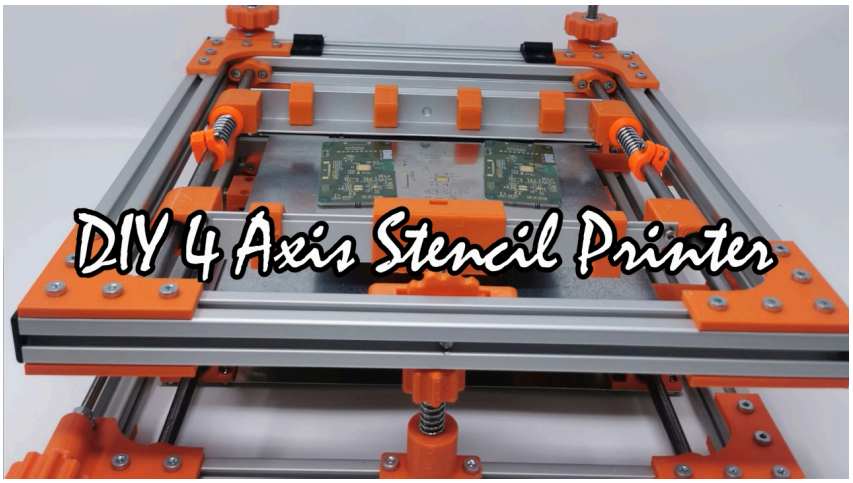
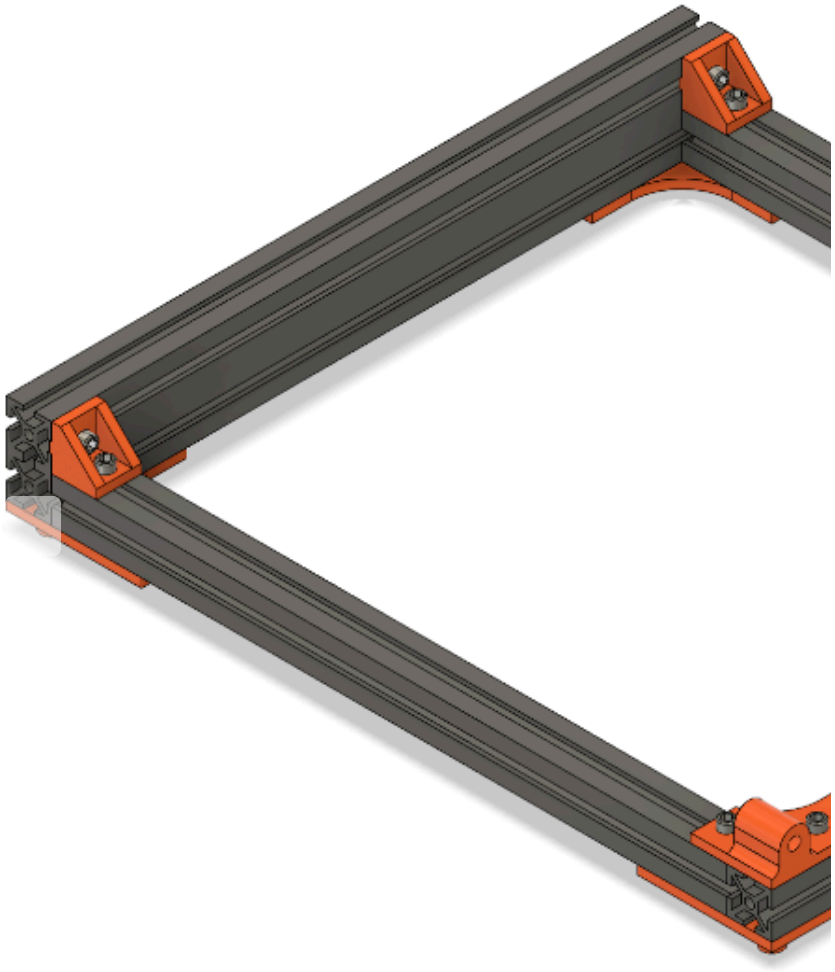
4-Axis PCB Stencil Printer – Digital Build Log



December 4, 2020 admin

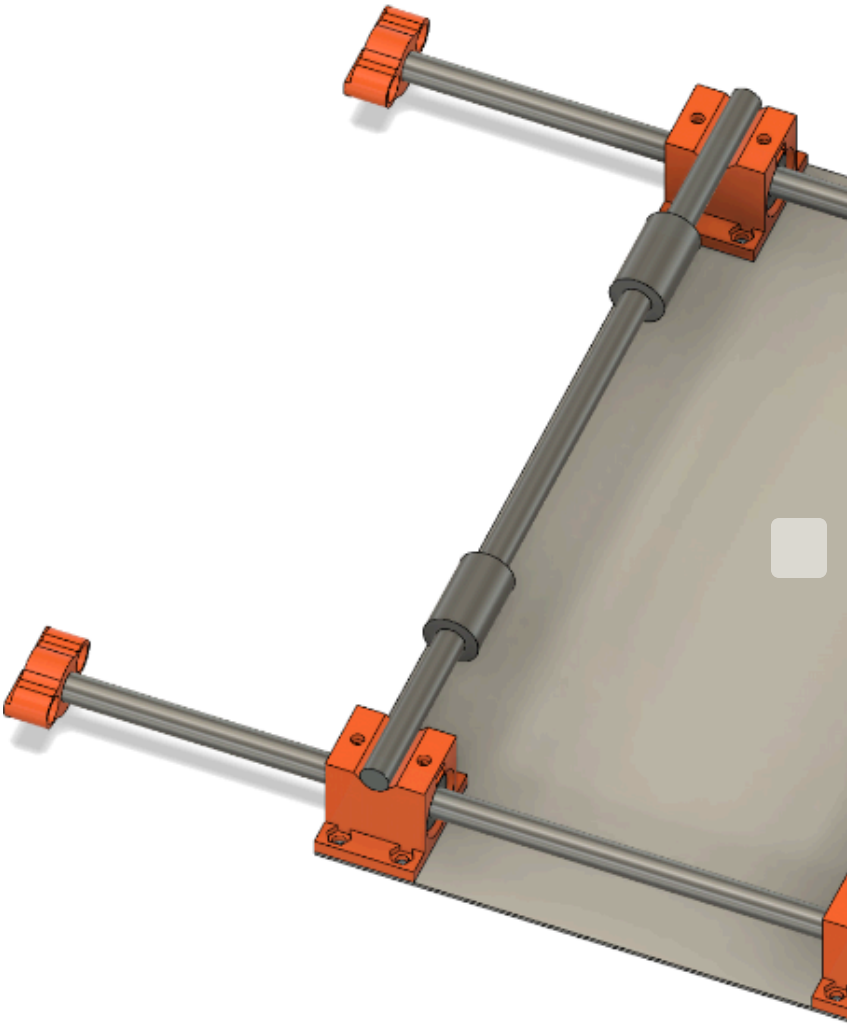
STEP 1: Bottom Frame



Count Name

1	Aluminum Extrusion 2040 x 300
3	Aluminum Extrusion 2020 x 300
5	(3DP) BOT_BRACKETS
1	(3DP) BOT_BRACKET_X_AXIS
2	(3DP) BOT_RIGHT_ANGLE_CON
4	(3DP) STAND
32	Screw DIN 912 M4x10
32	Nut f. Extrusion 2020

