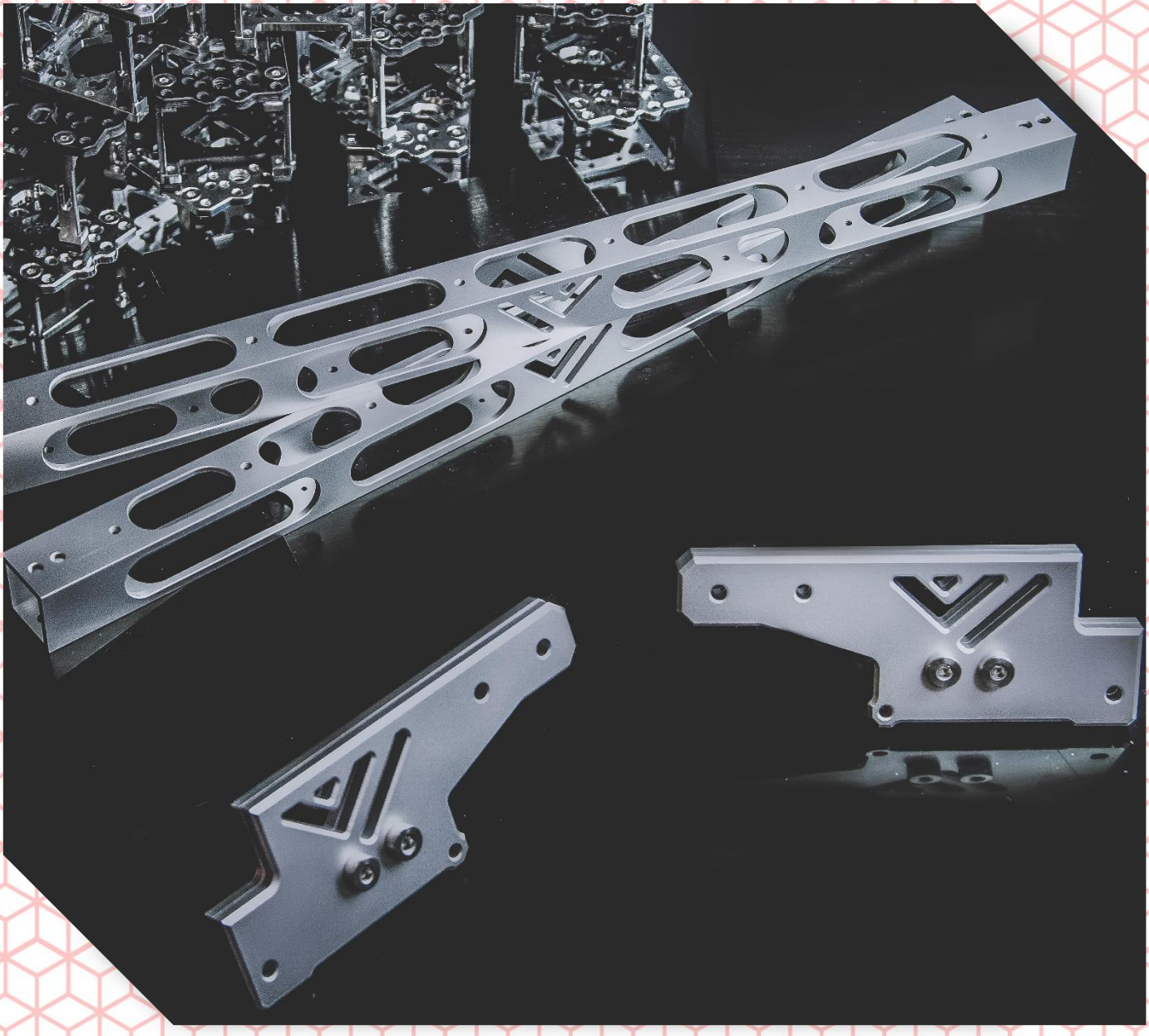
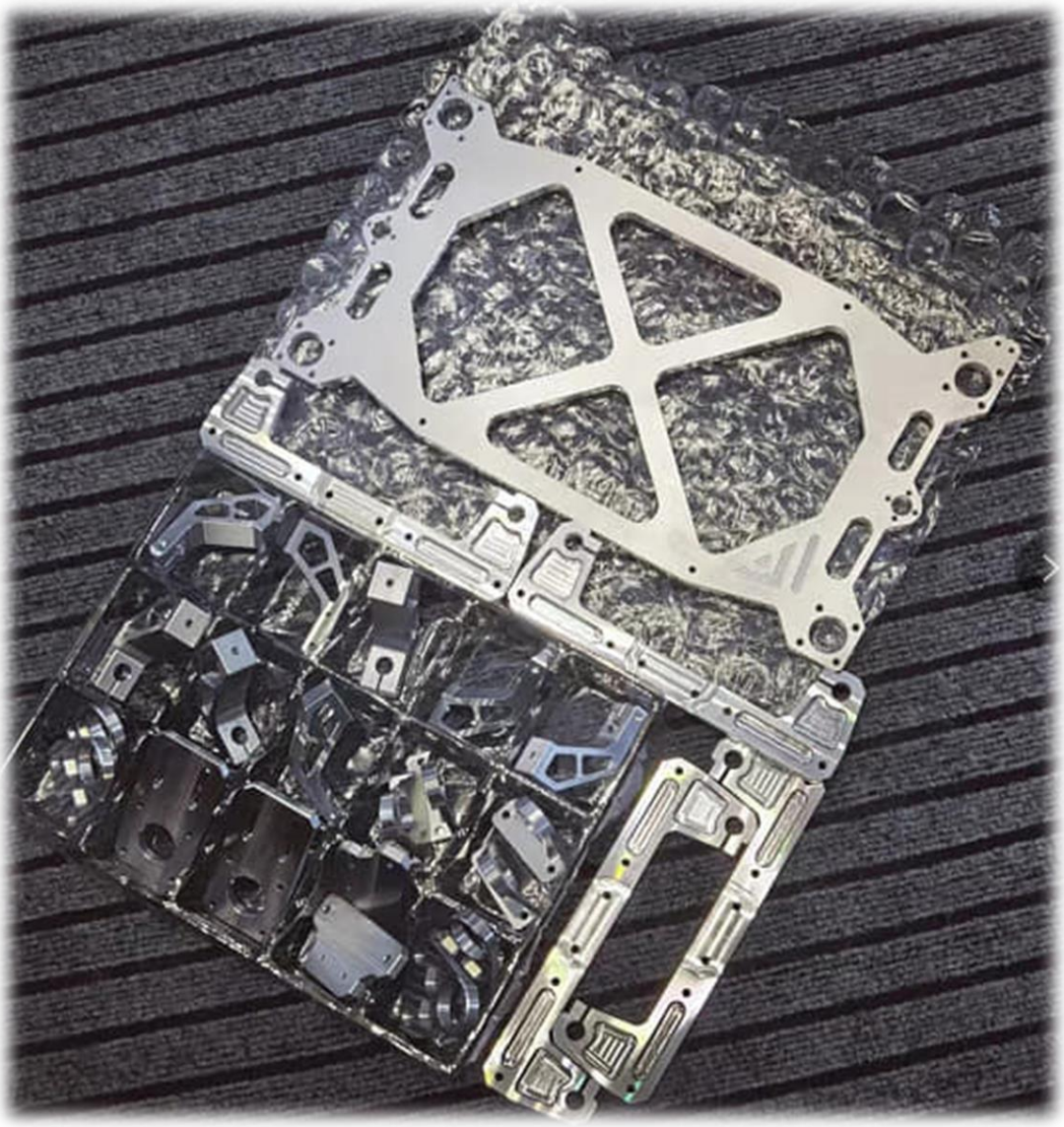


MANUAL VZ-235 AWD/2WD

About

This manual is intended for the aluminum parts for VZ235 as sold by F3D-Racing and Mellow. The aluminum parts are interchangeable with the printed parts, some additional hardware is required when purchasing the motor mounts and idler mounts. Furthermore some printed parts are required in order to mount your new sexy parts!



*Disclaimer: VzBoT is an opensource passion project, this manual is not definitive, and we try to make it as polished as possible. Fortunately, we all make errors so use common sense when following this guide.

Print settings:

We recommend printing all parts in ABS, ASA or similar material to be able to withstand the high heat environment in the printer enclosure.

Print settings should always be tuned for your own material and tested for decent strength and layer adhesion.

