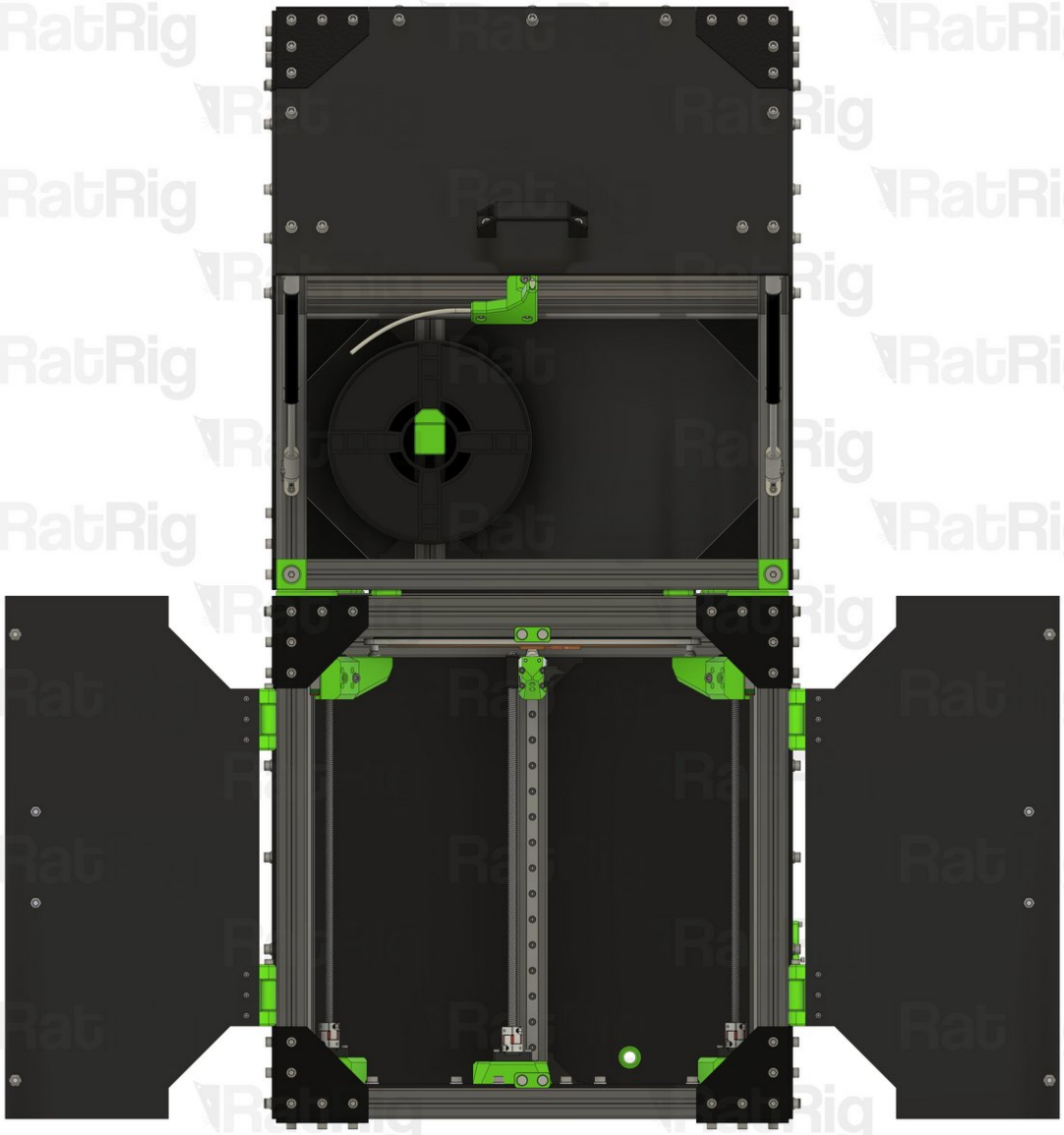
Rat Rig

13. Enclosure Kit

Written By: Simon Davie



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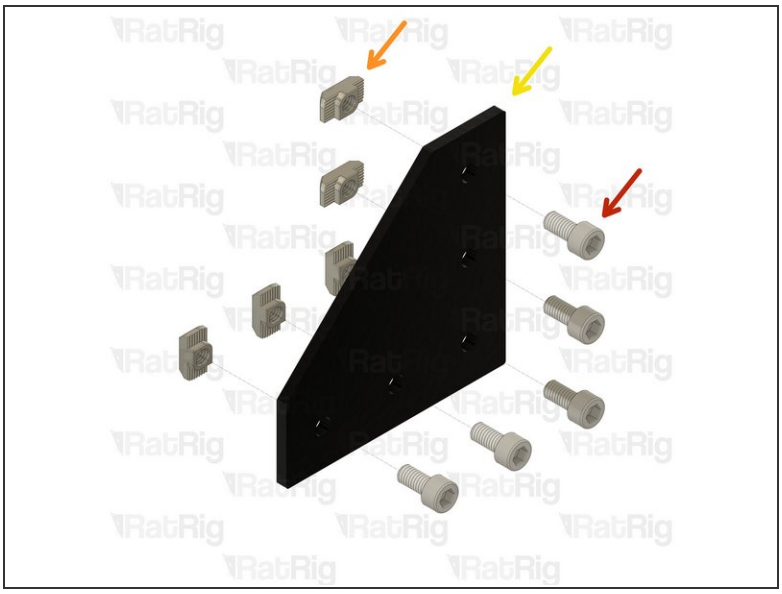
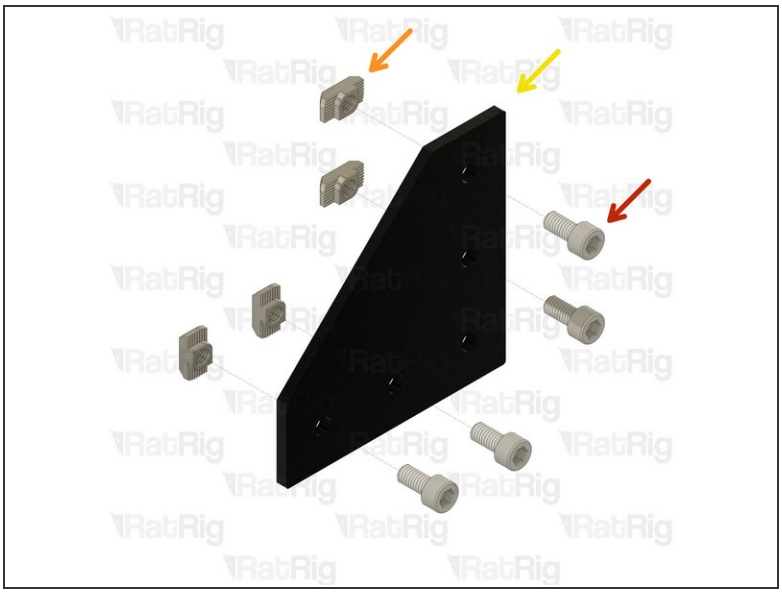
Step 1 — Assemble the 5 screw corner plates (x10)



- M6x12 Cap Head Screw
- 3030 Drop In T-Nut M6
- Joining Plate for 3030

Loosely thread the 3030 T-Nuts onto the M6x12 screws. Do not tighten them at this point.

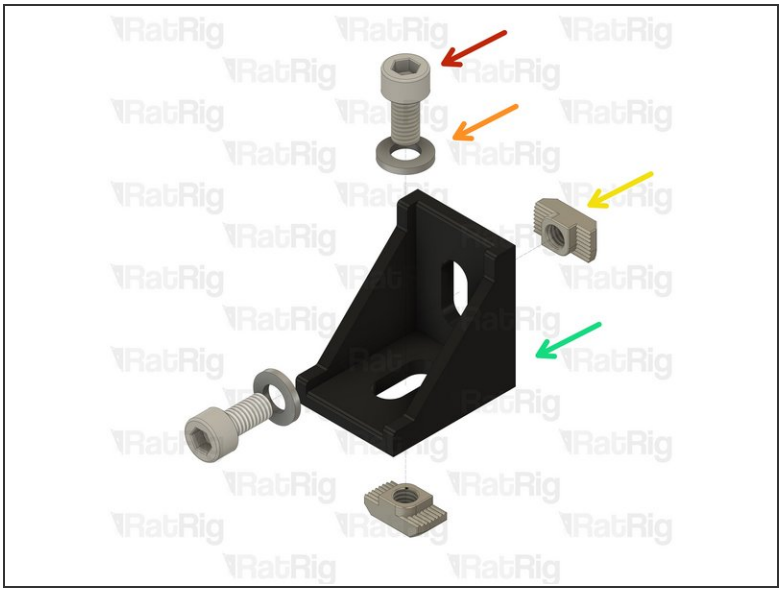
Step 2 — Assemble the 4 screw corner plates (x4)



- M6x12 Cap Head Screw
- 3030 Drop In T-Nut - M6
- Joining Plate for 3030

Loosely thread the 3030 T-Nuts onto the M6x12 screws. Do not tighten them at this point.

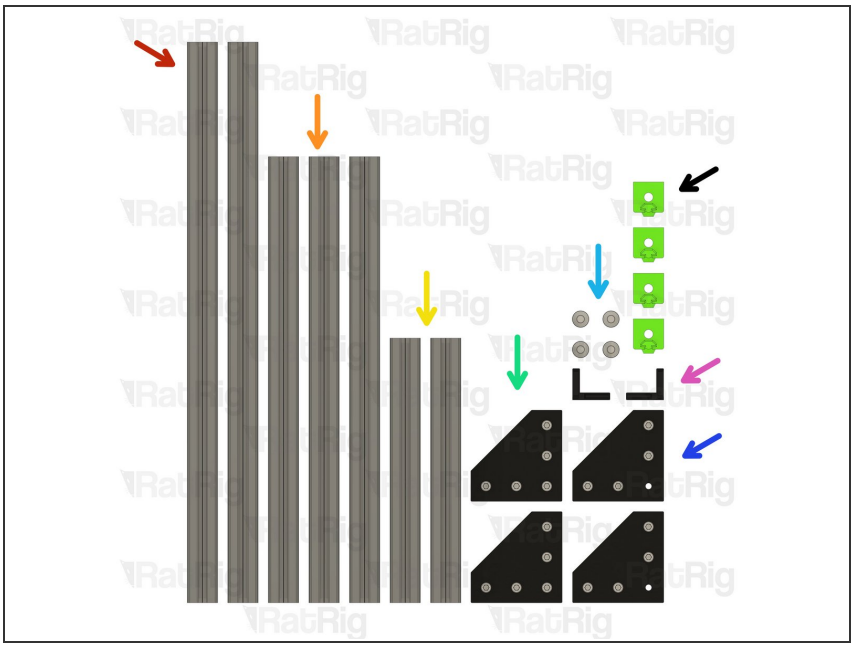
Step 3 — Assemble the 90 degree corners (x2)



- M6x12 Cap Head Screw
- M6 Washer
- 3030 Drop-in T-Nut - M6
- Cast 90 Degree Corner Bracket for 3030

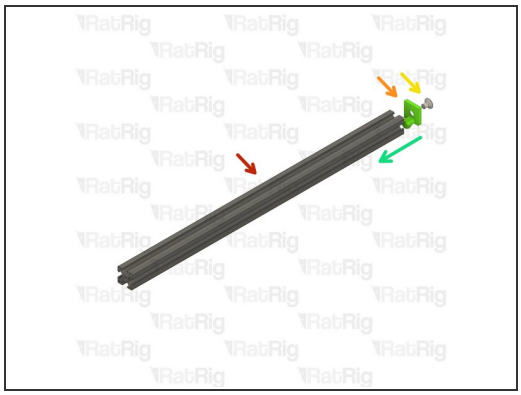
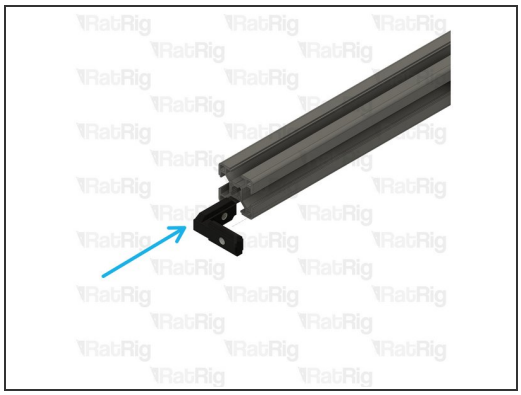
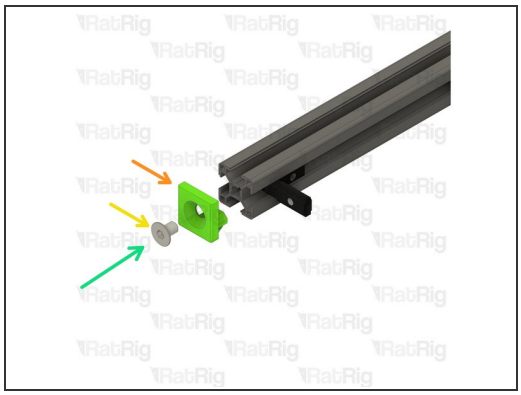
Loosely thread the 3030 T-Nuts onto the M6x12 screws. Do not tighten them at this point.

Step 4 — Prepare the lid frame parts



- 2x 553mm 3030 Extrusion
- 3x 440mm 3030 Extrusion
- 2x 261mm 3030 Extrusion
- 2x Corner Plate (5 Screw)
- 4x M8x12 Countersunk Screw
- 2x Corner Plate (4 Screw)
- 2x 3030 Inside Hidden Corner Bracket
- 4x enc_v_core_3_interface printed part

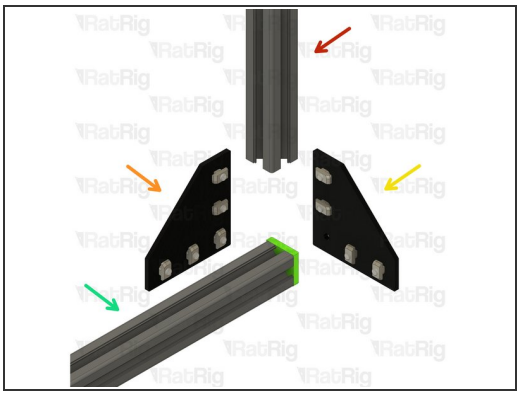
Step 5 — Assemble the left frame side - Part 1

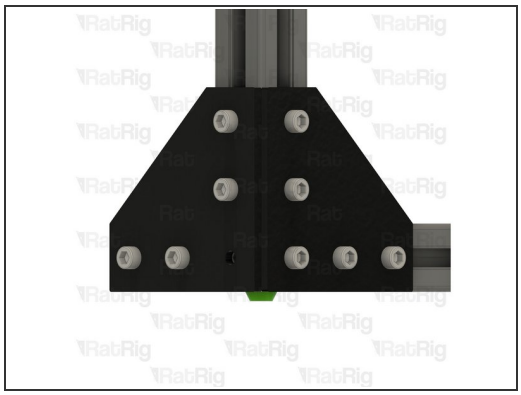




- 553mm 3030 Extrusion
- enc_v_core_3_interface printed part
- M8x12 Countersunk Screw
- Slide the enc_v_core_3_interface printed part into the end of the 3030 extrusion, securing with the M8x12 screw.

  ⚠ Take care not to over tighten the M8x12 screw as you can damage the printed part.
- Slide the 3030 Inside Hidden Corner Bracket into the other end of the extrusion as pictured.
- Slide the enc_v_core_3_interface printed part into the remaining end of the 3030 extrusion, securing with the M8x12 screw.

Step 6 — Assemble the left frame side - Part 2

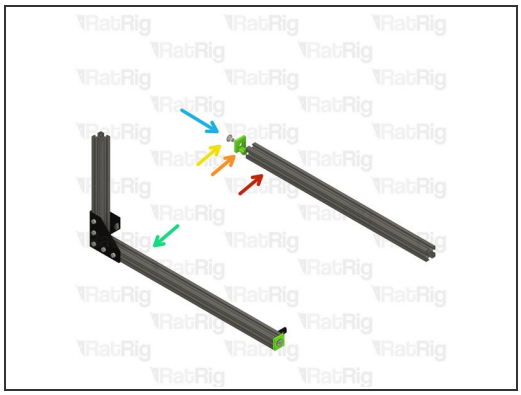
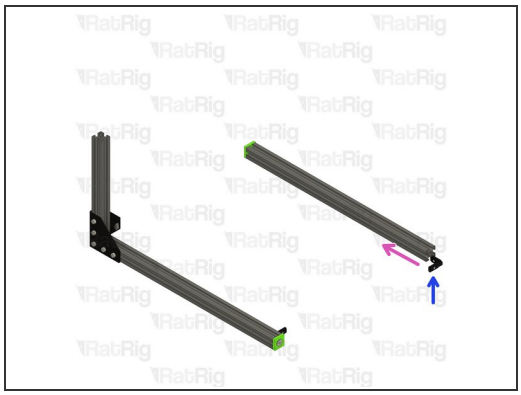
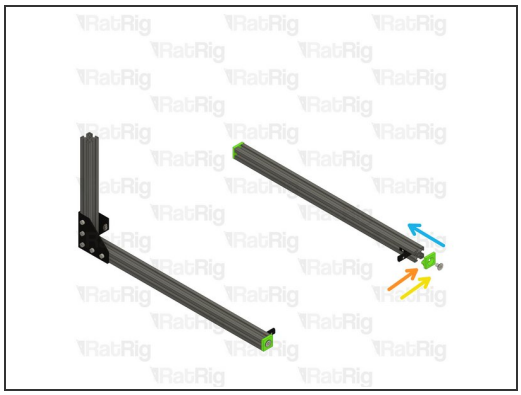




- 261mm 3030 Extrusion
- Corner Plate (5 Screw)
- Corner Plate (4 Screw)
- Assembly from **Step 5**
- Fasten all M6x12 screws except the two marked.

Put this assembly aside until **Step 9**

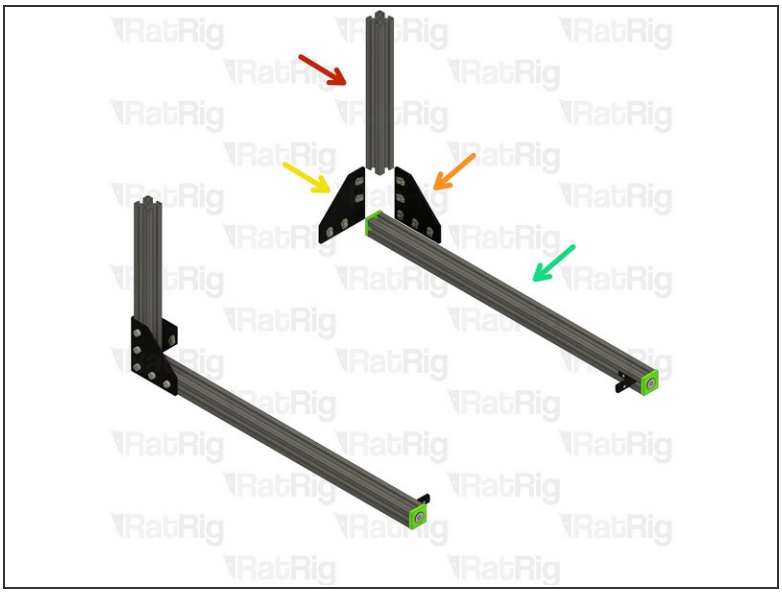
Step 7 — Assemble the right frame side - Part 1

- 553mm 3030 Extrusion
- enc_v_core_3_interface printed part
- M8x12 Countersunk Screw
- Left frame side assembly
- Slide the enc_v_core_3_interface printed part into the end of the 3030 extrusion, securing with the M8x12 screw.

