



Knife Sharpener



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Summary

Sharp like Ockams razor but even easier to apply

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Clamp your knife in place, fix the wet stone on the slider and just sharpen your blade. This fixture is ready to go with only 3D printed parts and therefore needs no extra hardware. You might add a couple of M3 bolts later (or similar) for your convenience though. Should fit a lot of different wet stone sizes.

Printing:

Since some parts are intended to glide/slide on each other, printing in PLA only is highly recommended. ABS or PETG are great materials but somewhat known to stick on them self and not gliding very smooth, so better avoid them here. All parts are desingned with tolerances from

0.25mm to 0.5mm, so everything should work on a moderately tuned printer. If you are not sure about your printers accuracy, you might cut some parts in your slicer, in order to have some test prints first. All parts should be printed in the given orientation. No supports needed.

-Note-

The threads may be hard on your printers capability. Make sure to have your XY-Compensation and your extrusion multiplier in check. If some of the threaded parts seem to bind, dont worry and work them free by hand. They will run smoothly eventually. If you notice some of the threads curling slightly upwards during printing, you might have to give them a little sanding with sandpaper. It is highly recommended to have a test print though. Use Base_KnifeBlock_Nut and Base_HightAdjusterBolt for this. If you are using a silk(ish) filament, you might have to compensate for its swelling

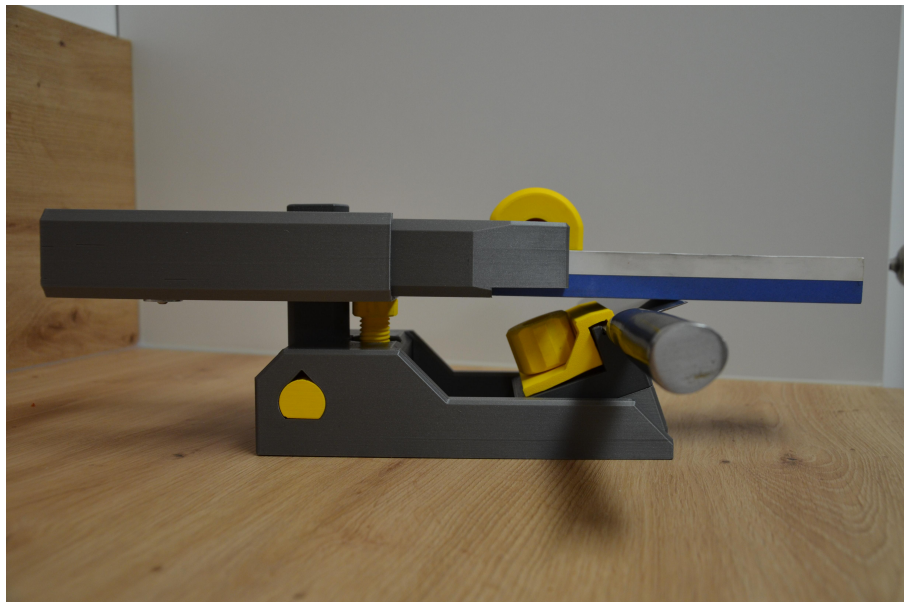
Assembly:

Assemble the base first and the slider assembly second. The position of all parts can be taken from the assembled .3mf version. The KnifeBlock and the AngleBlock are designed to be swapped easily but if you want to fix them in place permanently, you can bolt them down with a M3 bolt (or similar). The WetStoneMount in the GuideRail can be equipped with M3 bolts on the bottom (see the grooves there). This is to ensure the WetStoneMount does not fall out if it is slid out too far. This rarely happens and is not necessary though. If you dont want to fix the knife in place with the nut all the time, you might add some strong magnets in the KnifeBlock. I'd rather stick to the clamp mechanism though, because otherwise the knives are being magnetized and this might make other cutlery stick annoyingly to the knife.

If you have a knife with a small blade, like with vegetable knives and you want to use a sharp angle $<15^\circ$, you might need the magnets anyway because the clearance between wetstone and KnifeClamp is too small in this case.

