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Subject: 7pi build

Posted by [grimberg](#) on Tue, 24 Dec 2019 00:34:15 GMT

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I am planning to build a pair of 7pi speakers and started preparing the project chart. I will use the JBL 2226H, Delta 10A and B&C DE250-8. I have a few initial questions.

- 1) Which horn to use with the tweeter?
  - 2) The plan does not show where the binding posts should be placed on the woofer's cabinet. I am thinking the same panel on which the woofer is installed, correct?
  - 3) Same as above for the mid-horn cabinet. The binding posts should be installed on the rear panel, right?
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Subject: Re: 7pi build

Posted by [Wayne Parham](#) on Tue, 24 Dec 2019 19:25:19 GMT

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Very good! I think you will be quite pleased with your project.

To answer your questions, the tweeter flare is the H290C waveguide. It doesn't need to be installed in a cabinet, but is more attractive when enclosed. You are free to use your imagination, but keep the waveguide close to the midhorn.

We used to offer a wood horn/waveguide but have ceased production of it after we made the H290C mold. The wood version was attractive but very expensive.

Some people just sit the midhorn on the bass bin and the tweeter on top of the midhorn. Others like to permanently mount the midhorn and tweeter. They mount the crossover in the bass bin and pass the wires through internal connectors to the midhorn and the tweeter.

I personally like to put connector plates on all three subsystems, and to put the crossover in its own little box. I sit the crossover box on the bass bin behind the midhorn. I also like to pin together the three subsystems rather than permanently attaching them or just leaving them sitting unattached. See the link below for positioning pin details and other tips:

Midhorn bracing

Gaskets

Mounting Screws and T-Nuts

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Subject: Re: 7pi build

Posted by [grimberg](#) on Wed, 19 Feb 2020 18:48:31 GMT

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I have just received the H290C horns purchased from Pi Speakers. The B&C DE250-8 documentation specifies the bolts as M6 but does not mention how deep they should go. Could you tell me what length M6 bolts should I use?

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Subject: Re: 7pi build  
Posted by [Wayne Parham](#) on Wed, 19 Feb 2020 19:44:32 GMT  
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The DE250 compression driver comes with studs and nuts that are the perfect length. Just use the mounting hardware that comes with the drivers.

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Subject: Re: 7pi build  
Posted by [grimberg](#) on Sun, 28 Mar 2021 19:09:39 GMT  
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Wayne,

This past year I had to halt my 7pi speakers build due to the unforeseen events we have all experienced. I have now all the parts and material in hand, ready to resume and hopefully complete the build in the coming weeks. Before preparing the plywood cut diagram I wanted to confirm if my understanding of the information you provided is correct. Using the diagrams and information contained in the pdf file you provided, the internal dimensions of the bass bin should be: 16" W x 32  $\frac{3}{4}$ " H x 7  $\frac{3}{4}$ " D. The port opening should be: 6  $\frac{1}{4}$ " W x 3  $\frac{1}{2}$ " and its depth 5  $\frac{1}{4}$ " measured from the outside surface of the baffle. Is this correct? Sorry if it sounds redundant.

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Subject: Re: 7pi build  
Posted by [Wayne Parham](#) on Mon, 29 Mar 2021 14:14:18 GMT  
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The box dimensions are right. The port is too, but do notice that it's kind of weird in that it is an "L" shape. It is made longer than the depth of the box by having a right angle at the end formed by the two pieces of  $\frac{3}{4}$ " material on its top. This adds 1- $\frac{1}{2}$ " extra length to the port.

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Subject: Re: 7pi build  
Posted by [grimberg](#) on Thu, 01 Apr 2021 22:55:07 GMT  
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Wayne,

While working on the mid-horns I ran into a problem. After cutting one horizontal side and one vertical side using the measurements in the documentation, I realized they do not align properly. After making sure my layout was correct, I decided to calculate the lengths of the sides using the length of the bases and associated heights. My calculations showed the length of the sides on the horizontal piece at 14.70", while on the vertical piece they measure 14.98", a bit shy of 9/32". Has there been an update to the documentation since you sent me a copy? Should the horizontal side be made longer to match the length of the vertical side, or vice-versa?

