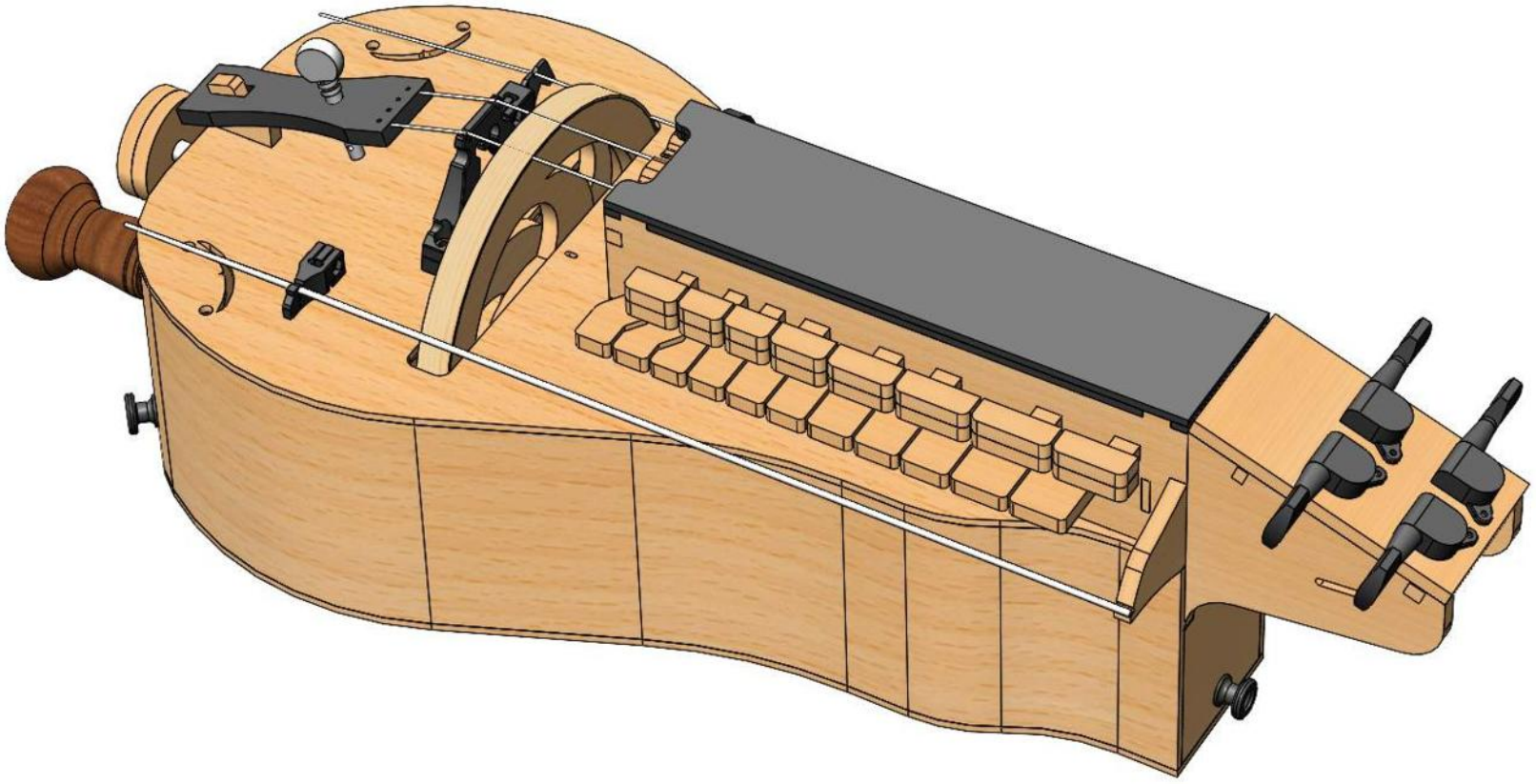
NERDY GURDY

by Jaap Brand, NL
2024



Nerdy Gurdy Petite Linotte
Assembly manual v1.2.0

Introduction

This manual describes how to assemble a Nerdy Gurdy Petite Linotte kit. Go to https://www.nerdygurdy.nl for more info about these instruments.

General directions

- It’s best to read through the whole sequence, before starting.
- When removing parts from the plate that are still attached, it’s best to cut the attached points with a sharp knife or chisel, to avoid splintering.
- Before gluing, it is wise to assemble the parts without glue, so that you’re sure how they fit together. You can assemble most of the instrument without glue, to get an idea of how the parts go together.
- Make sure that all surfaces that touch are fully glued together. This prevents undesirable vibration when you’re playing. Use plenty of glue on the wooden parts, and wipe off any excess glue with a wet cloth.
- If you want to stain the wood: it is best to do this before gluing, with a water-based stain. Stain may not take well on area’s that have seen glue. And glue may not take well on oil-based stain.
- If you do something wrong, it is possible to release wood glue by heating it to sufficient temperature (e.g. a with hot air gun).
- The parts are glued together with regular wood glue (not included in the kit), except a few plastic parts that need to be glued with all-purpose glue. The following icons will show you which glue to use:

Wood glue

All-purpose glue

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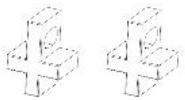
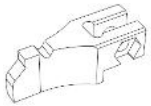
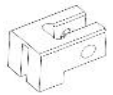
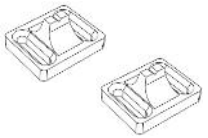
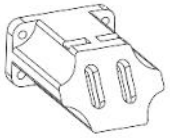
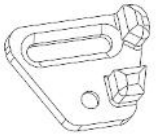
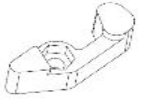
Parts included in kit (1)

Printed parts

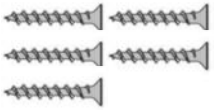
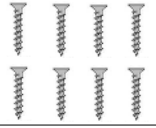
Drone and dog base 	Drone support 	Strap pin	Dog support 	Nut 	Tuning peg
Buzzing bridge (dog)	Bridge	Capo base 	Trumpet capo 	Capo lever 	Shaft bush

Strings:
Drone: Viola C

High melody: 0.97 (synthetic) gut
Low melody: ½ violin G

Trumpet: 1,2 mm (synthetic) gut

Fasteners, bearings, etc.

Bolt M3 x 10	String holder	M5 nut	Ring 5,3 mm	Large screw 3,5 x 20 mm 	Small screw 2,5 x 13 mm 	Bearing 8x22 mm	Bearing 5x16 mm	M3 lock nut (nyloc)
Bolt M5 x 50	Tube ID 5 mm	M5 lock nut (nyloc)	M3 nut	Ring 8,3 mm	Hinges	Flange bearing FL8	M8 nut	Bolt M3 x 10 countersunk

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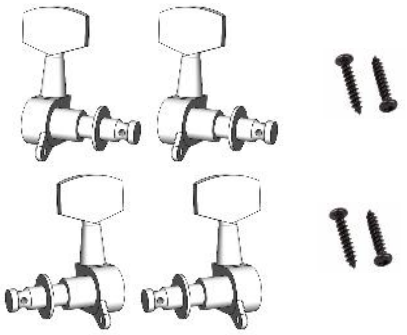
Parts included in kit (2)

Bag 3: Machine heads (tuners)



2 x LH + 2 x RH + 4 screws

Bag 4: wire and felt

Self-adhesive felt
6 mm x 270 mm

Piece of string
~300 mm

Piece of metal wire
~130 mm

Bag 5: tangents

22 x large
tangent

16 x small
tangent

Bag 6: tangent bolts

38 x bolt
M2.5 x 10

Shaft (M8 threaded rod)

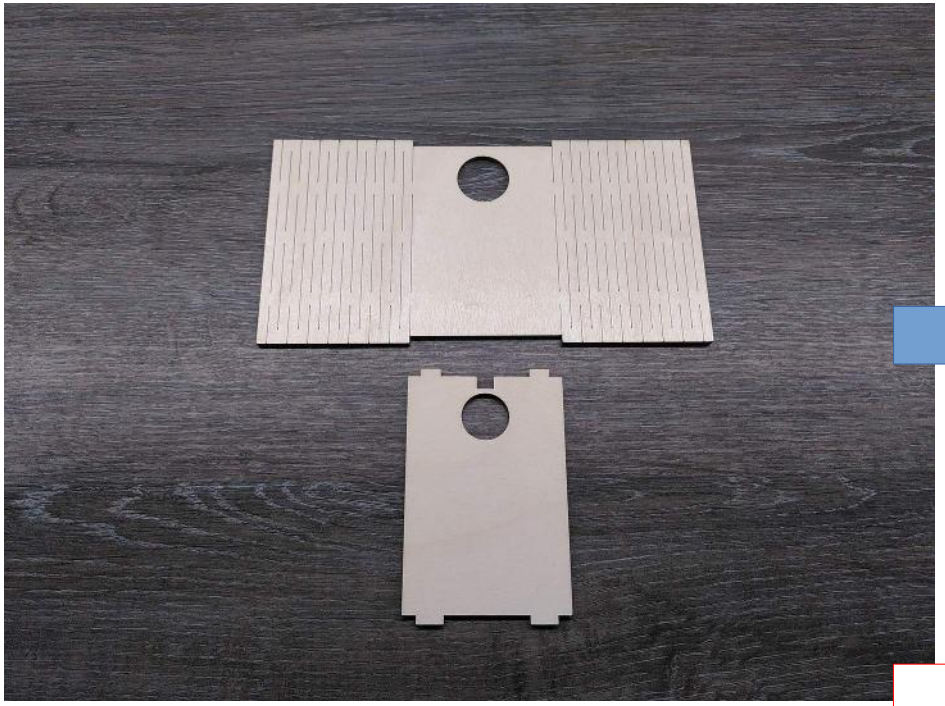
Crank knob

Tooling list

Tools, glue and paint are not included in the kit. You may need the following tools and materials to build your instrument:

- Wood glue
- All-purpose glue
- Some screwdrivers
- Size 13 and size 10 wrenches (or pliers if all else fails)
- Hex keys
- Lots of glue clamps (5 to 10)
- A (retracting) knife
- Sand paper
- Varnish/ paint
- Some basic woodworking skill and patience :)
- Violin rosin, cotton

Let’s start building!



Make sure the sides are well aligned.

Remove any excess glue with a wet cloth

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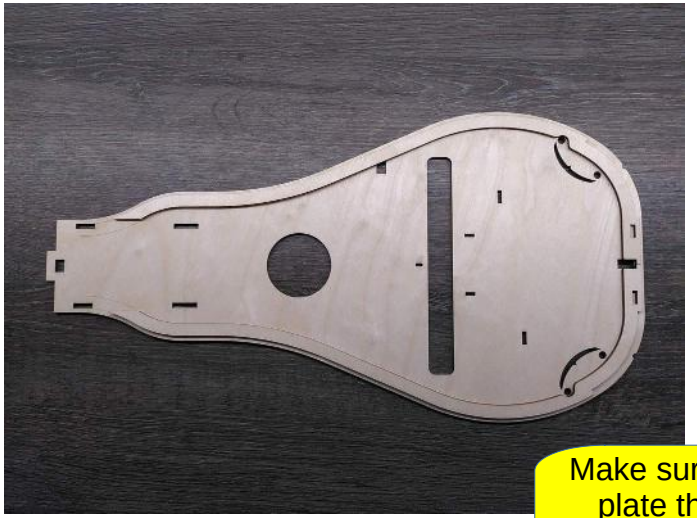
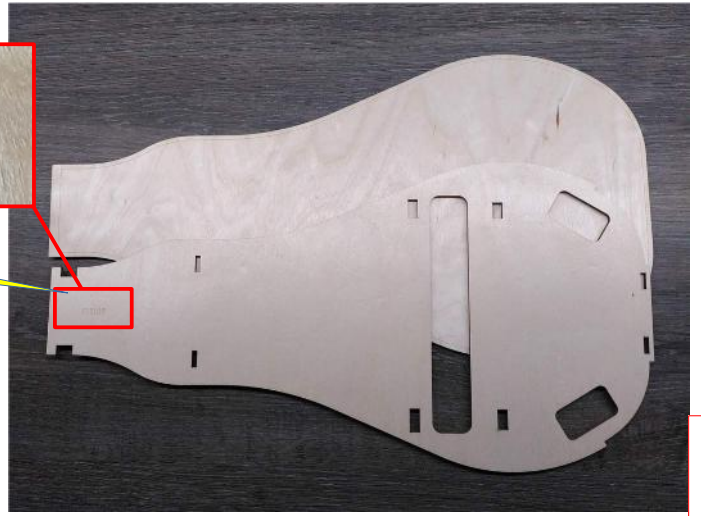


Make sure to keep 3 mm plate thickness away from the edge (guiding lines are engraved)



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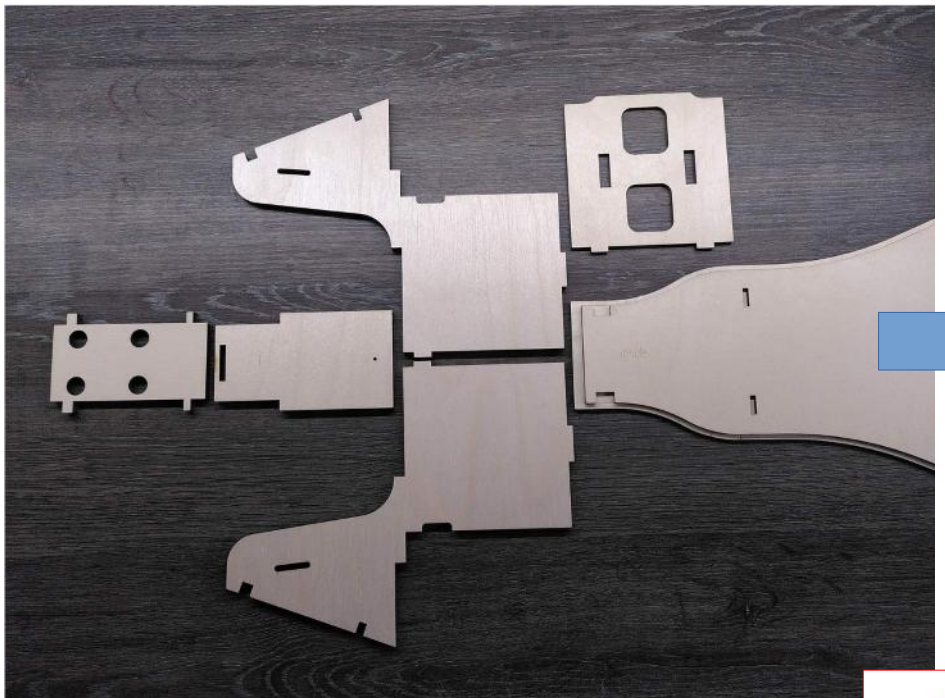

