Subject: Cabinets for Four Pi speakers
Posted by tubino on Fri, 10 Apr 2009 23:19:47 GMT
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I want to make a pair of Four Pi speakers, using what I have: * Pair JBL 2226J * Pair B&C DE250 * Pair H290 horns * Will build Four Pi crossovers, adjusting for 16 ohm 2226I want to recycle a pair of stout 3/4" plywood cabinets that measure roughly 29"h x 18"w x 14"d. I plan to make a new baffle board by gluing 3/4" plywood to 3/4" MDF, then using a plunge router and circle jig. I calculate the internal volume at ~2.9 cu ft minus some bracing, so about 2.7 cu ft. I penciled a layout with the 15" up from the bottom 3", and the bottom of the horn flange less than 1" from woofer edge. This appears to leave plenty of room for a horiz. brace inside between drivers, and also leaves room for two 3" circular ports (one in each bottom corner). Questions:Any tips for gluing two pieces about 27 x 17"?Is internal volume pretty close to the Four Pi?Layout is different from Four Pi pictures, with horn smack over the woofer, and ports in bottom corners. Any issues there?Thanks,Rick aka tubino

Subject: Re: Cabinets for Four Pi speakers
Posted by Wayne Parham on Sat, 11 Apr 2009 00:22:19 GMT
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What you propose is fine. Just make sure the Helmholtz frequency is 38Hz and put the tweeter

sensitivity. When using a 2226J instead of a 2226H, scale all values in the woofer circuit to match, doubling the inductance and resistance values and halving the capacitance values.I also suggest that you don't skimp on the resistors. They don't cost all that much and even if you're using low-power tube amps, it never hurts to over-rate the parts and keep 'em cool. It also allows you to use your speakers with the full amount of power the drivers are designed for without risking damage to anything. There's a lot of dynamic range potential in a speaker like this, but only if all the parts can handle it.

Subject: Re: Cabinets for Four Pi speakers - now Crossovers
Posted by tubino on Sun, 12 Apr 2009 03:50:44 GMT
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Thanks, Wayne! The extra attenuation for the 8R DE250 sounds smart. I wouldn't be averse to using a 100w L-pad for some flexibility...My tendency would be to use lower wattage on the resistors since my "big" amps (SE 845) are nowhere near 100w, but I think I'll follow your advice. I may be loaning these to a friend who thinks he needs to spend a lot to get good speakers

(Stereophile reader!). Knowing they could handle even a big SS amp would provide peace of mind. Is your crossover board useable with the large inductor values needed for the 16R woofer? To make matters worse, I like the Erse inductors for these large mH values. The Erse are nice for mounting to a free-form board, but maybe not to your PCB...

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Subject: Re: Cabinets for Four Pi speakers - now Crossovers
Posted by Wayne Parham on Sun, 12 Apr 2009 05:30:48 GMT
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I use air core coils where possible to prevent saturation, but usually use laminated cores for coils larger than 3mH.  An air core coil with enough meat to keep DC resistance down is just too large for the higher inductance values.  If you look through the crossovers shown in the shopping cart, you'll notice that we put Erse Super-Q coils on some of them.

About resistors, I use a 100 watt part for the Zobel but 10 or 12 watt parts for the other locations. The R1/R2 values are made with a series/parallel network of four resistors to increase thermal limits.

The post below has links about various topics related to some of the things you've brought up such as L-Pads, choice of crossover components, etc.
Tweeter circuits for constant directivity horns and waveguides

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