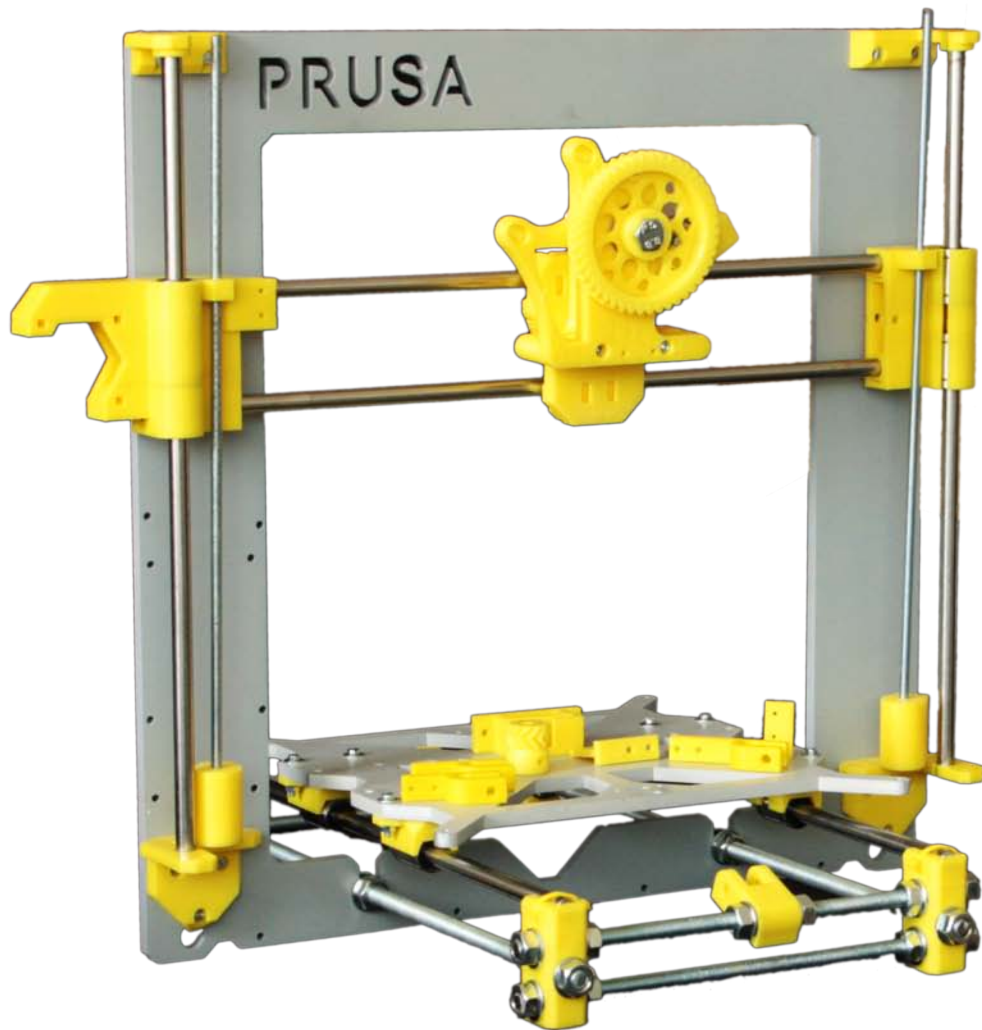


Reprap Prusa i3 Frame Kit



Build Manual

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Publications

Introduction

Purpose:

This Build Manual provides a step-by-step guide needed to construct a Reprap Prusa i3 Frame Kit

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Author of this Document:

Richard Achatz (richard.achatz@me.com)

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Prusa i3 Frame Kit: GPL (<http://reprap.org/wiki/GPL>)

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Changelog













V1 – 16th June 2013




- Initial Version

In case of issues with this document, suggestions or comments contact
the author: richard.achatz@me.com

List of Materials

Printed Parts

X Carriage	Y Belt Holder	Z Coupler	Z Axis Top Left	Z Axis Top Right	Z Axis Bottom Left	Z Axis Bottom Right	Endstop Mount	Endstop Holder Small	Y Bushing	Y Motor	Y Idler
											
1x	1x	2x	1x	1x	1x	1x	2x	2x	4x	1x	1x

Y Corner	X End Idler	X End Motor
		
4x	1x	1x



Extruder

Extruder Block	Wade Big Gear	Wade Small Gear	Gidler
			
1x	1x	1x	1x




List of Materials

Non-Printed Parts












Aluminium Frame







Prusa i3 Frame	Heated bed Mount
	
1x	1x

Threaded Rods & Smooth Rods

Threaded Rod M5 x 300mm	Threaded Rod M8 x 205mm	Threaded Rod M8 x 380mm	Smooth Rod 8mm x 320mm	Smooth Rod 8mm x 360mm	Smooth Rod 8mm x 370mm
					