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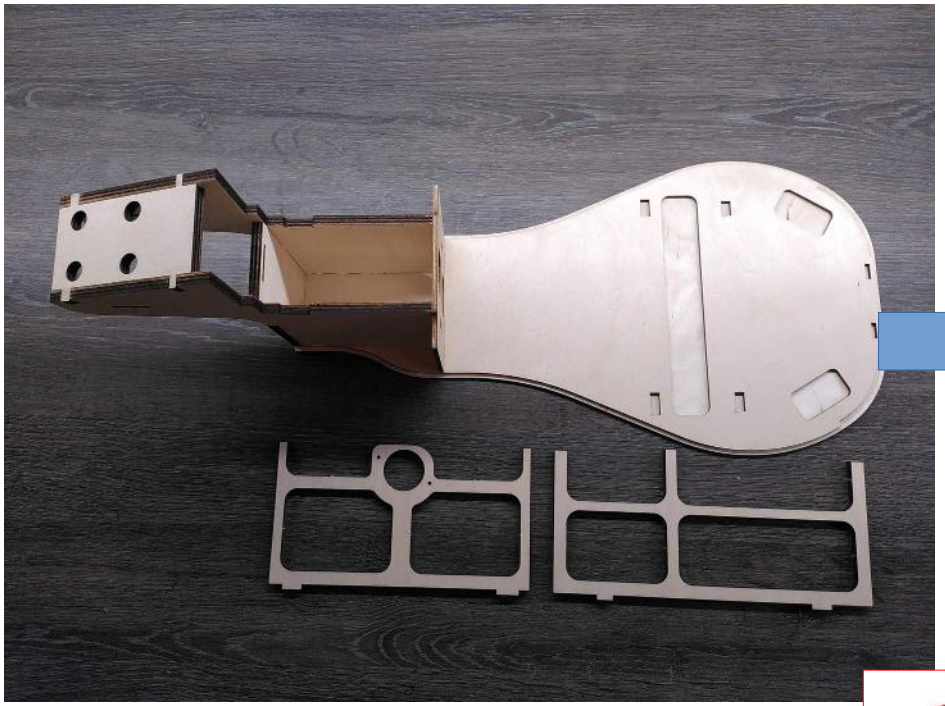

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The inside of the bearing can be flipped. Use the shaft to flip the inside around, to that the set screws are on the correct side. They may take a bit of force.

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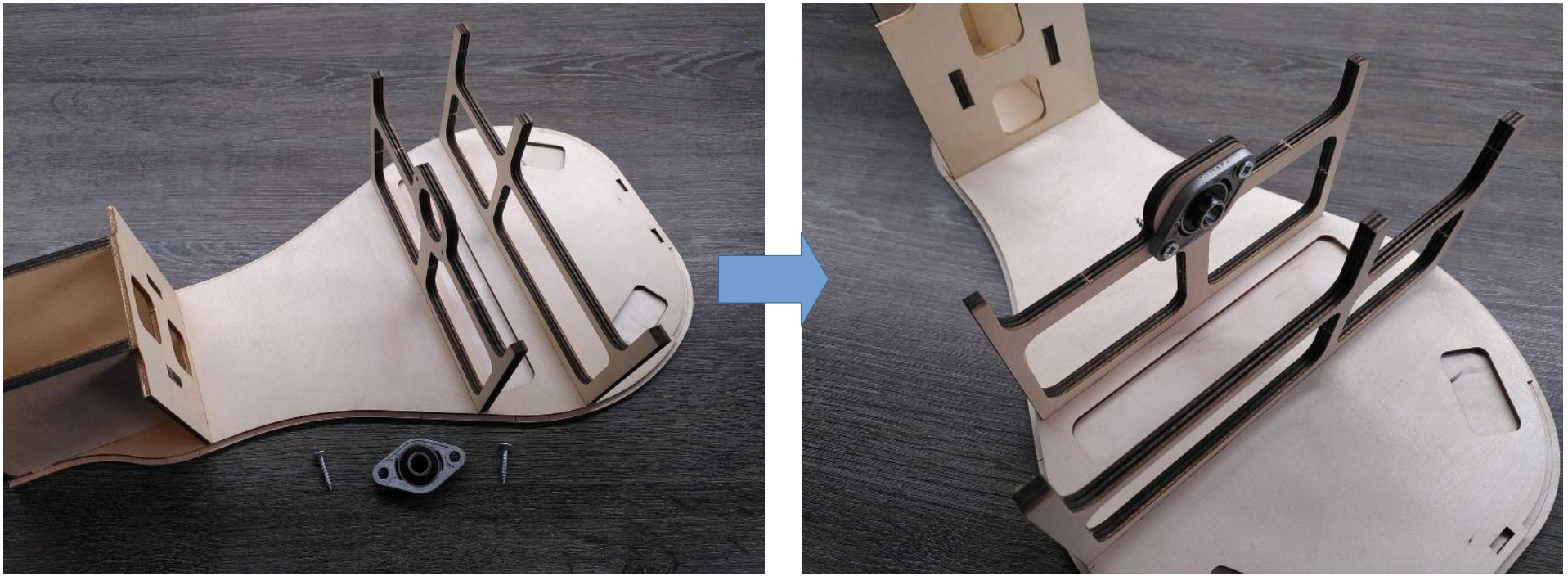

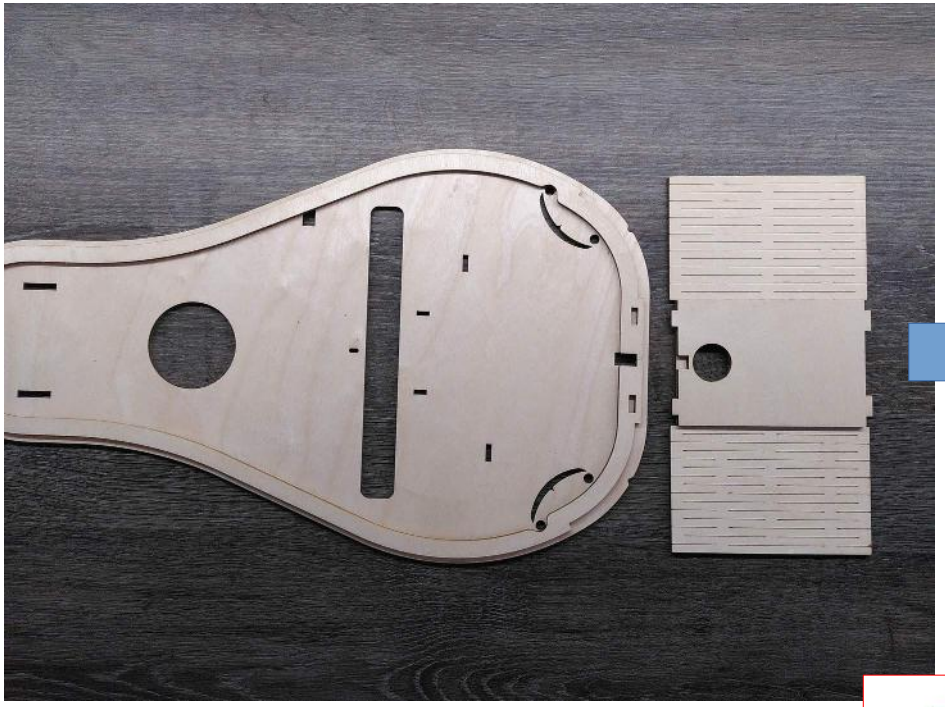

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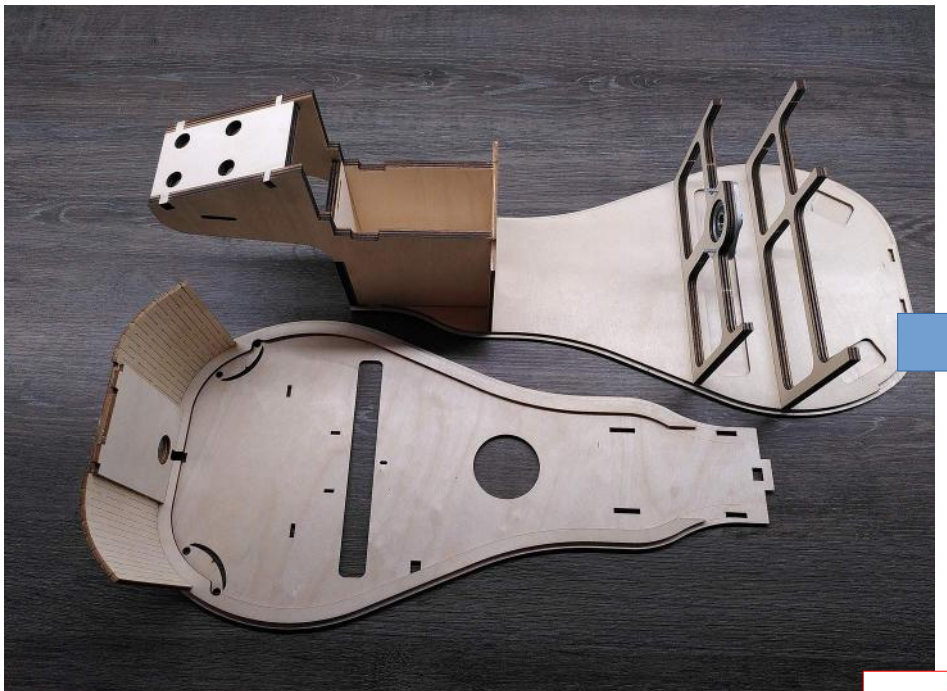

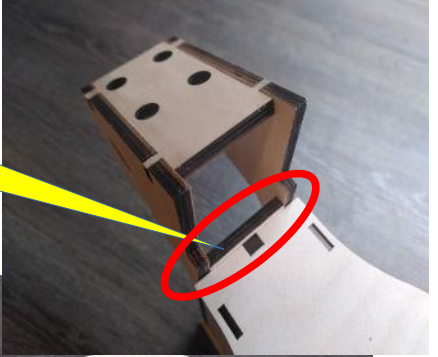

Make sure tab is inserted all the way

Suggestion: place instrument on a flat surface and place something heavy on top to take out warping while the glue cures (e.g. a stack of large books)

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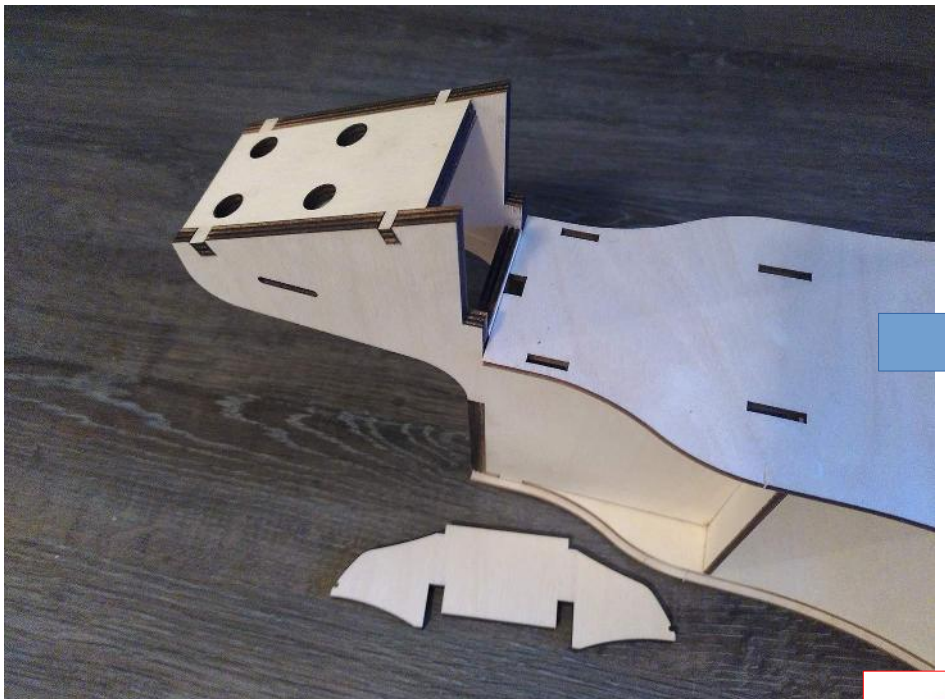

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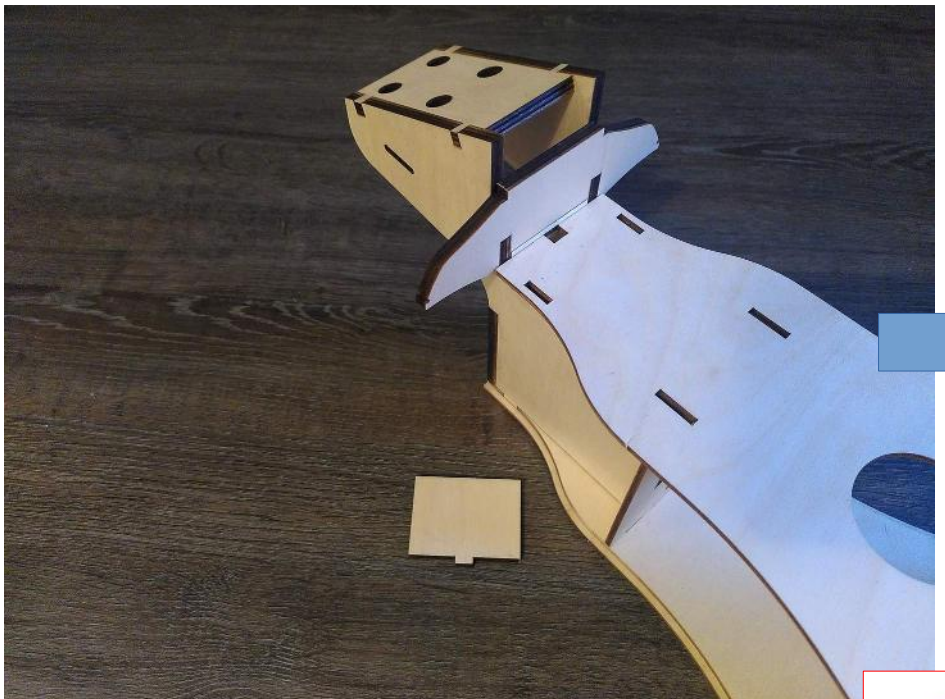

