Prusa Mendel documentation

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Prusa Mendel is machine from RepRap project. RepRap is open source 3D printer.

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1 Bill of materials

List of things you need to build the machine divided by categories

1.1 Rods and Bars

- 1x Idler

1.2 Nuts&bolts

- 3x 608 skate bearing
- 4x M4 nut
- 3x M3 10mm screw
- 2x M4 25mm screw
- 2x M3 25mm screw with HEX head
- 2x M3 15mm screw with HEX head
- 2x M3 10mm screw with hex head
- 1x M3 25mm screw
- 1x M8 hobbed bolt
- 1x M3 grub screw
- 17x M3 washer
- 37x M8 washer
- 38x M8 nut
- 6x M3 nut
- 1x M3 10mm screw with flat head
- 2x M3 40mm screw

1.3 Printed

- 1x Extruder body
- 16x Bar clamp
- 4x Y bushing
- 4x Frame vertex
- 1x Large extruder gear
- 1x Small extruder gear

- 2x Rod clamp
- 4x Frame vertex with foot
- 1x Y motor bracket
- 2x Belt clamp
- 1x X carriage
- 1x Z motor mount
- 1x Extruder Idler

2 Things overview

List of things and their descriptions

2.1 Y axis

Assembled Y axis

2.2 Frame with axes

Frame with all axes mounted

2.3 Frame vertex

2.4 Frame

Frame for adding all of the other parts

2.5 load tester

2.6 Y motor bracket

2.7 M8 hobbed bolt

2.8 Extruder Idler

Extruder idler

2.9 Frame with Y axis

Frame with Y axis mounted

2.10 Y bushing

2.11 Bar clamp

2.12 Configuration test

2.13 XZ axis

Assembled XZ axis

2.14 Large extruder gear

2.15 Frame vertex with foot

2.16 X end motor

2.17 Extruder body

Extruder body

2.18 Small extruder gear

2.19 Extruder spring

Spring used for idler on extruder.

2.20 Printable Bushing

2.21 X carriage

2.22 X end idler

2.23 Rod clamp

2.24 Z motor mount

2.25 Endstop holder

2.26 Bushing

2.27 Idler

Small M8 rod

2.28 Pulley

2.29 Coupling

2.30 Carriage

X-carriage with mounted extruder

2.31 Belt clamp

2.32 Extruder

Extruder

3 Assembly instructions

3.1 Assemble Small extruder gear

- Insert nut into cavity in printed gear.
- Tighten the grub screw a bit, just to hold in place.

3.2 Assemble Extruder Idler

- Insert piece of M8 rod into bearing.
- Insert 608 bearing with rod into printed idler part.

3.3 Assemble M8 hobbed bolt

- Use thread cutting bit in electric screwdriver ...

3.4 Assemble Large extruder gear

- Insert hobbed bolt into main hole.
- Add some M8 washers from other side, later with their count you adjust position of hobbed part in filament path.

3.5 Assemble Extruder

- Take idler and insert nut into small nut-trap inside the hinge.
- While holding the nut in place, preprare M3x25 bolt with washer and screw it into the hinge just enough to hold the nut.
- Now take the extruder body and idler. Place idler on the hinge counterpart and compleately screw the M3x25 bolt. This will create secured hinge.
- Place M4 nuts into their nut traps, secure them with piece of tape. We need them in place, since later they would be harder to access.
- Prepare your NEMA17 stepper motor and three M3x10 screws with washers.
- Hold motor on place and lightly tighten the screws. We need to adjust motor position later, no need to tighten it hard.
- Place two skate bearings on ther position, they should snuggly fit in.
- Insert prepared large gear into the body with mounted bearings.
- Check if the alignment of hobbed part with the filament path. Adjust it accordingly with adding or removing M8 washers.
- After adjusting, we need to fix the bolt in. So we place washer at the end of hobbed bolt and with two M8 nuts we will do locknut by tightening them against each other.

- Check if large gear turns freely.
- Prepare two M3x40 screws with sandwitch of washer-spring-washer.
- Insert two M3 nuts into nut traps on top of drive mechanism.
- Insert prepared screws into the holes on idler. Close the idler and tighten the screws into the trapped nuts. More you tighten those screws, more pressure will be on fillament.
- Your extruder is done.