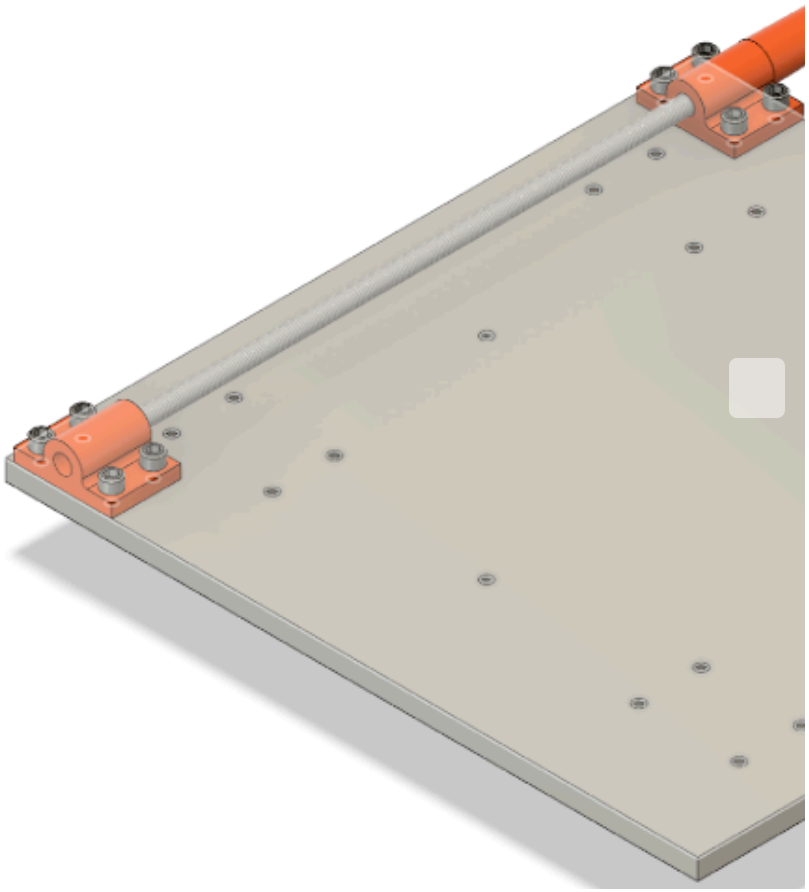
STEP 2: X-Axis Carriage



Count	Name

2	Linear Rail 8mm x 300mm (X-Rails)
2	Linear Rail 8mm x 244mm (Y-Rails)
4	(3DP) BOT_RAIL_HOLDER
4	(3DP) BOT_BEARING_MOUNT_X_AXIS
8	LM8UU Linear Bearing
16	Screw DIN 912 M3x6
24	Nut DIN 934 M3
8	Screw DIN 912 M4x10
8	Nut f. Extrusion 2020
1	Thin Aluminum Plate (1-2mm) 257mm x 162mm

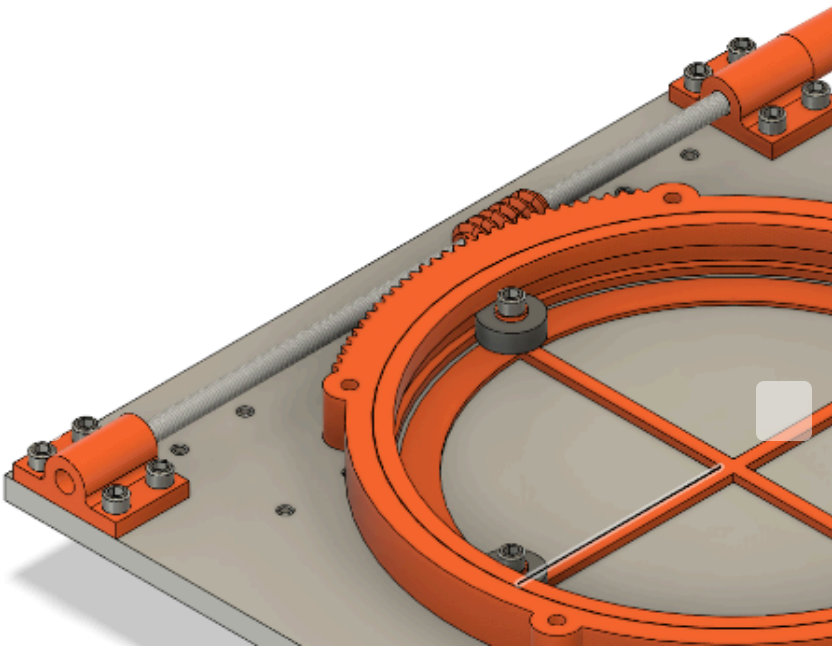
STEP 3: Aluminum Plates and Bearing Preparation

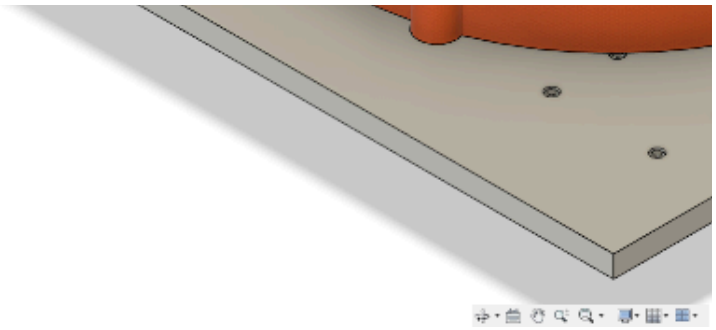


Count	Name
1	Aluminum Plate 200x200x6 (Drawing below)
1	Threaded Rod M5x270
24	Screw DIN 912 M3x8
1	Nut DIN 934 M3
1	Set Screw M3x6
3	(3DP) BOT_BEARING_MOUNT_Y_AXIS
1	(3DP) BOT_BEARING_MOUNT_Y_AXIS_DRIVEN
1	(3DP) BOT_ROD_HOLDER_ALPHA_AXIS_SHORT
1	(3DP) BOT_ROD_HOLDER_ALPHA_AXIS
1	(3DP) BOT_HANDWHEEL