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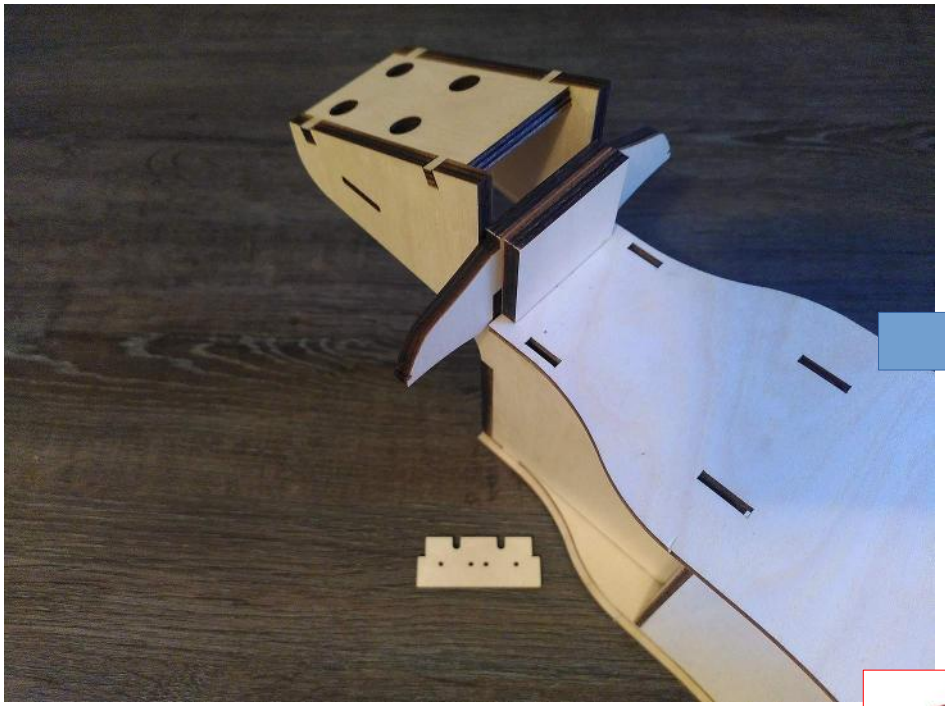

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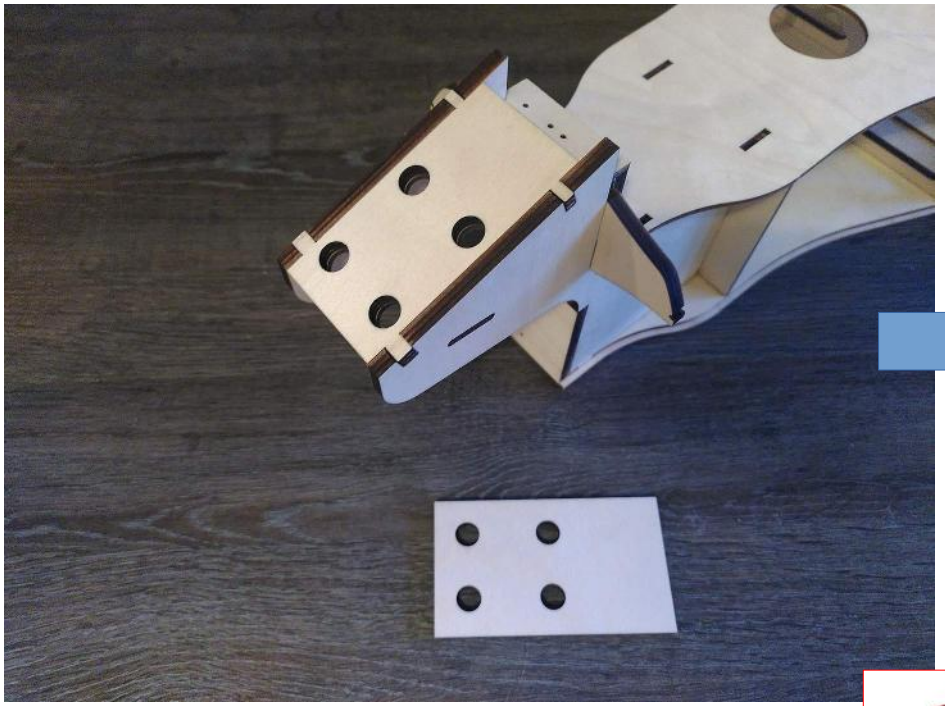
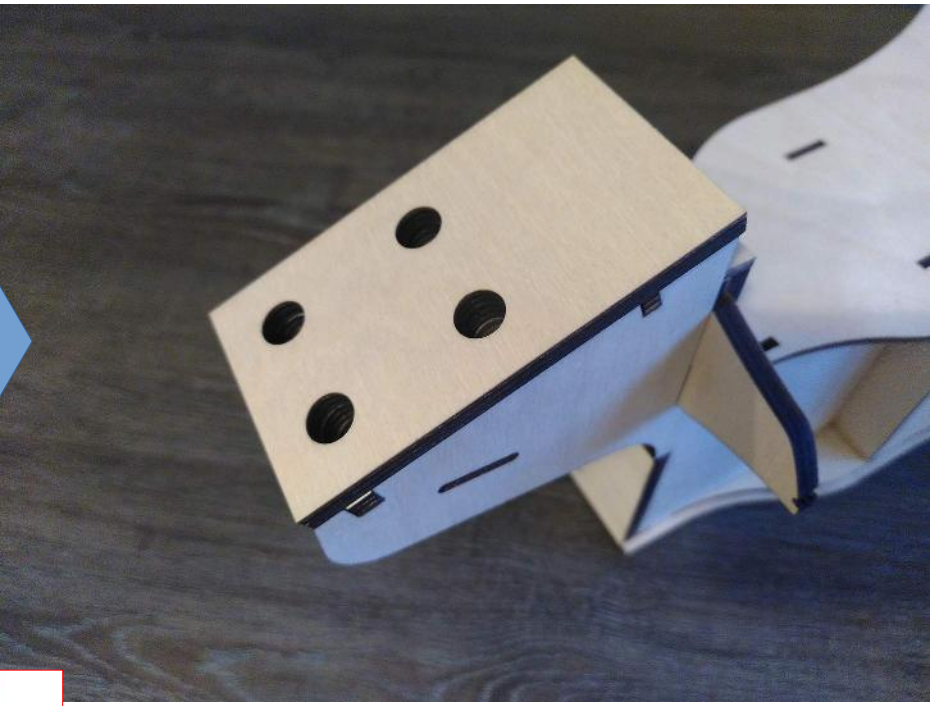
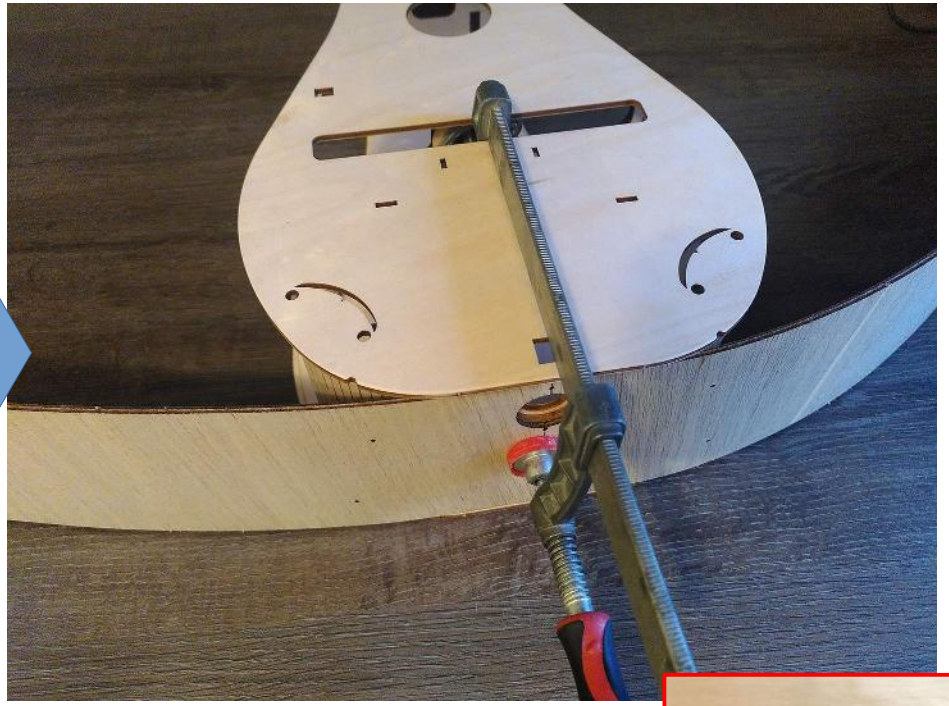




WOOD



Use the ball bearing to check that the parts are well aligned

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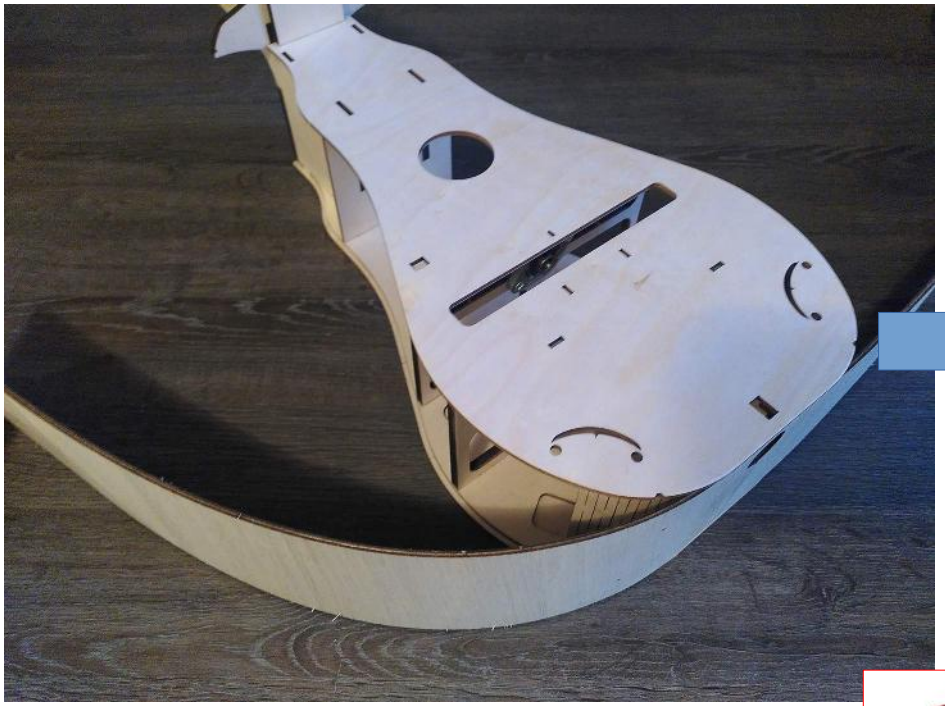

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BISON
WOOD

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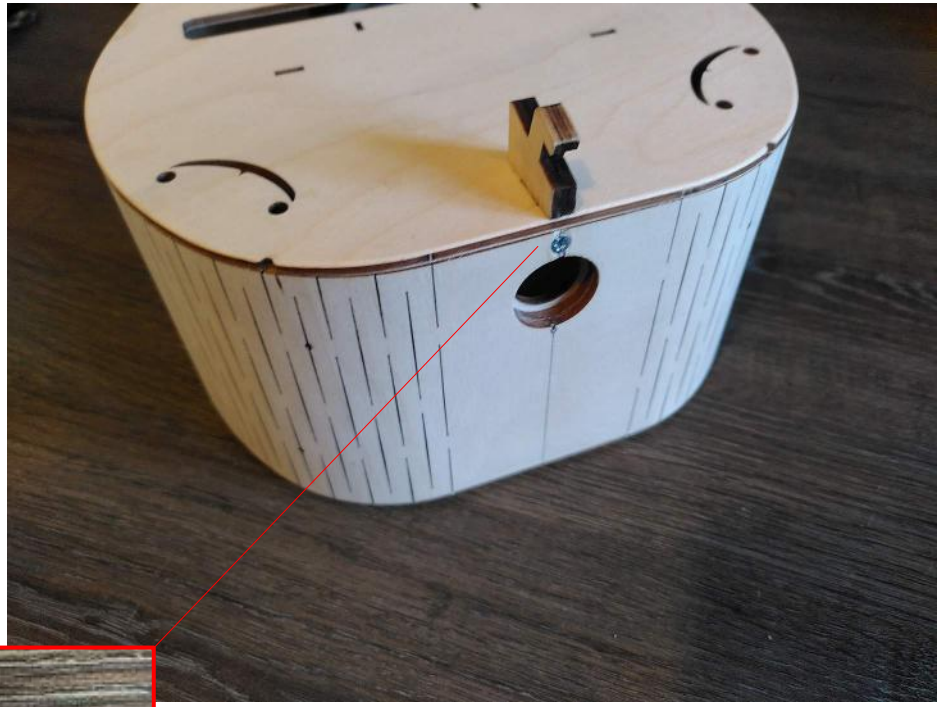

Smallest type of screw in the kit (2,5 x 13 mm)

