Subject: Re: 3pi with Sonido SCW-300
Posted by Wayne Parham on Thu, 01 Dec 2011 01:49:16 GMT
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Motor run caps are hit and miss. Some are excellent, so it's worth experimenting with them, in my opinion. But some are too lossy and others just plain sound bad. The ones to avoid are the poly caps. The oil filled ones are the ones you want.

Box simulators that show port airspeed almost always give DIYers the wrong impression. If you're building a prosound subwoofer, then you really need the displacement capacity and the performance at full excursion is important. But hifi mains are completely different and you shouldn't be overly concerned with airspeed "chuffing" problems.

If you're push the woofer hard enough to get port chuffing, then you have other problems anyway. We aren't expecting a lot of excursion from the mains - don't want it - because it causes intermodulation distortion, which is a bigger potential problem than vent noise.

The rule of thumb is to keep port airspeed under 100KPH. But the box simulators usually calculate airspeed at full excursion. This is unrealistic. If you want to get a better idea of minimum port size for mains, run the numbers at a fourth of full excursion.

I would also be concerned with standing waves, as already mentioned earlier in this thread. Larger ports tend to be more prone to cause midrange ripple. Not that I'm opposed to large ports - far from it - if you can have your cake and eat it too, all the better. A large port situated so that there is no midrange ripple is just fine. But it does bring back an issue I've mentioned before. You'll need to test this loudspeaker to see what effects your changes have made.

Having said that, I wouldn't worry about it too much. You only went to a 4" port, which probably won't give you any trouble. Hard to say, really, since the port length also comes into play. Only measurements will tell you for sure.

So you'll definitely want to get out the measurement gear and test the speaker, looking not only for the position of the nulls but also for ripple in the lower midrange, between 80Hz and 200Hz or so. These are the two things most likely to need adjustment. If you find ripple in the lower midrange, you'll want to change the size, shape and/or position of your port. If you find ripple in the crossover region, or if the nulls aren't above and below the centerline by approximately +/-25°, you'll need to adjust crossover component values. I find the midwoofer values are usually easiest to modify without a complete redesign. A little movement of one of two component values will shift the nulls and slightly change the response.

Good luck!