DRAWING: RAHMEN_BOTTOM_BOT_ALU_PLATE_XY_AXIS-Zeichnung-v1
Download

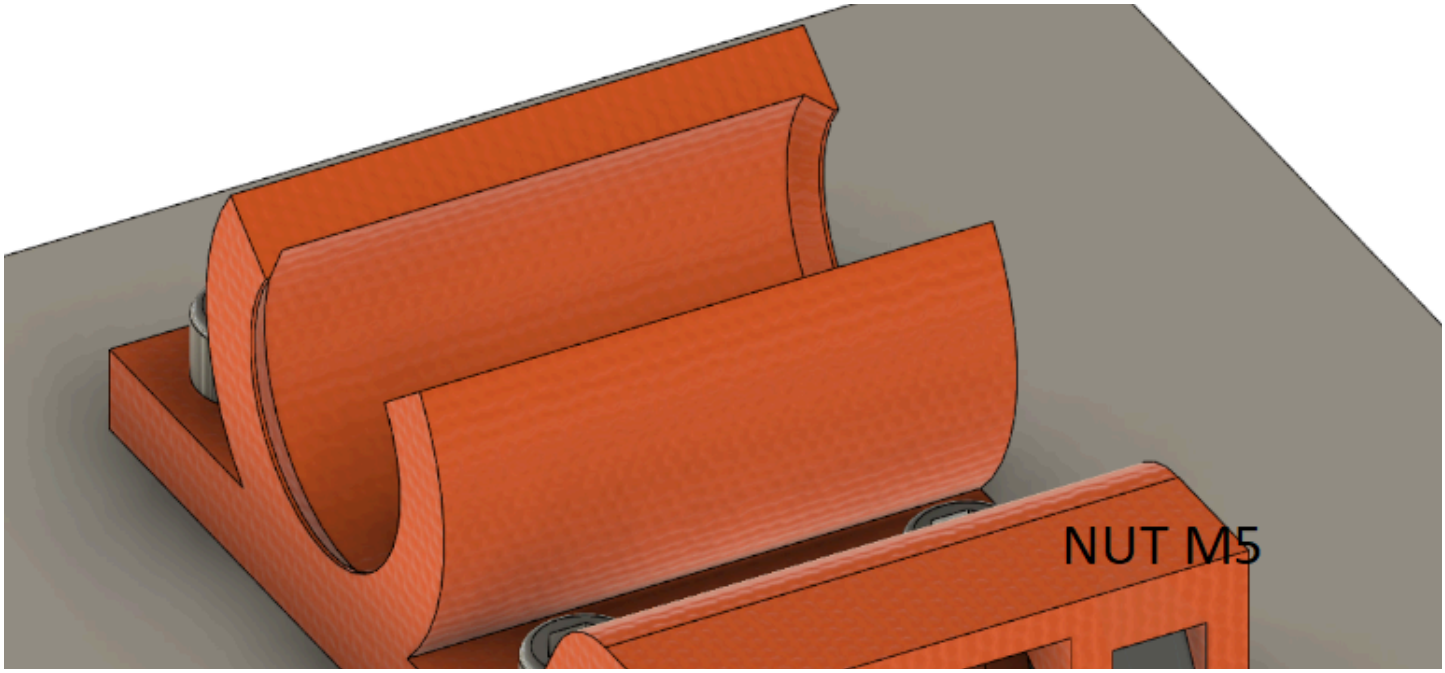
STEP 4: Alpha Axis Bearing

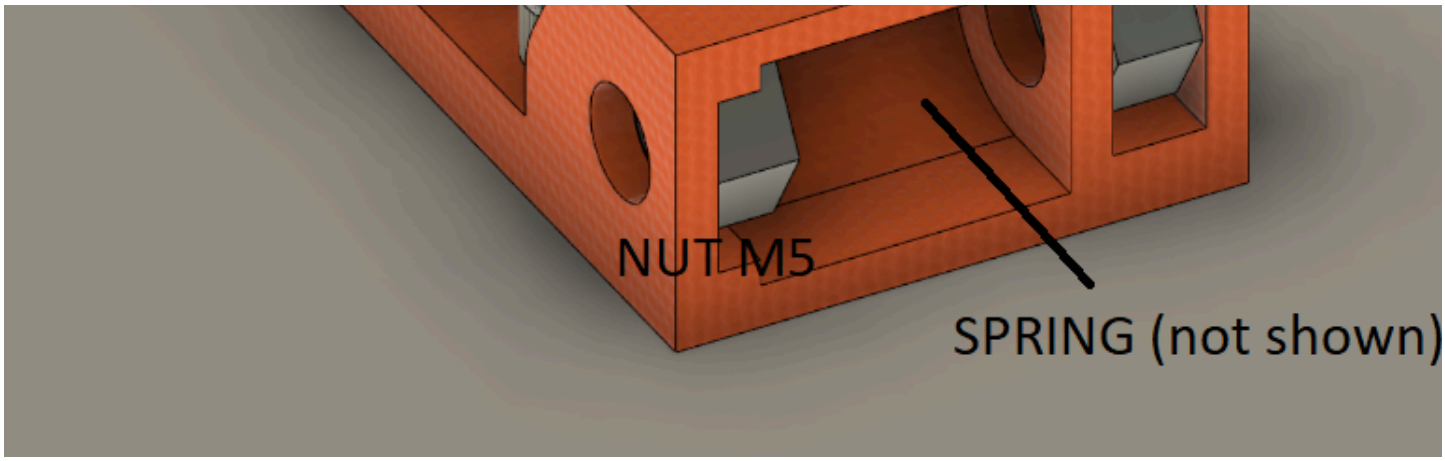




Count	Name
1	Aluminum Plate (Upper) 200x240x6 (Drawing below)
9	Screw DIN 912 M3x14
4	Bearing 14x7x5
1	(3DP) SR_BEARING_PLATE
1	(3DP) SR_WORM_GEAR
1	(3DP) SR_INNER_RING
1	(3DP) SR_OUTER_RING_W_GEAR
4	(3DP) Adapter D5 to M3x14

