Subject: Alignments
Posted by Wayne Parham on Fri, 22 Jul 2005 16:09:19 GMT
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For every driver, there's a continuum of alignments that are possible. There is a reasonbly wide range where response is flat and in this range, a larger box just provides deeper bass extension. For an example a JBL 2226 in a 2.0ft3 box tuned to 50Hz has f3 of 65Hz, 3.0ft3/50Hz has 55Hz f3 and 4.0ft3/50Hz has 50Hz f3. Any larger or smaller and response becomes underdamped.Moving the Helmholtz frequency down a little bit shifts the alignment towards an overdamped condition. This has a benefit of being forgiving of certain conditions. Adding series resistance from long wire runs or heated voice coils won't make the box sound boomy. On the other hand, it isn't an alignment that works well in wide open spaces without a sub. A flat or even slightly underdamped alignment sounds better if used in open areas, particularly if no subs are used.When the box is tuned to 40Hz, all box sizes from 2.0ft3 to 5.0ft3 work well, having flat response and cutoff somewhere between about 40Hz and 60Hz. They are slightly overdamped, so they are forgiving of high power levels and long wire runs. Larger boxes, up to 5.0ft3, yield an EBS alignment that rolls off about 40Hz. There are lots of prosound 15" drivers that have been made to work well in 2.0ft3 to 5.0ft3 boxes tuned to 40Hz. That's a standard target, so many manufacturers have made speakers that have suitable electro-mechanical specs for this application.So the difference is largely a matter of bass extension. You have about a half octave span to play with, and about 2x box volume to work with too.