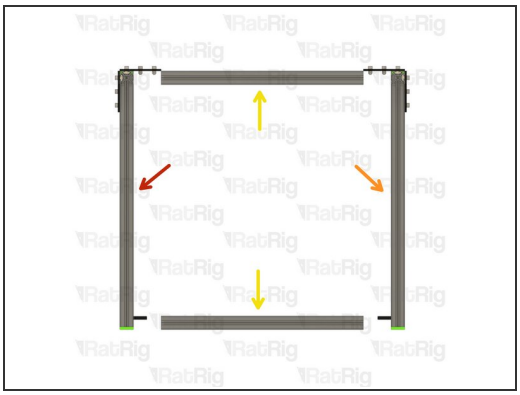
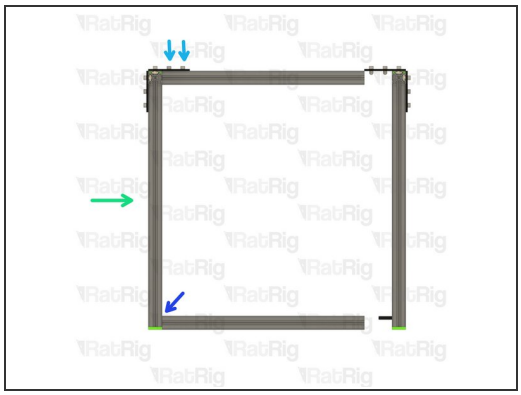
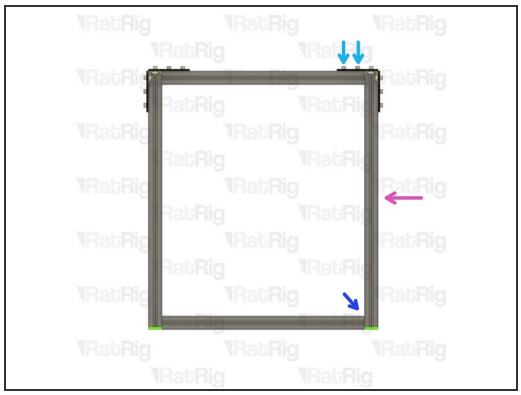
  ⚠ Take care not to over tighten the M8x12 screw as you can damage the printed part.
- 3030 Inside Hidden Corner
- Slide the 3030 Inside Hidden Corner Bracket into the other end of the extrusion as pictured.

Step 8 — Assemble the right frame side - Part 2



- 261mm 3030 Extrusion
- Corner Plate (5 Screw)
- Corner Plate (4 Screw)
- Assembly from **Step 7**
- Fasten all M6x12 screws except the two marked.

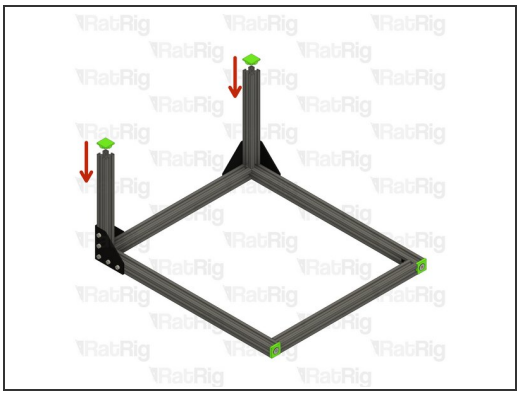
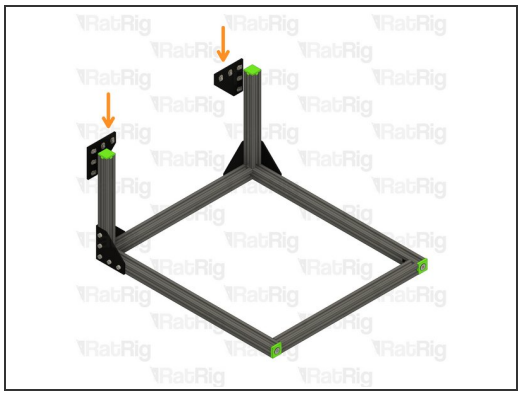
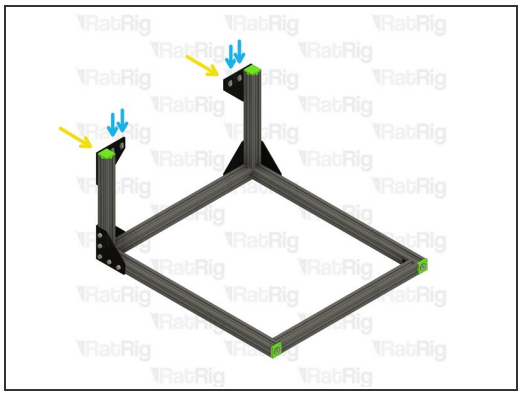
Step 9 — Assemble the frame - Part 1

- Assembly from **Step 6**
- Assembly from **Step 8**
- 2x 440mm 3030 Extrusion
- Install both 440mm extrusions into the left assembly
- Fasten the marked M6x12 screws
- Fasten the grub screws in the 3030 hidden corner
- Install the right assembly onto the left assembly

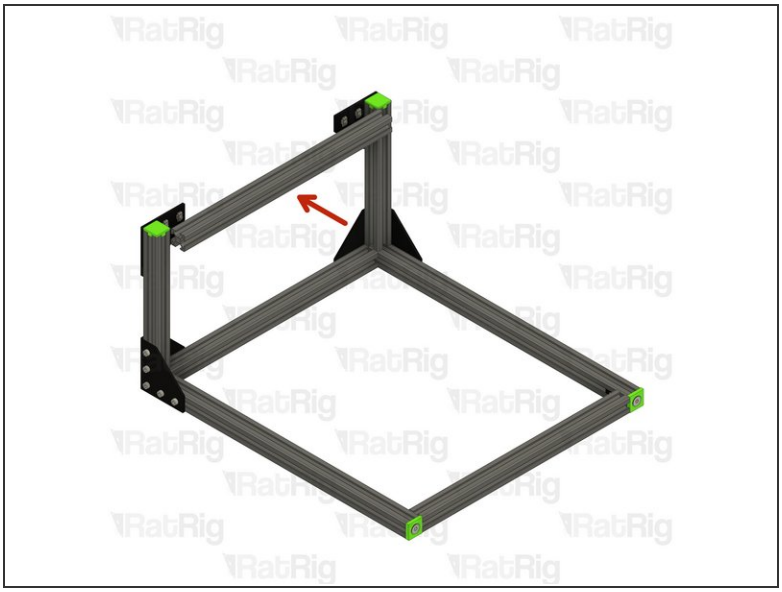
ⓘ Tighten the remaining M6x12 screws and both grub screws in the right 3030 hidden corner

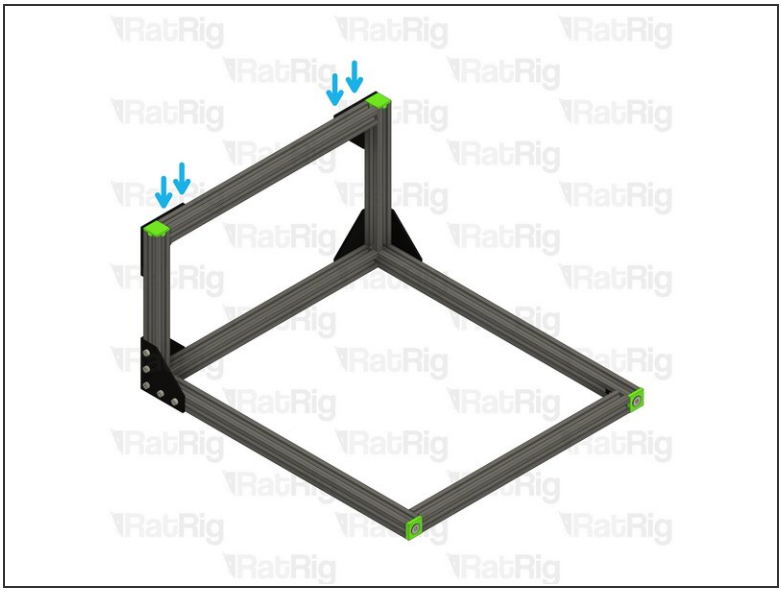
Step 10 — Assemble the frame - Part 2

- enc_3030_end_cap printed part
  - Push the printed part into the end of the 3030 extrusion
- Corner Plate (5 Screw)
- Install the corner plates onto the frame
- Fasten all M6x12 screws except the four marked

Step 11 — Assemble the frame - Part 3

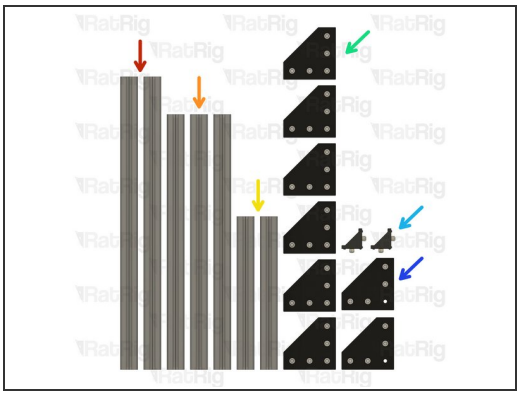
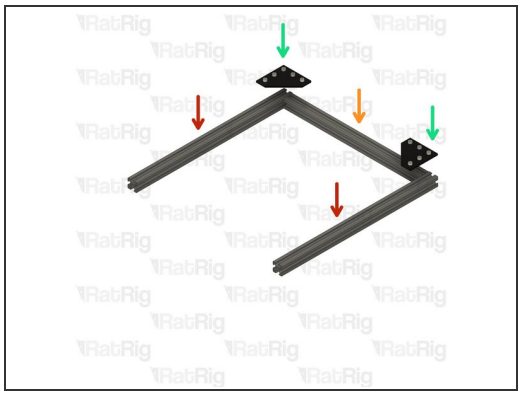
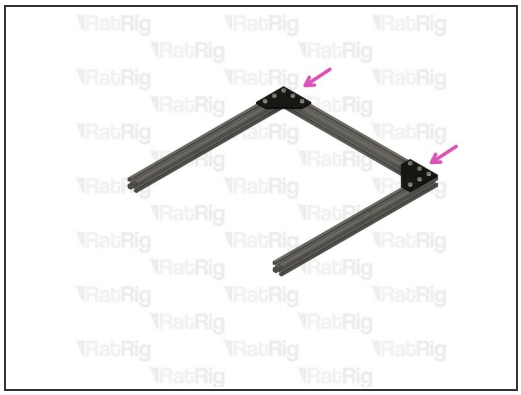




- 440mm 3030 Extrusion
- Fasten the marked M6x12 screws

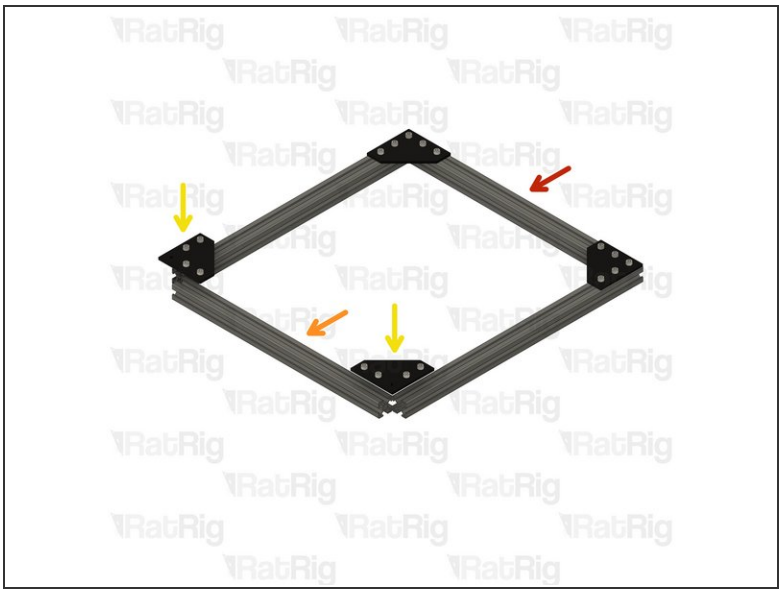
Put this assembly aside until **Step 18**

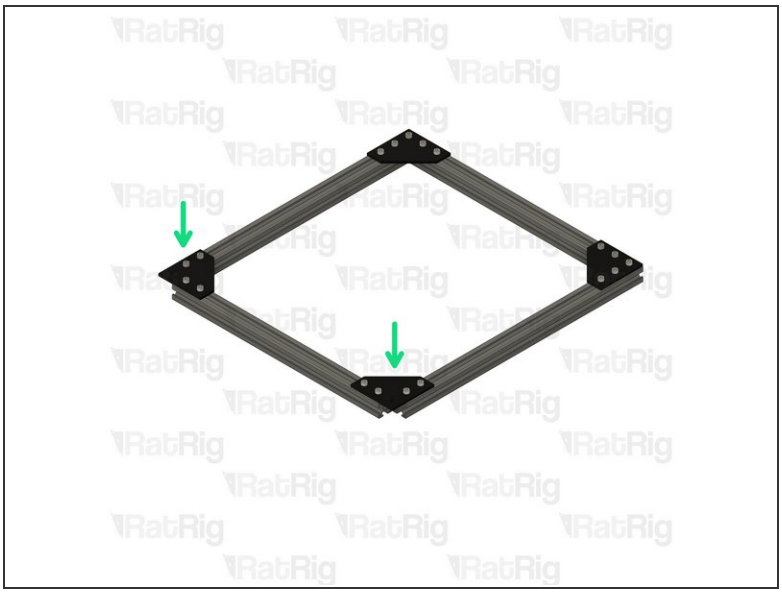
Step 12 — Assemble the lid - Part 1

- 2x 505mm 3030 Extrusion
- 3x 440mm 3030 Extrusion
- 2x 264mm 3030 Extrusion
- 6x Corner Plate (5 Screws)
- 2x 90 Degree Corner
- 2x Corner Plate (4 Screws)
- Fasten all ten M6x12 screws

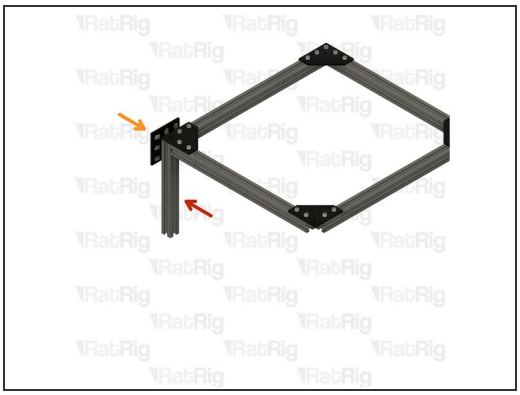
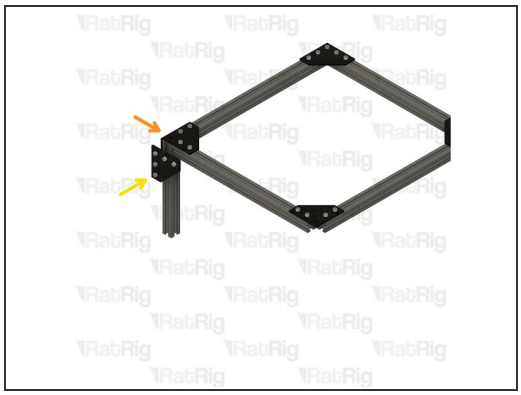
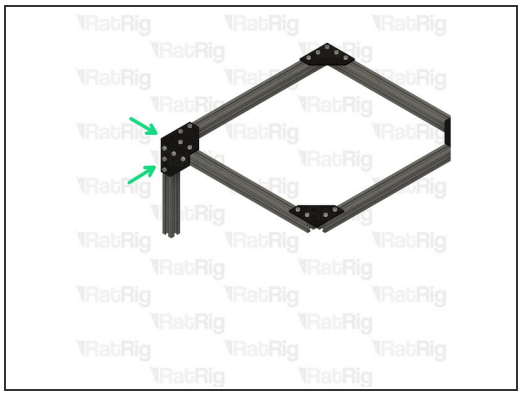
Step 13 — Assemble the lid - Part 2





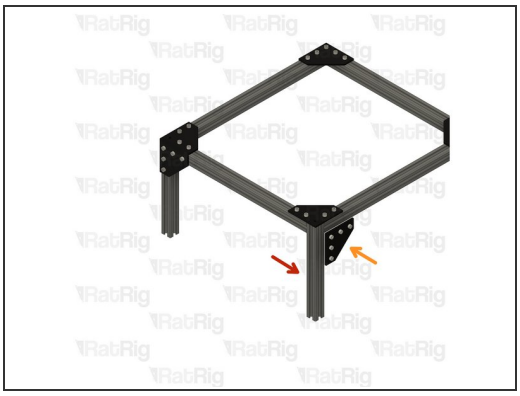
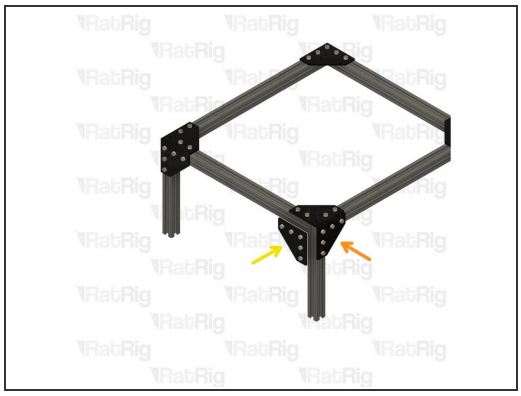
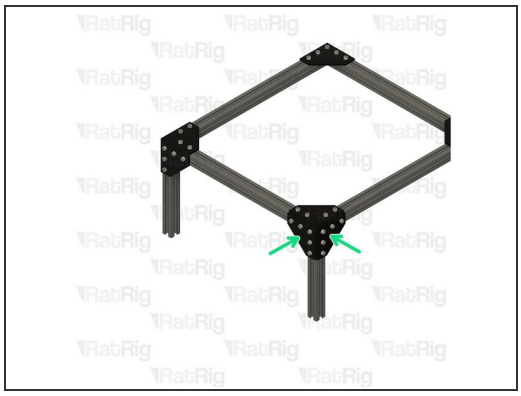
- Assembly from **Step 12**
- 440mm 3030 Extrusion
- Corner Plate (4 Screw)
- Fasten all eight M6x12 screws

