
Subject: 3Pi Sub plans, and some other questions.
Posted by [joshua43214](#) on Sun, 13 May 2018 15:18:02 GMT
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Seems this is the year for new stuff...

Wayne, please send me plans for the 3Pi sub.

I also have some questions.

Once my, 6Pi cornerhorns are complete, the 2Pi towers I just completed will be moved to the rear.

My listening room is also my home theater.

I know the 3Pi sub is pretty forgiving about changes provided the volume is kept mostly the same. Is there some limit to how much the HxWxD dimensions be tweaked? It would be nice to build it to fit under furniture.

Also, since the 6Pi's do not require a sub, the primary use will be for LFE.

Please also confirm that building it as a down-firing sub is acceptable.

Can you make a recommendation on a plate amp and specs? I am not convinced I need DSP for LFE, but it might find itself doing double duty assisting with room nulls when listening to stereo music. Please keep in mind I am probably going to put a class A or AB amp into service by years end.

I also have the 1Pi speakers I built last year.

I might try and fit them in as surrounds, or just pass them on. It did occur to me that I might be able to reuse the drivers for a center channel as a 3way or as MTM.

I have been running a ghost center since I put the 1Pi's in, and some movies really need a center for proper dialogue levels.

Any thoughts on this?

I don't see being able to afford a 3Pi for the center and a 3Pi sub in the near future, and the sub seems more important today, though I might change my mind once the 6Pi's go in.

Subject: Re: 3Pi Sub plans, and some other questions.
Posted by [Wayne Parham](#) on Sun, 13 May 2018 17:17:24 GMT
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You've got mail!

Vented and sealed subs are generally pretty tolerant of modifications. They are acoustically small, so standing waves don't setup inside. So basically, as long as the internal volume and port remain the same, you can expect performance to be the same too.

You can face the woofer downward if you want, but I would warn that it will ruin the woofer after a few years. The suspension will begin to sag due to weight. Once it does, the diaphragm motion is no longer symmetrical and distortion rises dramatically. So if you put the woofer on the bottom, plan to replace the driver every decade or so.

Forward-facing subs don't have this problem, and you can expect the driver to last forever when oriented that way.

One last note: Constant-directivity cornerhorns don't need flanking subs to smooth notches formed from nearest boundaries. But they do most certainly benefit from distributed multisubs. Run a pair of subs in opposite corners for a Welter configuration. Or place them in other random spots for a Geddes configuration. Doesn't matter - as long as you're running a pair of subs in addition to the pair of bass bins in your cornerhorns, you'll have four bass sound sources and room modes will be greatly smoothed. The added extension from the subs is welcome too.

Subject: Re: 3Pi Sub plans, and some other questions.
Posted by [joshua43214](#) on Mon, 21 May 2018 22:08:47 GMT
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Thanks Wayne for the reply, sorry to be slow to respond.

I will have to start with just a single sub for LFE, and work a second one in at a later date.

Do you have a suggestion for a plate amp?

Any thoughts on making a center channel from my 1Pi parts?

BTW, I started writing the build thread for the 2Pi Towers and the 6Pi cornerhorns. Should get the first post up when I find some time and feel like writing.

Thanks again,
-Josh

Subject: Re: 3Pi Sub plans, and some other questions.
Posted by [Wayne Parham](#) on Mon, 21 May 2018 23:27:35 GMT
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There are plenty of good plate amp options, especially for distributed multisubs. It's not like mains, where I'm a little more picky. Treat 'em like a commodity and choose whichever suits you best. Just stay away from the no-name brands and you'll be alright.

Center channels are always difficult. That's why so many people compromise on sound bars. I personally would prefer to omit the center channel than to use something as horrible as a horizontal array. That then leaves the problem that the left/right mains have to provide a phantom center. It works pretty well with the toe-in like we do it, but sometimes the dialog channel isn't mixed in as loud on left and right, so it's preferable to have a center if you can do it.

But that's not what you asked. You asked about using a one Pi speaker for a center channel. That's excellent if the left/right mains are one Pi's or two Pi's (studio or tower). Not so good if the left/right mains are any of the larger models. If so, you really want something more like the three Pi or four Pi for the center channel. The one Pi and two Pi models make excellent surrounds, but the center channel really needs to match the left and right mains.

If space is tight, what you might do for a center channel is to run a Beta 12CX. That could be used to provide a better match for the three, four, six, seven or eight Pi models. But that's a whole new design task, and without a proper design/test/refinement cycle, it might be best to stick with a phantom center.

And it's iffy. I don't know that the horn used on the BetaCX could be made to have spectral balance with the left/right mains, or if it could be made to sound good at all. So it's a gamble. I have a huge affinity for the H290C waveguide, so it would be a hard pill for me to swallow. I'm just saying it's a possibility perhaps.

All this is why I usually ask if the screen will be acoustically transparent - so that a center speaker can be placed behind it. If the screen is a television or monitor, then a large center isn't possible. That generally rules out a three Pi or four Pi center channel. So in that case, I suggest a phantom center as the only option.

Subject: Re: 3Pi Sub plans, and some other questions.
Posted by [joshua43214](#) on Tue, 22 May 2018 00:04:46 GMT
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Thanks again for the input.

I suppose I am stuck on wattage then for the sub. There is a big price jump going to 500watts. My gut tells me 250w is enough.

How many watts to match up with 6Pi mains and 2Pi tower rears (and possibly 1Pi surrounds)? For now just a single sub for LFE, and later add another.

I have been using a ghost center since I built the 1Pi's last year. They work ok for this, but many videos give you either 2channel stereo, or multichannel which requires a center.

The 2Pi towers work slightly worse since they need more space from the walls and are about a 18" forward of my screen.

My screen is 120" and comes down to 26" from the floor.
a 3Pi would have to be built sideways (which I assume is fine) to fit under the screen.

I am hoping the 6Pi's do a better job all around. I just do not see affording a 3Pi at the moment when I am in greater need of a new sub.

Subject: Re: 3Pi Sub plans, and some other questions.
Posted by [Wayne Parham](#) on Tue, 22 May 2018 00:17:52 GMT
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Expect the mains to be approximately 10dB louder than the subs given the same input power. So you'll want to run them with ten times the power. But believe me, high-efficiency speakers don't need much, even to reach THX reference levels.

I run my subs with a 50 watt amp, and it's plenty. I have Crown Macrotech amps, so I can run thousands of watts if I want to. But it's just not needed. So get a 250 watt amp - It'll be great.

Back to the center speaker dilemma, you can't get good performance from a speaker with the midwoofer to the side of the tweeter. That's why I made the comment earlier about horizontal arrays. When the drivers are sitting side-by-side, the off-axis nulls are also positioned at each side of the speaker. That puts them in the listening area. Best you could do would be to position them left and right of center by about 20°. That puts the nulls in the listening area, and isn't a good thing.

Having nulls at +/-20° is great in the vertical plane, because that puts one of them at the floor (damped by carpeting) and the other over the listener's heads. But it's terrible in the horizontal. So side-by-side drivers are a no-no: They're horrible for sound quality.

Subject: Re: 3Pi Sub plans, and some other questions.
Posted by [joshua43214](#) on Tue, 22 May 2018 03:06:49 GMT
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3Pi sub ordered, 250w plate ordered.

Thanks again for your help.

-Josh
