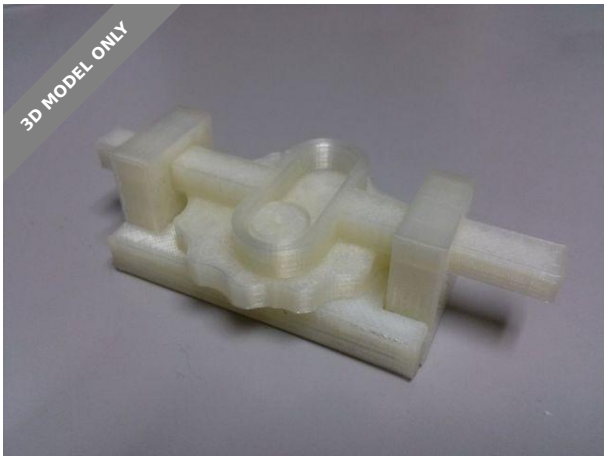

Another Scotch Yoke

WayTooManyHobbies

VIEW IN BROWSER

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Summary

This is a redesigned Scotch Yoke mechanism. I had posted a non-printable sample design some time ago. Recently another...

Learning > Engineering

Tags: scotchyoke

This is a redesigned Scotch Yoke mechanism. I had posted a non-printable sample design some time ago. Recently another Thingiverse user, Sprik, had generated a nice printable design. I made a couple and they worked very well, but the design relied on printed round pins to hold things together. This resulted in a final assembly that I thought was a bit fragile. Also, the tolerances needed to make the pins work on my printer were pretty loose. This made the yoke and end pieces rattle quite a bit, and the whole assembly would fall apart pretty readily unless glued together.

The attached design, which may feature some of the worst OpenSCAD code ever, addresses these issues.

Thanks for the great inspiration, Sprik! Your design is very nice!

Instructions

A plate file is supplied, with everything in a nice printable orientation. The plate file includes (2) Main Shafts, both for breakage and to keep the ends a bit cooler while printing.

All of the parts I have done so far are in PLA, and they've worked out quite well. If you don't have a fan on your hot end, I suggest setting up a fan to blow across the print bed once the first couple of layers are down.

I make use of the differential fill pattern and density features in Slic3r to make the Yoke and Main Shaft with a rectilinear pattern at 50% density. Everything else can be 20% density. If your filament is a bit translucent, playing with different infill patterns can make the Crank and Base a bit more attractive. The "extra" hole on the crank is there to allow a dowel or M3 screw to be added, either for reinforcement or a handle.

On my Printrbot Plus, the current OpenSCAD file generates parts that fit together nicely, and stay together without glue. The only parametric thing in the file is the clearance value - change that as necessary for your use. You can generate individual parts by invoking their name in the OpenSCAD file - it should be pretty evident where.

The OpenSCAD file is pretty ugly - sorry about that!

Category: Engineering

Model files

scotchyoke_redesign_11sept15.scad

main_shaft.stl

end_piece_1.stl

end_piece_2.stl

yoke.stl

crank.stl

base.stl

scotchyoke_plate.stl

Find source .stl files on Thingiverse.com

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