

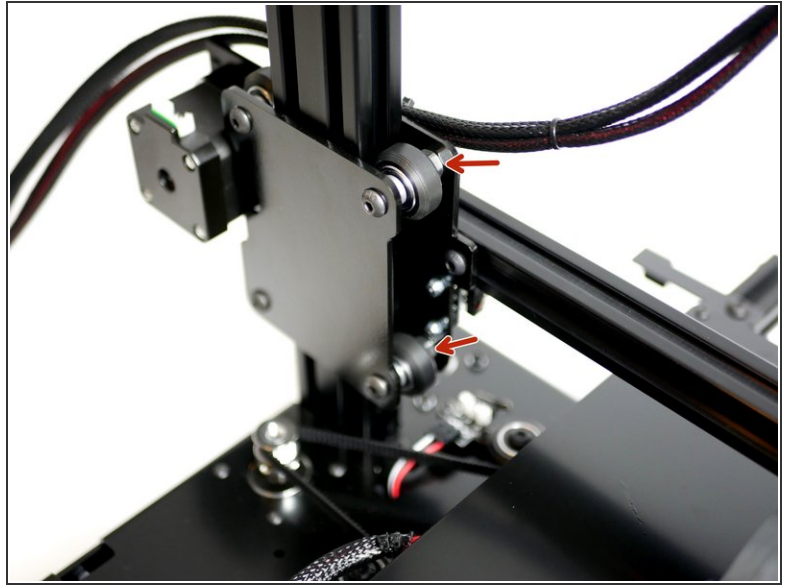
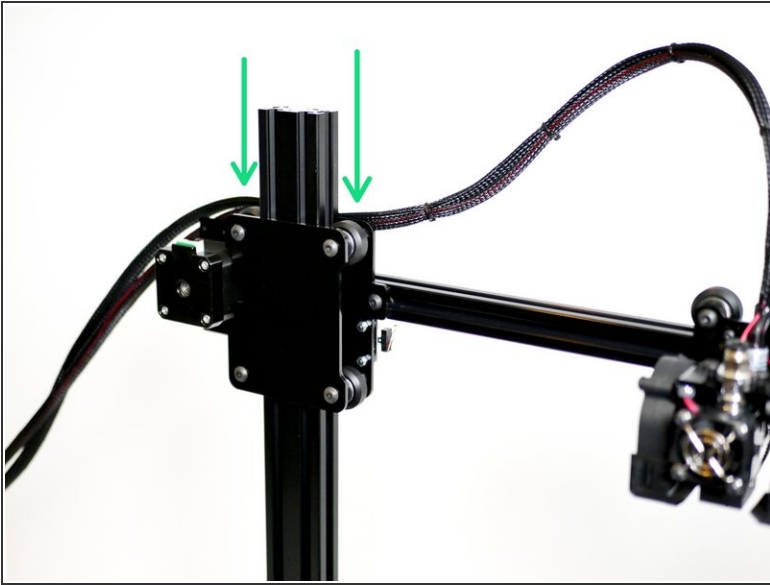
# Makertech

## Stage 07 - Z - Motion + Frame

Written By: Makertech

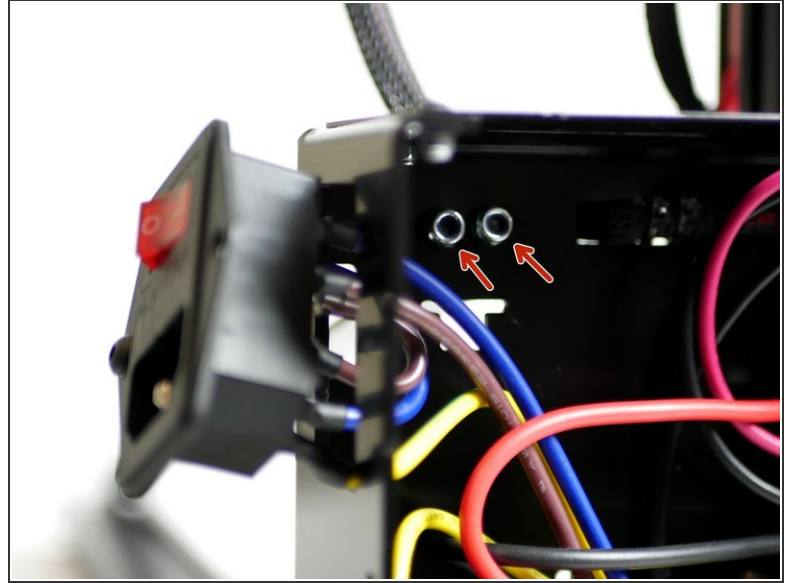


## Step 1 — Installing the Gantry



- Slide the Z-Axis Carriage of the Gantry onto the 2040 beam of the frame.
- Adjust the eccentric spacers to remove any wobble between the rollers and grooves in the beam. Tighten the M5 nyloc nuts to secure.

