

My 'Brief'

Build some speakers. Get a significant upgrade to my Naim Ariva's. Hopefully achieve sounds that I would not be prepared to buy of the shelf.

DIY? – My impression.

So – you shell out a 4 figure sum for some speakers that don't yet exist....It is highly likely though, that you *will* achieve a good 'sounds for pounds' ratio. One alternative to sourcing speakers is going to some flashy shop, being seduced by the latest, and paying through the nose to some company to beautify a lump of MDF and transport it half way round the world. You get it home, it sounds different, and in a few months you realise it isn't the marvel you first thought, and is really an exercise in economy. Troels points out that as a DIYer it is easy to score on the significant cabinetry that makes a big difference quite cheaply. I guess you have to have some creative instinct too, and some rudimentary DIY skills. Of course there is the second-hand market where there are some truly amazing bargains, plus a very good resale ratio, though DIY does give you fresh drivers and caps - which was probably around 90% of my spend anyway... My own approach was that I simply wanted to build my own speakers. I will now point out that my cabinetry skills are not high – in absolutely no way could I be called a craftsman or anything close, though I do have regular experience building things.

Jantzen Audio/ Troels Gravesen – A dynamic duo!

Thank you for the prompt, honest and helpful replies to my queries that evidenced a true passion for DIY speakers. Instructions are clear, and help is an email away. The clear 'real life' diagrams of the crossovers along with photos of the finished article are extremely helpful, as are the well documented and photographed builds. You guys are legends!

Purchase

From UK; My package from Jantzen was superbly packed, and the components of course very well protected by the acoustalux and cab lining. A very efficient process - no problems - a few days to deliver. The fees for paying by credit card were slightly cheaper than the bank, though a bigger spend would have reversed this as my bank gives a fixed fee for transferring funds (though credit card protection is a good idea). There are add-on expenses here though – Janzen do a good price, though Denmark adds on 25%VAT and the credit card incurs a 1.7% charge compounded on that. Sourcing the drivers from the UK saved me a 3 figure sum, although I think the delivery charge from Denmark is pretty much the same whether you go for components only or add the drivers. I also preferred not placing my entire investment in one box traversing several borders, and I figured with the sensitive drivers any after-sales or problems would be best kept closer to hand. I cannot emphasize enough though the vast wealth experience and help at hand you have gained through using the Troels/Jantzen combo.

My Choice.

Troels nails down the big issue – not how much to spend, but how big are you prepared for your speakers to be. Size effects quality. I quickly ascertained that the Jenzen design was a 'benchmark' in achieving maximum quality for minimum outlay, though they are big and it *is* the size that makes this trick possible. I thought I could 'handle' these things in my living room though after mocking up a

baffle with chipboard, and with the aid of a flight case and some cardboard making a temporary model of a Jenzen cab, I found out I couldn't. What I needed was 'Mini Jenzens', and this is just how Troels describes the Ellam Flex 3W that I eventually went for. I would thoroughly recommend this process of trialling. Troels quite rightly doesn't like describing sound, though if you study his text there are plenty of hints, and coupled with some further study, and perhaps listening to different speakers, you can build a rough picture. I have an instinct that the TL Ellam's are better for a 'refined' presentation than the ported Jenzens – just a hunch, and I think you have to make them...

Tooling up – My Impressions

A good table saw would be of real benefit in construction – I 'made do' with the use of a 'trade spec' band saw. I found a hand-held belt sander invaluable for tidying up cuts. The router is an important tool for speaker building, though I guess by laminating up baffles with different size holes one could get away without – jigsaw a bit small, and creep up to your line with a drum sander. Lots of clamps are essential.

Scanspeak – Out of the Box

First impressions; build quality superb, though these are expensive drivers and that is expected... A couple of quibbles; bearing in mind the amount of innovation in these drivers I expected some literature with them, though I just got drivers in boxes – not a word. e.g. I have since learned that spare tweeter domes are available separately and are an easy diy job to replace. I was also surprised to have to source my own screws at this level ... If I had paid just a tiny bit more and received some allen screws complete with matching keys and maybe drills I would have been more impressed. Something I wasn't aware of; the design features an open back beyond the spider, leaving the coil exposed – this does make me nervous and I have been extra thorough in vacuuming out cabs and keeping dust out. I guess the magnet would pull away most micro metal bits. Packing was very comprehensive, and I found the driver dimensions exactly as specified.

My Build

The basis of my construction in creating 22mm(ish) thick cabs was to first build basic 'inner' carcasses from 15mm MDF. I used good old DIY glue and screw butt-jointed techniques, feeling free to make a complete mess externally, drilling loads of screw holes, and bashing them about a bit correcting mistakes etc. I also doweled the main joints. These horrors were then 'skinned' with virgin 6mm Baltic birch for the final finish (18mm for baffle). (Some say using a composite will cancel out resonant frequencies...who knows...) Even if you want a painted MDF finish (or even veneer) I would still recommend this approach for the less experienced, particularly as you would get a double portion of the tougher outer skin of the MDF. The process is definitely more time consuming, though I valued a 'second chance' to get things right before skinning over, and (as a by-product) achieved a solid birch ply look for a little saving. For the TL section I first joined sides and inner baffles and had temporarily removable (just screwed) fronts and backs to hold everything square. These were of course glued when internal cable runs and wadding were in place. An oversize cut with jigsaw was made in the speaker and vent positions with the more precision routing methods applied to the 'outer' baffle. I have to admit being concerned about my ability to recreate the baffles (and the Ellam is more complex than many), on the one hand it really is easier than you think it might be, on the other the Ellam is a lot more involved for someone with less experience. I constructed a test baffle with some scrap

