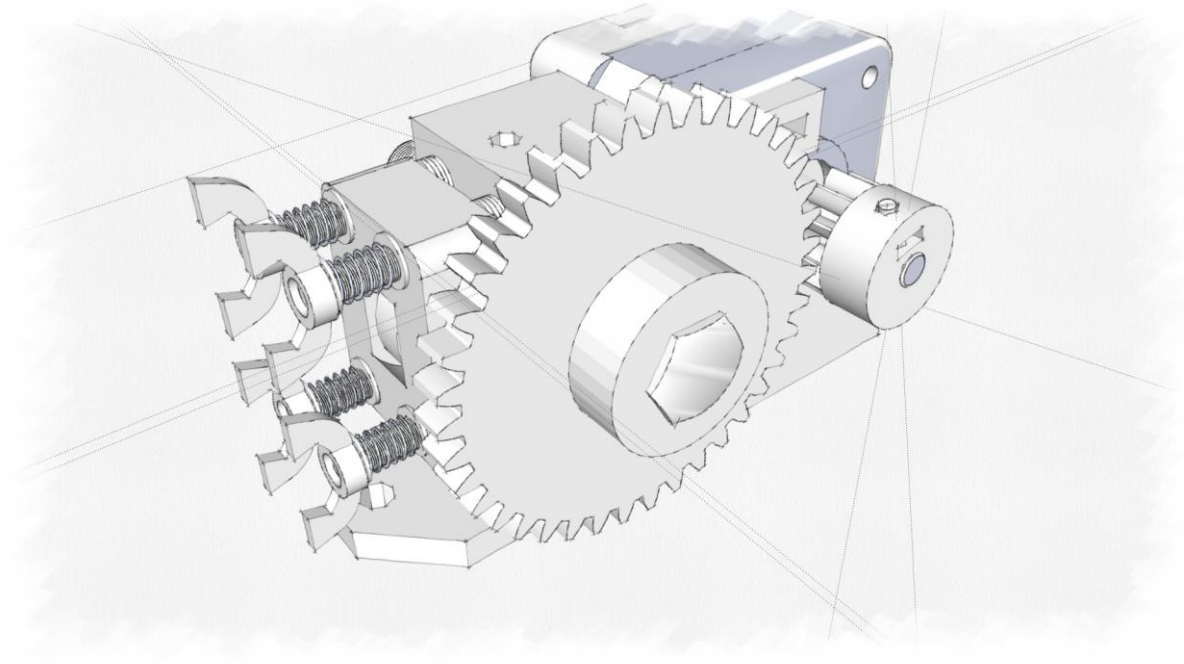
Wade's Geared Extruder



Visual Instructions

RepRap

Introduction

Goal:

Provide a visual guide of the steps needed to construct Wade‘s Geared Extruder.
More details can be found on the reprap.org wiki:
http://reprap.org/wiki/Wade%27s_Geared_Extruder

Original Authors:

Wade (design)

Author of this Document:

Gary Hodgson (http://garyhodgson.com/reprap)

STL Model Files:

https://github.com/prusajr/PrusaMendel/blob/master/stl/wade.stl
https://github.com/prusajr/PrusaMendel/blob/master/stl/wadebits.stl

The source files for this document available on Github:

https://github.com/garyhodgson/wades_geared_extruder_visual_instructions

Issues with this document can be submitted on the Github project page:

https://github.com/garyhodgson/wades_geared_extruder_visual_instructions/issues

Changelog

V1 - 8th April 2011

- Initial Version

Issue numbers referenced from the Github project page:
https://github.com/garyhodgson/wades_geared_extruder_visual_instructions/issues

Bill Of Materials

Feeder

- 2 X 608 bearings (Skateboard bearings)
- 1 X M8X50 bolt
- 1 X M8 nut (Nylock works better, but a pair of nuts will also work)
- 4 X M8 washers

Idler

- 1 X 608 bearing (Skateboard bearing)
- 1 X M8X20 piece of smooth bar, threaded bar or a bolt
- 4 X M4X45 bolts; - hex head will work best (they won't turn), and longer than 45 mm will be easier to assemble if you can find them
- 4 X M4 nuts
- 4 X M4 washers
- 4 X Springs - 1 mm diameter wire, wound to an OD of 10 mm, with 4 active coils. NOTE: some users have theirs extruders working without this springs, but springs are recommended.
- 16 X M4 washers - (optional) 4 washers on each M4X45 idler bolt between the main block and the idler block will limit the idler travel and make reloading filament easier.

Hot End Mount

- 2 X M3X35 bolts
- 4 X M3 washers
- 2 X M3 nuts

[This is largely dependent on your Hot End design. The materials shown here are taken from the Wiki. This document shows a simple Hot End design, which requires only two screws.]

Motor Mount

- 4 X M3X15 bolts
- 8 X M3 washers
- 4 X M3 nuts

Printed Parts

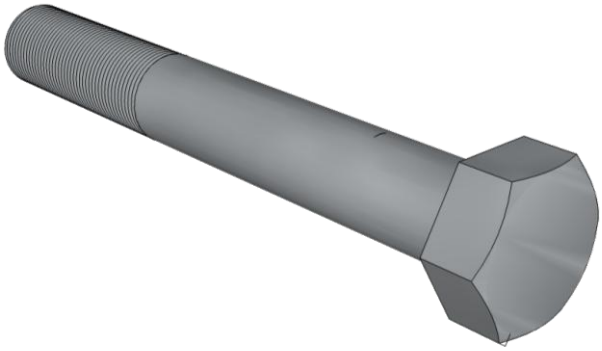
- 1 X Extruder Block
- 1 X Extruder Idler Block
- 1 X Large Gear
- 1 X Motor Pulley

