Subject: Thoughts on the Fostex FW305??
Posted by one_speed on Tue, 22 Mar 2005 18:16:51 GMT
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I thought I would try over here and see if anyone was familiar with the Fostex FW305. I'm looking for a LF driver to run up to around 200 hz or so where I'll bring in my Fostex fullranger. I know, a little different than the Pi Speakers, but I know there are a lot of knowledgable folks here that have a lot of experience with the larger efficient woofers.I'll most likely run in a ported configuration. I'd like these to reach down into the low 30's at least. Seems reasonable as the fs is 25 Hz, but perhaps I'm wrong. I'd appreciate any thoughts you'd like to share.Thanks in advance!!

Subject: It is very much like a JBL 2205, 2225 or 2226...
Posted by Wayne Parham on Tue, 22 Mar 2005 23:27:11 GMT
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We were just talking about that very thing last Saturday at the Great Plains Audio Club meeting. Seems a natural subwoofer match for Fostex full-rangers to me.The Fostex F200 reminds me of the JBL 2115 and the FW305 reminds me of a 2205, 2225 or 2226. In fact, the cabinet you should use is exactly the same except for the woofer cutout. I haven't used Fostex drivers, but I can tell you that list of JBL's is my all time favorites, so I am pretty optimistic about what the comparible Fostex drivers must sound like.The Fostex FW305 is best used in cabinets from 1.0ft3 to 4.0ft3 tuned to 38Hz. PiAlign suggests 2.25ft3 tuned to 38Hz, exactly like the JBL's. Put it in a

Subject: Thanks!!
Posted by one_speed on Wed, 23 Mar 2005 13:36:53 GMT
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WayneThank you so much for the info! I tried to download PiAlign, but it looks to be a PC program, and I'm a Mac guy. What I'd like to do, is to model different sized cabs (just curious to see what can be done/not done) and see how the curves look. For instance, if I tuned the box a little lower, (larger box?) how would that effect the curve?If you don't mind, I'd appreciate plans for the Four Pi cab. Also, do you recommend any particular type of crossover? I was thinking a second order, but if a simple first order will work, that would be great.Thanks again for all your help Wayne.Layne

Subject: Re: Thanks!!
Posted by spkrman57 on Wed, 23 Mar 2005 14:07:23 GMT
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Layne,About time you came over and visited the Pi speaker forum. You will find a lot of useful knowledge here. This is where I started when I found the site during a google for "2205's". Is your fullranger going to have a tweeter section on it??? Wayne can help you out on the crossover section if you give your requirements you need: ie: 12" or 15" bottome end crossover to FR with tweeter covering top end. Something like that with the driver details included helps out a lot.I think the 4 pi-pro cabinets are the ones you are wanting. There are several 4 Pi systems, so it is necessary to select one. For the 2226 or equivalent, the "pro" version 4 pi is what you want.Ron

Subject: Re: Thanks!!
Posted by one_speed on Wed, 23 Mar 2005 16:05:41 GMT
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Hey Ron/WayneI'm not sure I'll use a tweeter, depends on the amps I'll use. I do have a set of the Fostex T90a supertweeters I bought used that I'm sitting one, we'll see if i need them. With the 300Bs, I may need them. But, if I use a digital amp, I may not, as there's so much more top end there. Once I get these built, I want to get your Yamamoto 45 in my system for a listen.As for crossover points, I have been wanting to roll the woofer off at around 200 hz, then bring in the full range. Not quite sure where to have it come in though. Nor am I sure just what kind of crossover to use. I do know I'd like to use just a cap on the fullranger, but could go second order if needed on the woofer. If I do bring in the supertweeter, I would probably just use a small cap and maybe an L-pad. The thought here is to clean up the full ranger. I've read many times where the full ranger will greatly benefit from not producing the lower bass notes. It seems that while back loaded horns and such are still fairly popular with the full range crowd, more a leaning towards rolling off the bottom end in the full ranger and bringing in a big woofer. Thus, you get a cleaner and more defined bottom end as well as mids and high frequencies. As long as you don't cross too high, you shouldn't loose the point source imaging.Thanks again for thoughts and help with this.

Subject: Re: Thanks!!
Posted by Wayne Parham on Wed, 23 Mar 2005 17:01:51 GMT
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Cabinets between about 1.5ft3 and 3.0ft3 tuned to 38Hz are B4 alignments, which have flat response curves. Smaller cabinets become increasingly underdamped, but it isn't bad until you are under 1.0ft3. If you make the cabinet larger, up to about 4.0ft3, it becomes increasing more like a C4 alignment. The response curve dips a little in the octave above cutoff and then rises again just above falling rapidly at cutoff. Cabinets larger than 4.0ft3 tuned to 38Hz or above are

underdamped, and the peak rapidly becomes very large as the box is made larger. But you can make the cabinet larger and make the Helmholtz frequency lower to create an EBS alignment. This will give extended bass at a reduced level.

