

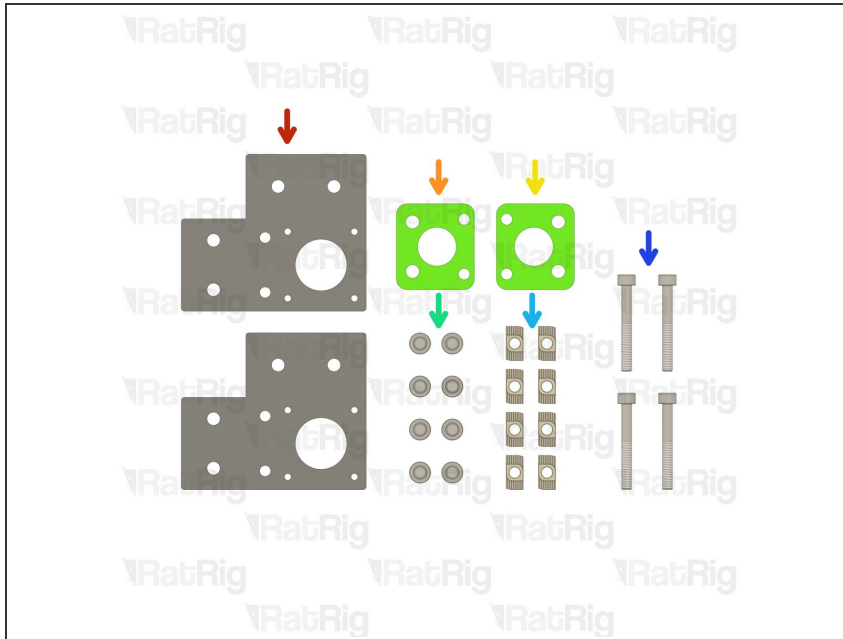
Rat Rig

05. CoreXY Motor Assemblies

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Step 1 — Prepare the CoreXY motor plate parts



- 2x motor_plate
- 1x motor_support_left Printed Part
- 1x motor_support_right Printed Part
- 8x M6x12 Cap Head Screw
- 8x 3030 Drop-in T-Nut - M6
- 4x M5x40 Cap Head Screw

Step 2 — Assemble the CoreXY motor plates



- motor_plate

⚠ Make sure the motor plates are oriented as shown

- motor_support_left Printed Part

- M6x12 Cap Head Screw

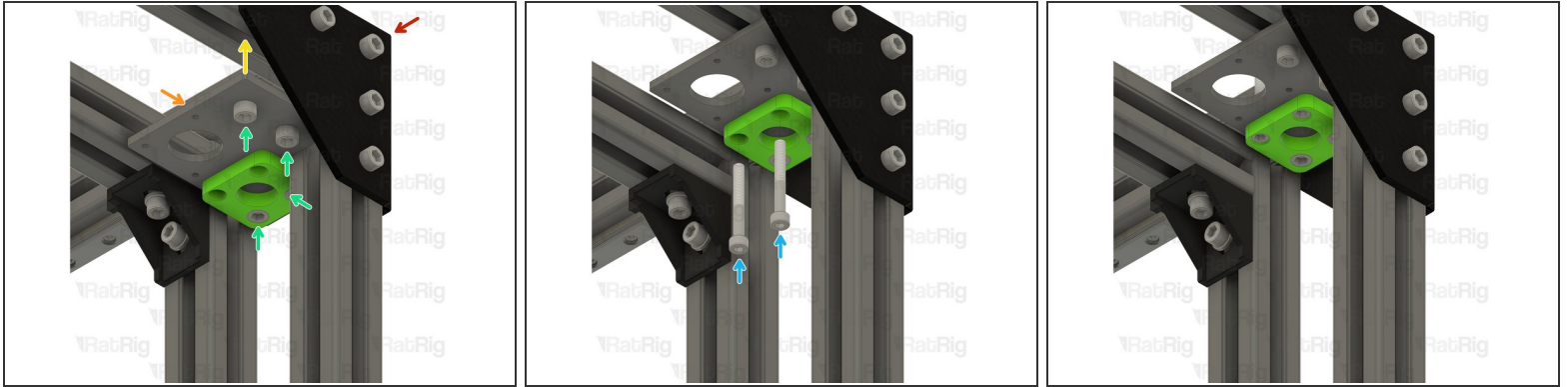
- 3030 Drop-in T-Nut - M6

ⓘ Loosely thread a 3030 T-Nut onto each of the M6x12 screws. Do not tighten them at this point.