STEP 5: Spring Loaded Drive Assembly

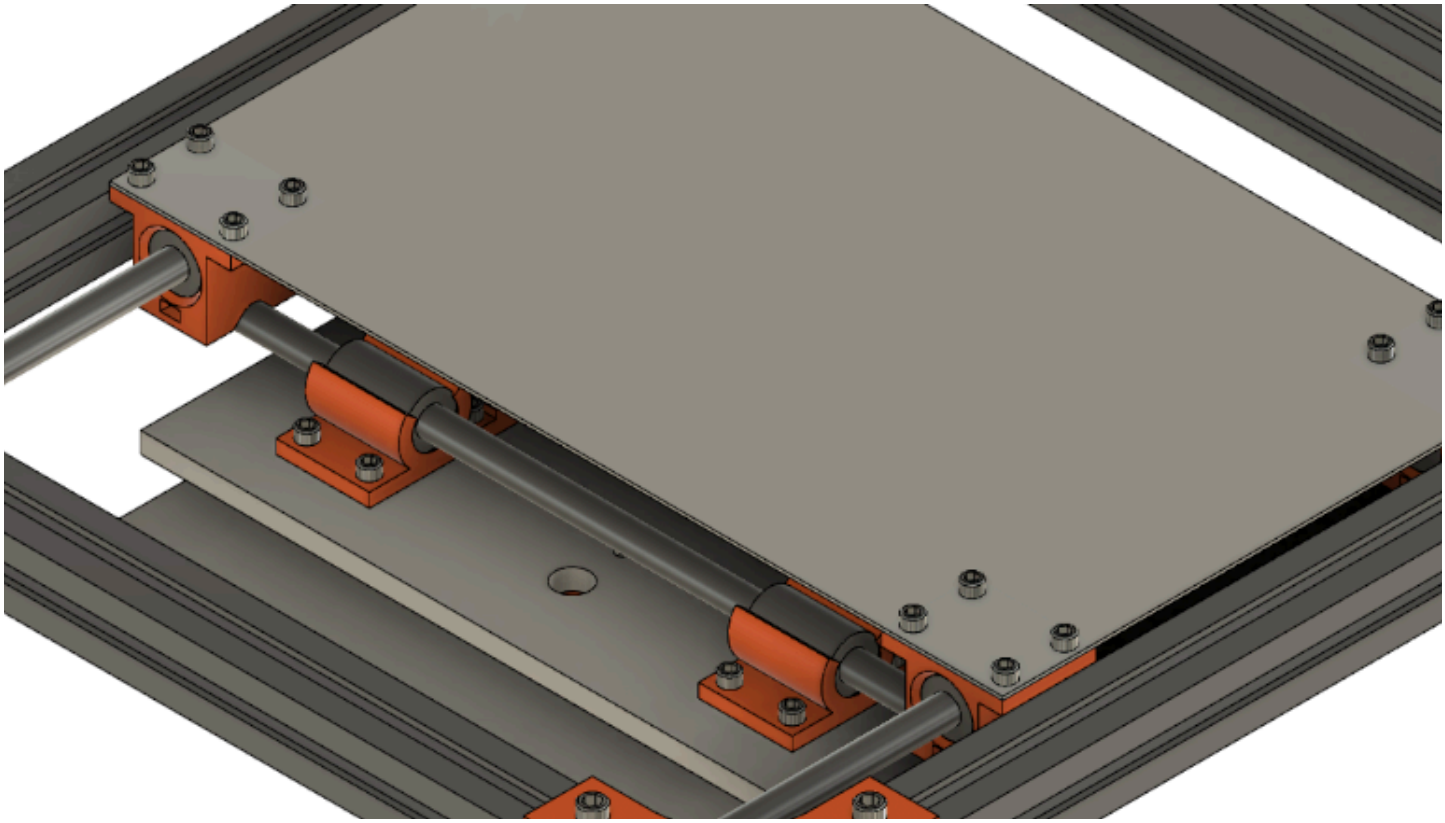


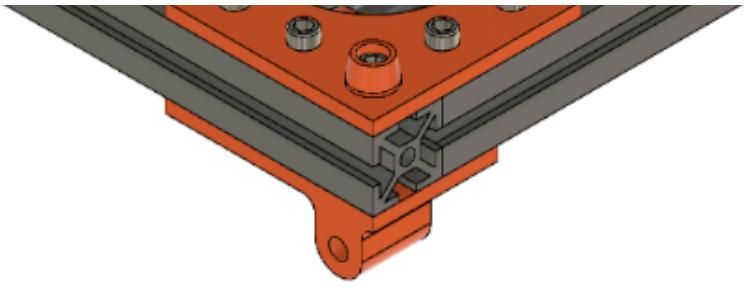


Insert two M5 nuts as shown. Insert the spring and washers if necessary. The spring has to be preloaded in order to eliminate axial play.

Count	Name
1	Spring (ID min. 6mm)
2	Nut DIN 934 M5

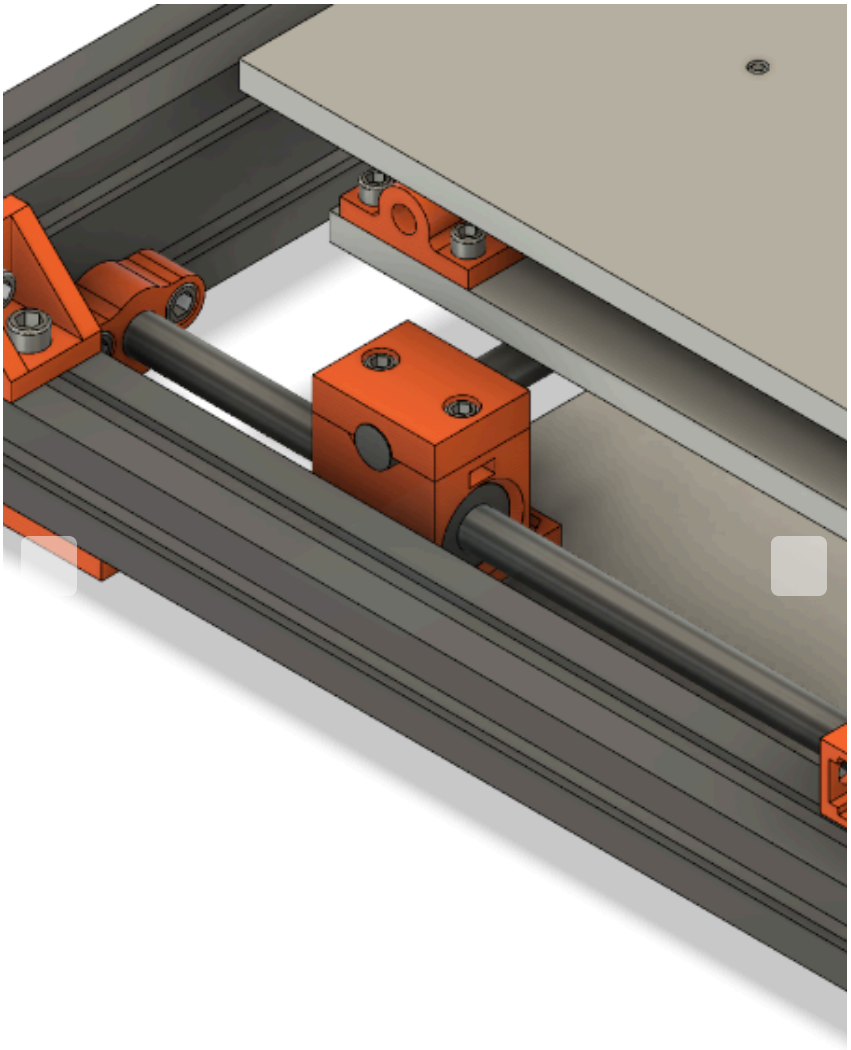
STEP 6: Clip in Alpha Axis Assembly





Clip the Alpha Axis Assembly to the LM8UU bearings of the bottom frame.