## Step 2 — Installing the Support Beam



**i** Fix the bottom of the support beam to the Base:

- Two M4 x 10mm Bolts
- Two M4 Nyloc Nuts

**★** You may need to temporarily remove the IEC switch to get better access to the nyloc nuts.

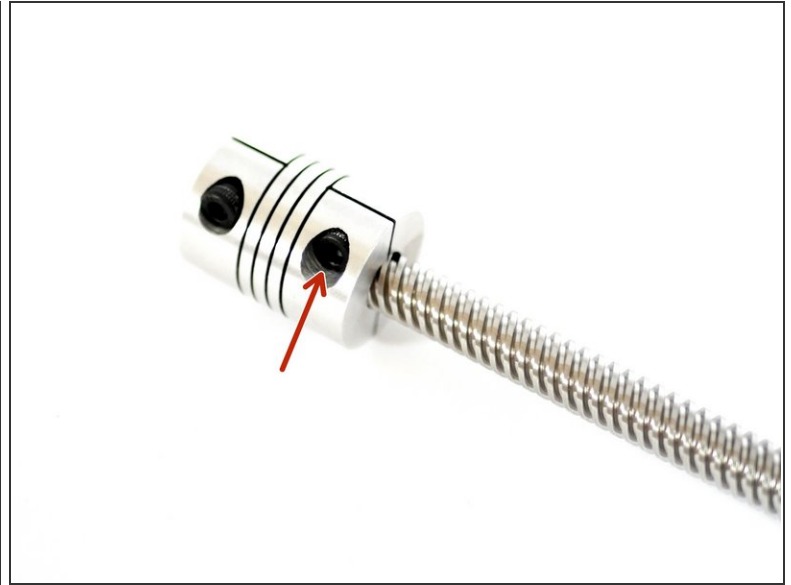
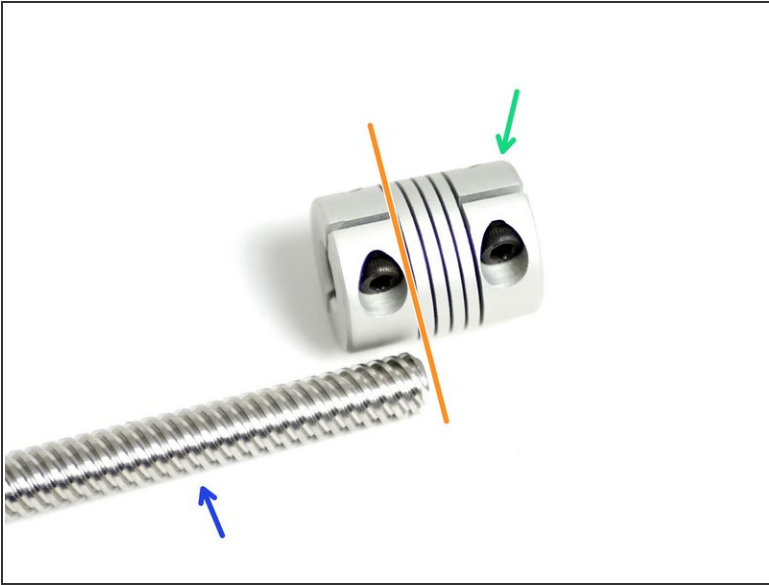
### Step 3 — Installing the Support Beam Cont.



**i** Fix the top of the support beam to the top of the 2040 beam with the spool holder fixed in between.

- Spool Holder
- M5 x 8mm + T-Nut Assembly
- M5 x **10mm** + T-Nut Assembly

## Step 4 — Leadscrew to Spring Coupling



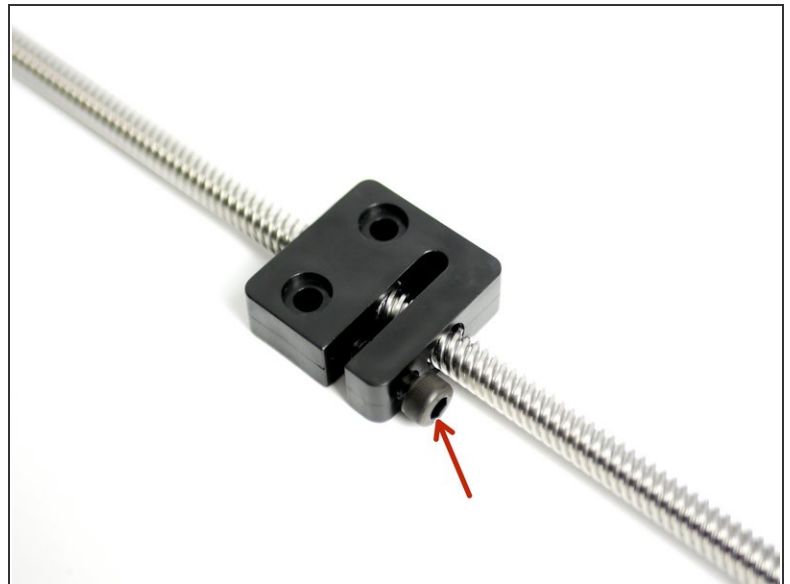
- i** Assemble the Leadscrew to the Spring coupling.
- Lead Screw
  - Spring Coupling
  - Push the lead screw up to the spring part of the coupling marked in the first image.
  - FIRMLY secure the bolt.

