

QIDI X-Max - Improved X-Gantry With Tensioners



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Summary

QIDI X-Max - Improved X-Gantry With Tensioners

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Support

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<https://www.paypal.me/humebeamengineering>

About

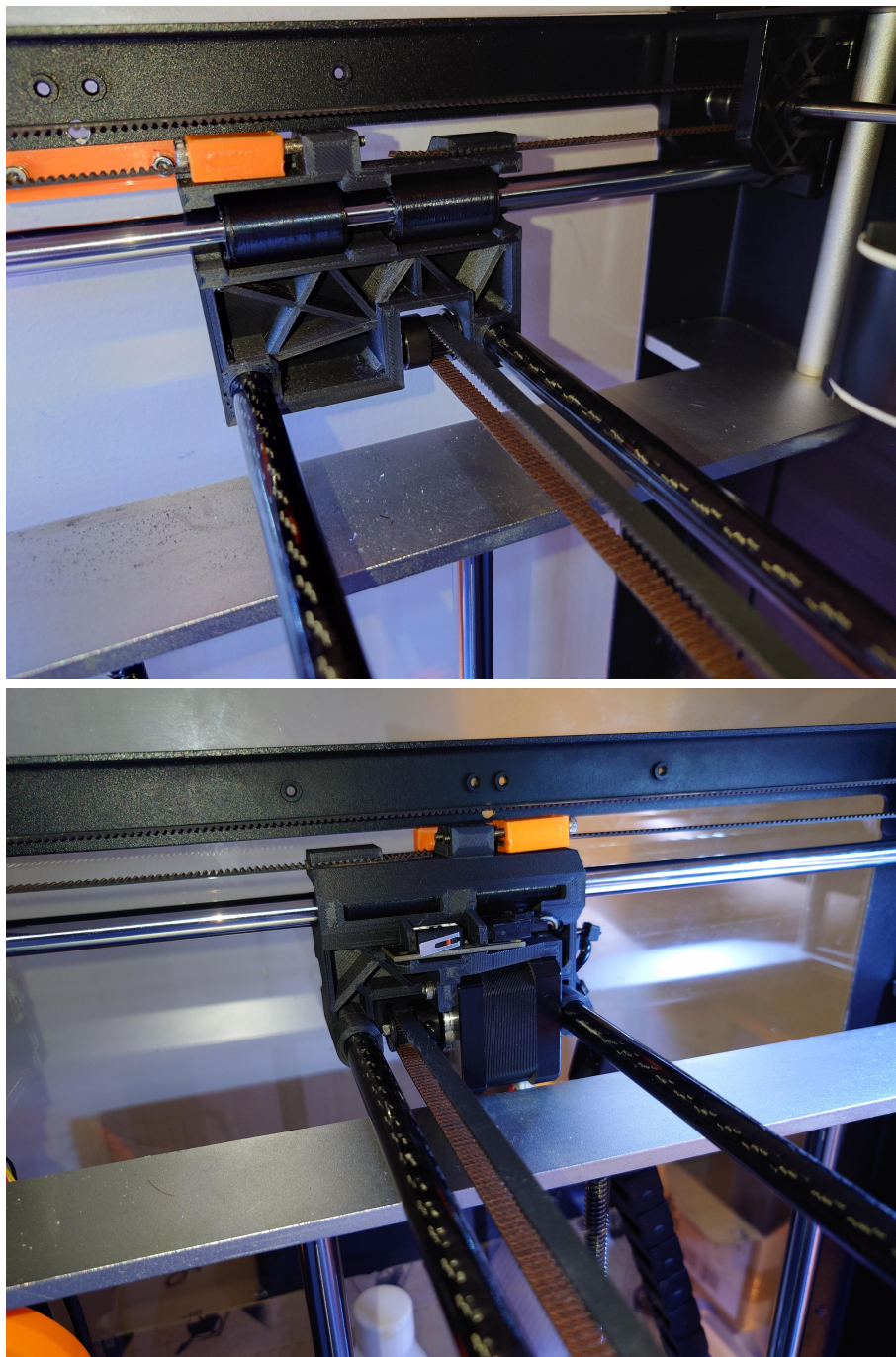
This is a redesigned X-Gantry for the QIDI X-Max. The original parts were not of the quality I wanted (poor molds) and specifically, I wanted an accurate rod distance for the Icarus 2 conversion with proper belt tensioners and some extra clearance for aftermarket 20T GT2 pulleys (Qidi uses smaller plastic 17T pulleys).

