MANUAL VZ-235 AWD/2WD

About

VZ 235 is the smaller brother for the original VZ 330. With its relatively smaller build volume it has reduced weight and a smaller formfactor. The design is built around the popular Creality Ender 3 bed but is not limited to this size, the frame can be scaled up or down to suit your own needs.

The design is based on the original VZ 330 design, this makes it very easy to take features you like from the 330 and use them on 235. The entire z assembly is interchangeable, same for the partial printed printhead (exception for the front and back plate), y gantry idlers and all the smaller parts like the feet and braces.

The biggest difference between VZ 330 and VZ 235 is how the gantry is situated. The 235 gantry is turned around 180 degrees compared to 330. This makes room for leaving out the 2020 extrusion in the front to make a clear view and allow easy access of the build volume.

The reason for doing this is to allow for room to add an optional All Wheel Drive version of the gantry! Double the number of motors per axis will in term double the amount of available torque and halve the sprung length of the belts! Of course, there is also a normal 2WD version available for those who prefer this.

It is recommended to use the provided .step files while assembling. This manual only covers the most critical parts of the build at this moment. For using the .step files as part of the build we recommend the free version of Autodesk Fusion360, it is not hard to use and look around in the files, so even people without prior experience can do this!

*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**

General order of building:

We recommend following this order of building the printer:

1. Frame
2. Z assembly + Bed
3. Gantry + printhead
4. Bottom and rear panels
5. Fume extractor
6. Electronics + wiring + firmware
7. First moves and checks
8. Enclosure panels + (RSCS)
9. Trim pieces

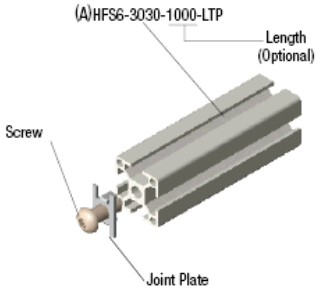
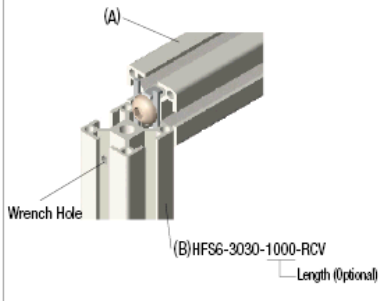
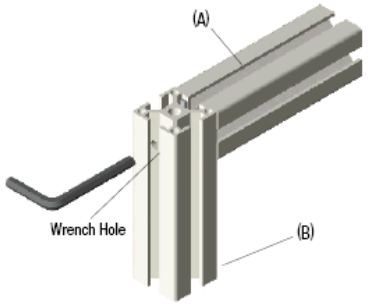
1. Frame:

Overview:

The frame is assembled through a combination of blind joints, corner brackets and blind corner brackets. The corner brackets are to help stiffen up the frame and are optional, though we highly recommend using them on every possible corner for best results.

How to assemble a blind corner Joint:

How to Connect Screw Joints (Tapped holes or wrench holes are required on the extrusion.)

Step	1	2	3
Description	Mount a screw joint on the tapped hole on the extrusion end face.	Pass the head of screw joint through the slot of Extrusion (B), and slide it down to the bottom of (A).	Insert the hex wrench into the wrench hole and tighten it.
Screw Joints			

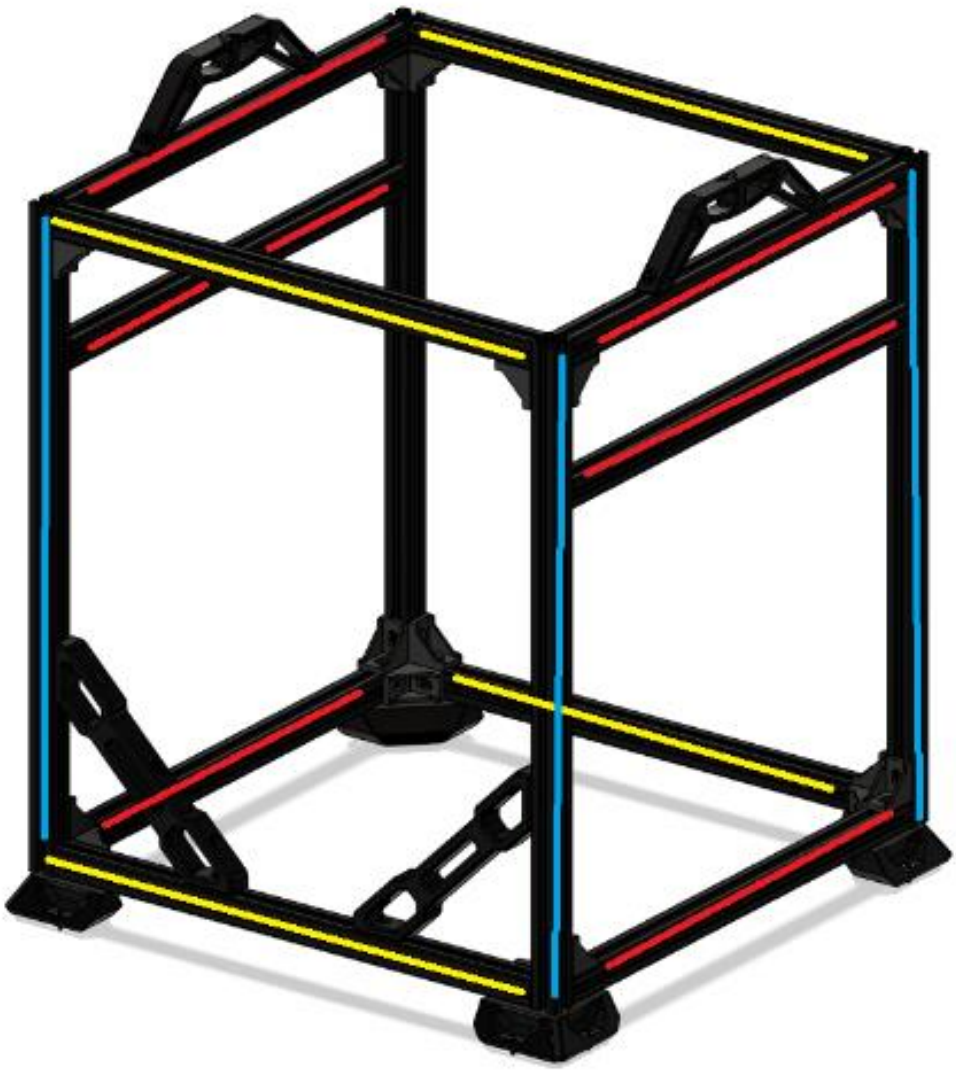
Useful links about the assembly of blind joints:

https://www.youtube.com/watch?v=2dvbn0rWA60

https://www.youtube.com/watch?v=ueniUWrUcjE

Bom:

Material	Quantity	Notes
M6/M5 10mm buttonhead	20	Depending on the type of 2020 you use you need M5 or M6 screws
385mm 2020 extrusion	4	Yellow
375mm 2020 extrusion	6	Red
470mm 2020 extrusion	4	Blue
2020 corner joints	18	
2020 blind corner joints	4	
385mm 2020 extrusion	1	Only for 2WD, mount the same as Y gantry extrusions



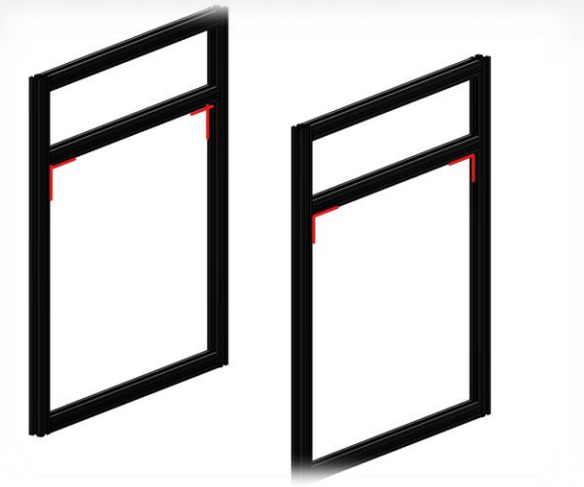
STL files:

File name	Amount to print
Brace	2x
Handle	2x
Y gantry alignment tool	2x
Nut insert for motor mounts	2x
Door latch frame mount	4x

Step 1:

To start you are going to build the 2 sides of your frame. Make sure you do your building on a nice flat surface. You will lay your frame half down with the included printed alignment tools for the y gantry extrusions and hand tighten all blind joints.

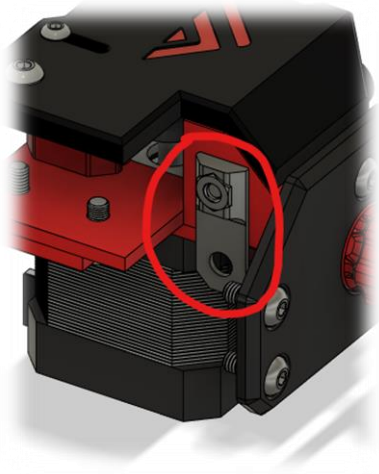
After hand tightening you can start tightening everything down properly. Make sure every corner is exactly 90 degrees. Moreover, make sure the Y gantry extrusion is parallel to the upper and lower extrusion of the frame half. The Y gantry extrusion is the only extrusion that can't use a 2020 corner joint bracket, it is stabilized by the motormount so there is no need for extra reinforcement.



Once you are done with one half repeat for the other half. Check the two halves by laying them on top of eachother with all corners exactly in the same spot and check the y gantry extrusions for the two halves whether they are parallel to eachother. They need to be parallel for the printer to operate smoothly.