Step 14 — Assemble the lid - Part 2

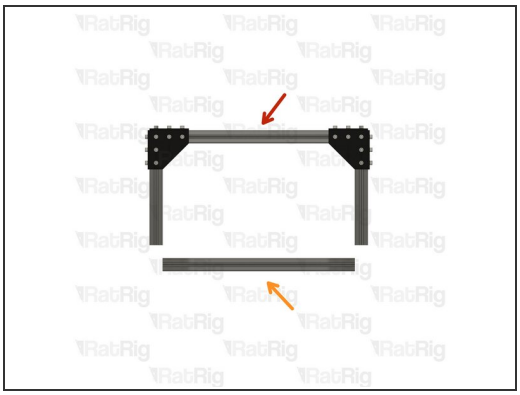
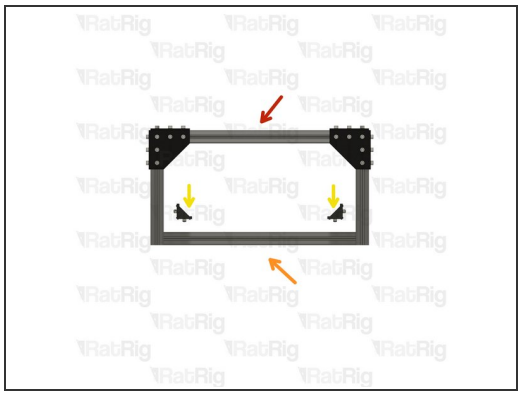
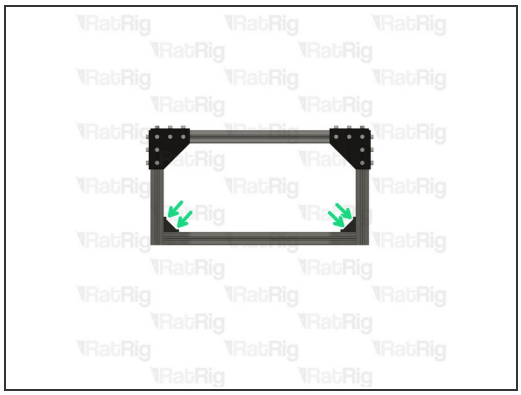
- 264mm 3030 Extrusion
- Corner Plate (5 Screw)
- Corner Plate (5 Screw)
- Fasten all ten M6x12 screws

Step 15 — Assemble the lid - Part 3

- 264mm 3030 Extrusion
- Corner Plate (5 Screw)
- Corner Plate (5 Screw)
- Fasten all ten M6x12 screws

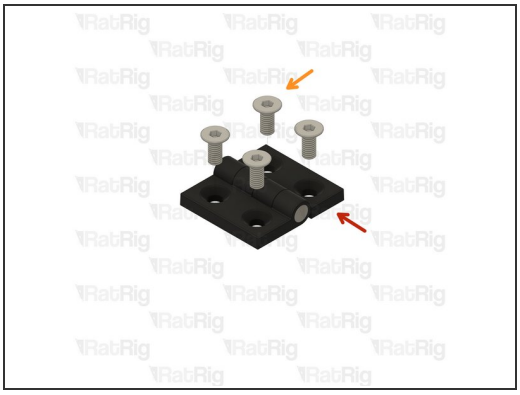
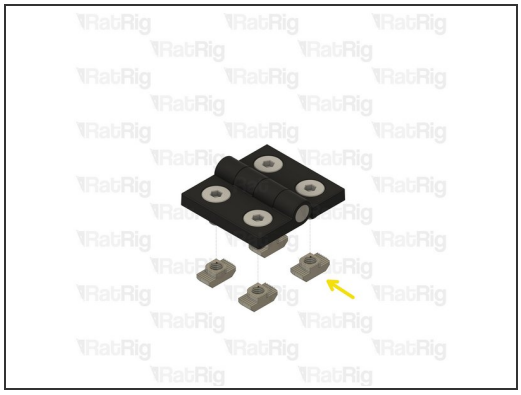
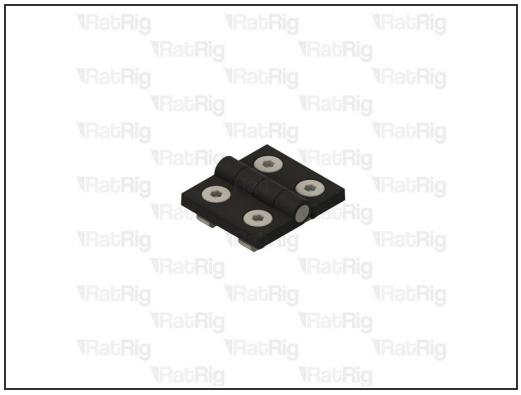
Step 16 — Assemble the lid - Part 4

- Assembly from **Step 15**
- 440mm 3030 Extrusion
- 2x 90 Degree Corner
- Fasten both M6x12 screws on each of the 90 degree corners

ⓘ Put this assembly aside until **Step 18**

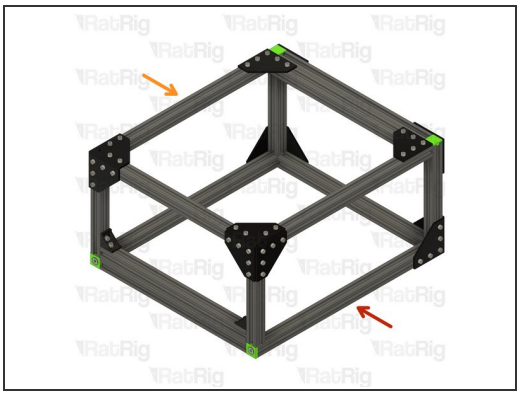
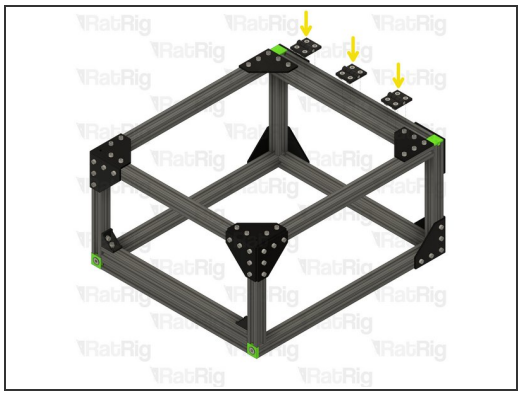
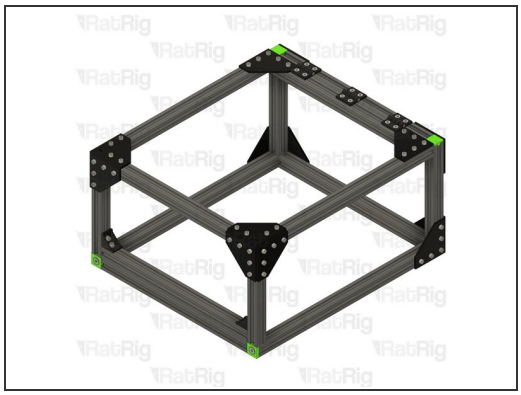
Step 17 — Assemble the Hinges (x3)

- Nylon 3030 Hinge
- M6x14 Countersunk Screw
- 3030 Drop In T-Nut M6

ⓘ Loosely thread the 3030 T-Nuts onto the M6x14 screws. Do not tighten them at this point.

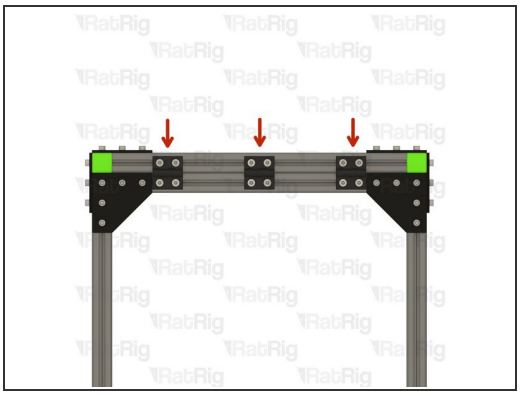
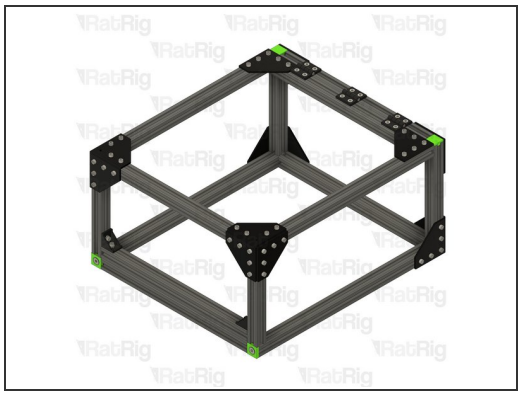
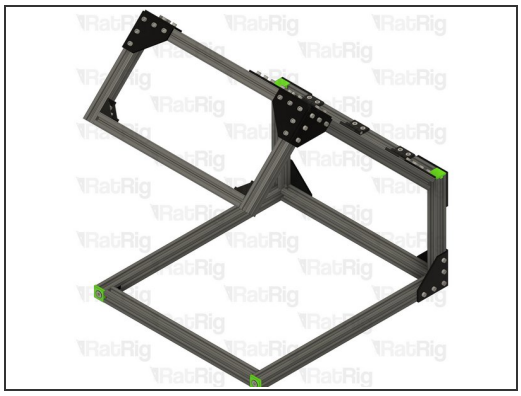
Step 18 — Assemble the lid to the frame - Part 1

- Frame Assembly from **Step 11**
- Lid Assembly from **Step 16**
- 3x Hinge Assemblies from **Step 17**

Do not tighten the M6x14 screws on the hinges yet. We will align and secure them in the next step.

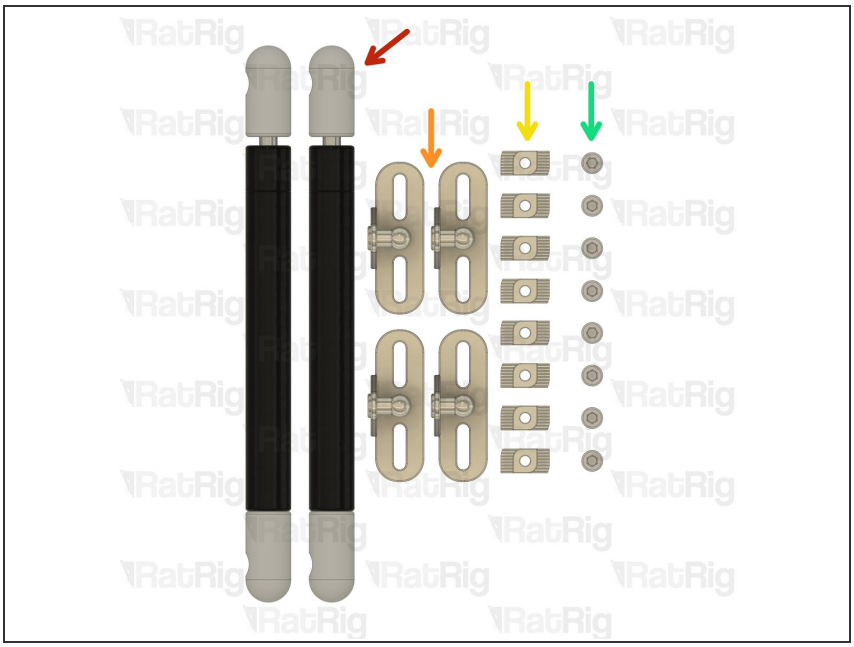
Step 19 — Assemble the lid to the frame - Part 2

- Position the hinges as shown and then tighten all 12 M6x14 screws.

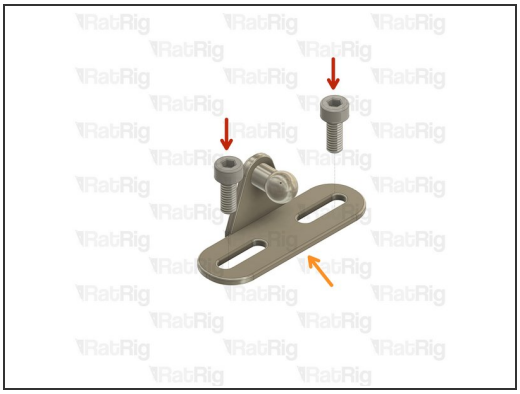
Test that the lid opens and closes smoothly

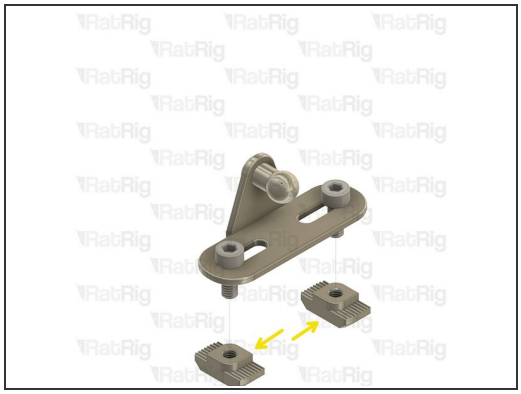
Step 20 — Prepare the gas strut parts

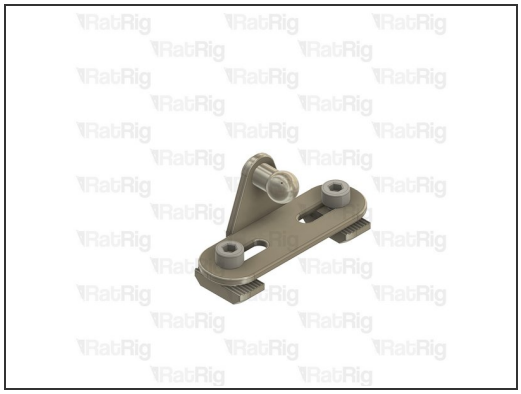


- 2x Gas Strut (100N / 10KG)
- 4x Gas Strut Mount
- 8x 3030 Drop In T-Nut M4
- 8x M4x10 Cap Head Screw

Step 21 — Assemble the gas strut mounts (x4)



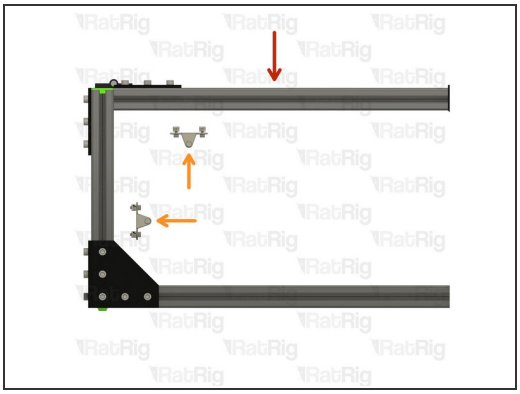
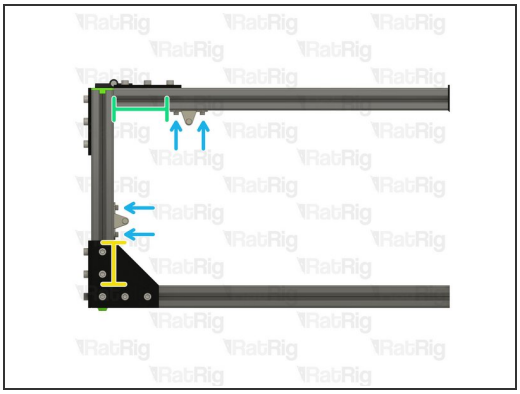
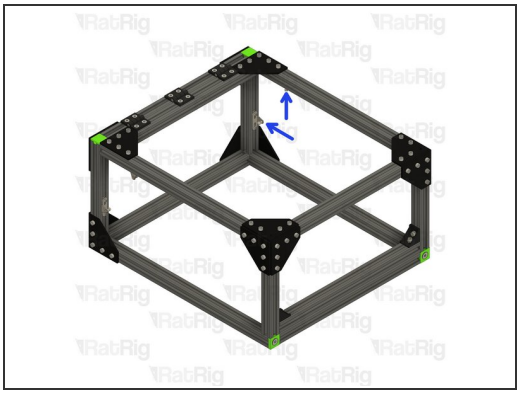




- M4x10 Cap Head Screw
- Gas Strut Mount
- 3030 Drop In T-Nut M4

ⓘ Loosely thread the 3030 T-Nuts onto the M4x10 screws. Do not tighten them at this point.

Step 22 — Install the gas strut mounts

- Lid & frame assembly from **Step 19**
- Gas strut mounts from **Step 21**

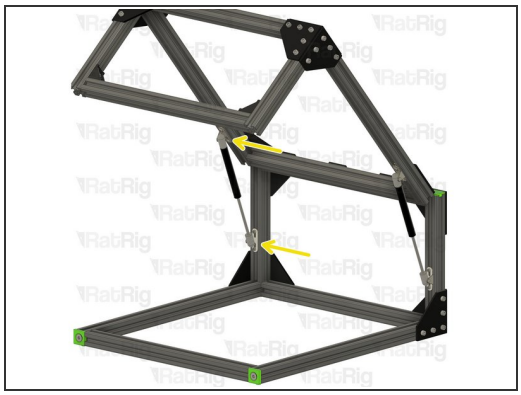
Position the gas strut mounts as shown

The gas struts will be adjusted in **Step 57**. This cannot be done at this stage as the weight of the lid will change once the panels are installed. It is important not to skip **Step 57**

- Fasten all four M4x10 screws
- Repeat the process on the other side

Step 23 — Install the gas struts





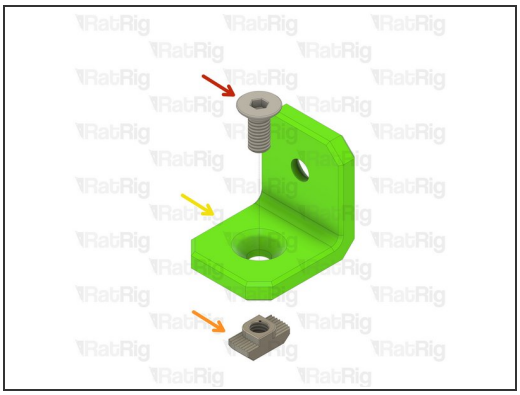
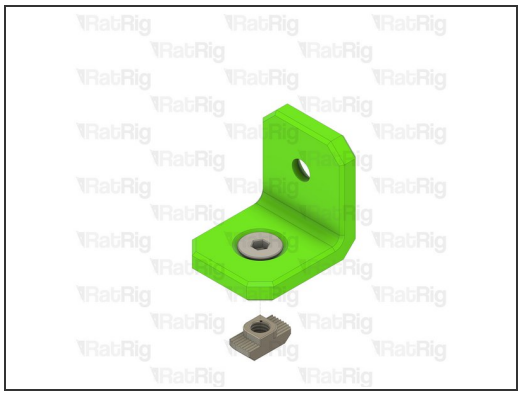
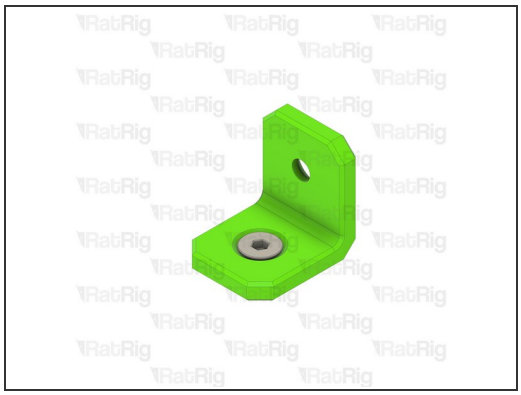
- Open the lid
- Install the first gas strut by pushing it onto the ball of the mount
- Install the second gas strut on the remaining side

⚠ Make sure the gas struts are installed as shown. Installing them upside down can cause damage to the internal seals.

