Subject: BETA 12LTA in a PiAlign enclosure
Posted by HigherFi on Thu, 26 Feb 2004 23:32:32 GMT
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Has anyone had experience with the Eminence BETA 12LTA in a PiAlign enclosure?The folks at DIY audio's Speaker forum thought they might be a good match.

Subject: Re: BETA 12LTA in a PiAlign enclosure
Posted by Wayne Parham on Fri, 27 Feb 2004 04:11:07 GMT
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The Beta 12LT will work well in cabinets from about 2ft3 to 10ft3 tuned to 35Hz. PiAlign recommends a 2.5ft3 cabinet tuned to 35Hz using a 2.5" diameter port that's 2.75" long. Response is nice and flat with f3 of 60Hz and f10 at 40Hz.

Subject: Re: BETA 12LTA in a PiAlign enclosure
Posted by HigherFi on Fri, 27 Feb 2004 09:28:07 GMT
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Wayne this looks promising on WinISD however the recomended post has a mach of 0.44 which is way too high. Is there room for fussing around with the port diameter to lower the vent mach?

Subject: Re: BETA 12LTA in a PiAlign enclosure
Posted by HigherFi on Fri, 27 Feb 2004 10:14:24 GMT
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If I use 3 1.5" vents 3.5 " long I still get the correct frequency for the ports and a vent mach of 0.14 which should give much less wind noise from the vent. The enclosure would be 18" wide by 28" tall and 11.5" deep using 3/4" plwood.

Subject: Re: BETA 12LTA in a PiAlign enclosure
Posted by Adrian Mack on Fri, 27 Feb 2004 13:31:38 GMT
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If the air speed velocity is too high in the ports, simply use a larger port that achieves the same tuning frequency as PiAlign reccomends, if that's what your using. 0.14 mach is 48ms, which is still going to cause some pretty major compression and distortion at high power levels.

Subject: Re: BETA 12LTA in a PiAlign enclosure
Posted by Wayne Parham on Fri, 27 Feb 2004 18:19:11 GMT
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The Beta LT has peak displacement volume of 42cc, which is only 2.5 cubic inches. That's not very much to push through a 2.5" diameter port, so airspeed won't get anywhere near 40% mach, which is 300mph. By the way, maximum airspeed is at fb, and falls off above that.

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.

Subject: Re: BETA 12LTA in a PiAlign enclosure
Posted by HigherFi on Sat, 28 Feb 2004 01:46:50 GMT
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Here is my best shot at discribing what I feel would fit the PiAlign model.The 5 ports are 1.25" diameter 4.38" long on a 12" radius from the center of the Beta 12LTA. The tweeter is a Fostex FT17H.I have a The WinISD WID file and crude drawing below
http://home.midmaine.com/talbot_audio_design/Beta 12LTA Pi alaigned.WID

Subject: Re: BETA 12LTA in a PiAlign enclosure
Posted by Adrian Mack on Sat, 28 Feb 2004 01:49:06 GMT
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The link for the picture and WinISD download file seem to be not working. I just posted about the 12LT here http://www.audioroundtable.com/PiSpeakers/messages/14110.html about air speeds.

Subject: Re: BETA 12LTA in a PiAlign enclosure
Posted by HigherFi on Sat, 28 Feb 2004 02:06:46 GMT
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Finally got drawing in a spot it can be accessed, my ISP didn't like the previous location

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Subject: Re: BETA 12LTA in a PiAlign enclosure
Posted by HigherFi on Sat, 28 Feb 2004 02:18:11 GMT
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I know this is a speker forum but if you are interested in the amp I am going to use with it go to my site:
http://home.midmaine.com/~talbot/talbot_audio_design/index.htm

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Subject: Re: BETA 12LTA in a PiAlign enclosure
Posted by Adrian Mack on Sat, 28 Feb 2004 02:23:05 GMT
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Five 1.25" diameter ports have almost the same cross sectional area as a single 2.5" diameter

port. You could use the 5 ports if you wanted to, but there is no difference in vent air speeds between the two options. Take a look at this posthttp://www.audioroundtable.com/PiSpeakers/messages/14110.html

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Subject: Re: BETA 12LTA in a PiAlign enclosure
Posted by Wayne Parham on Sat, 28 Feb 2004 06:09:15 GMT
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Interesting amp - Class A 300B with Lundahl output transformer. Have you built it yet? Have you ever heard another amp with those parts in that basic configuration? Or is this a brand new thing for you?I encourage you to post this link in the SET forum too; I think people will be very interested in it.