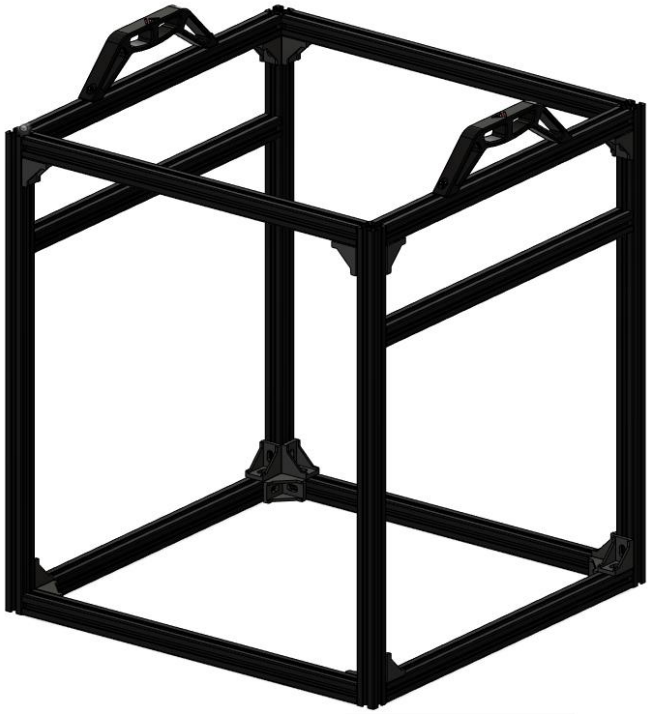
Step 2:

The bottom, top and upright extrusions in the front of the frame all have printed nut inserts inserted. 2 in the top for the door latches, 2 in the bottom for the lower latches and 1 in upright for the motor mounts to attach to. Insert the M4 nuts into the M4 inserts and push them in the uprights on the frame half. Next insert the 2x5mm magnets and the m3 nut into the frame part of the magnetic door latches and put 2 in the front lower and 2 in the front upper extrusion as shown in the picture before assembling the final part of the frame.



Step 3:

Attach the extrusions to connect the two halves of the frame. Make sure to put the part you are assembling on the flat surface and afterwards check the frame on squareness.



Step 4:

Attach all corner joints and check if your frame is square and strong. After this checks out attach the handles and the frame is built.

2. Z Assembly + Bed

Overview:

The proper alignment procedure of the VZ235 is the same as on the VZ330 only difference is the length of the alignment tools. Make sure to check out the YouTube video explaining how to align your Z-assembly, so it is both smooth and lines up with the possible travel of the printhead.

Assembly instructions: https://youtu.be/JvF-UNoDB_I

Bom:

Material	Quantity	Notes
10mm M4	47	
T-nut M4	47	
15mm M3	24	
20mm M3	4	
M3 nut	28	
608-2rs bearing	4	
300mm leadscrew	2	
Gt2 40t 8mm pulley	2	
Nema 17	1	
Gt2 20T pulley	1	
M3 t nut	2	
M3 30mm	2	
300mm 10mm smooth rod	4	Optional size, also supports 8 and 12mm as found on VZ330
Lmu10luu bearing	4	
Leadscrew nut	2	
M5/M6 20mm	2	Depending on extrusion type
Bed springs	4	
30mm M3 countersunk	5	
M3 wing nuts	5	
M4 8mm	1	
245mm 2020 extrusion	2	
232mm 2020 extrusion	2	
2020 corner bracket	4	
M5 10mm /8mm	8	Depending on the 2020 corner bracket
Ender 3 bed / machined aluminum bed	1	
850-890mm looped belt	1	
Microswitch	1	
M3 6mm	4	

STL files:

File name	Amount to print
Z lower rod mount main	4
Z lower rod mount clamp	4
Z upper rod mount main	4
Z upper rod mount clamp	4
Single z motor bracket upper	1
Single z motor bracket lower	1
Lead screw upper bracket	2
Lead screw lower bracket	2
Limit switch mount	1
Z stopper	1
Z chain mount	1
Bearing mount	4
Lead screw support	2
Oldham coupler (all parts)	2
Bed M3 support	4
Z alignment tool	2

Step 1:

First assemble your bed assembly, make sure the bed frame is on a flat surface when assembling. Insert the linear bearings in their brackets and attach them to the bed frame. Do make sure the brackets are on the most outer position of the frame like shown below and that they are flat with the frame. Do not attach the printer bed to the frame yet.

Step 2:

Attach all rod holders finger tight (upper & lower) to the frame, don't worry about the position just yet. You want to be able to shift them around. Then insert the rods into the bearings and attach the bed frame with the rods to the respective rod holders.

Step 3:

With the assembly in place attach the two alignment tools like shown below and tighten

Step 4:

Once you aligned the front corners you are going to put the bed in the lowest position and wiggle the bed around. Try to get the rod pretty nice and vertical to the frame and tighten the rear bottom rod holders and tighten them to the frame.

Step 5:

Now put the bed in the highest position and tighten the clamps for the upper rods and tighten the brackets to the frame. To keep the bed up you can use zip ties or ask someone to help.

Step 6:

Insert the bearings in the leadscrew brackets (press fit) and attach the brackets like shown below. Don’t forget to put the belt around the pulley before assembling the top part of the bracket.

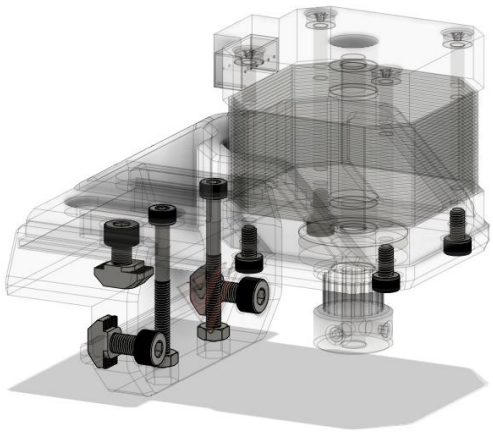
Then attach the leadscrew support with the oldham couplers and leadscrew nut to the bed frame and assemble the parts loosely.

Step 7:

To align the parts, measure the bracket is nicely in between the rod holders measure the distance and get it approximately centered. Turn the leadscrew a bit to help it self-align the upper leadscrew support on the bed and tighten the parts. The leadscrew should be nice and vertical. To check you can put the bed in the highest position and measure the distances between the leadscrew and z rod. The leadscrew should now be centered between both z rods.

Step 8:

Attach the single motor mount like shown below



The top M3 screws are 30mm and lock the sliding mechanism in place. They also serve as reinforcement of the mount. Also attach the motor pulley and belt on the motor.

Step 9:

To synchronize the leadscrews, turn out the grub screws on the 40t pulleys and get the bed in the top position. Then retighten the grubscrews

Step 10:

Assemble the z switch and make sure when the bed rises the switch is triggered by the screw to avoid a bed crash at the first homing sequence.

Step 11:

Finally install the bed M3 supports, attach the bed with the countersunk M3's and bed springs. If you are using a milled aluminum bed refer to the electronics/wiring section on how to properly assemble the silicone heater pad.

3. Gantry

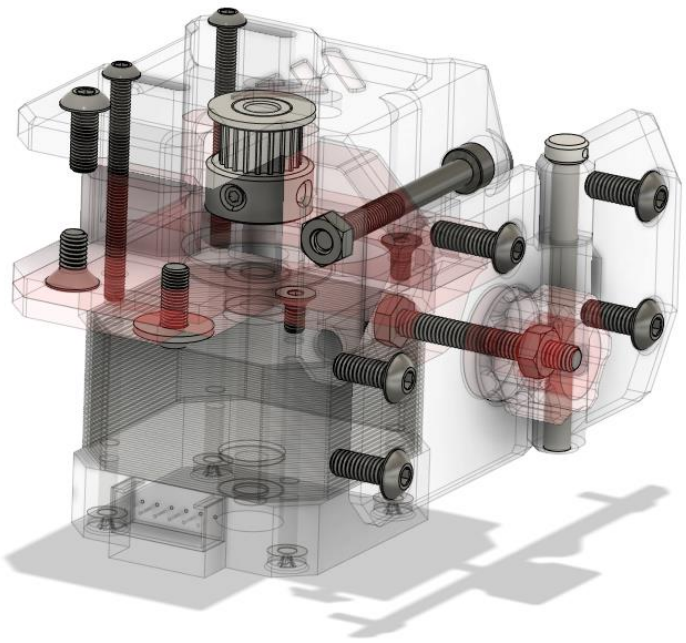
Overview:

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.

