

DTQWT MKII

CONSTRUCTION OVERVIEW

INTRODUCTION

I have been interested about the high-end audio, in a truly amateur way, for few years. I started out by simply changing out the front left and right speakers in my \$600 Onkyo home theater kit and now, twenty years later, I'm repeatedly buying and reselling used amps and speakers. I go to the Montreal Audio Show every year and I dreamed of Focal Grande Utopia and Sonus Faber Stradivari... :-)

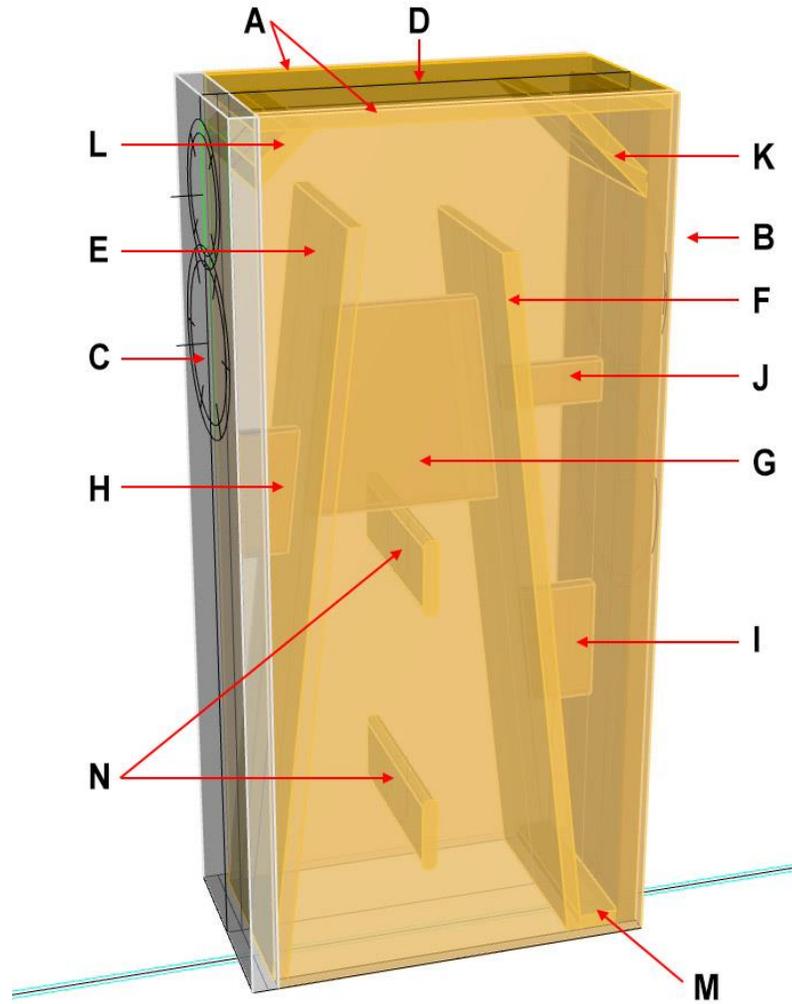
I don't own anything very high-end. I've never had speakers or electronics gears worth over \$5000 a piece. I'm just looking for good value for money. As for the cables, no Nordost or anything like that... I don't know if it's my ears, my room or my system, but I've never yet managed to hear a significant difference justifying the price gap.

Let's get back to our main topic... It was in 2011 that I found Troels web site. Admiring his level of knowledge and his frankness, I immediately became a loyal reader of his web site. After reading at the time that the DTQWT MKII were among the best speakers he had made, I ordered the "Superior + Silver Z-cap + wax coils" kit from Jantzen in 2012. That was the easy part !! Taken by work and family, the pieces slept in my basement and it was finally about 10 years later (during COVID pandemic) that I finally started the construction! Construction took place between July and December 2021.

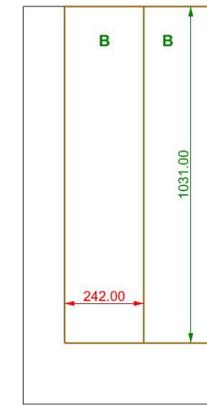
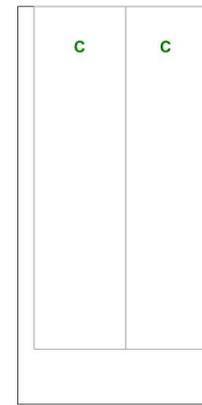
I know next to nothing about sound/audio science and electronics. However, being a professional product designer, I am very familiar with visual concept, 3D CAD development and mass production manufacturing processes. (If you are interested, here is my firm: brioinnovation.com). This being my first experience of this kind and not necessarily having a lot of free time, I remained very conservative. I didn't want to complicate things too much and wanted a timeless look. That's why I simply opted for a "Sonus Faber" look (wood, leather, aluminum). Now, let me share my adventure with you through the next few pages...

Note : Please be indulgent if some sentence seems weird to you. My first language is French.

BASIC 3D CAD MODEL

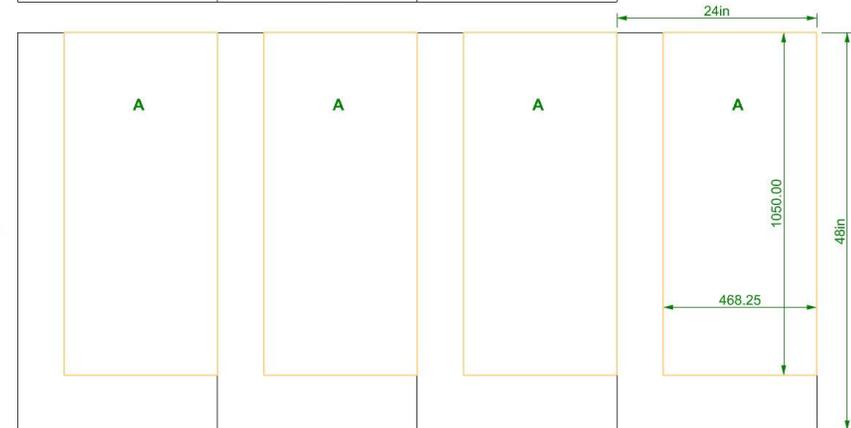
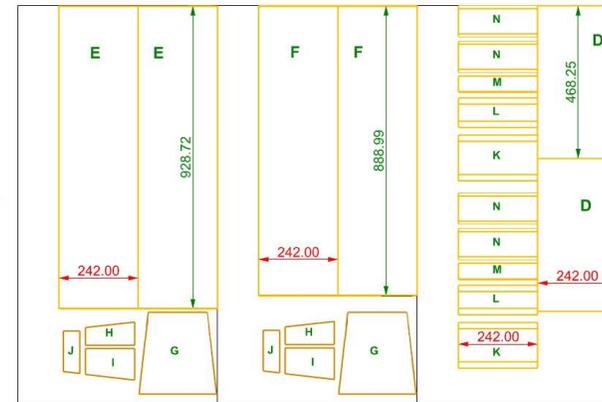


