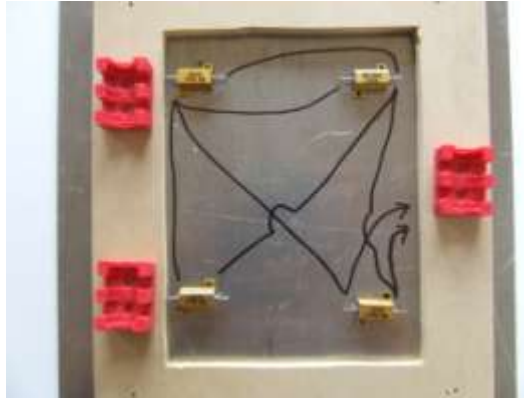# Prusa assembly notes

Fix MDF ring to aluminium bed with no6x10mm screws 4 screws.

Fix bearing brackets to MDF with no6x10mm screws 3 screws. Only use one screw in each as it helps to centre everything.


Fix housed resistors to aluminium with countersunk M3x10mm bolts 8 bolts and nuts

Fix belt holders to MDF with no6x12mm screws 4 screws

Fix all motors with M3x10mm bolts 14 bolts and washers, except the extruder motor use M3x12mm bolts 3 bolts

Fix electronics bracket to frame with M4x25mm bolts 8 bolts and nuts, 16 washers. Fix Sanguinololu board to base plate with M3x20mm bolts and Nylock nuts as standoffs then the board finish with normal nuts 4 bolts, 8 washers, 4 Nylock nuts and 4 normal nuts.
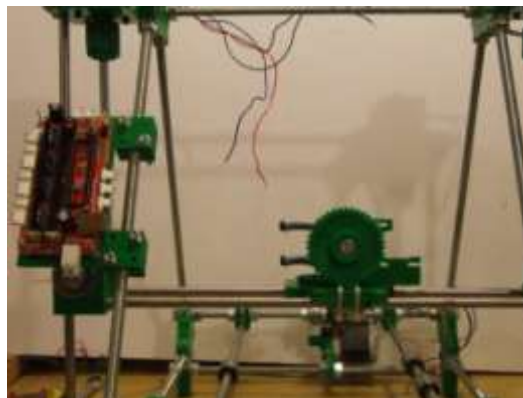
Fix Z couplings to motor shafts and threaded rod with M3x20mm bolts 8 bolts, washers and nuts. Put 5mm tube on the Z motor shafts.

Fix extruder to X carriage with M4x20mm bolts 2 bolts, 2 washers and 2 nuts.
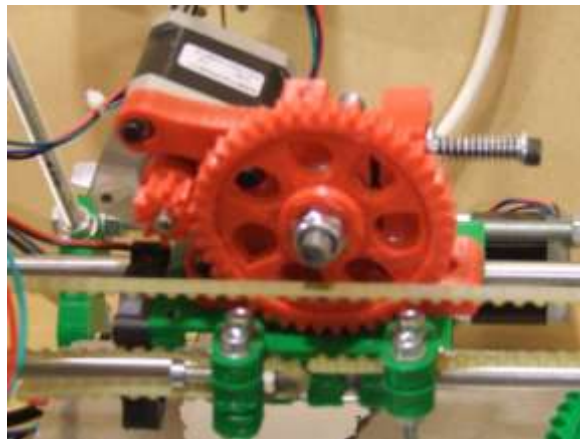
Fix gears to motor shafts, (file a flat on the shaft) with M3 grub screws and capture nuts inserted into the gear.

Fix nozzle to extruder with M3x25mm bolts 2 bolts

Fix hinged extruder together with M4x35 or 40mm 1 bolt, 2 washers, 3 608 bearings and short threaded rod 16mm long

For the big gear use M8x65mm Hobbed bolt, 2 nylock nuts and 4 washers, 3 are used behind the gear as spacers.

Fix idler top bolt M3x60mm 2 bolt, 2 spring, 4 washers, and 2 capture nuts

Fix Opto flag to X carriage with M3x10mm 1 bolt, 2 washers and 1 nut

Use short cable ties on each bearing for the X axis 1 for each bearing, the single bearing needs the cable tie to be on the left otherwise it fouls the large gear.

Use long cable ties for the bed bearings (drill through the MDF with a 5mm drill bit) Use 4 short cable ties for the Z motor and Z idler brackets.

