

Dutch Violin

Very Basic assembling Instructions.

This is how I make my prototypes, quick and not well finished.

So feel free to improve.

For tips on milling look at "The 4th axis"

Tools:

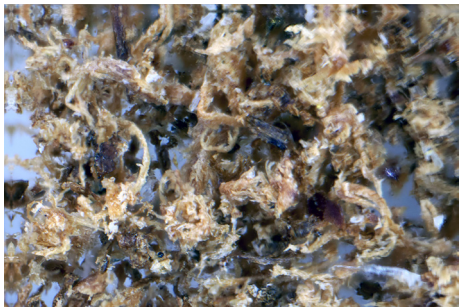
I use a band saw and a belt grinder as the two main tools.

The thin band of a band saw means that you lose less wood when you need to re-saw your wood.

Dust:

Using a cnc mill, a band saw and a belt sander means dust, and lots of it. Dust collection or a wide open door is the solution. Be extra careful with the belt sander and sanding is general: that dust is a lot finer than the dust from the mill and the saw.

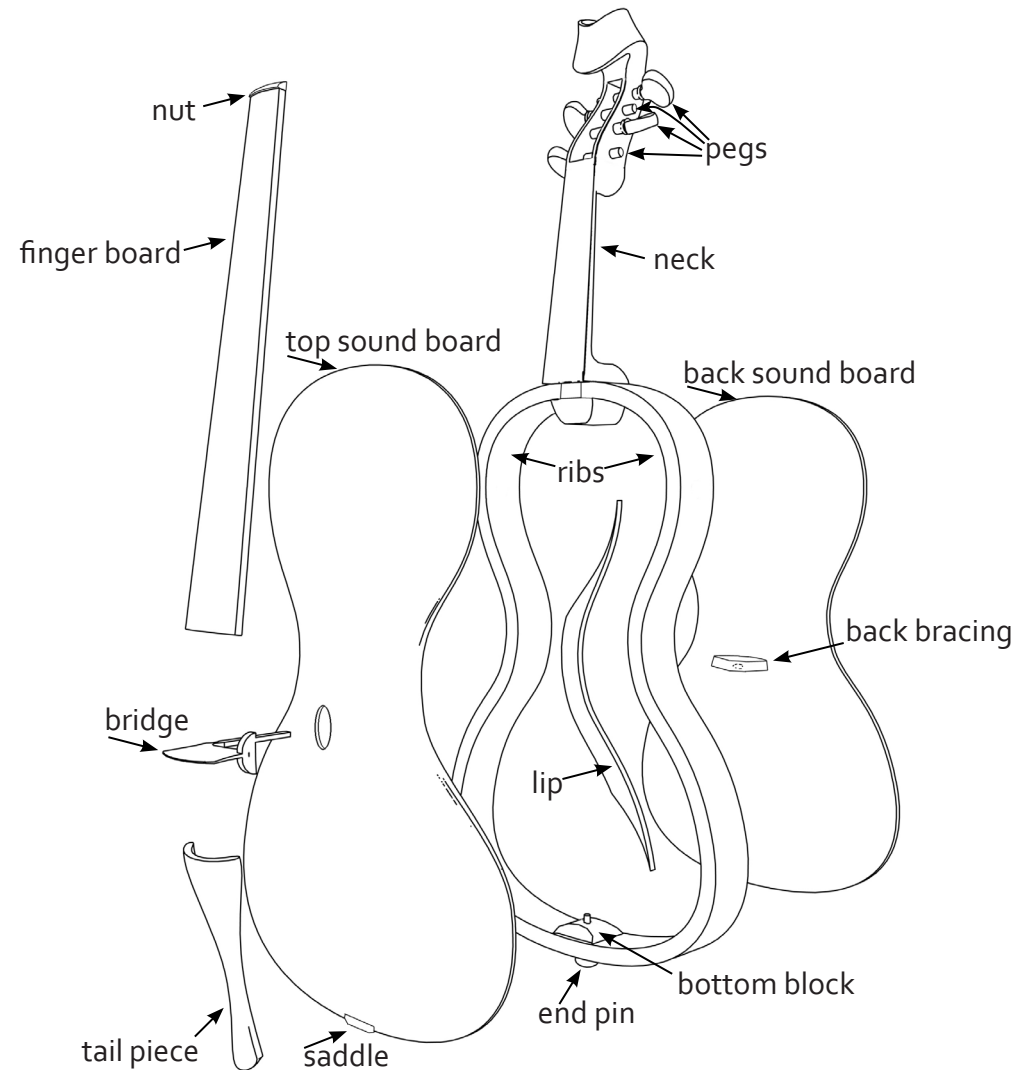
Under the microscope: the same scale



Belt sander dust



Cnc mill ballnose 6 mm. dust



The files:

-Form1.stl

The basic shape that can be used to bend the ribs and to make the rig for the glue up.

