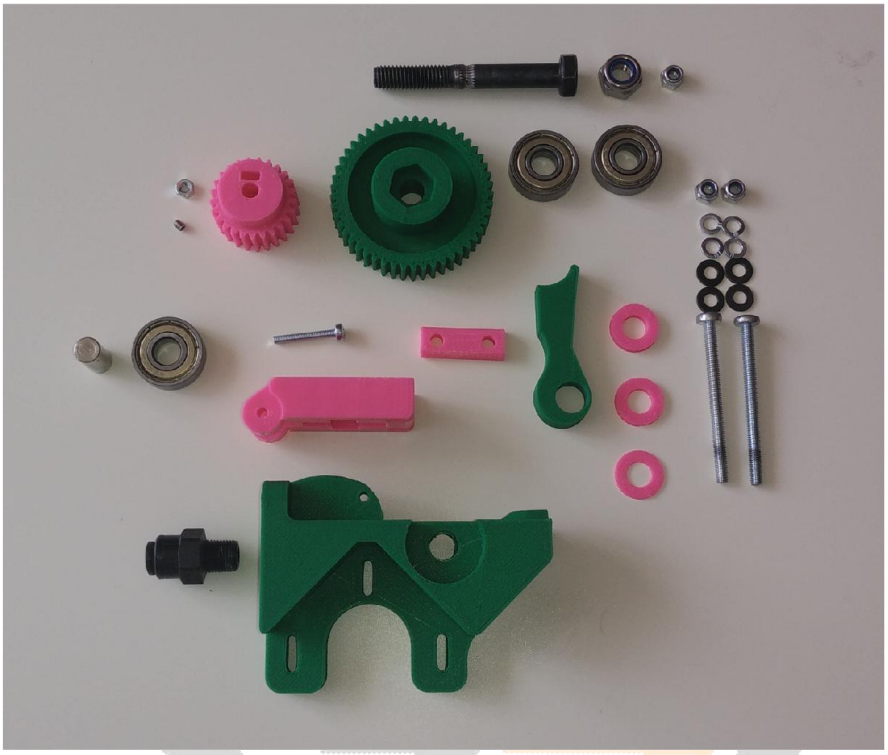
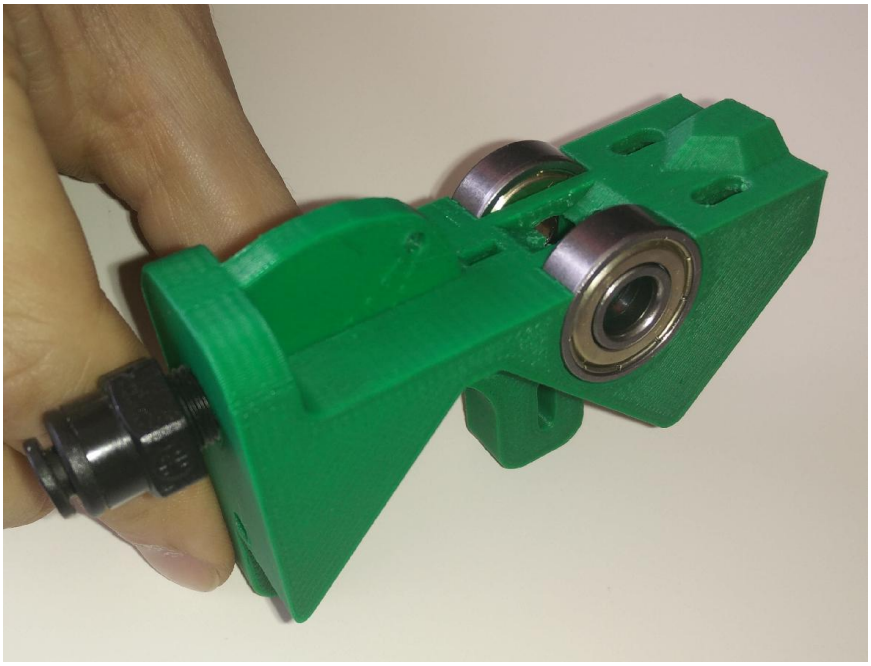
GEMSTRUDER
ASSEMBLY GUIDE

With a printed Gemstruder body in hand and a fire in the heart, we traverse on the adventure that is building the Gemstruder.