ⓘ Do not worry if the lid will not remain open, or remains open on its own, at this point. The positions of the gas struts will be calibrated in **Step 57**.

ⓘ Put the assembled lid aside until **Step 27**

Step 24 — Assemble the lid tiedowns (x4)

- M6x14 Countersunk Screw
- 3030 Drop In T-Nut M6
- enc_lid_hinged_tiedown printed part

Loosely thread the 3030 T-Nuts onto the M6x14 screws. Do not tighten them at this point.

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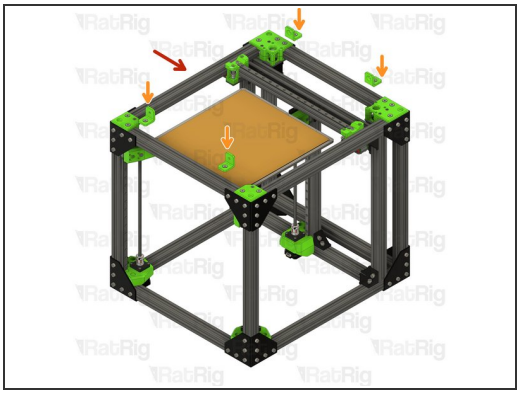
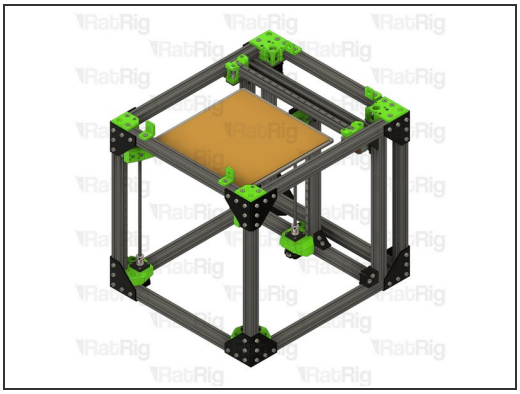
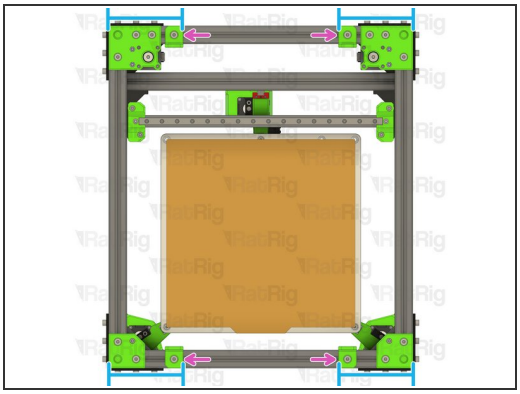
Step 25 — Preparing the V-Core 3 for lid installation

- RatRig V-Core 3
- Lid tiedown assembly

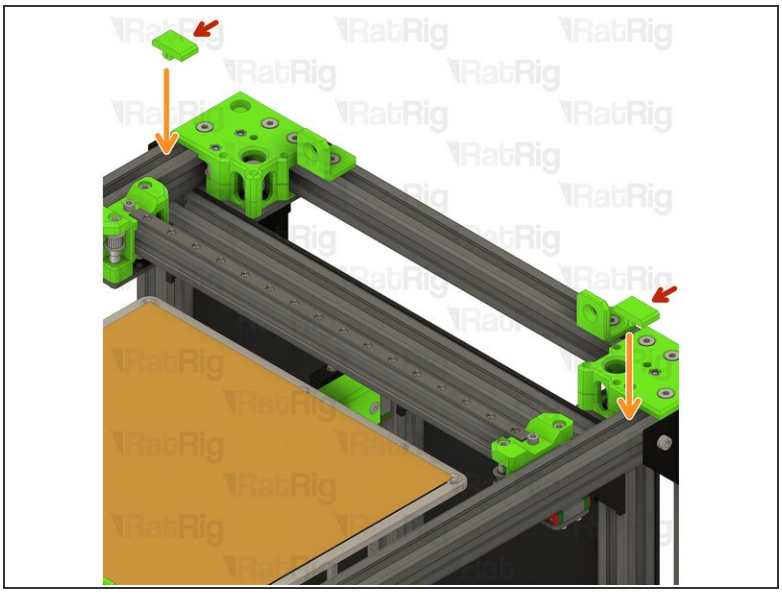
ⓘ Position the lid tiedown assemblies as shown

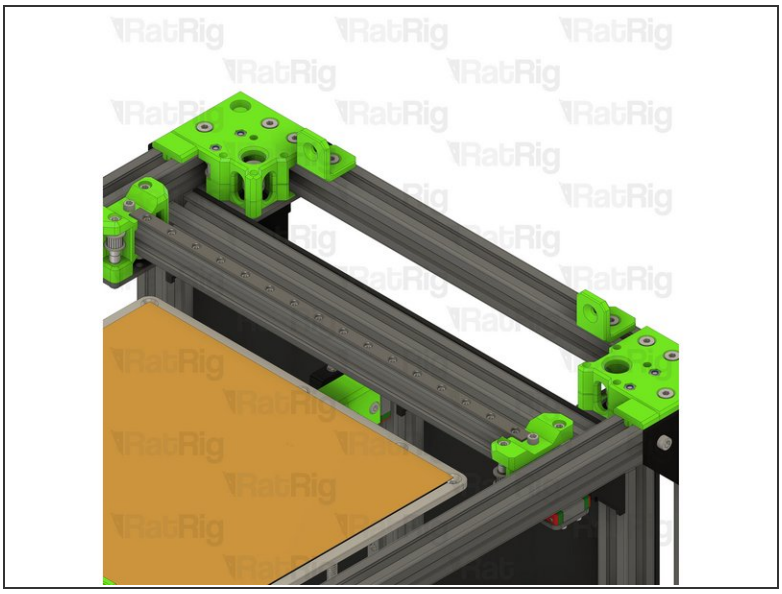
- The measurement marked should be around 120-125mm. It is not required for them to be accurate.

- Tighten each M6x14 screw to secure the lid tiedown to the V-Core 3 frame.

⚠ Take care not to over tighten the M6x14 screws as you can damage the printed part.

Step 26 — Install the enclosure fillers

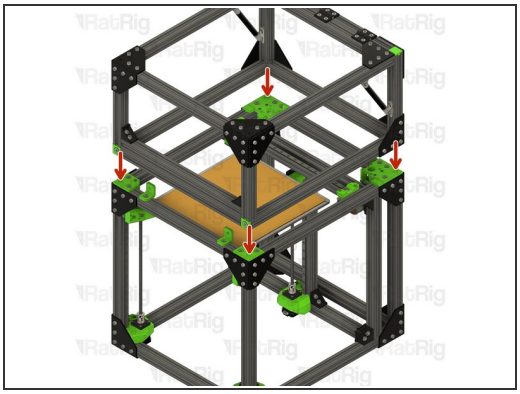


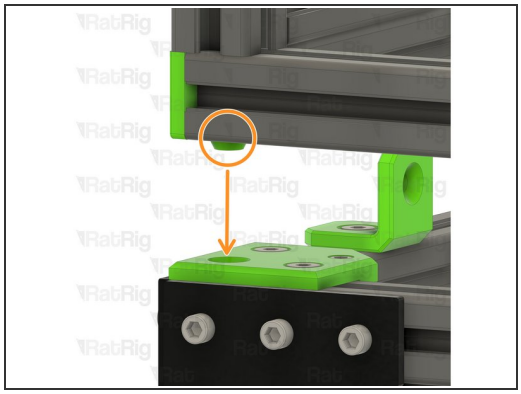


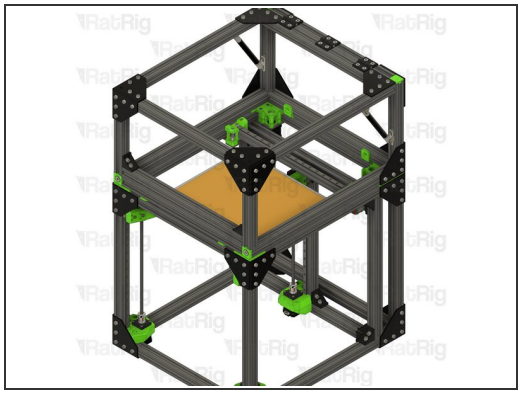
- enc_enclosure_filler printed part
- Install the enclosure fillers into the V-Core 3 frame as shown

  ⓘ Push them gently downwards and they will click into the V-Core 3 frame

Step 27 — Lid installation - Part 1







- Place the lid on top of the V-Core 3
- The alignment pins on the lid should fit into the recesses on the V-Core 3

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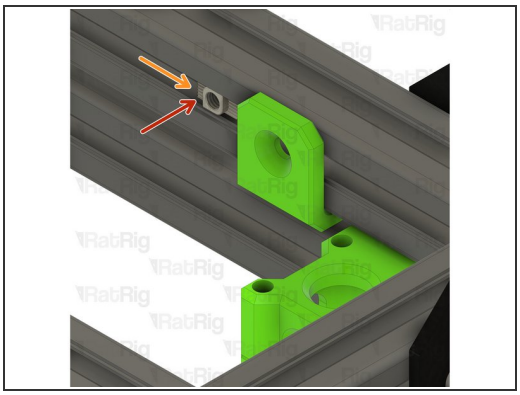
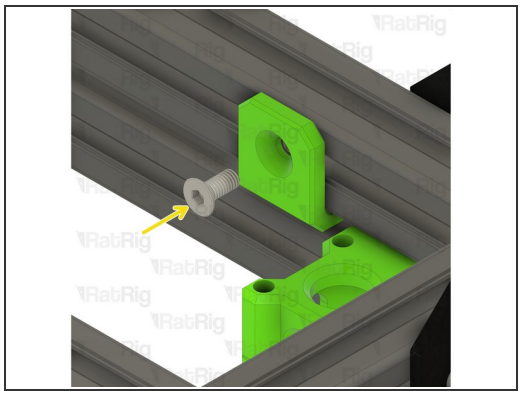
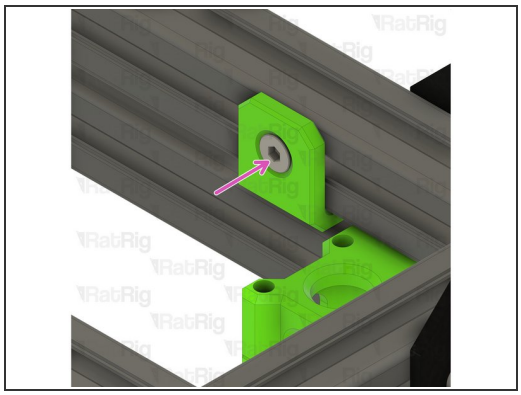
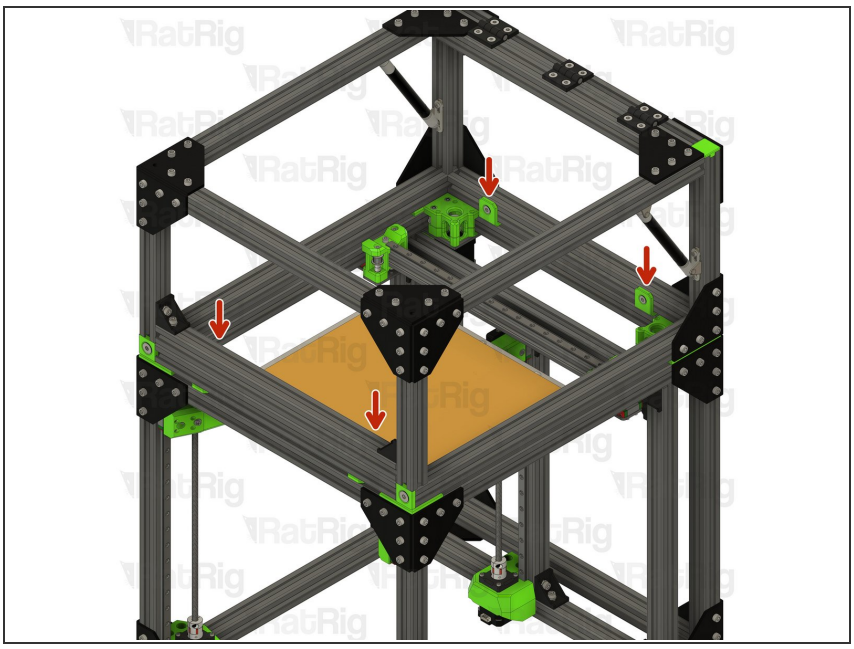
Step 28 — Lid installation - Part 2

- 3030 Drop In T-Nut M6
- Slide the 3030 T-Nut behind the lid tiedown printed part
- M6x14 Countersunk Screw
- Fasten the M6x14 screw into the 3030 T-Nut

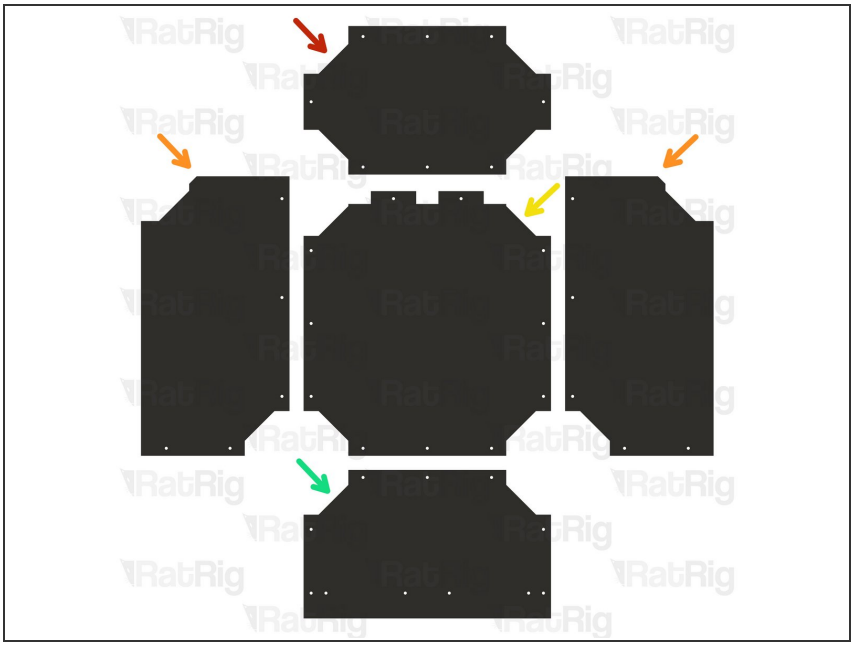
⚠ Take care not to over tighten the M6x14 screw as you can damage the printed part.

Step 29 — Lid installation - Part 3



- Repeat **Step 28** for the remaining three lid tiedowns

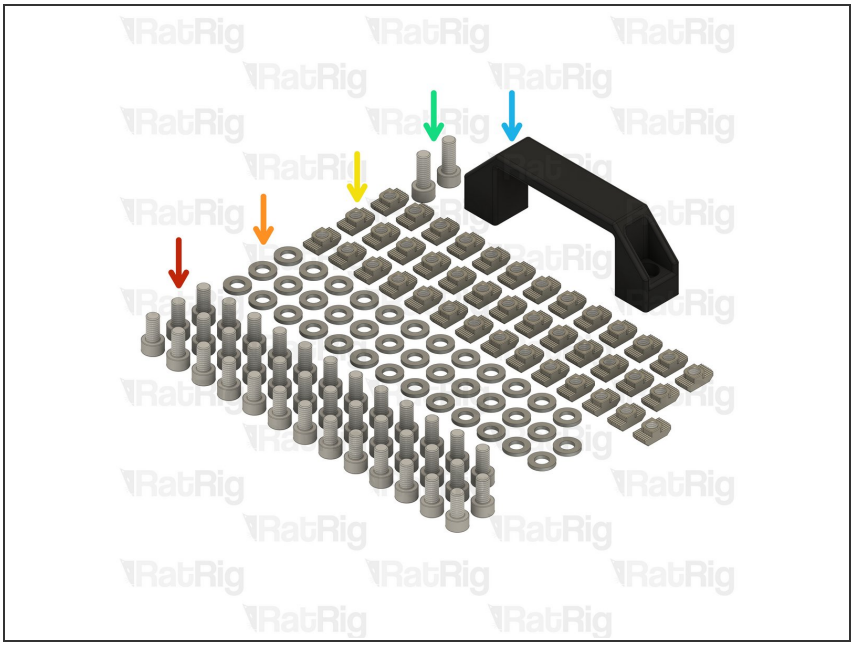
Step 30 — Prepare the lid panels



RatRig provides DXF and STEP files for you to have your own panels produced locally. These are available for download on the RatRig V-Core 3 GitHub repository

- 1x panel_lid_back
- 2x panel_lid_side
- 1x panel_lid_top
- 1x panel_lid_front

Step 31 — Prepare the lid panel accessories



- 38x M6x12 Cap Head Screw
- 38x M6 Washer
- 40x 3030 Drop In T-Nut M6
- 2x M6x16 Cap Head Screw
- Nylon Handle