2x	4x	2x	2x	2x	2x

Nuts, Bolts, Screws, Hobbed Bolt, Washers and Tie-Wraps

M3 Nut	M3 Washer	M3 x 16 Bolt	M3 x 25 Bolt	M3 x 35 Bolt	M4 Nut	M4 Washer	M4 x 20 Bolt	M4 x 25 Bolt	M4 x 30 Bolt	M5 Nut
										
24x	30x	21x	1x	2x	4x	10x	2x	1x	1x	4x

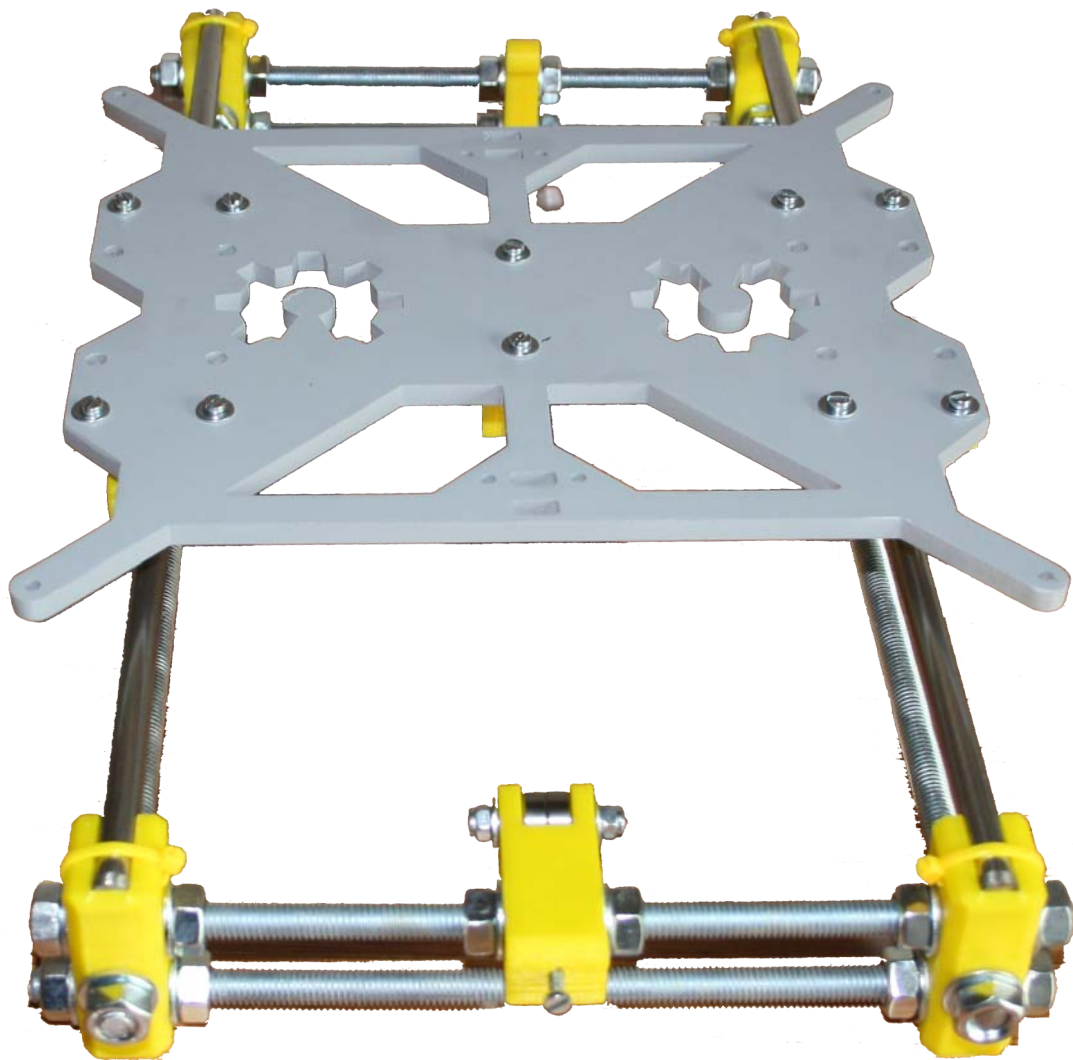
M5 Washer	M8 Nut	M8 Washer	M8 Grub Screw 20mm	Hobbed Bolt	Tie-Wraps
					
2x	36x	37x	1x	1x	14x

Bearings

LM8UU Bearing	Ball Bearing Large	Ball Bearing Small
		
11x	3x	3x

Step 1


Y-axis Assembly








1

Vertical Sides / Collecting all Parts



Printed Parts	
Y Corner	
	
4x	

Non-Printed Parts				
Threaded Rod M8x 380 mm	Smooth Rod 8mm x 360 mm	LM8UU Bearing	M8 Nut	M8 Washer
				
2x	2x	4x	12x	12x

1-1

Assemble Vertical Sides





Take two 380 mm threaded rods. Place an M8 nut, two M8 washers, and another M8 nut in the middle of each threaded rod. Fix the threaded rods to the Y corners with another nut and washer (hand-tight) on either side. Slide two LM8UU bearings onto the two 360 mm smooth rods. Push the smooth rods carefully on top of the Y corners.