BASIC 3D MODEL

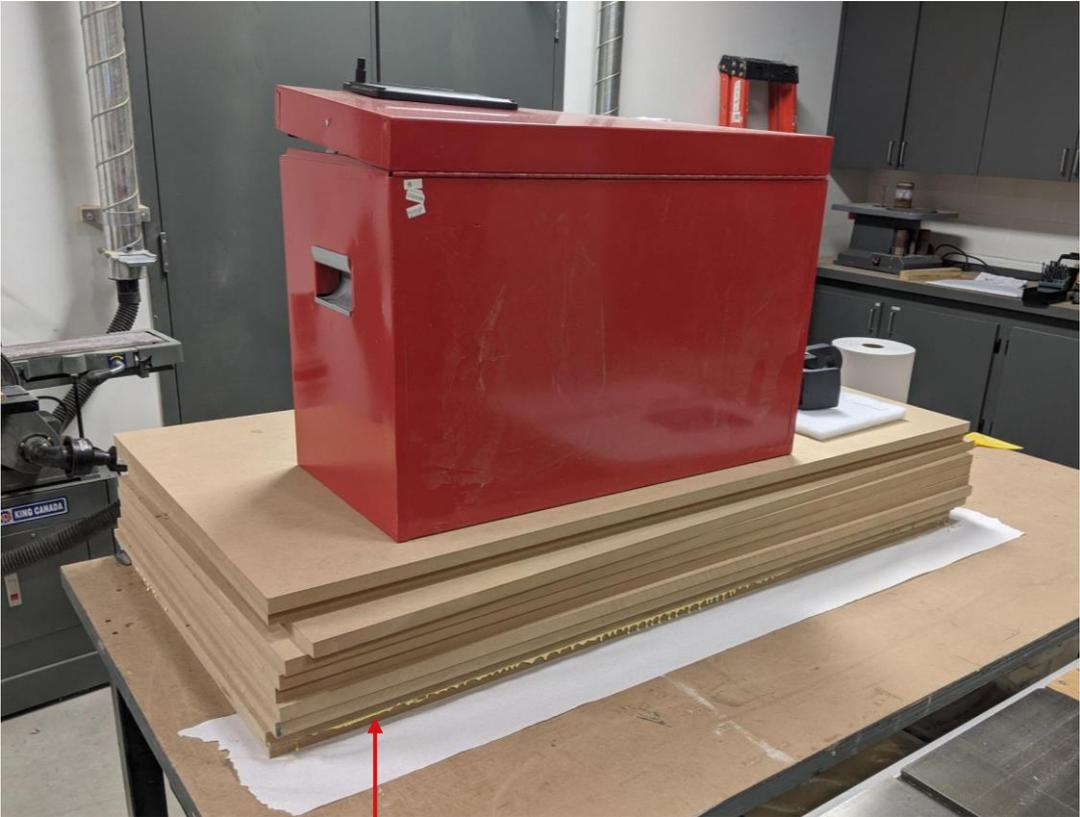


CUTTING LAYOUT (FROM 8' X 4' MDF SHEETS)

MDF THK:
3/4in = 0.705in
1in = 1.015in
1-1/4in = 1.220in

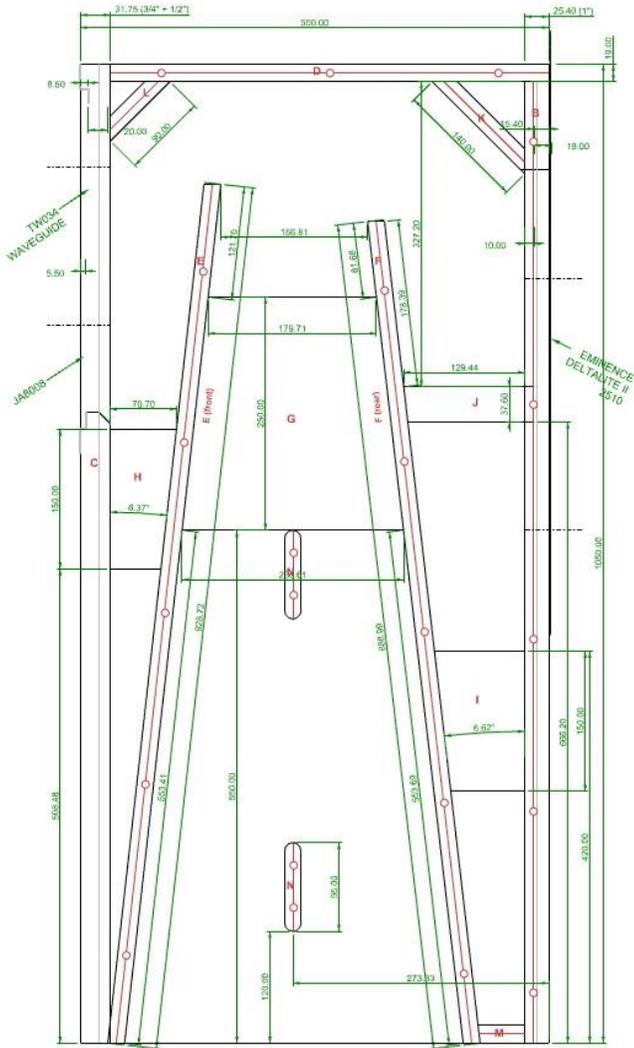


FRONT BAFFLE GLUING

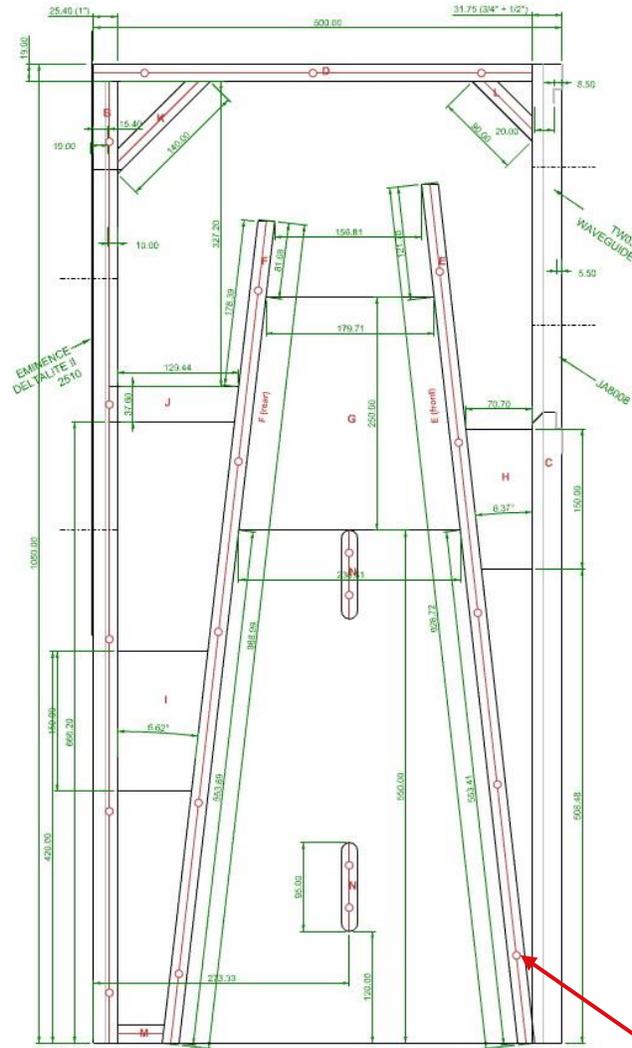


Gluing 3/4in + 1/2in MDF (total : 1.25 in) for front baffles.
(2 bottom sheets)

TEMPLATE DRAWINGS



LEFT SIDE PANEL TEMPLATE



RIGHT SIDE PANEL TEMPLATE

These drawings have been printed full size and used as templates for screw hole drilling and inner panels positioning.