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Subject: Re: 7pi build

Posted by [Wayne Parham](#) on Fri, 02 Apr 2021 00:07:37 GMT

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The side panels are longer since their angle is greater. When I did the original prototypes, I cut them as shown in the plans. Later, the cabinet shop made a 3D model for cutting the panels and a jig for assembly.

None of that really helps much. What I suggest is that you make the top and bottom panels long enough they match the side pieces. The final result should be a horn that has 12" x 24" mouth and 4.5" square throat.

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Subject: Re: 7pi build

Posted by [grimberg](#) on Sat, 09 Oct 2021 18:44:32 GMT

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Wayne,

I have finished building a pair of 7pi and am delighted with the results. They replaced a pair of Sound Dynamics 300TI in a room which is 15' wide. They sound great and eliminated the effect which always reminded me from where the sound was originating. The 7pi just creates a large soundstage, bigger than the room where they are located. Thank you very much for sharing your design.

I designed my own crossover PCB just as part of the enjoyment of building my own speaker system.

Also built a case for it.

Here is the crossover encased

To fit behind the mid-horn I added a base to keep it vertical

This is how the crossover sits on the bass unit

### File Attachments

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- 1) [Crossover\\_assembled.jpg](#), downloaded 784 times
  - 2) [Crossover\\_case.jpg](#), downloaded 790 times
  - 3) [Crossover\\_encased.jpg](#), downloaded 787 times
  - 4) [Crossover\\_encased\\_side.jpg](#), downloaded 677 times
  - 5) [Crossover\\_on\\_bass\\_unit.jpg](#), downloaded 795 times
  - 6) [Crossover\\_with\\_base\\_and\\_lid.jpg](#), downloaded 786 times
  - 7) [Crossover\\_with\\_base\\_bottom.jpg](#), downloaded 789 times
  - 8) [Crossover\\_with\\_base\\_top.jpg](#), downloaded 797 times
- 

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Subject: Re: 7pi build

Posted by [grimberg](#) on Sat, 09 Oct 2021 18:46:12 GMT

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This is the bass unit during the building process.

### File Attachments

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- 1) [Bass\\_unit\\_port\\_and\\_braces.jpg](#), downloaded 758 times
  - 2) [Bass\\_unit\\_with\\_baffle.jpg](#), downloaded 790 times
  - 3) [Bass\\_unit\\_with\\_insulation.jpg](#), downloaded 761 times
- 

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Subject: Re: 7pi build

Posted by [grimberg](#) on Sat, 09 Oct 2021 18:53:32 GMT

The mid-horn was the most labor intensive and time consuming portion of the whole build. Here are the flare sides cut and then assembled.

The flare and braces inside the case.

### File Attachments

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- 1) [Mid-horn\\_flares.jpg](#), downloaded 643 times
  - 2) [Mid-horn\\_flares\\_back.jpg](#), downloaded 640 times
  - 3) [Mid-horn\\_flares\\_back2.jpg](#), downloaded 659 times
  - 4) [Mid-horn\\_flares\\_in\\_case\\_back.jpg](#), downloaded 659 times
  - 5) [Mid-horn\\_flares\\_in\\_case\\_front.jpg](#), downloaded 648 times
  - 6) [Mid-horn\\_flares\\_parts.jpg](#), downloaded 644 times
  - 7) [Mid-horn\\_plate\\_installed.jpg](#), downloaded 642 times
  - 8) [Mid-horn\\_flare\\_mounting\\_plates.jpg](#), downloaded 656 times
- 

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**Subject:** Re: 7pi build

**Posted by** [grimberg](#) on Sat, 09 Oct 2021 18:57:56 GMT

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The insulation was cut in the proper shape to fill the spaces without being compressed.