We recommend the following settings:

For non-moving parts:

Layer height: **0.2mm**

Layer with: **0.4 to 0.6 mm**

Number of walls: **4**

Infill percentage: **40 to 50 %**

Top/bottom layers: **5**

For moving parts:

Layer height: **0.2mm**

Layer with: **0.4 to 0.6 mm**

Number of walls: **4**

Infill percentage: **30 to 40 % depending on your material**

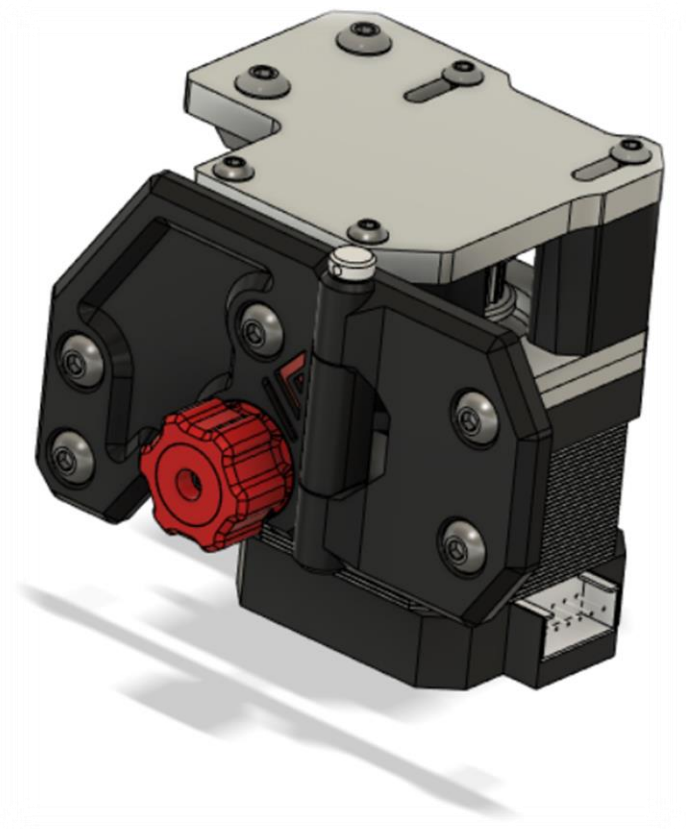
Top/bottom layers: **5**

1. Gantry

Overview:

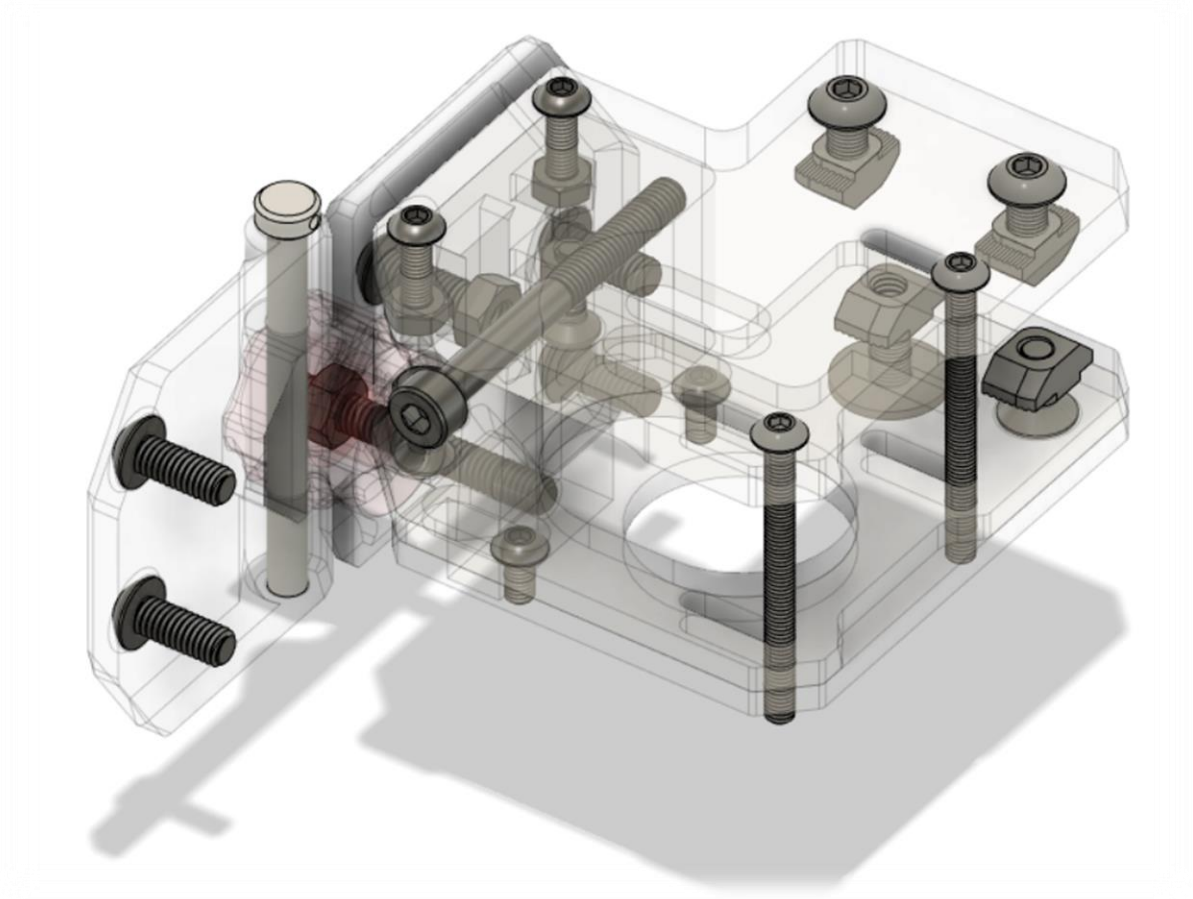
The Gantry is configurable for an AWD version and a 2WD version. The only difference between the two configurations is the rear idler mounts. On AWD they have an additional Nema 17 integrated in the design.

1.1 Motor mounts + integrated hinges



Bom:

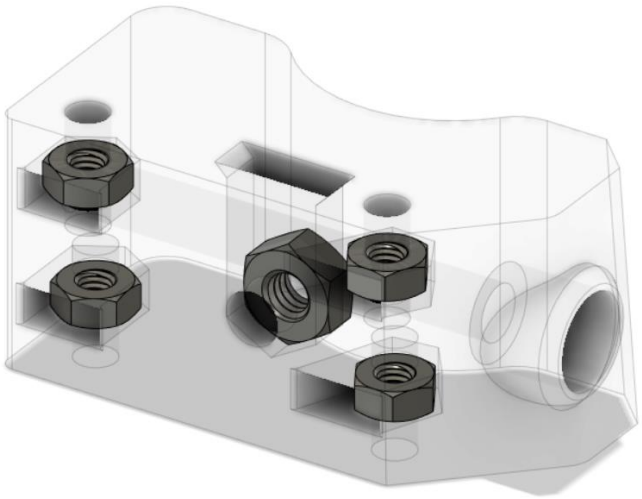
Material	Quantity	Notes
Nema 17	2	
20T GT2 Pulley	2	
8mm M4 countersunk	2	
30mm M4 set screw	2	
40mm M4 Socket head	4	
M4 nut	10	(also, for hinges)
M3 nut	8	
M3 6mm	4	
M3 12mm	4	
M3 10mm countersunk	4	
M4 12mm	8	
M4 10mm	8	
M4 T-nut	8	
M3 35mm	4	
4mm ID washer	2	



STL files:

File name	Amount to print
Printed standoff	Left + Right
Printed standoff 2	Left + Right
Printed standoff_motor anchor	Left + Right
Tensioner knob	2
Cap	2
Integrated hinge	2
Front plate alu motormount	Left + Right

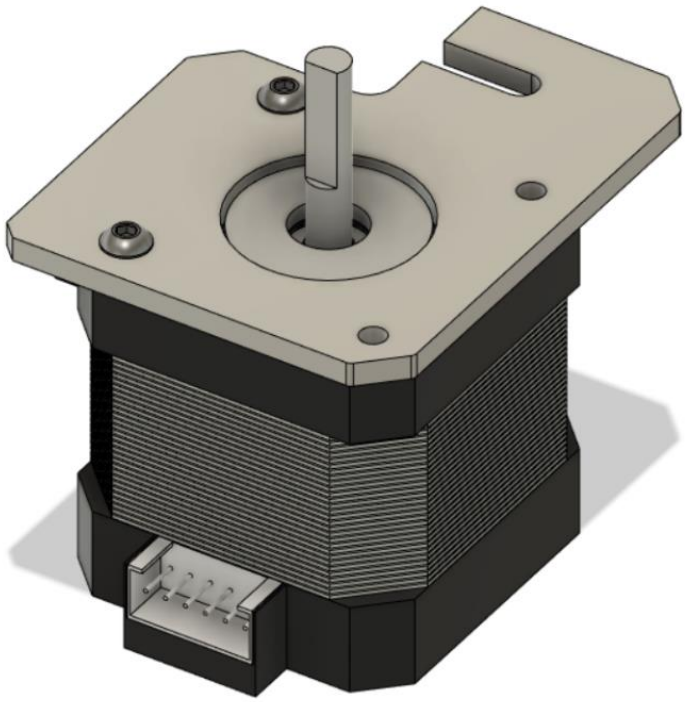
Step 1:



Insert the 4 M3 nuts and single M4 nut in the printed standoff_motor anchor as shown above.