- motor_support_right Printed Part

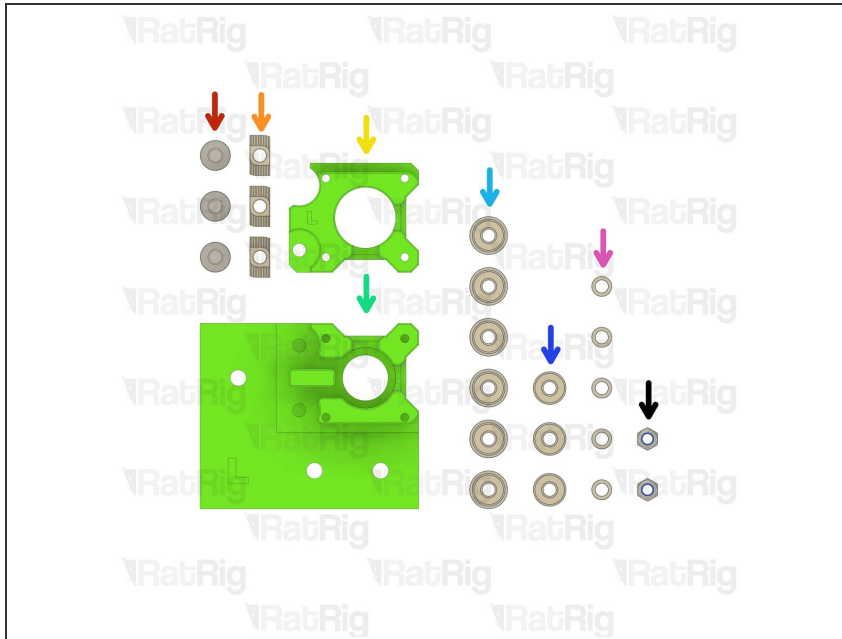
ⓘ Set the right motor plate assembly, and two M5x40 Cap Head Screws, aside until **Step 12**

Step 3 — Install the left CoreXY motor plate



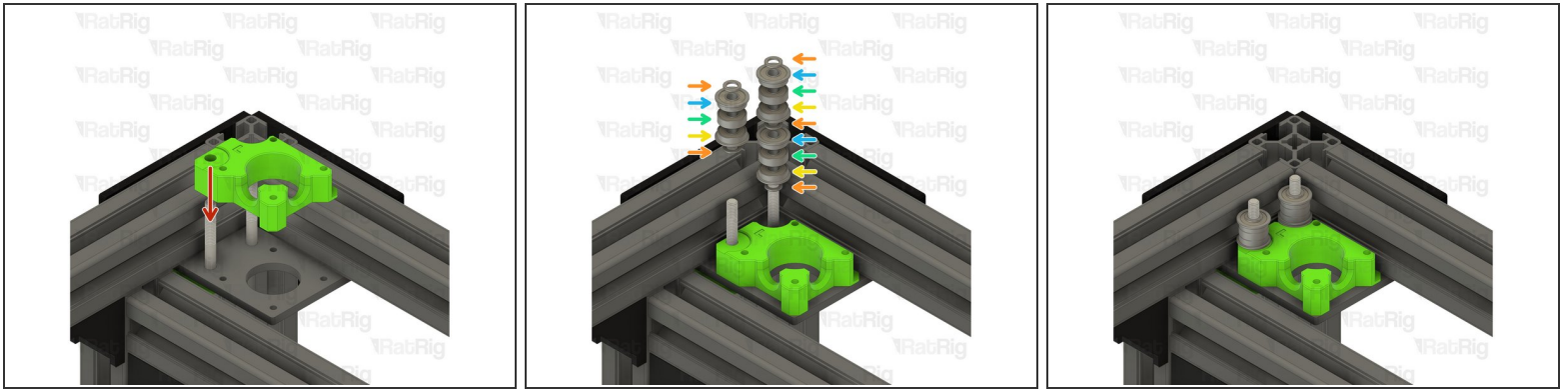
- V-Core 3.1 Frame Assembly - Rear Left Corner
- Left motor_plate assembly from **Step 2**
- Install the left motor_plate assembly to the V-Core 3.1 frame as shown
- Tighten the four M6x12 screws to secure the motor_plate assembly to the frame
 - ⓘ Make sure the plate is fully seated against the 3030 extrusion before tightening the M6x12 screws
- Insert two M5x40 screws into the motor_plate, as shown, in preparation for **Step 5**

Step 4 — Prepare the left CoreXY motor cage parts



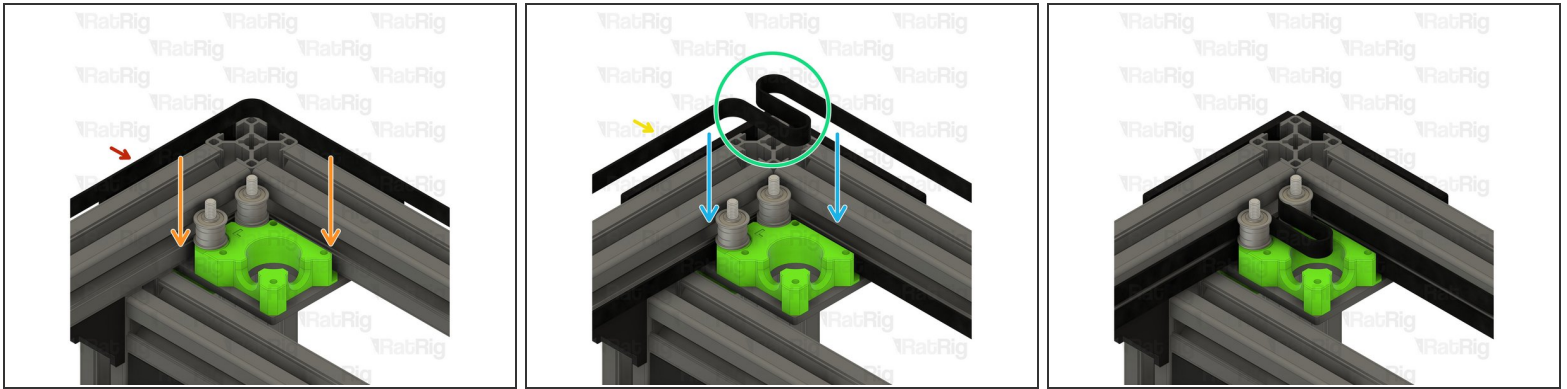
- 3x M6x14 Countersink Screw
- 3x 3030 Drop-in T-Nut - M6
- 1x xy_motor_cage_bottom_left_3.1 Printed Part
- 1x xy_motor_cage_top_left_3.1 Printed Part
- 6x F695ZZ Ball Bearing
- 3x 695ZZ Ball Bearing
- 5x Mini Precision Shim
- 2x M5 Nylon Locking Hex Nut