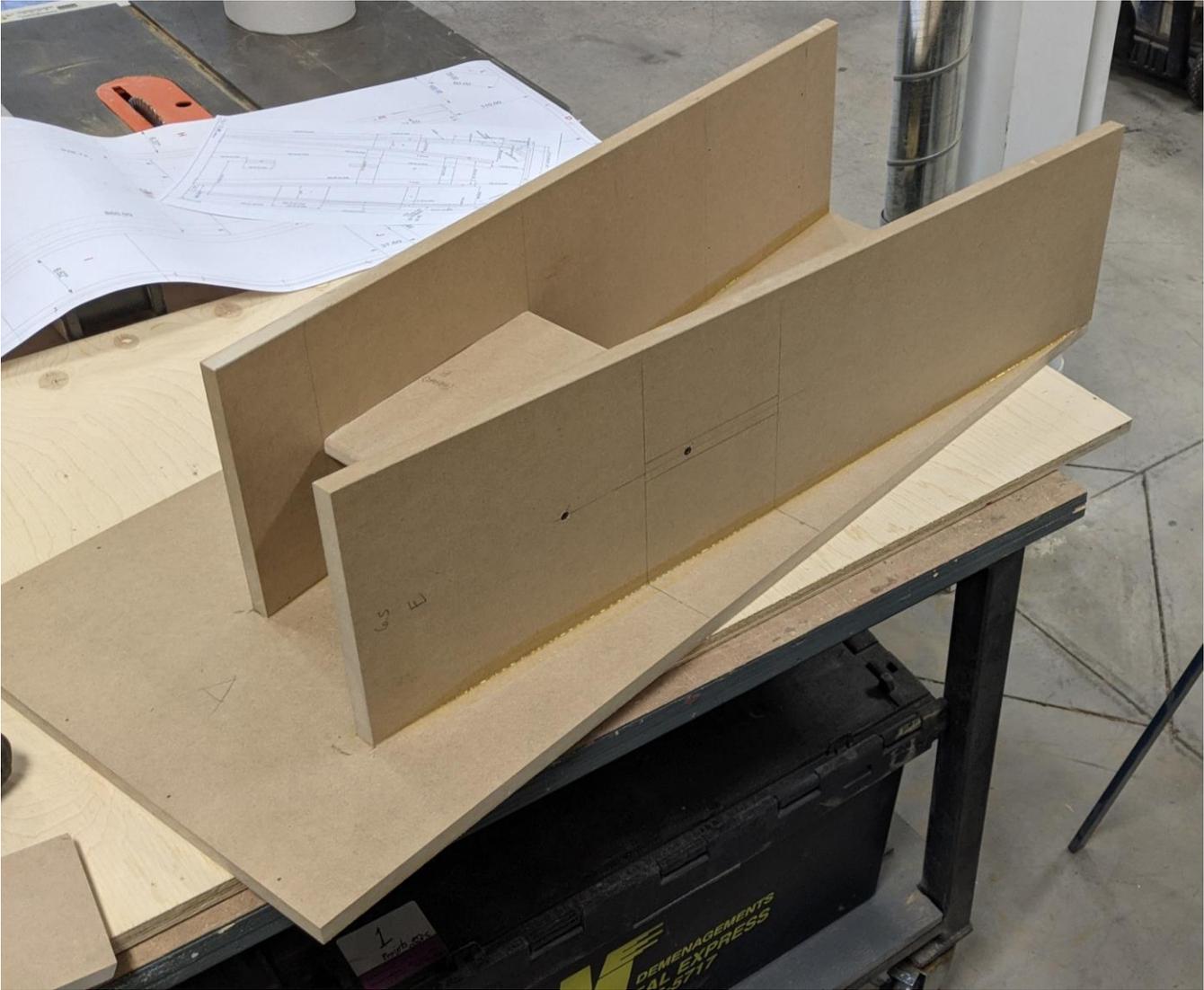
I did not have enough clamps for this project. So, I used wood screws, which I then covered with body filler.

Every screw hole has been pre-drilled including countersinks for screw heads.