3.1 Motor mounts + integrated hinges

Bom:

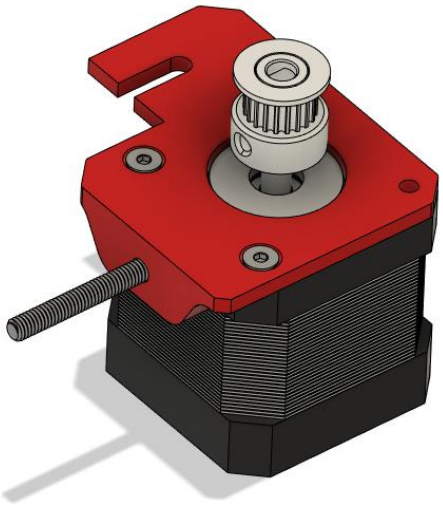
Material	Quantity	Notes
Nema 17	2	
20T GT2 Pulley	2	
8mm M4 countersunk	2	
30mm M4 Hex bolt	2	
40mm M4 Barrelhead	2	
M4 nut	8	(also, for hinges)
M3 6mm countersunk	6	
M4 10mm	12	
M4 T-nut	10	
M3 35mm	4	
4mm ID washer	2	



STL files:

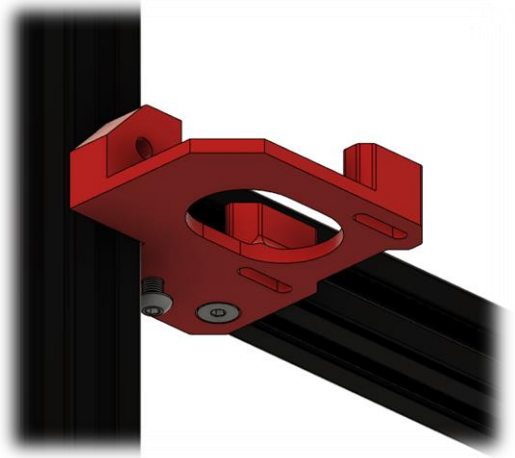
File name	Amount to print
Motor mount Part B	Left + Right
Motor mount Part A	Left + Right
X tensioner	Left + Right
Tensioner knob	2
Cap	2
Integrated hinge	2
Hinge/motor reinforcement	Left + Right

Step 1:



First attach the printed tensioner to the motor like shown above

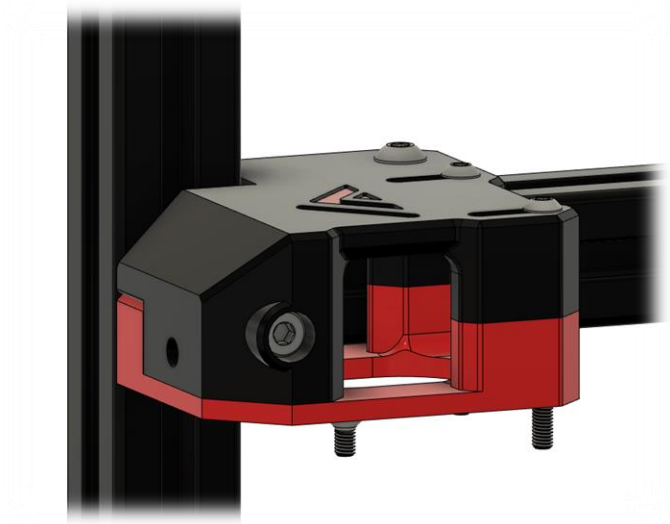
Step 2:



Then attach the lower bracket of the motor mount to the frame

Step 3:

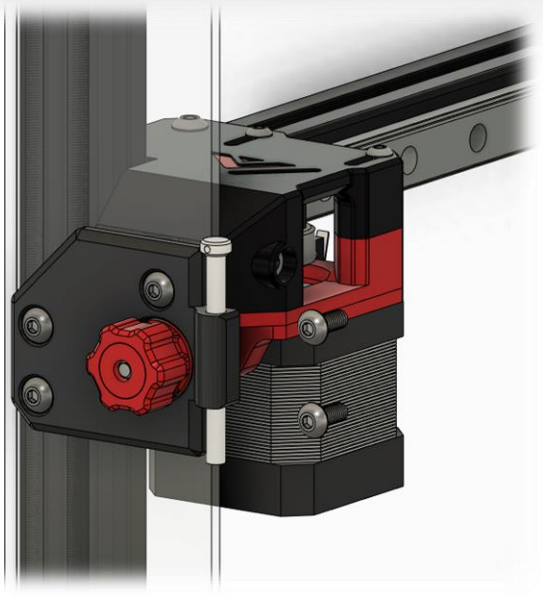
Insert the M4 nut in the upper half of the motor mount and attach it on top of the lower mount and to the frame with M4 T-nuts. Don’t forget to tighten the two halves to the frame by screwing down the 40mm M4 into the printed M4 holder you inserted when assembling the frame.



Step 4:

Attach the lowest part of the tensioner and motor, screw down the M4 in which the tensioner slides until it is snug, but the tensioner can still slide smoothly.

Step 5:



Finally attach the small side panel piece and attach the front brace/integrated hinge and tensioner knob. The hinge and door assembly can also be installed now but for ease of working it is best to leave it off for now.

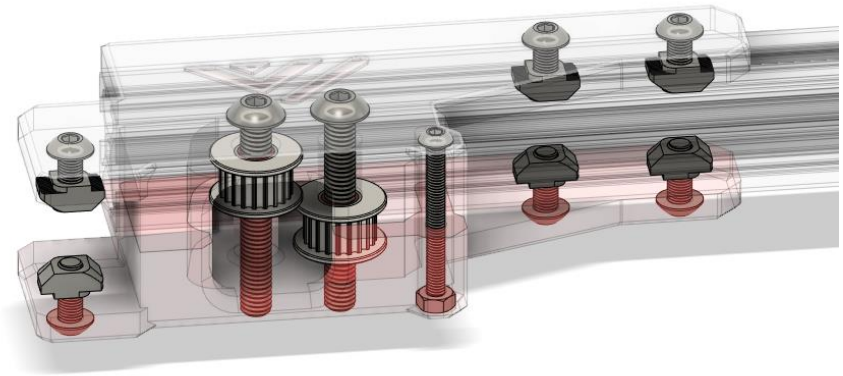
Step 6:

Repeat for the other side

3.2A Rear idlers (2WD)

Bom:

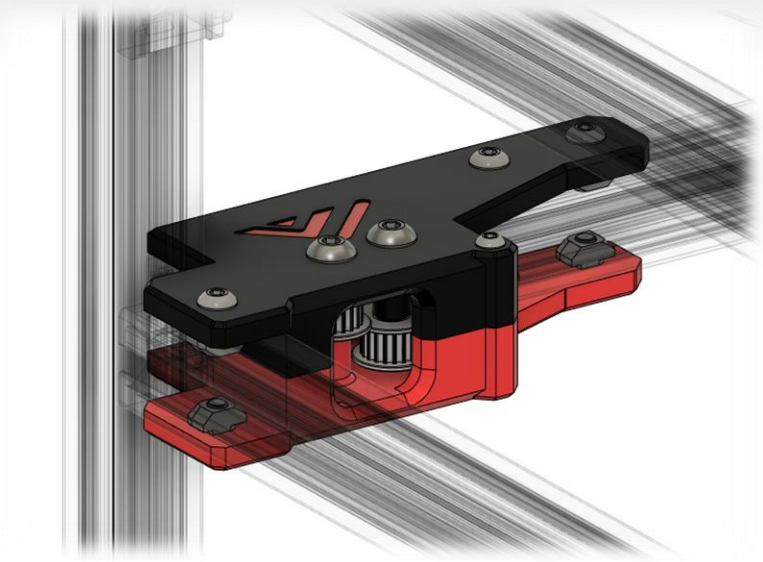
Material	Quantity	Notes
M4 10mm	12	
M5 35mm/5mmX30mm shoulder bolt	4	
M4 T-nut	12	
GT2 Toothed idler	4	
M3 30mm	2	
M3 nut	2	



STL files:

File name	Amount to print
Pulley mount left bottom	1
Pulley mount left top	1
Pulley mount right bottom	1
Pulley mount right top	1

Step 1:



Attach the bottom half of the idler to the frame, insert the pulleys and hardware to the upper part and mate together.

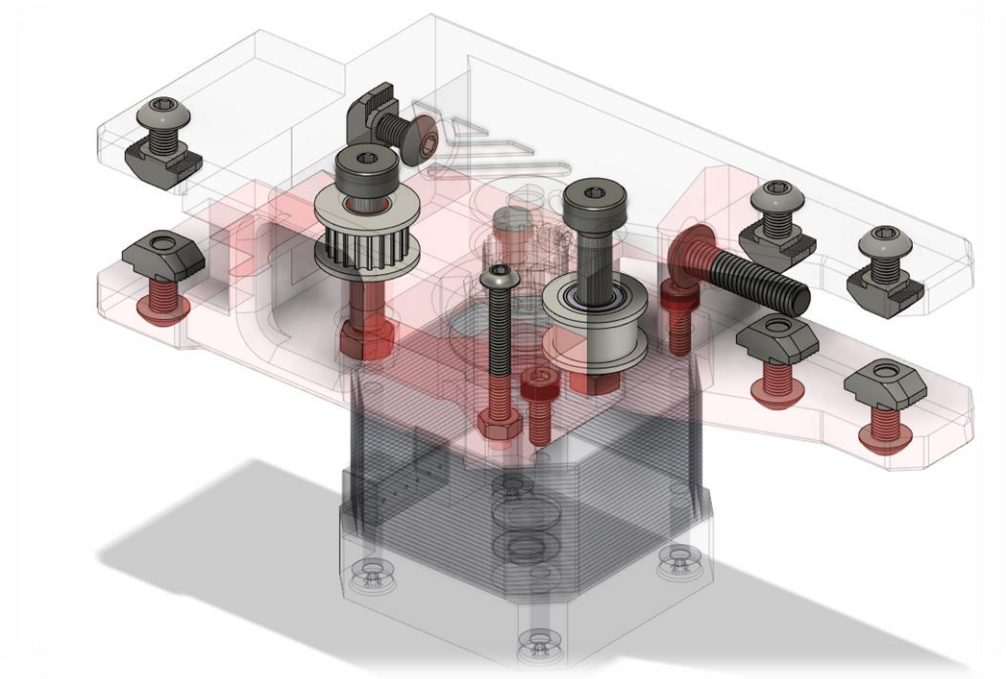
Step 2:

Repeat for the other side

3.2B Secondary motor mounts/Idlers (AWD)

Bom:

