
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 $V_{as}=37$ liters (1.31 cubic feet), $F_{ts}=31.0$ Hz and $Q_{ts}=0.24$. PiAlign values are then $V_{ad}=1.31$, $F_{rd}=31.0$ and $Q_d=4.17$ 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's 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.