Use a nut on both sides of the Z motor and Idler so that it winds up as well as down. (So put one in the top and one in the bottom)

Use M3x16mm bolts for the 40mm fan bolted to the X carriage (insert the nuts before the bearings as they need a tap down with a hammer).
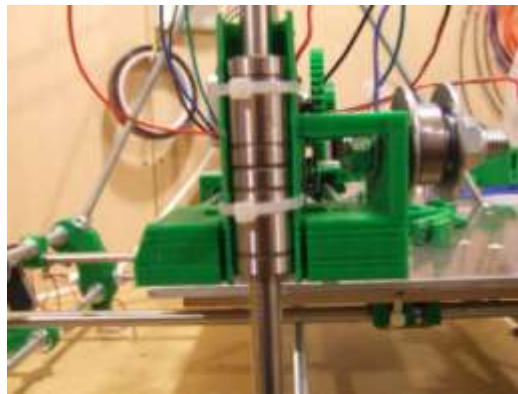
Belt holders on X carriage use M4x30mm 5 bolts, 8 washers and 5 nuts

Rod clamps use M3x 20mm 4 bolts, 4 washers and 4 nuts

Opto's use M3x16mm to fix to bracket 6 bolts, 12 washers, 6 nuts. To fix bracket to rails M4x20mm 3 bolts, 6 washers and 3 nuts

For the idler bearing use M8x50mm threaded rod 2 Nylock nuts, 2 large washers and 5 small washers

Bearing and washer layout.

The linear bearings will just clip into the X motor and X idler no problems at all, but in the Y axis brackets and the X carriage I found it best to heat the plastic parts **gently and very briefly** with a heat gun first (only needed on the X carriage and Y axis holders).

Sanguinololu 1.2 Wiring Schematic

X axis

Y axis

2 Z axis motors

Extruder Motor

Extruder Heater

Extruder Thermistor

SDSL

L N G COM COM V+ V+

Power Supply
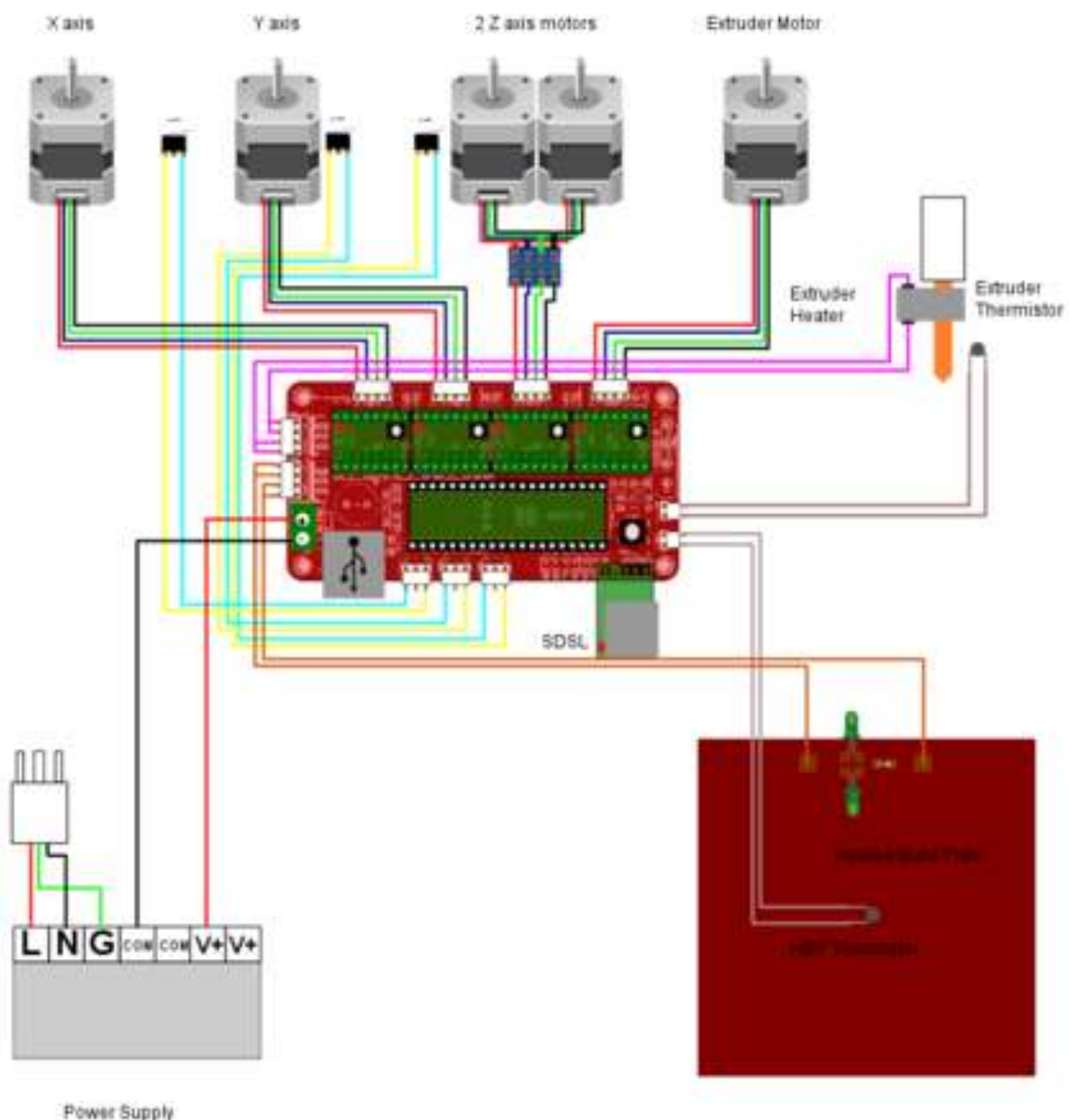
Included on this CD are photos of a Prusa build the same as the one you have purchased. The Arduino software package, the Sanguino plug-in, the Sprinter firmware (this is already setup and installed on the Sanguino board), the Pronterface and Repsnapper software for driving your Prusa (choose which you prefer both seem to work well) along with the Java software need to run Pronterface, Skeinforge for converting .stl files to Gcode and finally Netfabb basic software for viewing and repairing .stl files

