



File Handle

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updated 12. 4. 2022 | published 11. 7. 2021

Summary

After using metal files for years with just their tangs for handles, I decided it was time to create & print a set...



2.50 hrs



2 pcs



0.20 mm



0.40 mm



PLA



31 g



Prusa
MK3/S/S+

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After using metal files for years with just their tangs for handles, I decided it was time to create & print a set with my new Prusa i3 MK3.

Naturally, I chose to use wood filament for the prints...

:-)

A few alternative uses:

You can always colour-code your toolset with different coloured handles - or even use it as a cord-pull for a window blind or bathroom lightswitch!

You can also improvise and use it as a make-shift allen/ hex-key handle, by placing the short end of the hex-key into the hole (for the hand file's tang in the front end of handle) and hold it there with your thumb, to get a finer adjustment or a little more leverage...

(See <https://www.thingiverse.com/thing:3604772> for a better solution than the above method!)

Depending on the rod's thickness, even as a dowsing-rod handle!

Print Settings

Printer Brand:

Prusa

Printer:

i3 MK3

Rafts:

No

Supports:

No

Resolution:

0.2mm Quality

Infill:

At least 25% for strength as a tool handle

Filament:

Generic PLA Wood

Notes:

Higher print density helps increase the handle's strength and depending on the type or pattern used, this can add still more to its overall structural integrity. If the 3mm inserts prove difficult to print successfully, they can be replaced with 1x 16mm and 2x 14mm of M3 screw thread, stud or round rod, as is my own preference.

The inserts are best printed in halves and mated together later, each being stronger printed lengthways, as the strength needs to be at right angles to the direction of shearing force.

They will however require some reworking once mated together with glue or acetone. (The PLA inserts are fragile if printed vertically as the weakness lies in the layers being in the same plane as the handle's flat mid-plane section - they just shear off between layers.) So at this size, I tend to opt for the stronger pre-made screw thread, stud or even plastic rod.

The simplest readily accessible method is to screw an M3 machine screw of the relevant length & size into one half and cut the head off. You then have a ready made handle(!) to hold the insert while the tip is rounded off & readied for insertion into its corresponding opposite hole.

The 5mm insert prints vertically much more successfully, but is included on the buildplate all the same, as laying flat in two halves. Substituting PLA with metal inserts is however preferable to having the PLA break off when inserting them into each half of the handle, making it very tricky to then complete the handle.

(Printing the 3mm inserts as half-rounds can become very fiddly and messy if using superglue, because of their size and the safety aspect of fumes or sticking one's fingers together rather than the insert halves!.)

I therefore prefer the M3 stud method as the holes are actually 3.1mm wide, just enough to insert the studs smoothly. It's quicker, cleaner and less hazardous.

Post-Printing

Assembly.

When locating the handle halves together, all the inserts are fitted into only one of the two halves.

Begin with the middle M3 insert (the longer 16mm) nearest the tang, as this will help align the two halves more easily before inserting the 2x 14mm lengths for the other two on either side.

The 5mm insert fits into the opposite half at the same time as the two 14mm M3 inserts. If all the inserts are of the same length it is very tricky to get all the inserts in place at once and depending on the type of inserts used, their holes may need a little widening.

Once the two halves of the handle can be easily slid smoothly and neatly together with the inserts in place, make sure they don't jam or stick without the glue yet applied. Once the superglue is added the two halves must be quickly pressed together, so you don't want them getting stuck halfway towards each other - the inserts are only there to guide the two halves together so the action must be smooth.

Preparation here is key for a successful finish.

With the two halves attached on each side of the inserts and ready to be closed together, use a line of fluid superglue just inside along of one handle's edge and capillary action will do the rest when they're pressed tightly together. I use foldback clips to keep the two halves in place until the glue is set.

You can sand or file down very lightly any remnants of the glue in the gap to make a smooth finish. With the layering of a 3D print at about 0.2mm resolution, the final result does actually take on the grainy effect of wood.

How I Designed This

Measure up, Draw the profile, revolve 180Deg and extrude small elements.

I measured the length and relevant width points of an existing old file handle and proceeded to draw the profile including the long tapered hole for the tang, all of which was then revolved 180Deg to produce one half of the handle.

To make it easy to assemble, there had to be fixing points in each half to locate the two together correctly, hence the inserts, the holes for which which are 0.1mm larger than the inserts themselves. It was then a simple matter to mirror the first half and make ready to print.

The ferrule was drawn end-on to the length of the handle's plane, i.e. as though looking down the length of the file towards the handle.

Offset the size of the diameter of wood under the ferrule and add about 1.25mm or so for the ferrule's thickness, extruded that profile and thus the ferrule.

End result, something which I can handle more easily and hopefully, you too will find this one worth keeping on file...! :-)

Category: Hand Tools

Model files



file_handle_build_plate_02mm_quality_pla_mk3.stl



file_handle_only_-_build_plate_02mm_pla_mk3.stl



file_handle_inserts_02mm_pla_mk3.stl



file_handle_ferrule_02mm_pla_mk3.stl

Print files



file_handle_build_plate.gcode

🌀 PLA 📏 0.40 mm ⚖️ 0.20 mm ⌚ 2.50 hrs ⚖️ 31 g 🖨️ Prusa MK3/S/S+



file_handle_build_plate_02mm_quality.gcode

🌀 PLA 📏 0.40 mm ⚖️ 0.20 mm ⌚ 3.18 hrs ⚖️ 29 g 🖨️ Prusa MK3/S/S+

[Find source .stl files on Thingiverse.com](#)

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