Step 5 — Install the left CoreXY motor cage - Part 1



- Install the xy_motor_cage_bottom_left printed part as shown
- ⓘ Install the following components in the order shown in the image:
 - Mini Precision Shim
 - F695ZZ Ball Bearing (Flange at the bottom)
 - 695ZZ Ball Bearing
 - F695ZZ Ball Bearing (Flange at the top)

Step 6 — Install the left CoreXY motor cage - Part 2

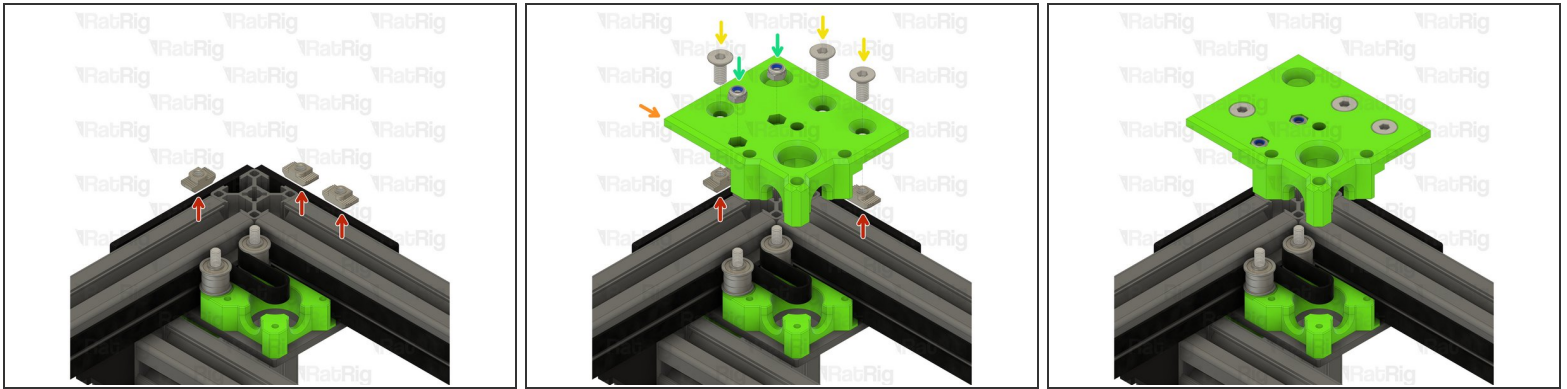


⚠ Proper installation of the belt is **very important, failure to follow the instructions can lead to damage of the belt**

- i** The CoreXY belt is provided in one continuous length. Unroll the belt and cut it in half to give you two belts of the same length
- Position one half of the belt so that the toothed side faces the frame, and the smooth side faces the bearing stacks
- Slot this half to the bottom of the CoreXY motor assembly, it should align with the bottom bearing stack
- Take the other half of the CoreXY belt. Again, position the belt so that the toothed side faces the frame and the smooth side faces the bearing stacks
- Form a loop as shown, this will be used to engage with the NEMA17 motor pulley
- Position the upper belt as shown

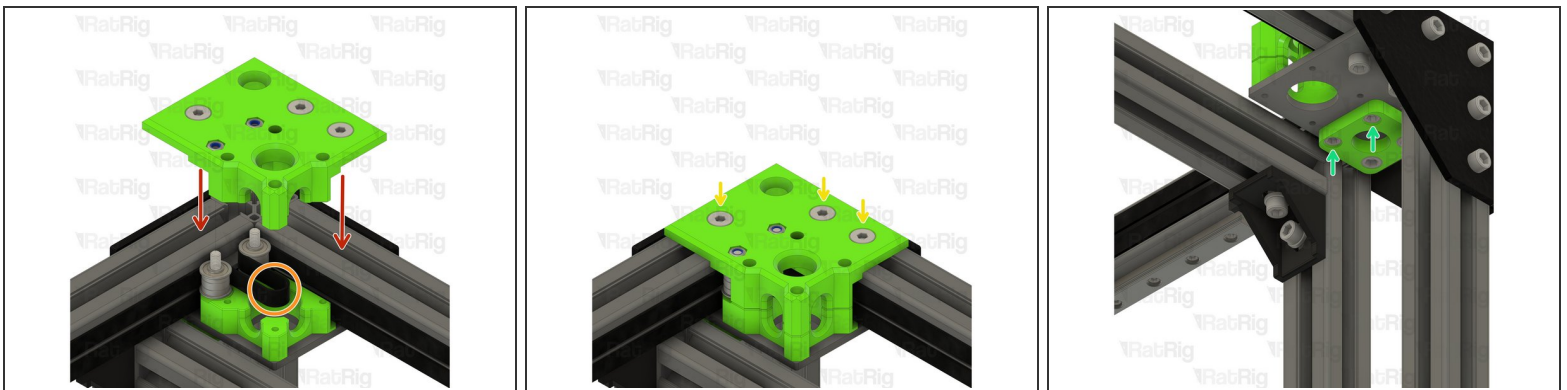
⚠ Make sure that both belts match the third image before proceeding

