
Subject: Smaller 3 pi construction?

Posted by [stereojan](#) on Fri, 05 Mar 2021 09:13:58 GMT

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Hi!

I am thinking about building a couple of speakers for the living room. My preference would be the 4 pi, but they are a too big for wife acceptance.

The compromise is to build a smaller 2-way speaker designed like the Klipsch Heresy III (24" x 16" x 13.5", tilted). I am thinking 12" woofer with waveguide tweeters. And maybe add two flanking subs in the corners next to speakers (perhaps used as speaker stands when wife is away).

Is it possible to reduce the size of the 3 pi to fit the the specs?

I guess I will lose some bass extension, but maybe subs will compensate enough.

Cheers.

Subject: Re: Smaller 3 pi construction?

Posted by [Wayne Parham](#) on Fri, 05 Mar 2021 14:34:37 GMT

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Of course, a loudspeaker like you've described could be designed and I would expect it to be great, if done properly.

But don't modify the cabinet dimensions without acoustic testing, and specifically pay attention to the lower midrange. That's what is most problematic in cabinet design for a large-format two-way loudspeaker.

Also, bear in mind that another one of the things that will change is the baffle step region. As the baffle shrinks, the baffle step happens higher in frequency. The three Pi and four Pi models are large enough that baffle step is around the frequency where the flanking subs rolloff. So they provide extension, SBIR and higher-frequency room mode mitigation and baffle step correction.

More information about these issues and others can be found in the Pi Speakers FAQ.

Subject: Re: Smaller 3 pi construction?

Posted by [stereojan](#) on Sun, 07 Mar 2021 09:11:44 GMT

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Thanks for the reply and the additional tips :)

Seems like I have to get into some acoustic testing too. May be some of the econowave variants is an easier place to start from since I am kind of a newbie in this. The size of those designs fit my size requirements quite well it seems. I understand those design were based on your Pi speakers. But maybe not as refined as your designs.

What do you think is the easiest starting point?

Subject: Re: Smaller 3 pi construction?

Posted by [Wayne Parham](#) on Sun, 07 Mar 2021 14:56:09 GMT

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Econowave guys are definitely kindred spirits. You could certainly root-around on the Econowave thread and find something that suits your needs.

Subject: Re: Smaller 3 pi construction?

Posted by [stereojan](#) on Wed, 31 Mar 2021 13:16:34 GMT

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After some research I've decided to start out with the 3Pi kit, and try to measure and adjust the crossover to the smaller box/baffle size. Or maybe just add some simple digital corrections with the Minidsp shd streamer/dsp/dac.

I think I will go for the B&C tweeter. Not sure yet which woofer. The B&C woofer seems maybe to do better in a smaller box (+ higher sensitvity?). Any opinions on which is the better choice?

Subject: Re: Smaller 3 pi construction?

Posted by [Wayne Parham](#) on Wed, 31 Mar 2021 13:40:24 GMT

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The B&C 12PLB100 is the highest-quality option. I'd go with that.

Subject: Re: Smaller 3 pi construction?

Posted by [stereojan](#) on Thu, 27 May 2021 05:08:50 GMT

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Hi again :)

Just received the speaker elements from a store in England, and looking forward to start with the project. But by chance, when inspecting the B&C DE250 compression drivers, I noticed something that seemed a little wierd. When using a flashlight to look inside the driver, it looks like there is some kind of corrosion, or white powder or something.

You guys know what this is, or if it's normal?

File Attachments

1) [IMG-2701.jpg](#), downloaded 683 times

Subject: Re: Smaller 3 pi construction?

Posted by [Wayne Parham](#) on Thu, 27 May 2021 14:19:30 GMT

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I can't really see it, but I can tell you that aluminum oxide is white. It's very common to see it on aluminum parts, and it isn't harmful.

Subject: Re: Smaller 3 pi construction?

Posted by [stereojan](#) on Mon, 31 May 2021 12:05:50 GMT

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Thanks for the reply.

I emailed B&C to check. Got the following reply, so doesnt seem to be any reason to worry:

It is normal.

What you see is a white residue due to the evaporation of the adhesive's solvent used to glue together the phase plug components.

This behavior does not affect absolutely the performance of the phase plug or its reliability, but it concerns only its cosmetic appearance.

Unfortunately, once the phase plug is assembled, the parts covered by the white residues are difficult to reach. Their removing would be too much time consuming, so they are left on the parts.

Subject: Re: Smaller 3 pi construction?

Posted by [stereojan](#) on Mon, 31 May 2021 12:13:18 GMT

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Another question :)

Im thinking about moving the bassport to the back of the speaker. Will this affect output significantly, such that I have to compensate for it in the crossover?

Subject: Re: Smaller 3 pi construction?

Posted by [Wayne Parham](#) on Mon, 31 May 2021 14:47:25 GMT

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I've seen that white residue from adhesive too. It's really common from super glue.

As for the port, it won't change the SPL significantly but it does change the possibility of a pressure node lining up with it. Of course, if you're changing box dimensions, you'll need to check the lower midrange anyway, so that's just part of it.