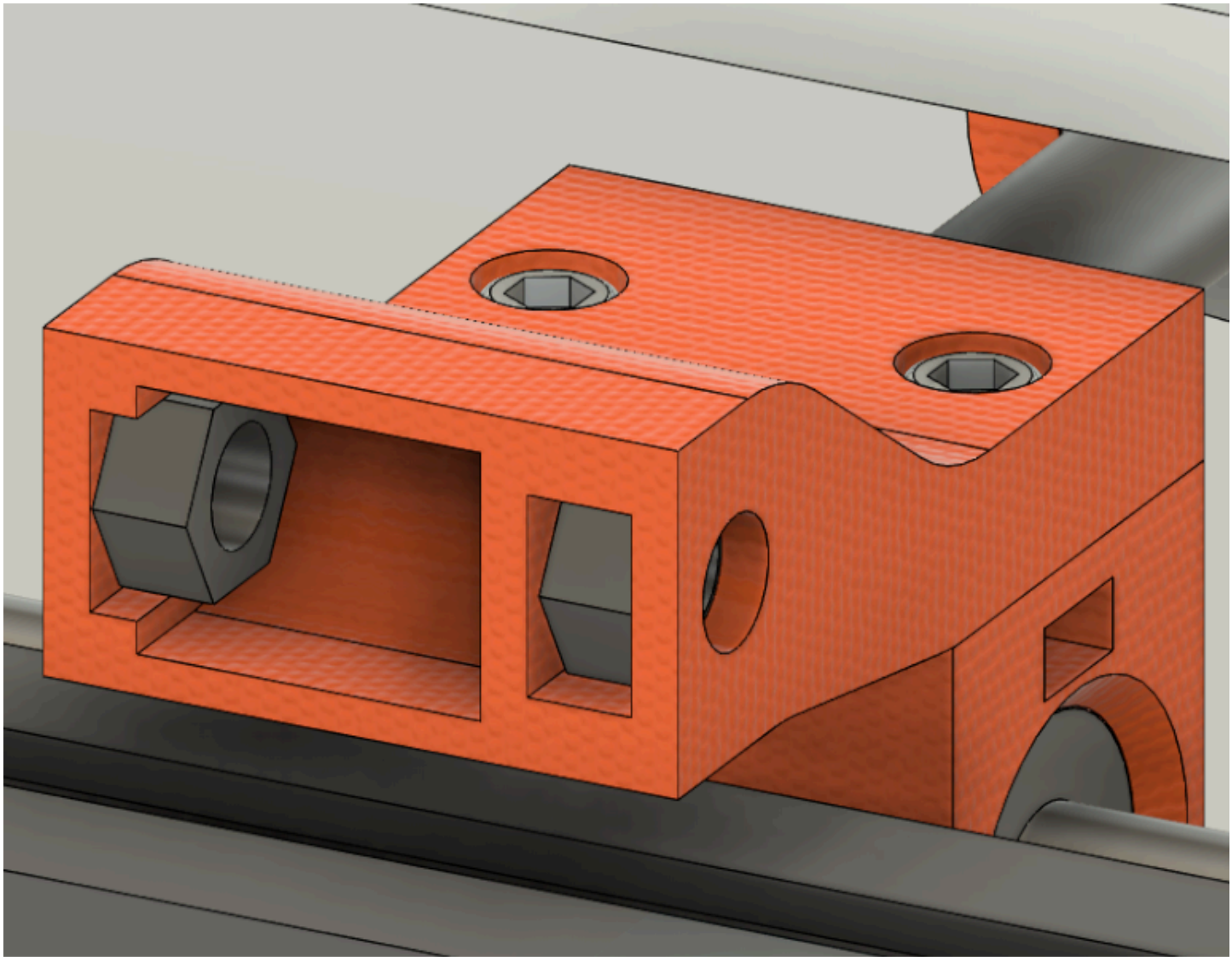
STEP 7: Clamp Y Axis Rods



Assemble as shown. To clamp down the rods insert M3 square nuts in the respective slots and tighten the upper clamp parts down with M3 screws.

Count	Name
2	(3DP) BOT_RAIL_CLAMP_Y_AXIS
1	(3DP) BOT_RAIL_CLAMP_X_DRIVE
1	(3DP) BOT_TAIL_CLAMP_Y_AXIS_1
8	Screw M3x10 DIN 912
8	Square Nut M3

STEP 8: Spring Loaded X Axis

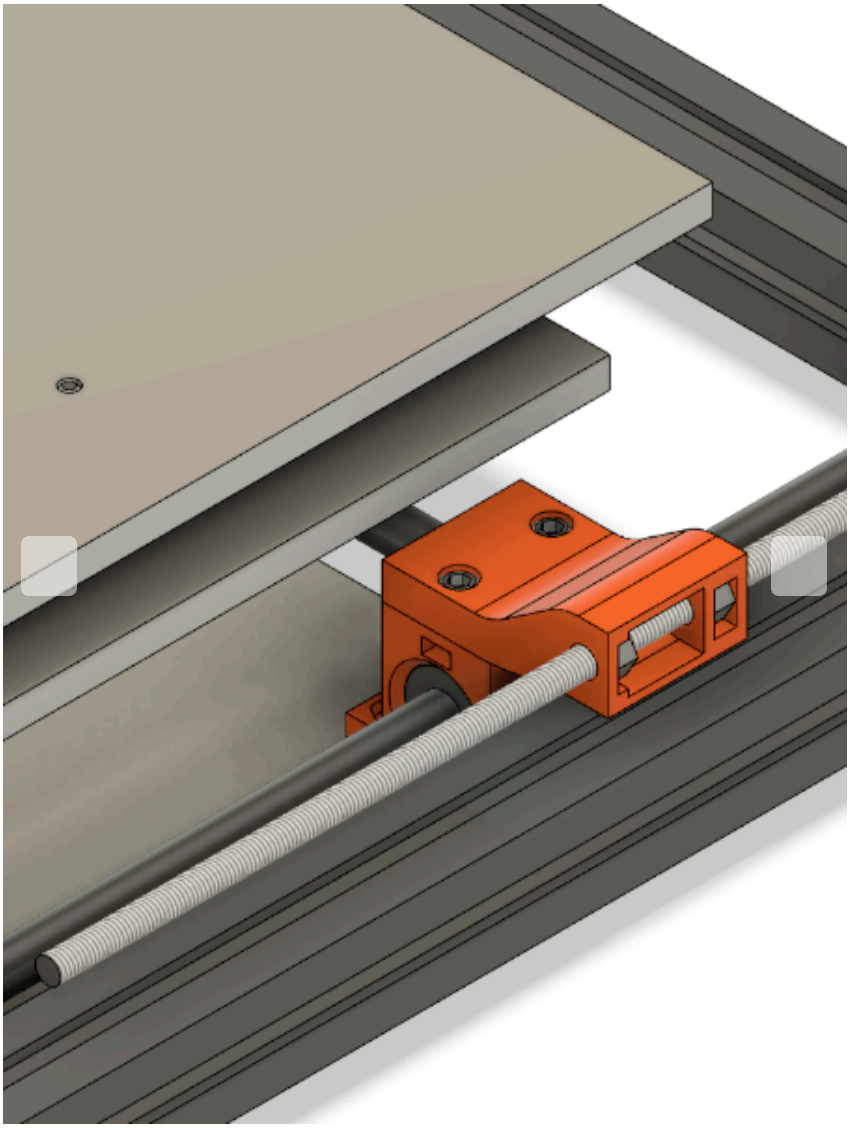


Assemble according to Step 5.