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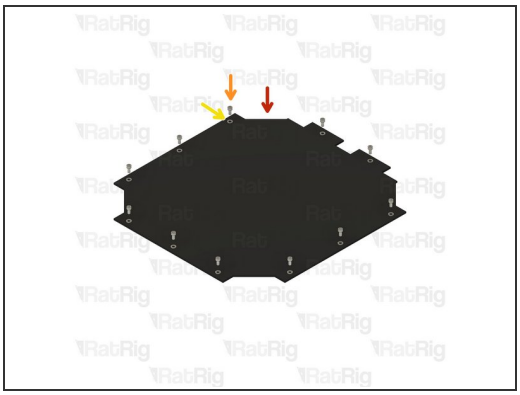
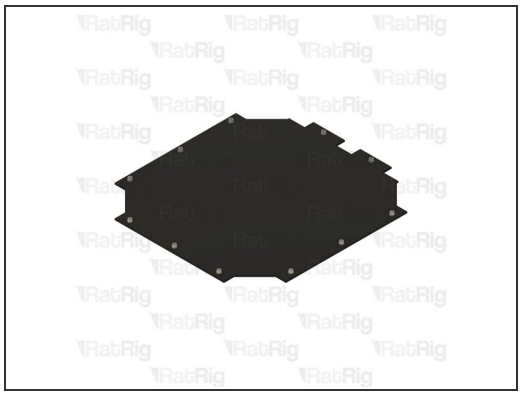
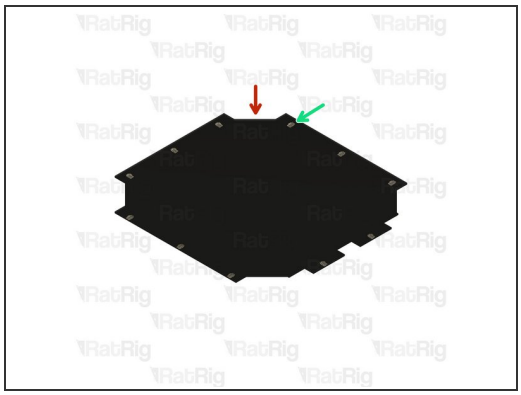
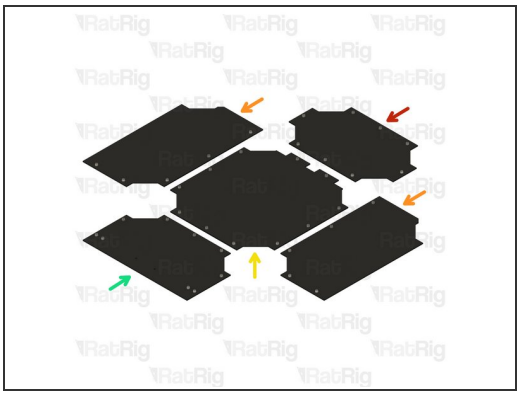
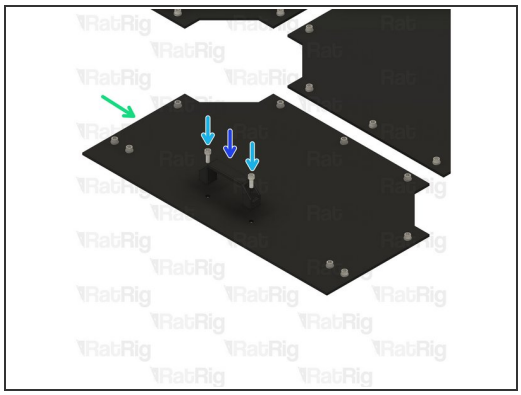
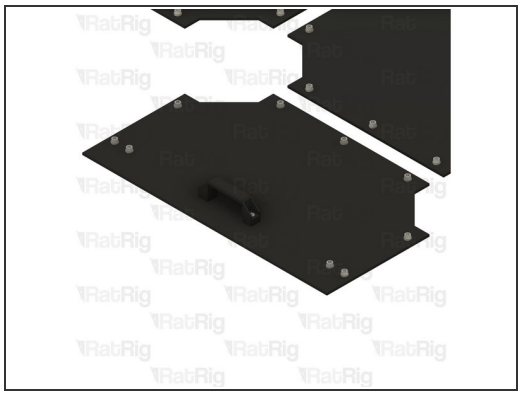
Step 32 — Assemble the lid panels - Part 1

- panel_lid_top
- M6x12 Cap Head Screw
- M6 Washer
- 3030 Drop In T-Nut M6

Loosely thread the 3030 T-Nuts onto the M6x12 screws. Do not tighten them at this point.

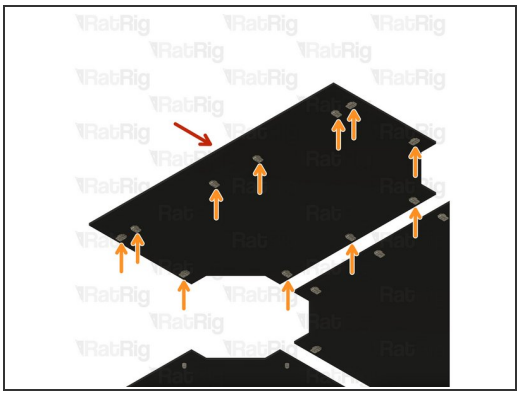
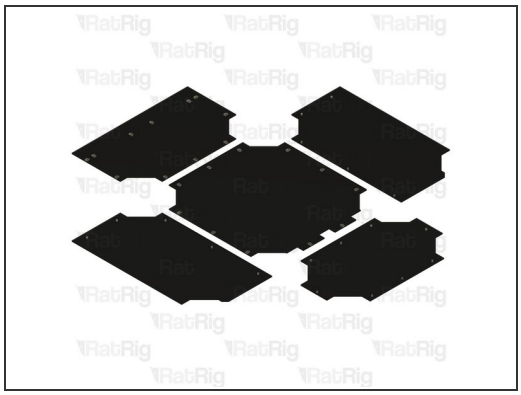
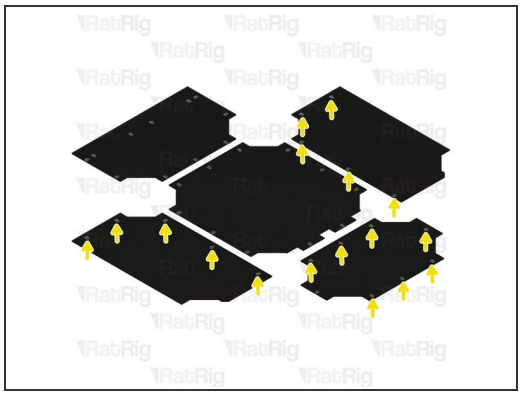
Step 33 — Assemble the lid panels - Part 2

Install M6 Washers and M6x12 cap head screws into all panels as shown

- panel_lid_back
- panel_lid_side
- panel_lid_top
- panel_lid_front
- M6x16 Cap Head Screw
- Nylon Handle

Step 34 — Assemble the lid panels - Part 3

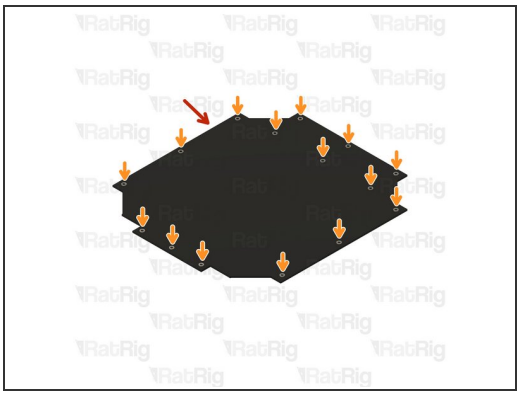
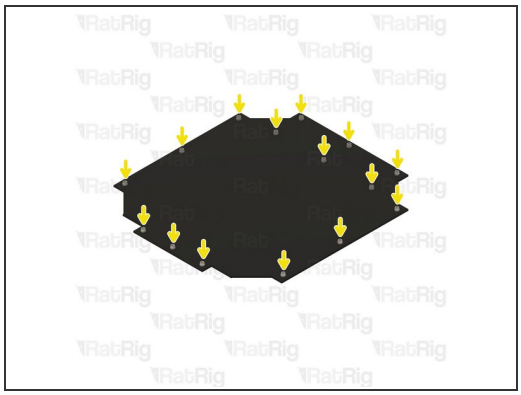
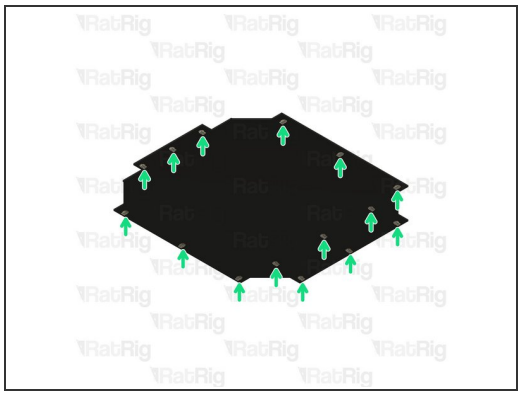
- panel_lid_front
- 3030 Drop In T-Nut M6

Loosely thread the 3030 T-Nuts onto the M6 screws. Do not tighten them at this point.

- Loosely thread the 3030 T-Nuts onto the remaining M6x12 screws.

Put the assembled panels aside until **Step 52**

Step 35 — Assemble the left V-Core 3 panel

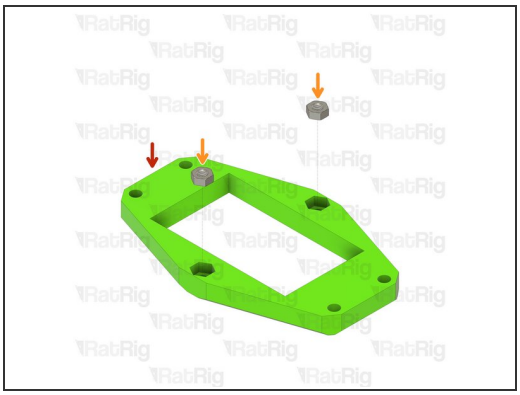
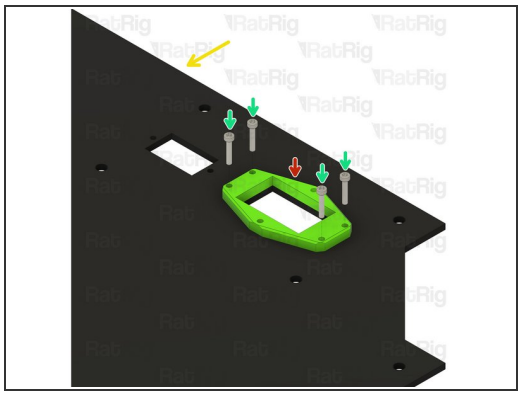
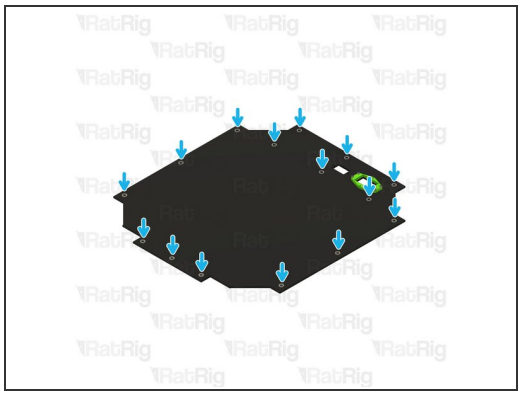




- panel_side_left
- M6 Washer
- M6x12 Cap Head Screw
- 3030 Drop In T-Nut M6

Loosely thread the 3030 T-Nuts onto the M6x12 screws. Do not tighten them at this point.

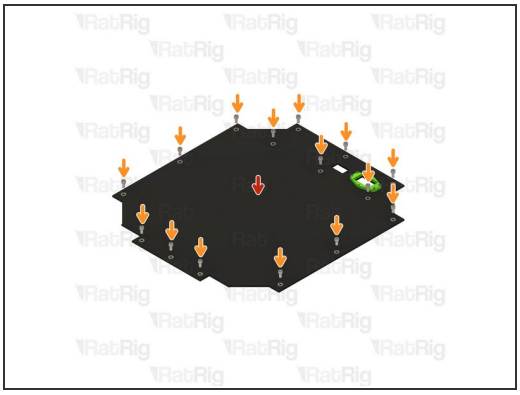
Put the assembled panel aside until **Step 55**

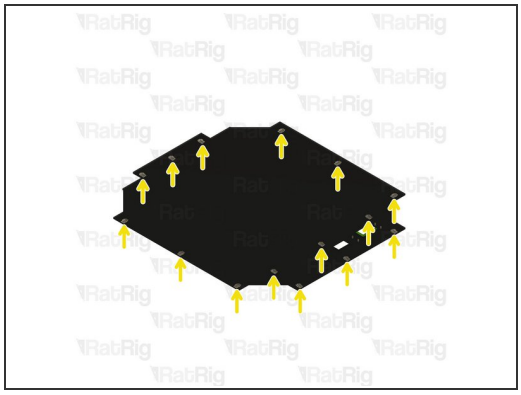
Step 36 — Assemble the right V-Core 3 panel - Part 1

- iec_socket_adapter printed part
- M3 Hex Nut
- panel_side_right
- M3x16 Cap Head Screw
- M6 Washer

Step 37 — Assemble the right V-Core 3 panel - Part 2





- Assembly from **Step 35**
- M6x12 Cap Head Screw
- 3030 Drop In T-Nut M6

Loosely thread the 3030 T-Nuts onto the M6x12 screws. Do not tighten them at this point.

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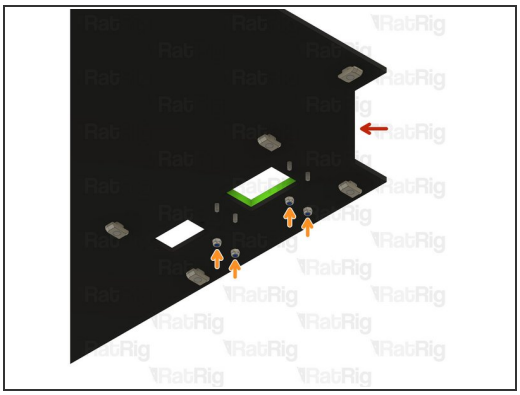
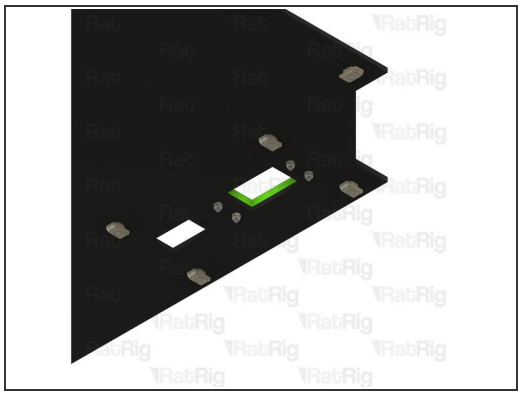
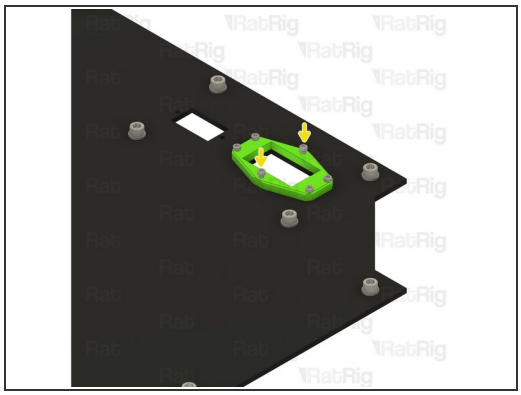
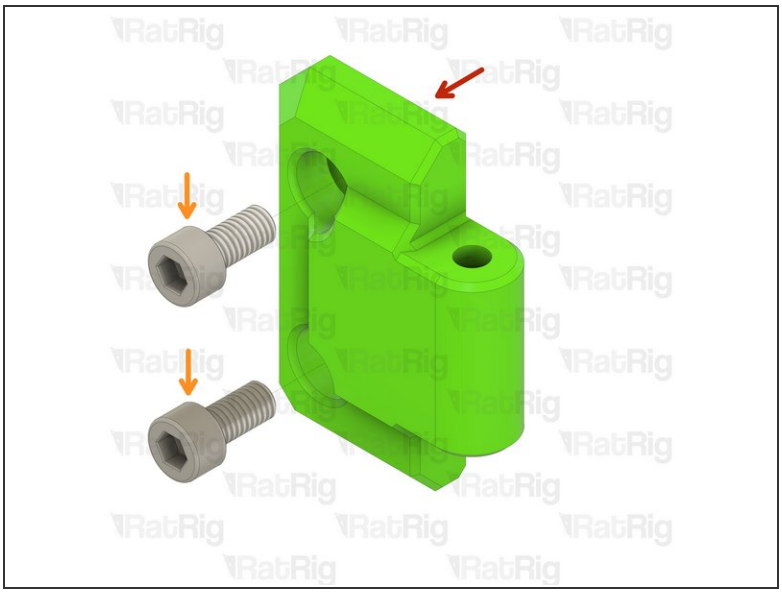
Step 38 — Assemble the right V-Core 3 panel - Part 3

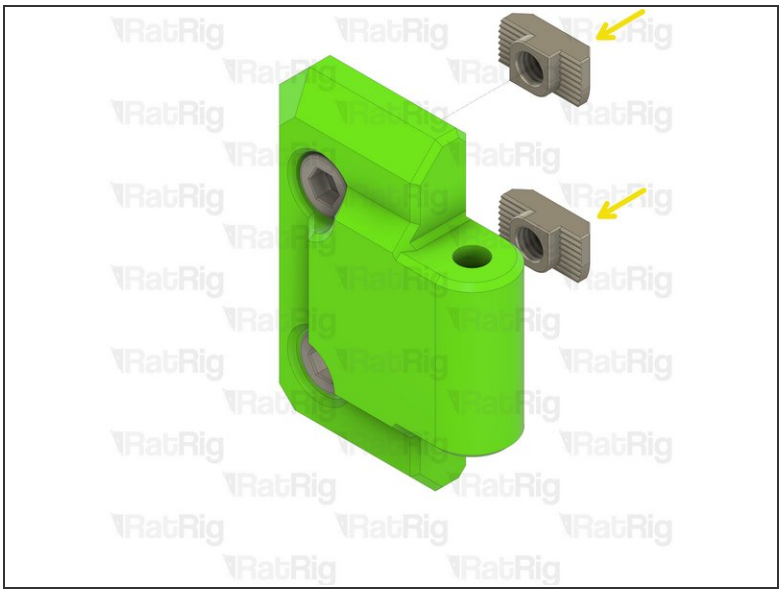




- Assembly from **Step 36**
- M3 Nylon Locking Hex Nut
- M3x8 Cap Head Screw

Put the assembled panel aside until **Step 54**

Step 39 — Assemble the frame hinges (x4)



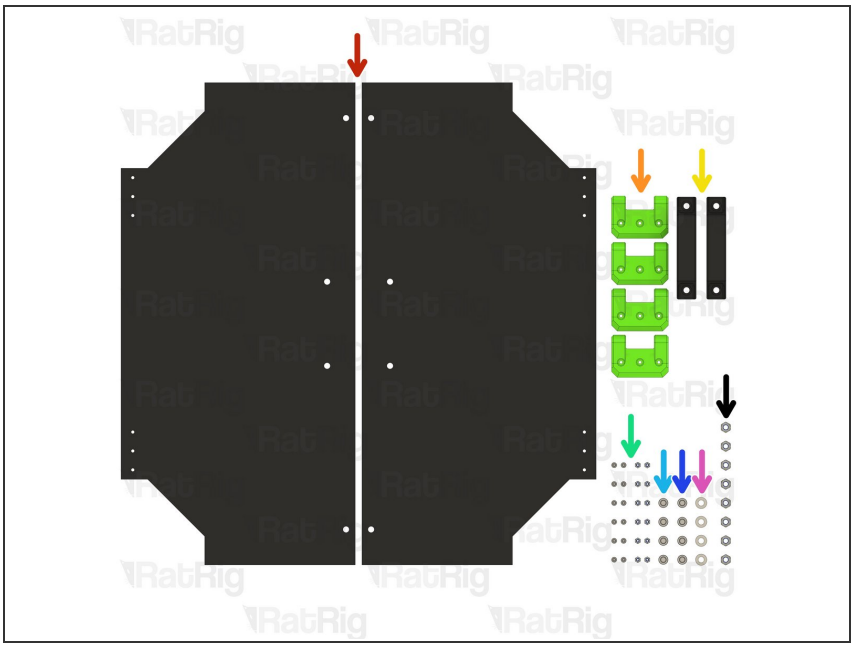


- enc_door_hinge_frame printed part
- M6x12 Cap Head Screw
- 3030 Drop In T-Nut M6

Loosely thread the 3030 T-Nuts onto the M6x12 screws. Do not tighten them at this point.

