Subject: Re: Hi-Efficiency vs Lo-Efficiency Speakers
Posted by Earl Geddes on Mon, 10 Jan 2005 18:18:59 GMT
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WayneI think that Our discussion comes down to what a shorting ring does.In my understanding, and I have some considerable experience with large loudspeakers companies in this, a shorting ring does two things.The first is basically what you said, except that it does not just make the flux symmetrical, but stabalizes it, symmetrical or not. A shorting ring, if it had zero resistance, would not allow for any flux that pasess through it to change. Any change in the flux would result in a ring current which would produce exactly the counter flux required to make this change zero. This change is MOSTLY symmetrical, but since the entire flux circuit is nonlinear it also has a non-symmetrical part. All changes - symmetrical or not - are canceled. But shorting rings are not zero resistance, so they cannot do this perfectly. The lower the resistance the better. JBL once used silver. Today we know that a lot of copper works just as well at a much lower cost.The other effect of a shorting ring is to linearize the inductance change with position. This is closely coupled with the above effect in many respects in that the inductance change with current is closely associated with flux modulation. It is different than the inductance change with position. A shorting ring will tend to negate the inductance increase due to the steel core of the motor structure, thus decreasing the change with position. This lowering of the inductance is a primary effect in compression drivers particularly at high frequencies. The previous effect (flux modulation) is more dominate in woofers, but both effects exist in both components. The change of inductance with position is again dominately non-symmetrical, but it has signifcant symmetrical aspects to it.I hope that this discussion sets well with your understanding.Earl Geddes