Subject: Help please ... from the bottom up
Posted by Frihed89 on Tue, 30 Jun 2009 12:30:24 GMT
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I need new speakers. My 10 Ohm LS3/5As run out of steam on complex music with my Audio Note Meishu integrated (8Wpc 300B), but actually sound great with jazz and acoustic.

Wayne and i have exchanged emails about the trepidations I have with my small room (3M Long (listening axis) x 4M wide, no corners or side walls).

Now I have some really basic questions, such as:

1. What does the kit actually contain (for 1 speaker?). No answer will insult me unless it is insulting. Does it contain "everything" but the cabinets, including wire, binding posts, pcb board or mounting for cross-over, etc...?
2. As I will have to use a highly skilled (and well paid) danish carpenter to construct the cabinets, how many labour hours did this take you?
3. What wood did you use/would you recommend? Birch and beech are widely available.
4. Do you have any pictures of a finished unit? I have only seen these black ones.
5. How much does a kit weigh? It has to fly to Denmark.
6. I looked at the measurements on the board, and i have some questions:
A) Do they sound "correct" to you?
B) How rolled off are these horns, really?
C) No problems with 8 Wpc, correct? (I didn't see a phase diagram).

You are probably wondering, why don't I just get some DIY guy in DK to help me? Have you a name and phone number? I speak danish and i am not shy.

My fall back position is probably a new set of Audio Note K´s

How about a pair of 20-year old Snell E's? There are several for sale, i think.

I hope some of you can help.

Thanks.

Best Regards,

Mac

Subject: Re: Help please ... from the bottom up
Posted by Wayne Parham on Tue, 30 Jun 2009 13:15:02 GMT
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and appearance.

footprint. It has the bass of a much larger speaker, and it doesn't cost much. Efficiency is high,

suited for critical listening, in my opinion.

copy of the plans. For larger speakers that incorporate a compression tweeter and crossover network, kits also include the crossover, Zobel woofer damper, and all cable assemblies are completed and ready to install. Every kit containing a compression driver also includes the horn flare and the bolts to mount the driver to the horn.

Basically, kits come with everything but the materials to build the cabinet. Crossovers and wiring harnesses are pre-assembled, ready to install.

cabinets go, they're probably as simple as it gets.

I suggest either MDF or baltic birch for construction. If used outdoors or in environments with high humidity, baltic birch is better. If not, MDF is fine. Use a real wood veneer of your choice for appearance, or you can paint them.

Shipping to Denmark is going to be expensive. I used to ship overseas a lot, but in 2005, the postal service changed rates and insurance policies. I do not think they are a good way to go anymore. In my opinion, it would be best to source the drivers locally and only get the crossovers from me. You can also get the plans and source all the parts locally.

Subject: Re: Help please ... from the bottom up
Posted by Frihed89 on Tue, 30 Jun 2009 14:28:19 GMT
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Thanks for the kind reply.

What does the kit weigh for each speaker?

What do you know about what is available locally? I have visited one DIY support place, but they don't carry horns or much in the way of high efficiency woofers, although any 15" woofer ought to be fairly sensitive.

Do any of the well-known Scandinavian companies sell horns or woofers that meet your specs?

What is the size of each speaker and the weight?

Best,

Mac

Subject: Re: Help please ... from the bottom up
Posted by Wayne Parham on Tue, 30 Jun 2009 15:06:38 GMT
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send them in two separate boxes to avoid size restrictions.

suggest JBL 2226 and DE250 options, and I'd use the larger 15 guage coils.

The size restriction really hurts us here, if we go with parcel post. You can't quite get all the stuff needed in one box, so you have to send the woofer separately. My suggestion would be to source that locally. See if you can find the JBL 2226H. I can send the rest at a reasonable cost.

Subject: Re: Help please ... from the bottom up
Posted by Frihed89 on Tue, 30 Jun 2009 16:13:58 GMT
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Hi Wayne,

The JBLs cost around the equivalent of $560/ea (2800 DKK) and the B&C horn drivers you mentioned are around $200/ea (1000DKK). Of course that has all the duties (9%),taxes (25%) and freight built in. I haven't compared the US prices. I need to.

I should also take a look at the towers you mentioned. Do you have the frequency response curves for these? What about the load curves.

The K's here with the SPe silver wiring cost about $4500 and about $3800 for the Lx copper wire. I want to get under this, of course.

How long to build the cabinets?