Note: If the threaded rods don't slide easily through the Y corners, use an 8 mm drill to widen the gap. Be extremely careful not to crush the plastic parts.

2

Horizontal Sides / Collecting all Parts



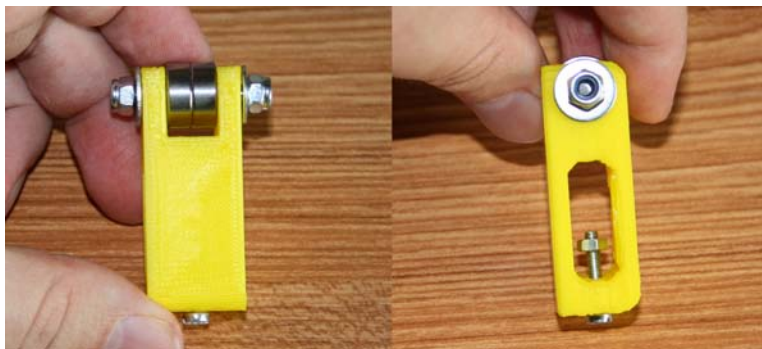
Printed Parts	
Y Motor	Y Idler
	
1x	1x

Non-Printed Parts				
Threaded Rod M8 x 205mm	M3 nut	M3x16 Bolt	M4 nut	M4 Washer
				
4x	1x	1x	1x	2x

M4x30 Bolt	M8 Nut	M8 Washer	Ball Bearing Small	Tie-wraps
				
1x	22x	22x	2x	4x

2-1

Assemble Y Idler



Slide an M4x30 bolt & M4 washer through the side of the Y Idler, put two small ball bearings in the middle. Fix the bolt with a washer and nut. Slide an M3x16 bolt through the top of the Y Idler. Put an M3 nut on the end of the bolt.

2-2

Assemble Horizontal Sides



Take four 205 mm threaded rods, slide two through the Y Motor mount and one through the Y Idler. Fix the Y Motor and Y Idler in the middle with an M8 washer and nut on either side. Take another threaded rod. Thread a nut and washer on all ends of all four rods (+- 4 cm from the ends).

2-3

Connect Horizontal / Vertical Sides





Slide all the ends through the Y corners of the vertical sides. Fix them with a washer and a nut (hand-tight). Fasten the smooth rods with four tie-wraps.

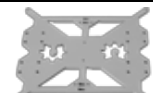




Note: Do not tighten the outer nuts with a wrench yet. We need some flexibility for the next steps.

