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Posted by [Wayne Parham](#) on Fri, 19 Nov 2004 11:51:42 GMT

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Both the shorting ring and the push-pull plenum are mechanisms that decrease second-order harmonics. Third-order will not be affected. But the same features that reduce harmonics in the LABhorn or any other basshorn apply here. Namely, the reduction of excursion from horn loading and the low-pass nature of the horn, its front chamber and the folds. Consider this: If a horn is intended to be used from 30Hz to 120Hz then the second harmonics are between 60Hz and 240Hz. This is a range that is completely in the passband of the horn. The top half-octave is just starting to be attenuated by the front chamber and the folds, but basically, all second harmonics enter the horn and are affected by it. If you think about it, sounds between 20Hz and 30Hz are not amplified by the horn, but their second harmonics are. So a reduction of second harmonics is pretty important for improving deep bass quality. Third harmonics for the same 30Hz to 120Hz range are 90Hz to 360Hz. As you can see, the range is shifted high enough that it starts to get beyond the operating range of the horn. The front chamber and folds can effectively attenuate about half of the third harmonics. Besides all this, if you can reduce harmonic distortion, it would seem to be worth doing. As for power handling, please see the post called "Loudspeaker Venting and Cooling Techniques." This shows some of the techniques we're looking at for removing heat from the motor and increasing thermal capacity. None of them will improve mechanical performance of the woofer and excursion limits will not be increased, so high-pass filters might be still be advised for extreme situations. But mechanical limits will not be decreased by any of these techniques either. About pneumatic asymmetry, the drivers will have the same volume for a rear chamber, so that's not an issue. They will share the same front chamber, so that's not an issue either. And they will each have their cooling vents plumbed to the same pressure, so that's not a source of asymmetry. There's nothing about this approach that makes it pneumatically asymmetrical. The thing left to do is to build some models for testing and we're working on that right now. As an aside, I'm very excited about the level of quality and design expertise brought to the table on the vent valves. I am confident that we will be able to provide a fitting at a reasonable cost, and I've asked that one be made available with a right angle fitting for LABhorn owners too. After tests are done, I'll be sure and post the results at each step along the way.

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