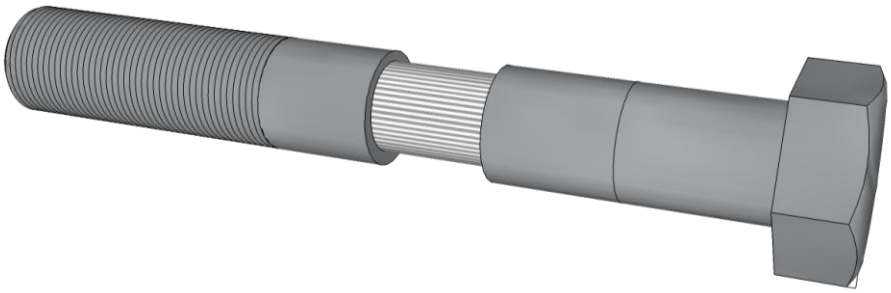
Part 1

Assembling the extruder

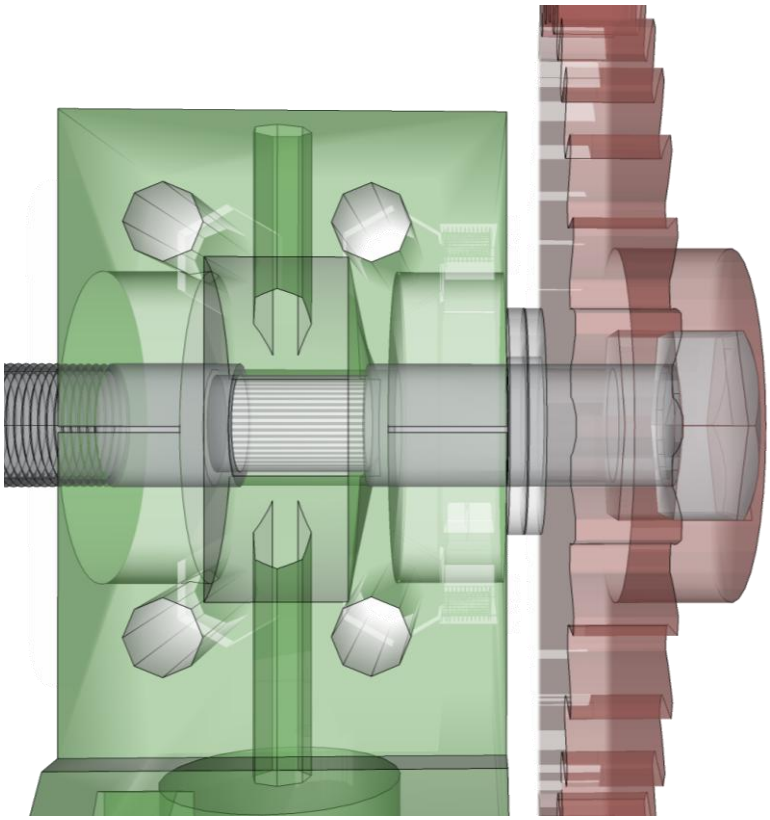
1

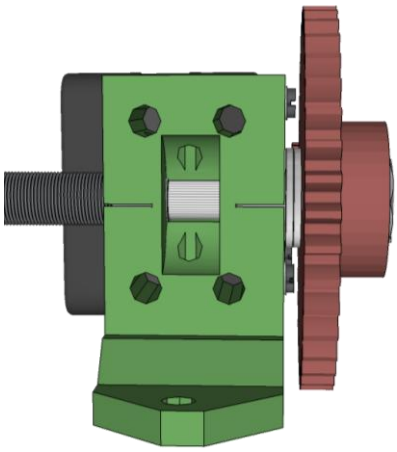
Create or purchase a hobbed bolt. Details on various techniques on creating one can be found on the wiki: http://reprap.org/wiki/Wade%27s_Geared_Extruder#How_to_build_it





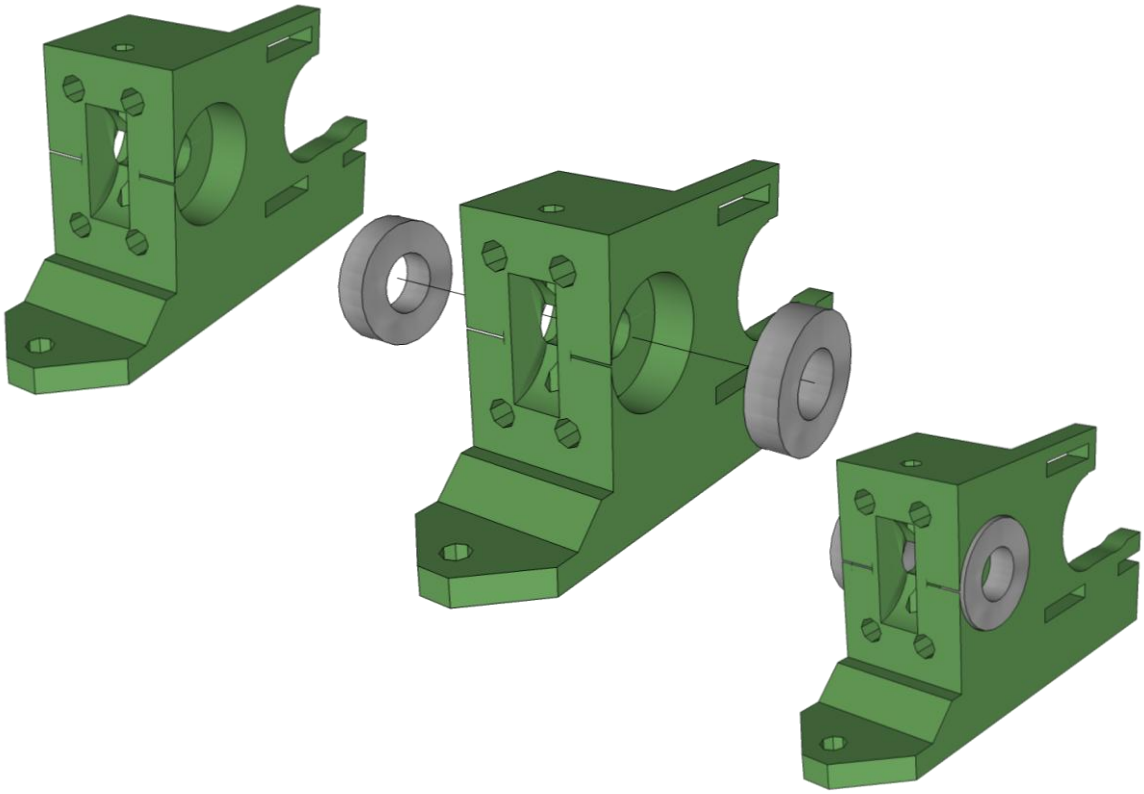
“If you're not sure where to cut the pinchwheel slot, test assemble the extruder, making sure you leave room for the motor mount bolt heads under the 39 tooth gear, and mark the M8 bolt where it crosses the filament feed channel.“





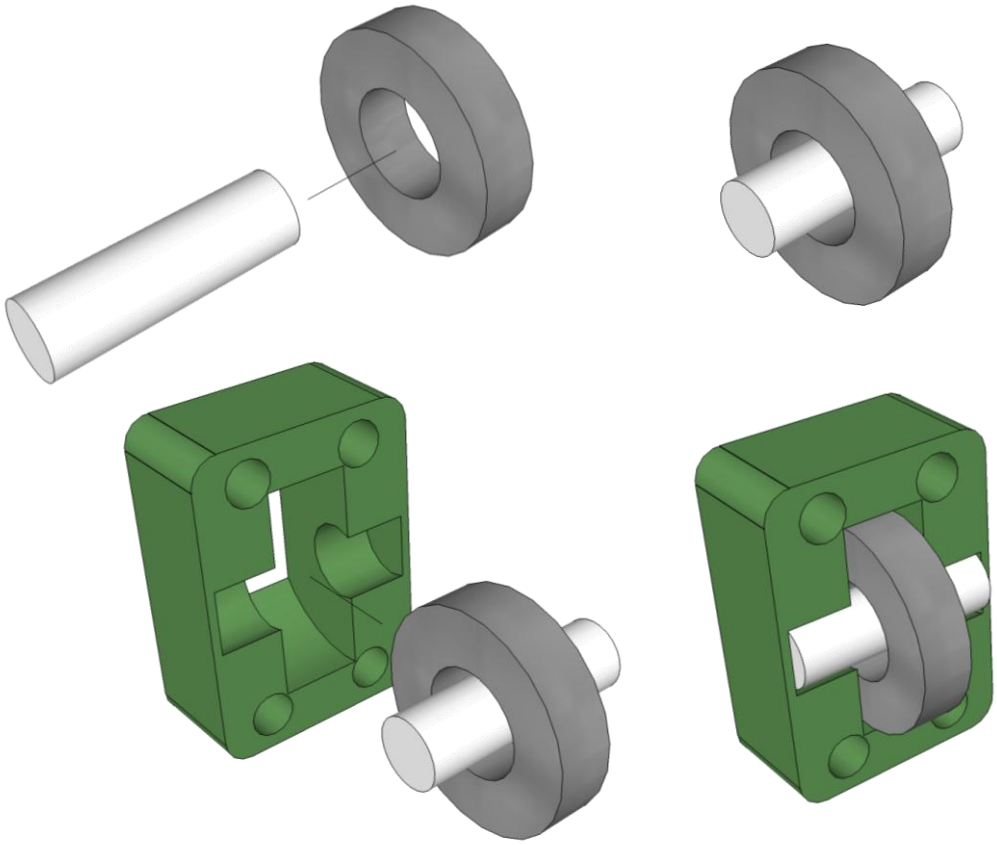
2

Take the extruder body and insert two 608 bearings.