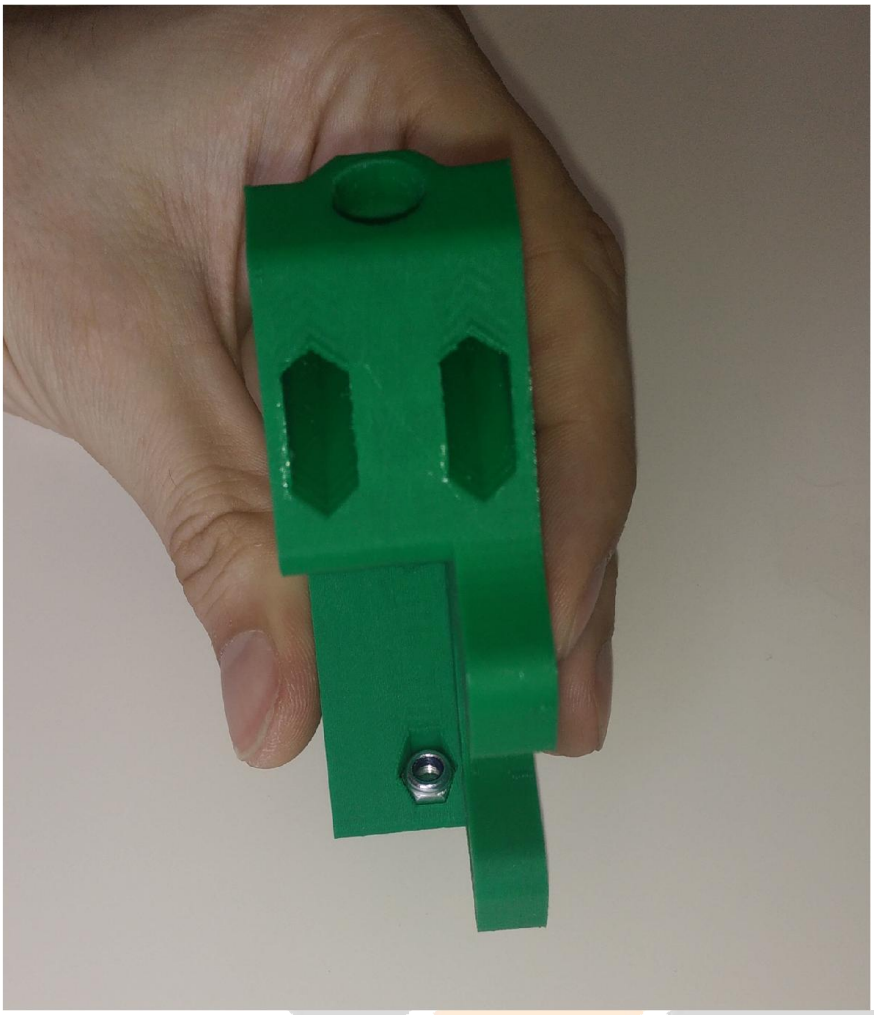


Insert the 608ZZ bearings into the dedicated round holes on both sides of the body. Make sure they are as flush as they can against the inside.

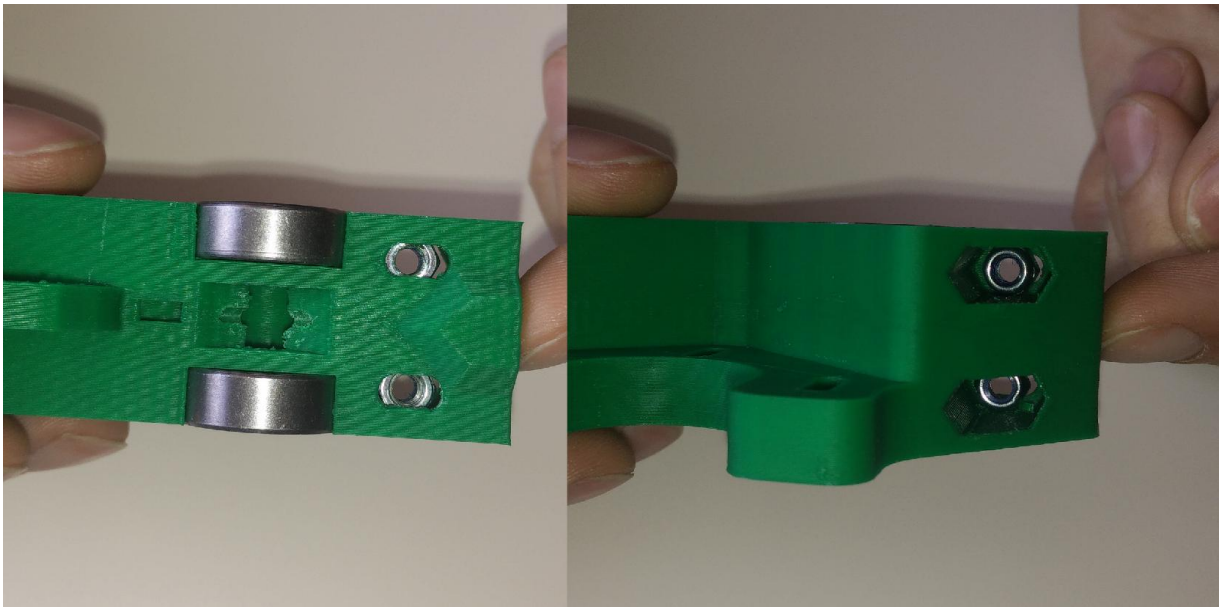
Then twist the pneumatic fitting into the front of the body. Beware that it might not go in all the way, do not overtighten it as it might strip the threads.