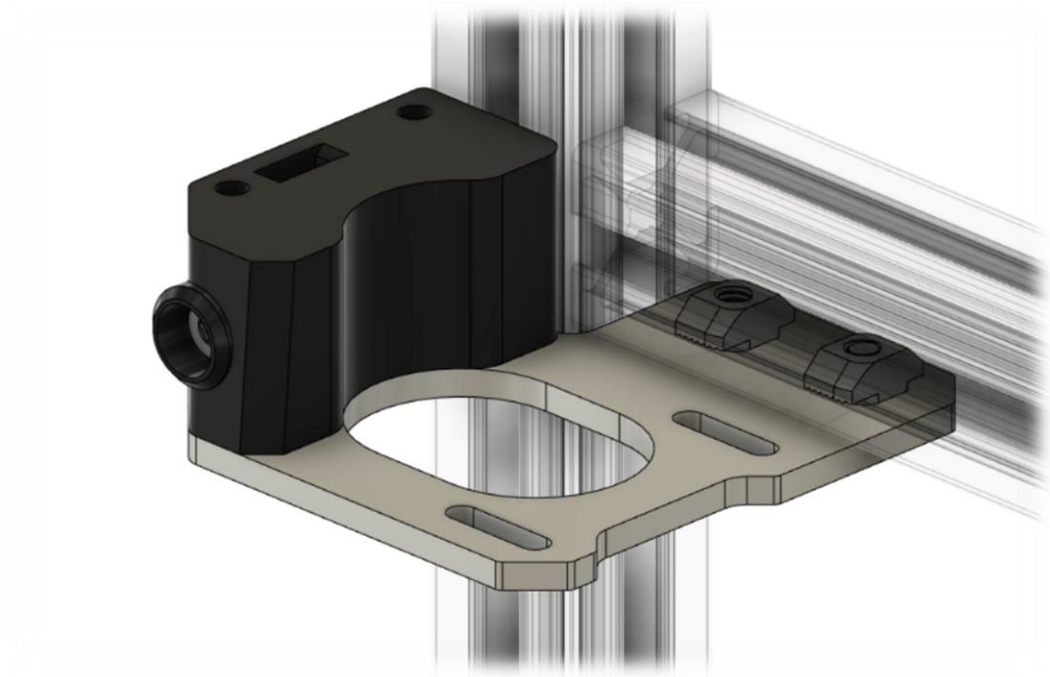
Step 2:

Attach the stepper motor to the bottom motor plate with 2 6mm M3 screws.



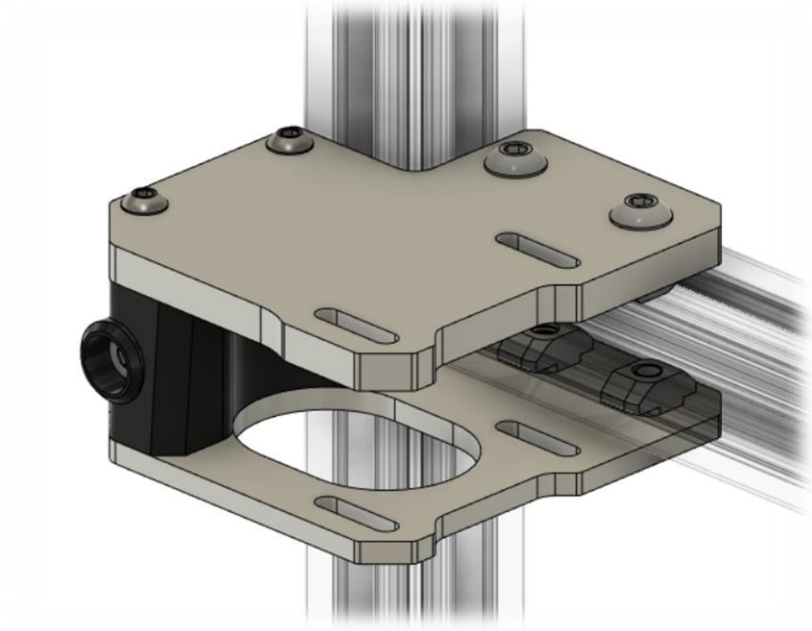
Step 3:

Screw the standoff in the middle plate using the 10mm countersunk M3 and attach it to the frame using one 12mm M4 and the 8mm countersunk M4. Lock the standoff in place using the 40mm M4 and the printed hammer nut that is installed during frame assembly.



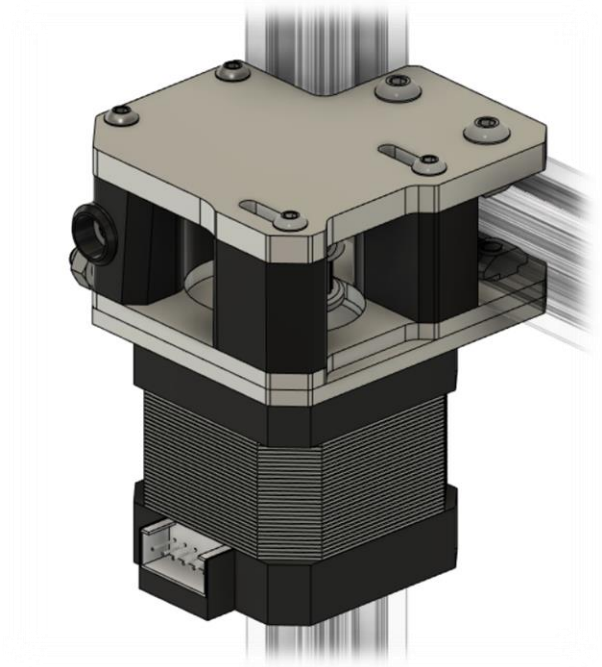
Step 4:

Attach the top plate using the 12mm M4 and T-nuts to the frame and screw in the 12mm M3 into the printed standoff.



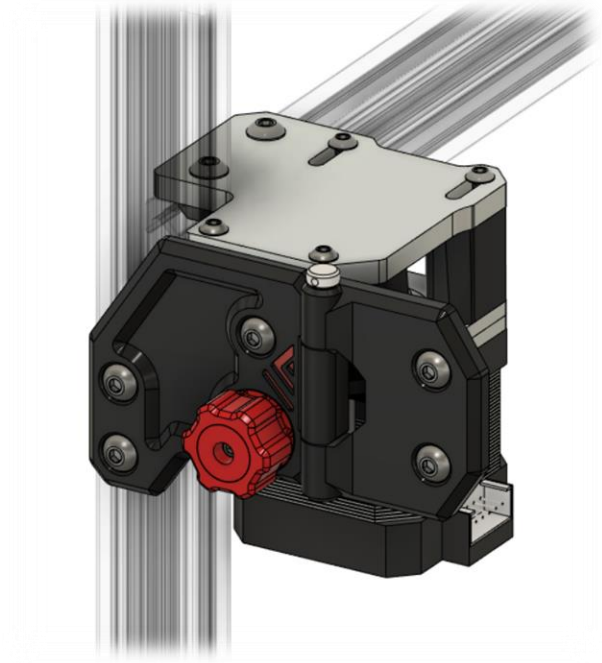
Step 5:

Insert the final standoffs and insert the 35mm M3, slide in the motor with its plate and tighten the M3 screws finger tight.



Step 6:

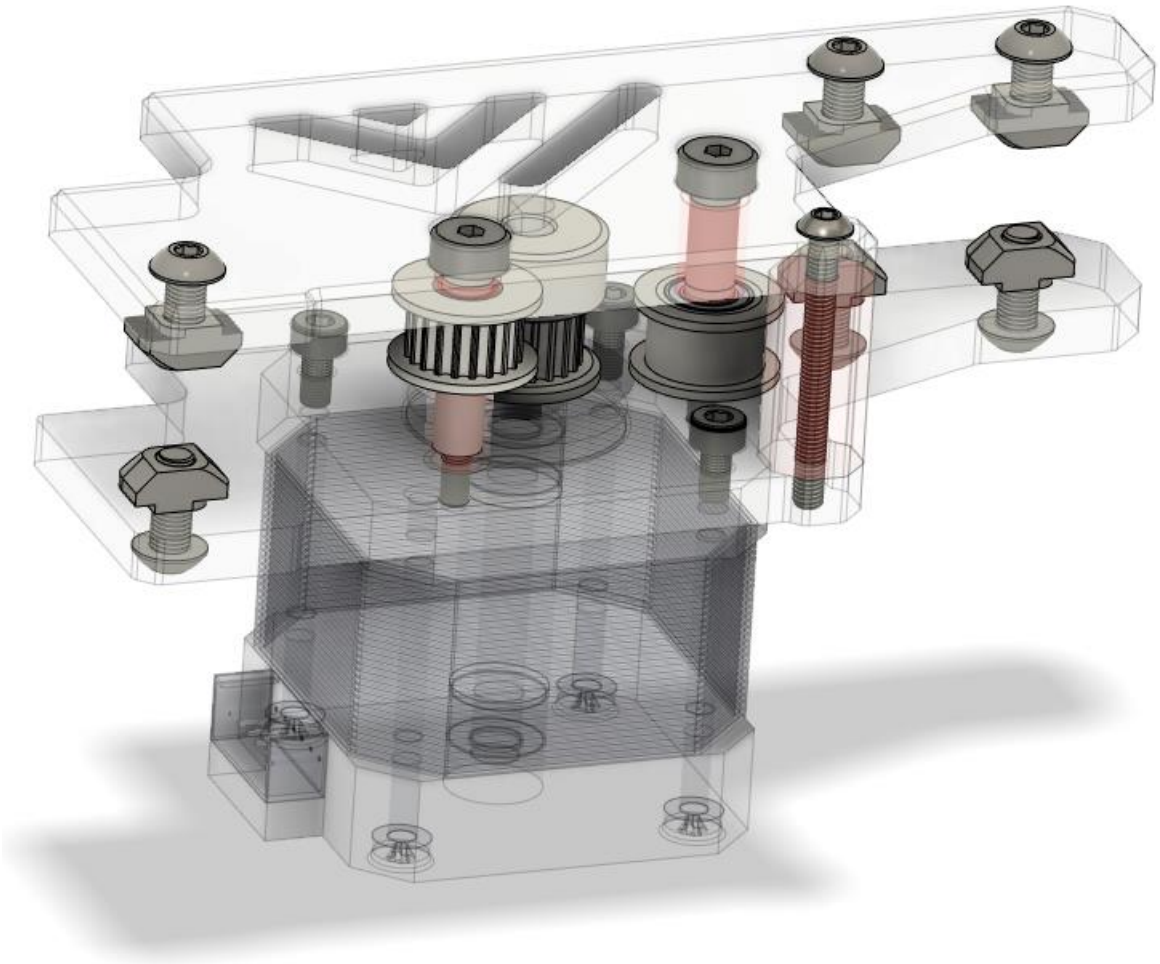
Screw in the M4 set screw into the bottom tensioner, the M4 nut should be pressed into the tensioning knob. The tensioner plate can be installed when the enclosure panels are on the printer.