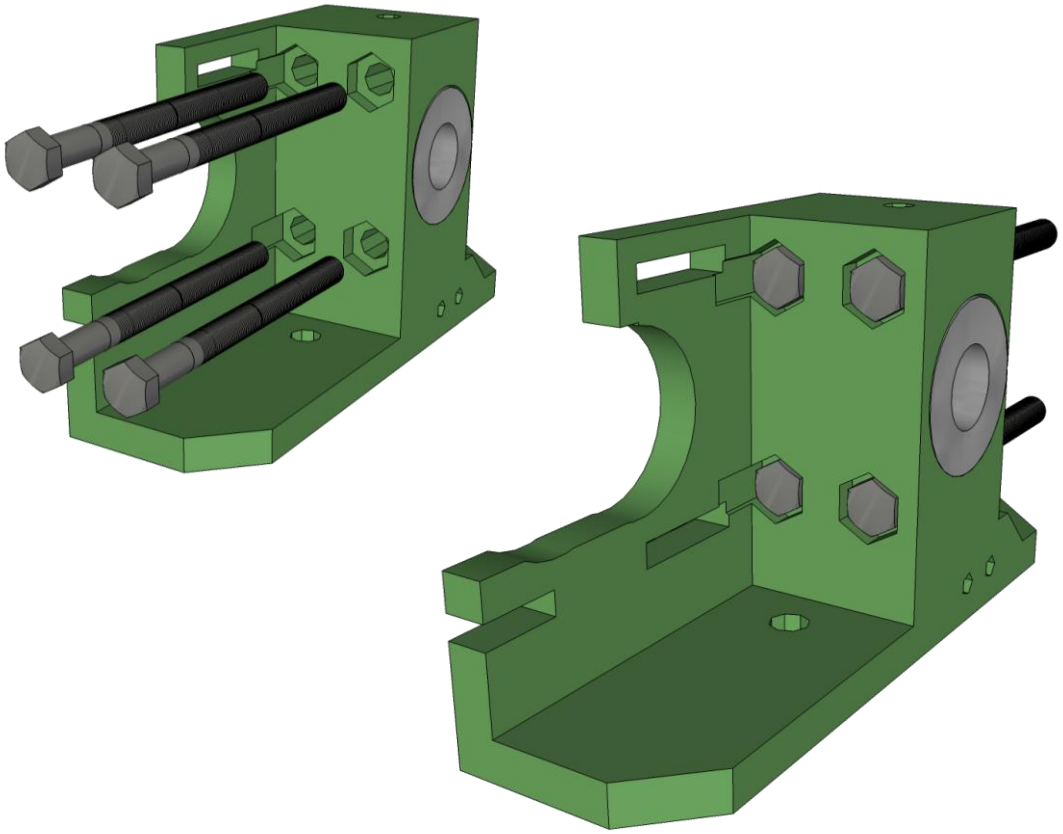
3

Insert the smooth bar into a 608 bearing, and insert into the idler. The actual fit is tighter than indicated in the diagram here.

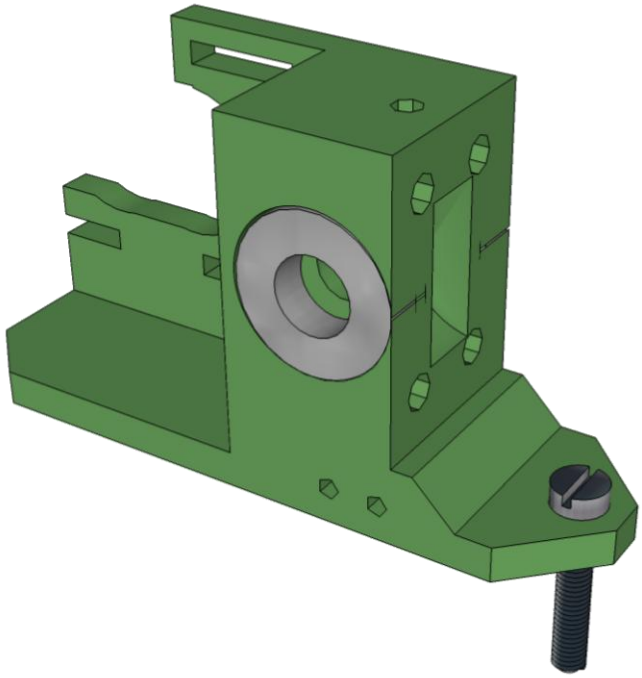


4

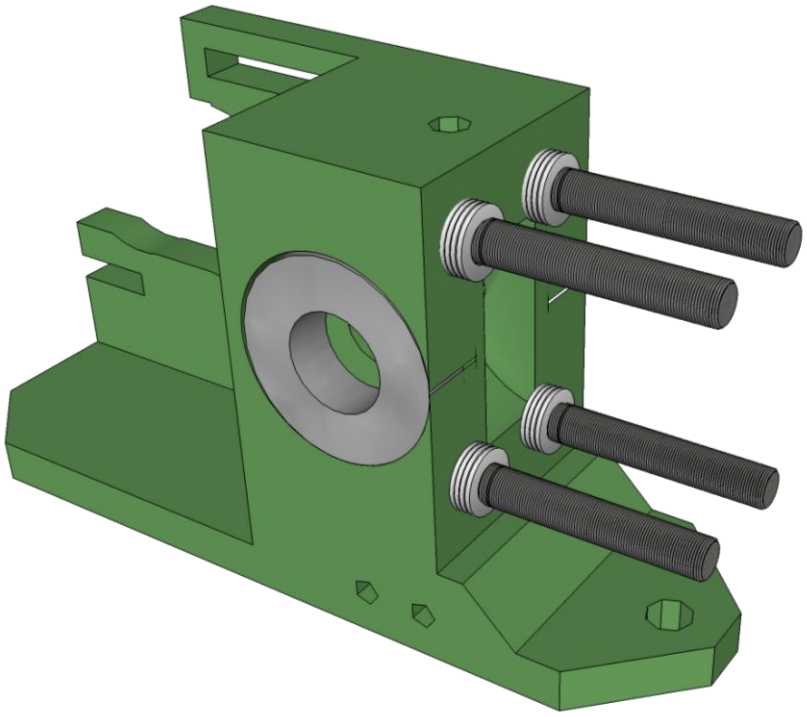
Insert the long screws through the extruder body.



(Optional) You may wish to insert the x-carriage bolt now, as this may be difficult once the idler is in place.