As for crossovers, I would use a simple first-order filter at 200Hz. It will work very well in this application because wavelengths of bass frequencies are large, so summing will be good. Basically, as long as the front to back spacing is less than a foot and a half apart, the two sounds sources will combine as one. Just use a 6.0mH coil on the woofer. If you need a passive crossover on the main driver, use a 16 ohm 10 watt non-inductive resistor across the speaker and a 100uF capacitor in series. That large a cap will probably tempt you to run electrolytic, and if so, you might go with a Black Gate N Type. You can also get several smaller values of another capacitor type and connect them in parallel to form 100uF. An example would be to use (5) 20uF polypropylene capacitors.

Subject: Crossover Electronics 101
Posted by Wayne Parham on Wed, 23 Mar 2005 18:41:37 GMT
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For this application, I'd go first-order but always be aware that a speaker's voice coil is an inductor. When you use a series capacitor for a first-order high-pass crossover, that in itself forms a two-pole system. It becomes a resonator. It is damped by the resistance in the system, and sometimes it isn't too bad. But sometimes it is. Add to this the mechanical resonance of the diaphragm and the impedance peaks of a horn, if used, and the single cap crossover merits a closer look.

I almost always prefer to put a resistance in shunt across the driver, usually 2 to 3 times the impedance of the driver, to damp the system and prevent peaking. This isn't usually needed on a low-pass filter, since it is a coil in series with the voice coil. But if you're going to use a capacitor in series with a loudspeaker, it is best to consider the peaking from crossover capacitance, voice coil inductance, horn impedance and mechanical resonance of the diaphragm.
Crossover Electronics 101

Subject: Re: Crossover Electronics 101
Posted by one_speed on Wed, 23 Mar 2005 19:57:55 GMT
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Looks like I have some reading to do. Again, thanks for your time with this Wayne, I really appreciate it!!

Subject: Re: Crossover Electronics 101
Posted by josephjcole on Thu, 24 Mar 2005 00:32:11 GMT
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Layne/Onespeed was kind enough to point me to this thread, as we have been discussing fostex drivers crossed over to high effeciency woofers. I've been working on a 4" fostex driver crossed over to an Eminence Delta 12lf, and I've been quite pleased with the results so far. I am curious about your suggestion to put a resistor across the fostex. Is this to compensate for the peak in impedence at driver fs, or the box's resonant frequency? If so would crossing over 2 octaves above both of these negate the need for a resistor in parallel with the fostex? Obviously I am still learning. Thanks in advance.Joe

Subject: Re: Crossover Electronics 101
Posted by Wayne Parham on Thu, 24 Mar 2005 00:46:13 GMT
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I generally put a resistor across drivers that are used with crossover capacitors in front of them. It's to damp the system, to reduce the amount of peaking between the capacitor and voice coil. See the "Crossover Electronics 101" documents for illustrations.

Subject: Thanks Wayne (nt)
Posted by josephjcole on Thu, 24 Mar 2005 13:36:31 GMT
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nt.

Subject: damping resistor
Posted by spkrman57 on Thu, 24 Mar 2005 16:04:54 GMT
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Maybe I'm wrong here guys, but try not to imagine that resistor as affecting the crossover as much as letting the crossover do its job better.Wayne, is that close, or did I try and think to hard again??? LOLRon

Subject: Re: damping resistor
Posted by Wayne Parham on Thu, 24 Mar 2005 16:10:13 GMT
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You're right. It provides a resistance that is more pure than the resistance of the driver alone.

Subject: Re: Thoughts on the Fostex FW305??
Posted by Godzilla on Thu, 24 Mar 2005 23:55:19 GMT
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http://www.partsexpress.com/pe/showdetl.cfm?&DID=7&Partnumber=264-343http://www.partsexpress.com/pe/pshowdetl.cfm?&DID=7&Partnumber=290-395&ctab=10#TabsHas anyone looked into these as a small ported bass module to warm the sound of Fostex drivers and help them out in the bass?I might like to build a 1 to 1.5 cubic foot cab (small) to sit beneath my Fostex 168S in a small ported box.Thanks!Godzilla

Subject: Re: Thoughts on the Fostex FW305??
Posted by one_speed on Fri, 25 Mar 2005 13:28:09 GMT
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Wow, that 10" is a real monster! Now that's what I call a magnet. I'll be curious to see if others are familiar...

Subject: Wayne, thoughts on the 2205 if you don't mind...
Posted by one_speed on Fri, 25 Mar 2005 15:57:38 GMT
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I was discussing this with someone and they offered a pair of JBL 2205As for a decent price. How do you think these would compare to the Fostex? I believe I heard a pair of these a couple weeks ago and liked them quite a bit.Also, what do you think of for a box? My main concern is room, as I live in an apartment and a 15" driver is huge. I'd like to try to make the box as narrow as possible.I'd appreciate your thoughts on this. Also, if this changes the crossover, let me know your thoughts on that as well. Thanks again for sharing your knowledge.

Subject: Re: Wayne, thoughts on the 2205 if you don't mind...
Posted by Wayne Parham on Fri, 25 Mar 2005 18:47:01 GMT
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I've never heard the Fostex, so I can't say anything about it. But the 2205 is an excellent

special.