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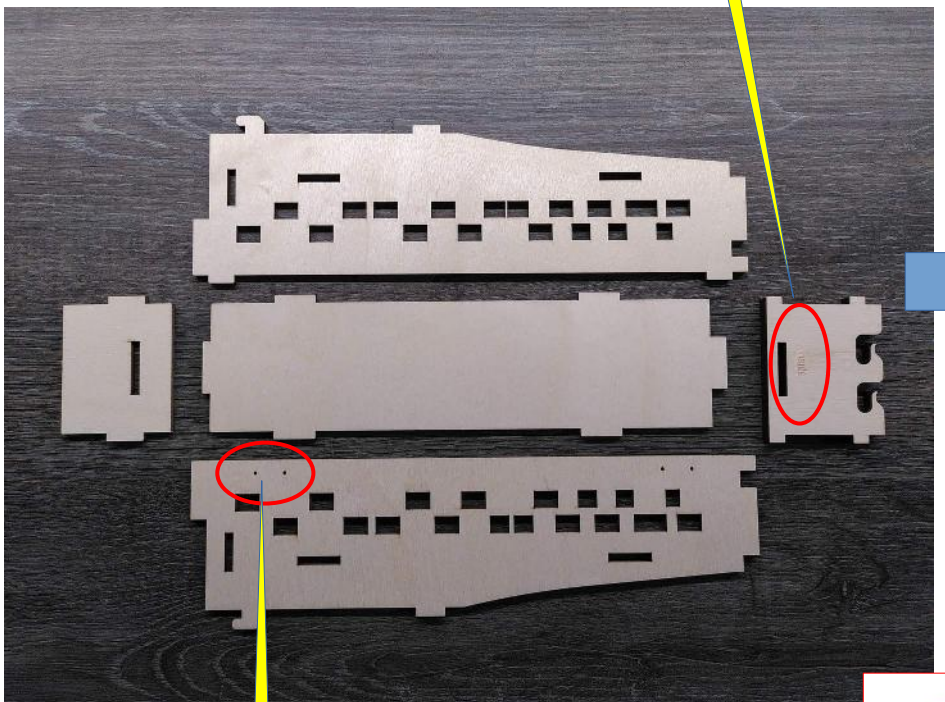

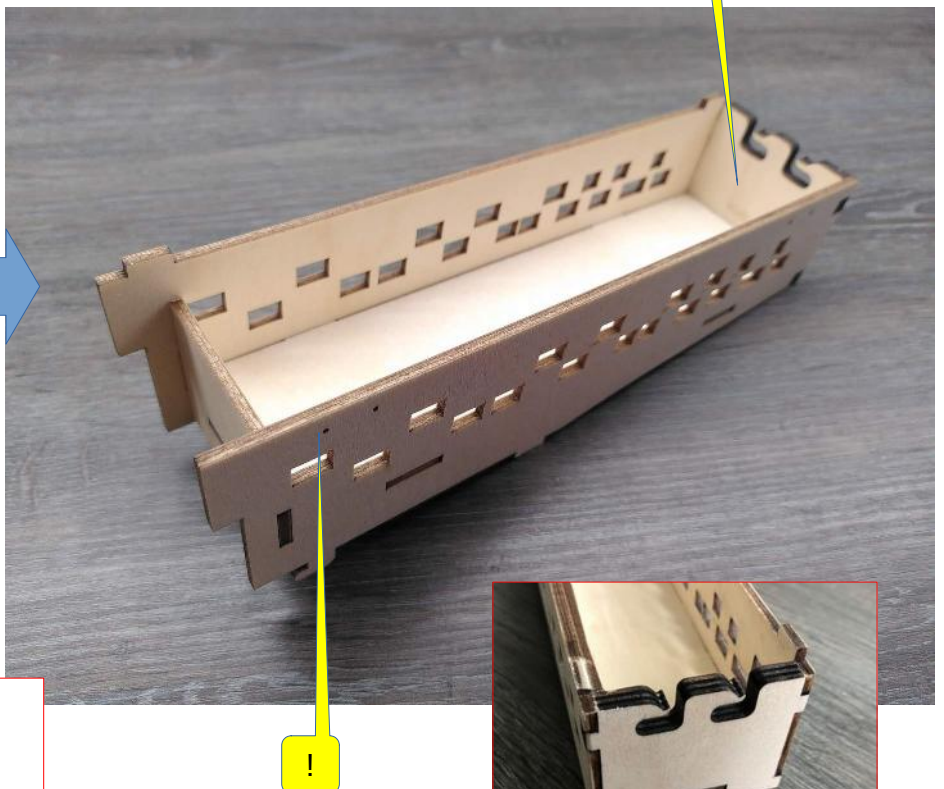

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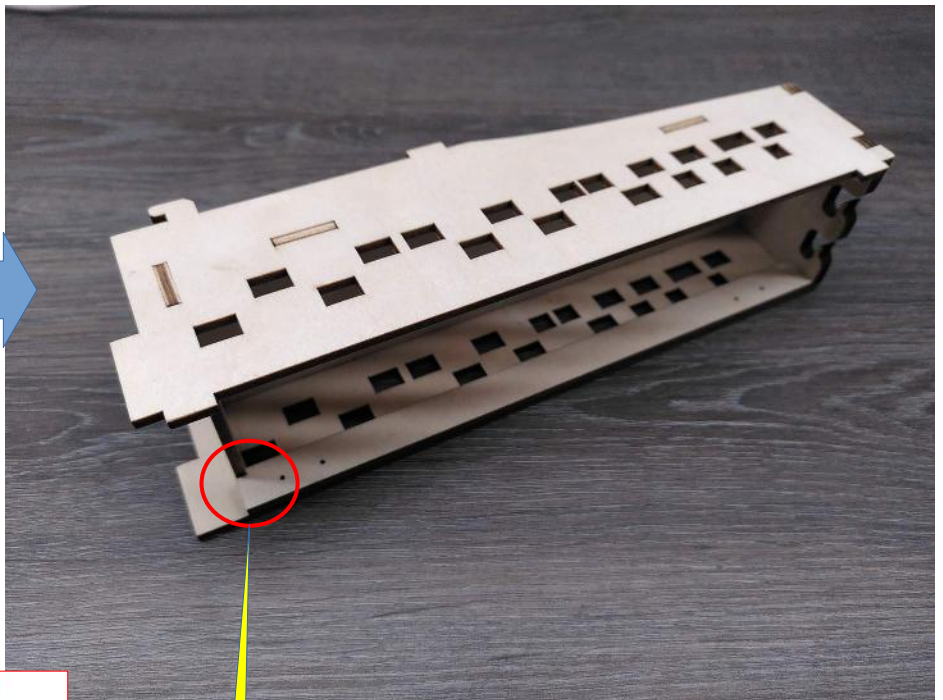

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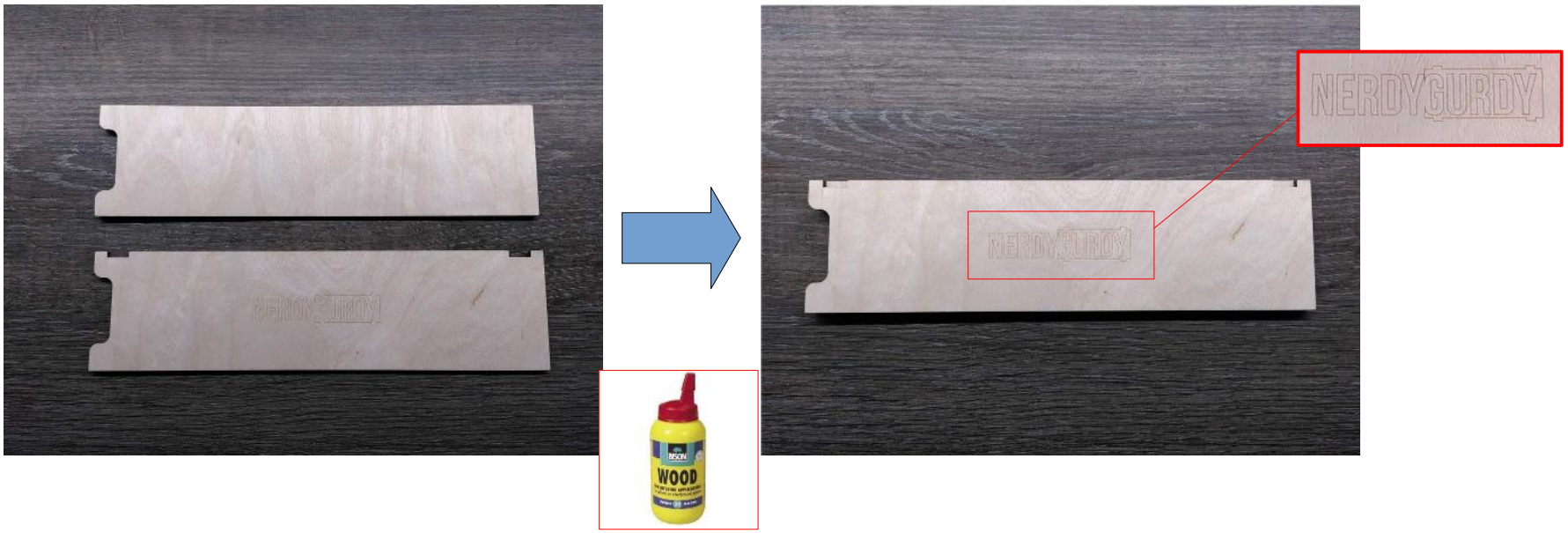
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BISON
WOOD

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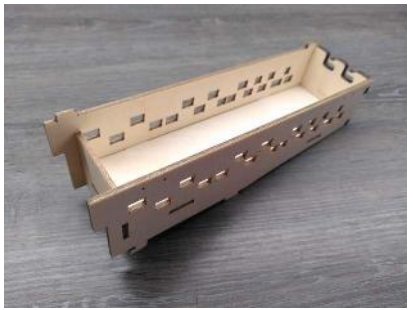
Sand and paint

This is where you can get creative and bring personality into your instrument. Below is how we often paint them: a clear coat on the keybox and body, and black for the other parts. But you can do whatever you like here of course.



No paint inside the slots for the keys!

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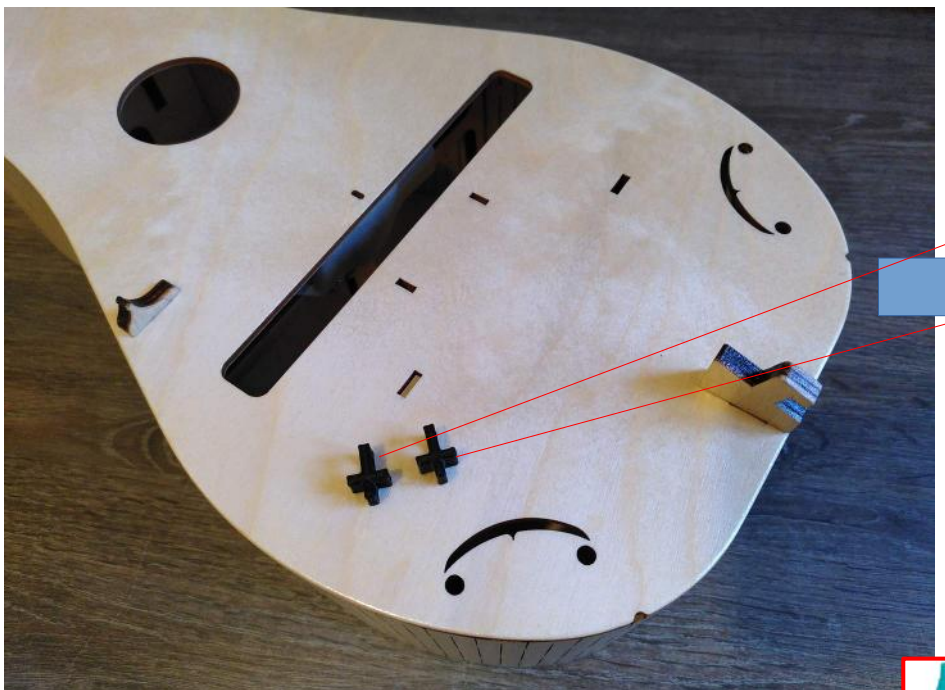

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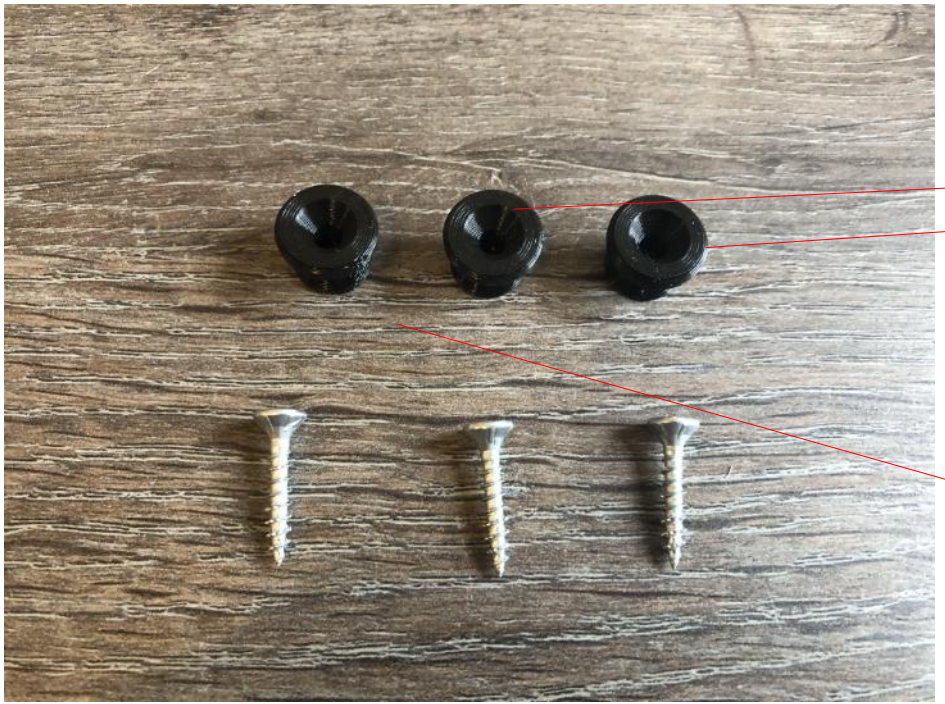