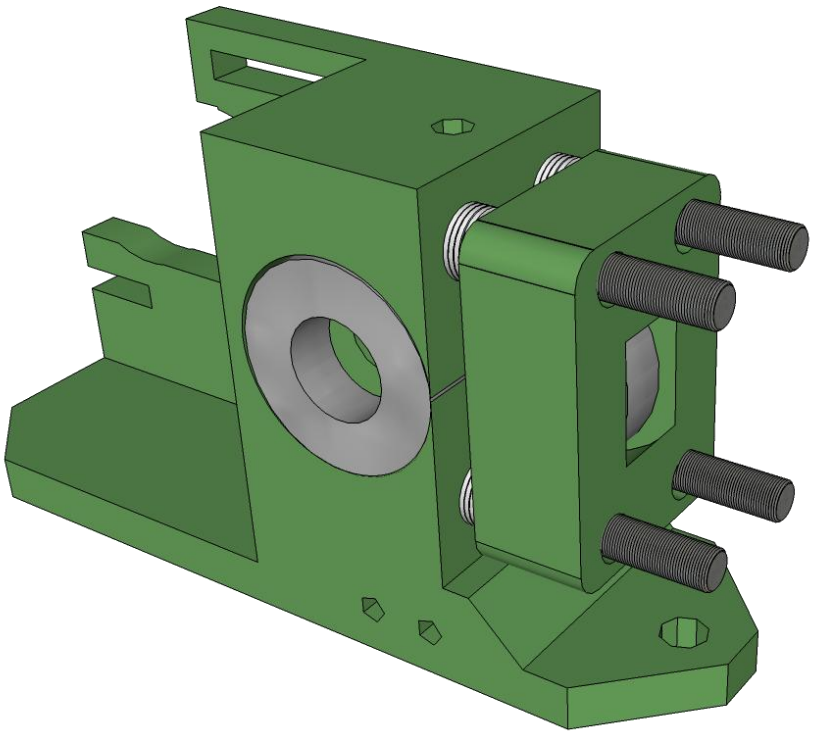


"If you add 3 or 4 M4 washers on each bolt before you put the idler block on, it will reduce the idler block travel when loading new filament, making loading new filament much easier."



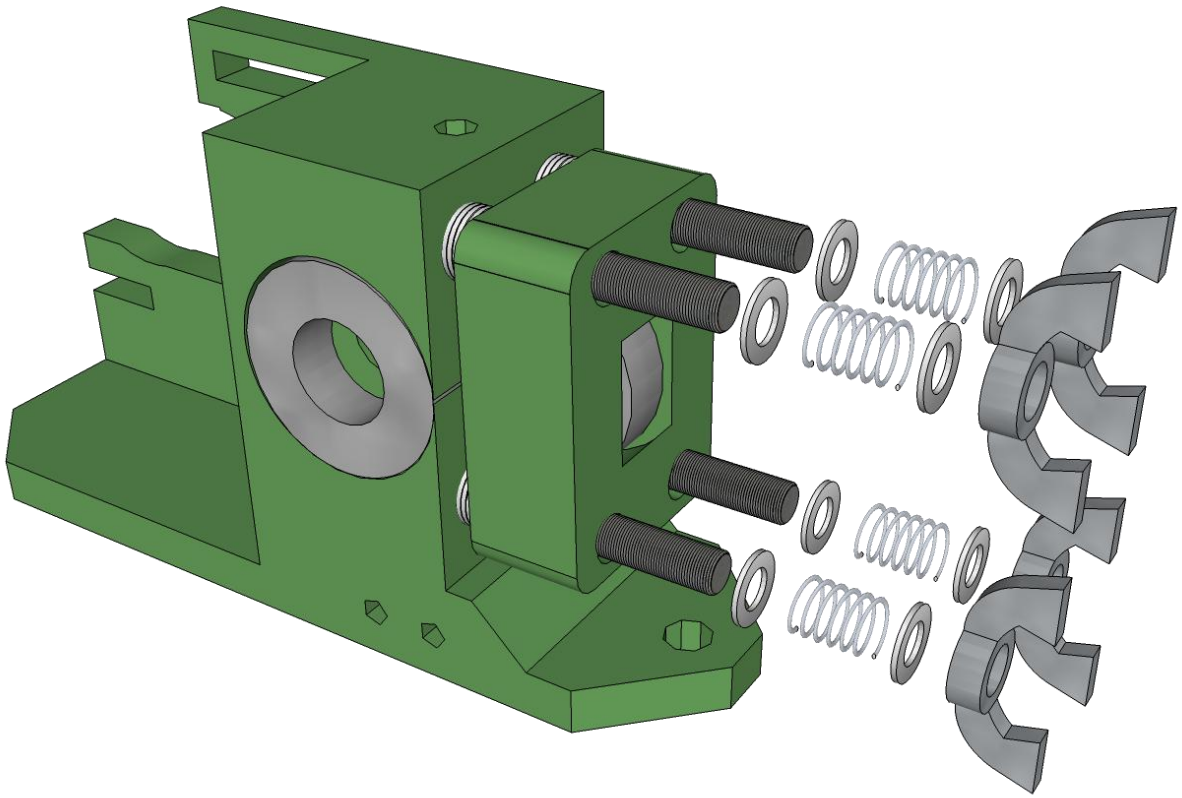
5

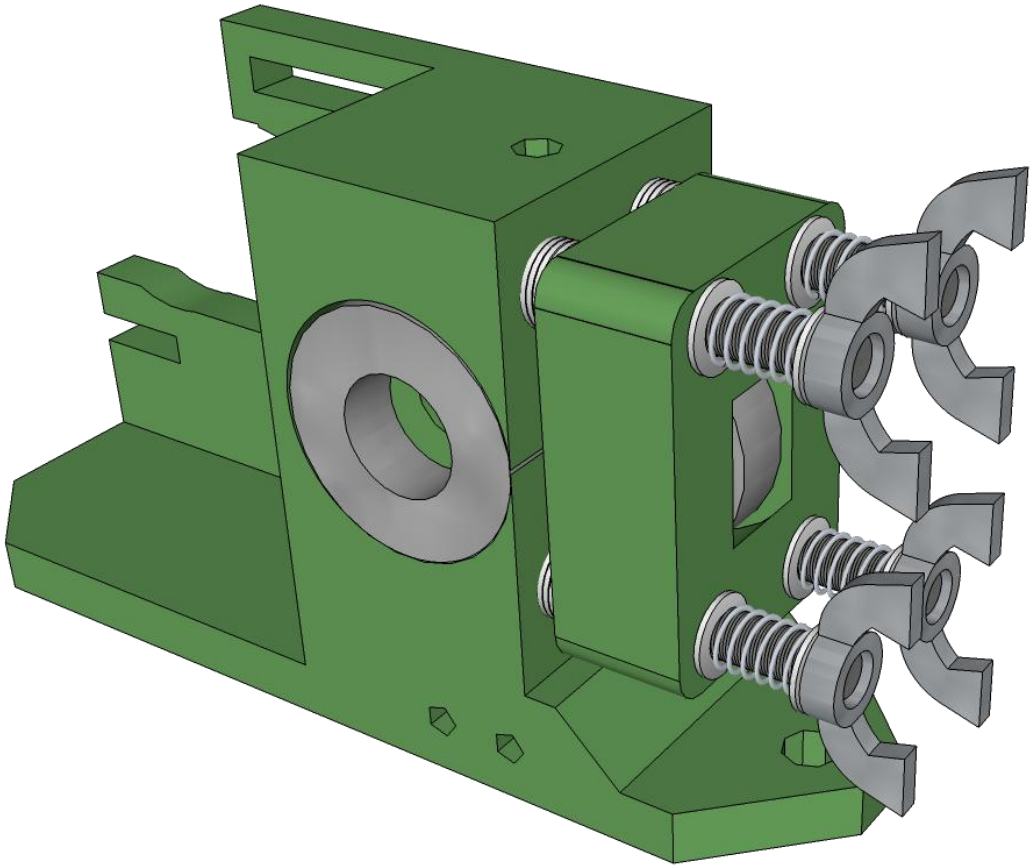
Add the idler.



