

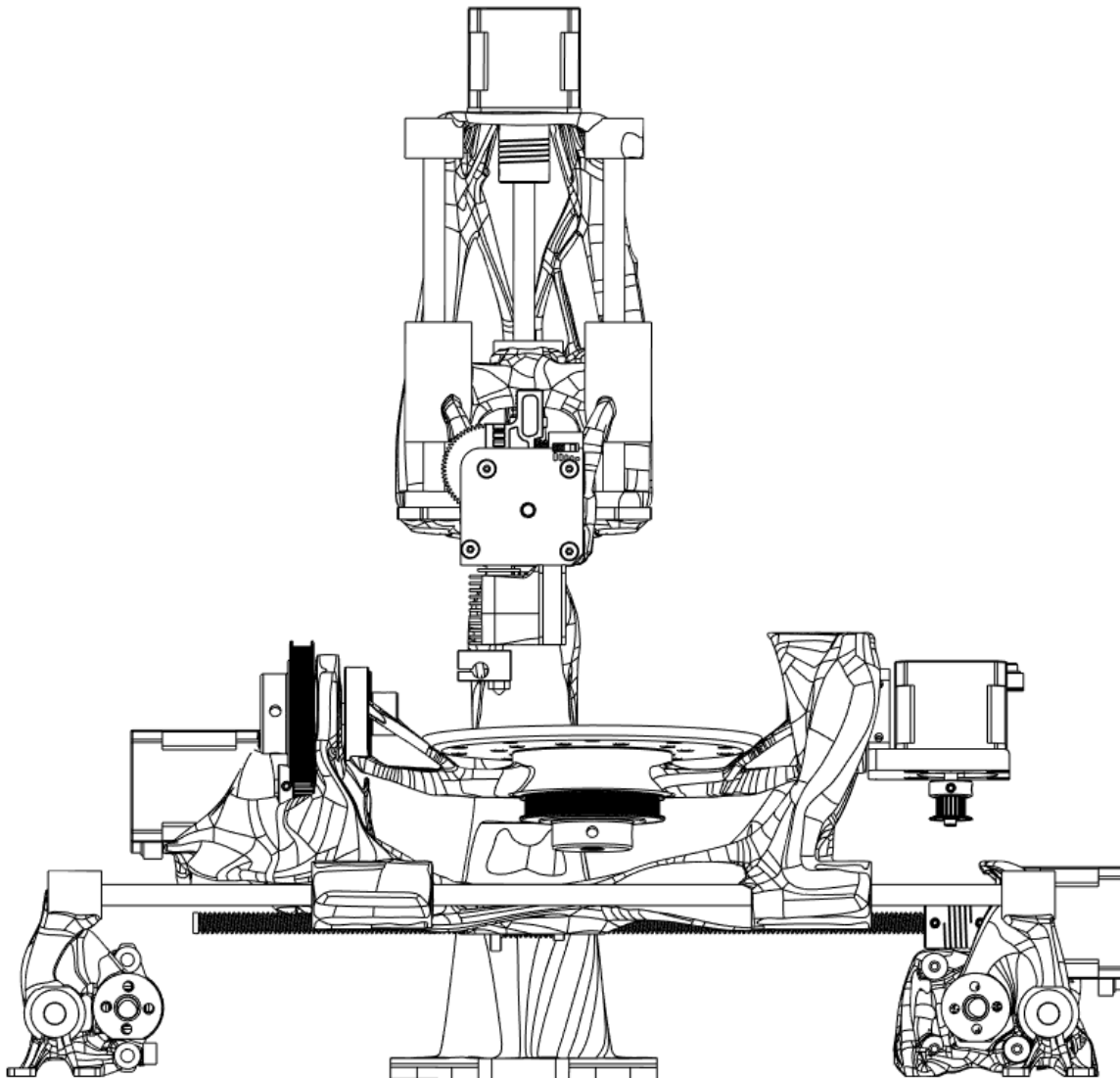
Gen5X V1.0

Parts List

This list of parts includes everything needed to build and assemble the Gen5X Generatively Designed 3D Printer. The V1.0 was designed to work with readily available low cost components. Many of the parts required for this build can be salvaged from older 3D Printers, or similar projects. If you don't have the right parts (for example LM10UU bearings and 10mm steel rods instead of the specified LM8UU) you could have a go at regenerating the design in Fusion360 to work with your components.