Now add a M4 lock nut into the mounting hole into the inside of the body.

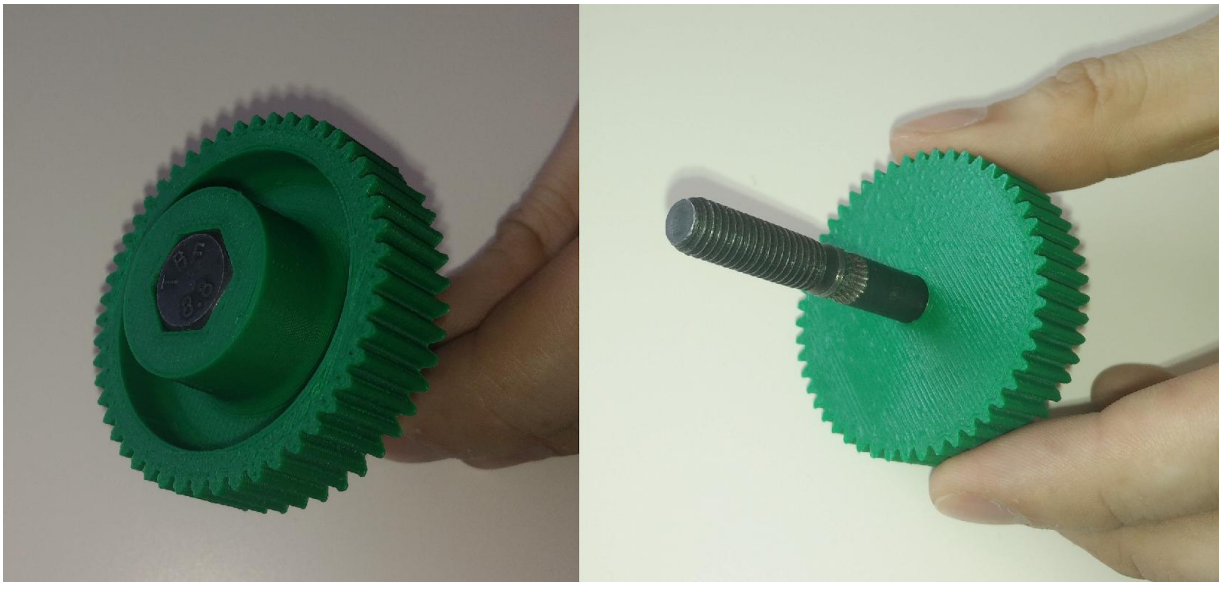


Time to add the idler M4 lock nuts, if you can’t press them in then you can use a M4x50mm bolt to pull/push them into their sockets.