-Form2.stl

The shape of the ribs

-Form3.stl

This gives you the shape of the sound board clamp.

Make some room for the neck in the top of the form

I used adhesive weather-strip on clamp to protect the wood.

-Form 4.stl

The outer cutout shape.

-SB top.stl

-SB back.stl

Sound boards

Type of wood: tone wood, usually spruce cedar or some other softwood.

The wood should sound bright when tapped. The brighter the better. The higher the better

The wood should have no defects ,no knots and a continues grain.

This indicates an even density.

It should be light. I mean really light : the hole violin weights 460 gram.

If you use different types of wood, Spruce and Cedar, use the best (highest) sounding for the top

For more about tone wood see: Wood.pdf

After milling:

Top and back have an extra 1,5 mm around the circumference. Sand the insides to remove fibers and most of the mill traces.

Top sound hole: (for placement see rim on the outside) 20 mm Ø.

It is not included as a hole in the file, so there is room for changes and experiments.

I cut it out with a cutting compass.

-Bracing top.stl

-Bracing back.stl

Bracings: I only mill the side that needs to be glued on, so I can shape them for tuning.

The back bracing need an indentation to receive the sound post.

Placement , see measurements.pdf Mark the place, do not glue yet .

The tapered side faces the neck.

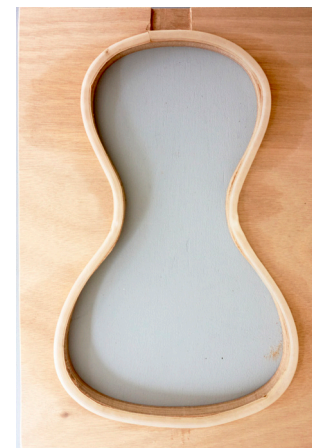
Recently I tend to make them thicker (15mm) and a bit shorter.

The bracings are a bit big, so there is room to tuning.

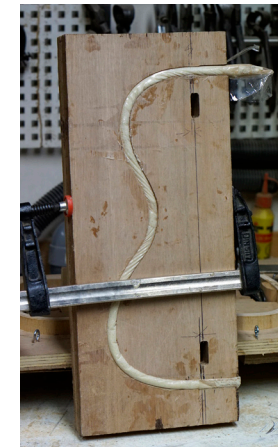
form1 assembly rig



form2 glue clamp



form1 press rig



59 mm long and 11mm high



39 mm long and 13mm high (2.2 Gr)



Neck: use a fine hard wood

Maple is classic.

This is by far the most complex file of the violin so I added some supports and left out the holes for the pegs, keeping it as simple as possible.

Rubber bands are used for clamping.

Ribs: I use Cieba bending plywood 5mm (Cieba Petadra or Fuma, It is very light)

Use the Form1 file.

I have used that file just to mill 2 pieces of 22mm plywood and made the Form from those.

Make two strips of Cieba wet (1 hour in water does the trick for me) and press them together in the form.

If you have never done this before: always compress NEVER stress the wood.

Wait for them to dry, take them out, apply glue and press again in shape. (I use polyurethane construction glue)

The final height is 32 mm. Variations are possible.

The same Form1 file was used to make the assembly rig.

Fingerboard and tailpiece:

Use a very dense hardwood.

After milling:

Clean up the fingerboard, then sanding and polishing.

For the tailpiece you need to drill the four holes for the fine tuners and two smaller holes for the loop.

After that, sanding and polishing.

Top nut, saddle and bottom block are hand made. (Sorry)

-Lip.stl

I've only milled one out of plywood.

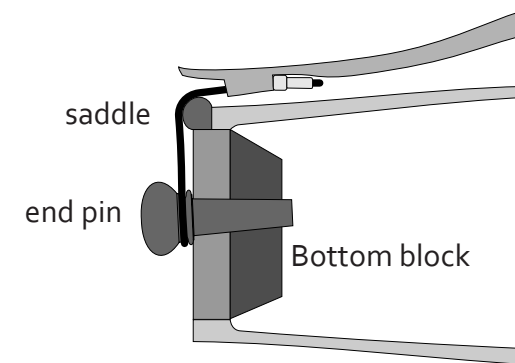
I use it as a template to mark out nice pieces of hard wood.