6

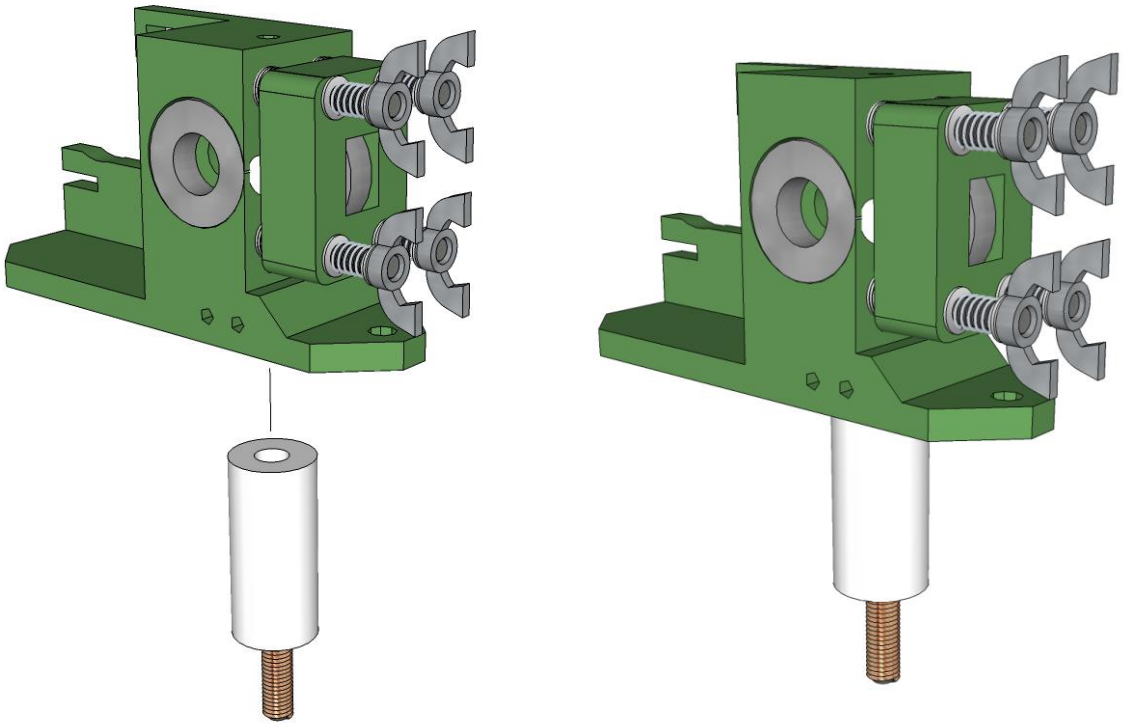
Add washers, springs and nuts (or wingnuts).



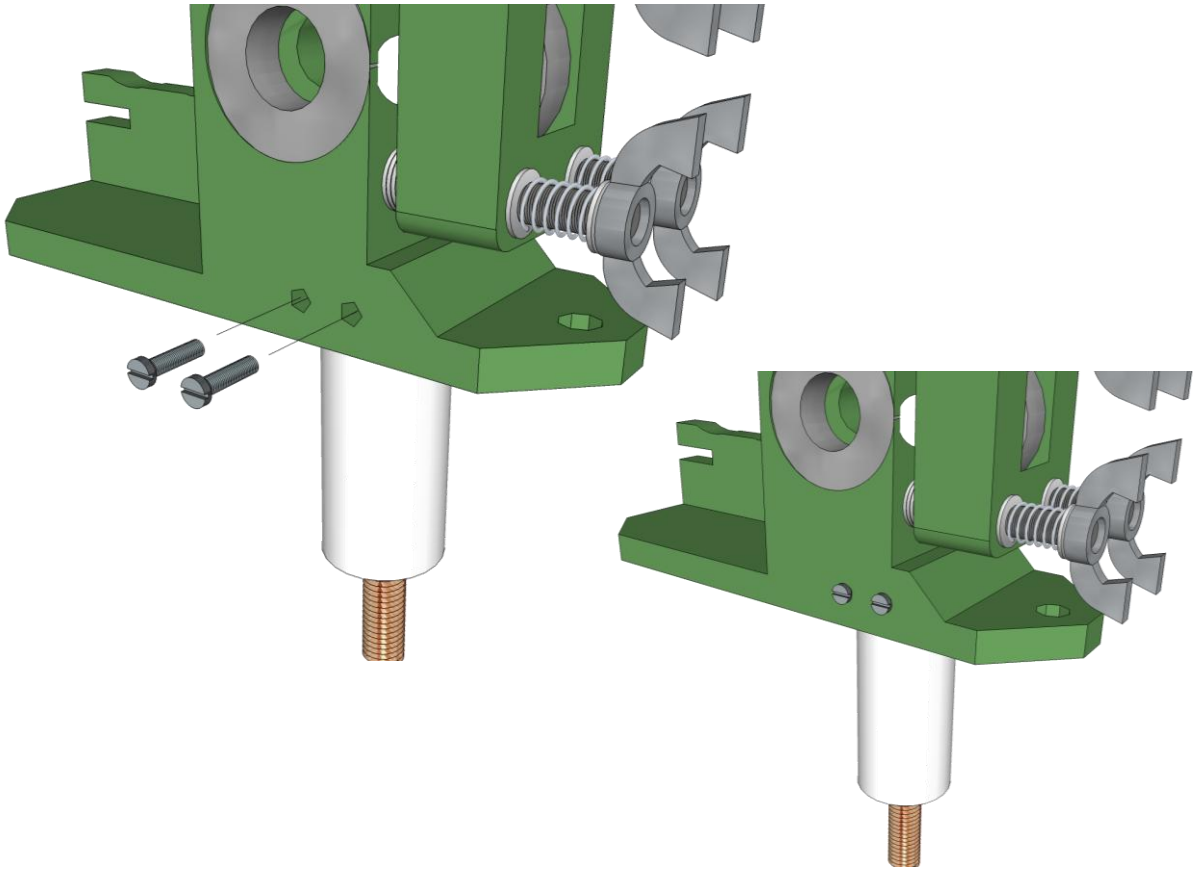


7

Mount the Hot End (basic version shown, alternative hot ends are available).