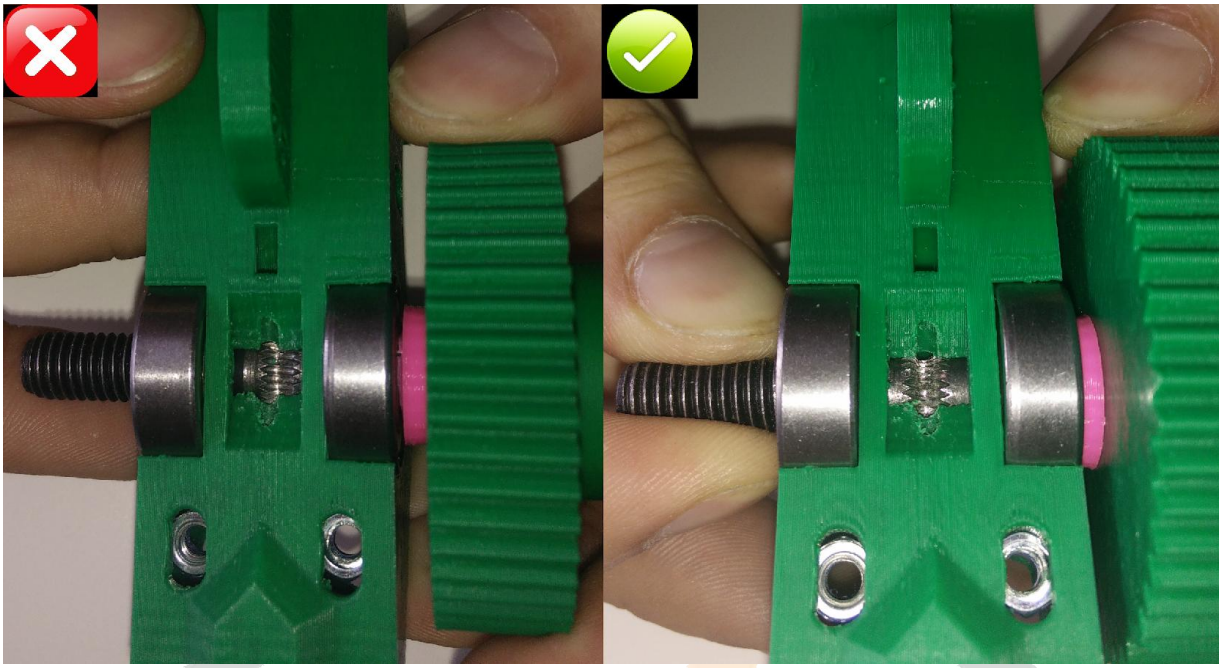
Time to build up the driving bolt.
Place the Gemstruder body aside for the moment.

Grab your hobbed bolt, slide the larger bolt gear over the bolt all the way to the end with the flat side of the gear facing away from the bolt head.



Next you add one of the spacer rings, start with any of the 3 and see if the middle of the hobbed bolt teeth is lined up in the middle of the idler port.

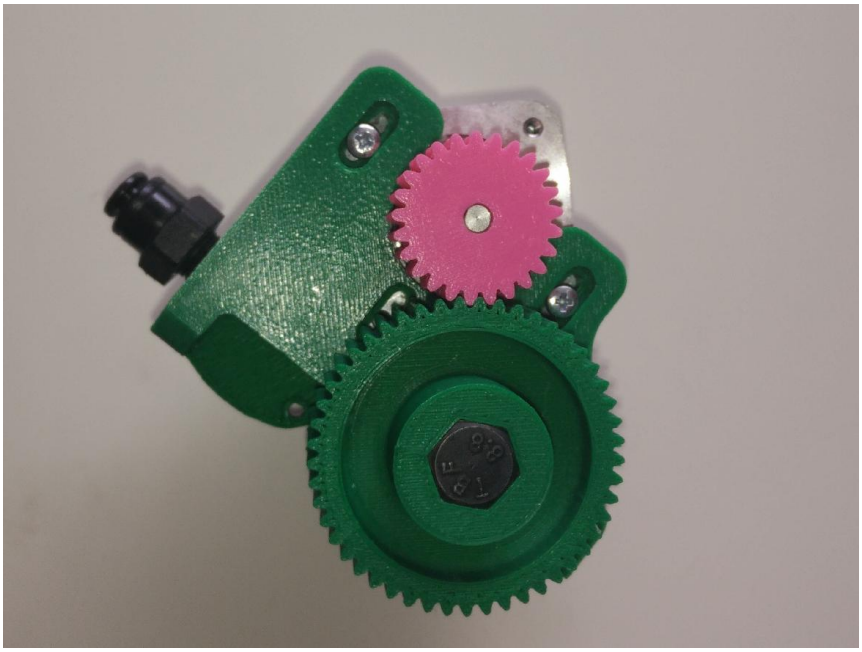
If the hobbed bolt teeth are not lined up then you should use one of the other spacer rings to suit your needs.