1.2 Secondary motor mounts/Idlers (AWD)

Bom:

Material	Quantity	Notes
M3 35mm	2	
M3 nut	2	
M3 6mm	6	
M4 10mm	12	
M4 T-nut	12	+3 when mounting the extrusion to the rear panel
Shoulder bolt 5mmx20mm [M3]	4	M3 threading with 6mm of threaded length, if longer grind down the ends https://nl.aliexpress.com/item/1005003611471729.html
M4 nut	2	
GT2 Toothed idler	2	Low profile required, as available at Mellow & F3D
Gt2 Smooth idler	2	Low profile required, as available at Mellow & F3D
GT2 motor pulley	2	
260mm 2020 Extrusion	1	
M4 8mm	3	Optional but recommended, used to secure the rear extrusion to the rear aluminum panel



STL files:

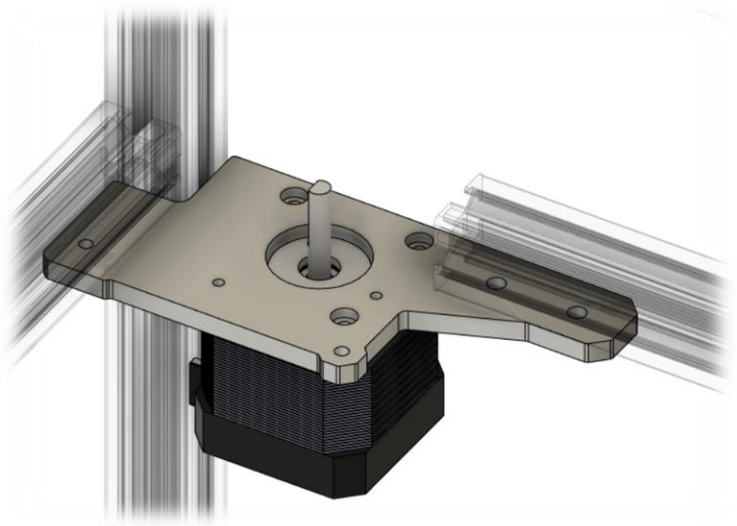
File name	Amount to print
Spacer long	4
Spacer short bottom	2
Spacer short top	2
Spacer M3 corner	2

Step 1:

Mount the motor to the bottom plate with the M3 screws

Step 2:

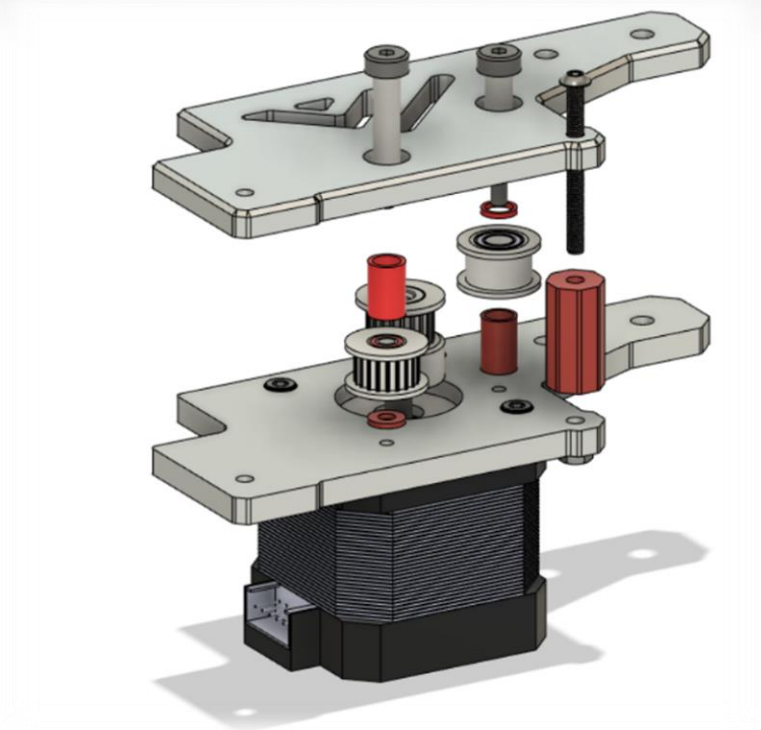
Mount the bottom assembly (left & right) to the frame with the rear extrusion



Step 3:

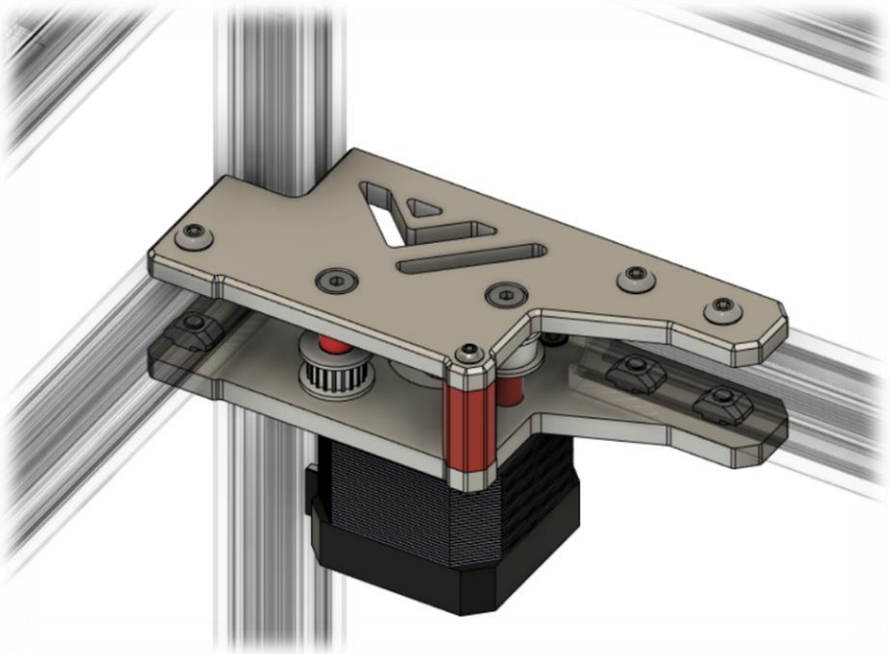
Mount the pulleys with their respective spacers and hardware like shown below. Mind that the bottom spacer for the toothed idler pulley has a smaller inside diameter then the top one for the smooth idler.

**when getting the top plate in position with all hardware it is recommended to either have the printed parts printed with some excess first layer squish or put some thicker grease between the last spacer and the shoulder bolt to keep the assembly together before mounting*

