Subject: front baffle size
Posted by rude52 on Mon, 23 Sep 2002 17:47:27 GMT
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Hi Wayne,There has been lots of talk about changing box dimensions slightly to fit preferences, but I have a bit different question. I was wondering for 2 pi towers if it is advisable to build to the spec'd dimensions, but put the motors in the narrower (13") side and have the 16" be the depth. I realize it might be a tight fit with a 10" motor, but other than that, are there issues with diffraction or anything that might be a problem? When I made a mockup of the 2pi towers, the 16" front is a little imposing head on and it might be a better fit on the 13" side. What do you think?Rich

Subject: Re: front baffle size
Posted by Colin Fritzke on Mon, 23 Sep 2002 18:41:39 GMT
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The only issue I can forsee here is a possible reduction in bass response, or technically referred to in some forums as "baffle step". Many expert speaker/crossover designers incorporate baffle step compensation into their crossovers in order to overcome the baffle step loss in bass response which isn't as much an issue when building wider-baffle speakers such as Wayne's designs. Perhaps someone here can fill in with some more technical info about designing for baffle-step. I built my Premium Stage 4 Pi's a little bit taller and narrower than Wayne's cabinet design, and even modified the cabinet volume a bit to get a little deeper bass and I'm very happy with the performance of my system (see picture).Regards,Colin

Well, its a web page...

Subject: Re: front baffle size
Posted by Wayne Parham on Mon, 23 Sep 2002 21:26:05 GMT
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"Baffle step" is caused by the baffle creating a half-space orientation at high frequencies but being too small to do that at low frequencies. It transitions to freespace in a range determined by baffle dimensions. If the speaker is located near room boundaries, then from the lowest frequencies up

to 1/4 wavelength from the room boundary, the speaker is constrained in eigth-space, quarter-space or whatever the room conditions are.At vocal overtone frequencies and above, speaker drivers within the system are in half-space because room boundaries are multiple wavelengths away and only the baffle is significant. But there may be a range of frequencies in between these two points where room boundaries are too far and the baffle is too small, and for these frequencies, the radiators operate in freespace.This phenomenon is discussed in Chapter 3 of Augspurger's "JBL Professional Sound System Design Manual."

Subject: uhh, OK - is a 13" baffle alright for 2pi towers?
Posted by rude52 on Mon, 23 Sep 2002 22:09:50 GMT
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Hi Colin and Wayne,Thanks for the very good technical answers. Sorry to sound like Beavis and Butthead, but I am still not sure what the practical answer is. It seems like there "MAY" be a drop in bass response (ie what Colin said). Again, sorry for the basic questions, but I'm just curious.ThanksRich

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Subject: Dude.....
Posted by BillEpstein on Tue, 24 Sep 2002 00:24:51 GMT
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....that is DEADLY looking! Where has that been. Yeah!

Subject: Yes, it's fine
Posted by Wayne Parham on Tue, 24 Sep 2002 01:12:08 GMT

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The difference between a 13" baffle and a 16" baffle is pretty small really. If the speaker with 13" baffle were suspended in mid-air, then what we would have is fresspace radiation up to 250Hz. From 250Hz up to 1kHz, the radiation pattern would more and more closely resemble that of halfspace and by 1kHz, it would be purely halfspace. So the spatial conditions alone would make it have output that rose 3dB over the two-octave region between 250Hz and 1kHz. In the case of the 16" baffle, the frequencies that mark the beginning and end of this region are 212Hz and 850Hz.But most of the time, loudspeakers are placed near a room boundary, such as the walls and floor. In this case, sound radiators are usually constrained at different frequencies. For example, if we have a speaker that has been placed on the floor and the sound source of the 250Hz to 1kHz frequency range is less than 16" off the ground, then those frequencies are bound by half-space regardless of the width of the baffle. In fact, if the baffle were wider than 16", then the system would act as quarter-space even if the cabinet is pulled away from other room boundaries, i.e. in half-space. In this case, the region would have a 6dB DI gain, rather than the expected 3dB that half-space placement offers.So all that just to say that you can mount the speakers on the 13" side or the 16" side and you can expect good performance. There will be a tiny bit of difference, but certainly nothing you can hear. And if you'll position them in a corner, where they'll act as quarter-space (radiators too far off the ground to be eighth-space) - If you'll put 'em in the corners, you'll not have an issue with baffle step anyway because the midrange/woofer will be close to the walls.

Subject: Sweet!
Posted by Wayne Parham on Tue, 24 Sep 2002 01:24:36 GMT
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Those are excellent!Care to show a close-up of the speaker grilles?

Subject: Re: Yes, it's fine
Posted by Chris R on Tue, 24 Sep 2002 19:44:15 GMT
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Wayne, The 2 Pi's I posted pictures of a week or so ago are 17.5"wide. Because of the frame, it looks pretty well balanced.Without the frames, it looked a little wide. If you put grillson, who

cares.Chris