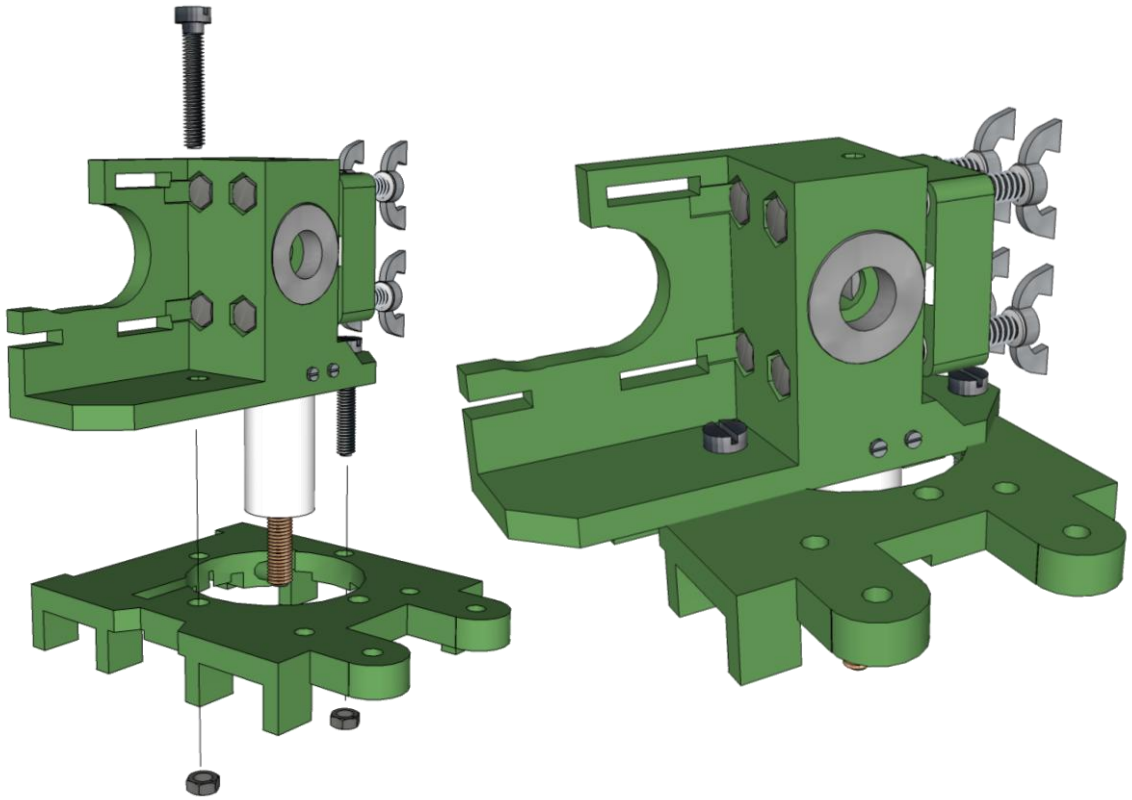


Note: Routing of the wires is not shown



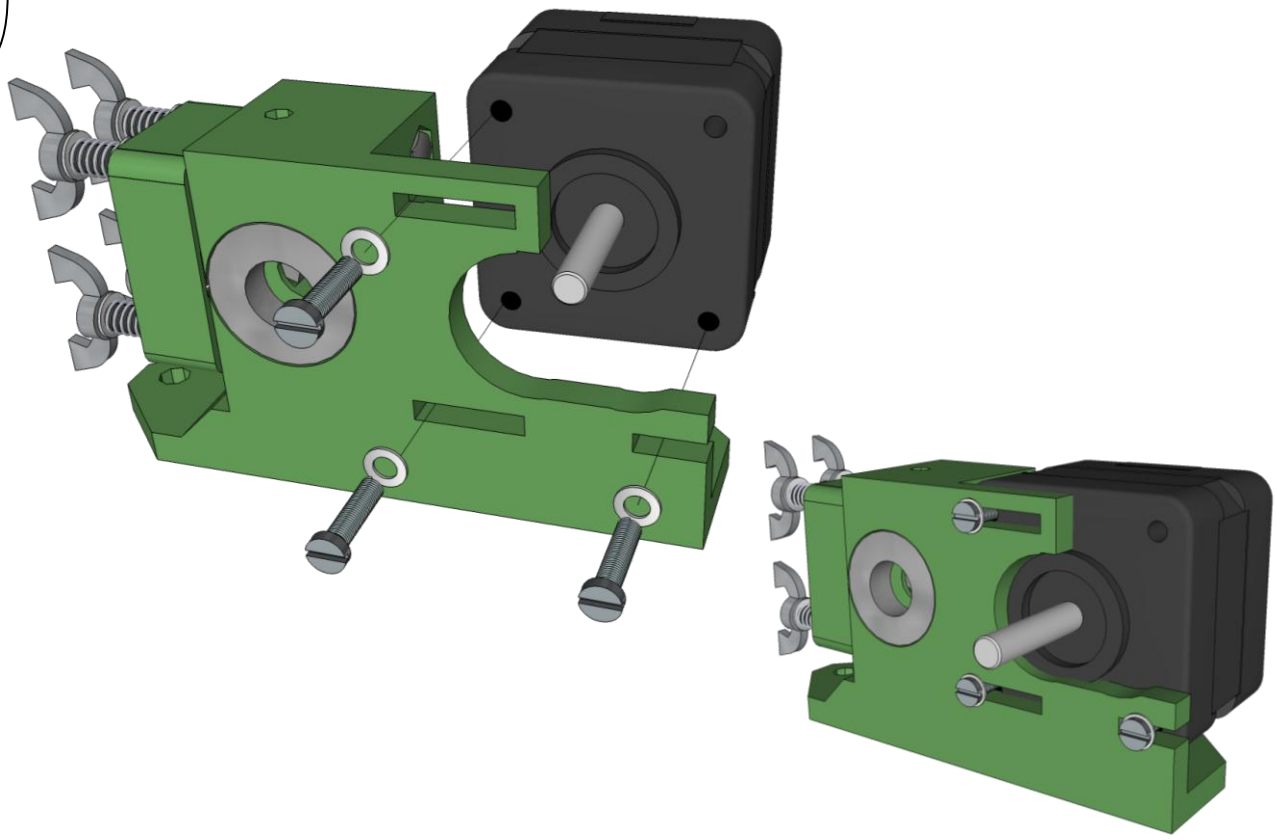
8

Attach the extruder to X carriage (this can be performed later, but is could be easier now.)



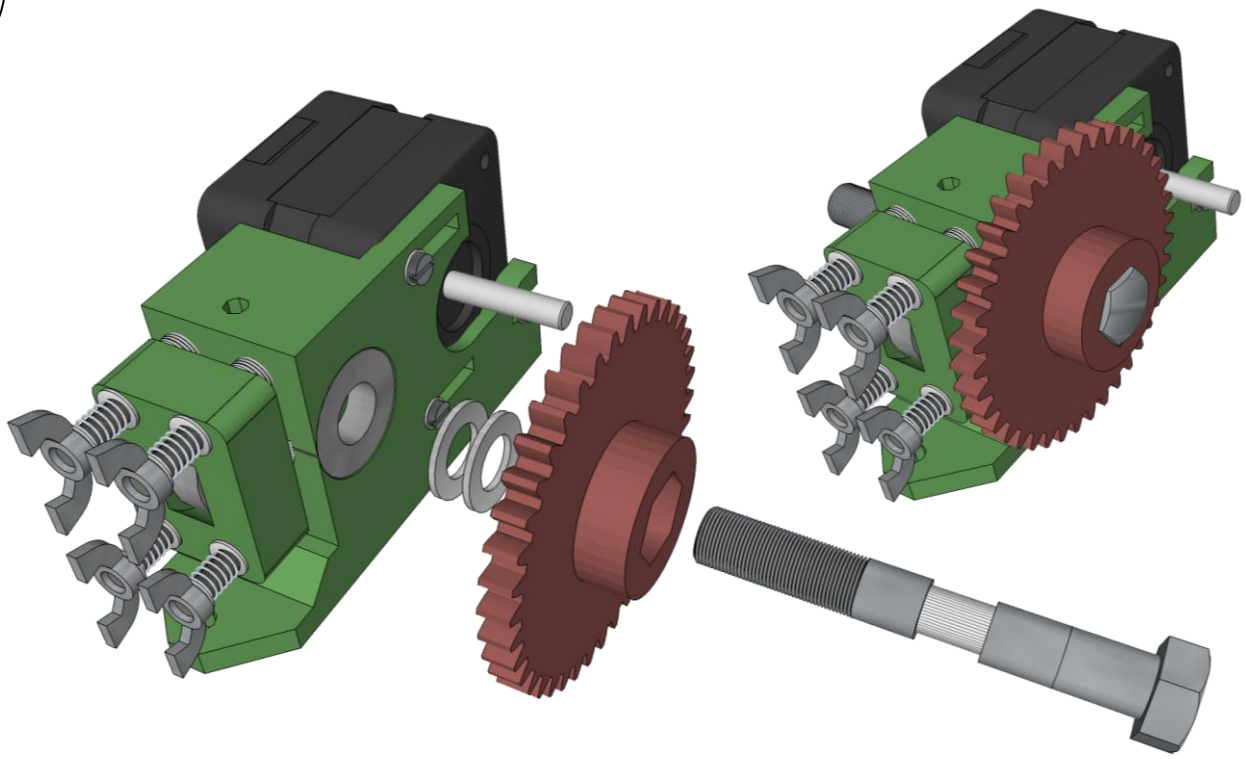
9

Push the screws (and optionally washers) through the motor holes and loosely attach the motor. Do not tighten completely yet, the motor should slide a little.



