Subject: B&C DE 250 and compensation
Posted by Russellc on Tue, 07 Apr 2009 19:06:16 GMT
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Wayne, I've been using my B&C DE 250 DRivers, both on 290H and the JBL wave guide, and am finding the driver to have WAY to much volume, or whatever that causes a real in your face/pierce the head type of sound. Breakin and reversing the phase of the HF hookup helped some. My setup isnt bass or mids shy, JBL 4507 with either 2225H or 2235H 15 inch drivers. I noticed that the series and shunt resistor in your 4 PI crossover for the DE 250 are basically the same as I am using in the E'wave crossover, 30 and 15 ohms. (30 is series, 15 is shunt) With an L-pad, I must turn it down to the 10 oclock position or quieter to balance this driver with the woofer, which is 94 db for the 2235H and 97 db for 2225H. I notice that the 4 PI does not use an L-pad, and I have read and understand the reasoning behind that decision, but it seems like that driver should be SCREAMING at that setting, or perhaps your 4 PI crossover is less quieting to the LF band? The drivers otherwise show tremendous potential and I sure would like to harness some of that!Thanks for any explanation you can give,Russellc

Subject: Re: B&C DE 250 and compensation
Posted by Wayne Parham on Tue, 07 Apr 2009 22:11:12 GMT
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It's basically the same as what I'd use for an 8dB network, combined with an L-Pad for variable tweeter output. The L-Pad changes the scale of the R1/R2 values some, because its impedance combines with the fixed resistors. But the proportions are the same and when you analyze the

tweeter circuit, with the L-Pad to provide additional variable attenuation.

The adjustable L-Pad gives the user some wiggle room, but it also means that only 8dB of HF augmentation can be provided. The AK/Econowave network was optimized specifically for the Selenium driver which has some breakup in the top octave, giving it some boost up there. If a full 6dB/octave EQ were given above 4kHz, there would be 12dB emphasis by 16kHz, and the Selenium driver would be too hot in the top octave. But the other side is that when a driver is used that doesn't have this kind of response, the top octave isn't given enough energy, and you lose some of the sparkle. Some drivers need a full 6dB/octave augmentation, which is what you would expect from mass rolloff. Without it, they'll be sort of shouty sounding. It's not as bad as no EQ at all, but it's about half of what you need. It's just not balanced EQ.
Tweeter circuits for constant directivity horns and waveguidesMost of my speakers use R1/R2 values of 16/16 or 25/16, which equates to 10dB or 12dB compensation, respectively. There are other values that can be used (see chart) but most of my speakers have combinations that require

circuit, which provides nice smooth response. There is actually a slight on-axis drop in amplitude above crossover, but when you look at the total power response radiated at all directions in the pattern, it's a good match. Some angles have a slight rise in the crossover region, some a slight

dip, with the average being as uniform power distribution as I have found in any speaker I've seen. It's a highly optimized crossover and is partly responsible for the speaker's good directional characteristics.

Subject: Shouty highs
Posted by Champion on Tue, 07 Apr 2009 23:26:34 GMT
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Hi Wayne,This is probably a bit off topic - I am using the 3Pi with DE250 driver and found the midrange a bit thin and the high frequency a bit too shouty. Then I push them into the corner (about 1 feet away from the back wall) and toe them in at 45 deg. The system now has a much better tonal balance (actually quite nice!!!). However, my room is only ~10feet wide and I am sitting around 8 - 9 feet from them so the speaker axis actually cross in front of me by a large amount (probably 2-3 feet??). Is it an 'acceptable' placement? Or am I trying to hide a problem in the wrong way? Thanks.

Subject: Speaker setup
Posted by Wayne Parham on Wed, 08 Apr 2009 00:02:32 GMT
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You've set them up exactly the way I would.Imaging, placement and orientationThere are a lot of things that can cause a little (or a lot) of excessive sibilance. Of course, the speaker, it's tweeter and network are the obvious ones. The DE250 is a little hotter than the PSD2002, so sometimes people forget to change tweeter resistors when upgrading, which causes a bit too much treble. Other causes are lively rooms and source material, things like that. If you've stayed with the plans, used the right components, you can rule out the loudspeakers. They're properly matched. That leaves the room, setup and source material.In your case, I'd say you've found your answer. By having the speakers setup the way you have, you've reduced early reflections and improved imaging at the same time. This configuration works best in most cases, making the most natural sound.