Step 7 — Assemble the left upper CoreXY motor cage



- 3030 Drop-in T-Nut - M6
- xy_motor_cage_top_left_3.1 Printed Part
- M6x14 Countersink Screw
- ① Loosely thread a 3030 T-Nut onto each of the M6x14 screws. Do not tighten them at this point.
- M5 Nylon Locking Hex Nut

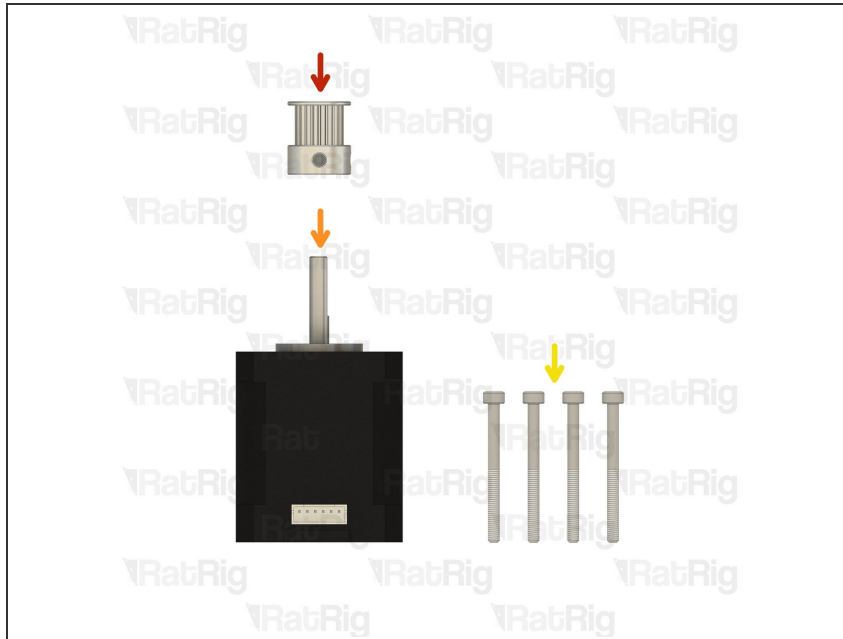
Step 8 — Install the left upper CoreXY motor cage



- Install the xy_motor_cage_left_top assembly onto the frame as shown
- Make sure the belt loop, created in **Step 6**, remains in the position shown
- Tighten the three marked M6x14 screws to secure the CoreXY motor cage top to the frame
- ⚠ Take care not to over tighten the M6x14 screws as you can damage the printed part
- Tighten the M5x40 screws to secure the bearing stacks into the CoreXY motor cage top

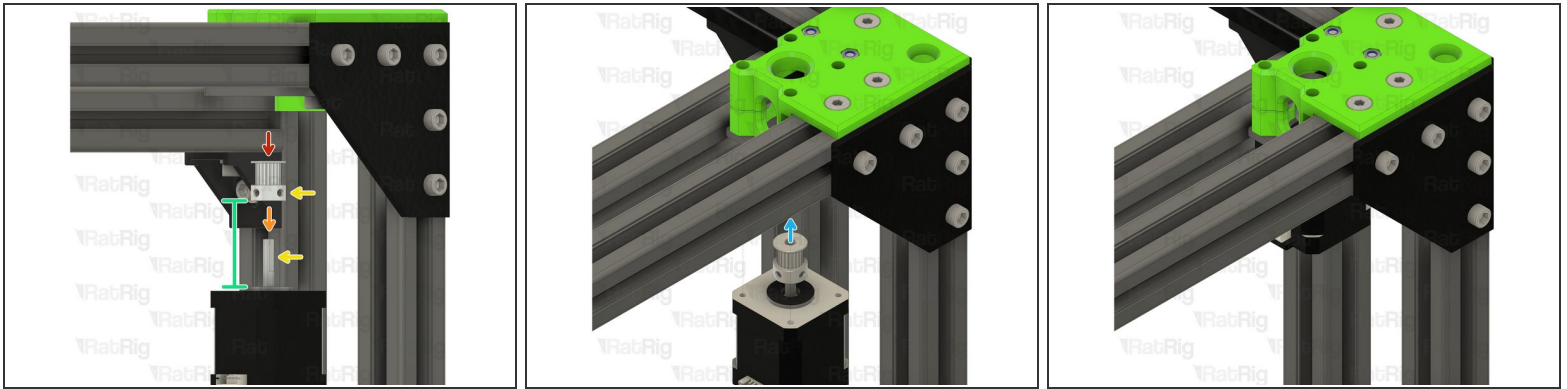
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Step 9 — Prepare the left CoreXY motor parts



