Subject: Re: Heavy-cones verses light-cones in basshorns
Posted by Wayne Parham on Wed, 13 Sep 2006 04:47:59 GMT
View Forum Message <> Reply to Message

Shorting rings do nothing to affect moving mass. They do decrease and stabilize voice coil inductance, which is useful for extending HF response, among other things. They also reduce flux modulation, which reduces distortion.I really like drivers with shorting rings, because one that's properly made will reduce harmonic distortion 15dB or more. That's a huge improvement. But they don't work very well below about 100Hz. Theoretically, one could be made that reduced distortion at very low frequencies, but it's difficult. The ring has to be large, and that takes away from magnet space. From a practical design standpoint, it becomes prohibitively impractical to design a subwoofer with an effective shorting ring. That's why you see other technologies employed, things like differential voice coils and other forms of push-pull drive.Push-pull drive reduces even harmonics, and it works best at low frequencies. So where shorting rings lose their effectiveness at the bottom end, push-pull drive starts to work its best. Push-pull drive only works on even harmonics, but folded basshorns with limited bandwidth will attenuate higher harmonics. For example, if a basshorn is designed to operate to ~100Hz, then the third harmonic of a 35Hz signal is at the edge of the stop band. Second harmonics are cancelled by the push-pull drive and third harmonics are reduced by being out of the passband. Fourth harmonics are cancelled by both the push-pull drive and being even further out in the stop band. Of course, higher harmonics are reduced even more.
Push-pull verses shorting rings