Subject: Re: Speaker setup
Posted by Champion on Wed, 08 Apr 2009 00:14:59 GMT
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Thanks Wayne, that sounds good. I have read your message a few times but I wasn't sure how much in front of the listener should the axis crossover (is it a few inches or 1 feet or 3-4 feet)? It is good to confirm with you that I am not doing something weird. I was impressed with the speaker

at the beginning but got tired easily, but now it is much more comfortable to listen to.BTW, what are the correct resistor values? I got the crossover and the DE250 from you together last year and wonder if the resistor is already tweaked for the DE250?Many thanks!

Subject: Re: Speaker setup
Posted by Wayne Parham on Wed, 08 Apr 2009 01:52:09 GMT
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If you bought the crossovers from me, I would have asked what tweeter you were planning to use and populated the board with the appropriate parts. I'm pretty sure I would have put the right parts on the board, especially if you bought the drivers from me at the same time you bought the boards. I think I remember your order.

speaker with a DE250, the weak link isn't the tweeter, it's the woofer. Not knocking the Delta 12LF at all, it's a nice sounding woofer, very smooth, and some people prefer it. To me, the Delta 12LF sounds very rich and warm, but it doesn't have the upper midrange smoothness of the JBL 2226. When I take speakers to shows and listen to them non-stop for a whole weekend, I find the 2226 doesn't leave me fatigued at all. When I take a speaker with the Delta 12LF or Omega 15, they sound nice but I notice I'm fatigued after about a full day or two. The combination of a properly-designed shorting ring and a well-damped cone in the JBL 22xx woofers come together to make the midrange and upper mids very smooth. I haven't found any equals yet. Hence, the upgrade path I recommended yesterday.

Subject: Re: Speaker setup
Posted by Chris R. on Thu, 09 Apr 2009 05:50:20 GMT
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You wrote:> When I take speakers to shows and listen to them non-stop for a> whole weekend, I find the 2226 doesn't leave me fatigued at all. > When I take a speaker with the Delta 12LF or Omega 15, they sound > nice but I notice I'm fatigued after about a full day or twoDo you notice the same thing with the 3-way design with the Omega? The "below ~300Hz" output is certainly there, but doesn't seem tohave any character that would get annoying after a while. I really love my 3-way setup. Not exactly a 7Pi, but close.

Subject: Re: Speaker setup
Posted by Wayne Parham on Thu, 09 Apr 2009 06:31:45 GMT
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audible well up into the lower midrange, around middle C. The Omega 15 and Delta 12LF are great woofers, but neither has a shorting ring. Try substituting a 2226 sometime, you'll hear the difference.

Subject: Re: Speaker setup
Posted by Champion on Thu, 09 Apr 2009 12:04:07 GMT
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Hi Wayne, as I understand, the 3 Pi cannot use any JBL woofer, right? So I am kind of stuck on that. I am quite keen on JBL woofers but rebuilding the cabinet is probably too expensive and too big a job for me. If there is any alternative (or suitable JBL replacement) for the Delta12LF please let me know. Thanks.

Subject: Re: Speaker setup
Posted by Wayne Parham on Thu, 09 Apr 2009 15:28:43 GMT
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Actually, the cabinet volume is fine for the 2226, it's the Helmholtz frequency that's wrong. The

port was right for the woofer chosen. So you would need to change the port if you changed the woofer.The problem is it's hard to resize a woofer hole and/or port and do a good job. You're limited on the tools you can use. So I understand your dilemma. Sorry, but I know of know

looking at AE Speakers, to see if they have a woofer or can make one for this application. On first glance, the TD-12S specs look right.
