
Subject: altec gear in a pi box??

Posted by [EZ_Angus](#) on Fri, 26 Jul 2002 00:08:38 GMT

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Hi. I've been thinking about getting an altec VOT set up. when I asked about it on the high efficiency forum, someone suggested using the vintage components but to build a good bass reflex box instead of using a VOT cabinet. Is it possible to figure out a "correct" cabinet for an altec 416 woofer? I'd like to use it with an 802driver/511b horn crossed around 500hz. Unlike many here, I am not super concerned with the lowest possible bass; solid to 40hz would be great. I currently use a vintage 12" fr driver with a big alnico mag in a wacky homemade cab that rolls off around 55hz on the bottom and 14khz on the top, but oh the sound inbetween :^) i'd like to bi-amp using a pair of dynaco mk iv's on the bottom and a puny SET for the top. has anyone here tried this? has anyone here compared vintage drivers using pi theory to the kits that wayne sells? I am just a retro dude in many ways so the altec gear means something special to meby the way, wayne if you read this, I live down in norman!EZ

my current weird but wonderful speakers

Posted by [Wayne Parham](#) on Fri, 26 Jul 2002 00:45:19 GMT

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All you'll need are the T/S specs for the woofer. I'm sure they're easy to find and I think I've probably been told them more than once. So but if you'll get 'em and write them here, I'll tell you the dimensions of the cabinet. Alternately, you might grab a copy of PiAlign and run the numbers yourself. There are several Altec fans here, and tons of JBL guys too. See the link below for

Subject: the 500Hz. xover "myth"

Posted by [Sam P.](#) on Fri, 26 Jul 2002 10:19:22 GMT

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Yes, the VOT using the 511B Altec horn was used with oem xovers at 500Hz. That does not mean that the HF drivers have not started rolling off at the low end before then(-6 or -10dB by 500Hz. relative to 1kHz.?IIRC), as well as having the distortion start to rise. Better to cross where the drivers are still flat, like 800Hz. If you don't already have the 802's...look for 900 series Altecs, a pair of new 'phrams will set you back another \$150, BUDGET that into your purchase from the start, you will be rewarded with near "mirror image" freq. response graphs from the left and right, and no Al-Weako magnet worries. T/S data for Altec woofers is readily available, punch them into boxplot or Pi-align and see what they say regarding enclosure size and tuning for BR. Don't know how altec woofs sound crossed at 800, JBL's are awesome, and ruler flat run even higher.

Try for a 24 inch enclosure width to match the top mounted 511B, mount the woof as close to the top as you can, to reduce vertical distance between the drivers, and you are "done". Look at the pics of the Kilomax 4 Pi's with wood horn on top, that's what you want, with a 511B on top, crossed at 800Hz. Sambtw, a set of 4 Pi Pro's would definitely rock your living room as well as 511B's over a 15 inch BR, and they are much more compact and wife friendly.

Subject: Re: the 500Hz. xover "myth"

Posted by [Tom Brennan](#) on Fri, 26 Jul 2002 12:11:59 GMT

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Sam---Running the 806 down to 500, even with a 1st order crossver, has not led to audible distortion problems at fairly loud sound levels. JBL 1" drivers used like this have clacked all to Hell. Note that the 1" Altecs were intended to run down to 500 and be used in theaters under 450 seats in the bargain. In any case I'd use the 511B horn, even if crossing at 800, simply because it looks so cool and sounds so good.

Chicago Horn Club

Subject: Re: altec gear in a pi box??

Posted by [EZ_Angus](#) on Fri, 26 Jul 2002 13:01:14 GMT

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Thanks to all for the posts. I don't want a sub, so it seems like the 825 cab will not get the job done for bass down to 40hz or so. does everyone agree about that?The T/S params for the 416b are $x_{max}=0.15$ $V_d=19.20$ $F_s=25.1$ $V_{as}=26.47$ $Q_{ts}=0.32$ $Q_{ms}=7.05$ $Q_{es}=0.33$ $V_{id}=0.2$ for the 515b its $x_{max}=0.18$ $V_d=23$ $F_s=24.7$ $V_{as}=19.7$ $Q_{ts}=0.17$ $Q_{ms}=7.5$ $Q_{es}=0.17$ $V_{id}=0.22$ I was thinking of an 802/511 combo for the HF. despite some "alweako" cracks, to me a paper cone and alnico magnet combo sounds awesome. does anyone have alternative suggestions for horns/drivers?On the crossover, I thought bi-amping necessarily meant an active x-over before the amps. Is this not actually true? As you can tell, I know little audio theory. the dyna monos put out around 35-40 watts the hf amp will be 2-3 watts.thanks again, EZ

TS parameters for altec drivers

Subject: Tommy, I based my remarks upon Altec's

Posted by [Sam P.](#) on Fri, 26 Jul 2002 13:32:40 GMT

published data, where freq. response graphs showed they were flat down to 1kHz., then start to roll off. I'm surprised as many complaints have been posted regarding poor HF performance with 800 series Altecs that you could recommend them. "Uncomped" 902's w/ 34647 'phrams run out to 14kHz or better. As I stated, his linearity will be better, and distortion lower, if he crosses at 800Hz. And 902's have superior HF extension. I was trying to HELP HIM AVOID being sucked into the "vintage is always better trap" where he will buy a beat set of mismatched drivers, send them off to be remagged, have them still suck, buy new 'phrams, and lose interest eventually. Or obtain his 825/828 boxes, then find out he needs a friggin' subwoofer too...Sam

Subject: Re: altec gear in a pi box??