3

Y-carriage / Collecting all Parts

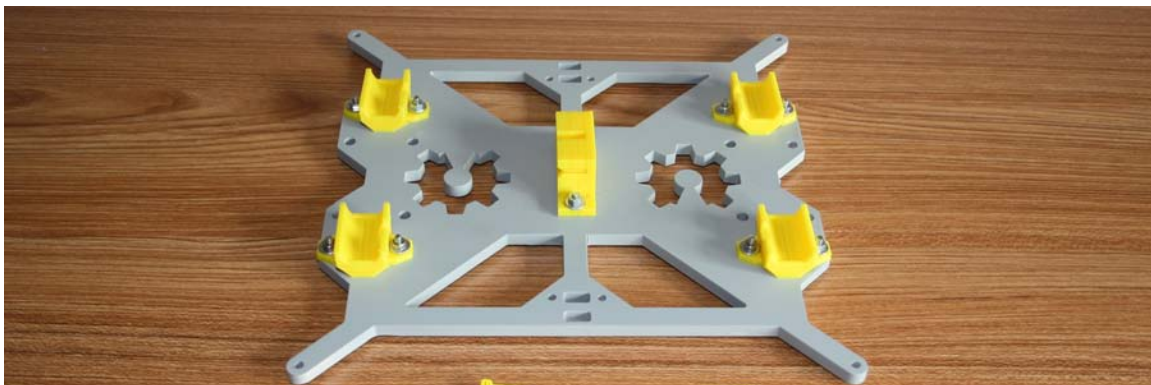


Printed Parts	
Y Belt Holder	Y Bushing
	
1x	4x

Non-Printed Parts				
Heated bed Mount	M3 nut	M3 Washer	M3x16 Bolt	Tie-wraps
				
1x	10x	20x	10x	4x

3-1

Assemble Y-carriage

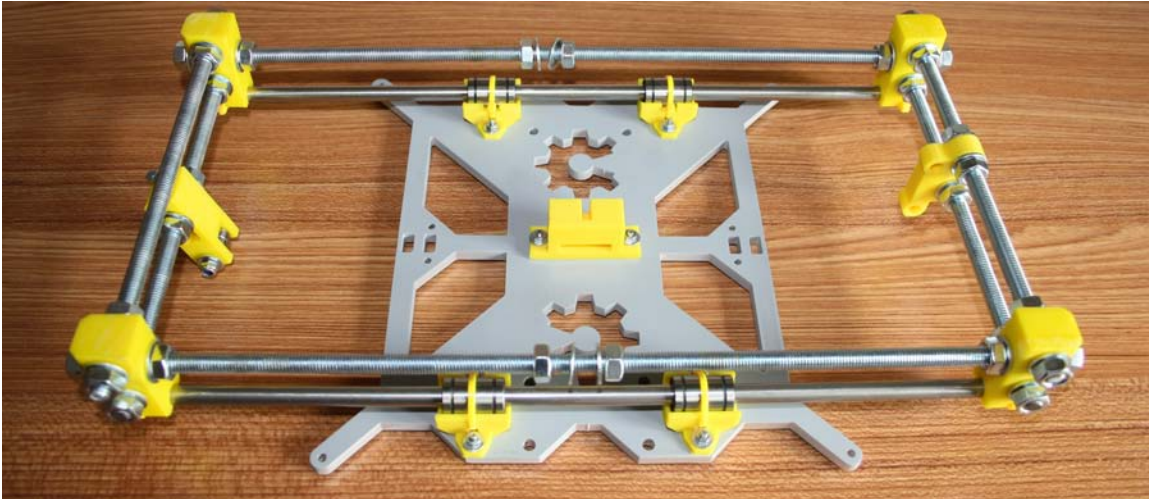


Mount (hand-tight) the four Y Bushings, with eight M3x16 bolts, 16 M3 washers and 8 M3 nuts, to the Heated bed Mount. Place the Y Belt Holder on the middle of the Heated bed Mount and fix it with two bolts, four washers and two nuts.

Note: The holes of the Y Bushings might be a little too small. Use an 3 mm drill to widen the gap. Be extremely careful not to crush the plastic parts.

3-2

Connect Y-carriage / Y-axis



Connect the Y-carriage to the Y-axis frame. Carefully place the LM8UU bearings in the Y bushings and fix them with four tie-wraps.

Note: You might have to loosen the outer nuts of the Y-axis frame.

3-3

Adjusting the Y-axis frame

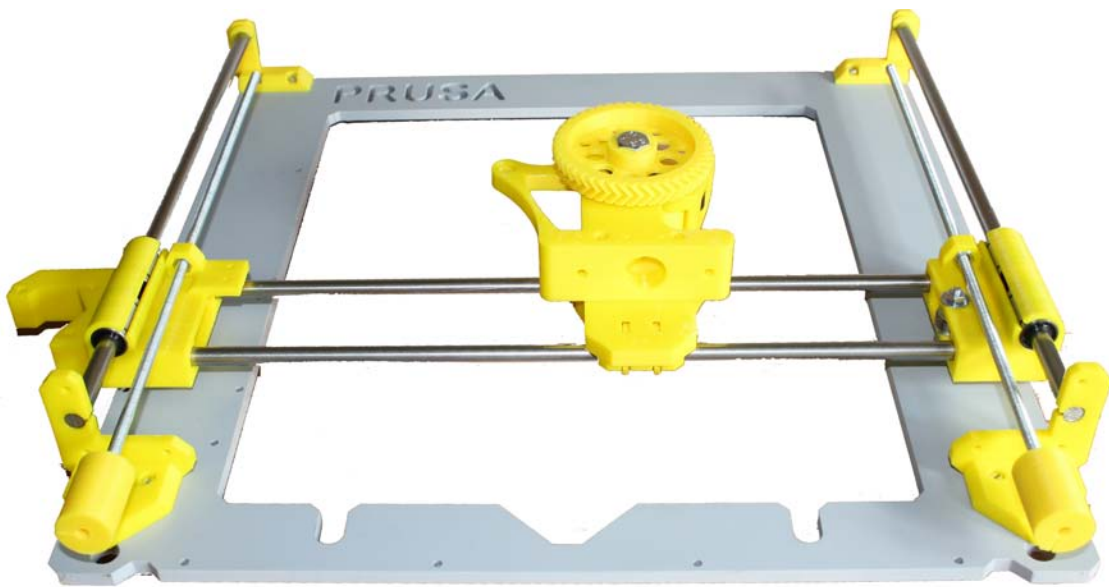


Measure the distance between the smooth rods. It should be at approximately 16,2 cm. Make sure the Y-carriage runs smoothly up and down. Tighten the outer nuts with a wrench and the Y Bushings of the Y-carriage with a screwdriver.

Note: Tighten with care until firmly attached and unable to move. Do not crush the plastic parts!

