Prusa MK3S Improved 45 Degree Fan Shroud

IPIND3D

VIEW IN BROWSER

updated 4. 8. 2023 | published 4. 8. 2023

Summary

Based on the original Thing from K_Lab - thanks for the source Fusion 360 files:...

3D Printers > 3D Printers - Upgrades

Tags: mk3s fan fanduct duct vent shroud fanshroud intake

Based on the original Thing from K_Lab - thanks for the source Fusion 360 files:

https://www.thingiverse.com/thing:3533859

and the remix from Theo Tinjum:

https://www.prusaprinters.org/prints/34393-prusa-mk3s-low-noise-fan-shroud-45deg-angle

I printed the original shroud in PETG due to the heat in the area - I don't think PLA would be suitable.

I always found the bolt holes to be way too big to allow for proper alignment of the shroud. Any tension on the bolt heads would just tear them out or stretch them, only making the issue worse.

I worked around that by using washers.

After about 5 weeks, the shroud started sagging and as the weeks went on, during some infill operations, the shroud would resonate like a reed valve and was very loud.

I loved the shroud, but could not live with the noise and the sag would also be affecting the efficiency of the air flow.

After looking around for other designs, I found that K_Lab had since uploaded the Fusion 360 files. This allowed me to add a bit more thickness to the base to stiffen it and also improve some minor geometry issues which will improve the air flow. I also reduced the bolts holes from 4.5mm down to 3.2mm so that they were the correct size for the M3 bolts used to attach the shroud and part cooling fan.

The extra thickness and reduced bolt hole sized eliminated the need for washers and correctly aligned the shroud with the fan intake. The base is now significantly stiffer with a negligible increase in weight.

You will need to use M3x25 bolts (you might have some in your spares bag) due to the extra thickness of the base.

As you will see in the photos, the shroud now has a nice close tolerance fit to the fan.

Thank-you to both K_Lab for the original design Theo for the 45 degree angle remix. :)

24/09/2020: Uploaded my Fusion360 file due to a request. This was worked from the original designer's STEP file, so it is far from perfect in terms of the workflow, so stow any criticism. :)

Print instructions

Printer brand:
Prusa

Printer:
I3 MK3S

Rafts:
No

Supports:
No

Resolution:
0.20 or 0.15 with a 0.4 Nozzle

Infill:
Doesn't matter

Filament_brand:
Prusament

Filament_color:
Prusa Orange

Filament_material:
PETG

Notes:

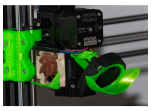
Better results on the curves at 0.15 layer height, but prints fine with 0.20 layers.

I used all default Prusa profiles in Prusa slicer, but just slowed down the perimeters, gap fill and infill speeds by 10mm/s to ensure quality. Not really required.

The STL comes in at an angle due to the source file, but just put the base flat in the bed and it will print fine.

Two M3x25 or M3x30 bolts (there are some in your Prusa spares bag) are needed due to the extra thickness of the base.

This remix is based on



Prusa MK3 low noise fan shroud (40° angle)
by K_Lab

Model files

improved-45-degree-fan-shroud.stl

radial-fan-shroud-v2.f3d

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