flooring chipboard to check I could do it, and this cemented my own process of doing this. The angled cuts were rough cut on a makeshift jig on the bandsaw, and shaved down to size using a belt sander. My first attempt involved making the rough cut with handsaw, and this worked too. Personally, I can't imagine chiselling the whole thing, particularly if ply is used, though I am absolutely not a skilled woodworker...For finishing I chose clear acrylic varnish – I did debate oil based varnish and Danish oil, though I am really happy with my choice for a nice natural look. I am a fan of Danish oil and wax finishes elsewhere in the home, though somehow I think a harder finish suits technology (!) The plinth (oak) was stained with watered down acrylic black paint, distressed, and then varnished. I completed the build in 3 months, some weeks I devoted quite a bit of time others not so much. Certainly over 100 hours in total. A lot of this time was spent fiddling around with my tweaks, devising personal methods, getting round slightly inadequate tooling. I could imagine someone with good cabinetry experience with a decent workshop not trying to add any fancy bits could take a week off and knock a pair.

Tweaks

- MDF/ply laminate as previously mentioned
- Rather than a separate crossover box mounted to the rear of the top cab, I incorporated these two elements together, I guess the whole unit could be made as one too...
- The speakers sit on a solid oak constructed plinth inset with sorbothane domes and housing the bass crossover. This floating plinth is spiked to the floor. The plinth adds a little bit of height though Troels said this 'should work fine'. The bottom of the cab has a routed indent (with epoxy cloth to stiffen the area) to take some of the volume of the large cap. Two separate cable runs go from the plinth; to the bass, and to the mid/treble unit. (Solid oak was at hand courtesy of a friend's defunct pergola!)
- Rather than use the screw connectors between the boxes, a raw cable end runs out of the back of the bass unit to be terminated on some regular binding posts on the top cab which is aesthetically more pleasing to me. An external run up the back of the speaker from the lower binding posts I think I would personally find preferable to the screw connectors, and I note a number of builders have come up with their own alternatives.
- The 3.3 ohm (a more relaxed listening mode) tweeter attenuator was used though a 3 way switch adds in parallel a 15 and 30 ohm which give the 'more detailed' treble response Troels tried, and an increment in-between. Not an expensive switch, though I linked 2 poles for a surer contact and the 3.3 is of course hard wired.
- I used self-manufactured 'end on' ply for the mid/treble cab, partly because I couldn't source black MDF without paying a silly amount for it, and partly because I like a light wood finish - face on ply with the Ellam baffle would produce some odd looking laminations. I doweled the driver screw locations and think this might be a good idea with MDF also. This process of course contributed to the build time, though it went as smoothly as I could have hoped.

Listening

What I am used to; Tannoy 15" dual concentric (at workplace). Various monitors - Alesis, Tannoy.

Home system; Naim Ariva. The Naim Ariva, although closed box, somehow manages to give a bass much deeper than you might think – certainly deeper than the quirky older Naim designs, and definitely deeper than my old pair of Avance concretes, with a decent size enclosure for the main 8"

driver and a 8' passive. Current Amplification; Naim Nait 5i CD; Rega Apollo 35th anniversary. I mention this to give you a fighting chance to see where I am coming from.

First test – one speaker at a time to check they were working. Immediately I heard new detail and depth leap out of the mix – I wasn't even listening for it. This using a test amp - a cheap Sony tuner, and plonked in my small entrance room 6' x 8'. This tells me this design would probably not be too overblown for a small room.

So, next they are hooked up to my Naim/Rega in my 20'x12' lounge. Apparently the dimensions of this 'pass' some calculation to render it a suitable listening room by some equation the BBC use – you can find it on the net somewhere. I have also installed some acoustic panels behind the speakers. It's a bit reverberant but not too bad with a 12' wall of heavy curtains, wall to wall carpet, and big soft sofa + armchairs. (could do with a book shelf or 2 ideally...)

OK – now they're on – raw and no run in. Compared with Ariva's they are straight away obviously a much better speaker. I would say it's the best system I've heard, having more impact on me than my friends very expensive Linn/Naim set-up (though my room is so much better...). Bass – way lower, and at moderate volume you can really feel that bass. Close your eyes and it's not difficult to imagine a much bigger woofer – and I play bass. But some chamber music on however, like a piano quintet, and in no way do you feel the bass is being pushed – it's just giving you what is on the recording. Perhaps they don't gain any transient punch on the Ariva in the lower register – though hardly surprising with a close box design by Naim. Mids; the detail and separation blows the Ariva out of the water – simple. Treble – detailed but really natural, giving a much more accurate rendition of orchestral instruments. Speaking of orchestral – you can hear the breathing on the brief lead in, individual string players in the section - these are massive gains, it all sounds much more real. Overall I would say these are a very well-balanced speaker that does not have an overriding character of its own, and therefore well suited to a variety of music. Complete 'Bass heads' may want a bigger woofer, though this thing can shake the furniture given the right signal.

A few comparisons/ impressions;

Friedman/Liebiziet, Secret Rhythms 5 – Bass totally awesome, synth tones more grit (more accurate?) imaging precise and more detailed.

Mendelsohn, Octet – more dynamic, clarity in upper mid, separation, detail in cello bowing attack.

Moeran, Serenade in G – much more open orchestral soundstage, big and natural sounding.

Sorabji, Etude 69(Ullen) – sweet piano sound, noticeably accurate and realistic attack to notes – supreme separation.

Bach cello Suites (Meyer, Double-bass) Not over-bassy, in fact eliminates some boominess of Arivas. More detailed Timbre.

Messian, Turangalila (Previn EMI) dynamics, massive orchestral soundstage, the bass really gives when asked (bass drum hits) though no boom, detail on muddy textures, ambient detail.

So –I could rant on, and maybe I will feel differently in a month – and they've yet to run in...