Links

http://www.thingiverse.com/thing:9869

X carriage and fan mount showing belt tensioner by Greg Frost

http://www.thingiverse.com/thing:9622

Prusa Z coupling by Nophead

http://www.thingiverse.com/thing:8252

Hinged extruder by Greg Frost

http://reprap.org/wiki/Sanguinololu

Sanguinololu board layout, Wiki site

http://reprap.org/wiki/OptoEndstop_2.1

Wiring up the Opto's and associated board

http://reprap.org/wiki/PCPowerSupply#Building_an_affordable_power_supply

Converting an ATX power supply

http://reprap.org/wiki/Prusa_Mendel

Prusa wiki page

http://reprap.org/wiki/RepSnapper_Manual:Introduction

Repsnapper wiki

Use Skeinforge to convert drawings from an STL file to the required Gcode, the version of Skeinforge included here is V41 an older version but it includes my current settings.

Use Pronterface to load the Gcode output by Skeinforge and then send it to the Prusa

<u>Nuts and bolts</u>

<u>Screws</u>

No6 dome head 12mm   5no

No6 c/sink10mm   7no

<u>Countersink machine screws</u>

M3 x 10mm   9no

<u>Socket head machine screws</u>

M3 x 10mm   12no

M3 x 12mm   3no

M3 x 16mm   8no

M3 x 20mm   17no

M3 x 60mm   2no

M4 x 20mm   5no

M4 x 25mm   8no

M4 x 30mm   5no

M4 x 35mm   1no

<u>Dome head machine screws</u>

M3 x 35   2no

<u>Nuts</u>

M3   39no

M4   19no

M8   80no

M8 nylock   4no

<u>Washers</u>

M3	45no
M4	36no
M8	90no
M8 30mm	6no

<u>Grub screws</u>

M3 x 8mm	4no

<u>Bearings</u>

8mm Linear	10no
608 skate	6no

<u>Threaded rod</u>

6 x 370	Triangle end frames
4 x 294	Front and rear lower bars
4 x 294	Top and underneath bars
2 x 210	Z axis bars
1 x 50	X idler
1 x 16	Extruder idler

<u>Smooth rod</u>

2 x 400	X carriage (extruder)
2 x 406	Y axis (bed)
2 x 350	Z axis (up & down)