



Kobra Max linear Rail upgrade



Sixx Precision

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Summary

Linear rail kit for the Kobra max

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Tags: [anycubic](#) [linear](#) [kobra](#) [max](#) [rail](#)

After installing the klipper firmware i could achieve greater speeds and accelerations, this led me to design this kit as in my opinion, the longevity of the machine is dramatically decreased due to the increased speeds with the standard setup.. (just my opinion)

initially it was just a fun project that in time, has got a little out of hand... i over engineered parts at the beginning but the results were incredible..

I sent a few kits out to be beta tested... and up to this point only 1 has actually been installed.(shipping problems) Another kit is to be installed in the next weeks...together we have been trying to perfect the kit.

I then tried to simplify, make a kit that i could get produced on a small'ish scale at a low cost.. which has proved to be very difficult, the machining costs even in china have dramatically increased! with the simplified version i got some ok results.. but the original CNC design was by far the best.

so I'm releasing the files incase you or a friend, has access to a milling machine...

The kit is made up of aluminum parts and also 3d printed parts... i don't advise printing the aluminum parts as i haven't tried or designed for it to be made in plastic.. do so at your own risk.. i cant guarantee your investment in the rails etc.. will pay off if you only have access to a 3d printer... in my opinion its better to get the aluminum parts made..

you can either, cnc machine the aluminum plates.. or have them laser cut, if you laser cut the plates you will need to tap a few m3 holes after.

for the Y carriage, I have included extra holes... because in the near future i plan to move the belts to a different position and try thicker belts.. with input shaping (klipper) we are held back by the 6mm belts stretching before moving the plate.. I'm going to try 9mm or 12mm belts.. but this requires designing extra parts and at this time i haven't had the chance...

The y carriage comes in 2 flavours.. the cnc machined beast.. or, the 4mm laser cut plate.. both more than triple the acceleration you are able to use.. standard kobra max has 900mm/s accel... 4mm has in the region of 3000mm/s and the cnc milled plate.. has around 4000mm/s (input shaping values, which will increase using thicker belts..these are my figures.. yours may be differ)

i can run the machine upto 15000mm/s accel without skipping steps.. which on a beds slinger is fantastic.. and this is due to the lighter y carriage... however the prints suffer from a little vibration at this point.. i feel that with the wider belts.. we can combat this and bring the suggested input shaping values up... that being said the vibration wasn't terrible.. nothing a small amount of post processing couldn't solve.. which on helmets etc.. you'd be doing anyway.. i still feel my quality is better than before

the Y end stop mounts are designed to be machined in aluminum but maybe you can 3d print them... i can also try to come up with a printable design ...

Let me be honest, klipper firmware has given the print speed increase.. the linear rails in my opinion help with accuracy and longevity of the machine at these speeds.. it is not an easy project.. and it will not automatically let you print faster.. Klipper and an upgraded hotend setup will make you print faster.. this kit.. will allow you print faster for longer.

MGN12H adapter, this uses the standard hot end mount from the kobra max.so if you have adapted your original plate, you can secure it to this using 2 m5 screws and the attach it to the linear rail slider. this has been

designed to made in alu.. however can probably be printed... with the use of two m5 inserts.

the belt guide you will need 4.. insert some m3 heatserts into the holes and screw them to the bottom of the y carriage

X angle bracket you will need 3, to attach the x rail to the extrusion.. it is designed to be cnc machined..

Bought components

600mm linear rail, 2 Sliders per rail (x2) (for y axis)

600mm linear rail, 1 Slider per rail (x2) (for z axis)

500mm linear rail 1 slider (for x axis)

you will need some silicone spacers and some m4 wheels that you can adjust the bed height with.

Tools

i Have included tools that will need to be 3d printed before you disassemble your machine to aid in the assembly of the upgrade.. also.. print the printable parts if you only have this printer.

You will need

2 x z models (left and right x2)

4 x y models (4 in total)

z height block.. remove your z endstop sensor and place this under bother z rails between the extrusion and the rail.. then attach the rail using the z guides.. the z guides will lock into place using the holes of the rail.. and the extrusion.. the rail and guides should move together.. lower @it onto the height block.

DISCLAIMER

I am still working on this project.. things may change.. but its been a long time now that i have teased you all with the kit.. and I can't deliver

if you choose to go down this route.. i will help you as much as i can.. but i am not responsible for any damage to your machine.. you are required to


drill and tap M3 holes in your extrusions.. and this should only be attempted if you are confident and competent.

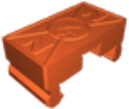
Youtube


<https://www.youtube.com/channel/UCZOdFlzxI5zrkoOLd6wfAJA>


i advise you go to the channel and watch the videos... all of them, and understand full what is involved.. it is not for the beginner. a few designs have changed a little.. but the assembly is the same.


Model files


 **Tools** 3 files

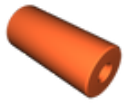
**z_linear-rail-guide-tool.3mf**
☐ Printable - PLA+/ASA/ABS (x4)

**y_rail-guide-tool.3mf**
☐ Printable - PLA+/ASA/ABS) (2 per rail)

**z-rail-height-block.3mf**

 **Printable** 4 files

**left-z-support-main.3mf**
☐ Printable - PLA+/ASA/ABS



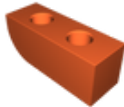
z-support-spacer2-needed.3mf

☐ Printable - PLA+/ASA/ABS



right-z-support-main.3mf

☐ Printable - PLA+/ASA/ABS

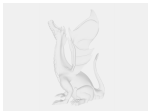


belt-guide.3mf



Aluminium

8 files



r_xz-mount.step

☐ aluminum



y-carriage-cnc.step

☐ aluminum



y-carriage-4mm_laser.step

☐ aluminum



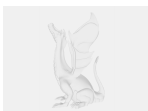
y-carriage-end-stoppper.step

☐ aluminum or Printable (maybe)



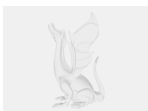
l_xz-mount.step

☐ aluminum



mgn12h-standard-anycubic-adapter.step

☐ aluminum or Printable (maybe)



x-rail-angle-bracket-x3.step

☐ aluminum or Printable (maybe)



end-stop-relocation-mount.step

☐ aluminum or Printable (maybe)

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