The rod distance of 69.9 mm matches exactly that of Icarus 2. It also fits stock printers of course.

It should also fit QIDI X-Plus and I-Mate (and I-Mate S) but I've only tested it on my X-Max.

Update January 14, 2023

Version 1.3 with perfect alignment of the belts together with Icarus 2.
Version for 8 mm rod printers coming tomorrow. Please take notice of the pulley orientation, see the pictures (new orientation with version 1.3 on the motor side):



The side with the motor, the pulley should sit as close to the motor as possible without rubbing so just 0.2 mm from it or so.

BOM - Bill of Materials

I buy most of my 3D printer parts from quality stores on AliExpress and Banggood. Shipping takes a while from China but quality is excellent and the prices are good.

You need some M3 hex bolts (socket head) and M3 nuts. It's best to grab the kit below, it will have everything you need for this build and many more:

440 pcs M3 Hex Socket Head Cap Kit

Optional parts:

I also recommend replacing the stock pulleys and belts for both this X gantry and the Y as well while you're at it. The original parts are pretty cheap (plastic pulleys that are pressed on) and the belt is of standard quality. As a replacement I recommend using genuine Gates GT2 belt and these pulleys sold by Trianglelab:

Genuine GATES-LL-2GT 2GT belt 6 mm (3 m required)

Trianglelab 2GT 20T Aluminum Pulley for 6mm (6 pcs required, ID 5 mm)

Don't forget to Loctite the grub screws!

What to print

Everything prints without supports. I recommend using Polycarbonate if possible but ABS or ASA should also work well.

Print the following parts, they're rotated correctly:

gantry-left.stl

gantry-right.stl

gantry-tensioner.stl (print 2 of these, one for each side)

If you're using Carbon Fiber rods, here are some bearings I've designed you can print and use:

<https://www.printables.com/model/347549-printed-linear-bearings>

E-step correction

Assuming you have replaced all pulleys on both X and Y and you use the Gates belts and larger pulleys I linked above, download and print this gcode:

estep-20t.gcode

If you have only replaced the X pulleys and not the Y pulleys (in the corner brackets of the printer,) instead download and print this gcode:

estep-20t-only-x.gcode

If you use stock belts and pulleys you should **not** change your e-steps. You can always revert to stock later. If so print this back to stock file:

estep-back-to-stock.gcode

Keep in mind you must replace all six pulleys if you use the e-step correction above, you cannot just change the X gantry pulleys (well you could but that would require another e-step correction gcode).

How to install

To install you must remove the left and right covers of your printer. Then remove the X belt and pulley. Next, pull hard on the left carriage of the gantry and it will pull off and out of the bearing sockets. It will require quite some force. Pull out the rods from the right carriage.

Unplug the limit switch and motor cable. Remove the limit switch cable. Unscrew the stepper motor (4 screws) and remove it.

Install in reverse then attach one belt to the set belt teeth and the other to the belt tensioner. Insert 2 M3 nuts in the slot in each carriage and tighten the M3 bolts to tension the belt.

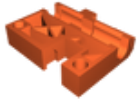
Do not overtighten the belts.

Step-by-step Guide

A great in-depth installation guide by Elphwrkz is available here:

<https://www.printables.com/model/198515-qidi-x-max-x-plus-gantry-upgrades>

Model files



gantry-left-13.stl



gantry-right-13.stl



gantry-left-lmuw10-13.stl



gantry-right-lmuw10-13.stl



gantry-tensioner-10.stl

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