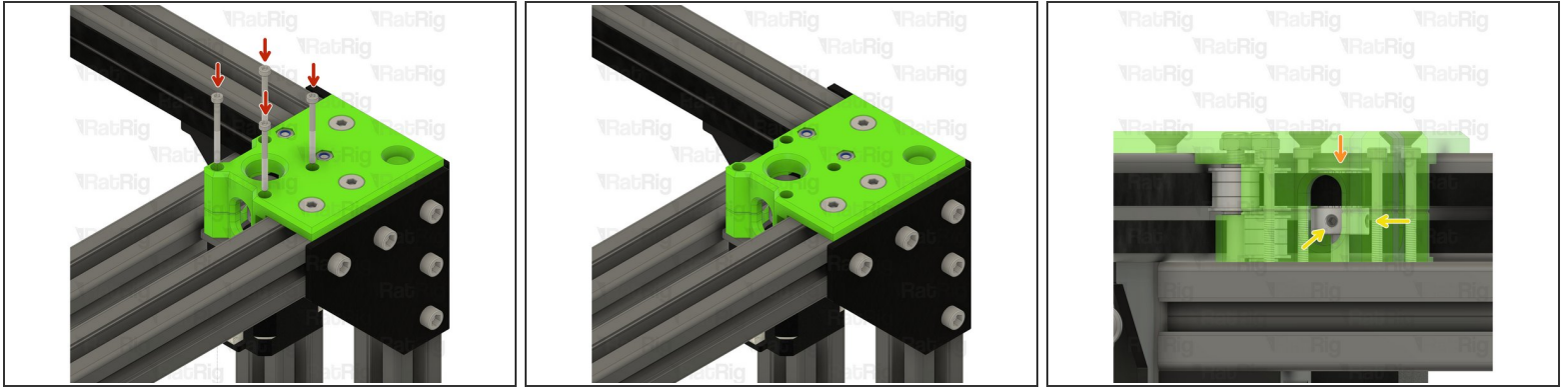
- 1x 20 Tooth 2GT Timing Pulley for 9mm Belt
- 1x 48mm NEMA17 Stepper Motor
- 4x M3x35 Cap Head Screw

Step 10 — Install the left CoreXY motor - Part 1



- 20 Tooth 2GT Timing Pulley for 9mm Belt
- Install the timing pulley onto the NEMA17 shaft, oriented as shown
- Align one of the M3 grub screws on the timing pulley so that it will tighten against the flat on the NEMA17 shaft
- Position the timing pulley so the marked gap is 9.5mm
- ⓘ Slightly tighten one of the M3 grub screws to hold the timing pulley in position for now
- ⓘ The timing pulley will be aligned and fully secured in the next step
- Position the NEMA17 motor up and into the motor cage from below, it will be secured in the next step

Step 11 — Install the left CoreXY motor - Part 2



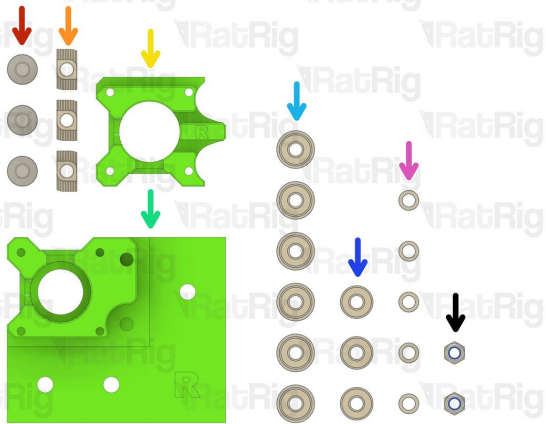
- Insert the M3x35 screws into the xy_motor_cage_left_top as shown, and fasten them to secure the NEMA17 motor to the mount
- Check the alignment of the timing pulley, the belt should be on the middle of the pulley as shown
 - ⓘ Adjust the pulley up or down if required to make sure the belt is in the middle of the pulley
- Fasten both M3 grub screws to securely mount the timing pulley to the NEMA17 motor shaft