Step 2




X & Z-axis Assembly










4


X & Z Axis / Collecting all Parts





Printed Parts		
X End Idler	X End Motor	Z Coupler
		
1x	1x	2x

Non-Printed Parts				
Prusa i3 Frame	Threaded Rod M5 x 300mm	Smooth Rod 8mm x 320mm	Smooth Rod 8mm x 370mm	M3 Nut
				
1x	2x	2x	2x	10x

Z Axis Top Left	Z Axis Top Right
	
1x	1x

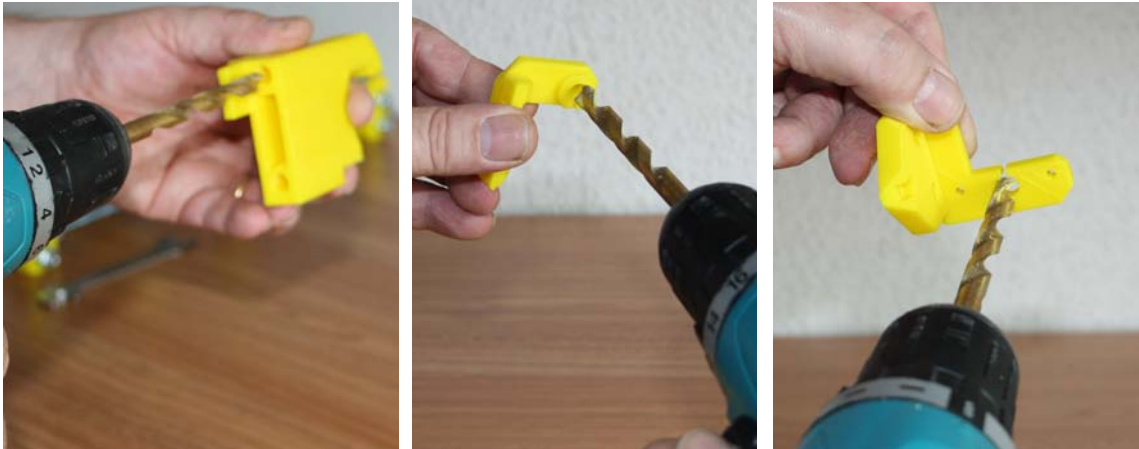
M3 Washer	M3x16 Bolt	M4 Nut	M4 Washer	M4x25 Bolt
				
10x	10x	1x	6x	1x

Z Axis Bottom Left	Z Axis Bottom Right
	
1x	1x

M5 Nut	M5 Washer	LM8UU Bearing	Small Ball Bearing
			
4x	2x	7x	1x

4-1

Preparation

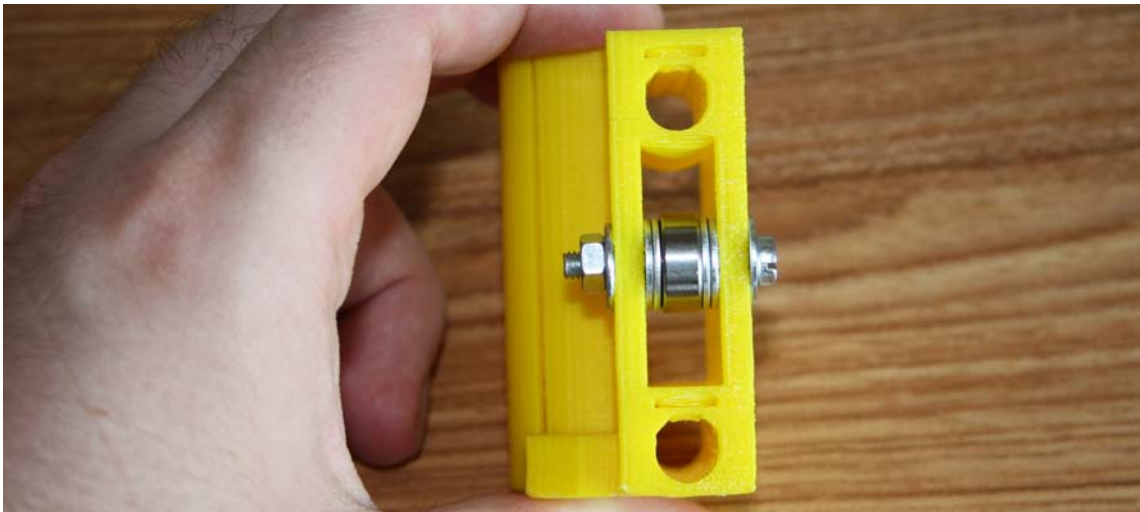


Widen the holes of the X End Idler, X End Motor and Z Axis Top parts with an 8 mm drill.

Note: DO NOT PENETRATE THE PARTS! Be extremely careful not to crush the plastic parts.

4-2

Assemble X End Idler



Slide an M4x25 bolt with an M4 washer through the X End Idler, put two washers, a small ball bearing and two more M4 washers in the middle. Fix the bolt with an M4 washer and an M4 nut.

4-3

Push the bearings



Push two LM8UU bearings in the X End Idler, and two LM8UU bearings in the X End Motor parts. Use a rubber mallet for this procedure.

