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Subject: 7PI questions

Posted by [Lagerlover](#) on Mon, 16 Feb 2015 23:54:34 GMT

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Hi Wayne. Thank you so much for sending me the 7PI build plans. I have been poring over them and have a few technical questions.

First up, how high up in frequency does the woofer corner horn enclosure hold directivity? I can gather that it crosses over to the mid horn at a rather low frequency. Could this same enclosure be used to cross over much higher, at around 700Hz?

I also see that the woofer enclosure is ported. Could a sealed enclosure be used in this same configuration? I have a pair of AE TD15Ms that I would like to use here, if possible and was also hoping to minimize group delay.

Third, assuming I would need to alter the volume of the cabinet to tailor it to the TD15M, what sort of dimensional relationships must be maintained? In other words, if the enclosure depth was increased would it follow that the corner horn mouth depth be increased by the same amount?

Lastly, I can't find much info on time alignment of drivers in corner horn applications. Would a corner horn such as the 7PI benefit from a DSP'ed crossover and delay with regard to the woofer-mid transition?

Sorry for all the questions. I hope dealing with folks like me is not too exhausting.

Best regards,  
Benjamin

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Subject: Re: 7PI questions

Posted by [Wayne Parham](#) on Tue, 17 Feb 2015 16:15:22 GMT

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The bass bin holds directivity up pretty high, because it is forced by the corner. But you'll get interference notches from self-interference and then rolloff at some point.

Whether vented or sealed doesn't really matter in this configuration. I tend to run slightly overdamped vented cabinets for the reduced excursion they offer. I'm not worried about phase in the modal region so it's pretty much a "free lunch." But if you have a woofer that isn't suited for a bass-reflex alignment, by all means use a sealed cabinet.

The matter of crossover phasing and "time alignment" is always really related to summing and the position of the forward lobe, nulls and side lobes. It doesn't really matter if this is done actively or passively, in the analog realm or the digital realm. Each of those technologies has their pros and cons. What matters is that summing is right and the nulls don't fall in the listening area.

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Subject: Re: 7PI questions  
Posted by [Lagerlover](#) on Tue, 17 Feb 2015 20:32:10 GMT  
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Thanks Wayne.

I had already dug through the FAQs a bit prior to posting and will continue to do so, rather than expecting you to re-address topics already covered elsewhere.

Just so it's clear where I'm coming from, I feel like I should explain myself a bit. I started out on the horn path with a pair of Klipsch Fortes. I liked the efficiency (I enjoy working with tube amps) and felt they did some things very well but ultimately found the nasal, cupped-hands-around-the-mouth qualities too distracting. Rather than writing off horn speakers, I instead came across the constant-directivity waveguide approach that you and Geddes have espoused for years now. It took me eight years, but I finally heard a pair of constant directivity speakers a couple months ago (SEOS-12 Tempests). I was very impressed with their qualities: headphone-like clarity and imaging capabilities with the sense of spaciousness that headphones lack (I assume this is where room reflections are desirable). I was sold.

Not being smart enough to leave well enough alone, I have been looking for designs that maintain directivity all the way down to the modal region. I don't really have a use for home theater designs - I'd much rather dig through musty record bins than watch superhero movies - so a more high fidelity solution is what I am after. Descriptions of the performance of your 7PIs seem to fit the bill.

Despite having already amassed some components, it would seem I am a long ways away from building any enclosures and taking any omnimic measurements. Texts by Toole and Dickason are on the nightstand at the moment and hopefully next time I check in with you, I can be a bit more up to snuff technically. I truly appreciate your time, thank you.

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Subject: Re: 7PI questions  
Posted by [JCDC](#) on Fri, 20 Feb 2015 12:24:51 GMT  
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Hey Ben, welcome.

As you peruse, you'll see Wayne has amassed a serious amount of info and then a couple of years back arranged it into the FAQs. (Whew!)

It's a lot to go through so bouncing back and forth with specific questions is a great approach.

I'm gonna go out and say it:

Wayne's 7 Pi speaker is the best corner speaker out there!

Tried and true, professionally documented/measured, precise plans, etc ... oh, and free, robust, life-time support as you are experiencing!

OK, the big '?'  
Corner speakers need corners. Tell us about your room.

The 7 Pi works best on the short wall, crossing in front of the listener with ~5ft of uninterrupted wall on both sides of the speaker. (Ideal)

Wayne [finalllllllllllly, ] has the flat-pack midhorn kits back in stock so if you're not up-to-snuff with wood working (like me) you can easily get goin'

Speaking of get goin', the 7 Pi also has many entry points!

inexpensive: PSD2002/alpha or delta10 and your own bassbin

to

Full-on best drivers, xover components, cabinets.

Cheers,  
Jeff

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