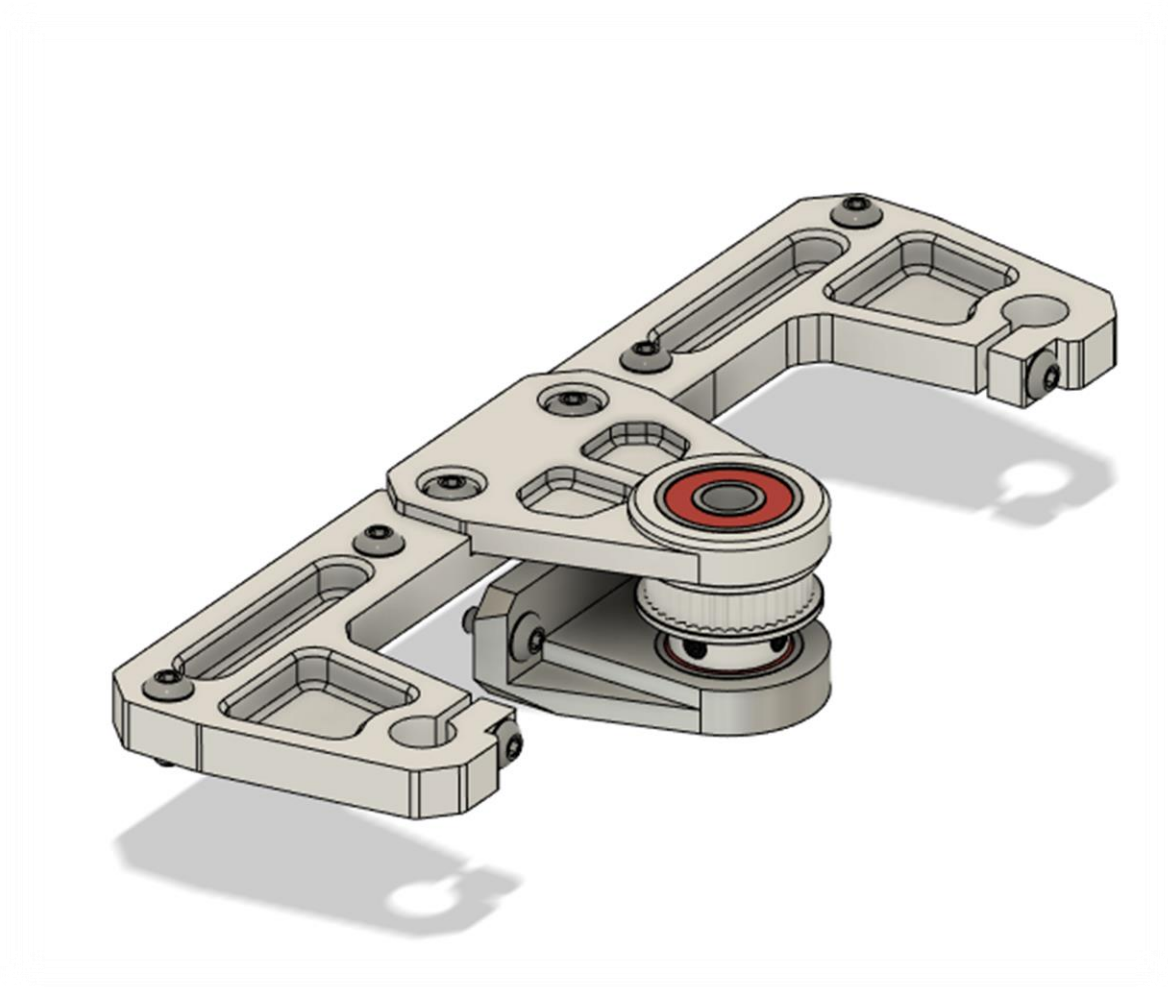


Step 4:

Secure the top plate

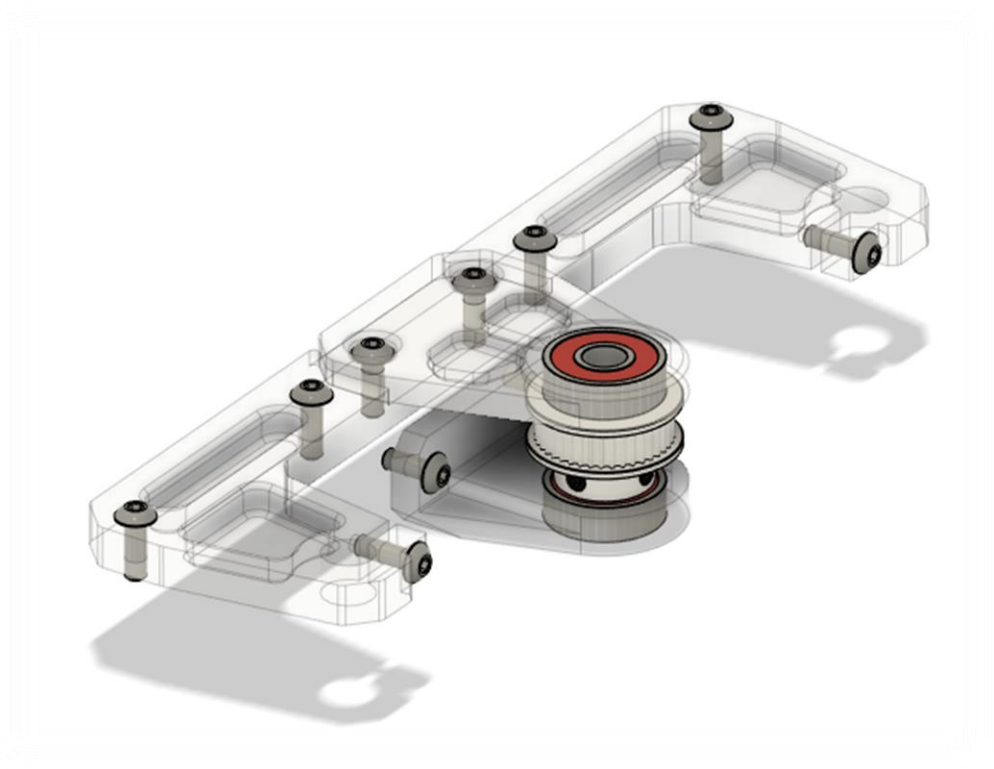


2.1 Lower rod & leadscrew bracket



Bom:

Material	Quantity	Notes
10mm M4	4	
12mm M4	16	
608-2RS (skateboard) bearing	4	
GT2 40T 8mm bore Pulley	2	
300mm 10mm rods	4	
Belt GT2 closed, length 860-870 mm		



STL files:

File name	Amount to print
Z assembly alignment tool (either EVA/VZprinthead)	1

Step 1:

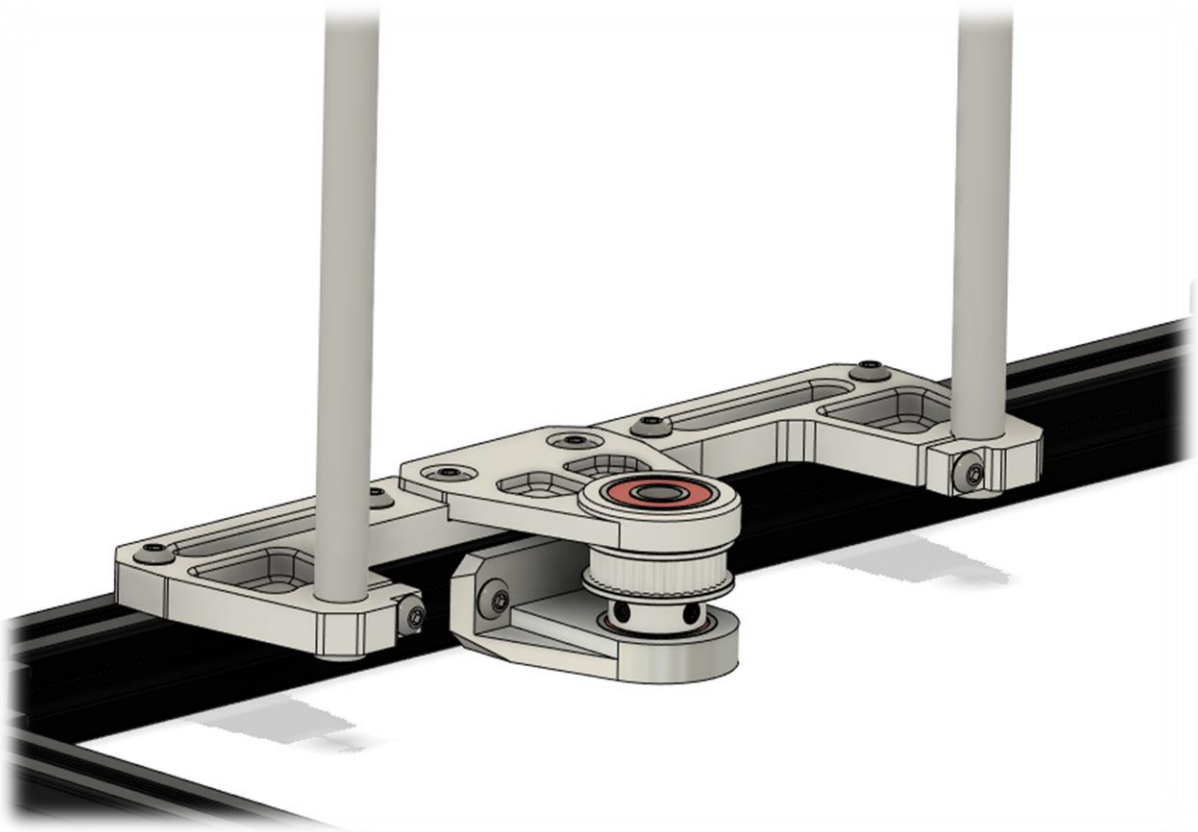
Mount the top bracket with the 12mm M4 hardware to the frame loosely. Then mount the sliding rods with 12mm M4 screws and align the assembly to the frame using the printed "Z assembly alignment tool". Be sure to secure all hardware. Be sure to either insert 2 T-nuts underneath the center two holes for the top leadscrew bracket or immediately mount the top bracket.

Step 2:

Mount the lower leadscrew bracket, using 2x 10mm M4 screws, loosely to the frame approximately in the correct position relative to the top bracket.