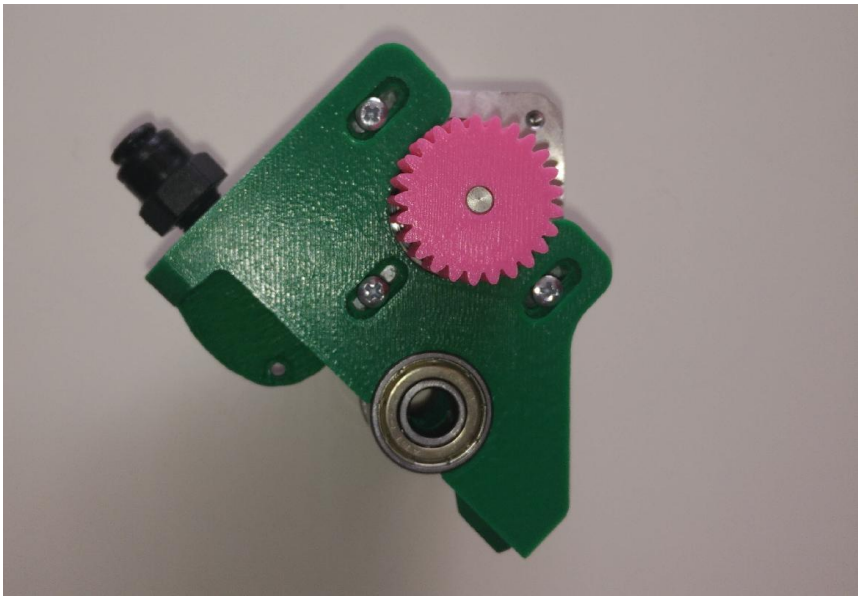
Put the body aside again and grab your stepper driver and the small gear. Insert a M3 nut into the slot on the top and screw a grub screw into it, but not fully as it needs to be mounted onto the stepper shaft first.

Next put the small gear onto your stepper with the grub screw side towards the body of the stepper motor.
And if your stepper motor has a flat side on the shaft then line up the grub screw with the flat side.

Next hold the stepper in place on the body so the gears align, now adjust the height of the small gear on the stepper to make sure both gears align and have the best meshing of the teeth possible. Insert 2x M3x10mm bolts into the mounting holes and into the stepper and tighten these down whilst holding the gears in contact with each other.

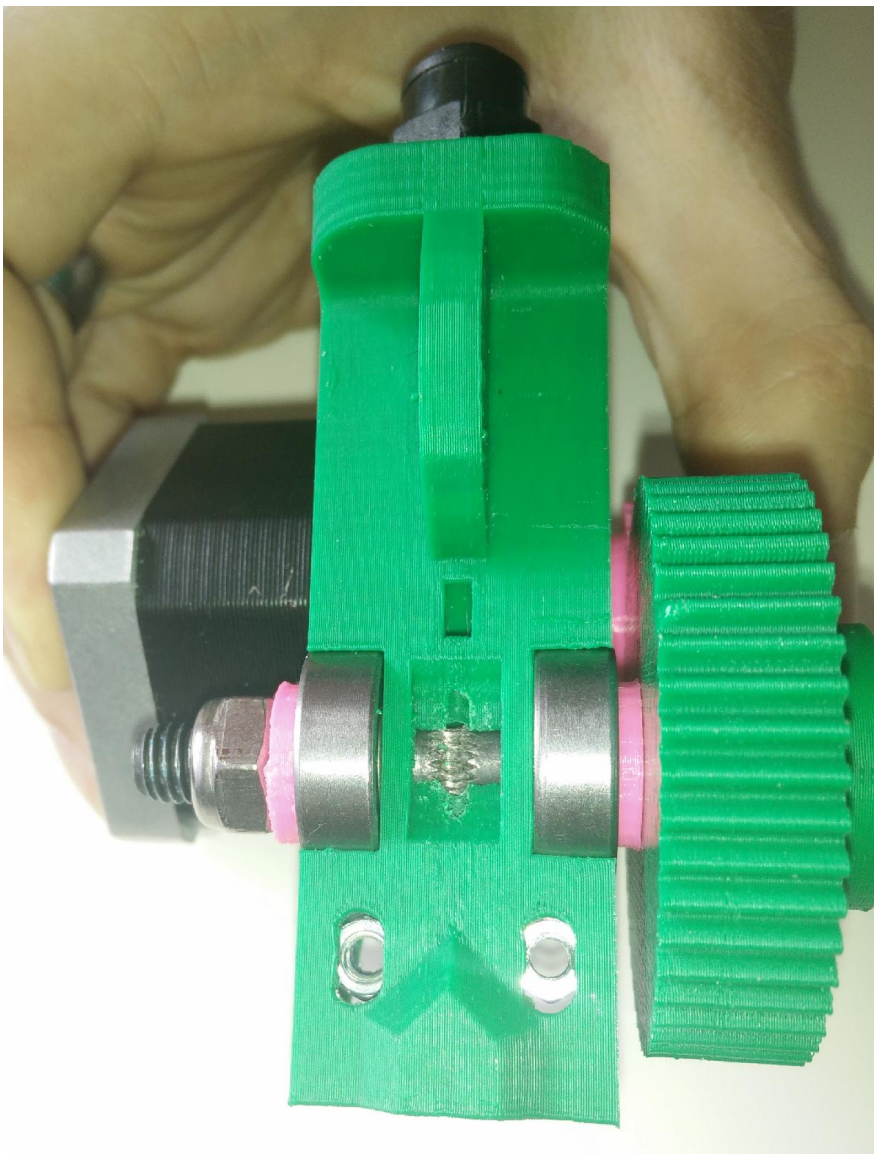


Now remove the big gear and hobbed bolt from the body and tighten the last M3x10mm bolt into the stepper.
Don’t forget to tighten down the grub screw of the small gear.
Afterwards insert the hobbed bolt back into the body.