Step 12 — Install the right CoreXY motor plate



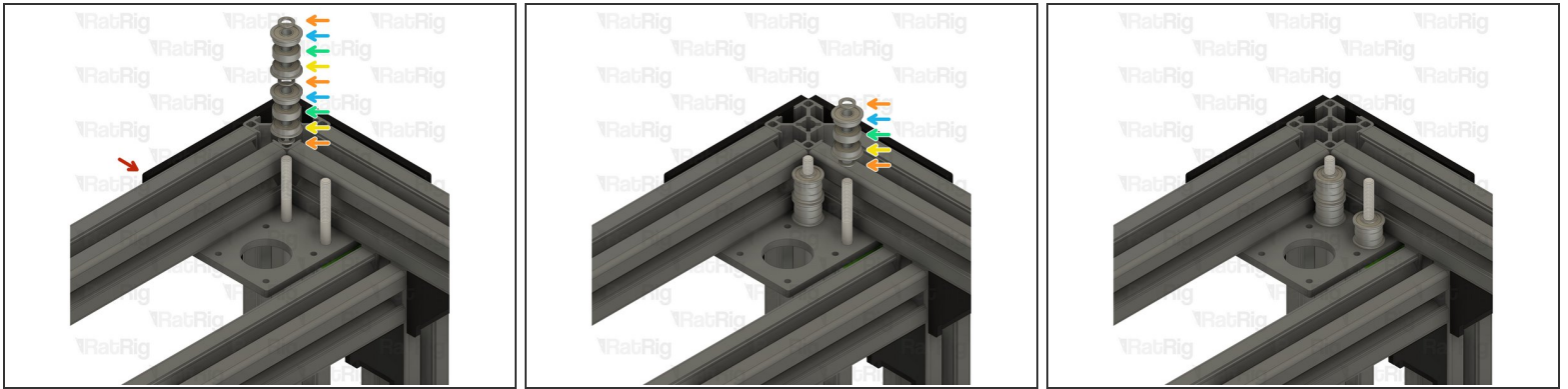
- V-Core 3.1 Frame Assembly - Rear Right Corner
- Right motor_plate assembly from **Step 2**
- Install the right motor_plate assembly to the V-Core 3.1 frame as shown
- Tighten the four M6x12 screws to secure the motor_plate assembly to the frame
 - ⓘ Make sure the plate is fully seated against the 3030 extrusion before tightening the M6x12 screws
- Insert two M5x40 Cap Head Screws into the motor_plate, as shown, in preparation for **Step 14**

Step 13 — Prepare the right CoreXY motor cage parts



- 3x M6x14 Countersink Screw
- 3x 3030 Drop-in T-Nut - M6
- 1x xy_motor_cage_bottom_right_3.1 Printed Part
- 1x xy_motor_cage_top_right_3.1 Printed Part
- 6x F695ZZ Ball Bearing
- 3x 695ZZ Ball Bearing
- 5x Mini Precision Shim
- 2x M5 Nylon Locking Hex Nut

Step 14 — Install the right CoreXY motor cage - Part 1

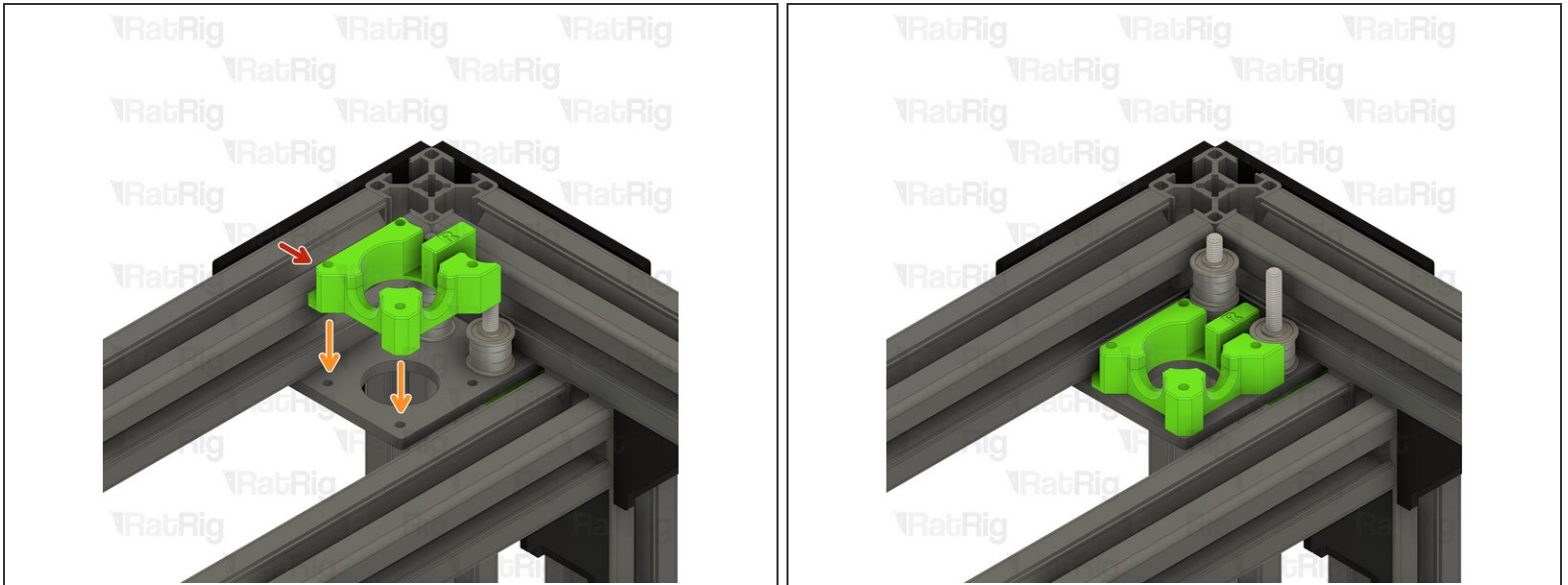


● V-Core 3.1 Frame Assembly - Rear Right Corner

i Install the following components in the order shown in the image:

- Mini Precision Shim
- F695ZZ Ball Bearing (Flange at the bottom)
- 695ZZ Ball Bearing
- F695ZZ Ball Bearing (Flange at the top)