Posted by [Wayne Parham](#) on Fri, 26 Jul 2002 17:52:13 GMT

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Hello again Kevin! You wrote:>> The T/S params for the 416b are $x_{max}=0.15$ $V_d=19.20$ $F_s=25.1$ $V_{as}=26.47$ $Q_{ts}=0.32$ $Q_{ms}=7.05$ $Q_{es}=0.33$ $V_{id}=0.2$ PiAlignments for that motor specify a cabinet of 8.5 cubic feet tuned to 30Hz. It further recommends a rectangular port having inside dimensions of 6" x 10.5" and 14" long. The response is nice and flat, with a -3dB point of 40Hz and -10dB at 23Hz. This is a very nice speaker with very full bass.>> for the 515b its $x_{max}=0.18$ $V_d=23$ $F_s=24.7$ $V_{as}=19.7$ $Q_{ts}=0.17$ $Q_{ms}=7.5$ $Q_{es}=0.17$ $V_{id}=0.22$ This one needs a much smaller cabinet. PiAlign recommends 3.35 cubic feet tuned to 54Hz, and suggests a rectangular port of 4.75" x 8.5" and 6" long. The response of this one is also nice and flat, but the system is tuned about an octave higher. Its -3dB point is 55Hz and -10dB is 45Hz. This makes a nice full range speaker, with less bass but in a smaller cabinet.>> On the crossover, I thought bi-amping necessarily meant an active>> x-over before the amps. Is this not actually true? It's an issue of semantics, really. All the stuff that makes up our amplifiers, preamps and crossovers has reactive circuits (signal modifiers) in addition to the transistors or tubes (signal multipliers). An active crossover is one where the circuit that performs signal splitting contains amplifiers, or active components, as an integral part of the crossover filters. But you could as easily install some reactive components in between amplifier circuits. Some call this a line-level passive crossover, since the filter is passive. Take care! Wayne

Subject: Re: altec gear in a pi box??

Posted by [EZ_Angus](#) on Fri, 26 Jul 2002 20:58:03 GMT

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Hey Wayne: thanks very much for the info>PiAlignments for that motor specify a cabinet of 8.5 cubic feet>tuned to 30Hz. It further recommends a rectangular port having>inside dimensions of 6" x 10.5" and 14" long. The response is nice>and flat, with a -3dB point of 40Hz and -10dB at

23Hz. This is a very nice speaker with very full bass.that would be a perfect If set up 4 me. can you suggest somewhere where I could read about what it means to "tune" a cab to a particular frequency? Also, are there theories about how to allocate the 8.5 CF between width, height, and depth? Also, can you tell from pi align the upper -3db point (in relation to the 500 v 800 xover issue)?>Some call this a line-level passive crossover, since the filter is passive. so with this method, does each amp still only get fed the range its supposed to reproduce and see directly its driver on the other end?>Let's get together sometime soon. Next time I'm headed towards the city, I'll drop you a line. If you come this way, you might do the same.I would like that very much. my email is angus@ou.eduKevin aka EZ Angus

Subject: Re: altec gear in a pi box?? 825 cabinet
Posted by [Tom Brennan](#) on Sat, 27 Jul 2002 01:22:08 GMT
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Ez---Though the 825 has a shelved response and is not flat down to 40hz subjectively it has a very good sound and many fans. Bass is better with the 416 woofer (A7) than with the 515B (A5) though nothing and I mean nothing, does better upper bass and lower mids than a 515B in an 825. I've found that well recorded electric bass sounds very lifelike over 825s with 416s and I've played bass for years. But the 416 in a vented box is a safer bet, it's flatter. If you can't hear 416s in 825s and judge yourself the vented box is probably the way to go.

Subject: Re: altec gear in a pi box??
Posted by [Wayne Parham](#) on Sat, 27 Jul 2002 05:57:37 GMT
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Check out the "Pi Alignment Theory" document. This shows what I do to align a cabinet - To pick a size and to tune it to specific frequency. It's based largely on the application of a Helmholtz resonator to provide specific frequency-sensitive loading for the woofer diaphragm. This can be likened to having a mass on a spring, and damping it with another mass on a spring which combines together in a complementary fashion.I don't know specifically where to find more information on the internet, but I suspect there's tons of it out there. First, do a search for "Helmholtz" to find information on his work. Then, do a search for "Thiele" and "Small" for information about theirs. I'm not sure you'll find the work of Brian Davies online, but I've got a copy of his excellent implementation paper, which I can make available if you're interested.