Material	Quantity	Notes
M3 25mm	2	
M3 nut	2	
M3 8mm/6mm	6	Depending on your motor you'll need a 6mm or 8mm bolt
M4 10mm	14	
M4 T-nut	14	
Shoulder bolt 5mmx20mm [M4]	4	
M4 nut	4	
M5/M6 20mm	2	Depending on the type of extrusion you use you'll need M5 or M6 to screw into the frame
GT2 Toothed idler	2	
Gt2 Smooth [low profile] idler	2	You'll need the mellow version idler, the 18mm OD version won't fit.
GT2 motor pulley	2	
260mm 2020 Extrusion	1	AWD only

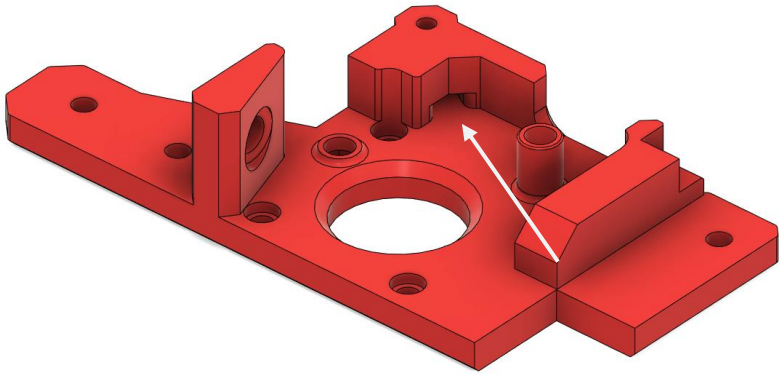


STL files:

File name	Amount to print
Pulley mount left bottom	1
Pulley mount left top	1
Pulley mount right bottom	1
Pulley mount right top	1

Step 1:

Insert the M3 nut as shown by the arrow in the picture below (left and right):



Step 2:

Insert the M4 nuts in the pulley mount bottom (left and right) part and install the motor with pulley. Mind that the left pulley has the grub screws on the upper side and the right mount needs the grub screws on the pulley on the lower side.

Step 3:

Install all hardware on the lower idlers (left and right) and attach the 2020 extrusion connecting the two idlers/motor mounts.

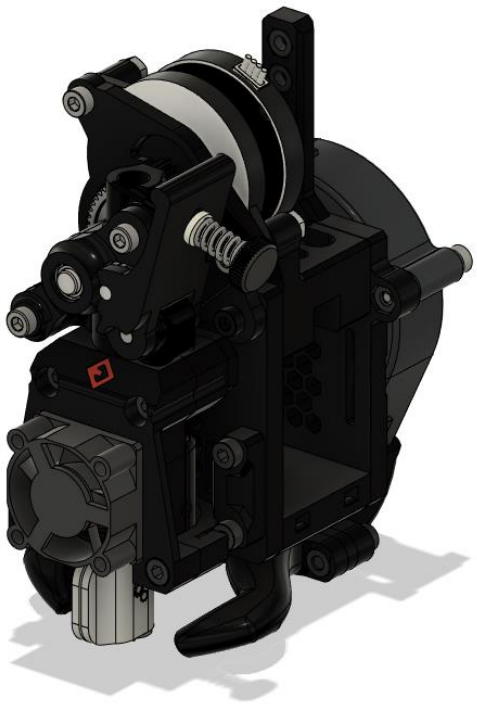
Step 4:

Install the assembly in the frame

Step 5:

Insert all hardware in the top pulley mounts, including idlers and shoulder bolts and attach them to their respective lower half.

3.3 Printhead (printed)



The VzBot printhead is based of EVA. The main difference is that both VZ235 and VZ330 utilize tensioners on the motor mounts, making the tensioner on the back of the printhead obsolete. As such the VzBot EVA uses different front and back faces to keep weight low. Still the printhead can be used with the original EVA configurations for the extruder, fan duct and hotend options from EVA 2.3 to support all popular configurations. EVA is by default used with mgn12 rails, VzBot is by default mgn9 so make sure you use a top part that also suits the mgn9 block.

Beware! VZ235 and VZ330 have a different belt path in regard to the printhead so the back and front plate for the printhead are not the same, use the one found in the VZ235 repository.

Also don't forget to check the community mods section on GitHub and Discord to find more hotend and extruder configurations!

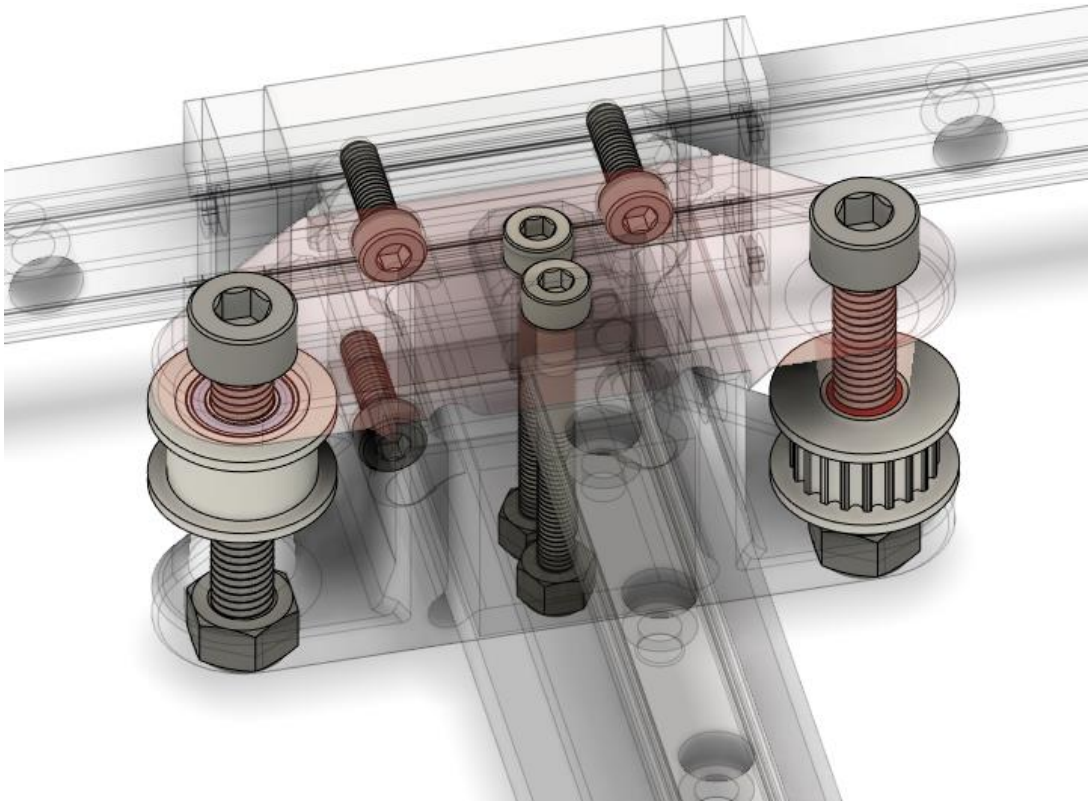
Links: https://main.eva-3d.page/

https://miragec79.github.io/HextrudORT/

3.4 Y-gantry rails, X-gantry and idlers

Bom:

Material	Quantity	Notes
MGN12H 300mm	2	
MGN9H 300mm	1	
CF square tube/aluminum tube	1	2020 extrusion will also fit but is not recommended due to its excessive weight
GT2 Smooth idler	2	
GT2 toothed idler	2	
M3 8mm	20 (or more depending on how much you use to secure the MGN12 & MGN9)	
M3 T-nut	12	
M3 nut	12	
M3 10mm	8	
M3 30mm	4	
M5 30mm [titanium]	4	
M5 nut [self-locking]	4	



STL files:

File name	Amount to print
MGN12 alignment tool	4
MGN9 alignment tool	4
Y gantry printed bottom	2
Y gantry printed top	2

Step 1:

Using the alignment tool, mount the MGN12 to the frame like shown below:

Use the 8mm M3 screws and T-nuts. You don’t need to fill all holes, but any other hole is fine. Make sure they are perfectly centered to the 2020 extrusion

Step 2:

Mount the lower half of the printed Y gantry pieces to their MGN12 cart with the 10mm M3 screws. Make sure the y gantry piece is parallel to the linear rail on both sides, you can use a small spirit level to achieve this.

Step 3:

To drill the holes in your CF-tube you'll need to measure out where all holes will need, to do this the following is recommended: put a piece of painter's tape on the tube, put the MGN9 on the tube with the alignment tools and have it centered. use a pencil to mark out all the holes you want to use. Put the CF-tube in your gantry and mark the holes for the tube to connect to the Y gantry, you will only need the 30mm M3 screws to secure the tube, the holes in the side are for 2020 extrusions.

!warning! drilling and sawing carbon fiber is very hazardous, if you don't buy the predrilled tube from mellow or the aluminum tube from F3D's shop be careful. Wear protection and drill in wet surfaces!

Step 4:

Mount the rail on the CF-tube using the alignment tools and the 8mm M3 screws, use the M3 insert piece to hold the M3 nuts and remove this printed holder after mounting.

Step 5:

Insert the endcaps in the CF-tube and put the tube in the Y gantry brackets, add the top part of the Y gantry and their corresponding hardware. Don’t forget to add the printed X end stop part on top of the left Y gantry. Keep all hardware on this point finger tight.