Step 15 — Install the right CoreXY motor cage - Part 2



- xy_motor_cage_bottom_right_3.1 Printed Part
- Place the xy_motor_cage_bottom_right_3.1 printed part as shown
- ① The xy_motor_cage_bottom_right part will just sit on the plate for now, it will be secured in **Step 20**

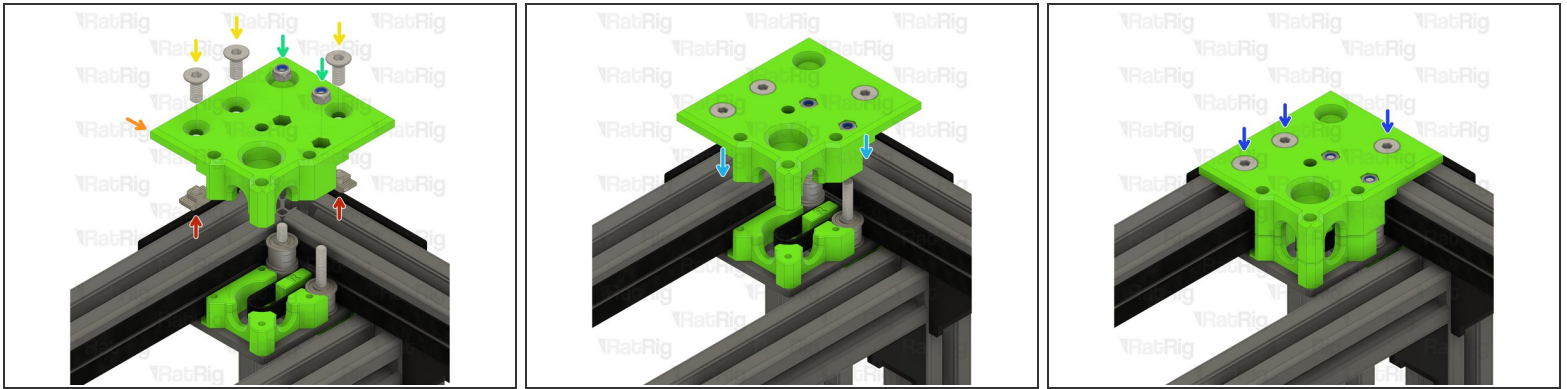
Step 16 — Install the right CoreXY motor cage - Part 2



- Loose end of the bottom CoreXY belt
- Form a loop as shown, this will be used to engage with the NEMA17 motor pulley
- Position the bottom belt as shown
- Loose end of the top CoreXY belt
- Slot this end of the top CoreXY belt around the top bearing stack as shown

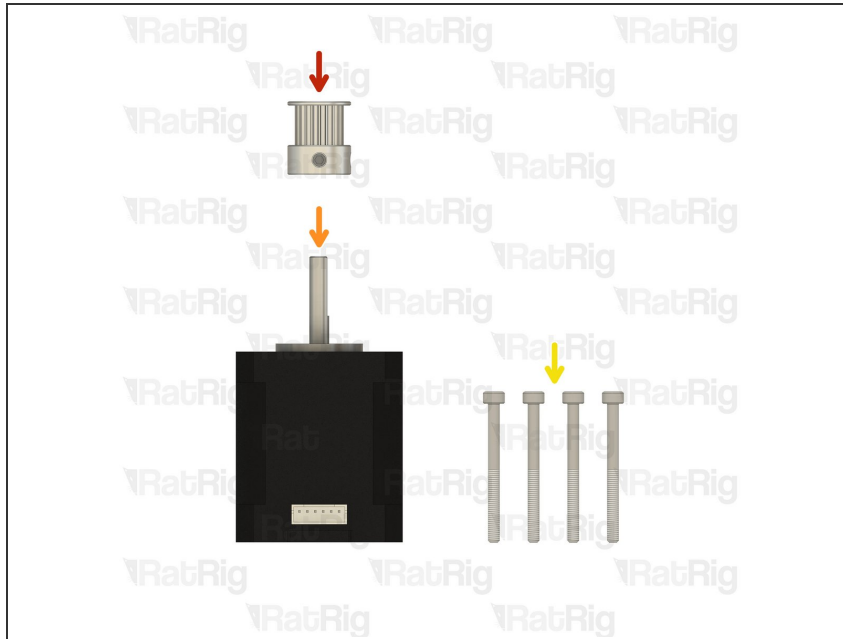
⚠ Make sure that both belts match the third image before proceeding