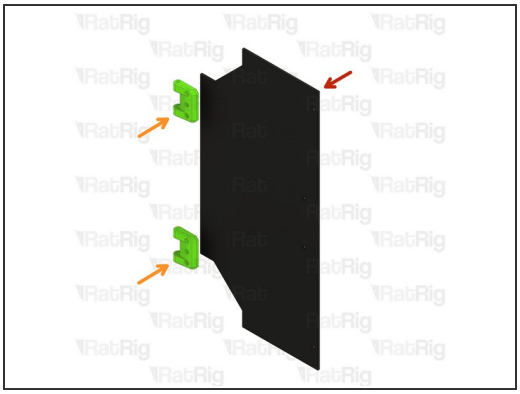
Put the assembled hinges aside until **Step 56**

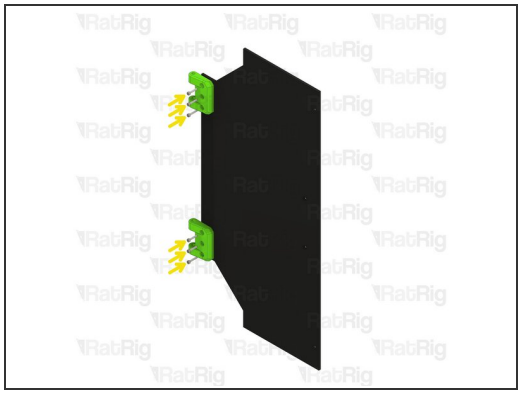
Step 40 — Prepare the door parts

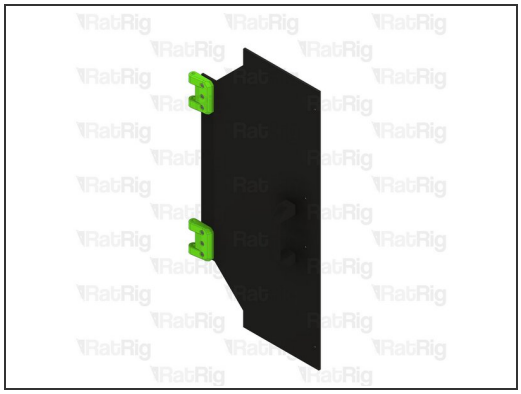


- 2x panel_door
- 4x enc_door_hinge_door printed part
- 2x Nylon Handle
- 12x M3x16 Cap Head Screw & M3 Nylon Locking Hex Nuts
- 4x M6x12 Cap Head Screw
- 4x M6x16 Cap Head Screw
- 4x M6 Washer
- 8x M6 Nylon Locking Hex Nut

Step 41 — Assemble the doors (x2) - Part 1

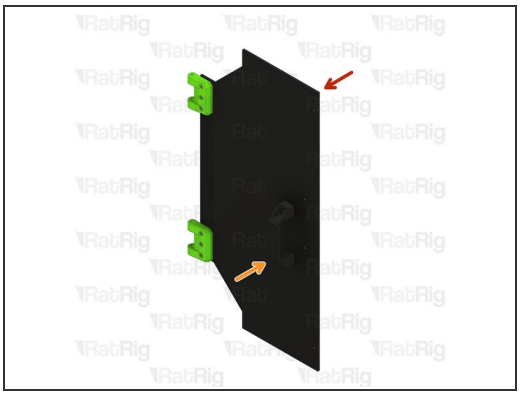
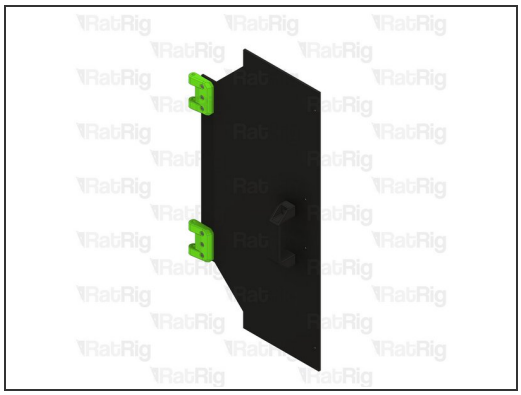
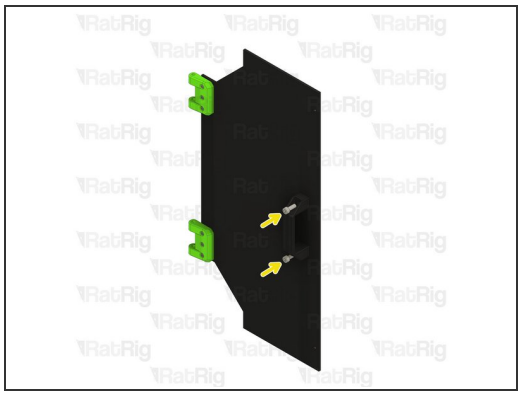






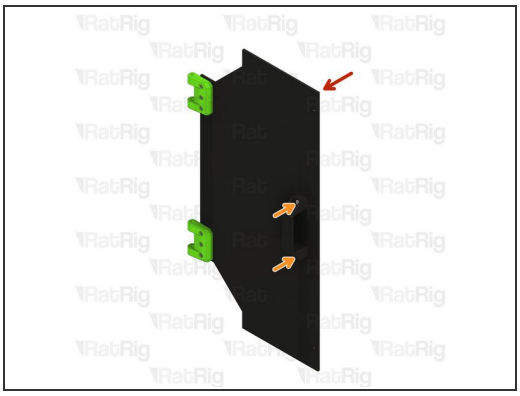
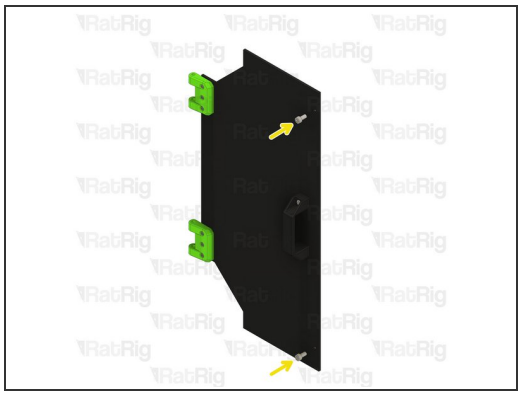
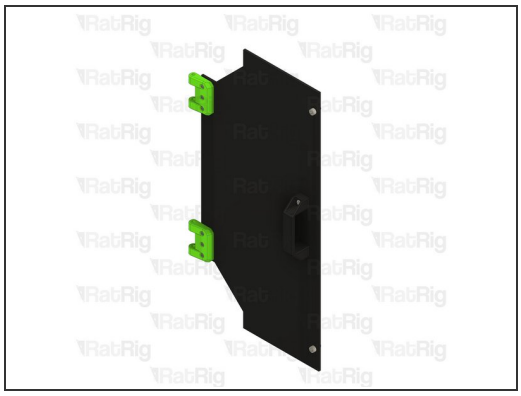
- panel_door
- enc_door_hinge_door printed part
- M3x16 Cap Head Screw

Step 42 — Assemble the doors (x2) - Part 2

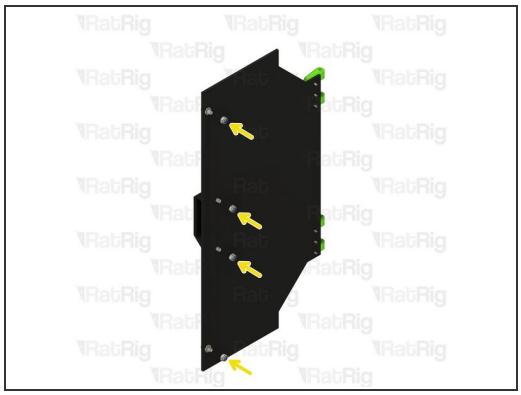
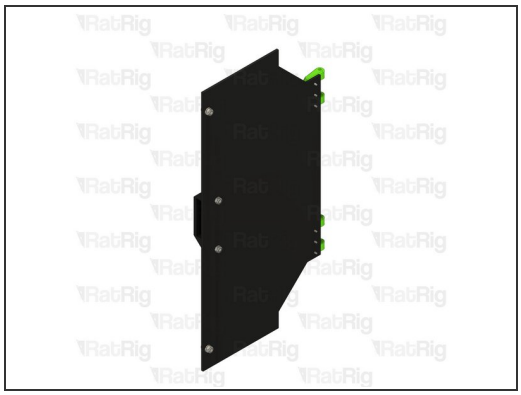
- Assembly from **Step 41**
- Nylon Handle
- M6x16 Cap Head Screw

Step 43 — Assemble the doors (x2) - Part 3

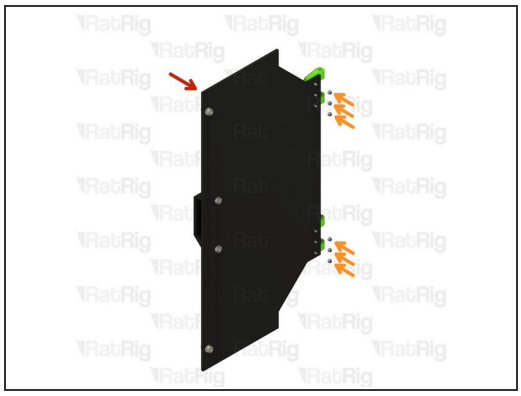
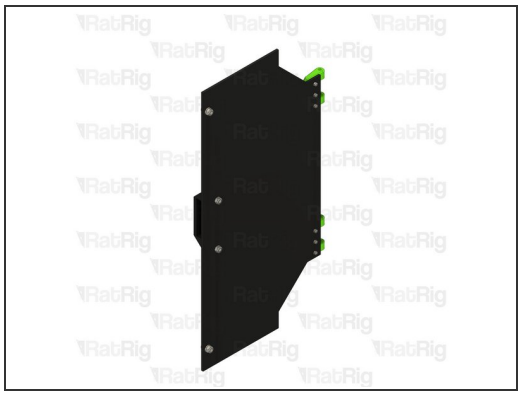
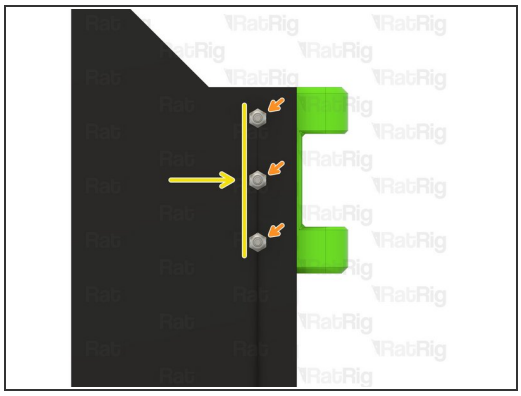
- Assembly from **Step 42**
- M6x16 Cap Head Screw
- M6x12 Cap Head Screw

Step 44 — Assemble the doors (x2) - Part 4

- Assembly from **Step 43**
- M6 Washer
- M6 Nylon Locking Hex Nut

Step 45 — Assemble the doors (x2) - Part 5

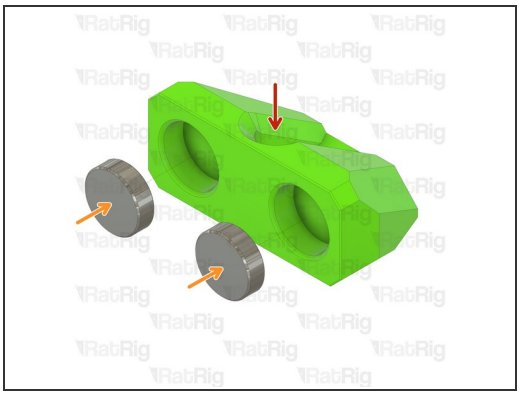
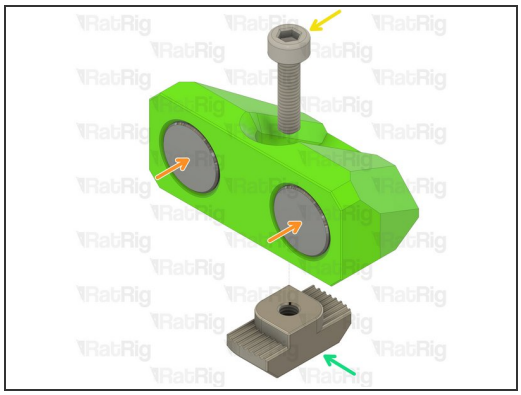




- Assembly from **Step 44**
- M3 Nylon Locking Hex Nut
- **Make sure that the M3 nylon locking hex nuts are oriented as shown**

ⓘ Repeat **Step 41** through **Step 45** to assemble the second door

ⓘ Put the assembled doors aside until **Step 57 & 58**

Step 46 — Assemble the magnetic door latch (x2)

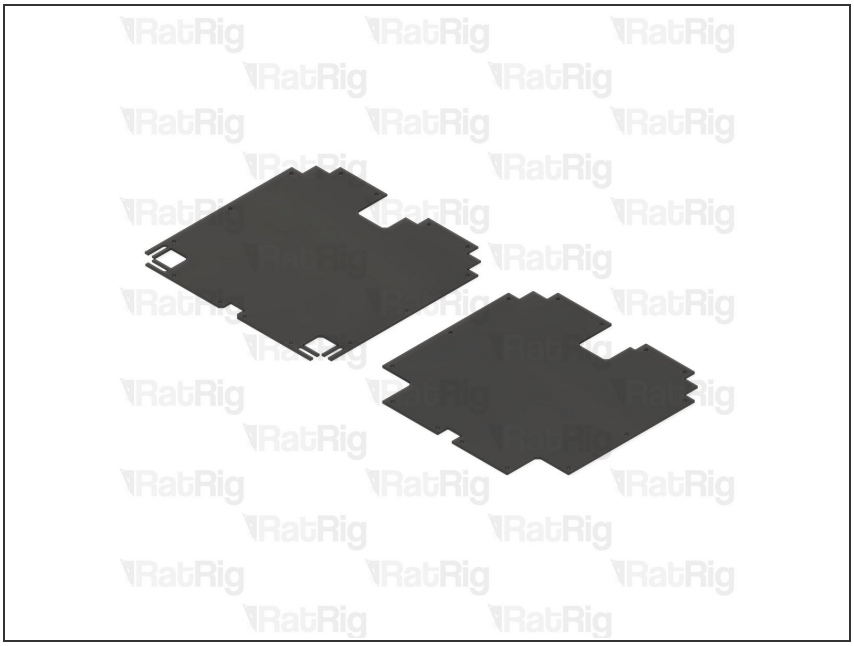




- enc_magnet_clip printed part
- Neodymium disc magnet
- M3x12 Cap Head Screw
- 3030 Drop In T-Nut M3

Loosely thread the 3030 T-Nut onto the M3x12 screw. Do not tighten them at this point

Put the assembled latches aside until **Step 59**

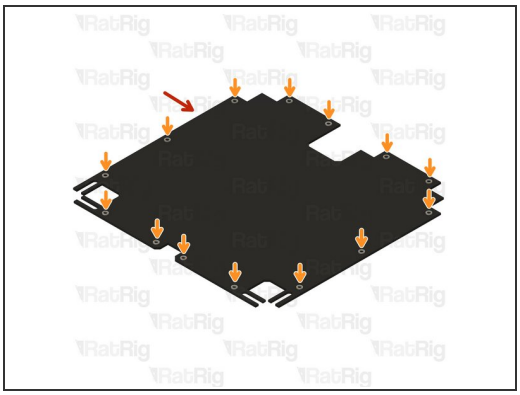
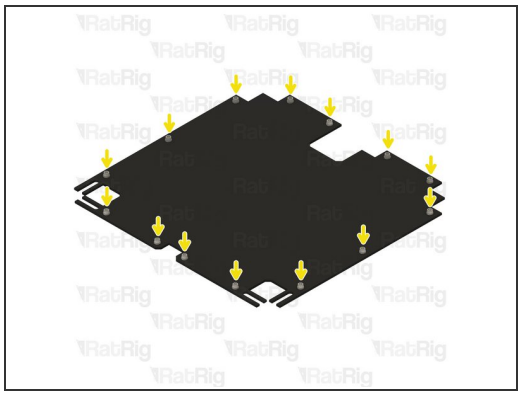
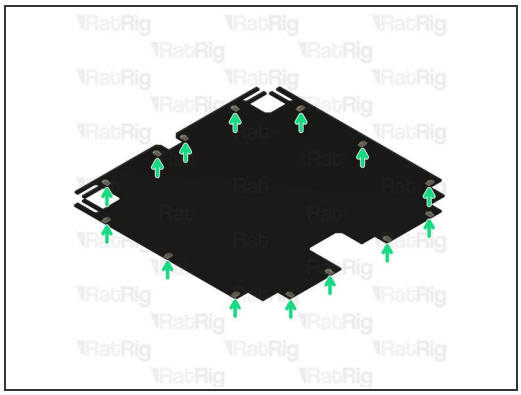
Step 47 — V-Core 3.0 or 3.1



Instructions relating to the base panel differ depending on which version of the V-Core 3 you are assembling the enclosure on

- For the V-Core 3.0, please follow **Step 48** and **Step 49**
- For the V-Core 3.1, please follow **Step 50** and **Step 51**

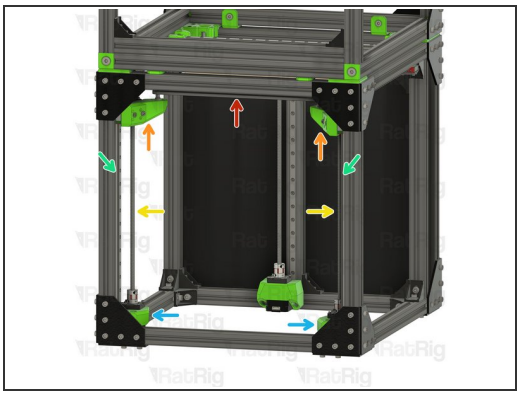
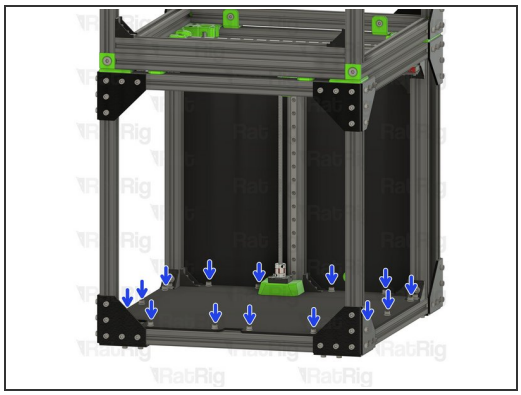
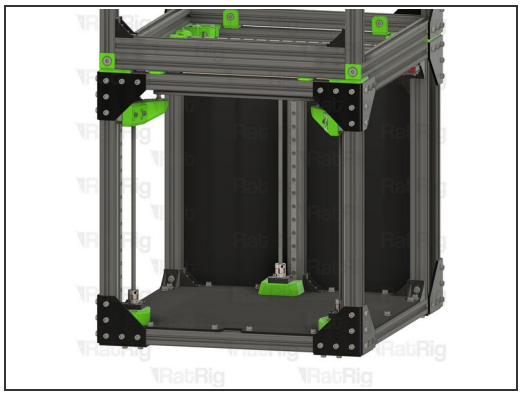
Step 48 — Assemble the base V-Core 3.0 panel

- panel_base
- M6 Washer
- M6x12 Cap Head Screw
- 3030 Drop In T-Nut M6

Loosely thread the 3030 T-Nuts onto the M6x12 screws. Do not tighten them at this point.

