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Subject: 7pi plans

Posted by [jgoodd8050](#) on Sun, 23 Oct 2011 00:37:29 GMT

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I think I'm ready for a copy of the 7pi plans.

Thanks very much.

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Subject: Re: 7pi plans

Posted by [Wayne Parham](#) on Sun, 23 Oct 2011 13:22:42 GMT

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Subject: Re: 7pi plans

Posted by [jgoodd8050](#) on Thu, 27 Oct 2011 02:59:06 GMT

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How important are the verticle pieces that form the 45 degree angle at the back of the corner horn? Is the corner formed by the walls enough?

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Subject: Re: 7pi plans

Posted by [Wayne Parham](#) on Thu, 27 Oct 2011 04:08:47 GMT

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Those pieces are there for structural integrity. The back is just a positioning device.

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Subject: Re: 7pi plans

Posted by [jgoodd8050](#) on Fri, 25 Nov 2011 15:49:43 GMT

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What is the low frequency cut off like for the 7pi? I'm trying get an idea of how low they go.

Thank you.

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Subject: Re: 7pi plans  
Posted by [Wayne Parham](#) on Fri, 25 Nov 2011 17:16:41 GMT  
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It's totally room dependant. The room sets the response below about 200Hz. And since they are designed to be used in corners, there is really no way to decouple the room response from the speaker response.

If you wanted to know how they would sound in an anechoic environment, you can look at the four difference in the way a speaker acts in free space compared to the way it acts in eighth space. It is different in SPL, response and directivity.

To get a feel for the difference, listen to a portable radio set out in the open. Hold it in your hand and stand in the middle of the room. Listen to the tonal balance and the volume level. Now, walk over to the wall and set it on a countertop, table or shelf where the radio is sitting in a tridredal corner. You will notice an immediate and obvious increase in volume level, and the bass and midbass is made fuller. This is how corner loading affects the cornerhorn too.

None of that was as specific as I think you would like. The problem is I can't really be more specific than that. The response down low is too room dependent. I can only say that the bass is made fuller and the corner sets the directivity to a constant 90° above the Schroder frequency. It actually starts getting that pattern above about 100Hz, and is very well defined above 200Hz.

I think what might be more important to you is whether or not to use subs. I would suggest using them, yes. Even though the constant directivity cornerhorn increases bass output, it could still use some extra extension at the lowest bass frequencies. These are high-efficiency speakers, after all. And also, while directivity is constant above the Schroeder frequency, room modes influence bass coverage below that. A couple dedicated subs placed in opposite corners or at the center of the side walls will give increased bass extension and smooth the lower frequency room modes.

The constant directivity cornerhorn is really great down to about 100Hz or so, because the upper frequency room modes (100-200Hz) are mitigated by blending between the woofer and midhorn. The woofer is snuggled tightly into the corner, so there is no self-interference notch from either adjacent wall or the floor. These two things really help maintain smooth response in the 100-200Hz range, which is such a problem for other loudspeaker configurations. But below 100Hz, the axial room modes dominate. So subs placed as mentioned above are ideal, providing increased extension and modal smoothing.

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Subject: Re: 7pi plans  
Posted by [jgoodd8050](#) on Fri, 25 Nov 2011 17:52:43 GMT  
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I'm working on building the cabinets now so I'll have to test them out after completion. Maybe we

can address the bass system when I have a better idea of what the room might need. Subs are definitely part of the plan.

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Subject: Re: 7pi plans

Posted by [tom-m](#) on Wed, 30 Nov 2011 19:10:52 GMT

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Hi Wayne,

A few 7pi questions.

1. Eminence or JBL woofer. The polarity connection to the crossover is different for these 2 woofers. Their red and black terminals are opposite of each other? Meaning a positive voltage applied to the red terminal of each woofer, one cone would have outward movement, the other would have inward movement? I see in the doc, "We consider positive polarity to be that which creates positive pressure from a transducer when positive voltage is applied." So from your diagram, it looks like the JBL red and black are backwards, considering your statement. I just want to be clear as I will be using a different woofer.
2. Where do you put the speaker binding posts? I may put mine on the side of the cabinet.
3. Should the midhorn be attached to the bass cabinet, or just sitting on the bass cabinet?
4. Is the crossover mounted inside the bass cabinet? If so, we would need to run the wires for mid and tweeter back out the cabinet to the drivers.

Thank you.

Tom

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Subject: Re: 7pi plans

Posted by [Wayne Parham](#) on Thu, 01 Dec 2011 01:07:28 GMT

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Answers by numbers:

1. The JBL 2226 is connected weird, in that positive voltage applied to the black terminal creates forward cone movement (away from the magnet). See "Notice for JBL Transducer Users" for more information.
2. There are two connection methods most commonly employed, and I've done both. One way is to mount the crossover in the bass bin along with the binding posts to connect wires to the amp. The outputs to the midhorn and tweeter then exit the bass bin, usually through separate

connectors. The other method is to put the crossover and amplifier connection panel in a separate box which has outputs for the bass bin, midhorn and tweeter.

3. Some mount the midhorn permanently or semi-permanently atop the bass bin. I personally like to pin mine, using the same hardware that is used for dining table leaf inserts. See "Finishing details" for more information.

4. You can put the crossover in the bass bin or in a separate box. Either way, I like to run the wires out using speakon connectors or binding posts.