Small dots = screw location

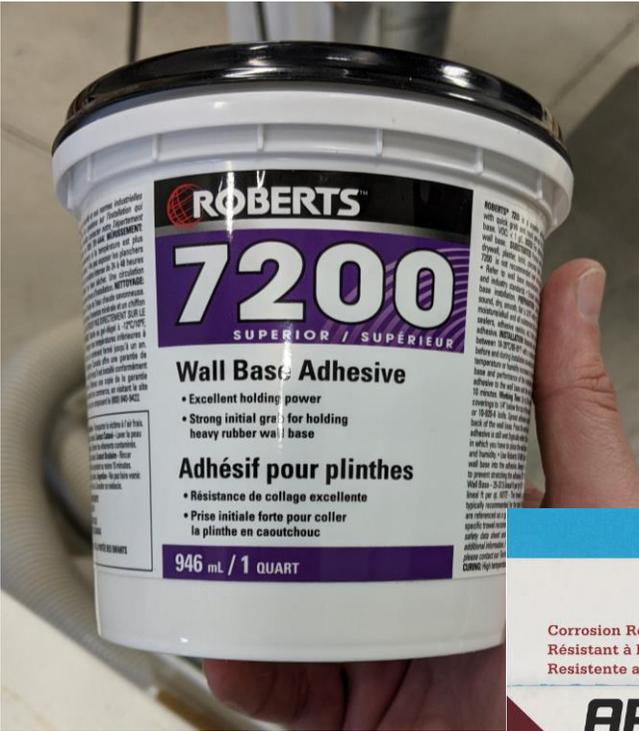
PANEL ASSEMBLY



PANEL ASSEMBLY



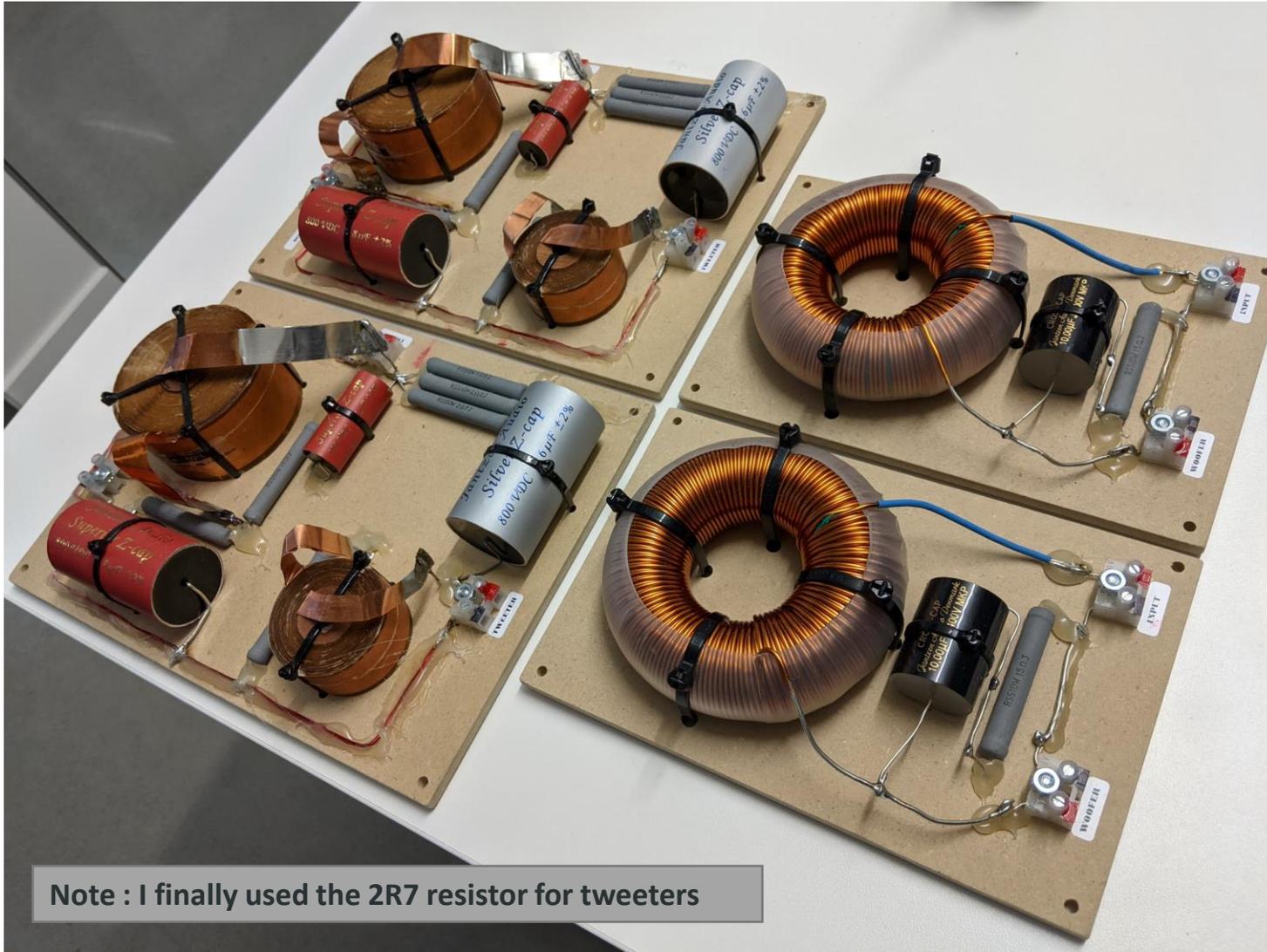
FELT INSTALLATION



USING GLUE + 3/8" STAPLES



CROSSOVERS & WIRING

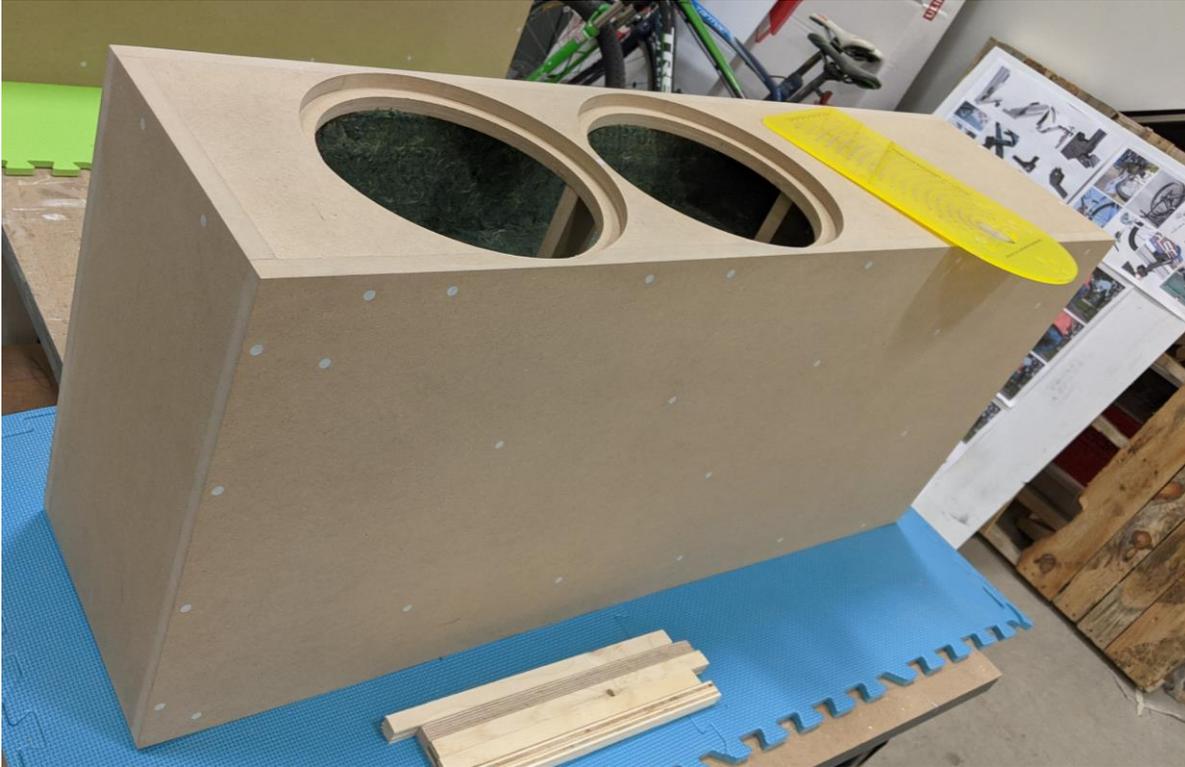


Note : I finally used the 2R7 resistor for tweeters

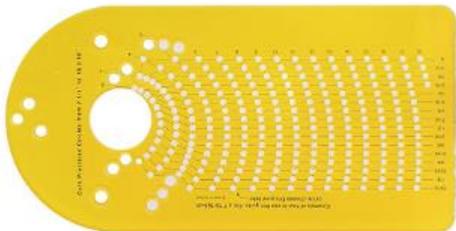


CROSSOVERS HAS BEEN ASSEMBLED AND TESTED AT A LOCAL AUDIO SHOP

CABINET ASSEMBLY



- Latest side panel has been added.
- Screws has been covered using body filler (2-3 thin coats).
- All surfaces have been sanded to ensure that they are perfectly smooth before the application of wood veneer.
- 10" rear driver hole has been made. (I think it would have been better to do them after laminating the wood veneer...)



All circles have been made using a router jig like this one from Amazon.

WOOD VENEERING



- Walnut paper backed wood veneer application : 2 coats of solvent base contact cement on MDF and veneer (Better play safe here... the last thing you want is air bubble !) Applied with a brush.

Useful links :

<https://www.youtube.com/watch?v=hDhbFWT3AYI>

<https://noyekplywood.co.uk/glue-veneer-plywood/>

- Once done, I pass a clothing iron on all surfaces (medium-high temperature, no steam). This reactivates the glue and ensure a perfect bond.
- Sanded in wood grain direction using grit 120 and 220.