The Fusion360 file can be accessed here: <https://a360.co/3Y41ZV0>

STEP files have now also been added to the project repo.



For convenience, the list of parts is given via a breakdown of the following subassemblies: the XY assembly, Trunnion assembly, and Z assembly. Additional parts such as controllers, power supplies and belts are given at the end.

Sub-Assemblies

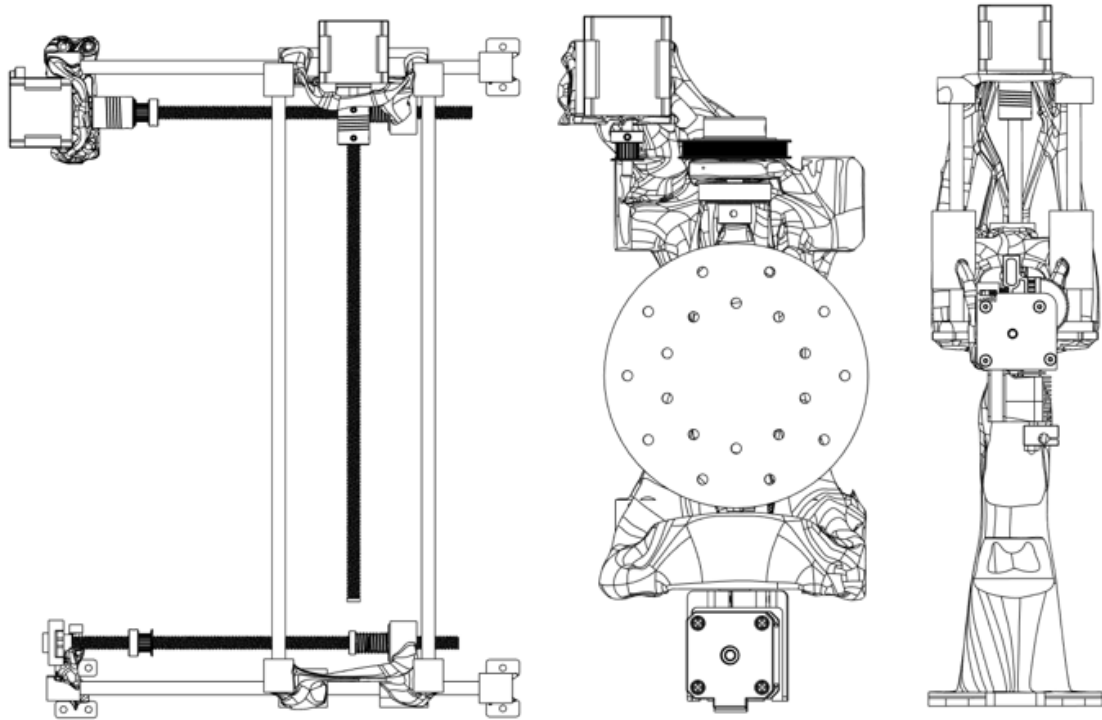
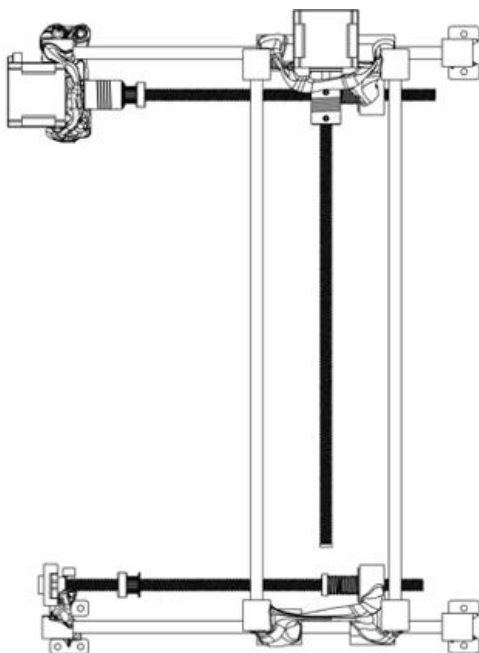
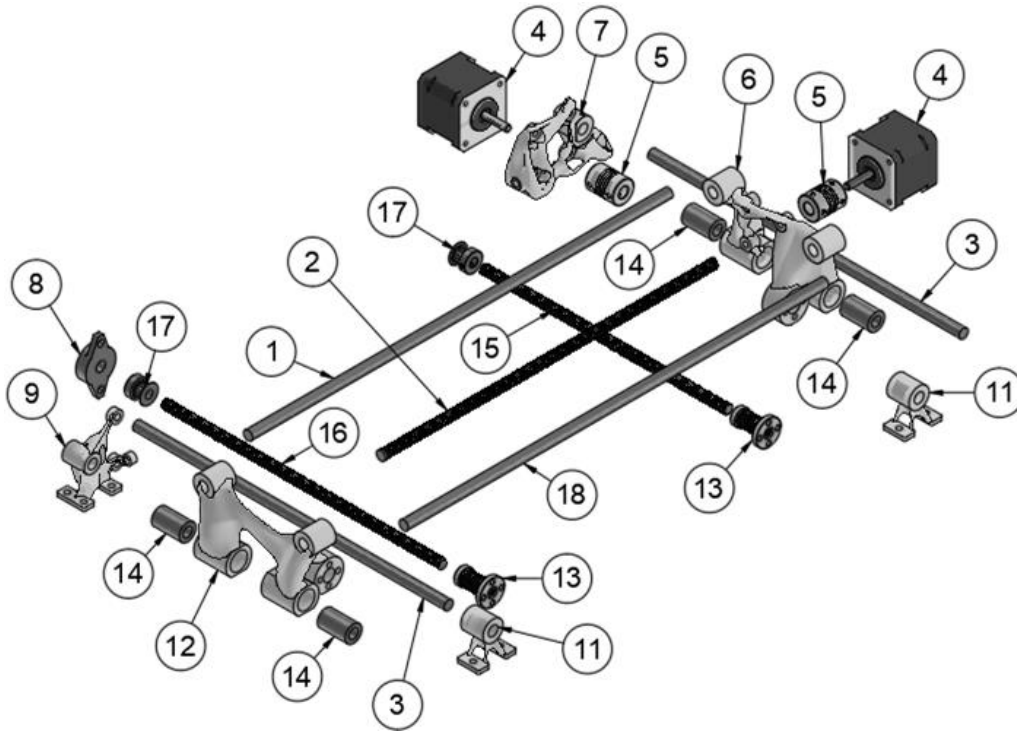