Step 6:

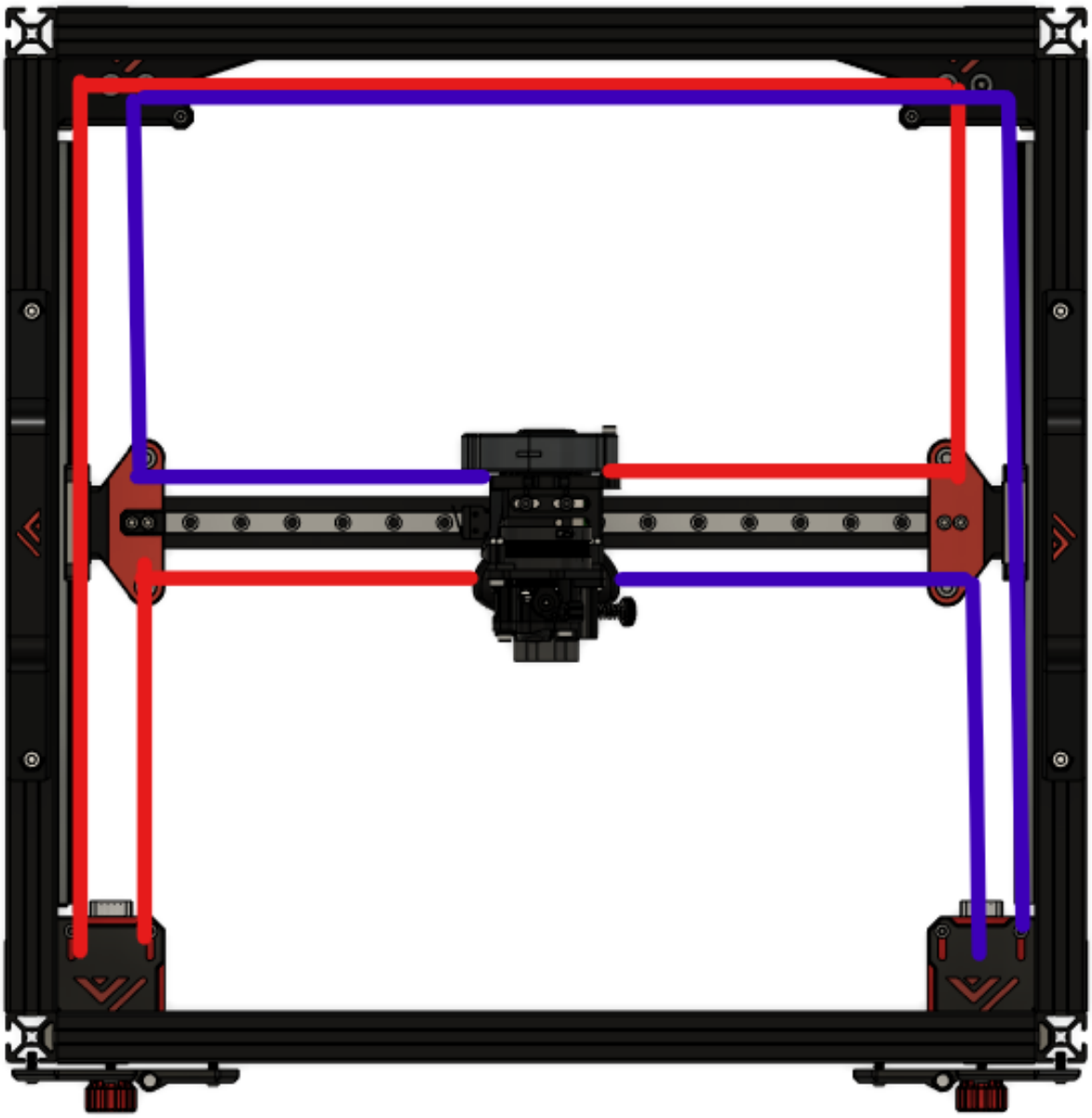
Insert the idlers and M5 bolts and nuts to secure, again only finger tight

Step 7:

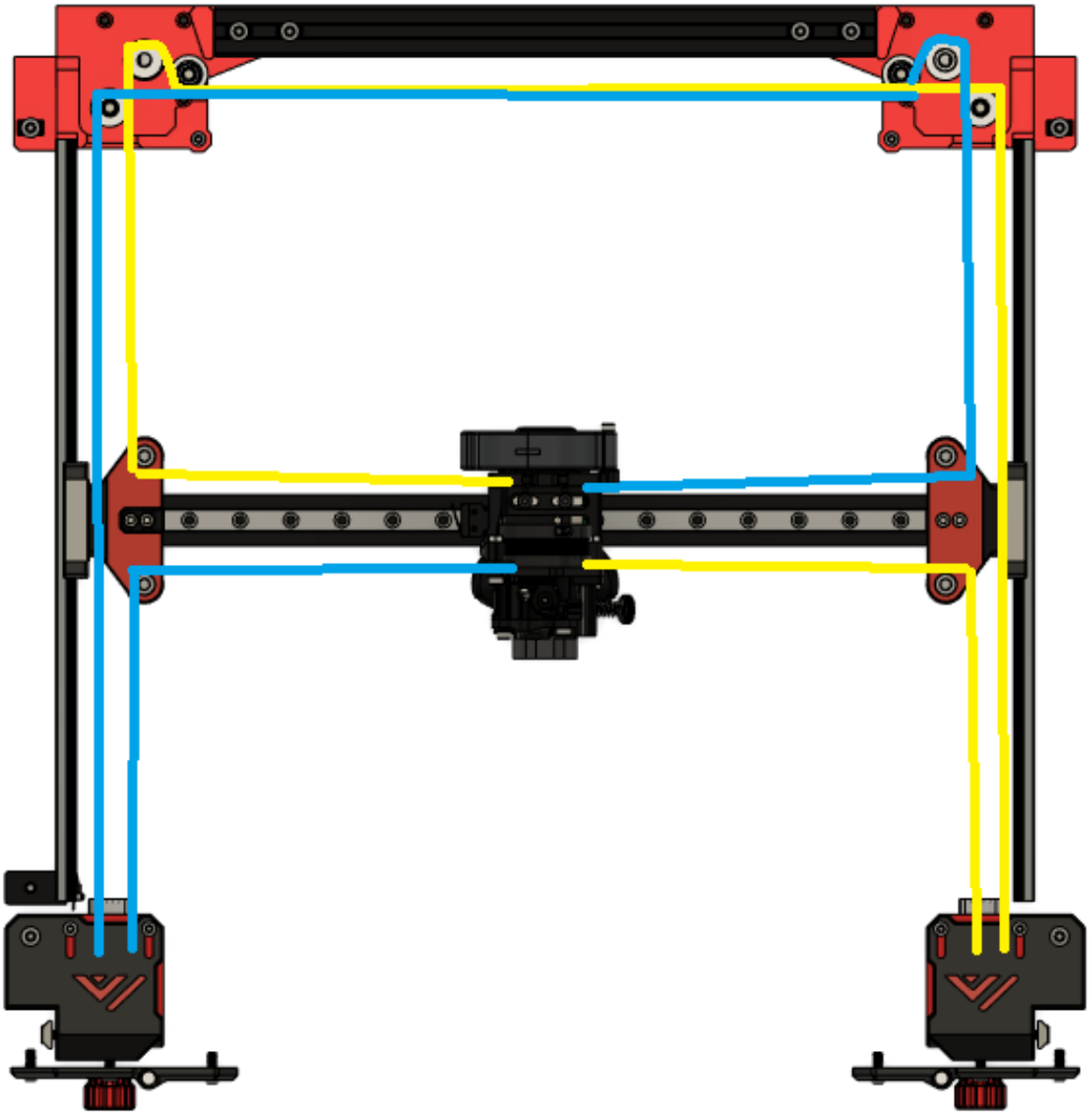
Put the x gantry against the rear idlers and tighten the Y gantry M3 hardware that hold the CF-tube in place. Then tighten the M5 hardware that hold the idlers, now your X gantry should be parallel to your rear extrusion. Measure with calipers to verify.

3.5 Belt routing and tensioning (AWD & 2WD)

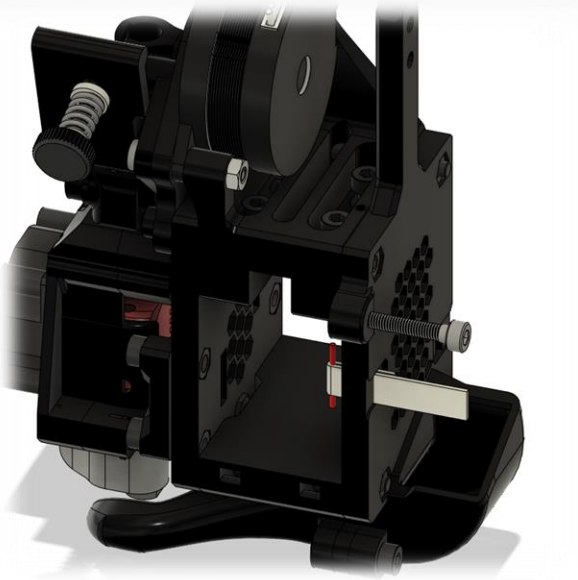
2WD:



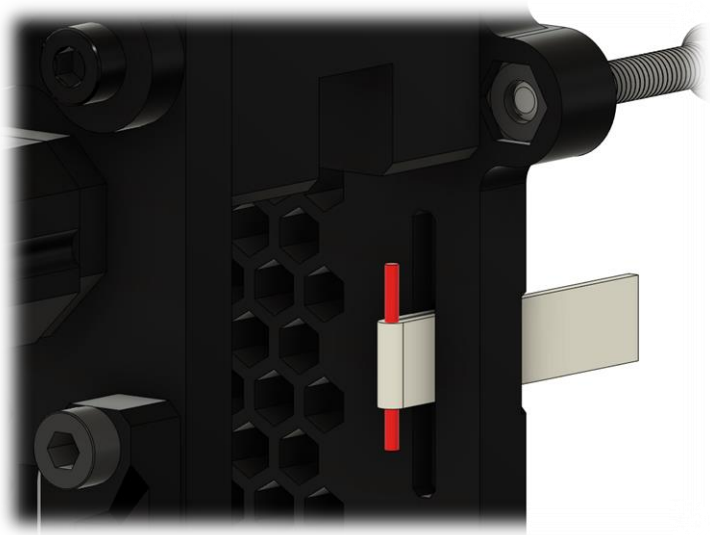
AWD:



Printhead belt routing:



On the printhead's front the belts are held in with printed clamps and M3 hardware. On the backside you need to fold the belt (in white on the picture) so the teeth engage on a small end, then insert a piece of filament (red) in the loop on the end. Be sure to have the piece of filament to fall in the cutout on the Corexy backplate so it sits flush with the part and doesn't rub against the X gantry.