FRONT BAFFLE

These front baffles will be covered with a 1 mm thick vinyl.
This must be taken into account when cutting and routing!

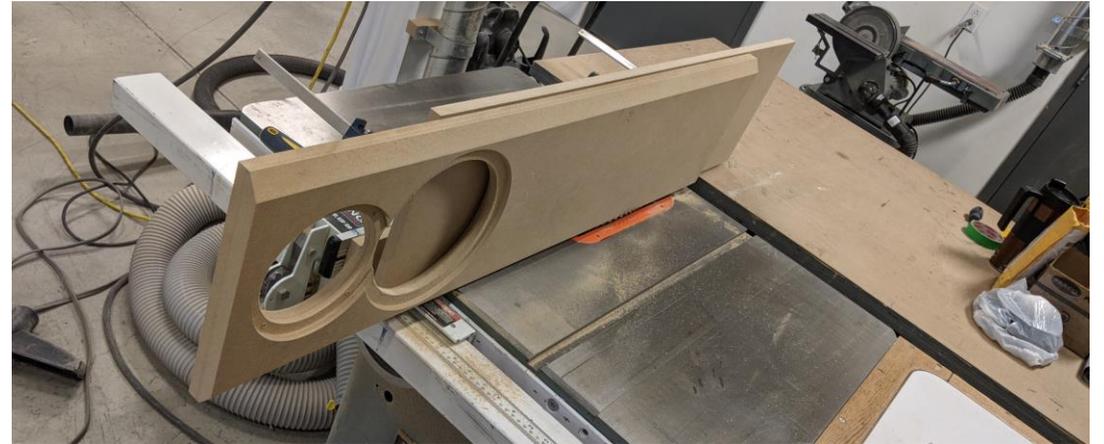
ROUTING



REAR

FRONT

SIDE EDGES CHAMFERING



FRONT BAFFLE

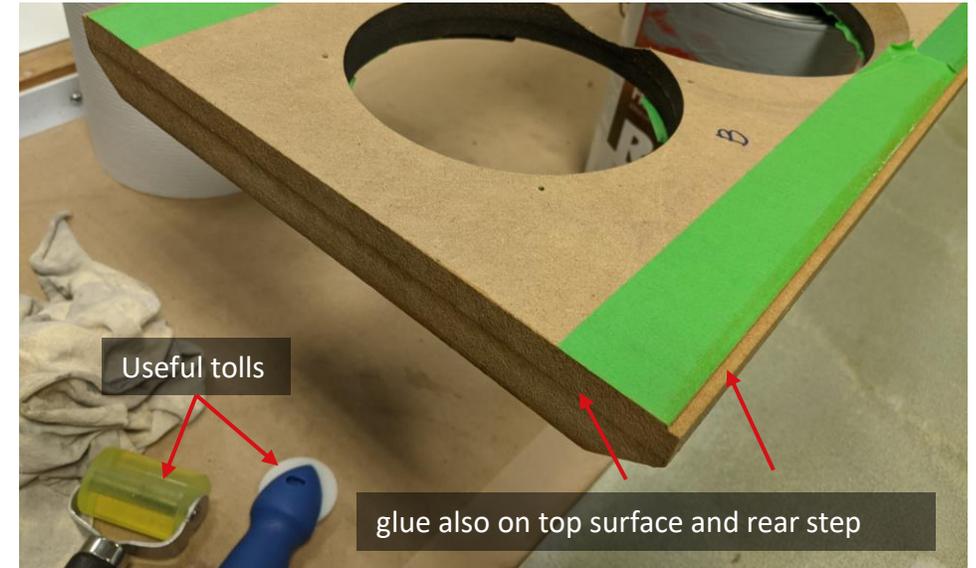
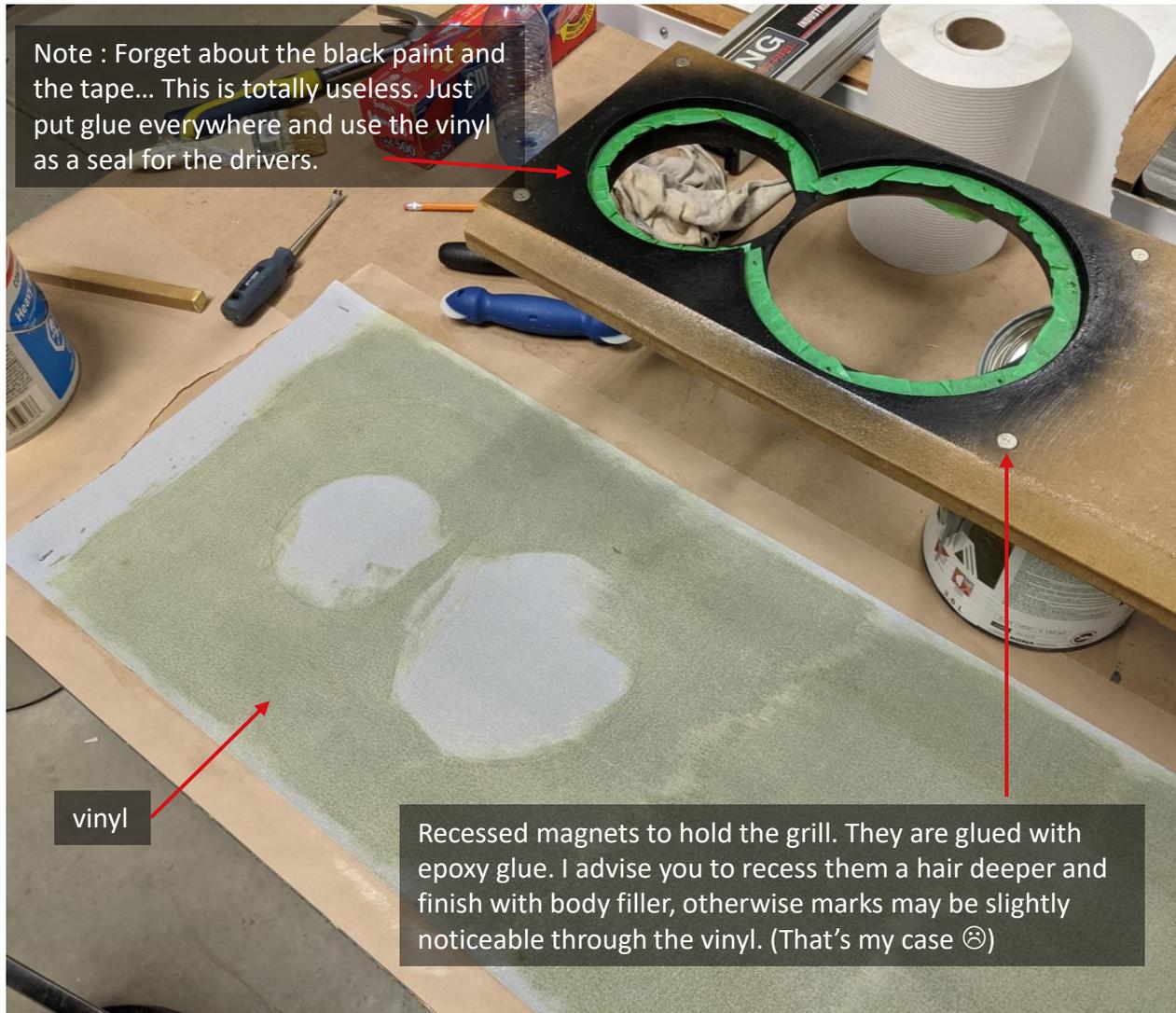


The front will be covered using a 4 way stretch vinyl. That's why I created a step (4 mm wide and 1.5 mm deep) to be able to fold the vinyl at the back. A depth of 1.5mm ensures that the 1mm thick vinyl will not interfere when gluing the baffle. A width of 4 mm makes it possible to keep a sufficient 15 mm wide bonding area when gluing on the side walls.