Step 49 — Installing the V-Core 3.0 base panel

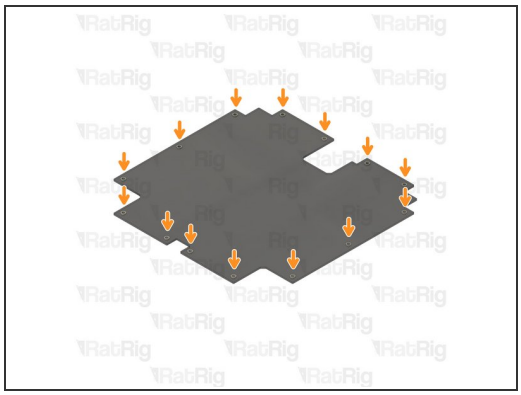
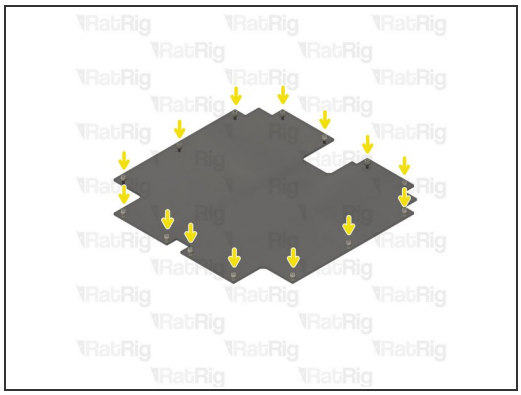
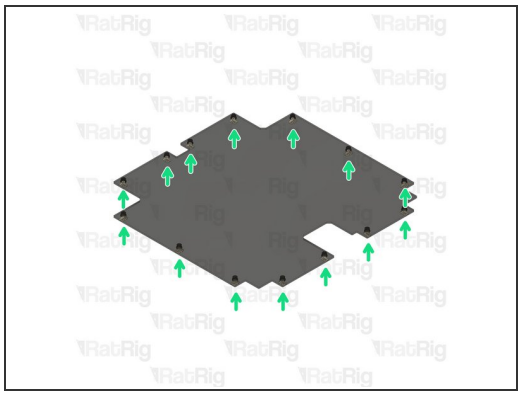
⚠ To install the base panel on an assembled machine, the following components need to be removed:

- Bed Assembly
- Both front Z arms
- Both front Z lead screws
- Both front MGN12 linear rails
- Both front Z motor mount assemblies

- Position the base panel assembly as shown and tighten all M6x12 cap head screws to secure the the panel to the V-Core 3.

ⓘ If you needed to remove components to install the base panel. Please refer to the V-Core 3 assembly guide to reinstall them.

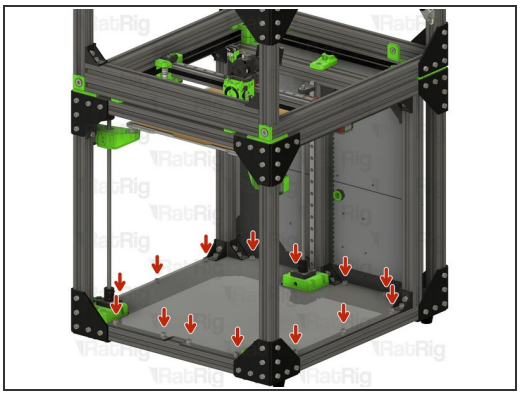
Step 50 — Assemble the base V-Core 3.1 panel

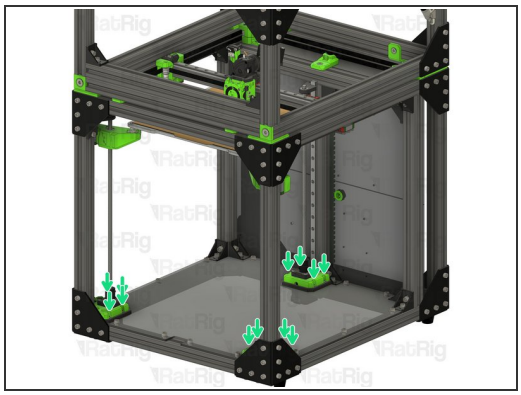




- panel_base_*size*_3.1
- M6 Washer
- M6x12 Cap Head Screw
- 3030 Drop In T-Nut M6

Loosely thread the 3030 T-Nuts onto the M6x12 screws. Do not tighten them at this point.

Step 51 — Installing the V-Core 3.1 base panel



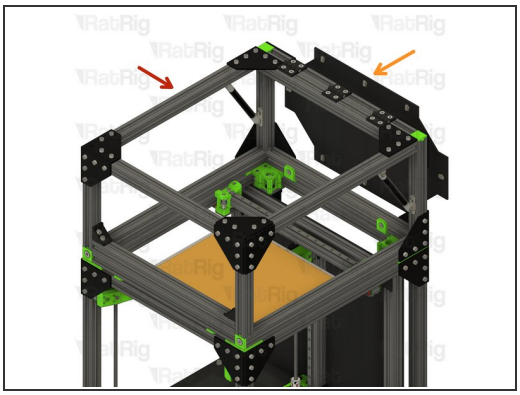
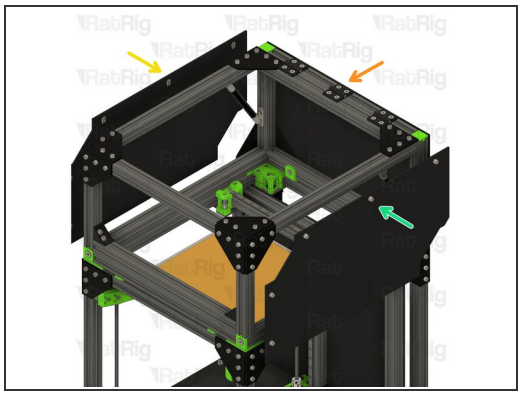
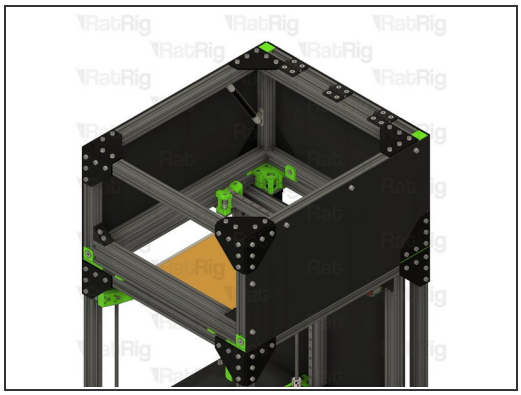


The V-Core 3.1 base panel can be installed without any disassembly

- Position the base panel assembly as shown and tighten all M6x12 cap head screws to secure the the panel to the V-Core 3.
- lead_screw_motor_cage_front_trim_3.1 Printed Part
- lead_screw_motor_cage_back_trim_3.1 Printed Part

  Install the lead_screw_motor_cage trim printed parts onto the motor cages as shown
- Install four M3x12 screws into each trim to secure them to the motor cages

Step 52 — Installing the lid panels - Part 1

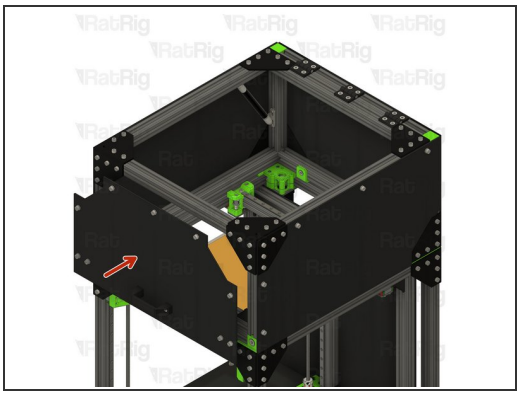
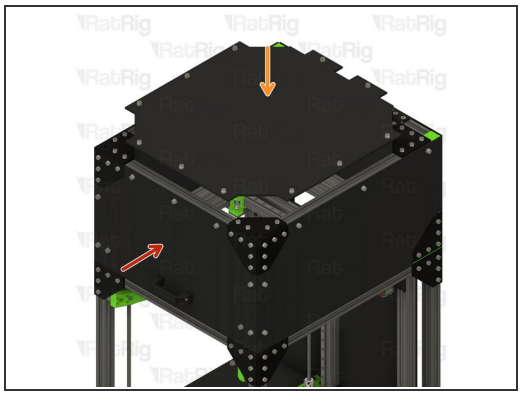
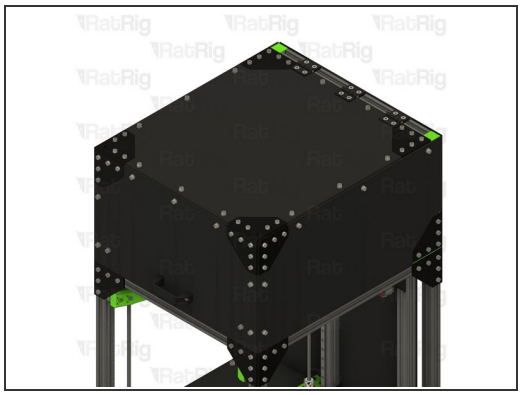
- RatRig V-Core 3 with lid installed

ⓘ You will require the following assembled panels from **Step 33**

- panel_lid_back
- panel_lid_side (left)
- panel_lid_side (right)

ⓘ Position each panel assembly as shown and tighten all M6x12 cap head screws to secure the the panel to the V-Core 3

Step 53 — Installing the lid panels - Part 2

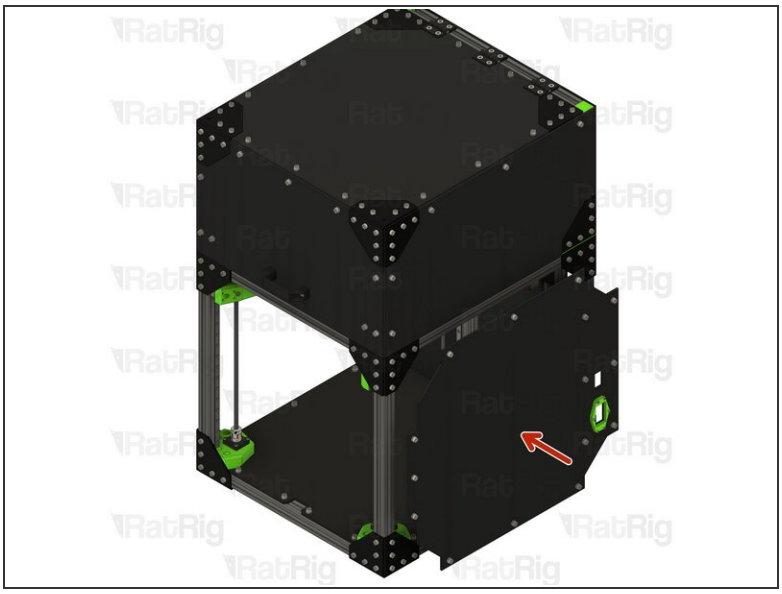




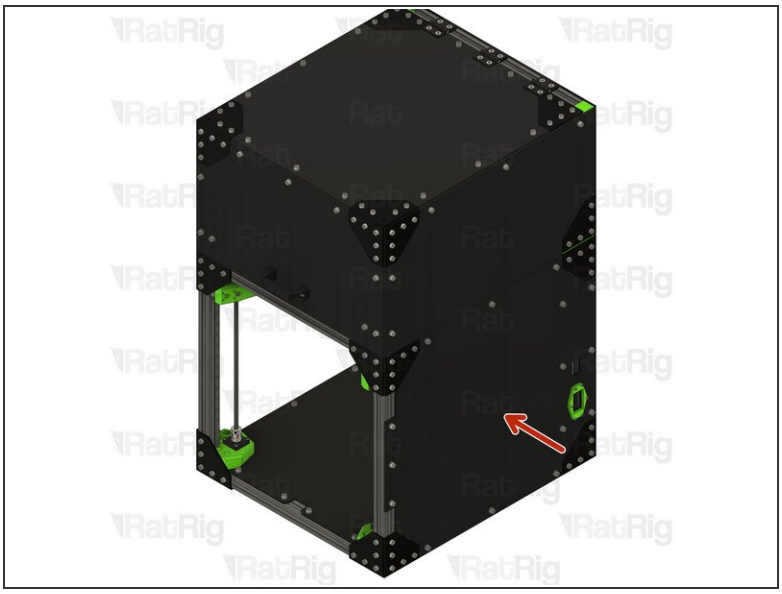
You will require the following assembled panels from **Step 33**

- panel_lid_front
- panel_lid_top

Position each panel assembly as shown and tighten all M6x12 cap head screws to secure the the panel to the V-Core 3

Step 54 — Installing the right enclosure panel



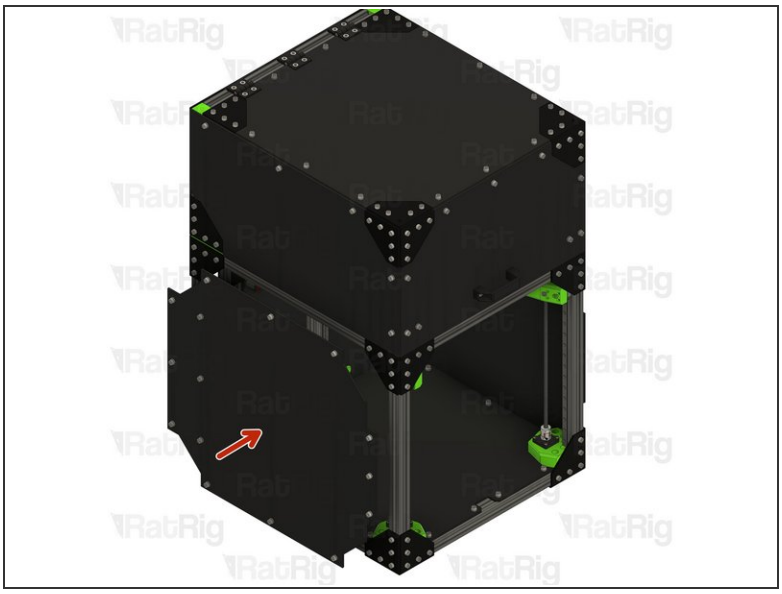


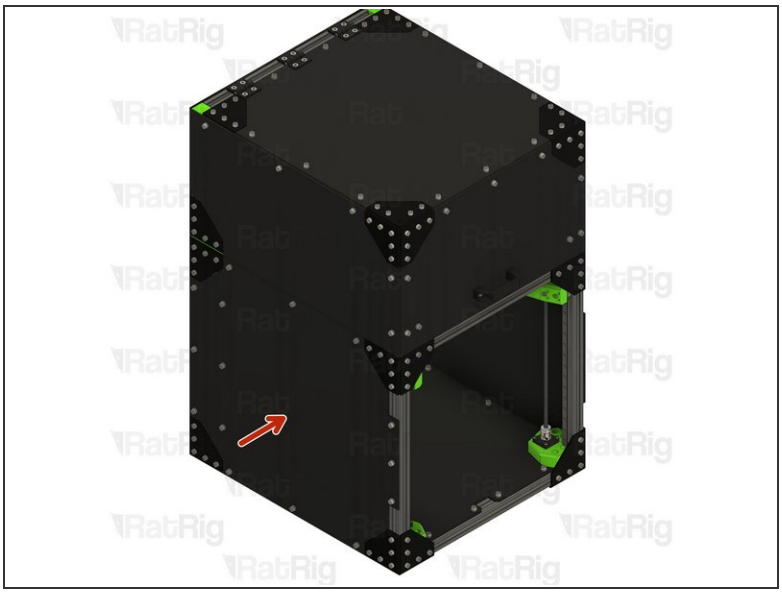
You will require the following assembled panel from **Step 37**

- panel_side_left

Position the panel assembly as shown and tighten all M6x12 cap head screws to secure the the panel to the V-Core 3

Step 55 — Installing the left enclosure panel



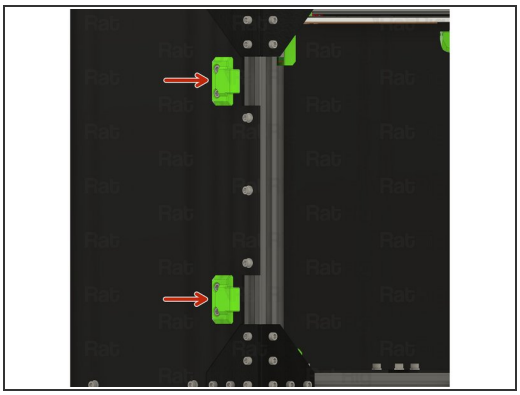
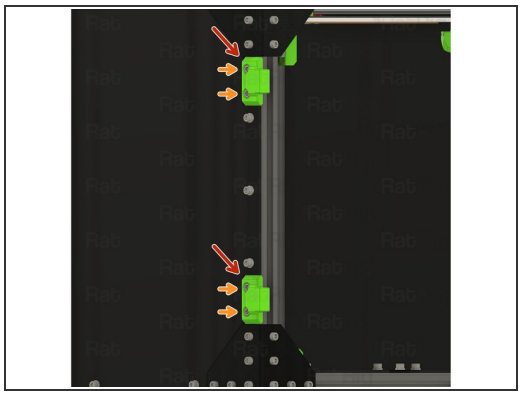
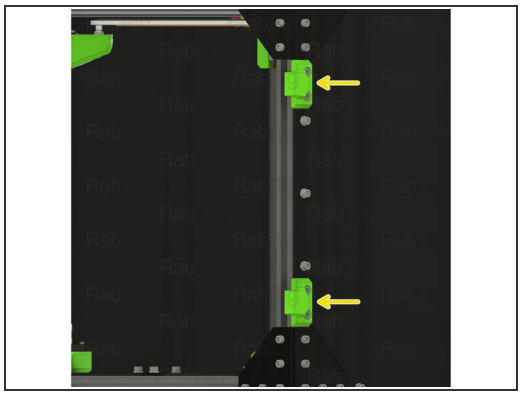