Step 3:

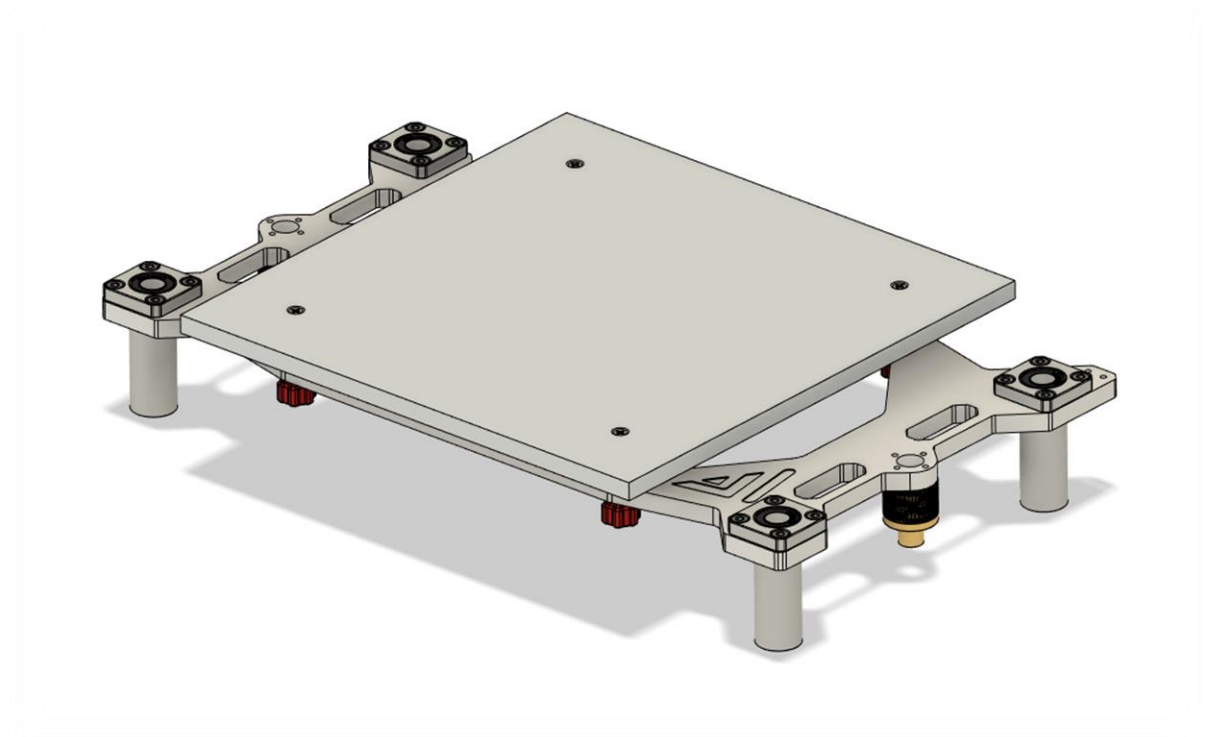
Mount the top leadscrew bracket to the assembly using 12mm M4 screws (skip when done in step one). Insert the pulley with the closed belt and insert the leadscrew. Then tighten the grub screws on the pulley. Lastly while making sure the leadscrew is perfectly straight up tighten the screws on the upper and lower leadscrew brackets. This can be checked by measuring the distance on both sides between the leadscrew (top position) and the 10mm Rods.



Step 4:

Repeat steps 1 through 3 for the other side.

2.2 Bed assembly



Bom:

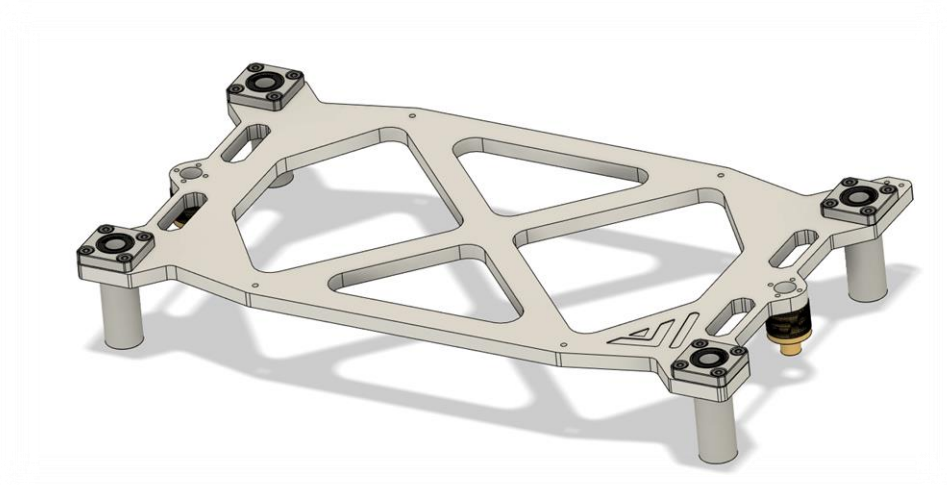
Material	Quantity	Notes
M4 8mm	16	
M3 8mm	16	
M3 50mm	4	Countersunk for the bed
M3 nuts	12	
LMK10LUU	4	
Oldham coupler	2	Optional but highly advised
Leadscrew nut	2	

STL files:

File name	Amount to print
Bed level adjustment knobs	4
Oldham couplers	optional

Step 1:

Mount the LMK10LUU using the M4 hardware to the bed frame. Then mount the Oldham couplers with the leadscrew nuts together with M3 hardware and mount that assembly to the bed frame using M3 hardware



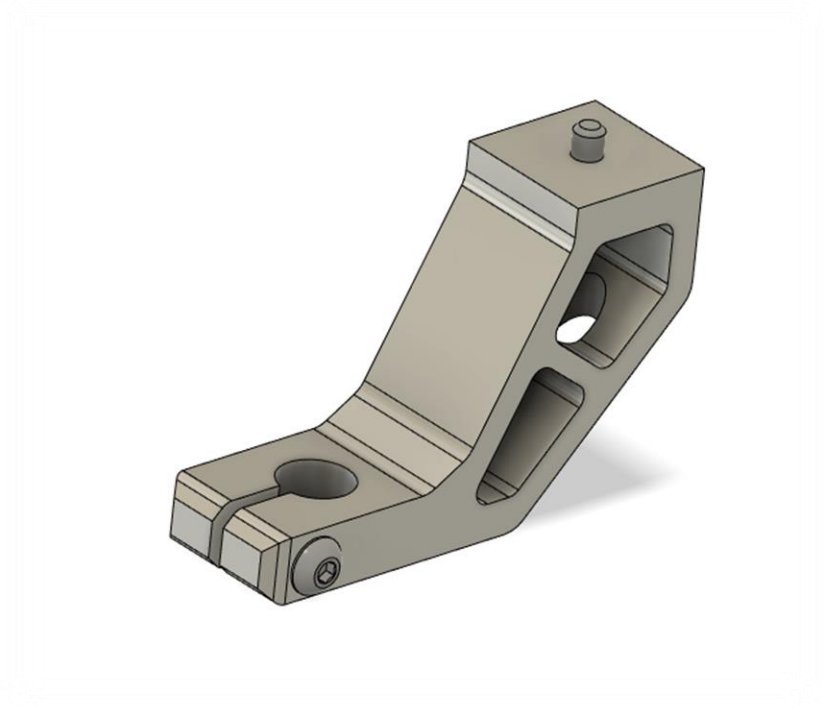
Step 2:

Place the bed assembly in the rods and leadscrew.

Step 3:

Mount the bed plate to the bed frame using the 50mm countersunk M3 screws. When using a cast aluminum bed make sure it is well prepped before mounting. It is recommended to always be safe and inform yourself properly on how to apply a AC silicon heating pad.

2.3 Top rod mounts

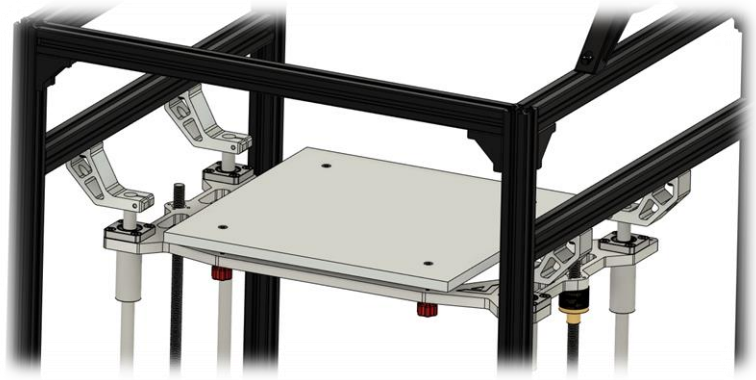


Bom:

Material	Quantity	Notes
M4 10mm	4	
M4 20mm	4	
M4 T-nut	4	

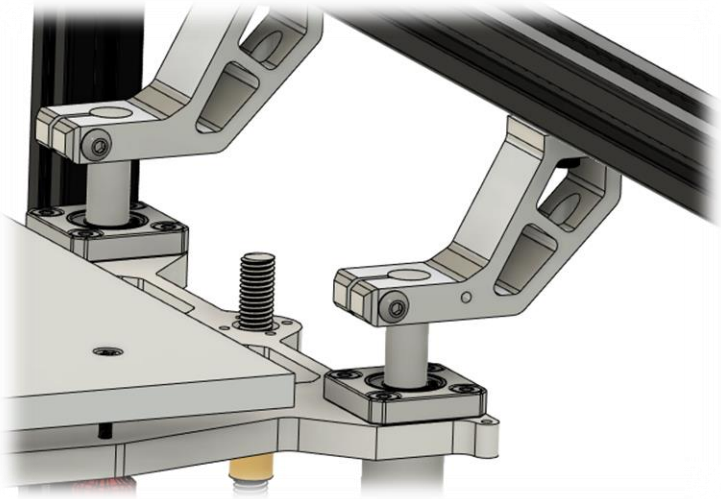
Step 1:

Mount the 10mm M4 screws and T-nuts to all top rod mounts and loosely turn in the 20mm M4 screws in the clamping mechanism.



