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Subject: 3pi update / 6pi build

Posted by [Mabob](#) on Sat, 16 Jan 2021 06:52:35 GMT

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I finally got around to upgrade my 3pi.s with B&C 12PLB100. Drivers arrived a few days ago and they really look nice :)

The only change in crossover going from Eminence 12LFA is swapping the C4 cap from 10 to 20uf right? Unfortunately I didn't receive it yet, can I still test it with the 10uf one? What will the difference be between the two?

6pi midhorns are under construction, they are somewhat challenging to build :roll: and it will probably be summer before I have the corner horns done. Luckily I'll be able to enjoy my upgraded 3pi.s

Mathias

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Subject: Re: 3pi update / 6pi build

Posted by [Wayne Parham](#) on Sat, 16 Jan 2021 16:55:14 GMT

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That's right. The only change is the value of capacitor C4. It affects the upper midrange - the overtone region, really, around 800Hz to 1.2kHz. The wrong part makes a slight droop or bump in response. If the value is larger than it's supposed to be, there's a droop. If it's too small, there's a bump. Polar response is affected too.

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Subject: Re: 3pi update / 6pi build

Posted by [Mabob](#) on Sat, 16 Jan 2021 22:34:31 GMT

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Thanks for the clarification Wayne. By midweek I should have both speakers fitted with new drivers and crossover updated with the right caps.

I'll report back when I have some listening hours on them.

Mathias k

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Subject: Re: 3pi update / 6pi build

Posted by [Mabob](#) on Tue, 26 Jan 2021 17:04:50 GMT

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Here's a few thoughts on my updated 3Pis.

The 12PLB100 seems to be really stiff and probably will benefit from getting some hours on them. What I feel is the biggest change is the tighter bass and control over bass especially on higher volumes.

I feel that with these it can get really loud easily without even noticing it. They just keep sounding really good and clean :)

Next up is recycling the Delta 12.s for flanking sub duty. Eminence recommends a ported box around 100L with an F3 of 44Hz. They do however state that it's for low power 125W. I hope they will be able too keep up and I won't blow them. Steep highpass filter set to 35Hz will be used to protect them.

Any thoughts on this, better box suggestions are welcome.

Mathias

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### File Attachments

1) [3Pi 12PLB100.jpg](#), downloaded 600 times

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Subject: Re: 3pi update / 6pi build

Posted by [Wayne Parham](#) on Tue, 26 Jan 2021 17:19:11 GMT

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That's an excellent idea. Highly encouraged!

I think you would probably get deeper bass from a driver like the LAB12. But flanking subs are mostly for the upper midbass anyway, for providing baffle step correction, and for mitigating SBIR and higher-frequency room modes. It's a helper woofer, sort of making the loudspeaker system into a three-way with the woofer being detached. And for this purpose, I think the Delta12LF tuned as you've described will probably work pretty well.

Your three Pi loudspeaker looks wonderful, by the way. Kudos!

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Subject: Re: 3pi update / 6pi build

Posted by [Mabob](#) on Tue, 26 Jan 2021 17:43:26 GMT

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Thanks Wayne!

I will use the Deltas as I have them and enjoy my 3Pis until the 6Pis are done. For deeper bass I'll

try to incorporate existing TableTuba tapped horn. We'll see how that goes.

I did the enlargement for 12PLB with an overhand router and a homemade jig. That was not the best way to go, if I'd do it again I would instead make a template and use a router bit with bearing. End result was scratched cabinet that had to be repainted, did some bad masking and they aren't what they used to be.

But hey! At least they sound great! 6Pis will be walnut veneered finished with danish oil.

Big thanks for making this update available to us not so pro DIY builders!

Mathias

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Subject: Re: 3pi update / 6pi build  
Posted by [Mabob](#) on Tue, 02 Feb 2021 07:07:26 GMT  
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I'm moving forward with my flanking woofers build and have a question concerning standing waves.

The cabinets will be W45cm X H75cm X D45cm. As they get rather narrow and tall I got worried about standing waves. Should I add damping like it is in the 3Pi?

This is from the build plans: "Hang a sheet of insulation on the brace, spanning the cabinet cross-section from side-to-side and front-to-back. Bass frequencies will pass right through it, but midrange and any unwanted standing waves will be greatly reduced."

I'm afraid I don't really grasp what a standing wave is... does it occur in frequencies from 30-120Hz :blush:

Mathias

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Subject: Re: 3pi update / 6pi build  
Posted by [Wayne Parham](#) on Tue, 02 Feb 2021 15:16:25 GMT  
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Yes, standing waves occur at frequencies between 30Hz and 120Hz. That's what room modes are and they can be quite troublesome. It's what the multisub configuration is designed to mitigate.

But to create standing waves in the bass requires a large enclosure. Where we usually see standing waves in loudspeakers cabinets is in the midrange band, and that's a potential problem if the cabinet is presented those frequencies. Small cabinets usually only have standing waves high enough that damping material inside the cabinet is very effective at attenuating. But larger

cabinets can have standing waves low enough that the damping material is less effective, which is why in some of my cabinets I have a sheet of insulation spanning the cross-section. It's more effective at reducing midrange energy than damping material attached to the walls. I also design the cabinets with driver and port locations specifically chosen to reduce the impact of any standing waves.

This isn't an issue in subwoofers, because cabinet dimensions aren't close to the wavelengths of the frequencies presented to them. Most subwoofers don't even have damping material inside because they just don't need it.

As to your cabinet, having dimensions of 45cm x 75cm x 45cm - 17.75" x 29.5" x 17.75" - the lowest standing wave mode it can suffer from is 230Hz. Most modes are in the 400Hz to 600Hz range and many are above 1kHz. So it really doesn't need damping material inside it at all.

Then again, there's no harm in adding damping material - it will actually make the cabinet act like a slightly larger box - so you could install it if you wanted to reduce any anomalies that might occur near the lowest standing wave modes. That would make the cabinet sound more natural if it were driven with midrange frequencies above 200Hz.

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Subject: Re: 3pi update / 6pi build  
Posted by [Mabob](#) on Wed, 03 Feb 2021 13:39:41 GMT  
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Thanks for the in-depth answer again Wayne.

I will proceed with the build and do some testing with and without damping.

Mathias