Note: Be extremely careful not to crush the plastic parts.

4-4

Assemble X & Z Axis



Slide one 320 mm smooth rod through the bearings of the X End Idler, and another 320 mm smooth rod through the bearings of the X End Motor. Fix the ends with the Z Axis Top and Bottom parts. Take two 370 mm smooth rods. Put two LM8UU bearings on the upper rod and one on the other rod. Connect the smooth rods to the X End Idler and Motor parts.

4-5

Connect X & Z Axis to Aluminium Frame



Now, connect the X & Z Axis to the Aluminium Frame. Push 10 m3x16 bolts through the printed parts. Fix the bolts with a washer and a nut at the back of the Aluminium frame.

Note: You might need to push the X End Idler and Motor parts a little with a rubber mallet. Be extremely careful not to crush the plastic parts.

4-6

Prepare Z Couplers



Widen one hole of both Z Couplers with an 5 mm drill and do not drill deeper then 15 mm. This side will be attached, later, to the motor shaft.

Note: Be extremely careful not to crush the plastic parts.

4-7

Assemble Z Couplers



Turn the two 300 mm threaded rods in the other opening of the Z Couplers. Fix them with an M5 washer and nut

Note: For extra stability, put a little plastic glue into the Z Coupler.

4-8

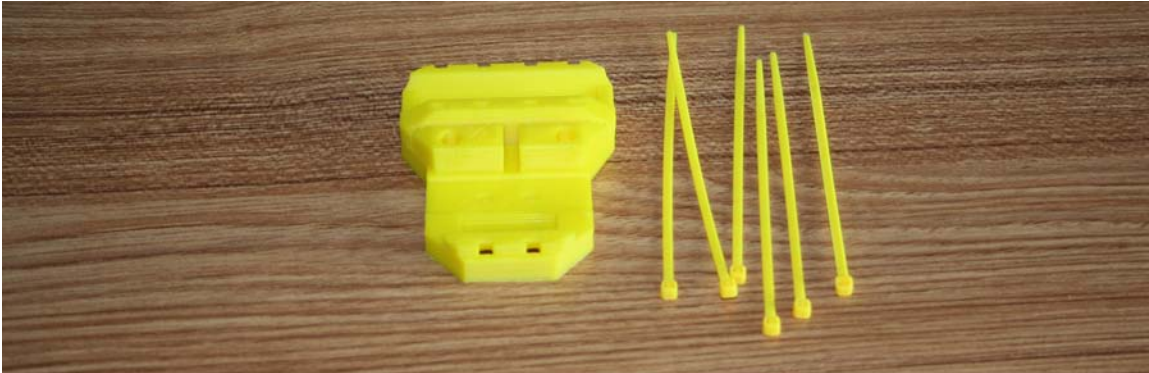
Mount Z Couplers to X-Axis





Place an M5 nut in the X End Idler & Motor. Turn the threaded rods until in position.

5

X-Carriage / Collecting all Parts

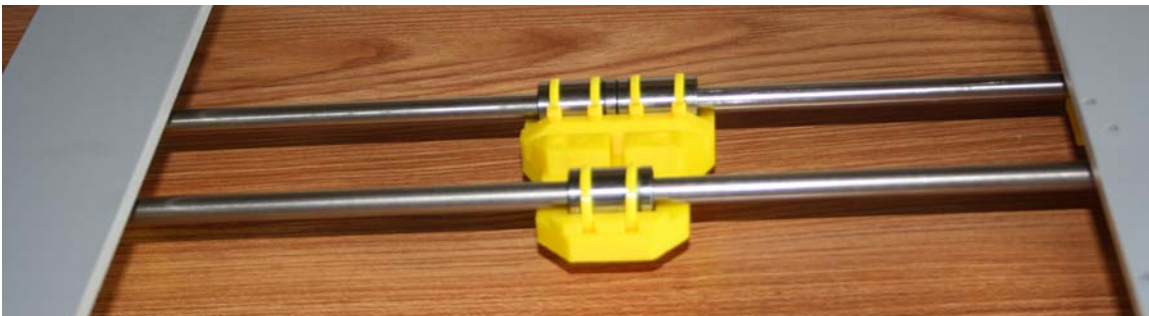


Printed Parts	
X Carriage	
	
1x	

Non-Printed Parts	
Tie-wraps	
	
6x	

5-1

Mount X-Carriage to Z-Axis











Pull the tie-wraps through the openings of the X-Carriage. Fix them tightly to the bearings of the X-axis. The bearings shouldn't be visible from the front.




6

Extruder / Collecting all Parts



Printed Parts		
Extruder Block	Wade Big Gear	Gidler
		
1x	1x	1x

Non-Printed Parts				
M8 grub screw 20mm	Hobbed Bolt	M3 Nut	M3x25 Bolt	M3x35 bolt
				
1x	1x	3x	1x	2x

M8 Nut	M8 Washer	Ball Bearing Large
		
2x	3x	3x

6-1

Prepare Gidler



Heat up an M3 nut and place it into the side of the Gidler.