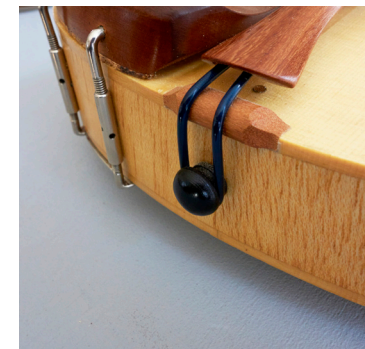
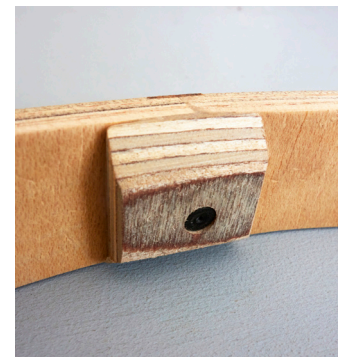
Not included....



and what you do with it.



Cross section
Fixture tailpiece



The bridge:

Bridge violin. (.pdf, .ai, .dwg)

Stock +/- 4mm thick again fine hardwood.(I've used maple and cherry)

Sand it and taper the front side, glue on the foot



Pegs and end pin.

I buy them on line, To instal them you can buy a reamer online with the correct taper.

That was the simple solution for me since I realized that I had to make quite a lot of prototypes.

Assembly:

Align and glue the neck. Drill and ream the holes for the pegs. Sand and polish.

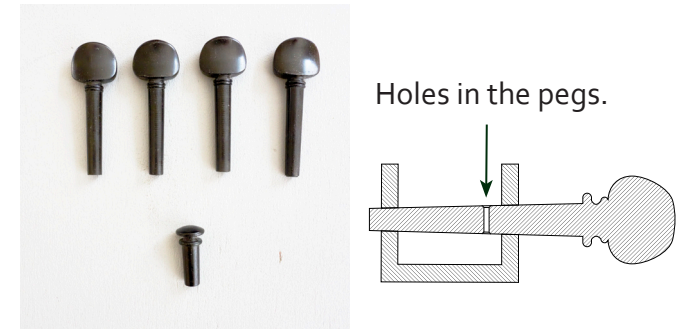
Make a press rig for the ribs

Glue the ribs. Make the sides parallel at 32 mm.

Make an assembly rig.

When you glue the ribs to the neck and the bottom block:

Make sure the neck is aligned in the centre and makes an angle of 8 degrees with the ribs.



The two sound boards:

Mark the centers.

Align them, facing each other.

You should see the marking of the back bracing in the center of the sound hole.

If that fits, check the 16,5 mm to the center.

Now align the top sound board on the ribs and make some room for the neck.

You can use thin wooden dowels (cocktail size) to fix that alignment.

Make the space for the lip and mark that space so you know where not to glue.

Glue in both bracings.

Glue the top sound board using the glue clamp (form3)and the glue up rig.

With a few clamps you clamp that form over glue up rig and the sound board, creating an even pressure to the rim.

When dry, take out of the assembly rig, fit and glue on the lip using the little clamps.



The little clamps

P.S. Please place your maker mark on the ribs, NOT on the sound board!

Make and place saddle and drill a hole for the end pin.
Align and glue in the back sound board, using the small clamps.

Trim the sound boards and lip flush with the ribs.
After that it is sanding and finishing.
Use the least possible amount of varnish on the sound boards to reduce weight.
The fingerboard is glued in place. (I use rubber bands for clamping)
Make and place the top nut, Scrape or sand nut and fingerboard flush with the neck and polish.

Fit your bridge. The one leg needs to be made to fit the back bracing.
Make the foot of the bridge fit the top sound board:
Use sandpaper and a protective layer of plastic under the sandpaper.
Lift the foot just so that you can slide the two layers under the foot.
Check the placement of the bridge.
Increase the string tension so that you can rotate the sandpaper.
Keep rotating and checking the place of the bridge.
If the bridge fits nicely, use some fine sandpaper for finishing

String the instrument.
Adjust the bridge height and the grooves in the nut according to the Measurements.

Smile,
That's it.