## Step 5 — Anti-Backlash Nut Prep.



- Prepare the Anti-Backlash Nut with an M5 x 14mm bolt.
- Do not let the end of the bolt touch the nut yet.

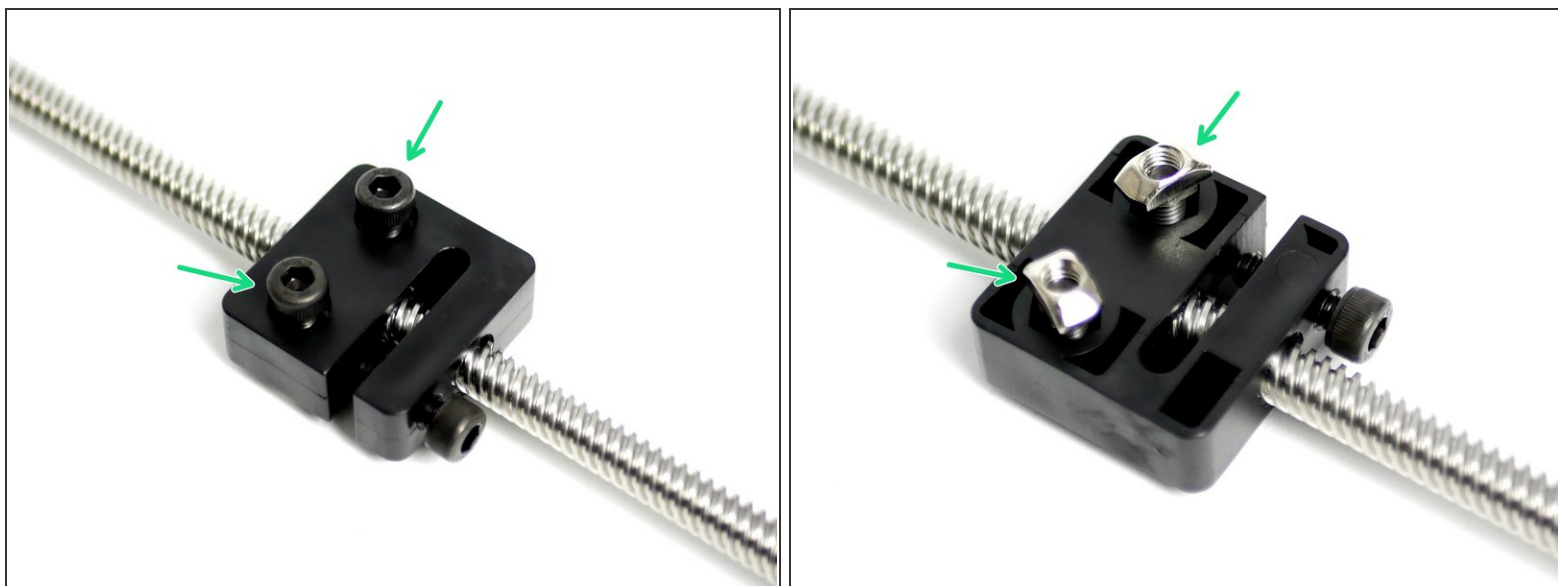
## Step 6 — Anti-Backlash Nut to Leadscrew



- ① Thread the Anti-Backlash Nut onto the Leadscrew with the bolt side facing towards the coupling.
- SLOWLY tighten the M5 bolt on the nut to remove any wobble between the nut and leadscrew.