6-2

Assemble Gidler



Slide the 20 mm grub screw through a large ball bearing. Push it inside the gidler with a rubber mallet. Make sure that the bearing turns around with ease.

Note: Be extremely careful not to crush the plastic parts. You might need to remove some material from the Gidler to make it turn around smoothly.

6-3

Prepare Extruder



Re-drill (3 mm) the side hole of the extruder.



Re-drill (3,5 mm) the bottom hole of the extruder.

Note: Be extremely careful not to crush the plastic parts.

6-4

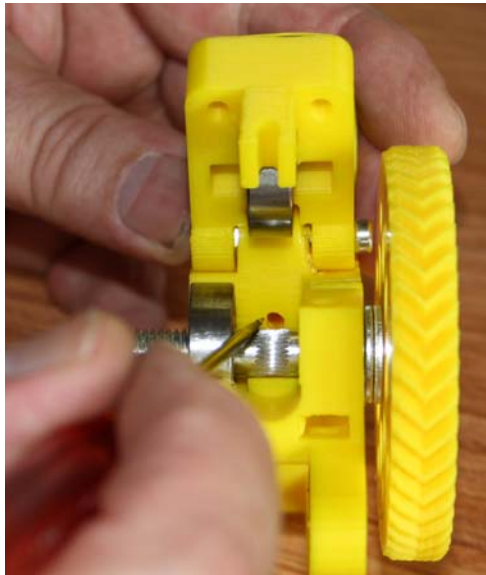
Connect Gidler / Extruder



Connect the gidler to the extruder with an M3x25 bolt.

6-5

Position Big Gear



Slide a hobbed bolt through the big gear. Put 2 M8 washers on the hobbed bolt. Now slide it through the side of the extruder. Make sure the hole, pointed in the picture, is in line with the teeth's of the hobbed bolt. Put a large ball bearing next to it.

6-6

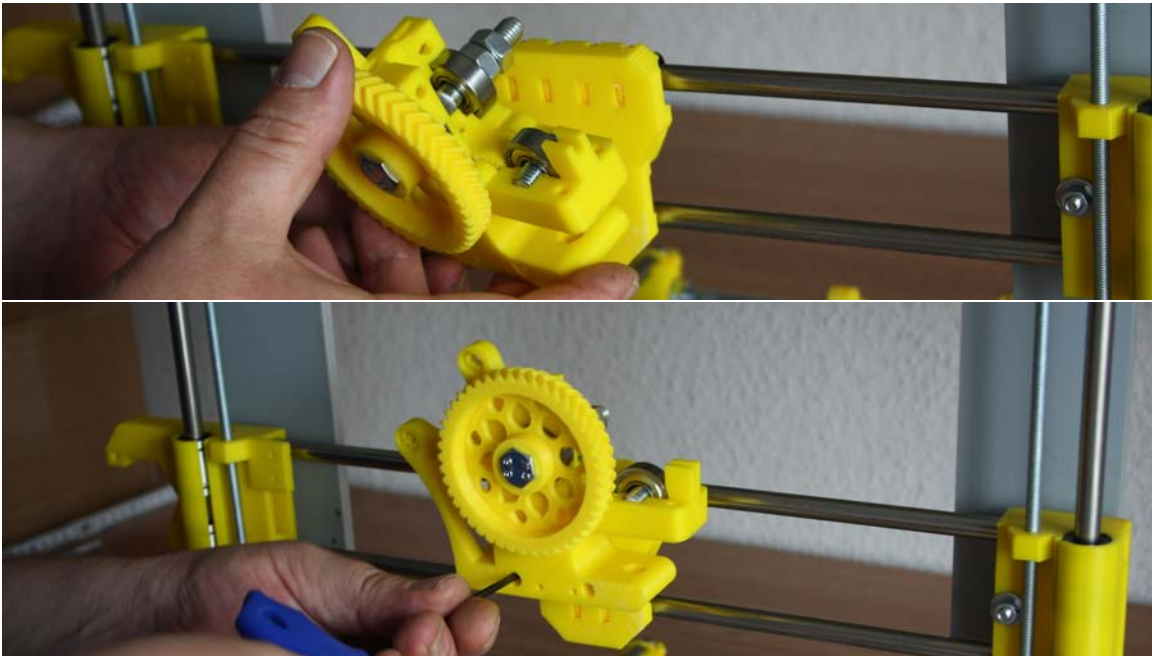
Fix Big Gear



Fix the hobbed bolt with an M8 washer and 2 nuts (next to the large ball bearing of step 6-5).

6-7

Mounting the extruder



Mount the extruder to the X-Carriage with two M3x35 bolts. Fix them with an M3 Nut on the back of the X-Carriage.

Note: Be extremely careful not to crush the plastic parts.

