level, a speaker with a little more distortion will be more fatiguing, making me want to "turn it down" much sooner than a less distorted speaker.
3. At low power levels, a speaker with a little more distortion will be more fatiguing over a long period of time. At low power levels, I cannot tell that it is going to fatigue me at first, even for a few hours, but after a few days at a trade show, for example, the higher distortion speaker will fatigue me, where the lower distortion speaker does not.
4. In subwoofers, distortion is much less noticeable, but higher distortion tends to sound louder and fatter. (Sorry for the subjective terms, just trying to describe what I hear)
5. Just like the mains, a high distortion woofer will be fatiguing, even if it cannot be easily detected.I gained these opinions after many years of using my own speakers which often come in a stock or upgraded version. The upgraded version usually has a midwoofer with a shorting ring, creating less distortion. Their response curves are very similar between the stock and upgraded versions, but the upgraded model has lower distortion.

Subject: Re: Start with a standard Pi ...
Posted by Maxjr on Wed, 10 Aug 2011 04:15:04 GMT

Thank you, again, for another great reply! I'm sold on the basic 4Pi kits. I think this will give me greater appreciation for the upgraded version when finances permit.

I'm looking forward to making sawdust this week