



Hex Key Handle - Long Axis Mount & Rotation

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VIEW IN BROWSER

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

Summary

This design is for a tool to hold and use a 3mm Allen/ hex-profile key for use on the Prusa i3.



5.28 hrs



1 pcs



0.20 mm



0.40 mm



PLA



46 g



Prusa
MK3/S/S+

[Hobby & Makers](#) > [Tools](#)

Tags: [hexkey](#) [hexkeyholder](#) [hexkeyhandle](#)

This design is for a tool to hold and use an M3/ 3mm Allen / hex-profile key.

The tool end of the handle is interchangeable by use of core-shafts with the same sizing as the previously uploaded Hex Tool Handles - <https://www.thingiverse.com/thing:3546066>.

If you already have the previously-printed handle from the above model, you may not intend using the handle of this particular thing if you want to save on printing / filament etc.

The tricky issue with this particular key-holding method is that while the design process is relatively easy, it's the rotational positioning of the toolholder end of the print on the heatbed which may present problems!

Due to the angles of 90Degrees either way, there will need to be supports somewhere along the line to avoid the overhangs being printed into thin air and thus fail the print.

This design therefore also incorporates a method to reduce wastage where a failed print would be costly - by reducing the size of the actual toolholding section. (This also enables producing different iterations of the same design intent for anchoring a hex key along the same longer rotational axis, to the same handle.)

So, whichever way one slices it...

Print Settings

Rafts:

No

Supports:

Yes

Resolution:

0.15mm Quality

Infill:

80% for strength - small sized tool holder.

Filament: Generic PLA Colour to suit.

Notes:

At least 80% or more density due to the size of the holder and the fact that there will be stresses placed on where the hex key will be exerting force.

There may be a need for the tool end to be printed horizontally, with supports and rotated with the open edges at 45Degrees to the vertical/ Z axis and does print somewhat quicker.

Two .STL orientations of the same tool-end are included. However, if using the 'supports everywhere' option in Slic3rPE, both work equally well in either vertical or horizontal axis orientation.

Note then that the lines of layer printing are 90Deg different between the two options - the horizontal print has its layer lines running parallel to the

long axis, while the other has its layers at 90Deg to the same axis - this can affect strength depending on how it is to be used.
(Whatever works best for you I guess!)

Post-Printing

Attention to detail!

As this particular model is intended to hold an allen key, there is the need for it to be as strong as possible, hence the higher density tool-end for strength.

This means making sure the finishing of the print is clean and neat - testing the fit and shaving off small amounts of material from the print to make sure the key fits snugly.

Removal of the support material is straightforward, the horizontally printed version being slightly quicker to print and the larger rear hexagonal hole actually has most of the support material in it.

A small amount of filing may be necessary to remove the support and brim traces from the underside if printed horizontally and a pair of narrow/ thin gripping snipe nosed pliers will thus be needed to extract these supports from the print.

There is now also a third option for the tool-holder section which uses an M3 screw and nut to secure the key against moving around while in the holder.

Nice clean lines in the body of the handle - which is also interchangeable.

With "necessity being the mother of invention"...

Having produced one method to provide a handle for a hex key where it inserts for use at right angles to its handle, there needed to be an alternative way to secure a hex key into a handle along the same axis as its intended rotation, rather than at right angles to that rotation.

So, after a prompt from TarcisioB (cheers dude!), I thought it would be an interesting challenge to come up with something which is eminently printable and more useful. Clearly this design would be better executed in solid metal on a milling machine, but not everyone has one of those (or understands how to use it well!) and not all of us are too skilled with a Dremel and arbour bit either.

The trick is to stop the bit from falling out once it is in position for use. Securing it so that it doesn't slip while in use, is therefore also just as important.

The resulting design means that although it can still rotate when attaching the hex key, it is possible to fix it so that it is secured in place for being used - hence the 4 stage method of slide in, rotate 90Degrees to the right, slide in again and finally secure it firmly with an M3 screw & nut, although this third iteration won't be quite as quickly useable straight out of the box.

What many folks will probably do though is to just leave the thing assembled with the screw & nut in the front end and interchange the handle when needed.

The 'proof of the pudding' as they say however... well let's just see how things progress.

So far so good with the added M3 nut & bolt, but there is a design flaw - securing it in both axes to stop it moving around.

There is a small amount of wiggle/play in both axes of about 2-3mm at the tip. (The key isn't going anywhere though.)

To further secure the key, you can wrap a thin layer of paper or tape around the key where it sits under the screw nearest the open end of the holder, only not so thick a layer that you can't get the screw over & past the key to fasten the nut!

For an alternative fixing method, instead of using M3 screws & nuts, it may be possible to use split pins, but care will be needed not to scratch yourself on the pins' ends. This may or may not work, depending on the thickness of the split pins used.

The hex-core diameter is about 13mm in diameter and the tool holder's outside diameter is about 20mm.

The hex-core inner diameter is 6.5mm, which fits well for the long shank of the box spanner (<https://www.thingiverse.com/thing:3546066>) used for the nozzle on the original Prusa i3 MK3 printer.

As a finished item, it can be attached to another similarly-cored handle if required.

Category: Hand Tools

Model files



3mm_hex_key_handle_-_long_axis_mount_with_support.stl



3mm_hex_key_handle_-_long_axis_mount_-_vertical.stl



3mm_hex_key_handle_-_rear_core_shaft.stl



3mm_hex_key_handle_-_front_core_shaft.stl



3mm_hex_key_handle_-_long_axis_mount_-_vertical_.stl



3mm_allen_key_handle_-_long_axis_mount.stl



3mm_hex_key_handle_-_end_section.stl



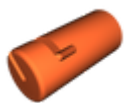
3mm_hex_key_handle_-_long_axis_mount_2x_m3_holes.stl



3mm_hex_key_handle_-_long_axis_mount_-_vertical_.stl



3mm_hex_key_handle_-_mid_section.stl



3mm_hex_key_handle_-_long_axis_mount_-_45deg_rota.stl

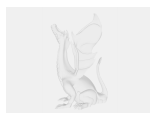
Print files



3mm-hex-key-handle-long-axis-mount-vertical-scr.gcode

PLA 0.40 mm 0.20 mm 5.28 hrs 46 g Prusa MK3/S/S+

Other files



sources.txt

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

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