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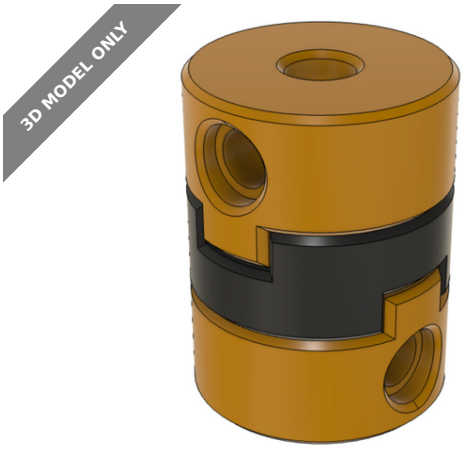

Anti-Wobble Oldham Type Shaft Couple for Qidi X-Max and Similar Printers.

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VIEW IN BROWSER

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Summary

Anti-Wobble Oldham Type Coupling, 5mm Bore A, 5mm Bore B, 25mm Length, and either 19mm or 24mm OD

3D Printers > 3D Printers - Upgrades

Tags: zwobble oldham coupling couple oldhamcoupler antizwobble antiwobble qidi xmax xplus

Note: For the X-Max (X-Plus), the same reduction of lead screw induced wobble can be accomplished by removing the bearing at the top of the lead screw And using the stock couples. This applies for 75% of the max print height. For prints that use the more than 75% of the build height, then keeping the bearing in place and using these couples may be the better option.

Anti-wobble Oldham type shaft couples are designed to reduce layer lines induced by the Z-Axis lead screw rotational variance caused by bowed lead screws. Typically the variance increases as the bed is lowered and the distance between the upper Z-Plate bearing and the lead screw nut increases.

A Nylon (PA) torque disc is located between the two hubs which provides a durable, low-friction flexion and accommodates rotational variance by sliding back and forth between the top and bottom hubs.

The 19mm Outside Diameter version is a little be tricky to get the brass inserts deep enough to allow for minimizing the screw head protrusion without compromising the shaft hole, but it has the advantage of fitting through the stock base plate hole.

The larger diameter 24mm diameter version works well with corrected spacing base plates is available here: https://www.printables.com/model/323819-x-max-x-plus-z-axis-linear-rod-base-plate

Note: you can buy Oldham couples but they are expensive, probably because they work up 3000 RPM. Printer lead screws rotate at about 10 RPM so printed versions work fine.

Printing

The parts need to slide smoothly so Carbon Fiber reinforced filaments should not be used.

- The upper and lower Hubs can be printed using PC, PETG, ABS or other strong/resilient filaments with excellent layer adhesion. Nylon or other malleable filaments are not recommended. No supports are needed.
- The Torque Disks should be printed with PA6 or PA12 for flexibility and low surface friction. Enable supports.

Assembly

The parts need to be tight enough to avoid backlash, but still slide smoothly; defer to avoiding backlash. File the parts to increase clearance or use superglue to build up the hub rail to tighten the fit.

Install M3 brass inserts as deep as possible without compromising the shaft hole. Fit M3 truss head screws. If you can, cut the screws to length such that they are just long enough to make firm contact with the shaft. Note that the screw on the flat side of the shaft will be longer. Cutting the screws short will make passing the couple through the base plate easier.

Use a 5mm bit to size and clean the shaft holes in the hubs after setting the M3 brass inserts. I used a pair of pliers to twist the drill bit rather than an electric drill.

Installation

Loosen the screws in the existing couples, remove the stepper motor and slide the stock couple off. Then install the upper hub on the lead screw

being sure to orientate one of the tightening screws to the flat on the shaft. Make the screws snug, but do not tighten yet. Install the other hub on the stepper motor shaft such that the shaft protrudes by 1mm. Fully tighten the screws on the motor's hub. Place the torque disk on one of the hubs and reinstall the stepper motor. Now tighten the lead screw's hub while pushing down on the hub and pulling up on the lead screw. The idea is to minimize vertical movement of the lead screw without being too tight.

Model files

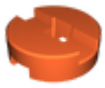
19mm-torque-disk.stl

Two required. Print with supports.

19mm-hub.stl

Four required.

24mm-hub.stl



24mm-torque-disk.stl

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