Here is a very useful link about vinyl wrapping techniques :
(There are others interesting videos on his channel)

<https://www.youtube.com/watch?v=oA7jafMrqdk>

FRONT BAFFLE VINYL UPHOLSTERY



2 coats of solvent base contact cement on MDF and vinyl. Applied with a brush. Wait for the glue to be tacky before applying the 2nd coat and also before wrapping with the vinyl.

The vinyl :

https://www.kovifabrics.com/search/product_detail/27010

The magnets :

[https://www.amazon.ca/gp/product/B0895QRNR8/ref=ppx_yo dt b asin title o01_s00?ie=UTF8&psc=1](https://www.amazon.ca/gp/product/B0895QRNR8/ref=ppx_yo_dt_b_asin_title_o01_s00?ie=UTF8&psc=1)

FRONT BAFFLE VINYL UPHOLSTERY



Here I used a 1/16 soft foam tape, but as mentioned on the previous page, the vinyl can cover these surfaces. Just make sure to cut a hole in the centre, otherwise the vinyl will be difficult to stretch.

The small wrinkles have been sanded to have a perfectly smooth surface. This will be covered with a aluminum plate later on...

FRONT CHAMBER DAMPING



SOME GLUE SPOTS + 3/8" STAPLES

FRONT BAFFLE INSTALLATION



NOTE :

Before gluing the baffle, I applied masking tape on the veneer, all around the cabinet and just below the split line, to protect the wood from excess glue. After installing the clamps, I wiped off the excess glue with a damp cloth and then I removed the masking tape.

WOOD VENEER FINISH (previously made) :

3 coats of water based flat varnish has been applied in wood grain direction using a good quality 4" brush. Light sanding (grit 220) in wood grain direction between each coat. Obviously, the varnish was applied to the cabinets when they were in a vertical position. (Better have the wood grain in a vertical orientation when applying varnish)

DRIVER INSTALLATION



Before installing the drivers on the cabinet, I had previously threaded two holes on each driver, as well as on the wave guide (as recommended by Troels) in order to easily remove the components if necessary. (using a bolt to pull them)