Best,

Mac

Subject: Re: Help please ... from the bottom up
Posted by Wayne Parham on Tue, 30 Jun 2009 21:15:22 GMT
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This is a pseudo-anechoic measurement, so the bass isn't shown. The towers have nice, deep, full bass though. To put numbers on it, f3 is 40Hz and f10 is about 30Hz.

Its impedance curve is very benign, works well with tube amps. All my speakers are this way. They're all high-efficiency designs that have impedance characteristics that work well with tube amps.

one, two, three and four are all just boxes with a few holes cut in them. You can literally cutout the pieces to build one in a half hour, and have the box completely assembled in an hour. Most people wouldn't race through it like that though, and take a little more time.

entirely trivial, mostly because these models include a midhorn. There are also more parts, more things involved. But still, as horn loudspeakers go, these are relatively simple designs, all straight sided horns that are pretty easy to cut and fit. They're made that way both for their directivity and

another few hours for assembly. The beginner will likely cut and try a few midhorn panels before they get some that fit the way they want.

Things like routed grooves for recessed driver mounting are nice extra touches that aren't necessary, but add to the aesthetics. That adds to build time. Same with the finish. You can use all butt joints and paint the box and it will sound just as good as if you use mitered edges and/or add exotic wood veneer and a dozen coats or hand rubbed tung oil. Painted finishes take a day or two, but hand rubbed tung oil takes a day drying time between coats. So as you can see, time to finish is mostly determined by the quality of finish.

You didn't ask, but I'll give you some personal impressions and comparisons between models. Others may have a different take, but this is how I feel about each of the speakers in the line. I designed each and every one with an intended purpose, and each were done with passion. They're all perfect for their intended application, in my mind. Each represents the best choices I could make for the goals they were intended for.

made to sound great and be satisfying to listen to (and look at). I will say this though - My own

room modes.

speakers. They do magic like no other speakers I've ever heard. Sadly, my main listening room isn't right for cornerhorns so they are in my office. I listen to them a lot there too, but they're really just for background music. I'm always working when I use them, not doing critical listening. It does tend to improve the quality of my work, because I am not eager to leave the office.

rooms, bedrooms, anywhere that a good quality secondary system is desired. They're also perfect speakers for a starter hifi for high-school or college kids. Response is flat and these speakers have a pure sound. Crystal clarity without sounding shouty. Bass response is good below 100Hz, but not by much.

some of my larger models. This model sounds just like the one and two in the midrange and treble, but it has deeper, fuller bass.

excellent directional characteristics, with almost the same response off-axis as on-axis. You can move left or right of the loudspeaker as much as 45° and they sound very much the same. Likewise, movement up or down is acceptable and response stays the same within over a 40° arc, above and below the speaker 20°. No speaker with a cone woofer and soft-dome tweeter can come anywhere close to this, in fact, many other speakers with horns that boast constant directivity don't do this well.

I didn't chose the HF horn solely because of its constant directivity, in fact, I've tended to use radial horns and other similar flares like what are now starting to be called waveguides. My loudspeaker designs are whole system designs, not overly optimized in one area at the expense of others. So for example, I've never used a constant directivity horn with sharp edges for pattern control. Mine are all very smooth, providing nice horizontal coverage and well behaved verticals.

where horizontal directivity matches. This happens at the frequency where the woofer has begun to beam, typically around 1kHz for woofers of this size. For that reason, the woofer selection is critical - it must be capable of smooth midrange sound. The cones must be well damped. The crossover is carefully designed with the geometry of the speaker in mind to set the vertical nulls out far enough above and below the speaker to give a nice large clean forward lobe. All in all, it's a very good design approach, in my opinion, combining good directional characteristics, high efficiency and low distortion in a relatively small package.

the audio band, at least down to the Schroeder frequency where room modes begin to dominate.

the reverberent field, as perfect spectral balance as you could have. They also are physically situated back into corners where they are somewhat unobtrusive, even with their larger size.

midhorn and can be placed in a corner, like the cornerhorns. This forces the radiation pattern into an eighth-space pattern, just like the cornerhorns. The midhorn driver is reflex loaded in the bass range, so it doubles as a woofer.

Placement of these speakers is part of their magic. More information can be found in the following threads. There are some other links in the thread too, so be sure and follow through.
Matching directivity in the vertical and the horizontal planes
Imaging, placement and orientationAt the low end of the band, I employ overdamped alignments in all my speakers. What this means is the rolloff is slow and gradual, much like a sealed box speaker. Venting gives a bit deeper extension and it reduces excursion, which tends to reduce distortion. Those are reasons enough to use venting, even if overdamped like a sealed box.

