Subject: Re: BETA 12LTA in a PiAlign enclosure
Posted by Adrian Mack on Sat, 28 Feb 2004 01:45:48 GMT
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I think he is probably modelling with over 100watts of power which by that time the driver would have well exceeded its max excursion. It only has 0.8mm of voice coil overhang, almost nothing. JBL drivers with zero overhang have xmax rated at 0.060" with the idea to keep distortion below about 10%. Usable xmax estimate on these drivers is about 15% of VC length added to one-way overhang. VC length on the 12LT is 9.54mm. 15% of this is 1.43mm added to 0.8mm overhang, is 2.23mm. Using the port and enclosure PiAlign suggests vent mach is below 0.05 or 17ms until 26Hz when driven to max excursion of 2.23mm (requires 13w RMS). Below 26Hz it rises to 0.06 mach or 22ms. By this time the port and woofer are unloading anyway as its below Fb. 2.23mm on this driver limits max SPL to ~107db as direct radiator. Considering other ways to determine xmax will come up with different numbers of course. If you want to use Dumax specification it's when drive force drops by 30%. djk once gave a different way to determine xmax of overhung drivers which is to take voice coil overhang and add the mean of 15% of the total coil length and 25% of the gap height. A more conservative 10% distortion limit for total xmax is estimated using this method. For the 12LT:15% of coil length is 1.431mm25% of gap height is 1.985mmSquare root of the product of those two numbers is 1.685mmAdd 0.8mm of one way overhang to that results in 2.49mm one way xmax at 10% THD. Assuming 2.49mm usable one way xmax then, vent mach is still very low compared to the other 2.23mm estimate because they are very close.