For the aluminum VzBot printhead as found on https://f3d-racing-fdm.myshopify.com/ this can be fitted just like on the VZ330 only need to rotate the belts around to fit the VZ235 gantry

3.4B AWD specific belt tensioning:

Because of shortening and lengthening of the belt and the fact that there are 2 driven pulleys for AWD, it is needed to synchronize the motors after each time the belts are tensioned.

To sync the belts properly it is important that the rear motor pulleys are attached without the grubscrews facing the flat part of the shaft. One can also use a motor with a round shaft instead of a D shaped shaft.

Before tightening one needs to loosen the set screws on both of the rear motor pulleys to get a proper reading of the tension. After tensioning you will need to power on the motors so they are engaged thus on a step position. You can now retighten the grubscrews again making sure the screws are not at the flat side of the shaft, turn the motor shaft if needed.

In the sample pinter.cfg file there is a macro included that enables all XY motors for synchronizing the belts. Make sure to have the pulleys and stepper shafts in a good position so they can be reached easily.

Links:

VEZ3D belt tensioning: https://www.youtube.com/watch?v=qNMXW6MUV5E&t=401s

VEZ3D belt routing: https://www.youtube.com/watch?v=Ibi27Toh-pg&t=2s

3. 6 Y end stop-switch mount

Bom:

Material	Quantity	Notes
Microswitch	1	
M2 10mm	2	
M4 8mm	1	
M4 T-nut	1	

STL files:

File name	Amount to print
Y switch mount	1

4. Bottom and rear panels

Overview:

A full panel kit is available at F3D-racing's shop. We recommend getting that over drilling the holes by hand because it is really difficult to get all holes in exactly the right position. If you want to drill the holes yourself, it is recommended to use the CAD as reference. For the AWD variant, the rear panel must have cutouts at the idler/ motor mount as shown above. These are to reach the motor pulley to be able to synchronize the motors!

Bom:

Material	Quantity	Notes
M4/M3 6-8mm	20*	Depending on the number of screws you use to secure your panels. Optionally you use the included enclosure trim pieces which are meant to use M3 hardware
M4 T-nuts	20*	*
M4 20mm	8	
M4 25mm	4	
M5/M6 25mm	4	Depending on the extrusion type
Rubber foot	4	As found on most printers like Tronxy X5SA or Creality Ender 5(plus)
Wood screws	8	Optional, to screw the printer down to a surface
415x425x3 mm aluminum plate	1	Optionally thickness, 1.5mm also possible
425x470x3 mm aluminum plate	1	Optionally thickness, 1.5mm also possible

STL files:

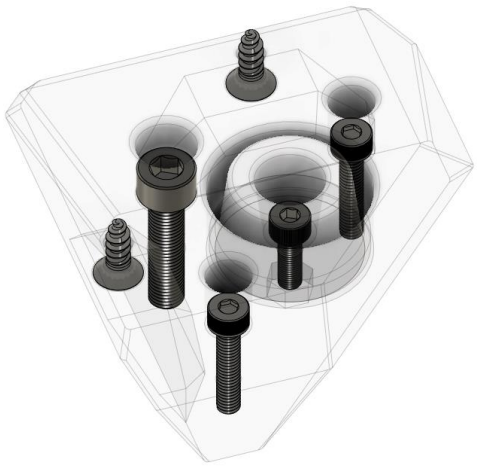
File name	Amount to print
VzBoT Foot	4
Foot scalable spacer (optional)	4

Step 1:

Mount all hardware in the backpanel and put the panel on the frame. It is easiest to start tightening starting in the middle of each side and work your way outwards to prevent the panel from bulging.

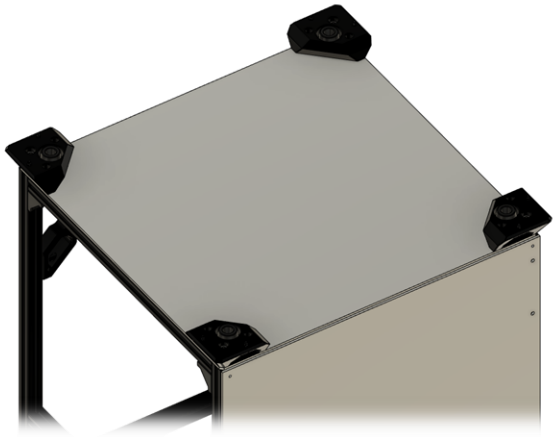
Step 2:

Insert all hardware in the printed feet and mount the rubber feet inside. When scaling the printed spacer make sure to get it to the height your rubber feet sticks out about 1-2mm out of the printed feet.



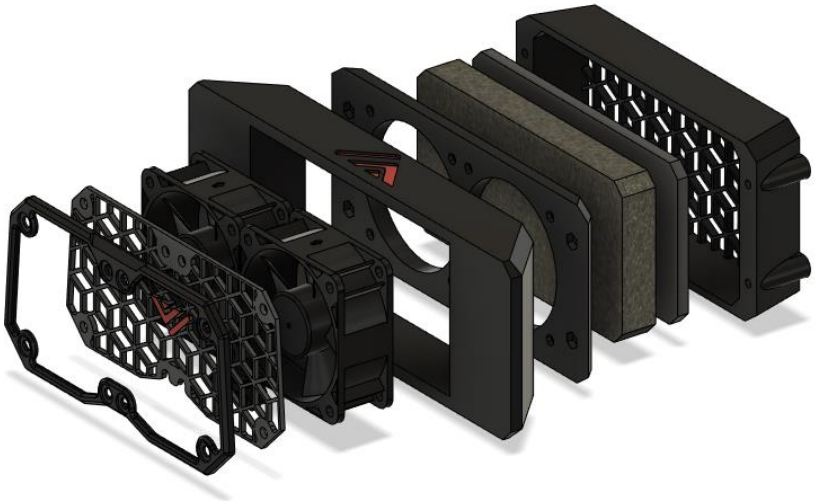
Step 3:

Mount the feet and all hardware to the bottom panel. Next up mount the bottom panel to the frame.



5. fume extractor

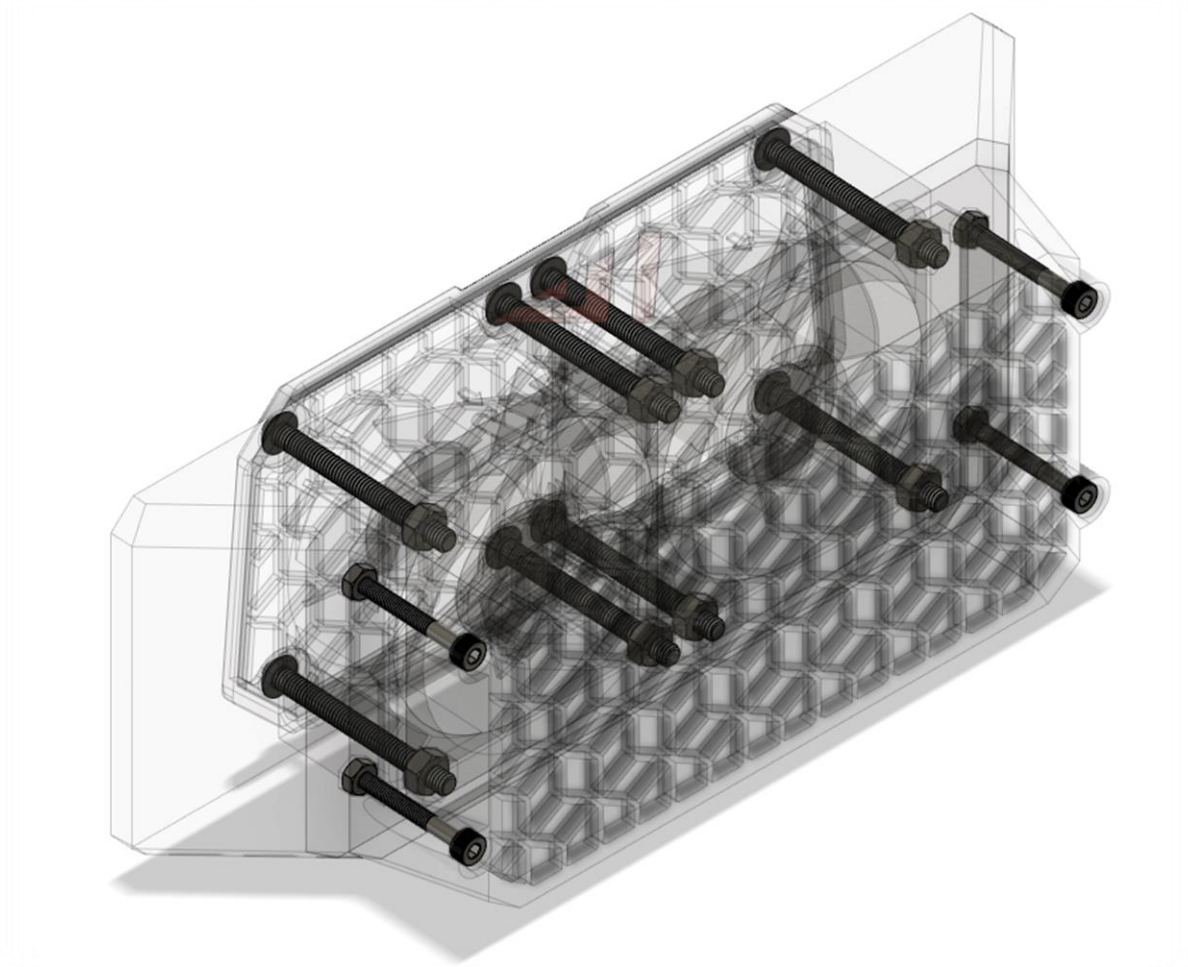
Overview:



The VzBot fume extractor is an optional piece of hardware but highly recommended! This device gets rid of VOC's (volatile organic compounds) and nasty smells that come from printing ABS filament.