Figure 1 Left to right: XY assembly, Trunnion assembly, and Z assembly.

XY Assembly

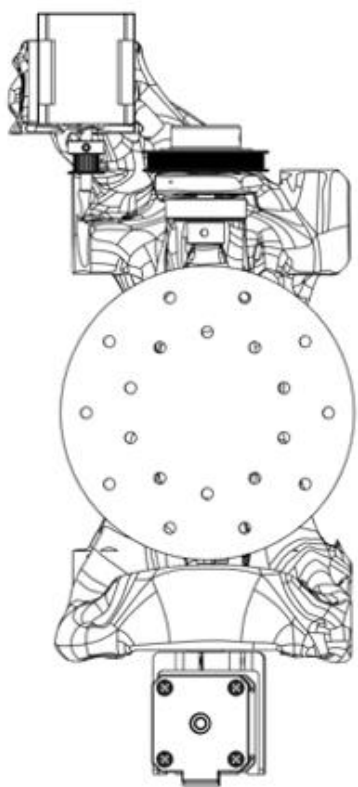


Parts List		
Item	Qty	Part Number
1	1	8mm Rod Linear Shaft 380 mm
2	1	T8x2 Leadscrew 300 mm
3	2	8mm Rod Linear Shaft 280 mm
4	2	Nema 17 Motor 37.5mm body
5	2	Flexible Shaft Coupling 5 mm to 8 mm
6	1	X Motor Printed Part (x_carr_m.stl)
7	1	Y Motor Printed Part (y_m.stl)
8	1	Flange Pillow Block 8 mm id
9	1	Y Printed Part (y.stl)
10	1	4mm alignment rail
11	2	Y Ends Printed Part (y_ends.stl)
12	1	X Printed Part (x_carr.stl)
13	2	TR8x2 Anti Backlash Nut
14	4	LM8UU 25mm
15	1	T8x2 Leadscrew Y Motor 220 mm
16	1	T8x2 Leadscrew Y 250 mm
17	2	GT2 Gear 16T Belt Pulley 8 mm id
18	1	8mm Rod Linear Shaft 380 mm B