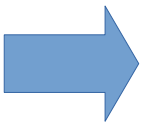

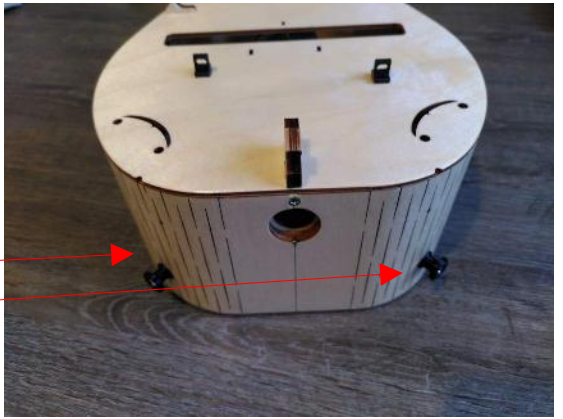

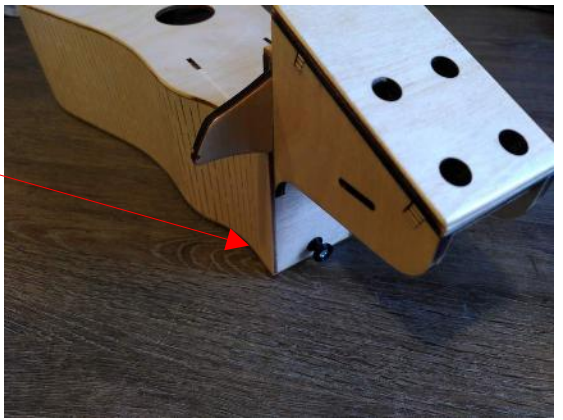

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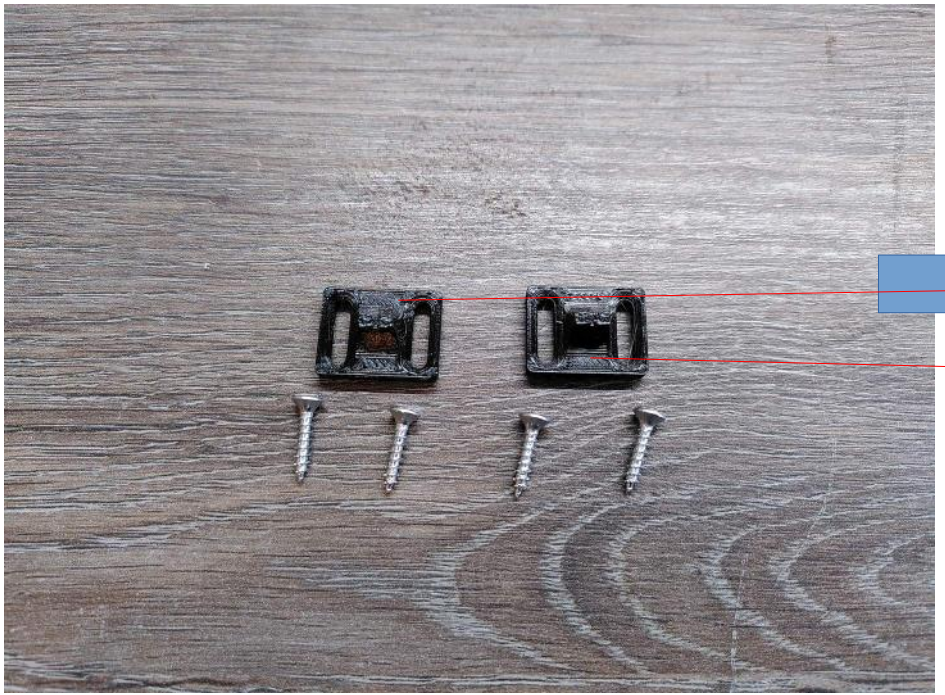

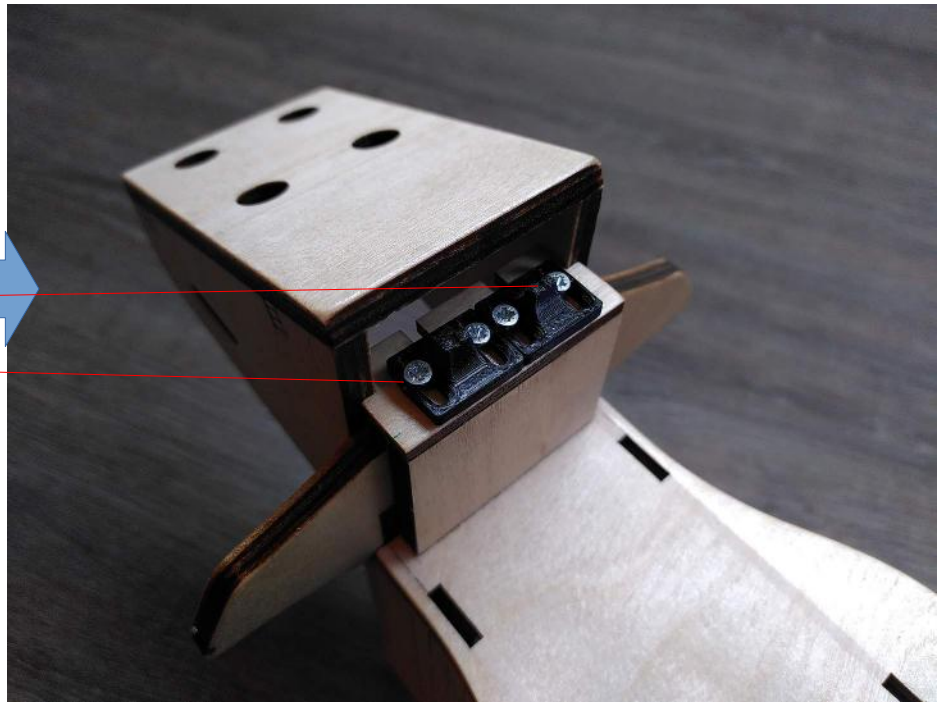

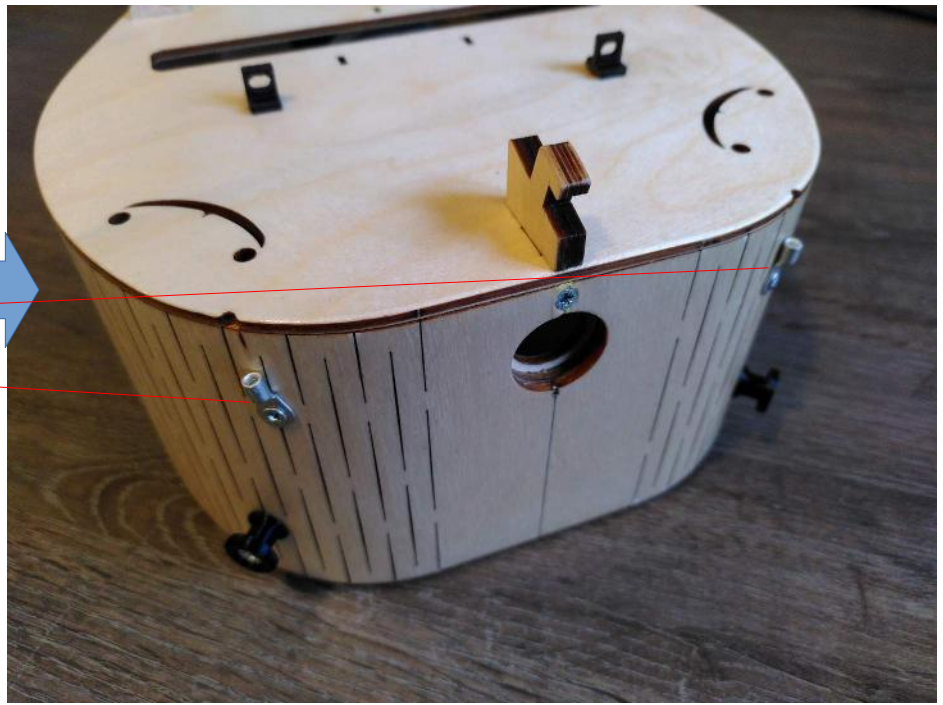

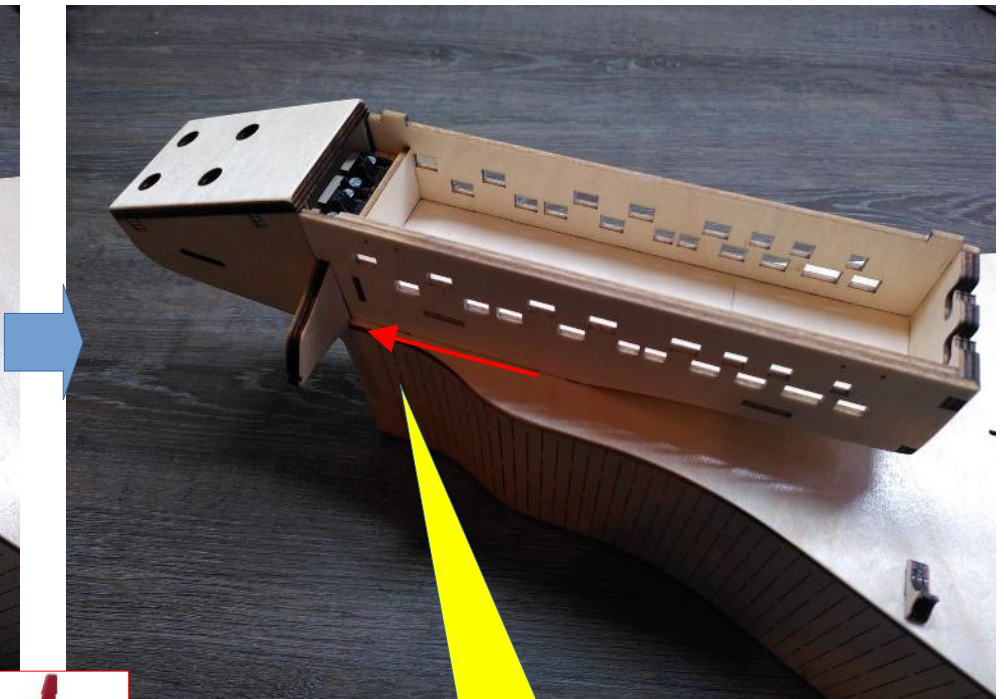

Slide keybox all the way towards the head

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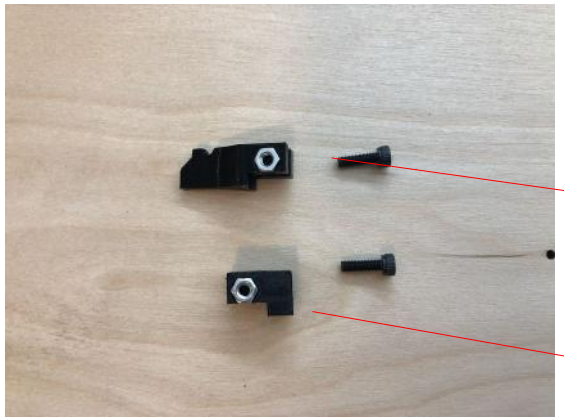
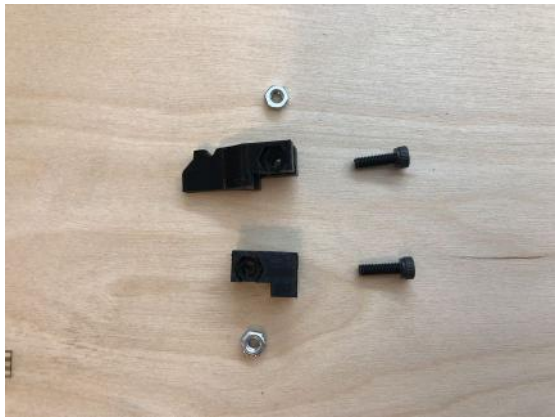
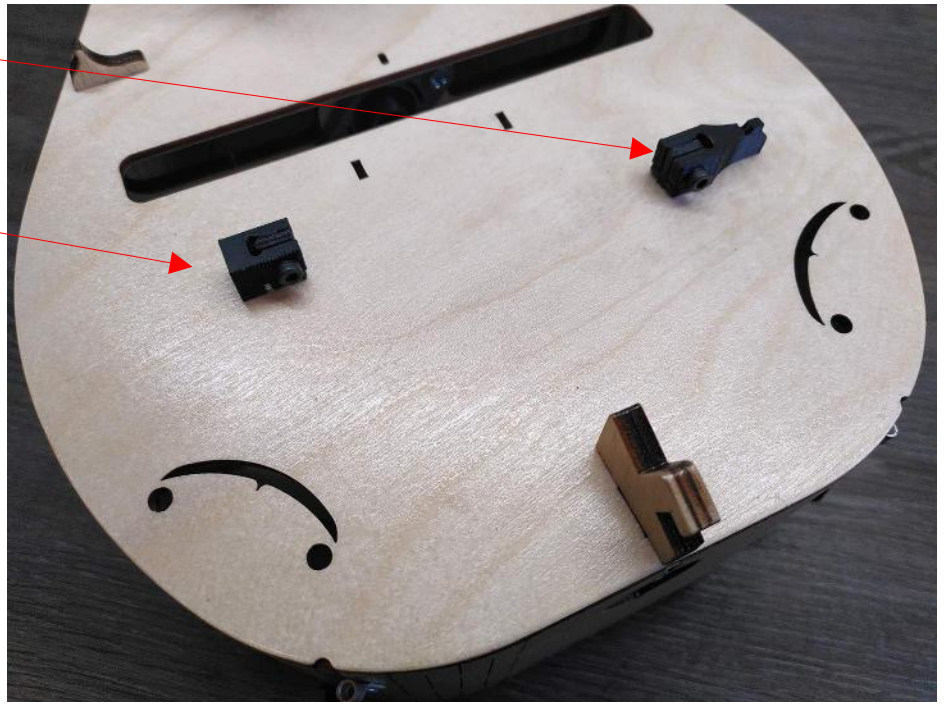
Do NOT glue







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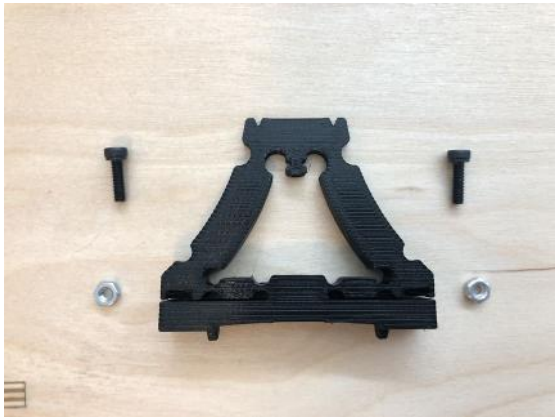

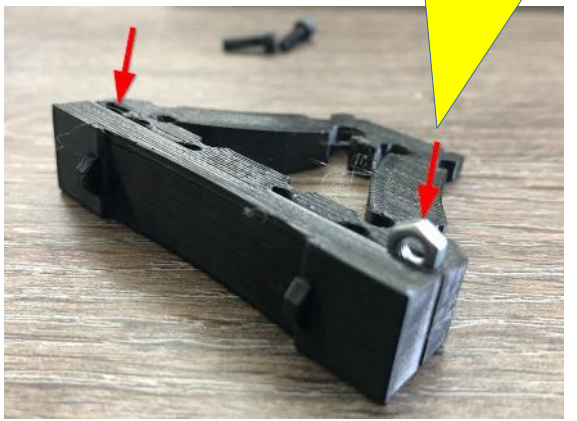

Insert the M3 nuts into these slots

Screw the bolts in from the top (only until the bolts pass through the nut on the bottom side). Later we will use these bolts to adjust the force of the strings on the wheel.