Now we are going to fasten the hobbed bolt, grab another printed spacer (any leftover size will work) and put that on the other side of the hobbed bolt, followed by a M8 lock nut.

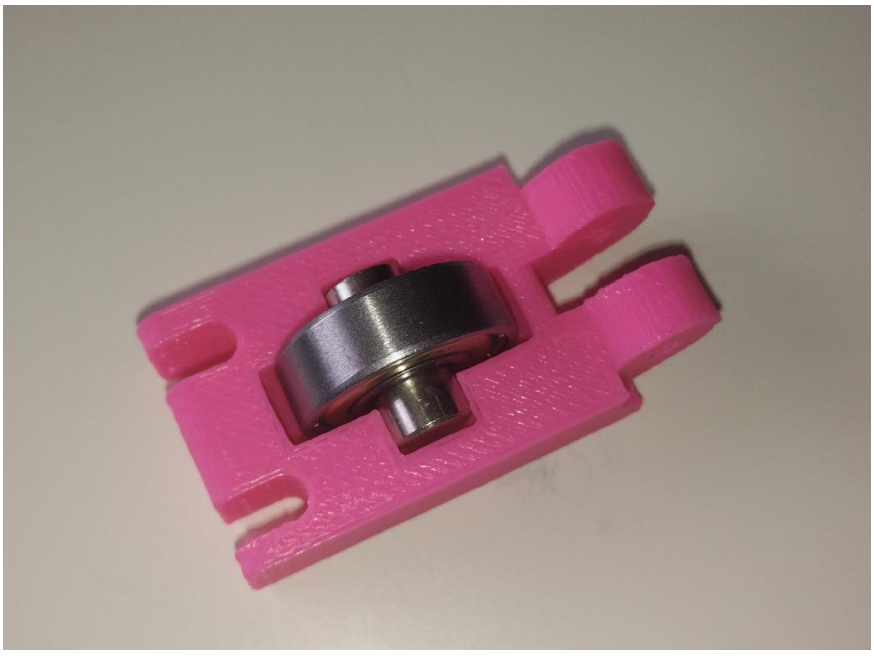
Heads up!
When tightening down the lock nut, make sure you eliminate play from the hobbed bolt but make sure it is still rotating freely with minimal friction.



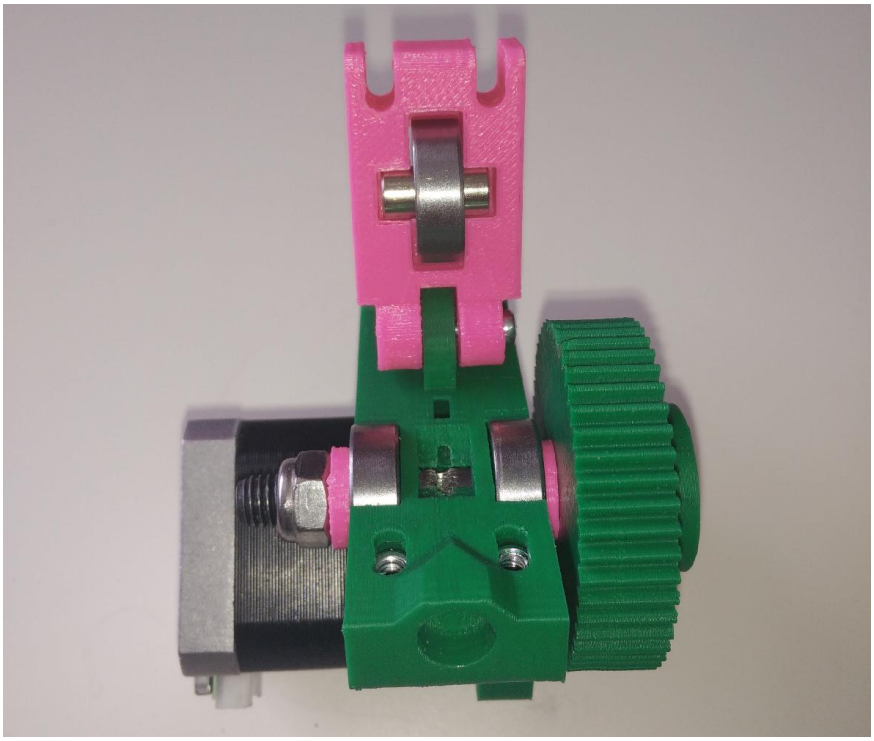
You can lay the body aside again for a second, we will now assemble the idler.