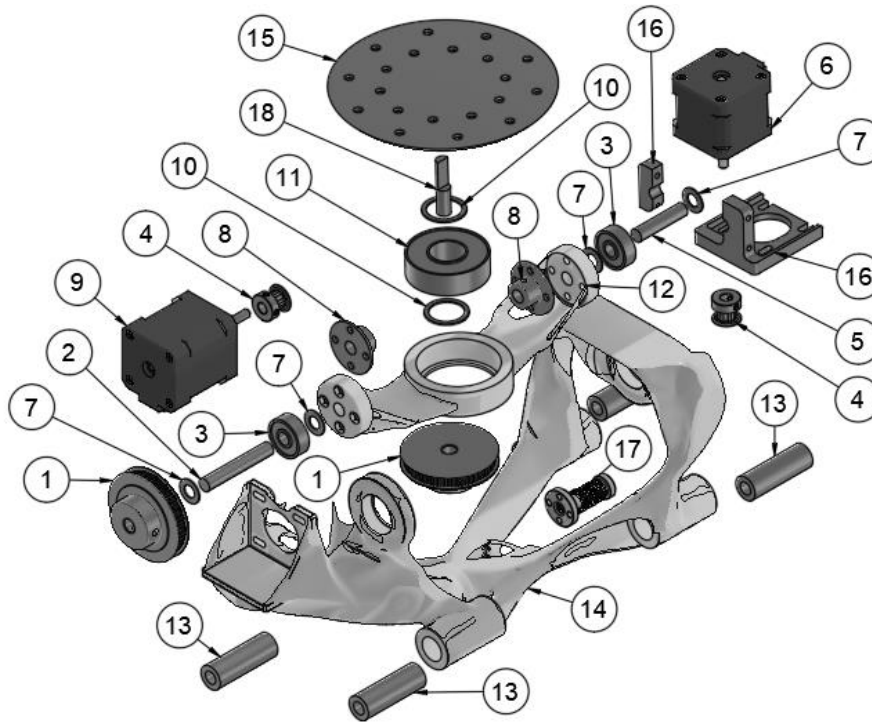
The XY assembly is fairly straightforward, make sure to test the tolerance of your printer as many of the fixings between printed parts are 'interference' fits. If required, gradually file away material from the printed parts to unsure shafts and bearings fit correctly and firmly (this applies to the other subassemblies also). It is best to assemble the frame with parts (12) and (6) first, before moving onto the lower frame with parts (9, 7, 11).

Trunion Assembly



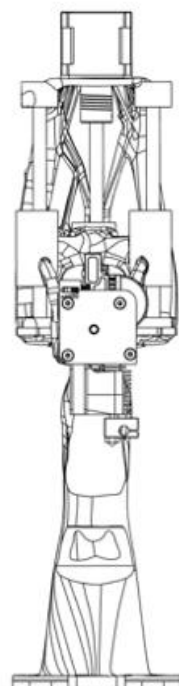
Parts List		
Item	Qty	Part Number
1	2	GT2 Gear 80T Belt Pulley 8 mm id
2	1	8mm Trunion Axle 50 mm
3	2	8x24x8 Bearing Trunion 8id 24od x 8 mm
4	2	GT2 Gear 16T Belt Pulley 8 mm id
5	1	8mm Trunion Axle 36 mm
6	1	Nema 17 Motor 37.5mm body
7	4	Washer id8 od15 mm
8	2	8mm Shaft Coupling
9	1	Nema 17 Motor 48mm body
10	2	BPlate washer id20 od25 mm
11	1	BPlate Bearing id20 od47 x 16 mm
12	1	Inner Trunion Printed Part (b.stl)
13	4	LM8UU 45mm
14	1	Outer Trunion Printed Part (x_trun.stl)
15	1	Fixture build plate
16	1	B Motor Mount Printed Part (c_mot/2.stl)
17	1	TR8x2 Anti Backlash Nut
18	1	8mm Buildplate Axle 35 mm

Note: ID of Item 4 should match the OD of the stepper motor shaft. This is usually 5mm on the NEMA17 motor but worth checking.