Count	Name

Count	Name
1	Spring (ID min. 6mm)
2	Nut DIN 934 M5

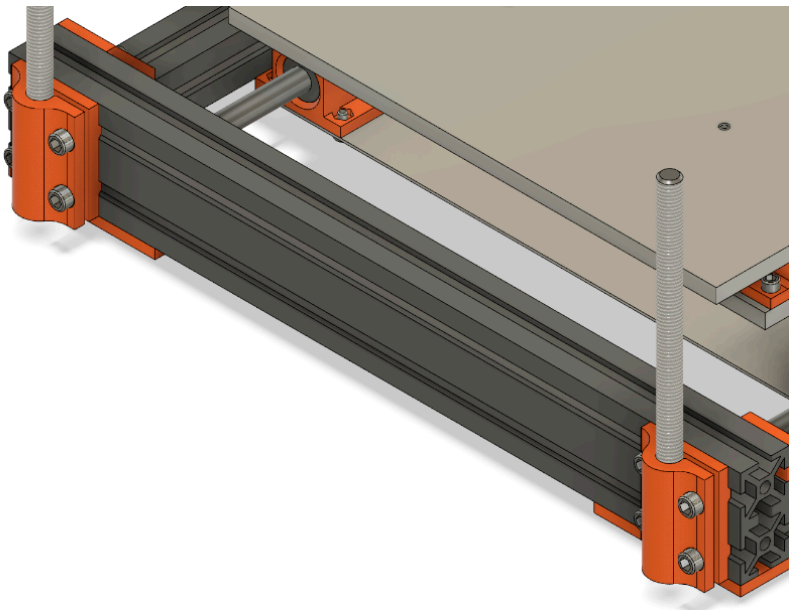
STEP 9: X and Y Axis Drive Assembly



Thread the M5 rods through the spring laoded x- and y-axis drives and add two M5 nuts before the 3D-printed holders in order to secure against pulling the rods out. Tighten the pair of respective M5 nuts against each other. Add a M3 nut to each of the BOT_HANDWHEELS's slots and secure the handwheels to the end of the rods by tightening the M3 set screw.

Count	Name
4	Nut DIN 934 M5
2	Nut DIN 934 M3
2	Set Screw M3x6
2	Threaded Rod M5x270
2	(3DP) BOT_HANDWHEEL

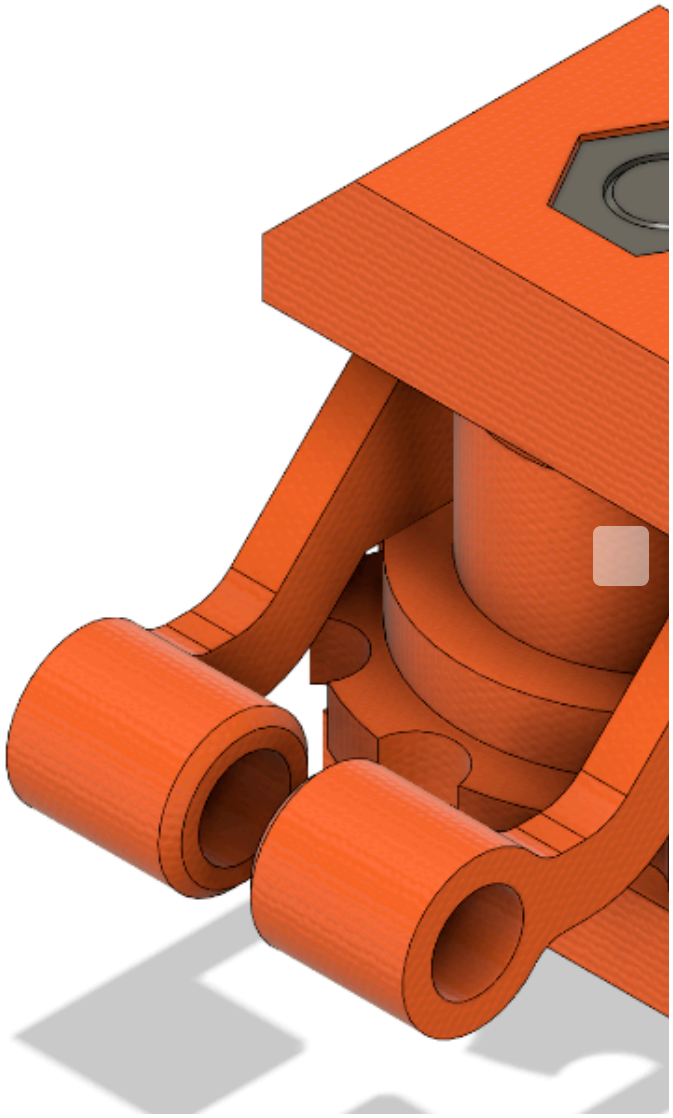
STEP 10: Z-Axis Clamp Assembly



Insert the nuts into the profile, align the clamps and tighten the srews.

Count	Name
8	Screw DIN 912 M4x10
8	Nut f. Extrusion 2020
2	Threaded Rod M8x140mm
2	(3DP) BOT_CLAMP_Z

STEP 11: Eccenter Front



Assemble two eccenters as shown. The bottom nuts mount the M8 threaded rod to the base.

Count	Name
8	Screw DIN 912 M4x10
4	Nut f. Extrusion 2020
8	Nut M8 DIN439
2	Threaded Rod M8 L=55mm
2	Spring (ID > 9mm)
1	Handlebar (e.g. aluminum pipe) OD = 8mm
2	(3DP) ECCF_HEIGHT
2	(3DP) ECCF_MOUNT
2	(3DP) ECCF_LEVER

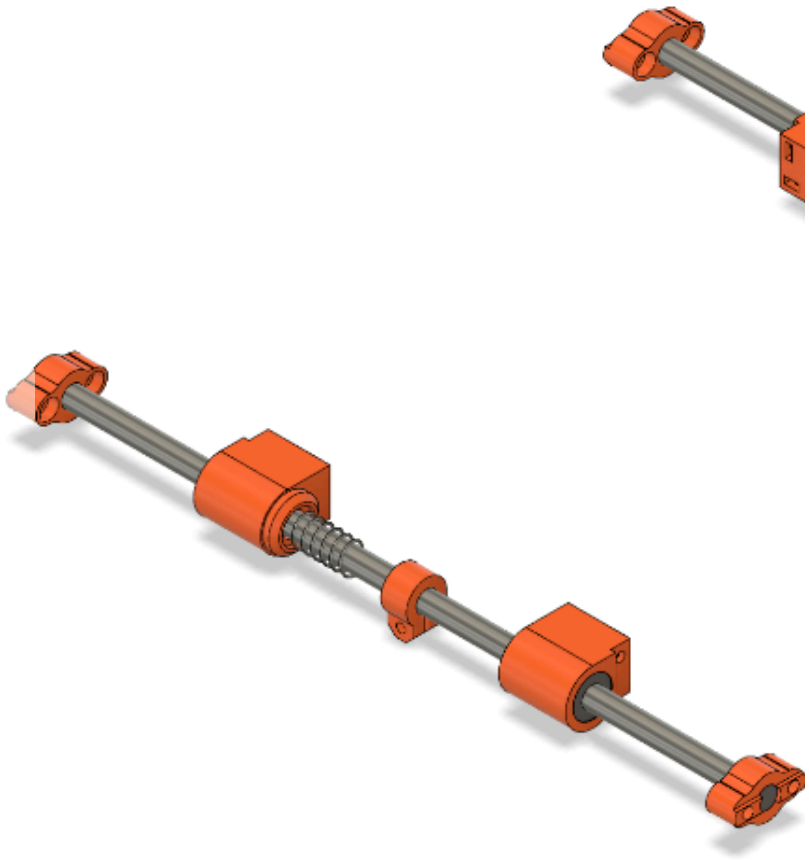
2	(3DP) ECCF_LEVER
2	(3DP) ECCF_TOP
2	(3DP) ECCF_BOT