How to use:

- 1) Put your wet stone on the WetStoneMount and clamp it down. Make sure it sits in one line to the slider and is not angled down or upwards.
- 2) Put your knife on the KnifeBlock and bolt it down too
- 3) Adjust the HightAdjusterBolt in the Base in such a way that the slider is parallel to the base, with the wet stone resting on the blade. (See picture below)



4) Slide the wetstone in a sweeping motion over the blade. Lift the SliderAssembly and repeat. (See .gif below)



Notes:

- 1) Do not apply pressure on the wet stone. Its weight is enough to sharpen your blade.
- 2) Due to flexibility in the used material and parts tolerances, the angle actually put on the blade, tends to be 1° - 1.5° “sharper” than intended. So if a 20° Wedge is used, you might get 19° - 18.5° in the end. Applying pressure will exacerbate this even further.
- 3) Count how many strokes you applied on one side of the blade. Apply the same amount on the other side in order to have the edge exactly in the middle and even.
- 4) Assuming you use a wet stone, make sure the knife and stone don't run dry

Nice to know:

| Type of knife | Commonly used angle |
|--------------------------------|-----------------------------|
| Pocket and Bushcrafting knives | 25° - 20° |
| Cleaver | 25° - 20° |

| | |
|--|---------|
| Allround kitchen knives | 20°-15° |
| High end kitchen knives | 15°-12° |
| Unreasonably sharp even more high end knives (The ones you and me can't afford anyway) | 12°-10° |


The “sharper” the angle the faster your blade weares down again and you have to resharpen more often. The best way to go seems some angle around 20°-16°

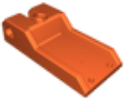
Also some kinds of metal (mostly from the cheaper variety) just cant be reasonably be brought to an edge below 15°

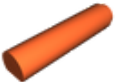
All these facts are horrably simplified and you might do your own reseach first. They are a good point to get startet though. Remember its no rocket science in the end. Simpletons like you and me most likely wont notice the difference between 20° and 15°, for cutting open frozen food wrappig anyway. So dont tinker with the whole thing to much and just use the sharpener as the tool it is intended to be.

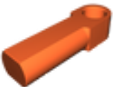
...Unless you want to tinker, then go crazy with it of course

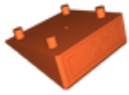
Model files


Knife Sharpener
13 files


base.stl


base_pivotpin.stl


base_pivotjoint.stl



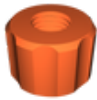
base_angleblock_20.stl



base_knifeblock.stl



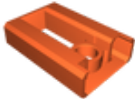
base_knifeblock_clamp.stl



base_knifeblock_nut.stl



base_hightadjusterbolt.stl



slider_guiderail.stl



slider_wetstonemount.stl



slider_wetstonemount_clamp.stl



slider_wetstonemount_nut.stl

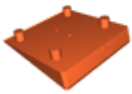


knivesharpener_assembly.3mf



All the Angles

16 files



base_angleblock_10.stl



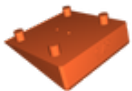
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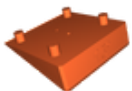
base_angleblock_12.stl



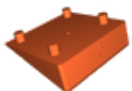
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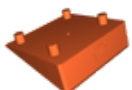
base_angleblock_14.stl



base_angleblock_15.stl



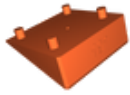
base_angleblock_16.stl



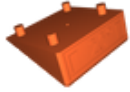
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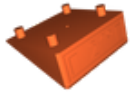
base_angleblock_18.stl



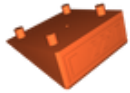
base_angleblock_19.stl



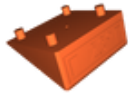
base_angleblock_20.stl



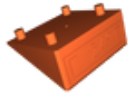
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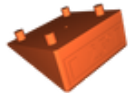
base_angleblock_22.stl



base_angleblock_23.stl



base_angleblock_24.stl



base_angleblock_25.stl

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