10

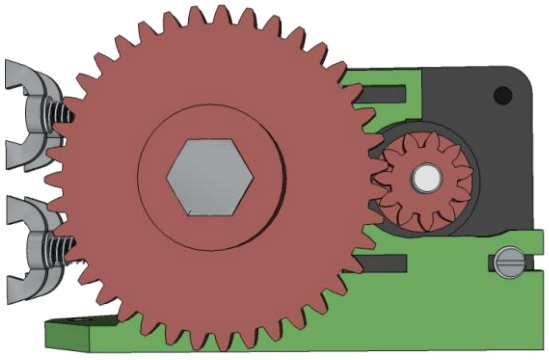
Temporarily mount the M8 hobbed bolt through the large pulley and washers, and insert into extruder body.

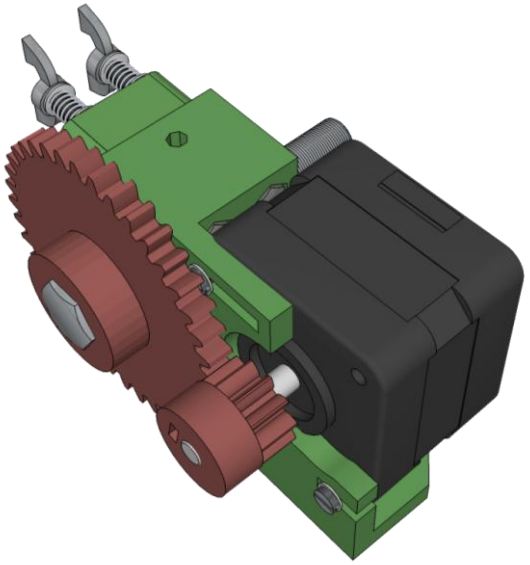


11

Temporarily attach the small pulley to the motor and position it so the teeth mesh nicely. Tighten the visible motor bolt so the motor stays still.

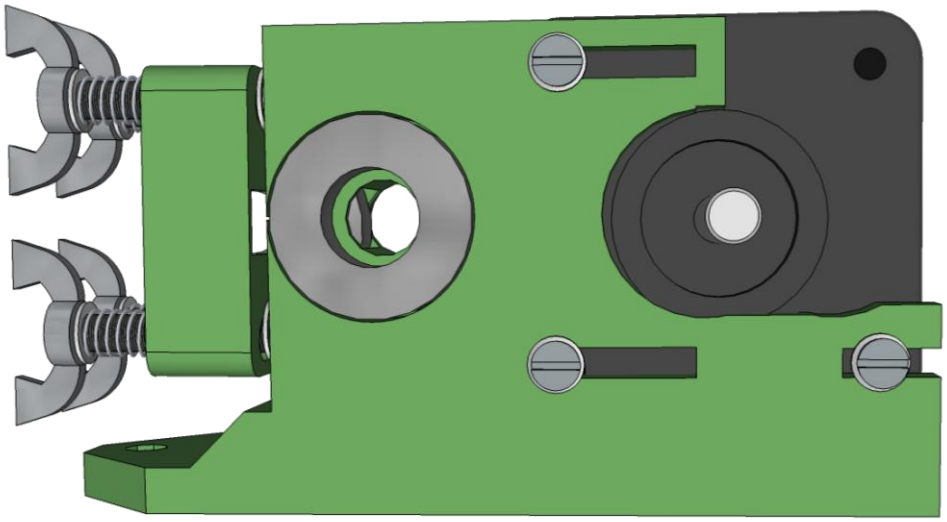
Note: You may have to attach the pulley backwards, depending on the position of the hobbed bolt, the length of your motor spindle and how close the motor sits on the extruder body.