STEP 12:Top Frame

Count	Name
46	Screw DIN 912 M4x10
4	Screw M4 (for hinges)
50	Nut f. Extrusion 2020
3	Aluminum Extrusion 2020 x 300
2	Aluminum Extrusion 2020 x 280
2	Hinges for 2020 extrusion

2	Hinges for 2020 extrusion
8	(3DP) TOP_BRACKET
2	(3DP) TOP_CLAMP_Z_AXIS

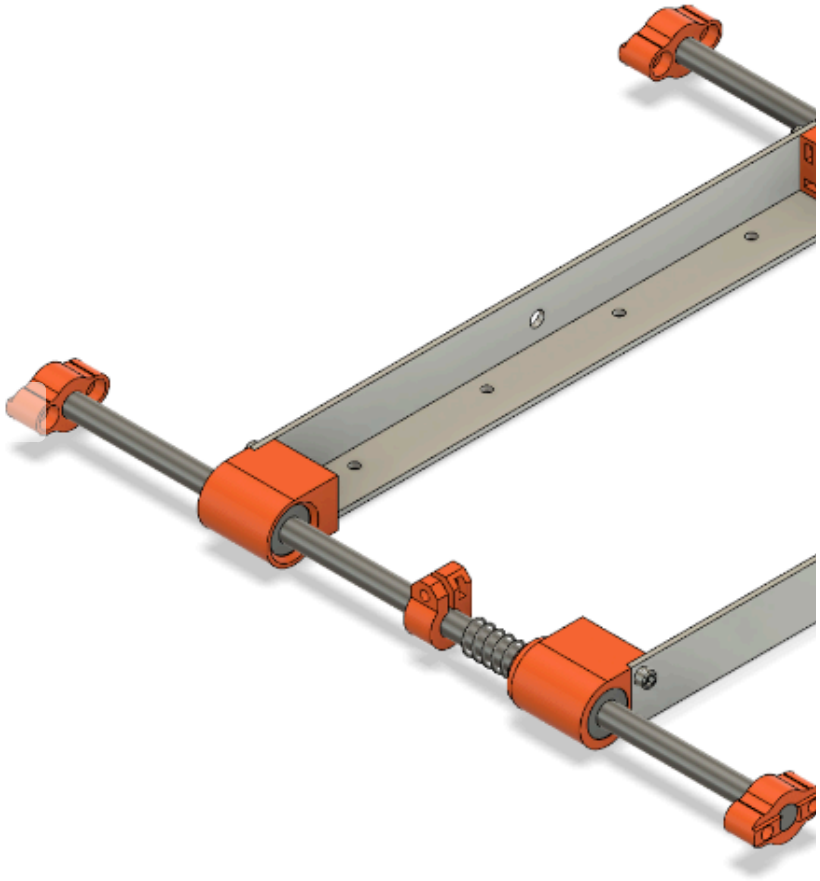
STEP 13: Top Frame Axis



Count	Name
2	Linear Rail 8mm x 280mm
4	LM8UU
2	Spring (ID > 9mm)
4	(3DP) TOP_RAIL_HOLDER
2	(3DP) TOP_BEARING_MOUNT_1
2	(3DP) TOP_BEARING_MOUNT_2

2	(3DP) TOP_BEARING_MOUNT_2
2	(3DP) TOP_SPRING_PLATE
2	(3DP) TOP_CLAMP_STOP

STEP 14: Aluminum Profiles



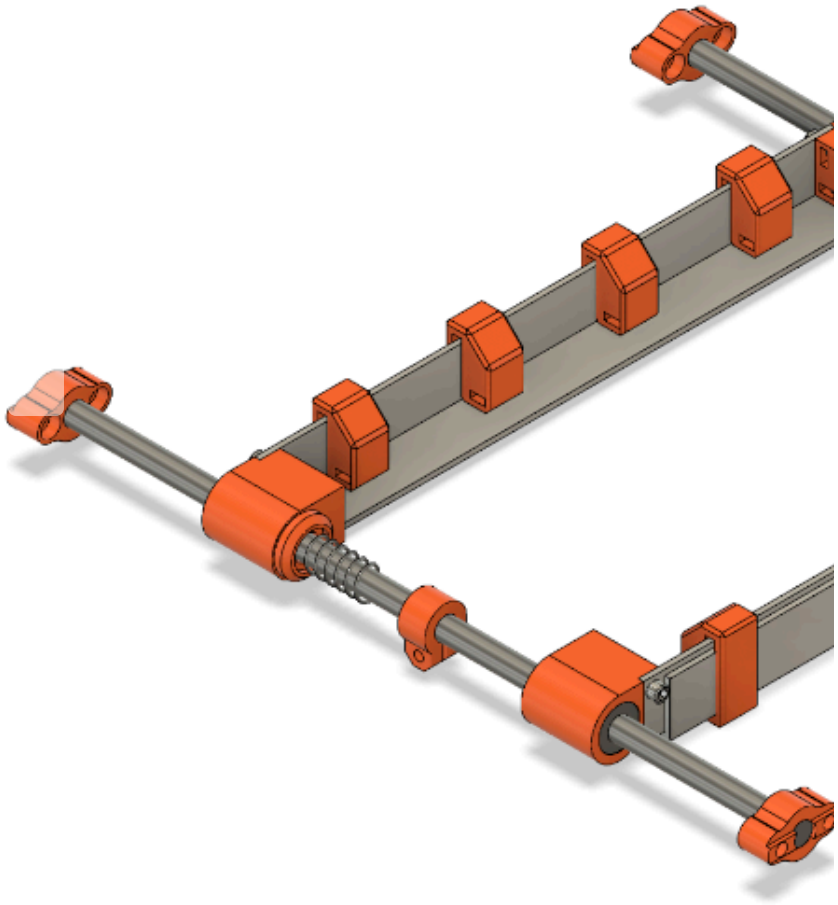
Please note that one of the profiles has an additional hole for an linear drive shaft. You may want to drill that hole later during final assembly. Insert the M3 nuts into the according slots and tighten the profiles to the 3D-printed parts.

Count	Name
12	Screw DIN 912 M3x10
12	Nut DIN 934 M3

2	L-shaped aluminum extrusion

L-Profil Download

STEP 15: Stencil Clamp Assembly



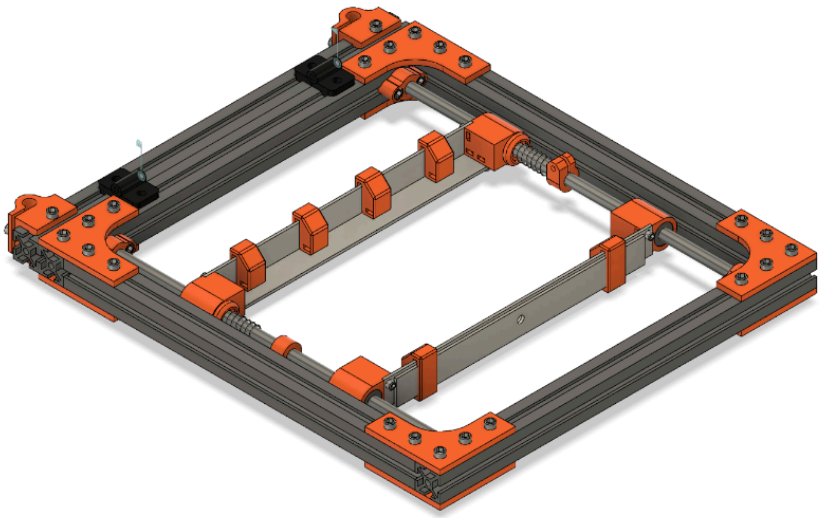
Cut and drill the bottom l-shaped profiles. Note that one of them, as before, has a through-hole for the linear drive axis.

