
Subject: 8 pi speakers install tweeter waveguide inside cabinet?

Posted by [tomlang](#) on Fri, 01 Jul 2022 19:38:40 GMT

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Attached is a picture showing the recommended enclosure with the tweeter waveguide on top of the bass bin.

Also shown is installing it inside the bass bin. Installing it inside reduces the bass bin volume negligibly, however, will doing this possibly causing standing waves, or other issues. Obviously, the drivers are lower that might also cause negative effects.

Simply an attempt at reducing the size of this.

Thoughts?

File Attachments

1) [8pi variations.JPG](#), downloaded 392 times

Subject: Re: 8 pi speakers install tweeter waveguide inside cabinet?

Posted by [Wayne Parham](#) on Fri, 01 Jul 2022 20:11:25 GMT

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No harm doing that at all. I'd love to see a build done that way.

Subject: Re: 8 pi speakers install tweeter waveguide inside cabinet?

Posted by [tomlang](#) on Sat, 02 Jul 2022 11:52:33 GMT

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This is excellent to know, Wayne. I am finishing up a (many year) remodel of our 1968 mid century home and these will be a showcase.

Refer to the drawing below. I see mention of the Peavey CH-3 horn in posts from many years ago. I have a pair. I like the look better as it matches the wider 8 pi cabinet. I realize a (hopefully slight) crossover mod may be required but I can tweak that after construction.

Question before I construct: There appears to be a 10 inch center-to-center distance between the mid horn and the H290. Should this 10 inches be maintained or should I mount the CH-3 as close to the mid horn as possible which results in a 9 inch center to center?

Thanks for offering these most interesting plans.

File Attachments

1) [h290 ch3.JPG](#), downloaded 367 times

Subject: Re: 8 pi speakers install tweeter waveguide inside cabinet?

Posted by [Wayne Parham](#) on Sat, 02 Jul 2022 13:13:29 GMT

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I liked the CH-3 in comparison with the 2370, so prior to the mid-1990s, it was my horn of choice. But that was a couple generations back.

The CH-3 uses a diffraction slot in the throat - as all CD horns of that era did - so while I found it to be less edgy than other CD horns, it still wasn't nearly as smooth as a waveguide horn like I use today. In fact, the harshness of diffraction-slot CD horns is what made me seek out radial horns with relatively uniform horizontal patterns to replace them.

Personally, I'd sell the CH-3 horns on eBay. There is still a market for them, mostly as repair replacement parts for loudspeakers that used them. But for a new cabinet build, definitely go with the much smoother H290C waveguides.

Subject: Re: 8 pi speakers install tweeter waveguide inside cabinet?

Posted by [tomlang](#) on Tue, 05 Jul 2022 16:08:15 GMT

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Here are 3 pics showing the mid horn in relation to the top horn. Is there a center to center distance to maintain or at least a tolerance?

I've noticed it does vary between builds as some folks put the tweeter on top with or without a cabinet which would result in some, but not much, difference.

File Attachments

1) [6 7 pi top.JPG](#), downloaded 347 times

2) [8 pi on top.jpg](#), downloaded 355 times

3) [8pi integrated.JPG](#), downloaded 290 times

Subject: Re: 8 pi speakers install tweeter waveguide inside cabinet?

Posted by [Wayne Parham](#) on Tue, 05 Jul 2022 16:48:33 GMT

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The vertical distance between adjacent sound sources sets the height of the forward lobe, which is punctuated by deep nulls just above and below it. It's a function of both position and frequency.

Generally, the closer you can get the sound sources, the better.

But there is a "diminishing returns" point, and that's where the distance roughly matches the vertical dispersion. What I mean by that is there is a distance between two sound sources that places the nulls above and below at positions roughly equal to the dispersion angle of the horn/waveguide(s). If the nulls are outside the dispersion angle, they are in an area that the speaker was not designed to radiate into.

So the important requirement is to position sound sources close enough to prevent the vertical nulls from falling within the radiation pattern.