Grab your 8x16mm smooth rod and put in into the hole of the remaining 608ZZ bearing.

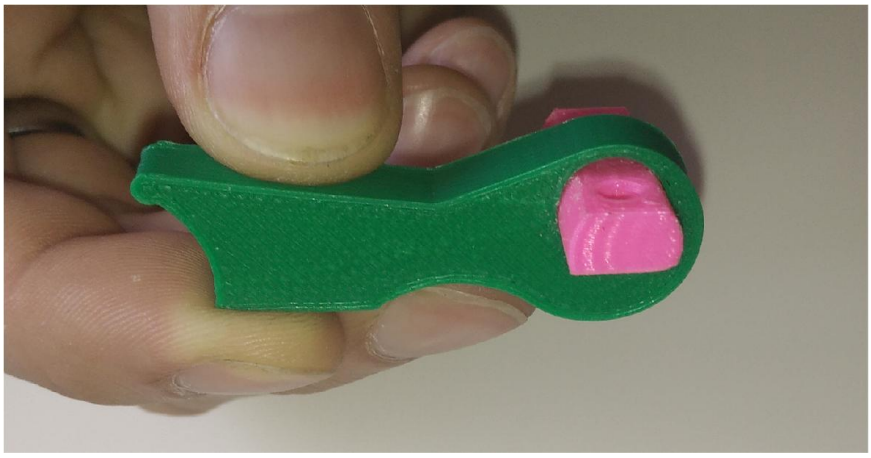
Next push the bearing and smooth rod into the bottom side of the idler, it may require some force. It will snap into place.



Next grab the extruder body again and place the idler on top, use the M3x20mm bolt to mount it onto the body.



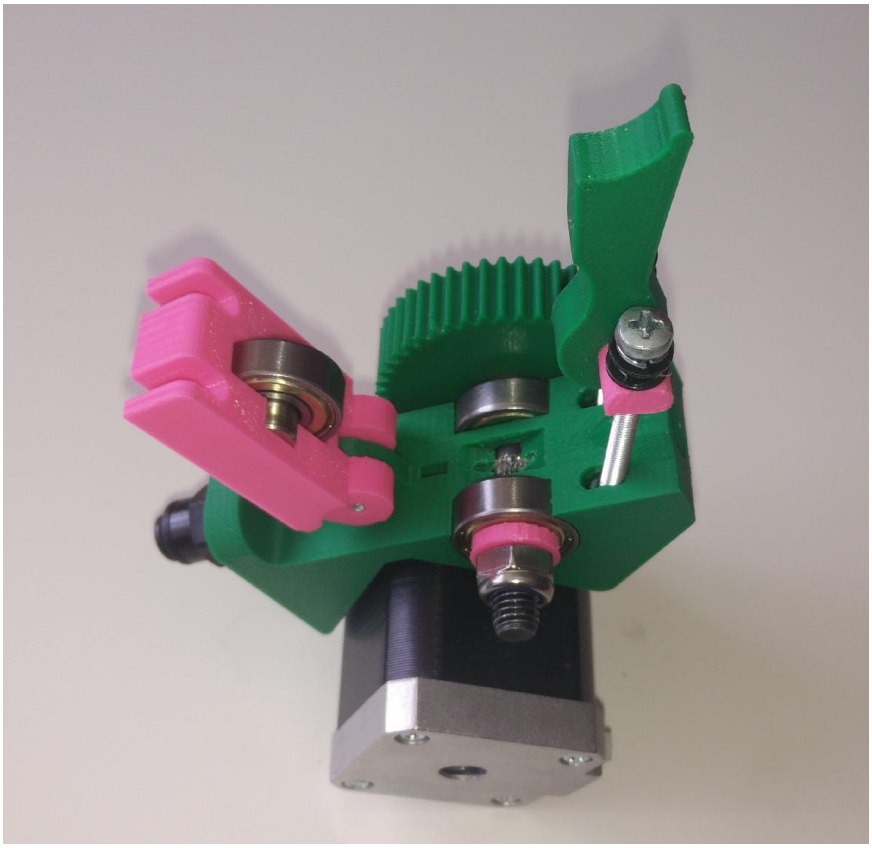
Lastly, we will mount the idler tension crossbar and lever.
Grab the lever and put the crossbar through the hole with the widest side towards the bottom of the lever.



