

## The static 4<sup>th</sup> axis

Working with a simple CNC mill starts with two physical challenges:

How to align and clamp your work piece.

Especially if you work with wood and even more so if that wood has an irregular shape.

If you want to mill the top of a violin, for example.

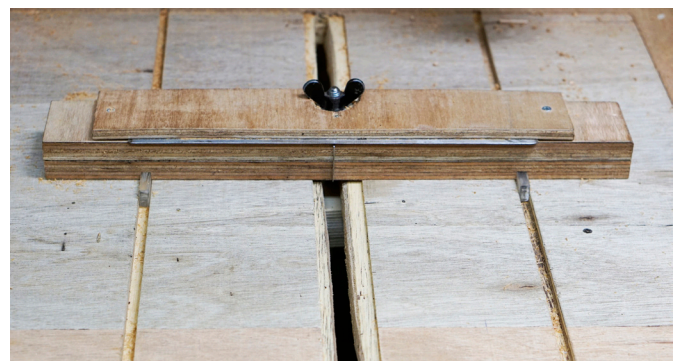
I found a solution and, after 14 violins, I would like to share my experience.



The static 4<sup>th</sup> axis is a simple concept, it is an axis but without movement.

One fixed and one movable center, like a lathe, on the X axis.

Those centers are T shaped.



I used the mill to mill a flat surface and two grooves in its bed.

An old blade from a handsaw was used to form the T shapes,

The movable center is kept in line with two pieces of Perspex.

The slit in the middle is there to fix the movable center with a piece of wood a bolt and a wing nut.

I use a band saw to saw crosses in end grain sides of my work piece +/- 8mm deep.

The T shapes fit tight in the crosses, so now my work piece is clamped and aligned.





The zero point on the mill is 25 mm in front of the fixed center.

It really does not look like much, just a first attempt, but still it works very well.

I can easily flip a work piece 180° or turn it just 90°.

I could have made a full cross instead of a T, but I chose for the most simple solution.

The clamping for wide work pieces works well because of the long horizontal part of the T.

I can work wood in all kind of odd forms or with the bark still on it, no problem.

Working with odd shapes reduces waist.

This gives me a lot of freedom.

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