- Wave guides and 8" drivers : M6 x 1 thread
- 10" drivers : 5/16"-18 thread

RECESSED BINDING POST PLATES



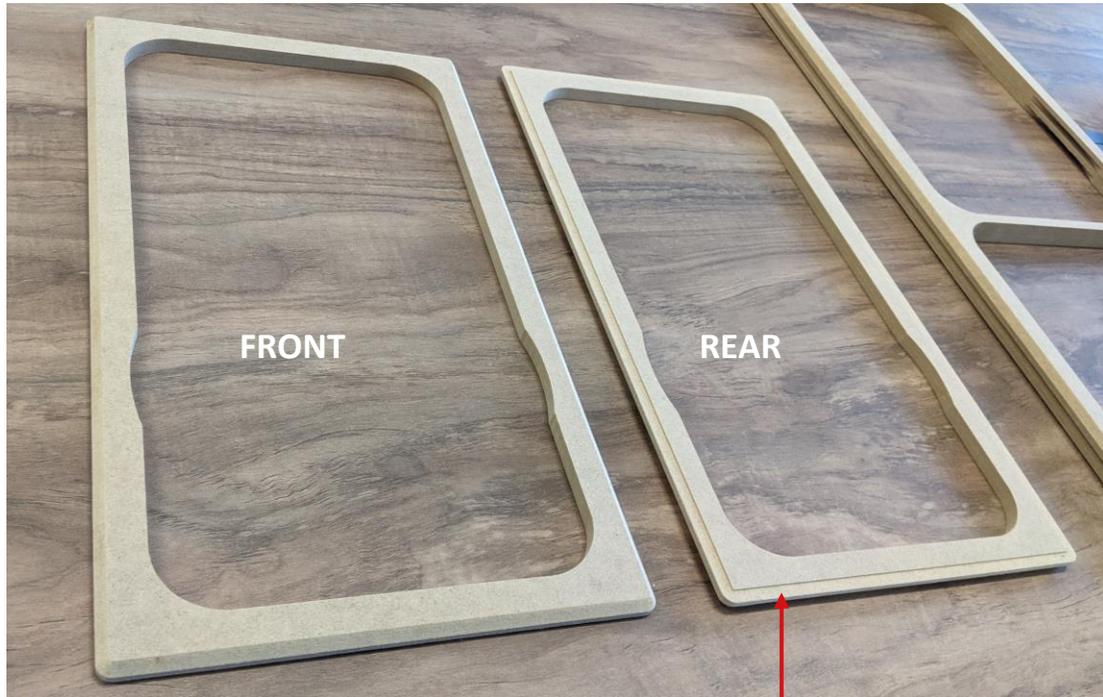
DRIVER WIRE SOLDERING



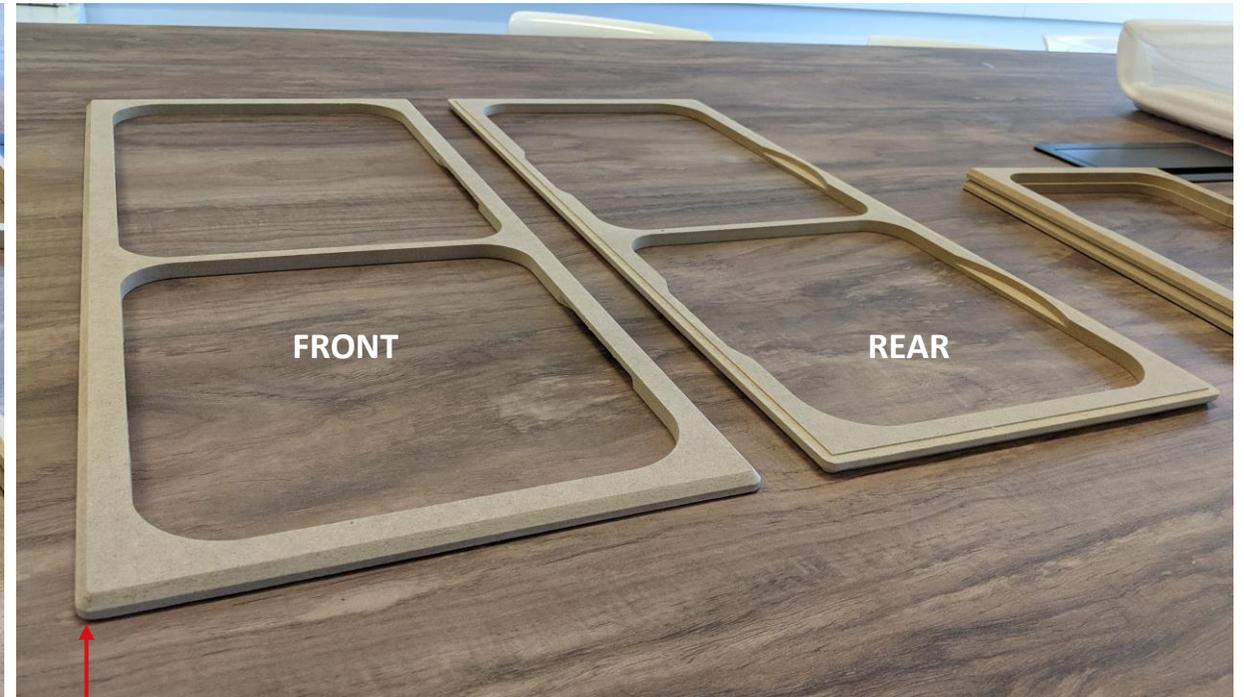
SPEAKER GRILLS

CNC MACHINED FROM 3/8" MDF

FRONT BAFFLE GRILLS



REAR 10" DRIVER GRILLS



FLAT BLACK SPRAY PAINT ON BOTH SIDES



6x1 mm STEP

Slightly rounded corners will reduce the risk of premature cloth wear.

I much prefer the look of speakers without grills, but since my wife operates a daycare at home during the week, I absolutely had to protect my new toys against curious little fingers. Of course, I remove them on the weekend :-)

SPEAKER GRILL MAGNETS INSTALLATION

A



1. Be careful and protect the surface with wax paper.
2. Position the grill magnets over the baffle magnets.
3. Put a drop of epoxy glue on top of each magnets.

B



Carefully place the frames on the magnets in the desired location and allow the glue to harden.

C



You're done !
Next step : the grill cloth...

SAME THING AT THE BACK



GRILL CLOTH INSTALLATION



- Apply a small bead of contact cement all around the rear step and spread it gently.
- Wait for it to be tacky.
- Have the cloth flat on a table, place the frame, start to stretch and glue the cloth (corners first, then the sides)
- Cut exceeding cloth.

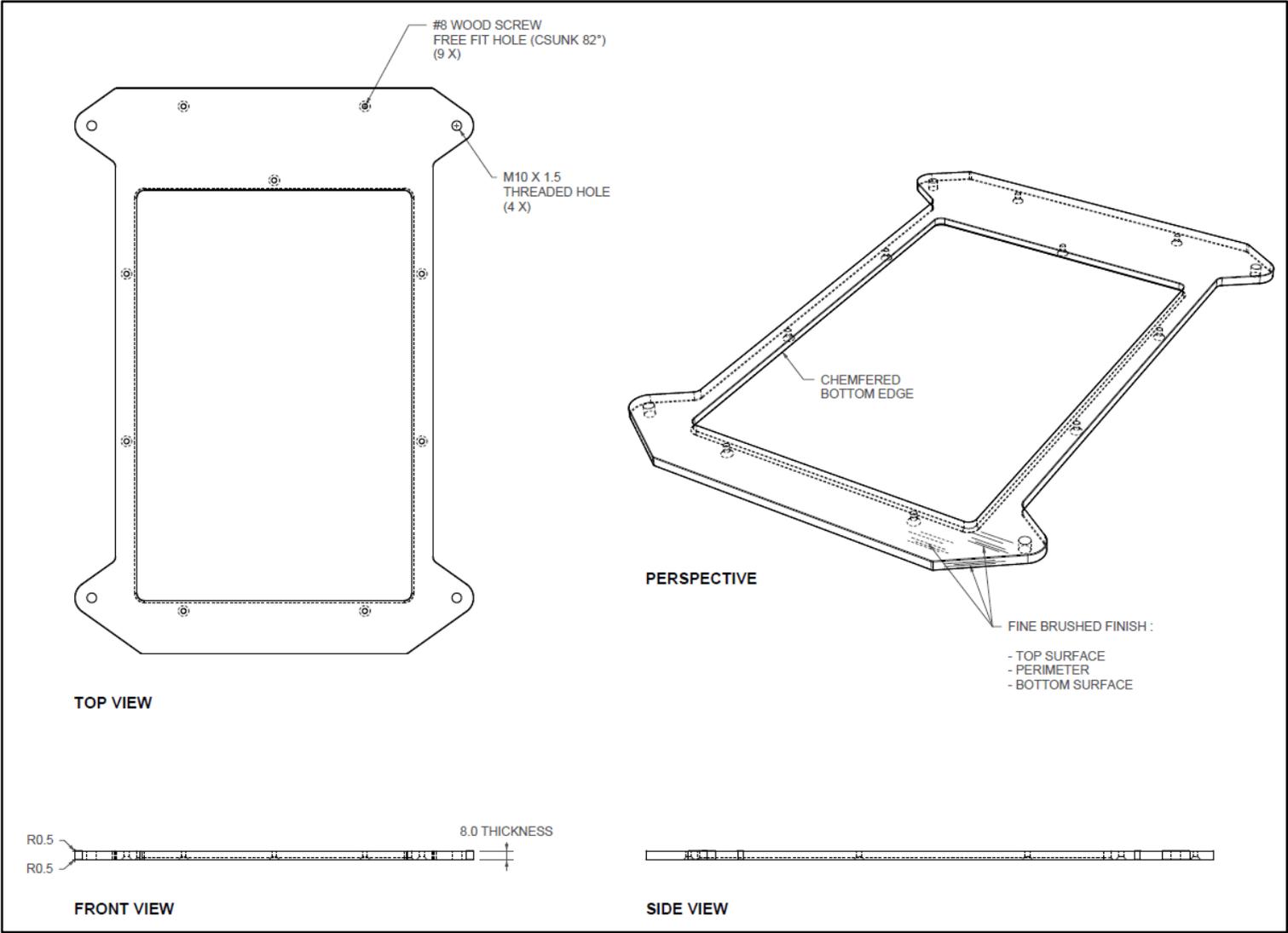
Useful link :

<https://www.humanspeakers.com/howto/grill-cloth.htm>

FINAL LOOK



BOTTOM PLATES



Material : Aluminum (8 mm thick)