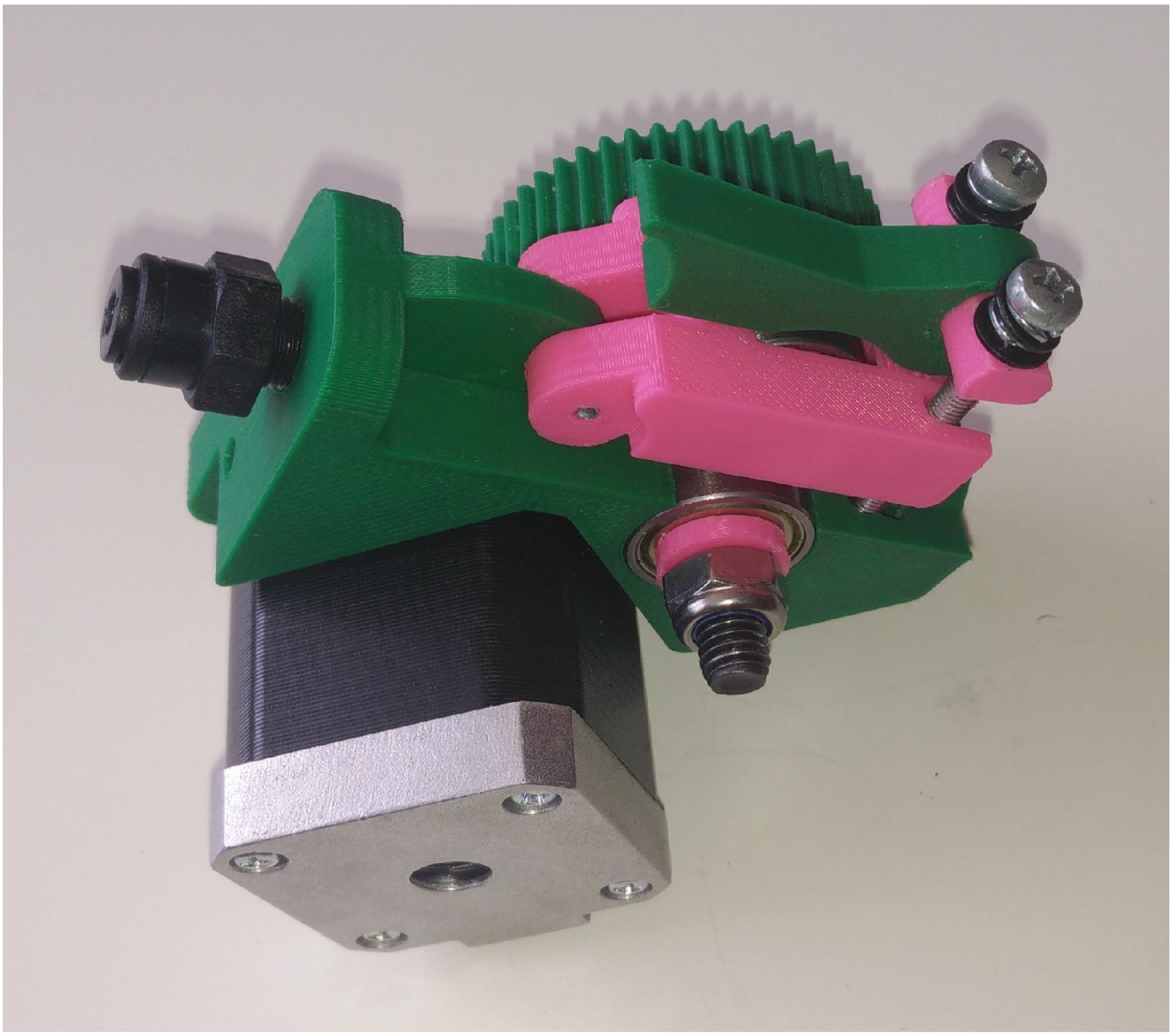
Next, put some spring washers and regular washers onto the 2x M4x50mm bolts.
The order of washers is as followed;

1. M4x50 bolt
2. Spring washer
3. Washer
4. Spring washer
5. Washer

Then insert the M4 bolt assemblies into the holes in the crossbar with the lever in the middle and thread the M4 bolts into the lock nuts in the body. You won't have to tighten the bolts down fully yet until you are setting your filament pressure.



And with that your Gemstruder is ready for mounting.



Your main adventure can now begin.

Happy printing!