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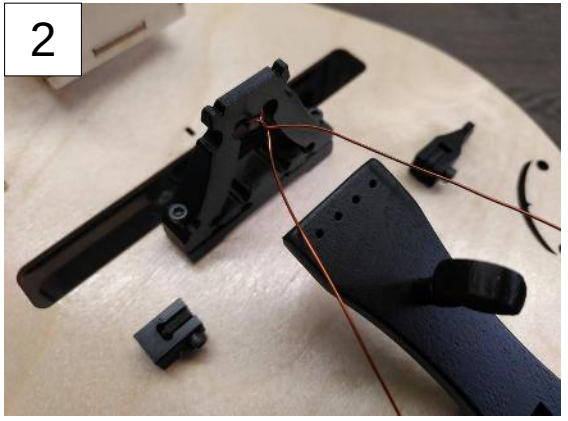
1

2



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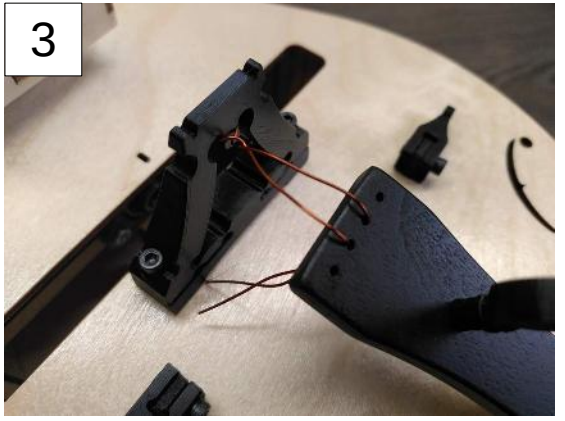

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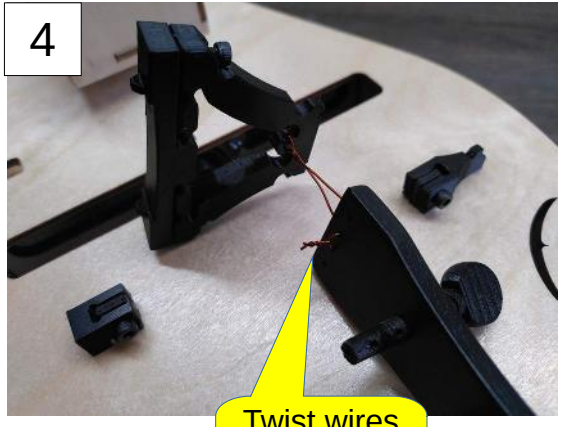
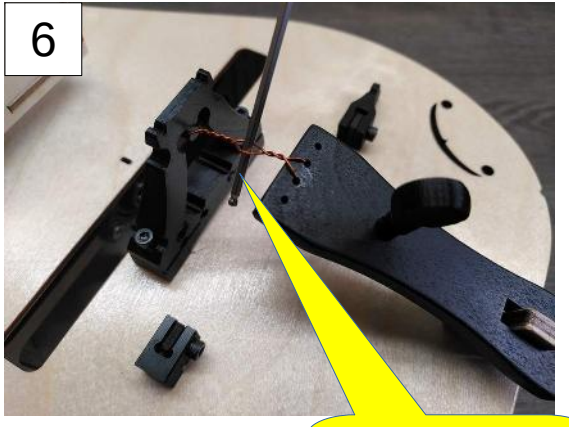


Twist wires together to fixate

5

6



Twist the wire to adjust the bridge upright

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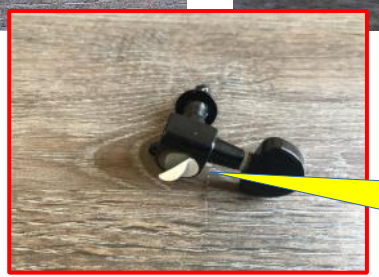
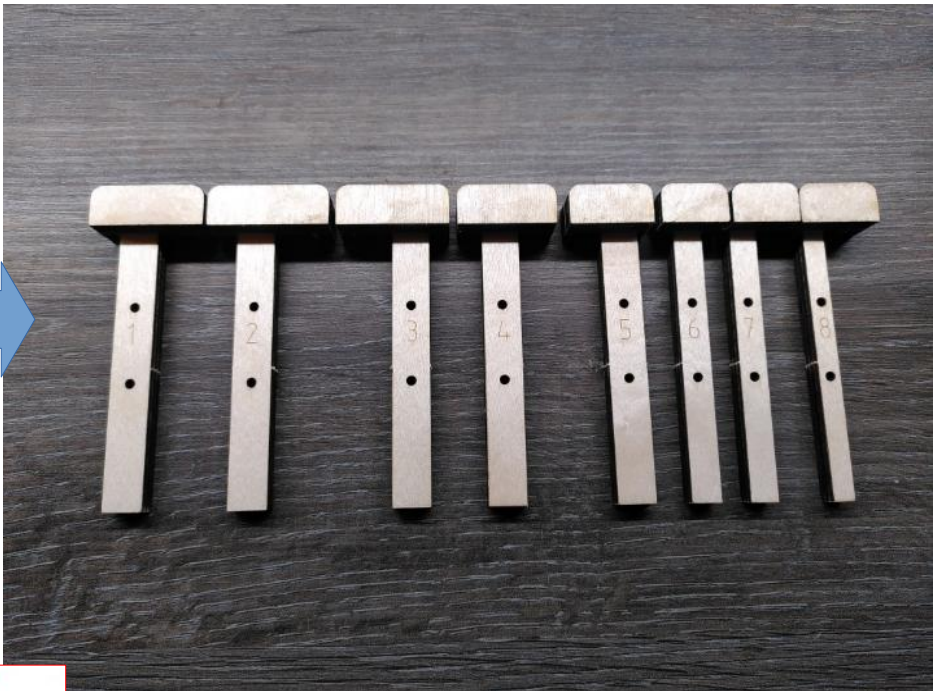
Use the included fastening tool and a 6mm hex key to tighten the tuners from the bottom



Peel of the foil

NERDYGURDY



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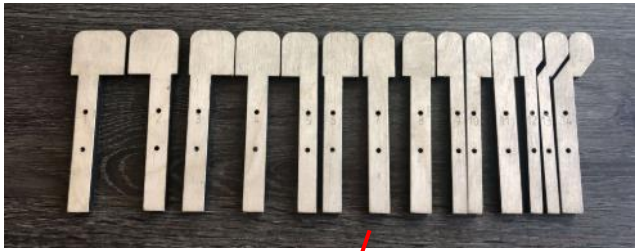
To Do

Update key picture



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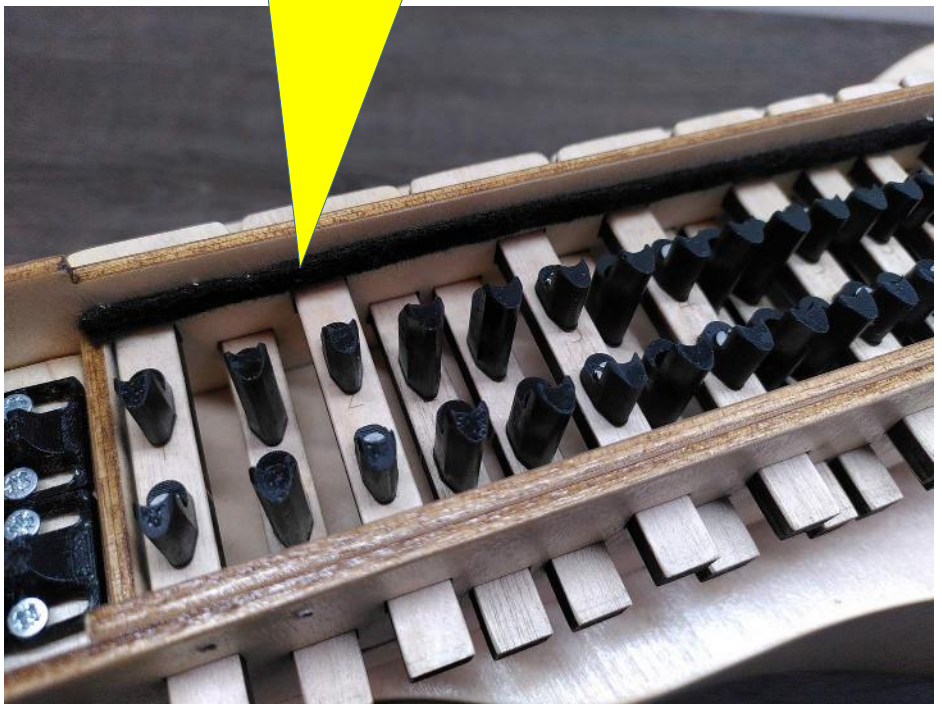
Remove the backing from the self-adhesive strip of felt

Stick the strip of felt inside the key-box, just above the keys. This reduces the sound of the keys hitting the key box



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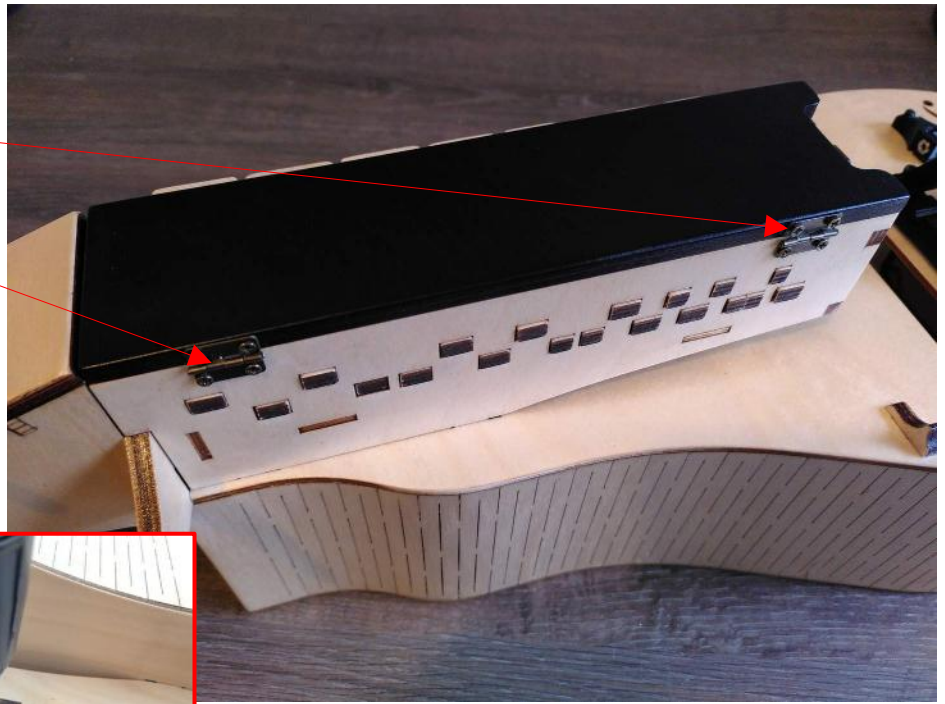
Attach the lid, with the hinges



It's best to pre-drill some 1 mm holes in the side on the lid, to reduce the risk of it splitting when you screw in the screws