Finish : Clear brushed and anodized



BOTTOM PLATES



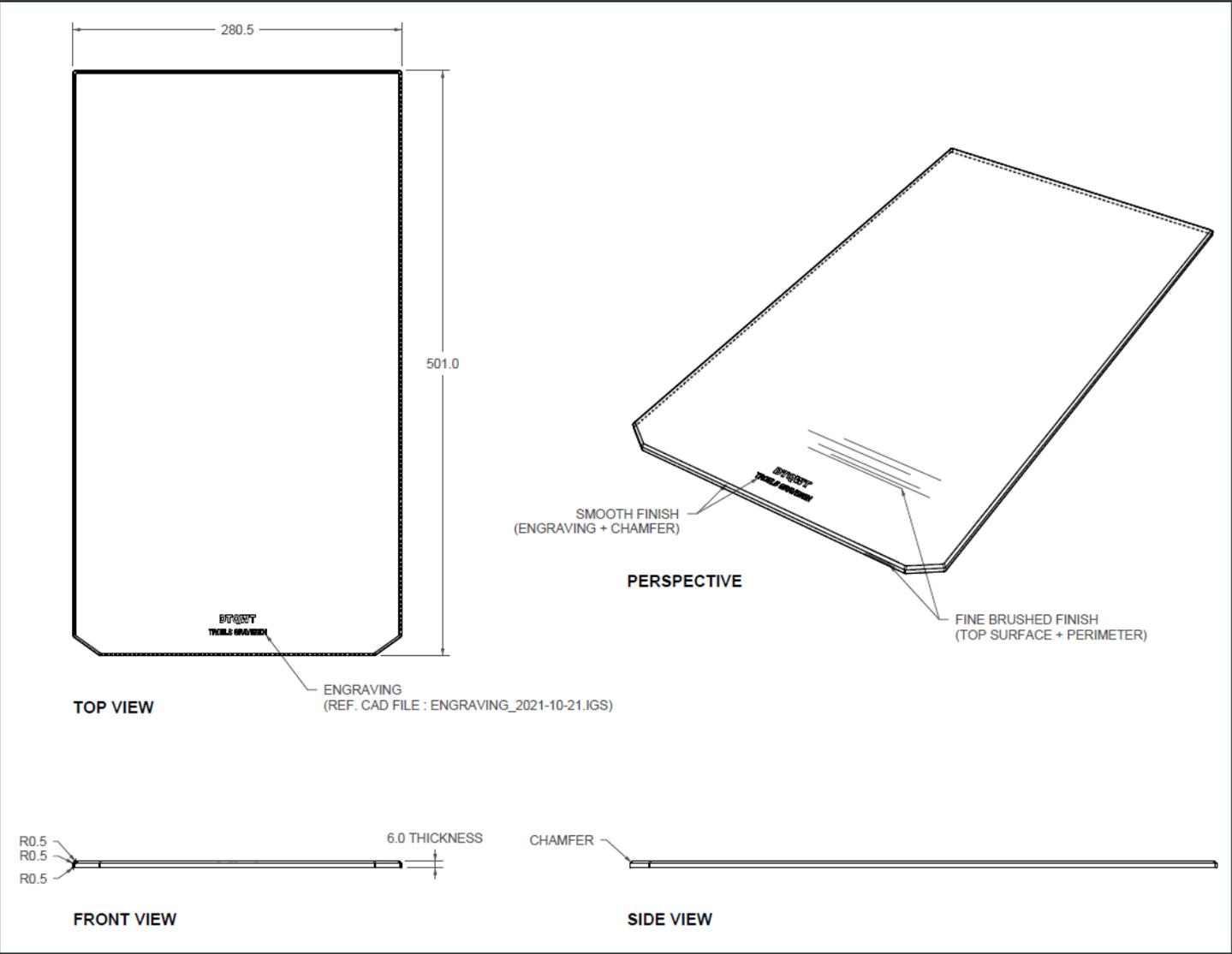
Following Troels' recommendation to leave a 25-45 cm gap under the cabinet, I used the following pieces as feet :

https://www.amazon.ca/gp/product/B085ZL9F1Q/ref=ppx_yo_dt_b_asin_title_o09_s00?ie=UTF8&psc=1

I also added 1" dia. felt pad under the feet to protect the floor :



TOP PLATES



Material : Aluminum (6 mm thick)
Finish : Clear brushed and anodized



TOP PLATES



The aluminum top plates were glued with solvent base contact cement (2 coat on MDF , 1 coat on aluminum)
A simple 2-sided tape would probably have done the job just fine.

Note : Top and bottom aluminum plates have been made in Asia by one of my company's suppliers.
(Price : 930\$ US + shipping). This is not cheap, but this really adds a touch of refinement and gives a luxury look to the final product.



SPEAKER BREAK-IN



Luckily, there's an empty room in the studio. So, I used it to do the first sound tests and make sure all the connections were all right. Everything seems to be working perfectly. So, I let a playlist of songs with a lot of bass play for a whole week. Moderate volume during the day (\pm 40 hours) and louder at night and during a whole weekend (\pm 120 hours), when everyone was away.

This was in no way a listening session because this room is probably one of the worst listening rooms ever. This room is practically empty with a concrete floor. All the walls are parallel, and a solid wall is only \pm 9 ft straight in front of the loudspeakers. It was rather "boomy"! (but you could still feel the potential...)

The speakers were now ready to be moved to my home 😊

MY ROOM (4.5m x 4.5m x 2.75m)



MY ROOM (opposite side)



MY MAIN SYSTEM



My main system (driving the DTQWT MKII) :

I control the music from the **Tidal mobile app** which I stream to the **Tidal Direct input** of the **Cambridge CXN V2** streamer. I also use the CXN as a pre-amplifier connected to a **Naim Nait XS** (2x60w) integrated amplifier.

Strangely, when I put my ear very close to the tweeter, silences sound quieter when I bypass the Naim pre-amp. Basically no noise at all when using the digital pre-amp of the CXN. This also allows me to control the volume with my phone when using Tidal Direct.

I also own the following components :

- **Sugden A25** integrated amplifier, 2x25w, class AB, mosfet output stage (also sounds great with DTQWT)
- **Jungson Hedo 2x80w** amplifier (also sounds great with DTQWT)
- **Jungson Hedo 2x200w** integrated amplifier (didn't try... too powerful)

My secondary system (home cinema and stereo listening) : (located in the basement)

- **Yamaha RX-V867** AV Receiver
- **Jungson Hedo 2x80w** (via Yamaha pre-amp output) for L and R front channels
- **Focal 826W 30th Anniversary edition** (with the “W-sandwich” drivers from higher-priced lines)
- + Cheap Polk surround speakers...

MY IMPRESSIONS

Over the past few years, I have owned a few loudspeakers. Nothing very expensive, but loudspeaker that still offering respectable performance like the Klipsh RF83 (big tower!), Rogers LS7t, Sonus Faber Principia 7 and Focal 826W 30th Anniversary Edition. Among these, my favorites are clearly the Focal 826W. Now, it is obvious that the DTQWT MKII are far superior to all these loudspeakers. In my opinion, they are also superior to several models that I listened to during my visit to the last Montreal Audio Show. I will not attempt to describe the sound exhaustively, but I find that they offer an impressive level of detail. The separation between the instruments is very clear and they produce satisfying bass when the recording calls for it. I had initially used the 2R2 resistor for the tweeters , but I quickly changed to the 2R7. I liked the level of detail in the highs, but I felt a certain fatigue during prolonged listening. I also believe that high fidelity loudspeakers like these can be annoying when listening to some pop music or other poorly recorded songs over a long period of time. One thing is certain, they know how to do justice to quality recordings. Acoustic instruments and voices are rendered with great realism. As for the deep bass, they are certainly capable of delivering the goods!

THANK YOU SO MUCH TROELS FOR YOUR HELP AND HUGE CONTRIBUTION TO THE DIY SPEAKER COMMUNITY, ALLOWING ALL THESE PEOPLE TO ACCESS THEIR DREAM LOUDSPEAKER AND UNFORGETTABLE AUDIO EXPERIENCES WITHIN A REASONABLE BUDGET.

DTQWT
TROELS GRAVESEN