Vented cabinets have more phase movement in the bottom octave than sealed cabinets, but room modes tend to swamp the response below the Schroeder frequency anyway. This makes the moving phase of a vented cabinet completely irrelevant indoors, so the added bass extension is a benefit for which there is no penalty.

I like to add subs to the larger models in order to further reduce room modes as well as increase extension. Being high efficiency designs, they have trade-offs in terms of size verses extension. A 3ft3 to 5ft3 box is not necessarily a small box, but for a high efficiency speaker, it's not that big either. You'll definitely have output to 40Hz, but it's rolled off. Nice smooth rolloff, bass enough to sound good without subs but perfect for blending with subs. Makes for a nice upgrade path. Build the mains first, add subs later. More information about the multi-sub configuration can be found in the following link:
Posts about the Multi-sub configuration on AudioRoundTable.com

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Subject: Re: Help please ... from the bottom up
Posted by Psychoacoustic on Tue, 30 Jun 2009 23:24:30 GMT
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Just to offer a little bit of first-time builder feedback: in relation to listening room size and speaker choice, I have found that in a space 3.8 metres wide, with Pi 4 style models approx 30cm from corners and toed-in 45 degrees, the listening position or sweet spot is approx one metre behind where the sonic focal point of the speakers would intersect. In other words, the chair is about 4 metres from the speakers. If you were to scale this down to your room, and are able to change the width (4m) to the length, I'm guessing they would work well for you. I found that Parts Express in the U.S. was best for shipping costs and like you I am located outside of the U.S. Fortunately, I was able to obtain the JBL 2226 woofers locally, which amounted to a considerable saving.
In my experience, acoustically treating the room is absolutely critical to speaker performance, in any size room. Wayne has discussed these points at length in this forum. Best luck with your project. Please see the link below for pictures of the listening room:
http://www.audiokarma.org/forums/showthread.php?t=183941&highlight=beginners+dedicated+listening+room

Subject: Re: Help please ... from the bottom up
Posted by Bill Epstein on Wed, 01 Jul 2009 01:45:52 GMT
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I don't get out much anymore but have to help a guy from the land of Victor Borge.

My latest room is just under 4x5 meters and I have my 4 Pis in front of bookcases on the short wall, toed in toward my listening chair which is almost up against the rear wall.

That leaves plenty of time/distance for the sound to coalesce with 1 caveat: the speakers need to be raised up about 10".

Other than that, everything else is a matter of opinion. I think the 4Pis are as good as it gets, the $20,000 Audio Notes I heard in Lima were 'nice' and every Fostex, including those I built, sound like an AM radio (except for Bob Brines which don't have enough dynamics for me and my flea watt amps).

Here's a new pic away from those pine walls and looking a lot less orange:

Subject: Re: Help please ... from the bottom up
Posted by Frihed89 on Wed, 01 Jul 2009 07:14:54 GMT
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Thank you, all, for taking the time to write. It has been helpful.

Psychoacoustic wrote on Tue, 30 June 2009 19:24If you were to scale this down to your room, and are able to change the width (4m) to the length, I'm guessing they would work well for you.

Unfortunately, it's not possible to change my listening space since my listening "open space" lies between the living "open space" and the eating "open space" with much traffic going in between. Also each speaker would have to contend with a different type of wall - one sloping and one flat.

As it is, people "walk through" between me and my LS3/5As. If I had the axes reversed they would have to contend with speaker cables speakers, racks, etc.

My wife is an avid music lover, and we have experimented with various alternative locations in our long open hall-like attic flat. This is both the best sounding and the least hassle.

So, this is my biggest concern right now. I think I could live with the two Pi Towers, which looks outwardly like the AN speakers. The one I would buy, if I have to, is the smallest K model, and the lowest priced version of that model costs around $3,800 in DK.

I can find all the drivers for the Fours in Germany, plus 6% difference in VAT.

Thanks for writing.

Mac

Subject: Re: Help please ... from the bottom up
Posted by Matts on Thu, 02 Jul 2009 04:15:41 GMT
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I'd like to add one thing based on your description of your space. My Pi 4's are one of the best speakers I've ever listened to outside the room they're in. It's hard to describe, but I'll put them on in the living room, not too loud, and they fill my whole downstairs with nice music, and on good recordings, it sounds very much like there's someone in there playing piano or guitar or whatever. Somehow the phasing and reverb, etc. just works very well. So if you might be listening from the adjoining areas, this may be an additional benefit. Mine are built out of plywood, but finished with a dark faux "varnished mahogany" look. No digital camera, or I'd post a pic. Good luck!