Step 17 — Assemble & install the right upper CoreXY motor cage



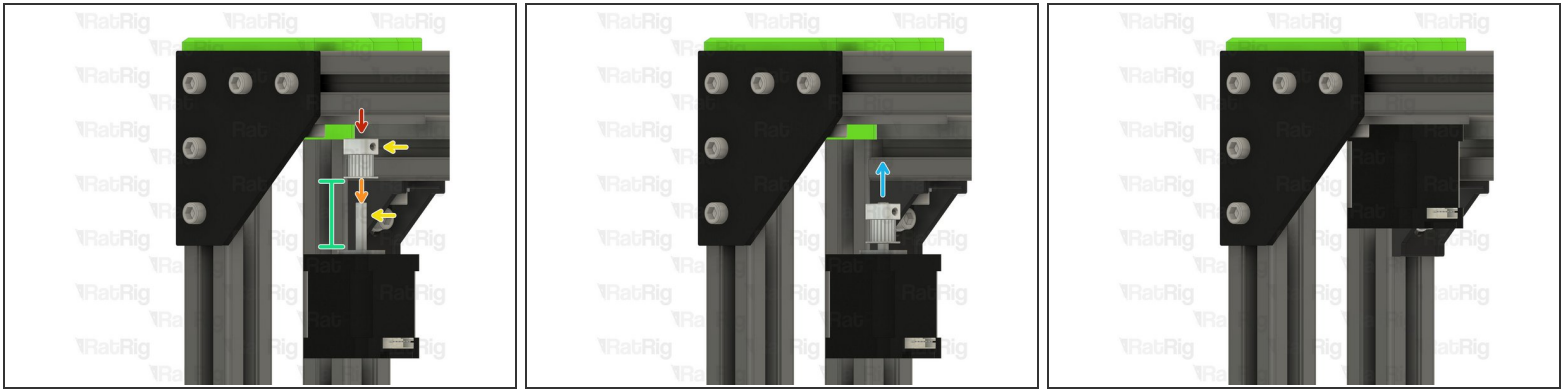
- 3030 Drop-in T-Nut - M6
- xy_motor_cage_top_right_3.1 Printed Part
- M6x14 Countersink Screw
- ① Loosely thread a 3030 T-Nut onto each of the M6x14 screws. Do not tighten them at this point.
- M5 Nylon Locking Hex Nut
- Install the xy_motor_cage_right_top assembly onto the frame as shown
- Tighten the three marked M6x14 screws to secure the CoreXY motor cage top to the frame
- Tighten the M5x40 screws, on the underside, to secure the bearing stacks into the CoreXY motor cage top

Step 18 — Prepare the right CoreXY motor parts



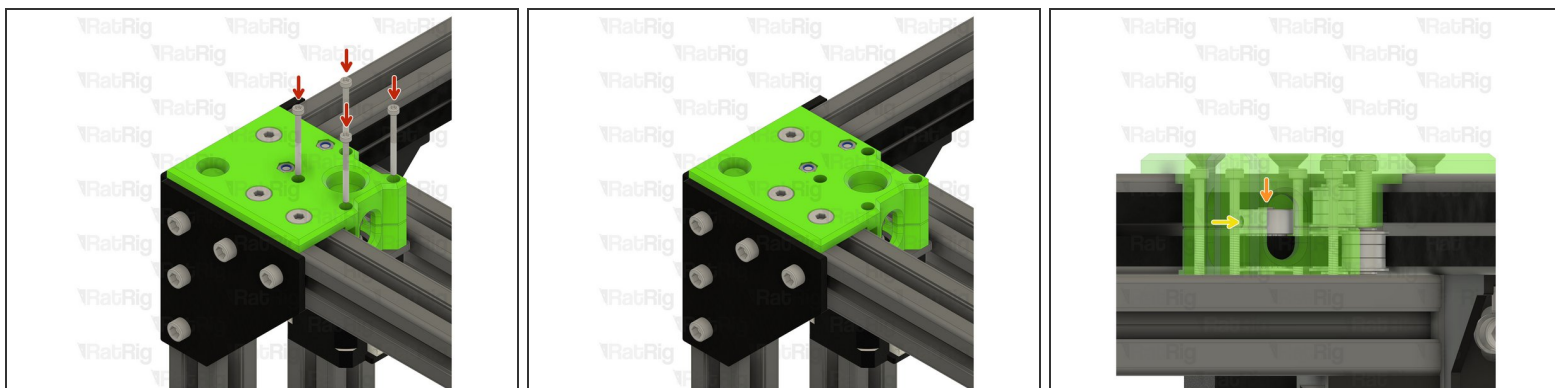
- 1x 20 Tooth 2GT Timing Pulley for 9mm Belt
- 1x 48mm NEMA17 Stepper Motor
- 4x M3x35 Cap Head Screw

Step 19 — Install the right CoreXY motor - Part 1



- 20 Tooth 2GT Timing Pulley for 9mm Belt
- Install the timing pulley onto the NEMA17 shaft, oriented as shown
- Align one of the M3 grub screws on the timing pulley so that it will tighten against the flat on the NEMA17 shaft
- Position the timing pulley so the marked gap is 3mm
- ⓘ Slightly tighten one of the M3 grub screws to hold the timing pulley in position for now
- ⓘ The timing pulley will be aligned and fully secured in the next step
- Position the NEMA17 motor up and into the motor cage from below, it will be secured in the next step

Step 20 — Install the right CoreXY motor - Part 2



- Insert the M3x35 screws into the xy_motor_cage_right_top as shown, and fasten them to secure the NEMA17 motor to the mount
- Check the alignment of the timing pulley, the belt should be on the middle of the pulley as shown
 - ⓘ Adjust the pulley up or down if required to make sure the belt is in the middle of the pulley
- Fasten both M3 grub screws to securely mount the timing pulley to the NEMA17 motor shaft

Step 21 — Next guide



- Continue with the next guide: [06. X-Axis Assembly](#)