Bom:

Material	Quantity	Notes
M4 40mm	8	
M3 25mm	4	
M4 nut	8	
M3 nut	4	
60x60x25 fan	2	
HEPA filter (self-cut)	1	Available for kitchen applications
Activated carbon filter (self-cut)	1	



STL files:

File name	Amount to print
TPU grommet [optional]	1
Fan guard	1
Fan guard insert	1
Exhaust fan housing	1
HEPA holder	1
Exhaust cover	1

Step 1:

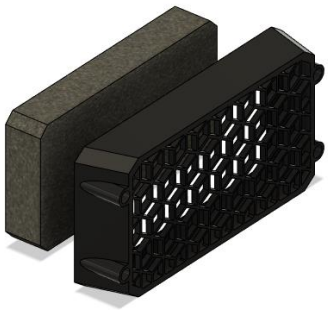
Start by inserting all the M4 and M3 nuts into the exhaust cover like shown below;

Step 2:

Next put the two fans in the exhaust fan housing, put the fan cover on the back panel and mount the exhaust housing, exhaust cover and fans with the M4 hardware.

Step 3:

Lastly Insert you HEPA filter and activated carbon filter in the HEPA_holder and screw onto the main fume extractor housing. The activated carbon filter



6. Electronics + wiring + firmware

Overview:

This is a general overview of the parts recommended for a VzBoT build. Everyone is free to use their own choice of parts. STL-files for other screens etc are not natively provided and may be found in the community mod section on GitHub and Discord.

We trust everyone to use their own best judgement when wiring their printer, we do not recommend to do this without professional help if you are inexperienced in electronics.

Bom:

Material	Quantity	Notes
LED strip 310mm	3	
mainboard	1	
BTT Pi TFT50	1	
PSU 24V	1	
PSU 48V	1	Optional
Wires	N.A.	Choose a correct wire gauge according to the current
C14 power switch	1	
Power chord	1	

STL files:

File name	Amount to print
LED strip bracket [print in vase mode]	3
Power switch bracket	1
Front screen cover	1
Rear screen cover	1
Screen mount	1
Door stopper	1

6.1 AWD specific:

To take best advantage of having 4 motors on X and Y, it is advised to run each motor on individual stepper drivers. Both Klipper & RRF fortunately now natively supports QuadXY. So you will have to download and install your favorite firmware as described in their respective guides.

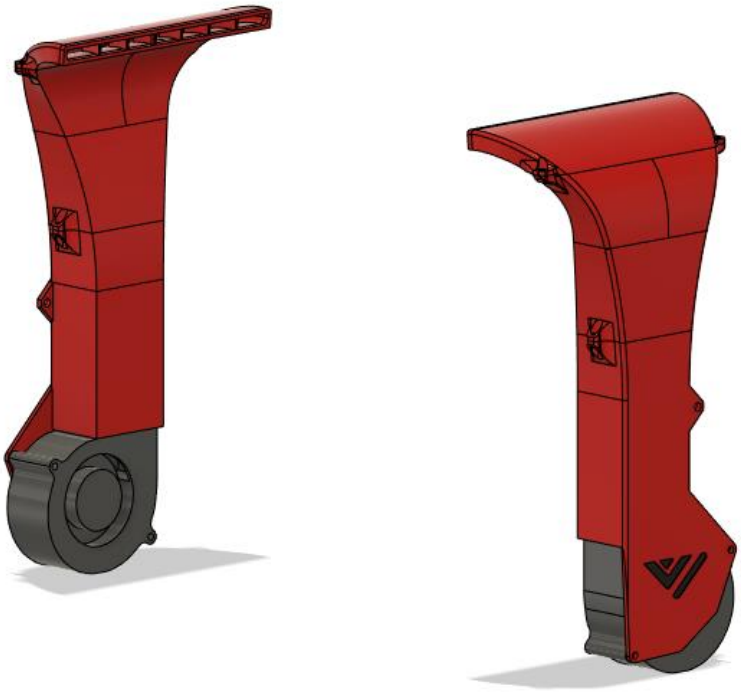
For Klipper it is recommended to use the provided .cfg file as base or inspiration to make a configuration to suit your own build. It is recommended to copy & paste the given TMC settings as much as possible for the best results both in terms of speed and quality. Although feel free to experiment, because after all that is what VzBoT is all about!

[Credits for the Klipper adaptation to suit 4 motor CoreXY or QuadXY go to TypQxQ on Github]

https://github.com/TypQxQ/klipper/tree/Multiple_Steppers_on_CoreXY

7. Side panels + RSCS

Overview:



RSCS short for remote static cooling is an optional extra pair of cooling fans which help cool the entire print when doing unicorn speeds! RSCS is mounted to the acrylic panels and this version fits in very tight to the Z-assembly. To ensure its proper fitment it is recommended to check the CAD for accurate measurements on the hole positions. Panels with pre made holes again available at F3D-racing.

Bom:

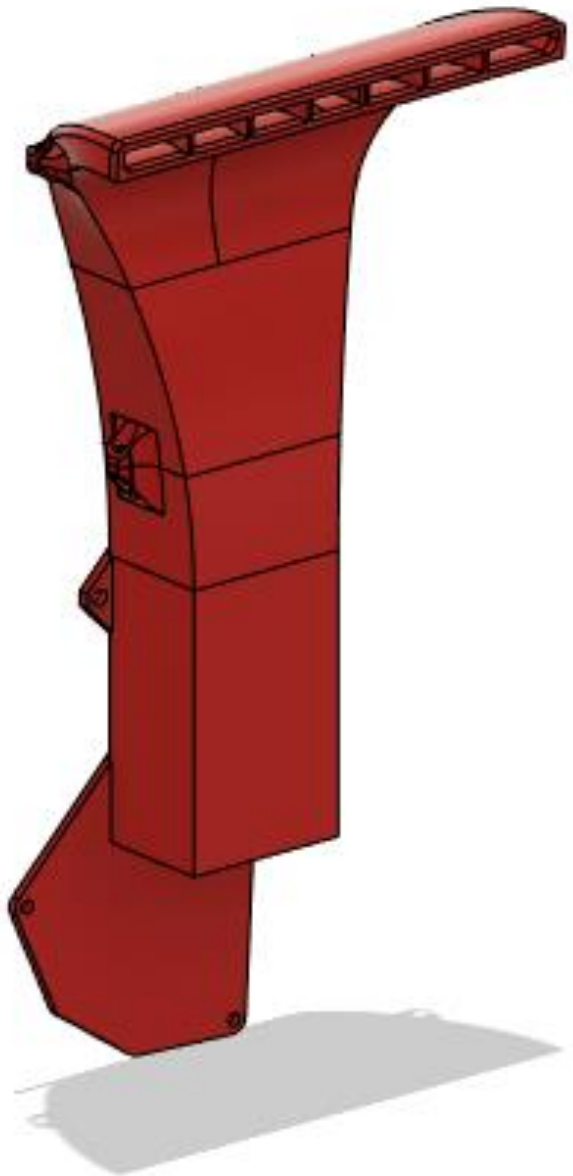
Material	Quantity	Notes
7530 radial fan	2	Gdstime
470x415mm acrylic panel	2	
50x470mm acrylic panel	2	
M3 35mm	4	
M3 8mm	8	
M3 10mm	22	
M4 8mm	2	
M3 nut	12	
M4 nut	2	
M3 T-nut	22	

STL files:

File name	Amount to print
Cover corner piece	8
Cover middle piece	8
RSCS top piece	2
RSCS middle piece	2
RSCS bottom piece	2