Count	Name
8	Screw DIN 912 M3x10
8	Nut M3 DIN439 // Square Nut M3

2	L-shaped aluminum extrusion L = 198mm
6	(3DP) TOP_CLAMP_NUT_HOLDER

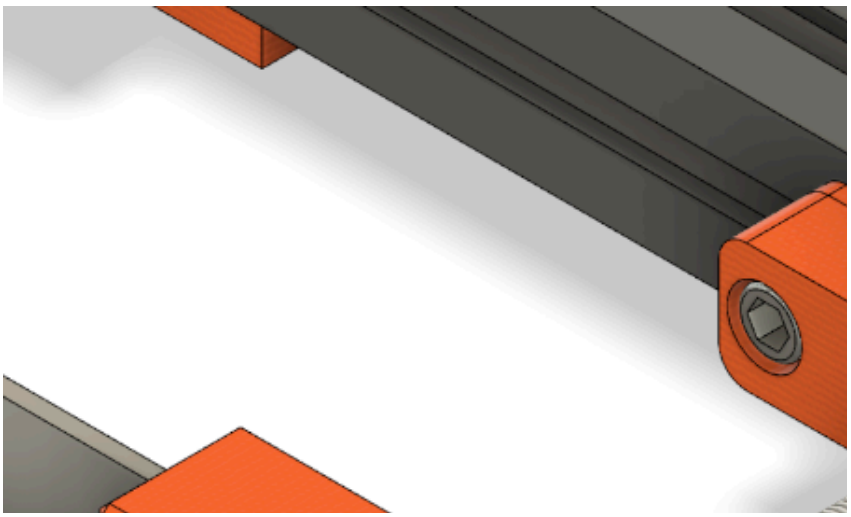
L_PROFILE_BOT Download

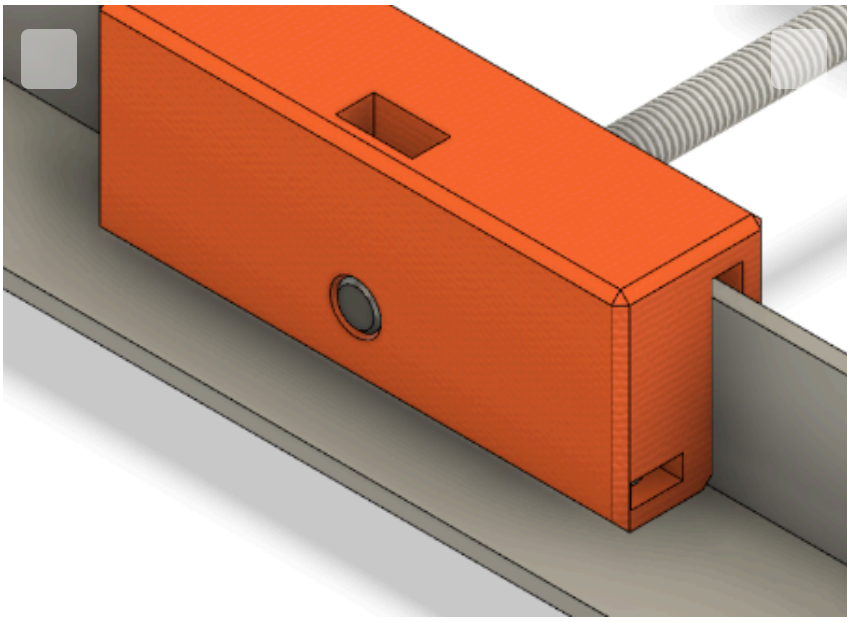
STEP 16: Top Frame / Axis Assembly



Count	Name
8	Screw DIN 912 M4x10
8	Nut f. Extrusion 2020

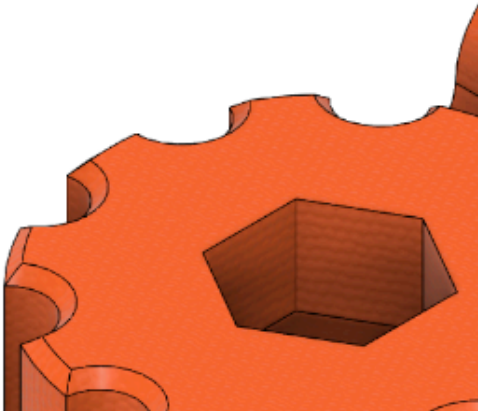
STEP 17: Stencil Stretcher

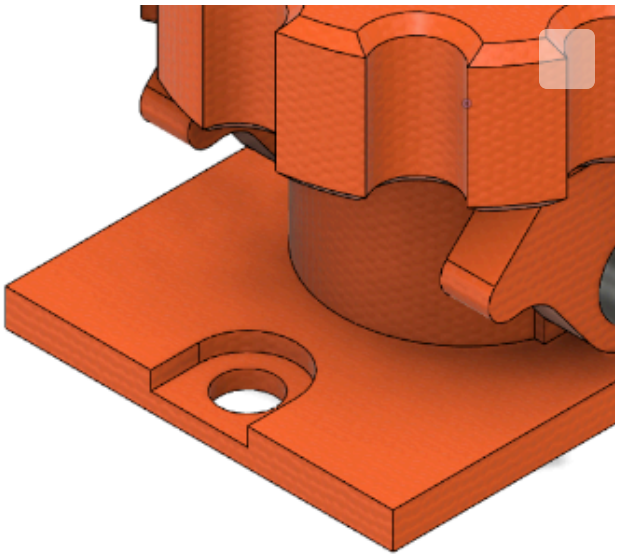




Count	Name
2	Screw DIN 912 M4x10
2	Nut f. Extrusion 2020
2	Nut M5 DIN439
1	Threaded Rod M5 L= ~100mm
1	(3DP) TOP_CLAMP_SPANNER_COUNTER
1	(3DP) TOP_CLAMP_SPANNER_CASE
1	(3DP) TOP_CLAMP_SPANNER_CASE_1
1	(3DP) TOP_CLAMP_SPANNER_HANDWHEEL

STEP 18: Final Assembly





Assemble two eccenters as show. Tighten these to the top frame. Mount the top frame to the bottom frame assembly. Finally adjust the height of the top frame to fit your pcb holders and general setup.

Count	Name
4	Screw DIN 912 M4x10
8	Nut M8 DIN439
2	Threaded Rod M8 L=55mm
1	Handlebar (e.g. aluminum pipe) OD = 8mm
2	(3DP) TOP_HANDWHEEL_Z_AXIS
2	(3DP) ECCB_BODY
2	(3DP) ECCB_LEVER
2	(3DP) ECCB_SHIM

4-Axis Stencil Printer, DIY Stencil Printer, Stencil Printer Build Log

‹ 4-Axis PCB Stencil Printer – 3D printed