Step 2:

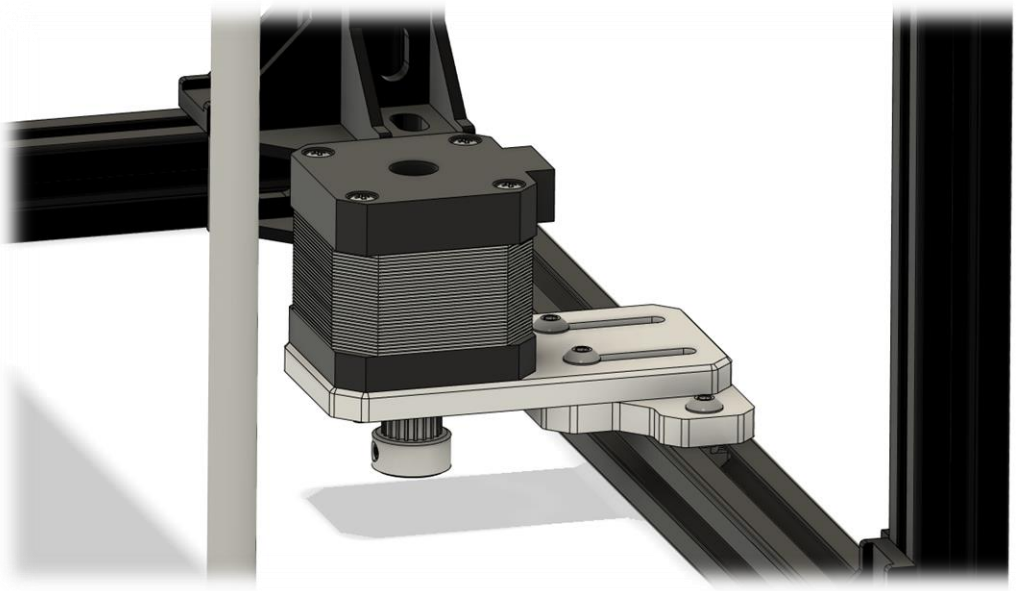
Mount all top rod mounts to the rod first. Make sure the rod mount with the extra hole (for the Z limit switch) is in the back right of the printer like shown below. Finally tighten the rod holders to the frame with the pre-inserted M4 hardware.



Step 3:

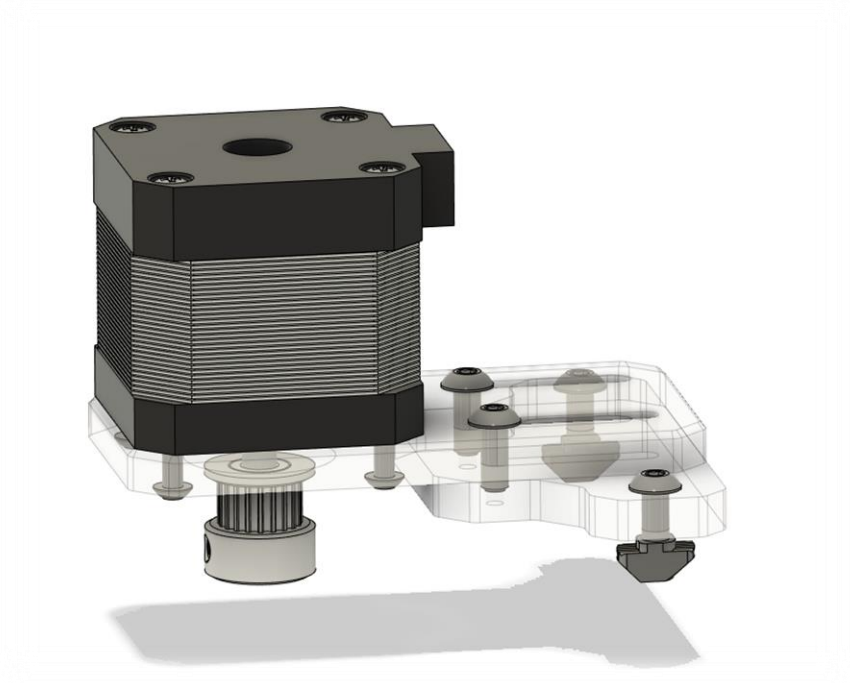
After installing check the movement of the bed assembly by turning the leadscrews. This should operate smoothly. If not, place the bed assembly in the top most position, untighten all top rod holders and retighten to align the rods.

2.4 Single z motor bracket



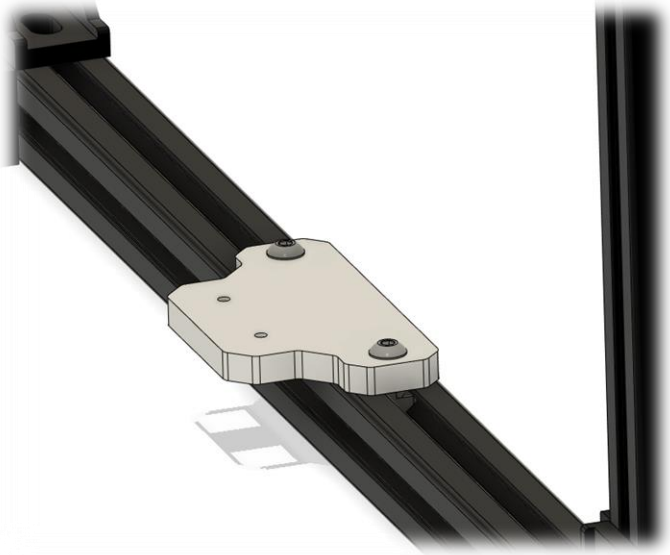
Bom:

Material	Quantity	Notes
M3 10mm	4	
M4 10mm	4	
M4 T-nut	2	
20t GT2	1	
NEMA 17 stepper	1	



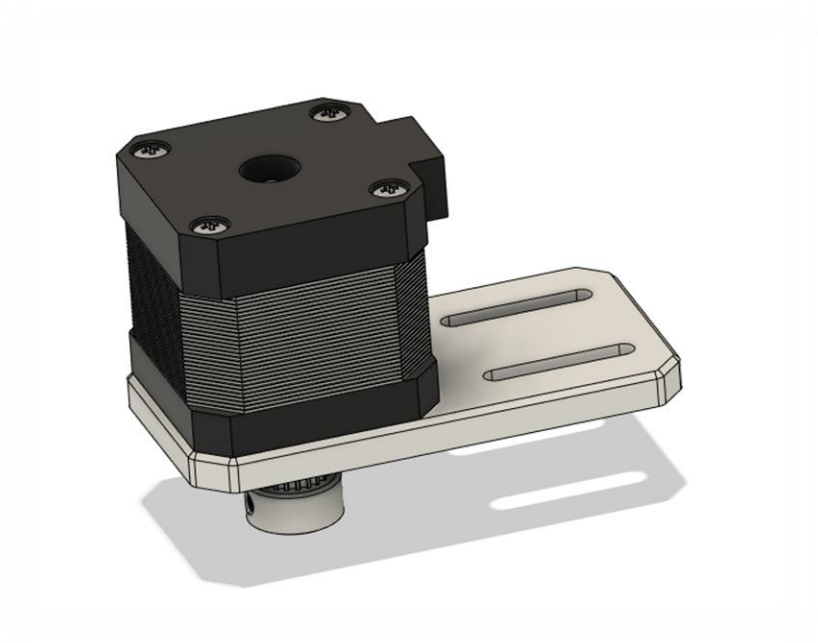
Step 1:

Mount the bracket shown below to the frame using the 10mm M4 screws and T-nuts. Make sure it is nicely centered in the middle of the frame.



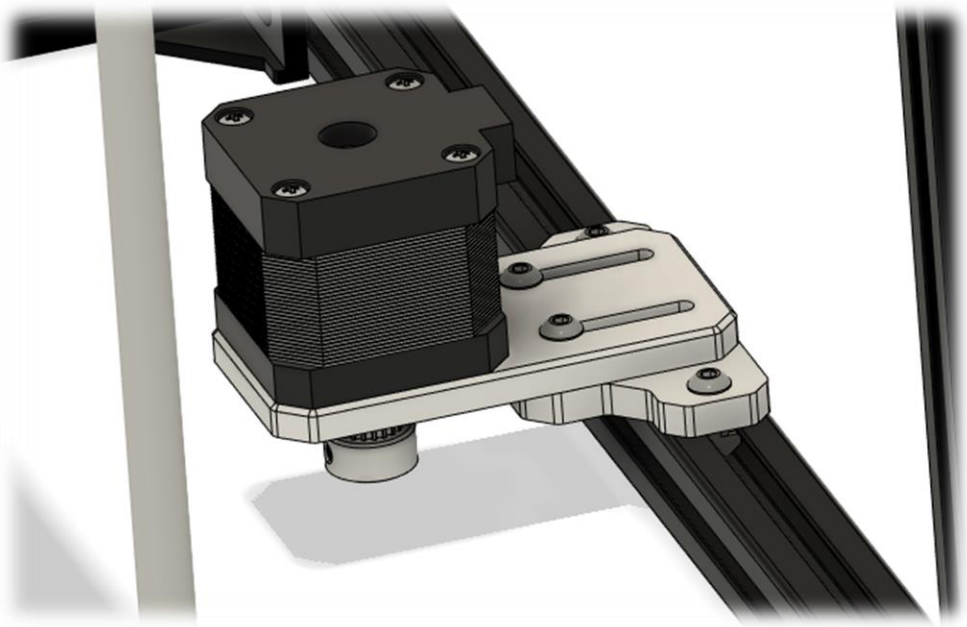
Step 2:

Mount the stepper motor to the top bracket using the 10mm M3 screws. Attach the motor pulley like shown below.



