
Subject: 4pi with altec 807?

Posted by [geezer](#) on Mon, 14 Jun 2010 21:47:21 GMT

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Hello Wayne

I been gathering parts for a 4pi build and stumbled upon a pair of old altec 807 horns. The horns are a bit big to fit in to the box so I was thinking of putting them on top. Are the box dimensions critical? And if so which ones shall I stick too?

Best regards

/Anders

Subject: Re: 4pi with altec 807?

Posted by [Wayne Parham](#) on Tue, 15 Jun 2010 01:16:54 GMT

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Driver position is important in my speaker designs, as is the horn chosen. I've used some Altec horns over the years, and many of them are old favorites. The Altec 811 is one of my favorite classic horns. But it cannot be used in any of my current designs, as a complete crossover redesign would be required. So don't use a different horn than what is called out in the plans or performance will suffer.

Now, if what you're talking about is just the 807 driver, that's a little different. I am assuming you have an 807 driver mounted on an 811 horn. But if you're willing to use just the driver, you can do

compression drivers I use in current production models.

Subject: Re: 4pi with altec 807?

Posted by [geezer](#) on Tue, 15 Jun 2010 06:22:04 GMT

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Of course your right, its a 811 horn I meant. I might want to try a build with these components inspite the big crossover issues. I have the Minidsp which is an active crossover that I can fool around with, and if the results don't end up satisfying I could always get back to the original 4pi design.

As you said it would be a totally different speaker but I wonder if you have any particular design advise? Considering your experience and knowledge about the jbl 2226 woofer.

My plan was to stick to the same tuning-frequency, port dimension and volume as the 4pi.

Thank you for the fast reply!
/Anders

oh and do you have 4pi-plans?

Regards

Subject: Re: 4pi with altec 807?
Posted by [Wayne Parham](#) on Tue, 15 Jun 2010 06:39:22 GMT
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I'll send plans.

You can use the same cabinet, of course, and that will at least give you a nice midwoofer to match your tweeter. You'll just have to dial-in the crossover, and since you have an active unit, that will give you some fun tinkering with it and getting it setup.

You should be able to get it sounding quite nice. The drivers you've chosen are all very good, and the horn sounds real good too. The thing that's different is the directivity, and therefore the reverberent field. The 811 creates collapsing DI, which gives you some acoustic equalization. You won't need as much electrical compensation as a result, but you also won't have as smooth polar response. But the 811 does sound pretty good and I think you'll have fun with it.

Subject: Re: 4pi with altec 807?
Posted by [geezer](#) on Tue, 15 Jun 2010 06:53:06 GMT
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That's one fast response.

Thanks alot!

Subject: Re: 4pi with altec 807?
Posted by [Bill Epstein](#) on Tue, 15 Jun 2010 19:10:44 GMT
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A number of us have, in the past, used the older 4Pi crossover with 811s and other horns with drivers that include the 806 and 902. We all used bigger boxes than Wayne, 3 1/2 to 4 1/2 cubic

feet tuned to 40 Hz, because that's what we had, mostly from the JBL Tent Sale at that time.

Heres a 3 1/2 cu ft JBL 3677 cabinet with a 4 1/2 cu ft behind it and the 811 just peeking out above. If you do a search here for Speakerman57 you'll find a lot of discourse between Ron and Wayne about implementation. I just held Ron's coat

(Wayne, you believe all that goes back nearly 10 years? Yikes!)

After several years of this, I built the dead stock 4Pis with the new crossover and couldn't be happier. Ron's still out there, with Beryllium, this time.

Happiness is:

File Attachments

- 1) [site1212.jpg](#), downloaded 8458 times
 - 2) [IMG_0837_1.JPG](#), downloaded 8220 times
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Subject: Re: 4pi with altec 807?

Posted by [geezer](#) on Wed, 16 Jun 2010 21:12:20 GMT

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Yes, I think I'm heading for a stock build to but at the moment I don't have all parts nessasary. The box will have the same dimensions so it be easy to convert.

I'm really tempted on trying to fit the 811 horn in box. This would radicaly change the orginal baffel leaving the port in one of the lower corners close to woofer. Is there any way to predict the response?

I've been scanning the forum reding post that mention risk of standing waves and the impotence of driver position.

Thanks
/Anders

Subject: Re: 4pi benefits

Posted by [Wayne Parham](#) on Wed, 16 Jun 2010 23:49:17 GMT

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Actually, as much as I like the Altec 811 horn, there's no way to get the polar response right, or even close. You can make the on-axis response right, but not off-axis. So you have to sit with the speakers directly facing you for them to sound good.

While that may seem to be a non-issue, it is actually really important because if the sound isn't balanced in all directions, then reflections have the wrong spectral balance. The total energy in the room - what you hear is made up of this total energy - is actually an aggregate of sound radiating in all directions, not just the sound that points directly forward from the speaker. So the goal is balance of the reverberent field, not just the on-axis response.

The problem is that long neck on the 811 horn. The lower region, from about 800Hz to 4kHz or so, radiates from the horn pretty evenly at all angles defined by the mouth. At the low end, it's actually wider than that. But as sound frequency rises, the pattern becomes more narrow. The higher frequencies are only present straight forward on-axis, and cannot be heard off-axis at all. That long narrow throat makes the sound beam at higher frequencies.

All of my loudspeakers have constant directivity as one of their design goals. If you'll stick with the stock plans, what you'll gain is nice smooth response over a nice wide 90°x40° pattern. I gave you a brief overview of why that's important in the paragraphs above, and in the link below, there are several threads with more detailed information. I've also included a link to the response (both

range of angles, and that's no easy feat. It's more complicated to make performance good over a large area, and there are more competing priorities to balance. That's why it's nice to be able to leverage the R&D I've already done, but to do that, you'll have to build what's shown the plans.

have an effect on lower midrange response, mostly in larger cabinets. The positions set how the standing waves line up. The goal is to keep acoustic radiators near zero crossing positions, so internal standing waves aren't audible. But that's not the only thing that matters where position is concerned. In fact, it's not even the main thing. The main thing is acoustic flight time, the path lengths between sound sources and listeners. These distances combine with electrical phase from the crossover to set the overall summing between sound sources. You can find more information about that at the link above.

Subject: Altec 811B horn and 807 driver
Posted by [spkrman57](#) on Thu, 17 Jun 2010 15:41:49 GMT
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First off I must agree with Bill and Wayne as far as using the 811B horn will be less than ideal unless you toe them in to the listeners position and that limits how many people will be able to hear the system like it should.

I still have that situation and then some since I use round horns which beam like a laser, but will image like not other horns if you can stand a micro-sized sweet spot.

I would also like to point out that the 807 driver if stock has a "symbiotek" diaphragm and HF response will be limited. Installing a aluminum diaphragm will help, but driver to use if you want Altec (or Great Plains) is the 902 with "Tangerine phase plug" and aluminum diaphragm.

Regards to all!

Ron

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1) [Manly 2 way.JPG](#), downloaded 393 times

Subject: Re: Altec 811B horn and 807 driver

Posted by [geezer](#) on Thu, 17 Jun 2010 19:00:51 GMT

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Thanks for all the replys. It's been very informative and have most likely saved me alot of unnecessary work and dissapointment.

I just orderd a pair of H-290 horns, so I could get started. I will for the moment stick with the 807 driver as I already have those and then later upgrade.

Thanks again!

/Anders
