Subject: Reducing vent size
Posted by Adrian Mack on Sat, 03 Apr 2004 01:14:14 GMT
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I do agree though that there comes a point when the vent can be too large so that theres no pump action and it is not drawing air in and out over the voice coil anymore. Obviously though the concern here is using a smaller vent size rather than bigger, 0.75". If it is too restricted it essentially creates a small acoustic chamber under the dustcap and beteen the pole piece, with constant compression and rarefaction of air pressure as the cone moves back and fourth. This would mean more heat on the voice coil, and also air-nonlinearity as you say which could be a barrier or restriction to the cones natural movement. I think this is why manufactures start adding additional air vents rather than simply increasing the size of a single air vent to reduce power compression. Is this possible to do on the MAG12? You could have additional air vents through the back plate which would be aligned with the voice coil or something, although this may also require a redo of the motor layout, just like the option of mounting the shorting ring's in the plates/outside of the VC (what was the plan before if we stick to the 0.75" vent? The shorting ring wasn't inside of the voice coil, was it? If so, I havn't see this sort of implementation used anywhere before, it's always been on the outside surrounding the VC on woofers that I've seen and in textbook diagrams or online). One thing for sure though is that power compression is bad, and I wouldn't want to play a juggling game with making an air vent smaller. Black anodized voice coils and extra heatsinks is an option to dissipate heat as well; unless some sort of other heat transfer device is implemented, I wouldn't want to see the air vent on the MAG12 reduced. Tom Danley commented on the live-audio forum his results from an experiment to examine power compression. He noted that typical VC woofers average -3db to -9db compression within the first 15 seconds, which also caused quite major resistance and frequency response changes, and T/S parameter shift. I wouldn't want to do anything which could potentially increase power compression and distortion, and the other non-linear affects that come along with it. I'm not sure if the original LAB12 woofer had any extra heatsinks in addition to the vented pole piece. My assumption though, is that this $150 woofer would have heat transfer or cooling similar to other woofers in its price range, which happens to be nothing special. What also pointed me toward that conclusion is because it uses a Kapton voice coil instead of a black anodized aluminium one, the latter being more effective in removing heat and has higher temperature characteristics. It just so happens that these woofers would have to have a lot more compression than your typical JBL pro woofer, which may have 4db or so compression at full power. I've seen on other websites such as Beyma and other brands, looking at their woofers which don't have all the high tech heat dissipation options like JBL, which DO actaully post power compression graphs which are some 6db compression or greater at full power on some woofers. Not to mention the increase in distortion caused by this. That's why I assume the LAB12 woofer would be similar - by comparison, higher power compression just like these woofers. If this new MAG12 woofer is going to be as great as it's supposed to be, it must have adequate cooling. If the vent size in the pole piece must be decreased, then additional cooling or heat transfer methods should explored really. If you're worried about motor noise from chuffing in the motors air vent if its size is reduced, why not flare the air vent like is done in the lambda 001 motor. It's all just my opinion, but thats what I believe and what I would personally like to see happen. I dont even know how big the vent is in the LAB12 myself, the mere fact of reducing its size though, I would say that one cannot expect performance not to suffer. I guess we'll know just how much it will suffer after Eminence do the tests on it. Adrian