Subject: Acoustic Suspension vs. Bass Reflex
Posted by Wayne_Parham on Sun, 08 Apr 2001 06:33:39 GMT
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I don't agree with the idea that sealed or open baffle cabinets are somehow immune to resonant behaviour. All speakers shift phase as they pass through their resonant regions, whether they are sealed, open, ported, labyrinth, transmission line or horn. No speaker is immune.All speakers have a resonant frequency and therefore can be excited into resonance at that frequency. A pulse sent to them will tend to cause overring, and the alignment will determine the amount of damping. This is what determines the amount of a "ringing" artifact is produced - Not whether it is sealed or ported, but rather the Q of the particular alignment.The speaker diaphragm and suspension is a spring/mass system which is mechanically reactive. There's no way around it. A sealed cabinet will offer damping - like that of a shock absorber - but it is helpless to remove the "spring" action in this system from the diaphragm mass and suspension. So a sealed cabinet can assist the motor by damping it, but it cannot remove the reactive nature of the mass/spring action of the motor.You will see a similar sort of "ringing" at resonance in a sealed cabinet as you will in a bass reflex cabinet. The more damped a system is, the less it will ring. But this is determined by alignment, and not by whether a cabinet is ported or not. As we examine this a little further, we actually find that a sealed box is incapable of providing as much damping as a optimally tuned bass reflex box, at least in the resonance region between fb and fh.