Step 3:

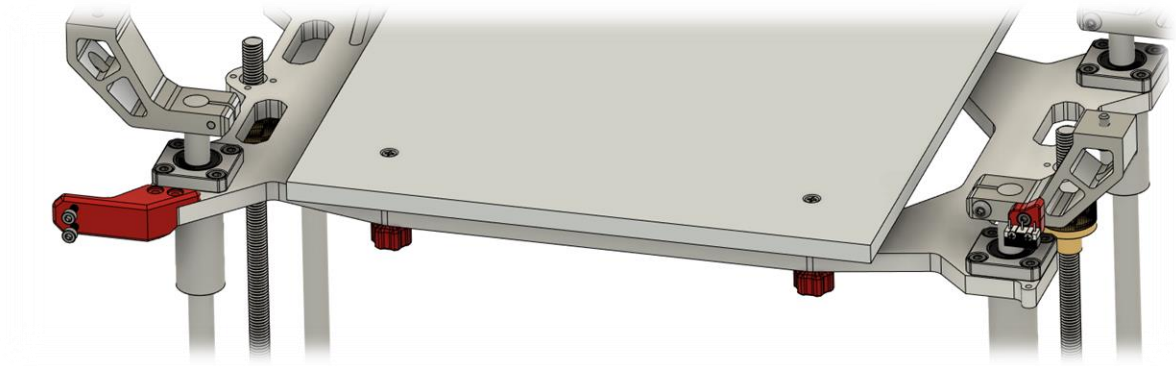
Mount the previous assembly to the bracket on the frame using 10mm M4 screws.



Step 4:

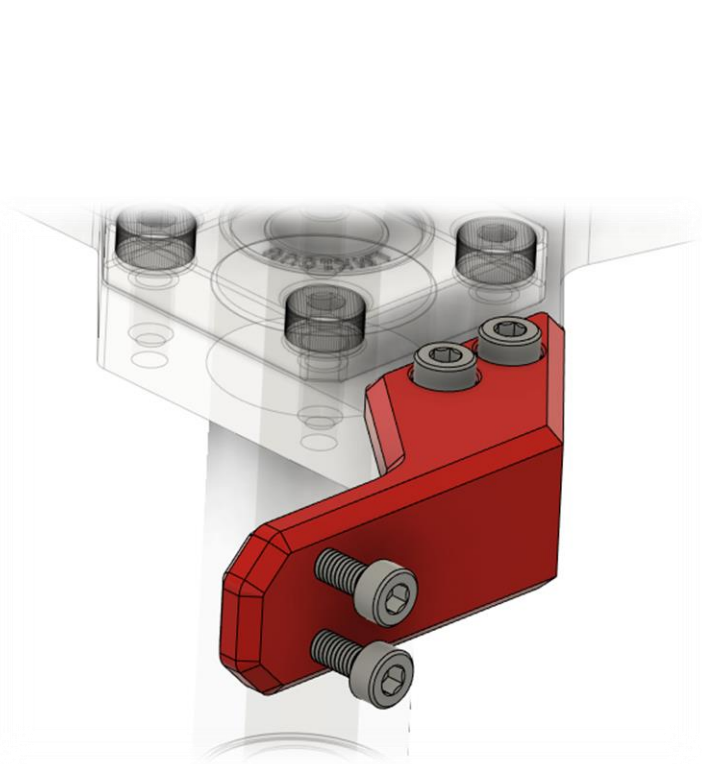
With the motor in the furthest position, loop the belt around the motor pulley and tighten the belt. Be sure to check if the belt is horizontally parallel to the frame for smoothest operation.

2.5 Z switch & bed chain



Bom:

Material	Quantity	Notes
M3 10mm	4	
M3 8mm	1	
M2 10mm	2	
M3 40mm	1	
M3 nut	3	
Microswitch	1	

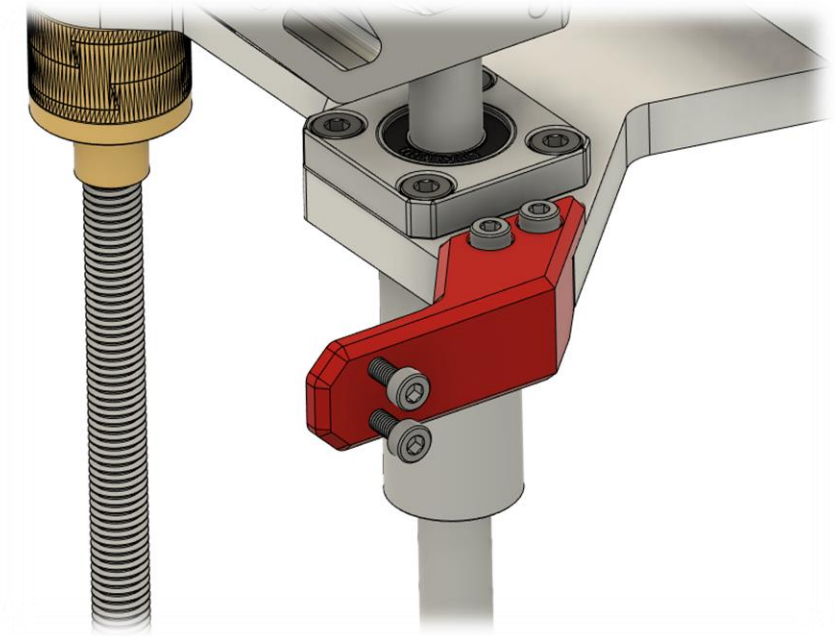


STL files:

File name	Amount to print
Printed z switch adapter	1
Z-chain mount	1

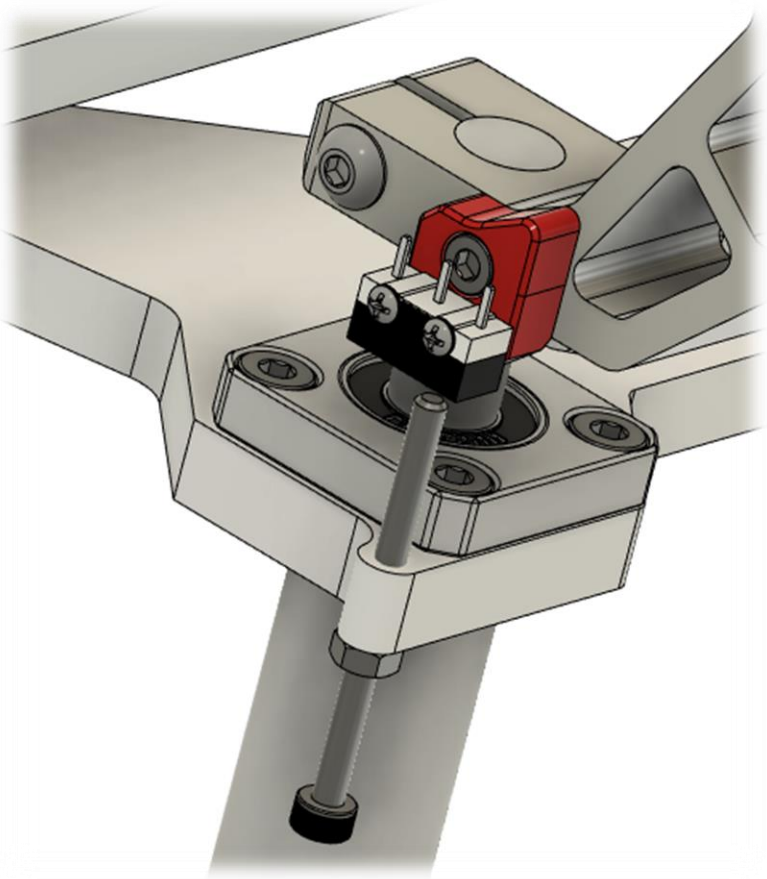
Step 1:

Mount the printed chain mount to the bed frame using the 10mm M3 screws. Then mount the cable chain using 10mm M3 screws and nuts like shown below.



Step 2:

Mount the microswitch to the printed adapter using M2 screws. Then mount the assembly to the top rod holder using the 8mm M3. Finally screw in the 50mm M3 screw and nut like shown below. After setting the correct Z-height using the adjustment screw use the M3 nut to lock the screw in place in order to make sure the screw doesn't drift off position.



Designed and developed by:

The VzBot Team


https://discord.gg/qmMeD6Vt3W


https://www.facebook.com/groups/4098868770205560/


https://github.com/VzBoT3D