Subject: Re: Compact version of 6Pi / 7Pi
Posted by Wayne Parham on Sun, 22 Jun 2025 14:44:13 GMT
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The H290C can be made with an additional roundover at the mouth to reduce wastebanding without the use of a baffle. That's what the H390C is - essentially an H290C made out of wood with additional mouth roundover for free-space operation, set upon a cradle-mounted stand.

But the problem is that this also changes geometeries and distances between sound sources. That usually necessitates a crossover change to get the forward lobe right, and that in turn requires a measurement - test / modify / retest - design cycle. So unless you are wanting to go through that, I'd stick with what you've done in version A.

Beyond that, I'll respond to your questions below.

1) I can change the front "chamber" to what I indicated in red under point 2c without significantly affecting the sound.

I didn't fully understand what chamber shape you were planning to make, but I can say that it isn't critical so I do not expect any problems. I'm assuming your shape is still pretty "open and free" so any low-pass properties are minimal. You'd almost have to create a bandpass chamber - limiting the opening to a small duct - to cause yourself a problem here.

2) The height / cross section of the bass-bin's mouth can be reduced without noticeable difference in frequency response.

This is sort of like the first question, in that you could make fairly large changes without causing a problem. The bass bin is really just a positioning device, placing the woofer near to the apex of the corner, and the slots are just a result of that. I found them somewhat empirically. The goal was to have the woofer acoustically near the walls but not so close that the slots formed a compression chamber.

3) The H290C requires baffle mounting, meaning that Design B is not suitable.

That's right, although I wouldn't say it isn't suitable. The H290C can be operated in freespace, but having a baffle reduces waistbanding. So I would suggest that version A is probably preferable.

4) Separating the mid-horn and the mouth of the bass-horn by 16cm is acceptable, thus Design A is OK.

That's totally fine. We're overlapping and blending the midhorn and bass bin sound sources in the upper modal region to help smooth vertical modes. By shifting the vertical position of the sources, you're really shifting the vertical modes of those sources. But you're still blending them and they're still in the same acoustic scale. You've only shifted by six inches, not six feet. So the region affected is still in the same range, which is the upper modal region.

5) Both the B&C 12PLB100 and the JBL 2226H are equally suitable for very low-level listening.

Both are excellent woofers. Both are excellent for low-level listening and both are excellent for fairly high power levels too. Low distortion, smooth response.