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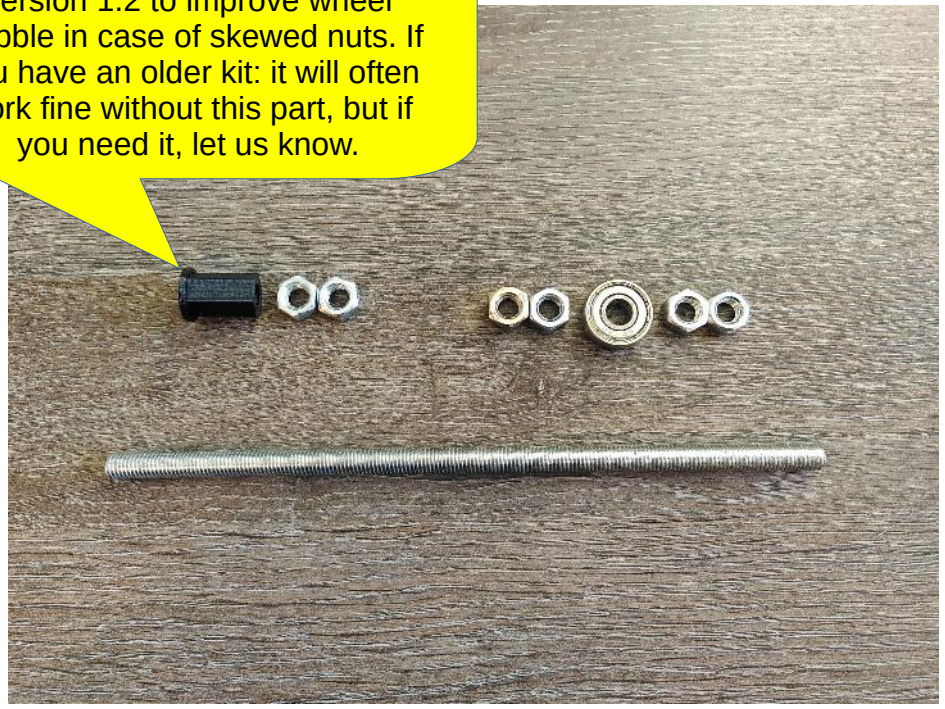
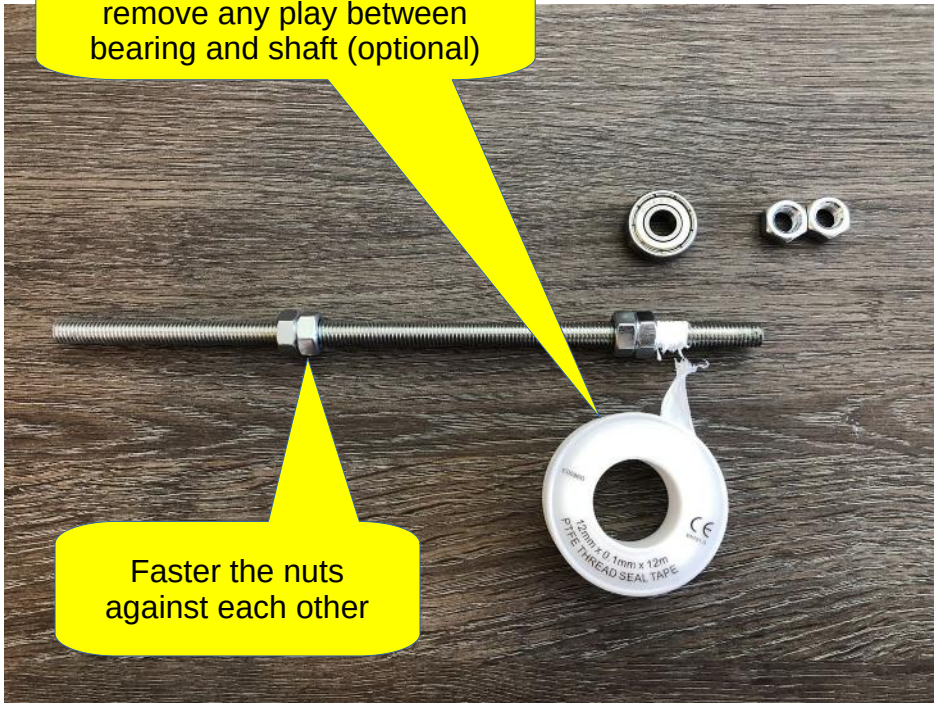
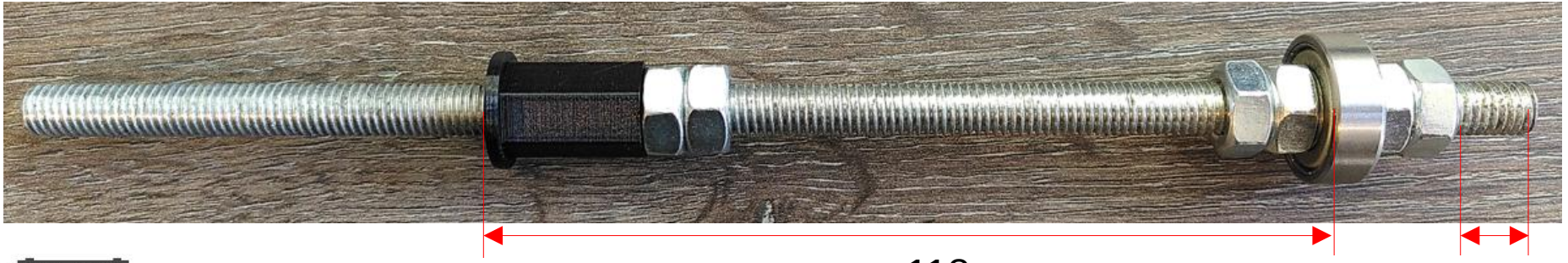
Note: shaft bush was added from version 1.2 to improve wheel wobble in case of skewed nuts. If you have an older kit: it will often work fine without this part, but if you need it, let us know.



You can use some tape to remove any play between bearing and shaft (optional)

Faster the nuts against each other





~118 mm

11 mm

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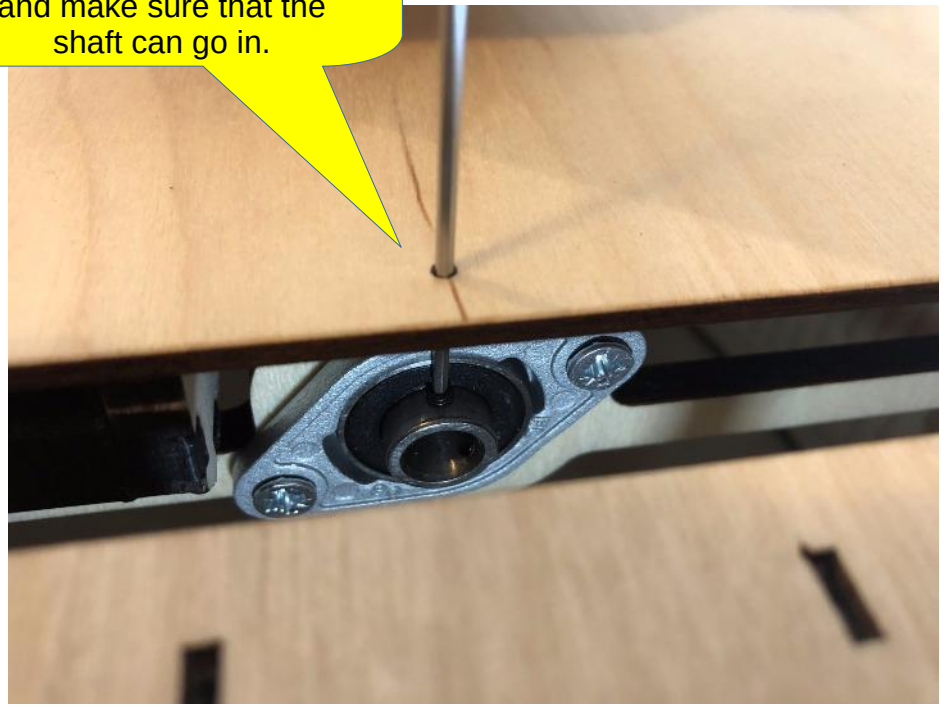
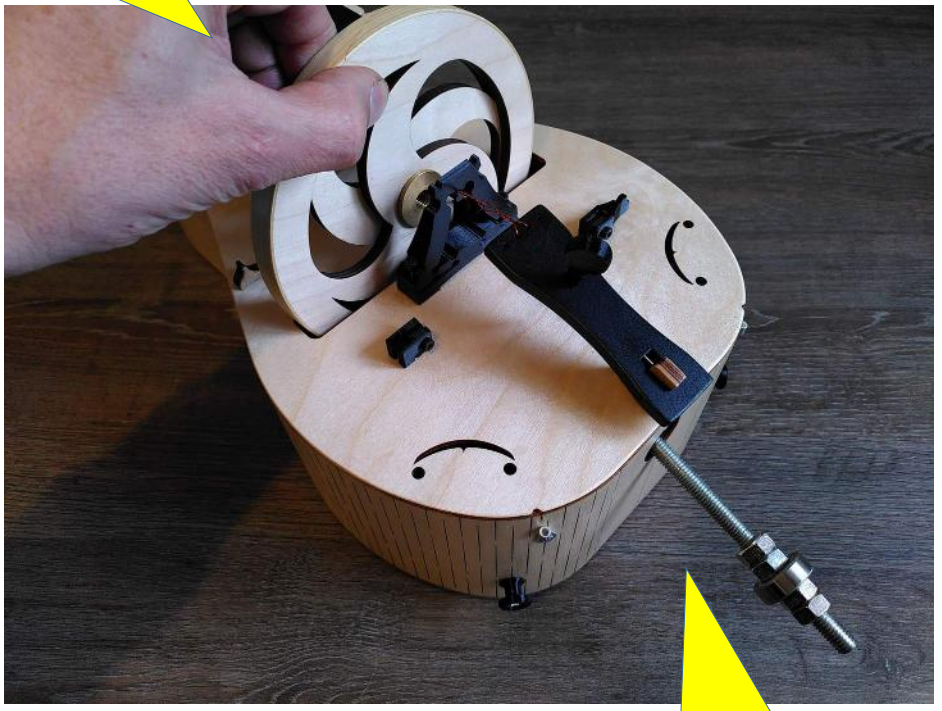
Insert hex key into one of the small set screws. Loosen the set screws a bit, and make sure that the shaft can go in.



Insert wheel from the top



Screw the shaft into the wheel (be careful not to damage the thread!)

Adjust the position of the nuts if needed

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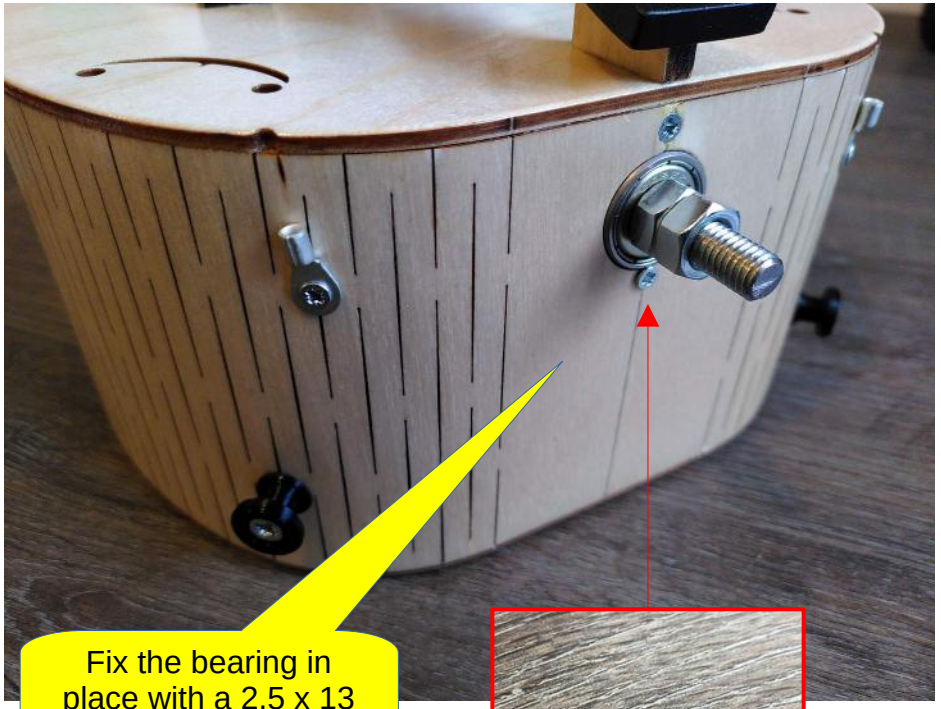
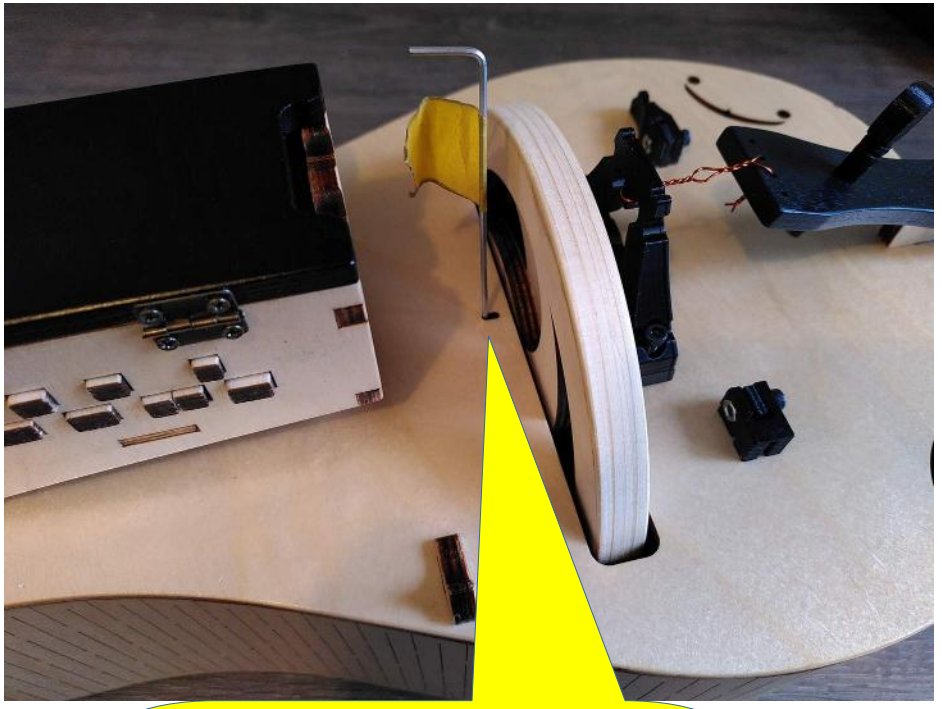
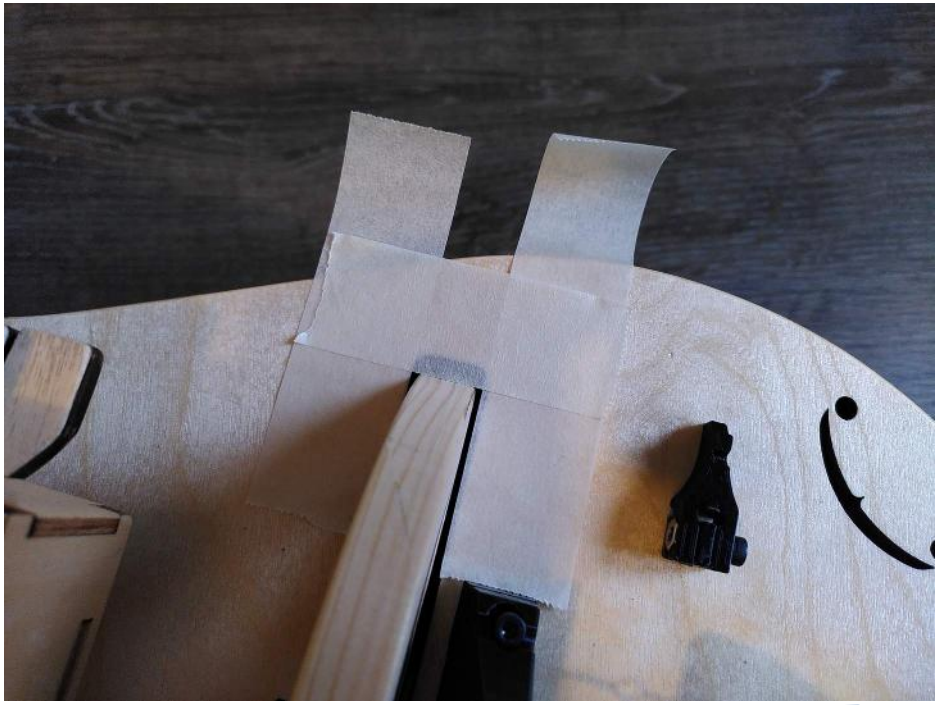


