Subject: push-pull - isobarik bass
Posted by dB on Thu, 25 May 2006 22:59:29 GMT
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Hi Wayne,First of all Congratulations for the success of the Great Plains Audiofest and the

bass system philosophy a little similar to the isobarik? You have your speakers in two different

vocabulary and the arrengements, does it work in the same way? Thanks. I think your 12pi basshorns take a long time to appreciate and maybe one day I can also listen to them... who knows?Psychoacoustics - I have been following the discussions on this forum about "psychoacoustics" and the (good) effect of wood (and bronze by the way) in electronics and acoustics.This is another web site that most of us might have found allready;"Dieter Ennemosers C37 Theorie" ...and the wood-cone speaker design patent(http://www.ennemoser.com/index.html) Dieter Ennemosers C37 Theorie

Subject: Re: push-pull - isobarik bass
Posted by Wayne Parham on Fri, 26 May 2006 16:23:30 GMT
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Push-pull and isobaric are fairly similar in physical construction but dissimilar in configuration.The isobaric arrangement has cones driven so that each moves together, forming an isobaric pressure zone between them. Basically, they cancel in this zone. The other side of the cones is exposed, and that's what generates useful output. The idea is to create a motor with twice the strength and twice the moving mass.The push-pull configuration has cones driven so each pressurizes the zone between them. One is driven so that it creates positive pressure from the front size of the cone and the other from the back. The idea is to reduce distortion by cancelling harmonics.The force that moves a loudspeaker cone is not perfectly linear, and its back and forth motion is not perfectly symmetrical. This is because the magnetic field generated by the voice coil deforms the magnetic field of the fixed magnet. This causes eddy currents in the magnetic circuit, literally modulating the flux. Further, the magnetic circuit is made of several parts, the center pole, top plate and back plate, in addition to the magnet itself. These may saturate at different levels, which will also cause force asymmetry. These are the primary causes of distortion in a loudspeaker.The push-pull configuration cancels any asymmetries by having two identical drive units running in opposite directions. Essentially you have a strong motor and a weak motor on each half cycle. On each contiguous half cycle, the strong one and the weak one flip.

Subject: Re: push-pull - isobarik bass
Posted by dB on Sun, 28 May 2006 08:34:59 GMT
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Very nice. Thanks for your explanation Wayne.Now I have another question. When I check with WinISD software for a vented box, for a 10" speaker, it gives a nice one with about 80L(2.8cf3) in the 40Hz-1KHz band freq. If I go with isobarik it gives a well developed -- and robust -- frequency response curve with one (box) of only 50L(1.7cf3) in the 30-500Hz band freq. But the freq. resp. band is now reduced to about 500Hz. What happen to the freq between 500Hz and 1K? Is the electrical output being "spread" by the (two) isobarik speakers so it gives a dim output on the midhighs around 1KHz, and the low's working like a piston develop a better response, like a stronger motor "with twice the strength"?In this case, if I use the isobarik design, I will have to change the xover frequency from 1KHz to about 500Hz for an even output and nice xover to the lowmids and upper bands(?). Am'I correct? Is the loss in power (500Hz-1KHz) virtually measurable and degraded by such a respectable amount or only approximate? Best Regards.

Subject: Re: push-pull - isobarik bass
Posted by Wayne Parham on Mon, 29 May 2006 03:24:08 GMT
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Remember that the isobaric design effectively doubles moving mass. So mass rolloff happens sooner.

Subject: Great!! thanks a lot.
Posted by dB on Mon, 29 May 2006 21:28:57 GMT
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Subject: Re: push-pull - isobarik bass
Posted by Spinjack on Thu, 01 Jun 2006 20:14:05 GMT
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Does the isobaric not result in teh same symmetry advantages because of teh push-pull configuration of the drivers?

Subject: Re: push-pull - isobarik bass
Posted by Wayne Parham on Fri, 02 Jun 2006 13:45:01 GMT

Push-pull and isobaric configurations are similar with respect to symmetry, but not exactly the same. The difference between then is the acoustic or pneumatic load. In the case of the push-pull configuration, both drivers have the same pneumatic load, so there is pneumatic symmetry. But the isobaric has one driver exposed to the listening environment, which is a large space, and the other driver faces the cabinet interior, a small space. The only exception is an open baffle isobaric, which has equal pneumatic loads on both sides, and so can be symmetrical.
Comparison of isobaric and push-pull woofer systems