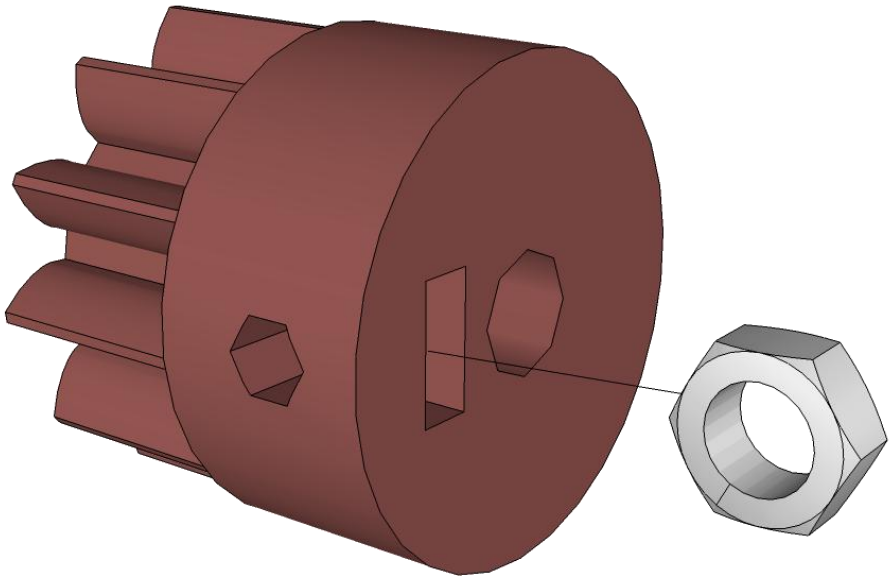
12

Remove the pulleys and tighten the remaining bolts on the motor



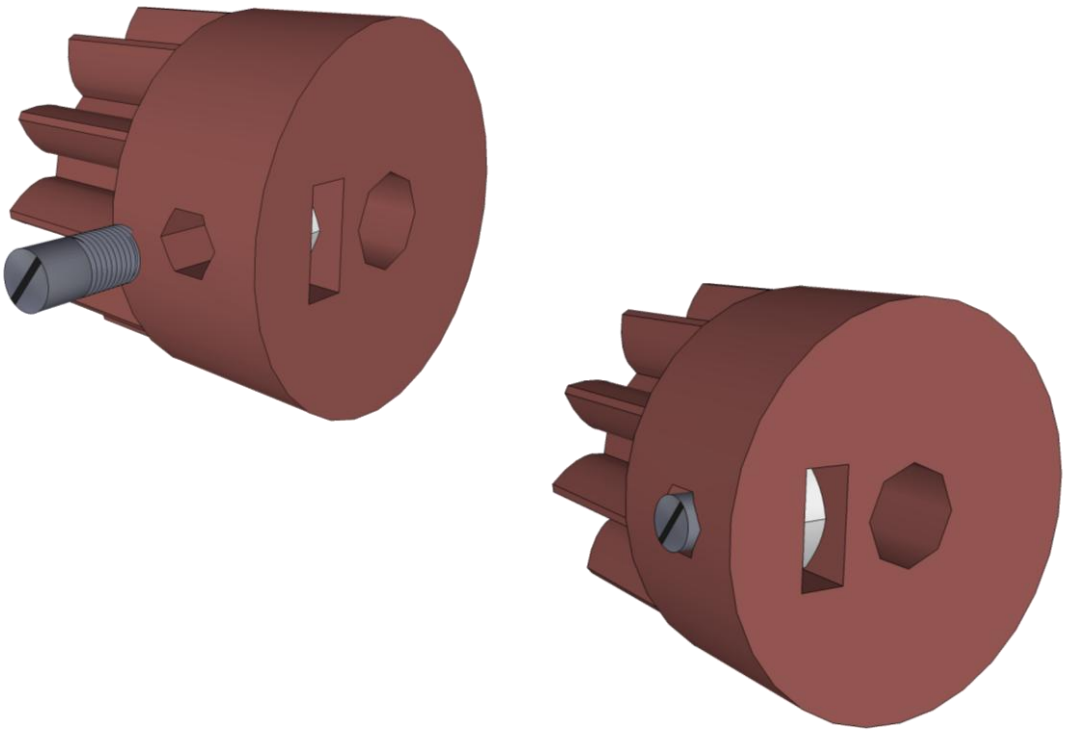
13

Insert a nut into the rectangular slot on the pulley bottom. You may need to widen the slot slightly to do this. Make sure that the center of the nut is aligned with the channel in the pulley that goes to the center hole.



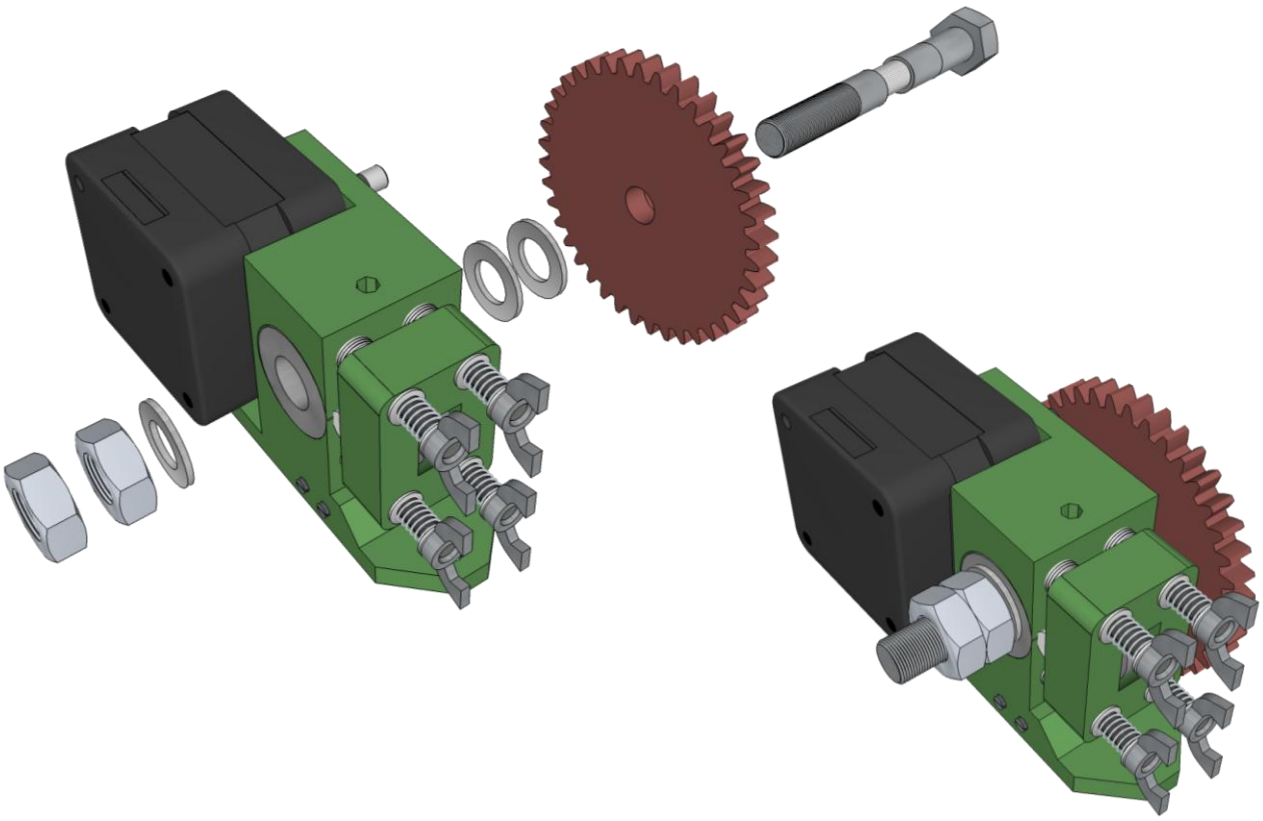
14

Insert an M3 grub screw into the channel on the rim of the hub.



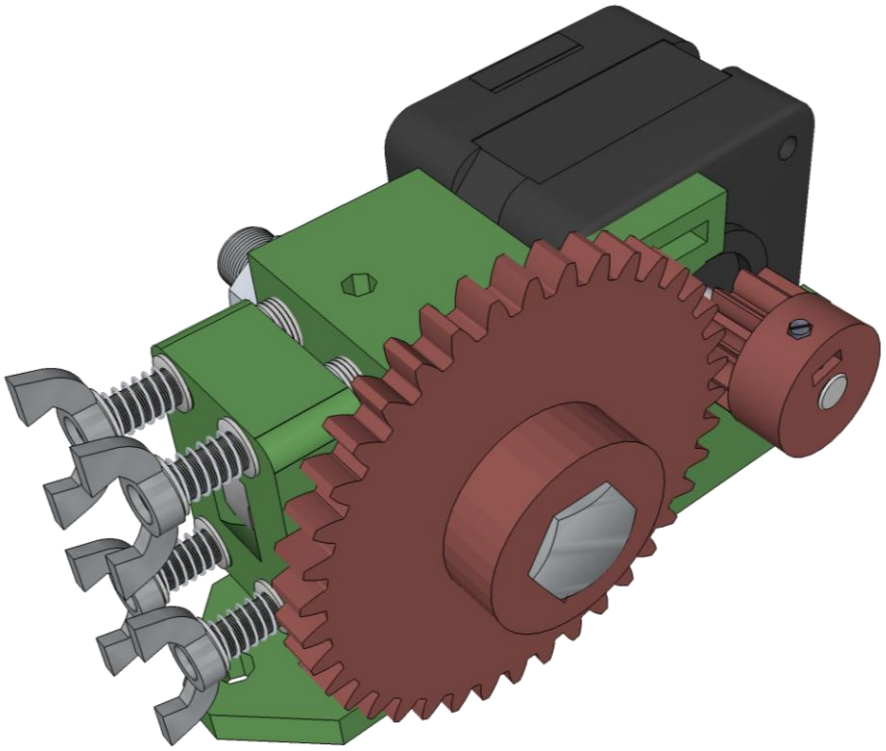
15

Attach the large gear with the washers and either two regular nuts, or a nyloc nut. The bolt and gear should rotate freely.



16

Attach the small pulley to the motor spindle and tighten the grub screw slightly. Be careful not to tighten too much or the pulley may warp.

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