Step 3

Connecting X, Y & Z-axis

7-1

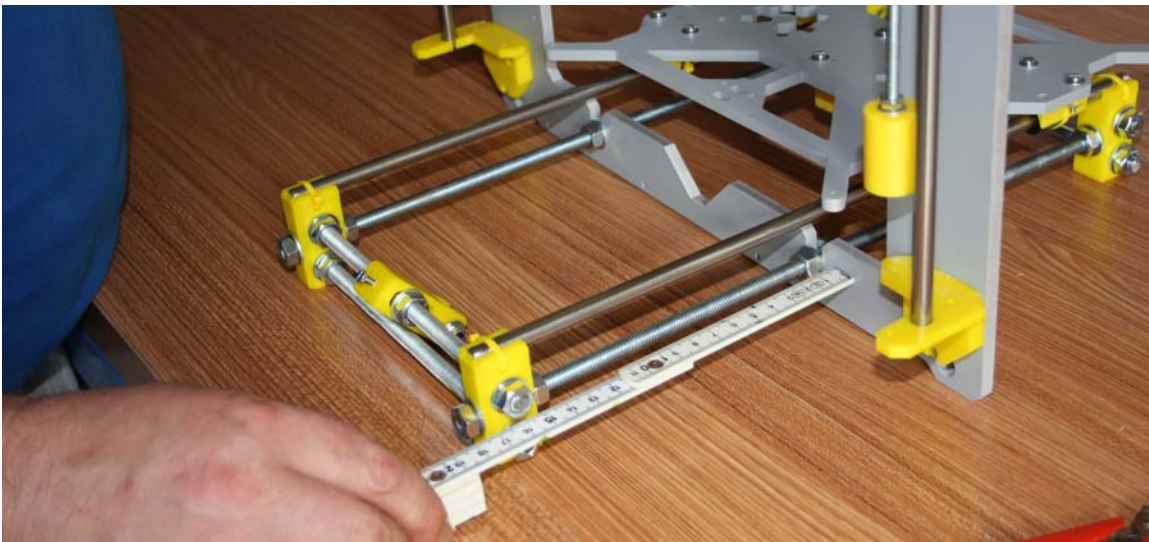
Connecting X, Y & Z-Axis



Mount the Y-Axis frame to the Aluminium frame by tightening the M8 nuts.

7-2







Adjusting the frame



It is not necessary to perfectly adjust the frame right now. You can fix it after you mounted the hotend. Make sure that the nozzle of the hotend points to the left down corner of the heatbed when the machine's axis is moved to "Zero".

7-3

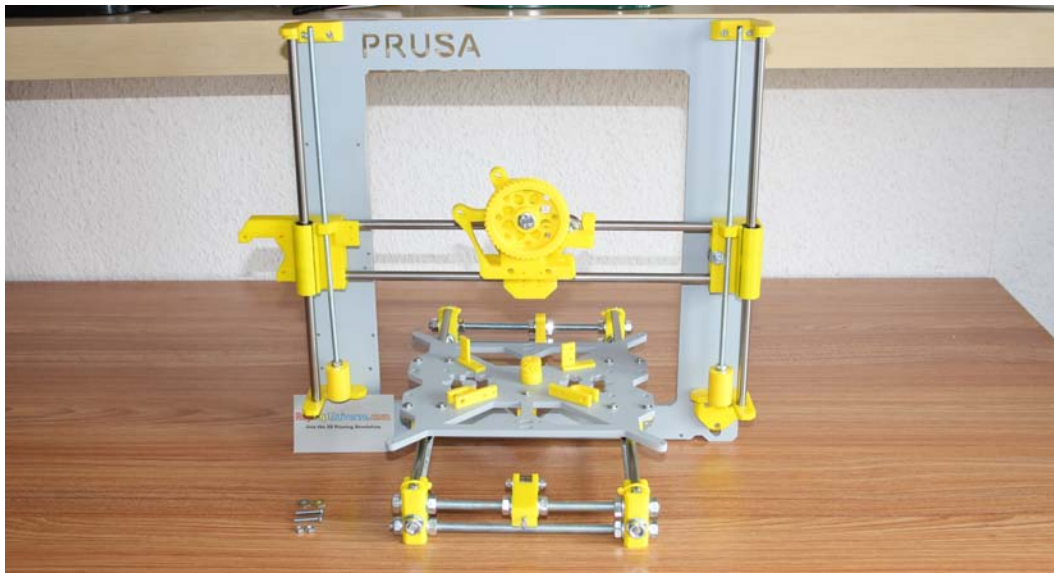
Parts for next steps

Printed Parts			Non-Printed Parts		
Wade Big Gear	Endstop Mount	Endstop Holder Small	M4 Nut	M4 Washer	M4x20 Bolt
					
1x	1x	2x	2x	2x	2x

The Prusa i3 frame kit contains some extra parts that you will need at later stages when mounting the endstops and the hotend.

7-4

Prusa i3 Frame Kit Ready



You have finished building up your Prusa i3 Frame. Enjoy!