You will require the following assembled panel from **Step 34**

- panel_side_left

Position the panel assembly as shown and tighten all M6x12 cap head screws to secure the the panel to the V-Core 3

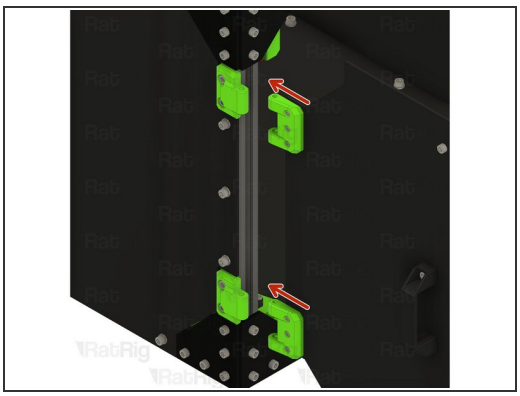
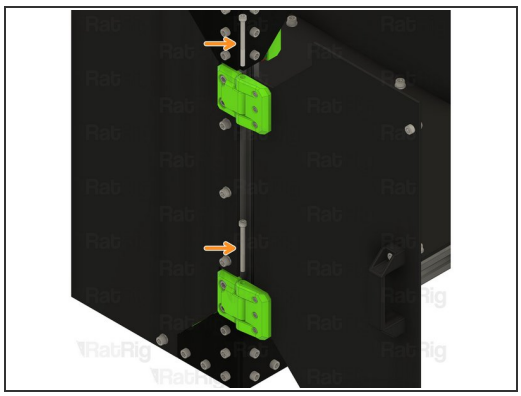
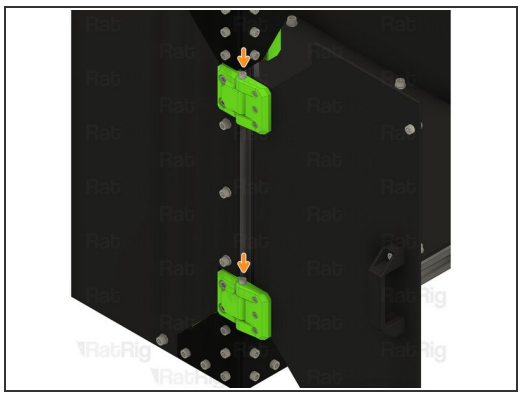
Step 56 — Installing the door hinges to the V-Core 3

- Fit the hinge assemblies from **Step 39** to the V-Core 3 frame as shown
- Tighten the M6x12 screws on both hinge assemblies to secure them to the frame

  ⚠ Take care not to over tighten the M6x12 screw as you can damage the printed part.
- Install the remaining two hinges on the other side

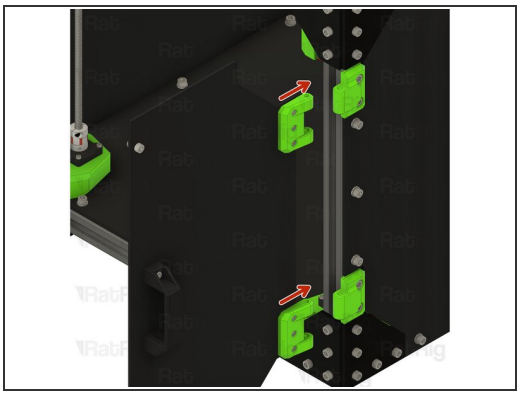
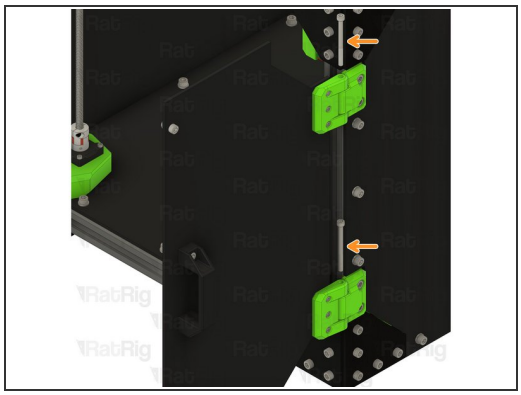
Step 57 — Installing the left door

- Door assembly from **Step 45**
- M5x60 Cap Head Screw

ⓘ Align the door assembly as shown, inserting the M5x60 screws into the hinges to join the door to the frame

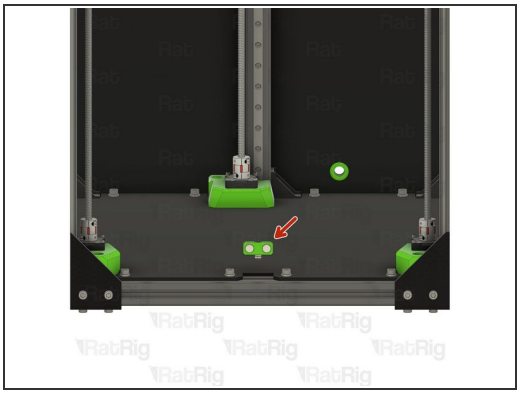
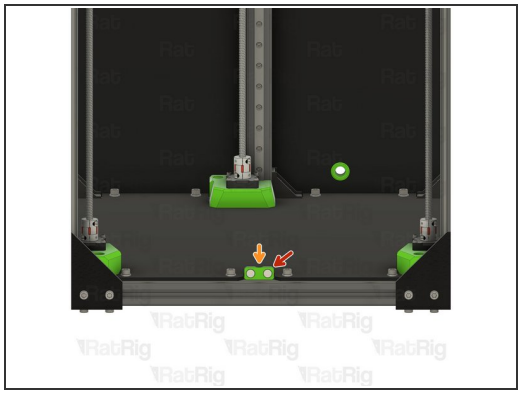
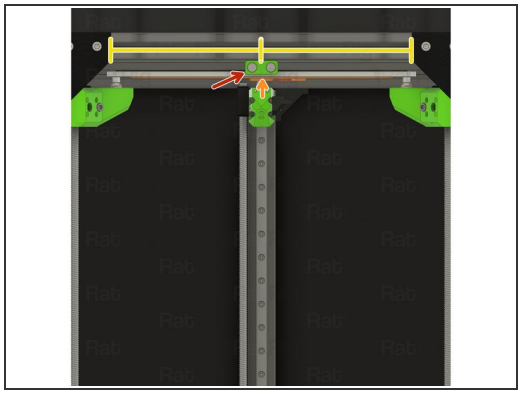
Step 58 — Installing the right door


- Door assembly from **Step 45**
- M5x60 Cap Head Screw

ⓘ Align the door assembly as shown, inserting the M5x60 screws into the hinges to join the door to the frame

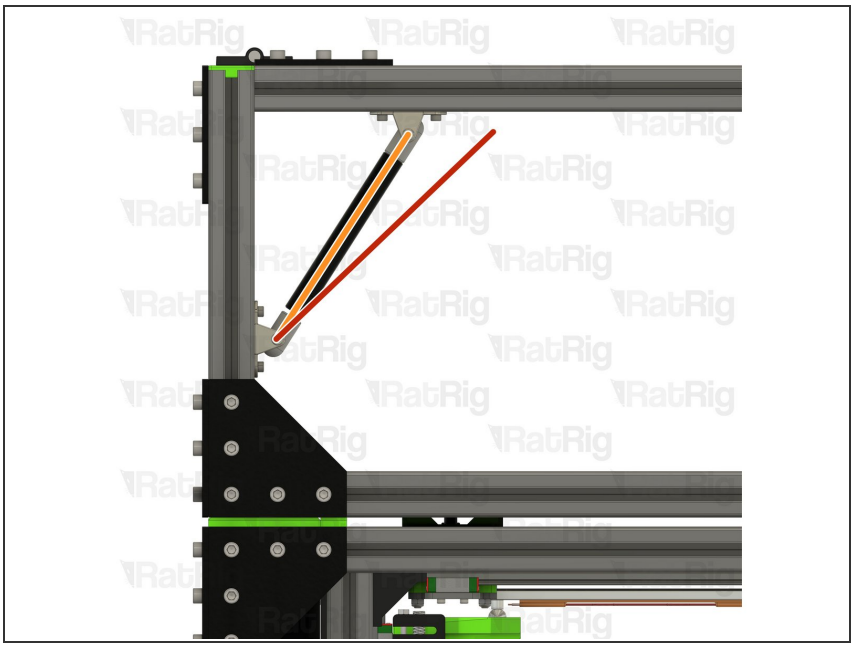
Step 59 — Install the magnetic door latches

- Magnetic door latch assembly from **Step 46**
- Tighten the M3x12 screw to secure the magnetic latch assembly to the V-Core 3 frame
- Position the top magnetic latch in the middle of the 3030 extrusion, as shown

⚠ Take care not to over tighten the M3x12 screw as you can damage the printed part

Step 60 — Adjusting the gas strut position



⚠ The gas strut positions will most likely require fine tuning to ensure correct operation

ⓘ If the lid either will not remain open, or will not remain closed, follow these steps. Otherwise, proceed to **Step 58**

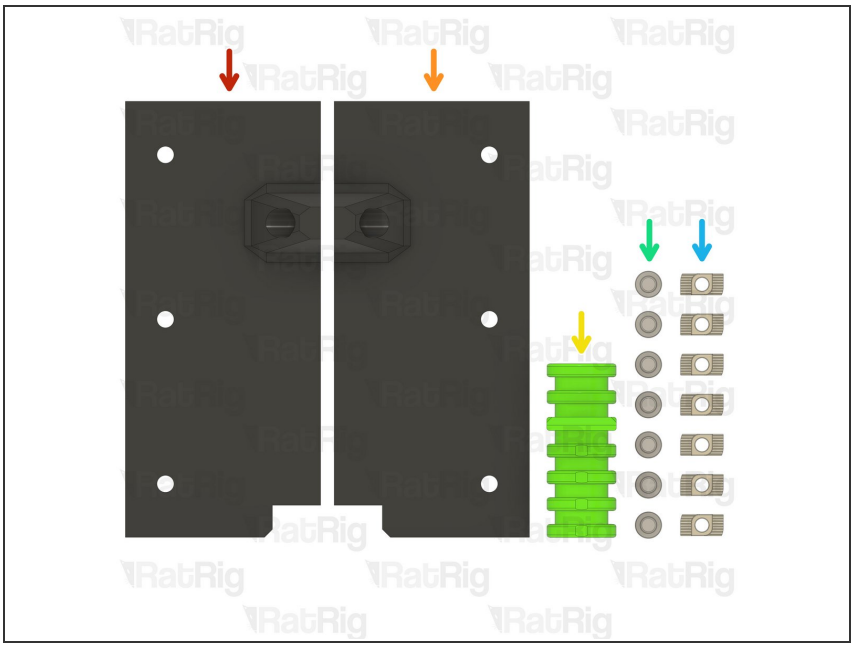
ⓘ If the lid will not remain open:

- Move the gas strut mounts to bring the strut closer to a 45 degree angle. This will increase the strength against the lid.

ⓘ If the lid will not remain closed:

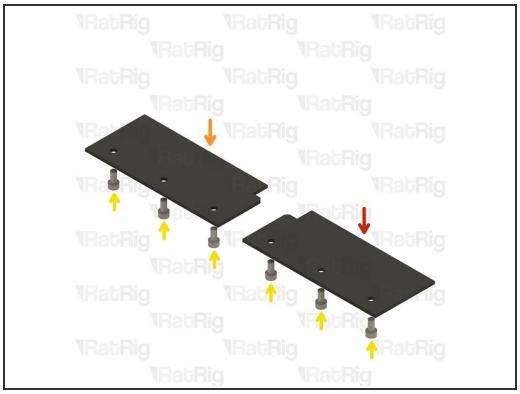
- Move the gas strut mounts to change the strut further from a 45 degree angle. This will decrease the strength against the lid.

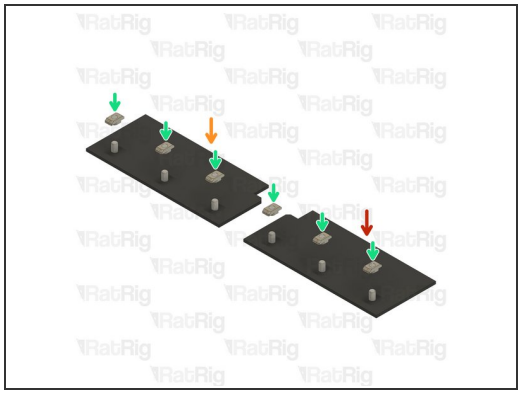
Step 61 — Prepare the rear shelf parts

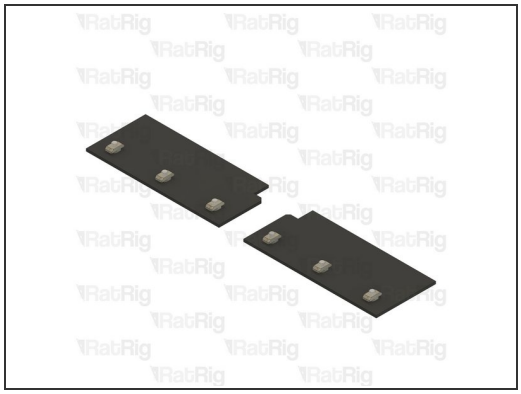


- 1x shelf_left printed part
- 1x shelf_right printed part
- 1x cable_tie printed part
- 7x M6x12 Cap Head Screw
- 7x 3030 Drop In T-Nut M6

Step 62 — Assemble the rear shelves



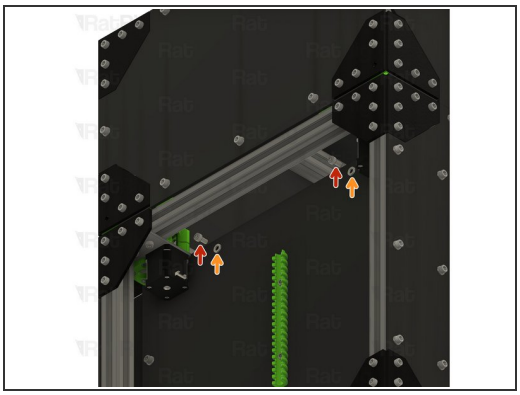
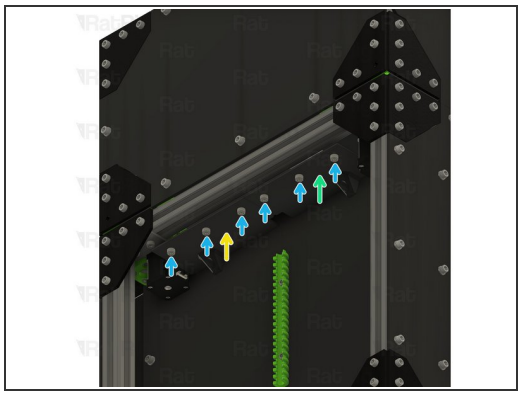
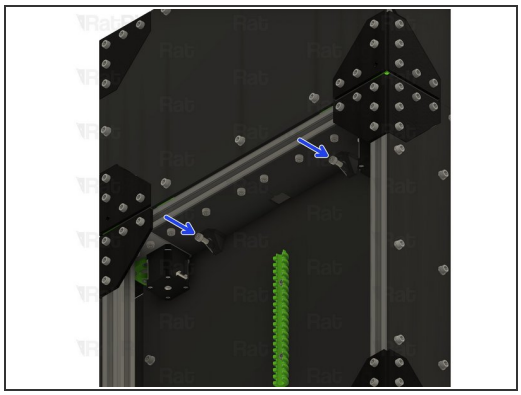




- shelf_left printed part
- shelf_right printed part
- M6x12 Cap Head Screw
- 3030 Drop In T-Nut M6

Loosely thread the 3030 T-Nuts onto the M6x12 screws. Do not tighten them at this point.

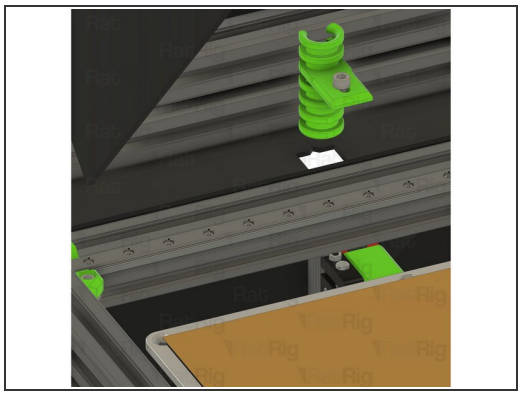
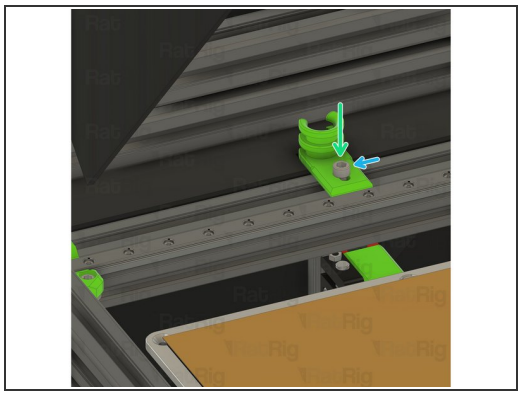
Step 63 — Install the rear shelves

- Remove the marked M6x12 screws from the electronics panel. Set them aside for a moment.
- Remove the marked M6 washer from the electronics panel. These are no longer needed.
- Right shelf assembly from **Step 58**
- Left shelf assembly from **Step 58**
- Tighten all 6 M6x12 screws to hold the shelves in place
- Reinstall the two M6x12 screws previously removed

⚠ Take care not to over tighten the M6x12 screws as you can damage the printed parts.

Step 64 — Install the shelf cable guide

- cable_tie printed part
- M6x12 Cap Head Screw
- 3030 Drop In T-Nut M6

Loosely thread the 3030 T-Nuts onto the M6x12 screws. Do not tighten them at this point.

- Install the cable guide assembly as shown
- Tighten the M6x12 screw to hold the cable guide in place

Take care not to over tighten the M6x12 screws as you can damage the printed parts.