Subject: Wayne, what do you think about this?
Posted by Adam on Wed, 26 Jun 2002 18:43:33 GMT
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Hey bud,I Pialigned a Seas Excel 7" for use as a midbass in vehicle, running down to 60 Hz.It came up with some somewhat odd results which plotted funny in my box program (it gave me a response peak), but maybe I just mistranslated them. Anyway, I tweaked it slightly from what Pialign gave me, I placed it in a 0.33 cuft tuned to 51 Hz. Gives me flat response to 50 Hz, which is fine in this case because it'll only be operating 60 Hz and up.Is there any chance you could check this out and tell me if this box design would still sound great for the midbass? This is one of the best midbass drivers in existance, but I've never heard of it being run in such a small enclosure before, and it strikes up a bit of worry. Since you have a ton of experience with these overdamped ported box alignments, I thought maybe you could help me out.Thanks bud.Here's the woofer specs:http://www.madisound.com/seas/e017.pdfAdam

Subject: This is a perfect motor for Scott's application
Posted by Wayne Parham on Wed, 26 Jun 2002 20:11:02 GMT
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You've found an excellent motor for Scott's application. The system is optimally flat using this driver in a box the size needed, a quarter cubic foot. It's not terribly efficient, at 88dB/W/M. But that's normally the case with tiny woofers like this, and overall, it looks like one of the best solutions for the system.From the Seas W18EX001 specification sheet, the numbers shown are Vas=37 liters (1.31 cubic feet), Fts=31.0Hz and Qts=0.24. PiAlign values are then Vad=1.31, Frd=31.0 and Qd=4.17 and the recommended enclosure is 0.31 cubic feet and tuned to 48Hz. It is able to calculate a cabinet having actual resonance very close to this - 52Hz - using a 3/4" port that's 3/4" long, so that nice because it can be formed easily by drilling a 3/4" hole in 3/4" baffle material. All-in-all, PiAlign's recommendation is an excellent solution.A couple of other things are worth mentioning. You might notice that distortion rises substantially at low frequencies. It rises fast below 100Hz, where it is around 1%. By 50Hz, it is over 3% and climbing quickly into the double digits. Distortion is also rising at the other end of the spectrum, and breakup modes are severe at 4kHz. Performance up to 4kHz is quite sufficient and really, so is performance down to 50Hz. For a system of this size, I think it would compare favorably and work very well.

Subject: Re: This is a perfect motor for Scott's application
Posted by Adam on Wed, 26 Jun 2002 21:20:01 GMT
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Thanks Wayne!I was planning on crossing it at 1.2 kHz with an Image Dynamics horn, so the

breakup modes won't be a problem.Also, like I mentioned in my particular app, it'll only be operating down to 60 Hz so I think distortion should be fine. This is one of the cleanest midbass drivers around. I think you can do better than it for the low bass, but it's still an impressive unit... Some of the lowest distortion figures around, twin copper shorting rings, magnesium cone, solid copper phase plug...Pialigning the driver (or at least a similar alignment) really seems to offer the extension I need down to 60 Hz, with big time power handling, no loss in sensitivity... Shoudl be great!! Much better than running the weaker motor version in a sealed box... Bleh.I was going to recommend this driver to Scott actually, the only thing that stopped me is it's $156 dollar price tag and it's 8 ohm impedance.Adam

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Subject: Re: This is a perfect motor for Scott's application
Posted by Adam on Wed, 26 Jun 2002 21:28:53 GMT
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Oh, by the way, it's worth mentioning that it was tested in a sealed box, which really isn't wht that unit should be running in at all, with that qts.I imagine the distortion figures on the bottom end would be a little lower if it was measured ported perhaps?Adam

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Subject: Re: This is a perfect motor for Scott's application
Posted by Wayne Parham on Thu, 27 Jun 2002 00:19:40 GMT
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Distortion in the resonance region between fb and fh would be less, because cone movement is reduced in this region. That will help between 50Hz and 100Hz. If desired, one can further reduce distortion by removing any chance of delivering information below the system resonant frequency. Since the speaker system unloads below fl, there is no output generated and so there's really no point sending it any input. So a high pass filter can be employed set to fl to further reduce distortion. But the direct answer to your question is that - Yes - a bass reflex speaker generates less distortion than a comparible sealed box because excursion is lower.

Subject: Response graph of PiAlign'ed W18EX001
Posted by Wayne Parham on Thu, 27 Jun 2002 02:36:05 GMT
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Response graph of PiAlign'ed W18EX001Cabinet volume = 0.31 cubic feetPort = 3/4" diameter

hole drilled through 3/4" thick baffle

Subject: Re: This is a perfect motor for Scott's application
Posted by Scott on Thu, 27 Jun 2002 10:14:45 GMT
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Looks good. But way too expensive. I'd have to retail with that driver around $300. I buy the RF and JLs for about half of this one (around $50 ea). Thanks for the help, though. I'm always on the lookout for something different.....

Subject: You probably should at least try it
Posted by Wayne Parham on Thu, 27 Jun 2002 16:01:40 GMT
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You probably should at least try it. I think you'd be very surprised. The cost difference is only about $45.00, and performance will be significantly better. If people hear both versions, you'll find that you'll only sell the Seas one, even if your price is twice as much.

Subject: Re: You probably should at least try it
Posted by Adam on Thu, 27 Jun 2002 17:25:08 GMT
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Scott, if you want, I'm gonna be running four of these units later next month (august) as midbass drivers in enclosures almost identical to this. That's why I brought it up initially. If you want, I can let you know how the full range bass sounds if you dont' want to spend the money for a trial unit.Adam

Subject: Re: You probably should at least try it
Posted by Scott on Fri, 28 Jun 2002 11:30:24 GMT
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It's not that I don't want to try one out. I actually have a box ready now. Understand guys, it's a money thing. I've actually been wanting to put another on the other side of my car, just don't want to spend the money for another driver right now.