To assemble the trunnion, firstly press the bearings (3) into the outer trunnion (14) ensuring that the fit is firm. Next, assemble the inner trunnion (12, 8, 11). Fixing (8) to (12) will require four nuts pressed into part (12); using a soldering iron to press these will ensure that the nuts are secure. With part (8) in place, position part (12) between the mounting points in the inner trunnion with spacer washers (7) on the outside (between 12 and 3). Push the respective axles (2, 5) through parts (3) until flush with part (8) and secure.

Z Assembly and Hotend

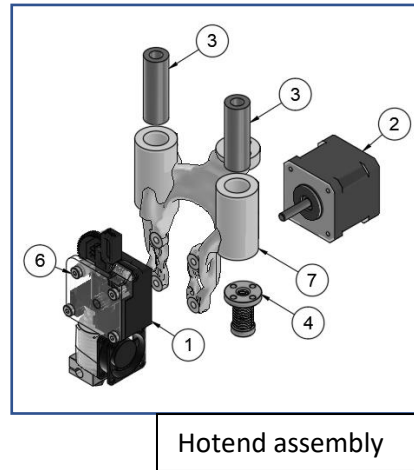
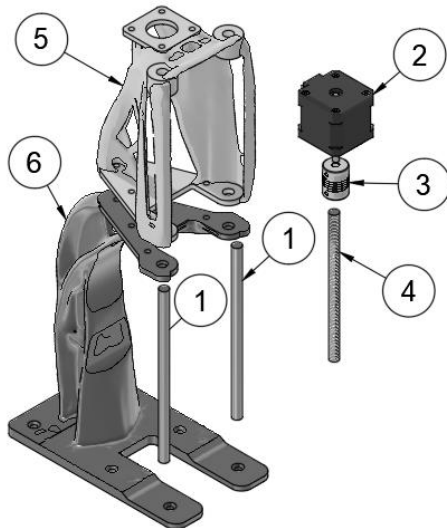


Hotend

Parts List		
Item	Qty	Part Number
1	1	E3d titan v4(Mirror)
2	1	Nema 17 Motor 37.5mm body
3	2	LM8UU 45mm
4	1	TR8x2 Anti Backlash Nut
5	1	SVLS-M4-25
6	3	SVLS-M4-25
7	1	Z carriage Printed Part (z_carriage.stl)

Parts List		
Item	Qty	Part Number
1	2	8mm Rod Linear Shaft 152 mm
2	1	Nema 17 Motor 37.5mm body
3	1	Flexible Shaft Coupling 5 mm to 8 mm
4	1	T8x2 Leadscrew Z 130 mm
5	1	Z Upper Printed Part (z_upper.stl)
6	1	Z Lower Printed Part (z_lower.stl)

Z assembly



The Z axis is split into two parts (5, 6) to allow for printing on a broader range of machines. To print the Z axis whole a generative study would need to be redefined as a single piece. Alternatively, parts (5, 6) could be merged in meshmixer before printing. The two parts (5, 6) are currently fastened using M3 or M4 nuts and bolts. Mounting the hotend assembly into the Z axis (5) can be achieved by threading the leadscrew (4) into the hotend backlash nut (hotend 4) before fitting onto half inserted linear shafts (1). Once in place shafts (1) can be pushed through into their positions on part (6). The motor coupling (3) and motor (2) can then be fixed to part (5).

Electronics



Duet 2
DueX5
Meanwell 24v 350W 14.6Amp Power Supply

Belts and Fasteners

Belts (Closed Loop)	Qty	Fasteners	Qty
Turntable belt (376 mm)	1	M3x8 mm socket head bolts and washers	40
Trunnion belt (224 mm)	1	M3 and M4 Nyloc nuts	20
Y axis belt (670 mm)	1	Assorted length M3 and M4 bolts (10 to 40 mm)	xx

(accurate quantities for bolts will soon be given)