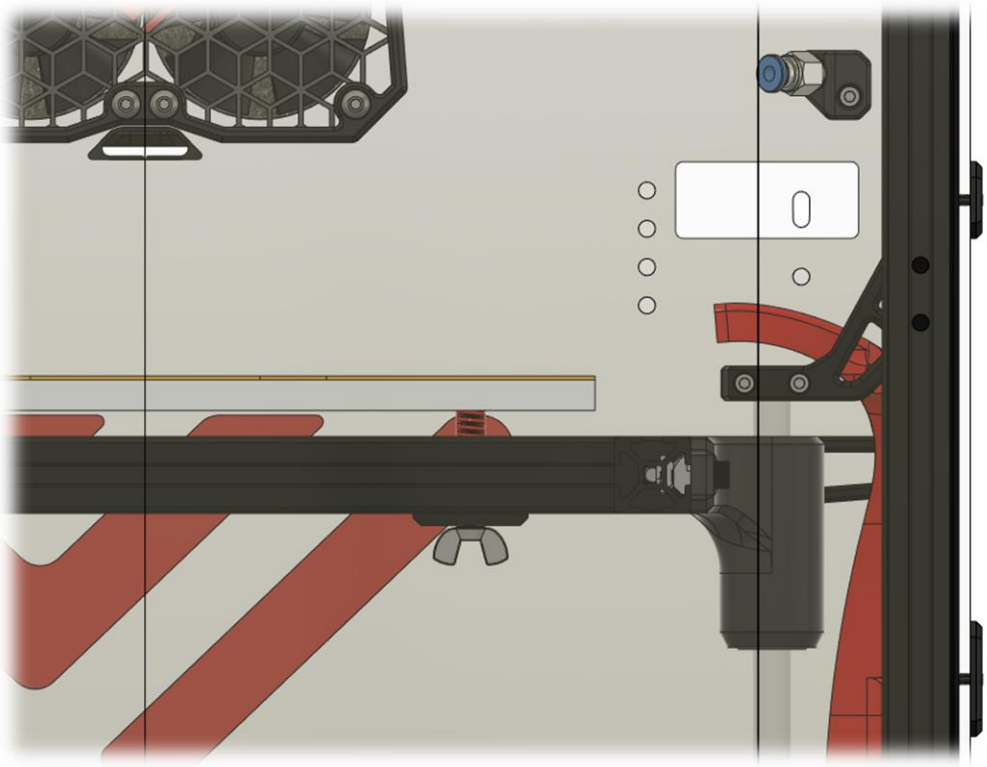
Step 1:

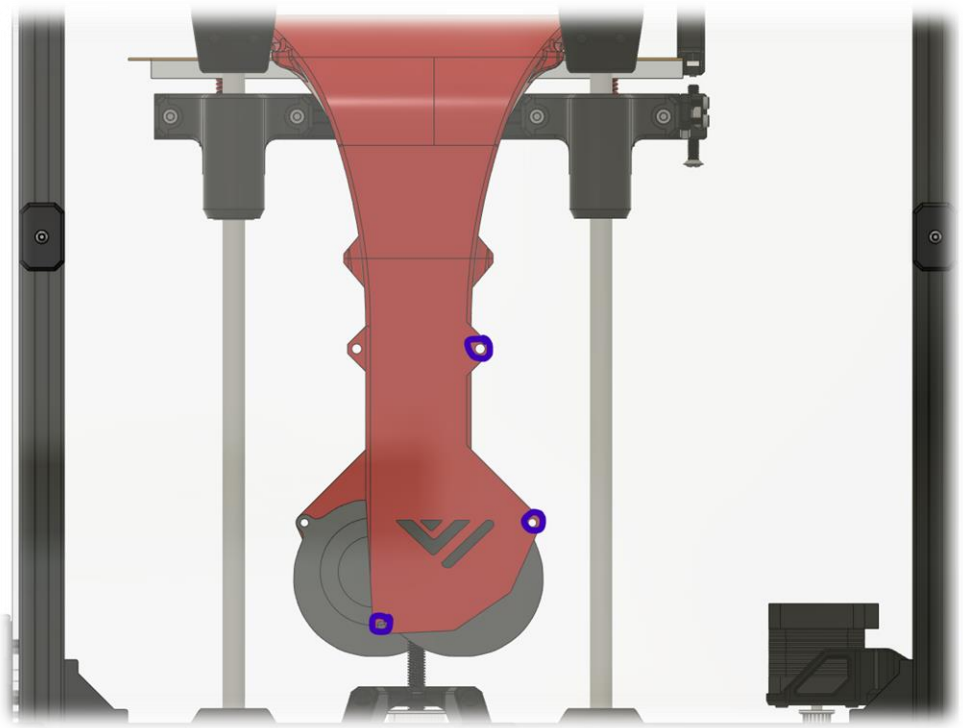
Use the M3 hardware to put the RSCS together like shown below. If the assembly won't fit through between the 2 Z-rods. Unscrew the top part and put this on after assembly.



Step 2:

Mount the RSCS to the panel. When drilling the holes make sure the duct is approximately 5mm above the Z-rods.





Step 3:

Insert the M3 hardware in the side and front (narrow) panel using the available trim pieces like shown below. When everything lines up screw everything down starting with the bolts in the middle outward.

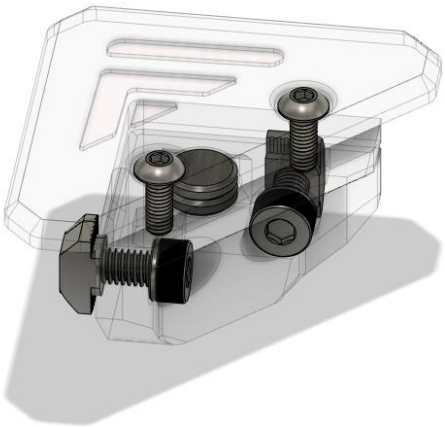
8. top cover and doors panels

Overview:

8.1 top cover & latches

Bom:

Material	Quantity	Notes
2x8mm Magnet	8	
M3 8mm	8	
M4 10mm	8	
M3 nut	8	
M4 T-nut	8	
395X405X3 mm acrylic panel	1	Refer to the .step file for placement of the cutouts



STL files:

File name	Amount to print
Top cover holder top part	4
Top cover holder middle part	4
Top cover holder bottom part	4

Step 1:

Insert the magnets in the top and bottom parts. They should be press fit, if not tight enough use some superglue

Step 2:

Screw the bottom part with M4 in each corner of the frame.

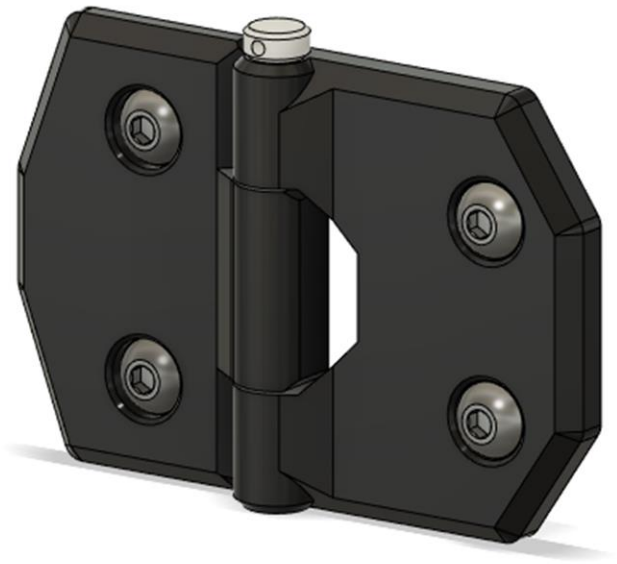
Step 3:

Insert the rest of the magnets and m3 nuts in the middle pieces.

Step 4:

Attach the top and middle piece to each corner of the panel and test the functionality of the top cover latch mechanism.

8.2 front doors hinges & doors



Bom:

Material	Quantity	Notes
M4 40mm/4x40mm shaft	2	2x if not not done when mounting the front panels or motormounts
M4 10mm	8	
M4 nut	8	
443X160X3 mm acrylic panel	2	Refer to the .step file for placement of the cutouts

STL files:

File name	Amount to print
Hinge door side	2
Hinge frame side	2

Step 1:

Mount the hinges to their respective panel.

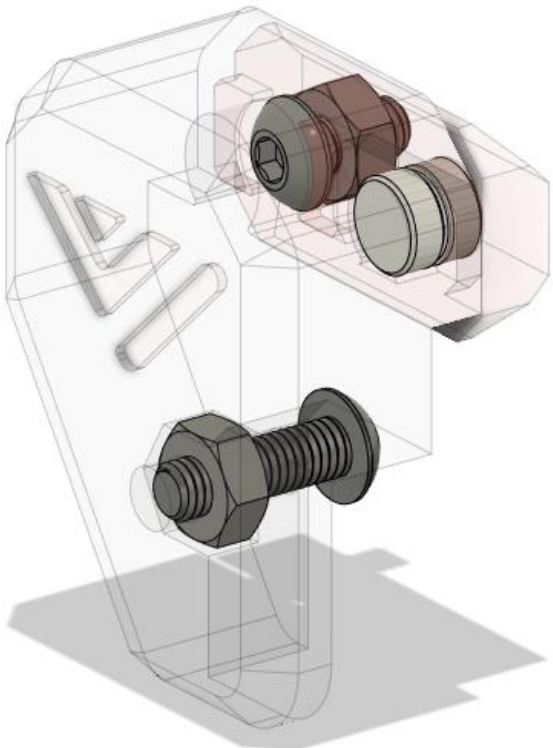
Step 2:

Put the door panels in position and insert the 40mm M4

8.3 Front door latches

Bom:

Material	Quantity	Notes
M3 6mm	4	
M3 10mm	4	
M3 nut	8	
2x5mm magnet	8	



STL files:

File name	Amount to print
Latch LD	1
Latch RD	1
Latch UL	1
Latch UR	1
Latch frame side [not needed when done while assembling the frame]	4

Step 1:

Insert the 2x5mm magnet in the latches, they are press fit. If not tight use super glue to hold them in.

Step 2:

Insert the M3 nuts in the latches

Step 3:

Screw the latches to the door panels using the M3 buttonheads

Step 4:

Untighten the set screws in the frame side latches and line them up with the latches, then to lock them tighten the M3 screw.

Designed and developed by:

The VzBot Team


https://discord.gg/qmMeD6Vt3W


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


https://github.com/VzBoT3D