Here is the mid-horn finished.

## File Attachments

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- 1) [Mid-horn\\_finished\\_back.jpg](#), downloaded 629 times
  - 2) [Mid-horn\\_finished\\_front.jpg](#), downloaded 647 times
  - 3) [Mid-horn\\_finished\\_side.jpg](#), downloaded 641 times
  - 4) [Mid-horn\\_finished\\_with\\_driver.jpg](#), downloaded 636 times
  - 5) [Mid-horn\\_flare\\_insulation\\_1.jpg](#), downloaded 685 times
  - 6) [Mid-horn\\_flare\\_insulation\\_2.jpg](#), downloaded 581 times
- 

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Subject: Re: 7pi build

Posted by [grimberg](#) on Sat, 09 Oct 2021 19:01:32 GMT

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Finally, here is the finished left channel sitting on the corner next to the box it replaced. I will build a case for the tweeter during the month of November. For now I am really enjoying my new speakers.

## File Attachments

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- 1) [7pi\\_finished.jpg](#), downloaded 608 times
- 

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Subject: Re: 7pi build

Posted by [Wayne Parham](#) on Sat, 09 Oct 2021 21:19:39 GMT

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Wow, those look amazing! Great work!

I love your midhorns and your bass bins. And your crossovers look excellent too. Nice work on the crossover boxes! I do that too. It's the best way to do it, in my opinion. Some put the crossovers in the bass bin - and that works well too - but I like having an external cabinet for the crossover.

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Subject: Re: 7pi build  
Posted by [tom-m](#) on Tue, 12 Oct 2021 20:06:33 GMT  
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Yes, that is a great build. Outstanding wood working skills and detail.

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Subject: Re: 7pi build  
Posted by [grimberg](#) on Tue, 12 Oct 2021 21:56:41 GMT  
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Thank you Wayne. I followed your suggestion from an earlier post when deciding where to place the crossover box. I built a regular horizontal box and added a properly shaped base, which is attached using a pair of screws and nuts.

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Subject: Re: 7pi build  
Posted by [grimberg](#) on Tue, 12 Oct 2021 21:57:37 GMT  
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tom-m,

Thank you for your kind words.

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Subject: Re: 7pi build  
Posted by [Rusty](#) on Sat, 16 Oct 2021 13:55:44 GMT  
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You're an exceptional craftsman Grimsberg. Great precision joinery. Enjoy your perhaps last loudspeakers you'll ever need for the utmost critical listening.

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Subject: Re: 7pi build  
Posted by [grimberg](#) on Sat, 16 Oct 2021 15:54:24 GMT  
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Thank you Rusty. I am definitely keeping these for the foreseeable future, maybe forever.

:)

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Subject: How about a subwoofer?

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Posted by [grimberg](#) on Tue, 19 Oct 2021 16:18:53 GMT

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Wayne,

I have been listening to my 7pi speakers every day since completing them. It has been great to revisit favorite tracks and find new details I had not heard before. I am very happy with their performance but, you know how it is, we are always thinking about what else can be improved. I was wondering, is there a subwoofer which complements the 7Pi?

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Subject: Re: How about a subwoofer?

Posted by [Wayne Parham](#) on Tue, 19 Oct 2021 17:44:14 GMT

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Three Pi subs work great with constant-directivity cornerhorns. Place 'em in Geddes or Welti configuration and you're good to go.

The 12Pi horns subs is also suitable. It's awesome - but it's big.

When used indoors, I personally would rather have a few three Pi subs in a multisub configuration than one large horn sub. I love horn subs, but indoors, modal smoothing important.

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Subject: Re: 7pi build

Posted by [grimberg](#) on Tue, 19 Oct 2021 18:28:43 GMT

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May I have a copy of the 3 Pi subwoofer plans?

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Subject: Re: 7pi build

Posted by [Wayne Parham](#) on Tue, 19 Oct 2021 20:15:03 GMT

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You've got mail!

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