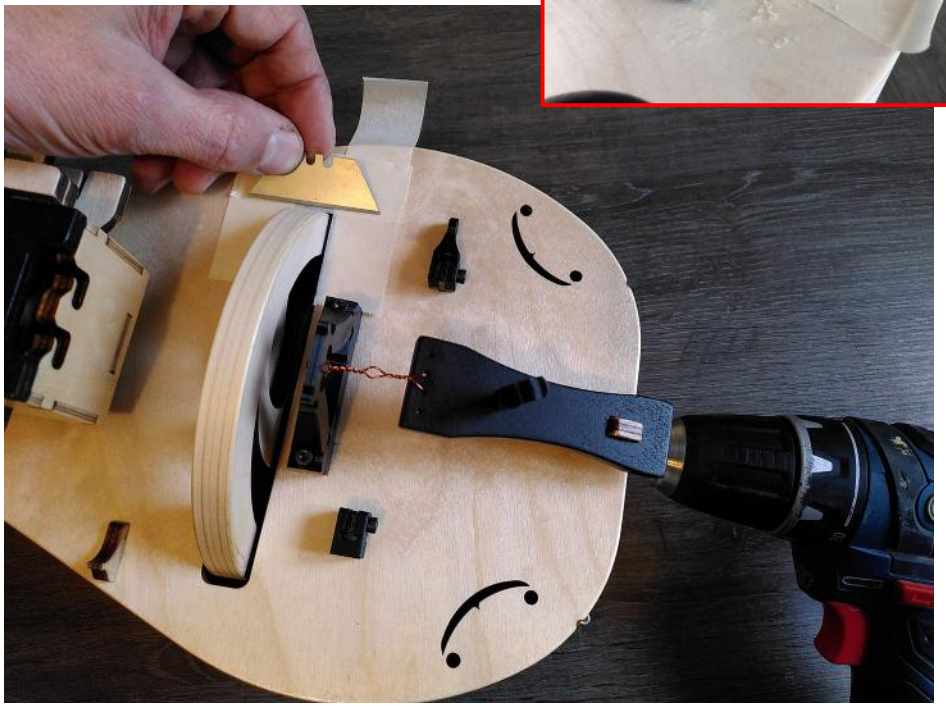
Fix the bearing in place with a 2,5 x 13 screw



Tighten the set screw to fixate the shaft. Pull the hex key out and rotate the shaft to find and fix the other set screw by touch (this is a bit tricky, but doable)

It might be necessary to ‘true’ the wheel after it has been assembled, to make it perfectly circular. You can also do this in a later stage. This is how it’s done:
1) Add some tape to the sound board to avoid damaging it.
2) Turn the wheel with a drill or just with the crank
3) Scrape the surface with a sharp chissel or utility knife blade until it is perfectly round
4) Finish the surface with a fine grain sanding paper





Note: some sideways motion (wobble) is no problem (~ 1 mm). Roundness is more important, so that the force of the string on the wheel remains constant. If the wheel has excessive wobble, it might help to reverse the nuts and/or shaft as this is the usual source.

(nyloc)
lock nut

Gently press
the knob onto
the bearings

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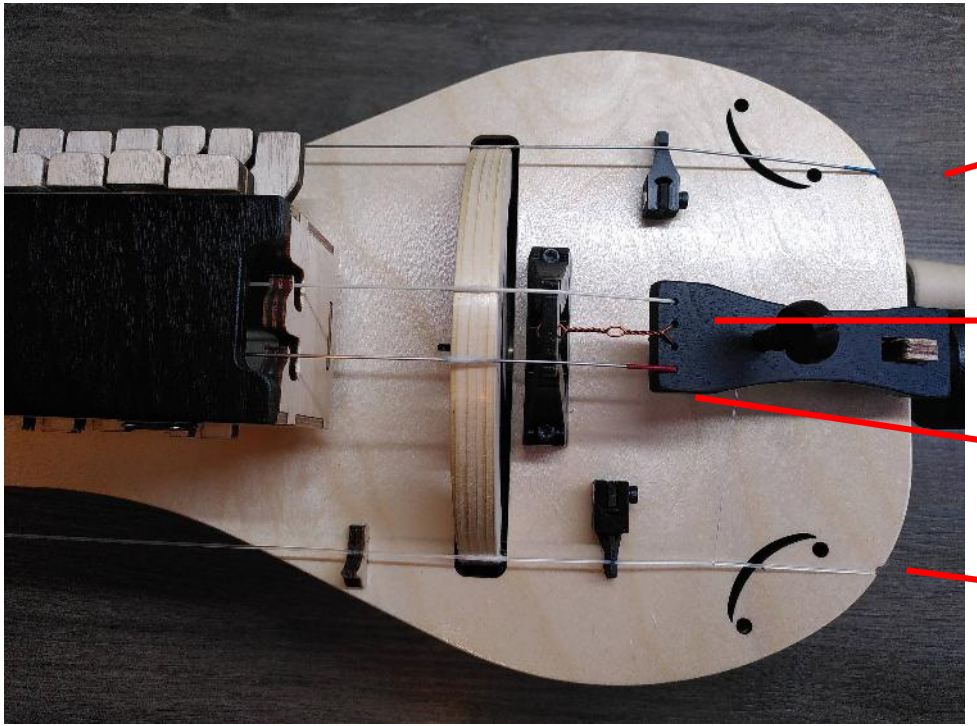
Place the buzzing bridges (dog) . They should be free to slide and vibrate.

Make an 8-knot in the trumpet strings and in the high melody string, so you can mount them.



String	tuning
Drone string viola C	C3
High melody 0.97 (synthetic) gut	G4
Low melody: ½ violin G	G3
Trumpet string 1.24 (synthetic) gut	C4 or G3

Note: this is a suggested tuning, which can be changed to your preferences

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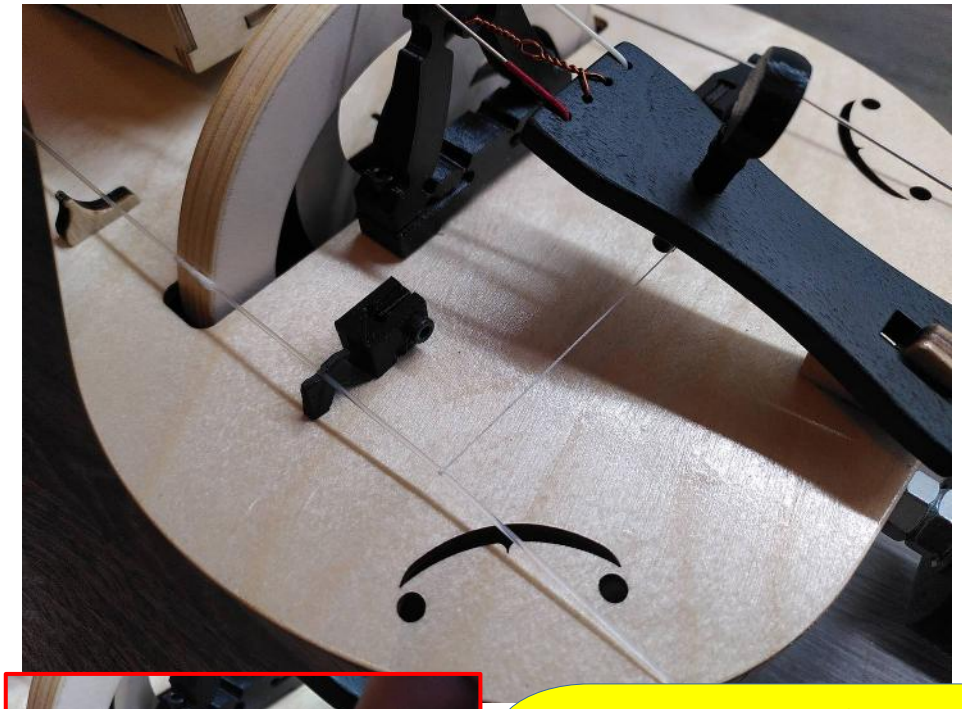

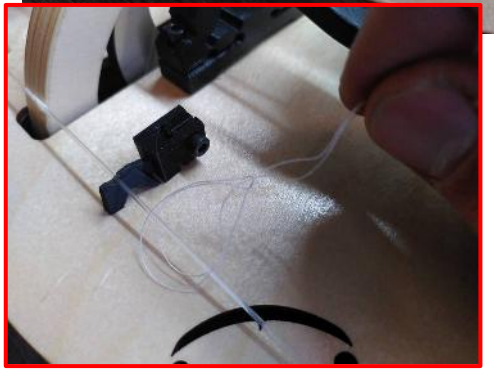

Fold the wire in half, and pass the loop under the trumpet string. Pull the double wire through the loop, to knot it around the string. Then attach the wire to the tuning peg (tirant).

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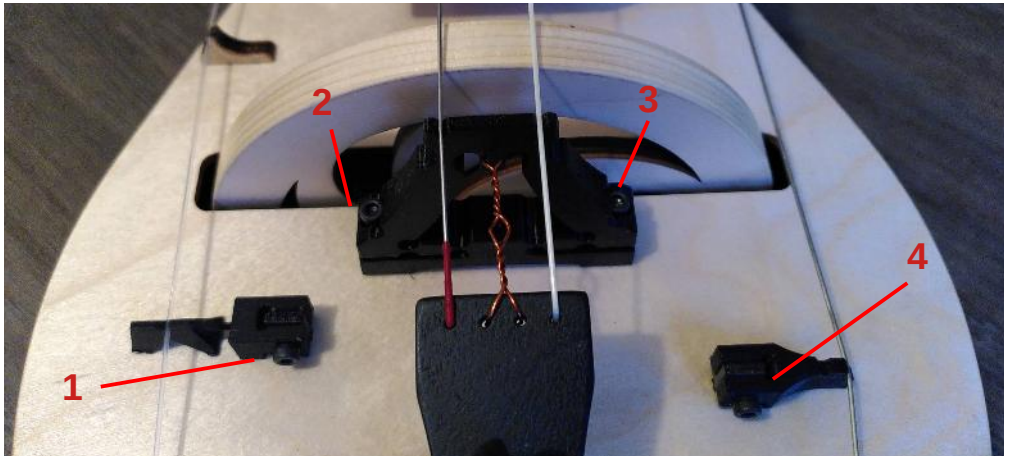
Adjusting the strings on the wheel

Adjusting a hurdy gurdy to sound nice takes practice and patience. If your instrument sounds like two cats fighting: do not despair! We'll try to take you through the steps:

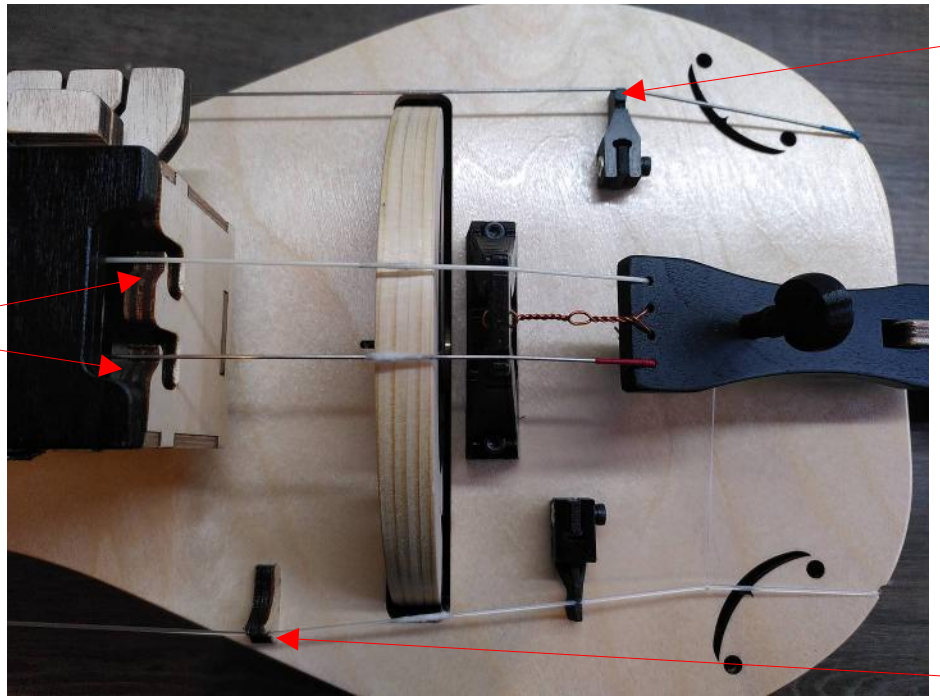
1) Apply rosin to the rim of the wheel. You can do this by holding a block of rosin against the rim and rotating the wheel, or you can use liquid rosin (YouTube will explain). Without rosin you won't get a sound. Too much rosin will give a scratchy sound. You can remove rosin by firmly rubbing the wheel with a cloth.
2) Use the 4 bolts in the picture below to adjust the pressure of the strings on the wheel. The strings should lightly touch the wheel. If pressure is too low, the sound will be thin. Too much pressure will give a scratchy sound.



3) Apply some cotton to the strings, where they touch the wheel. There a lots of tutorials online on how to do this. Main thing to note here: too much cotton on a melody string will increase the weight of the string in such a way that it becomes difficult to get the two melody strings in tune, especially in the high notes. Apply some rosin to the strings to make the cotton stick. But first you may need to roughen up the fluorcarbon strings locally with sandpaper, to make the rosin stick.

Mutes

- For novice players: it is usual to play with 1 or both melody strings, depending on the kind of sound you want to achieve. The other string is muted, by lifting it off the wheel and placing it on the ‘mute’ position. Likewise, a trumpet and/or drone string can be added on the wheel, to achieve a desired sound (usually with trumpet and drone in the same tuning, or in the same chord).



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Revisions NG Petite Linotte

V1.2.0	First release of kit