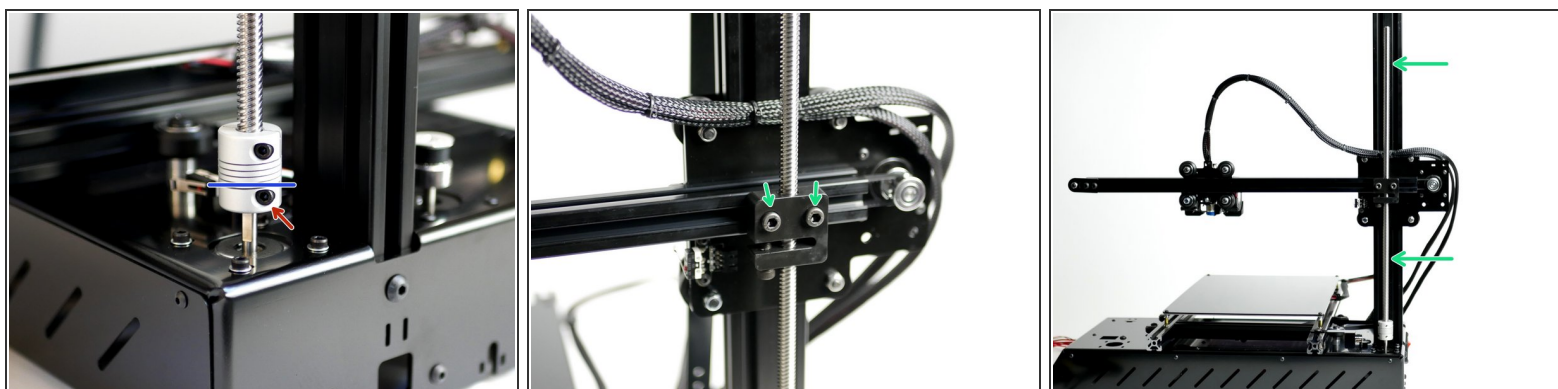


## Step 7 — Z-Axis Motor Prep.



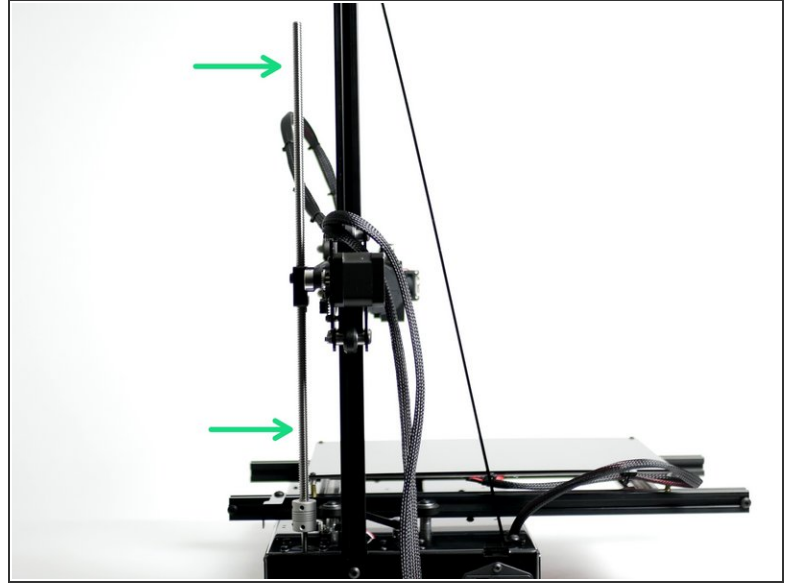
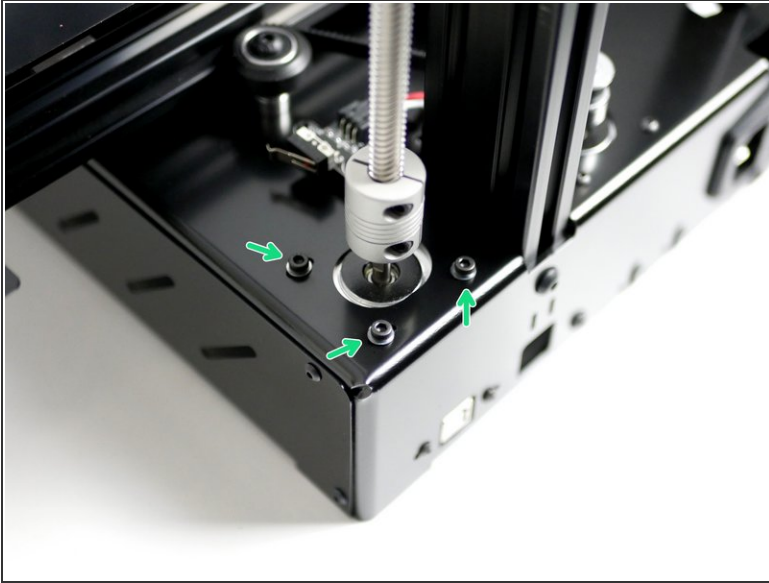
- Fasten onto the Nut two M5 x 14mm bolts and two M5 - T-Nuts

## Step 8 — Installing the Leadscrew



- Push the Spring Coupling onto the shaft of the Z motor. Again clamping only up to the spring part of the coupling as marked on the first image.
- Clamp it down FIRMLY.
- ⓘ Fix the anti-backlash nut onto the gantry beam.
  - Adjust the position of the anti-backlash nut until your happy that when looking at it side on the lead screw is straight.

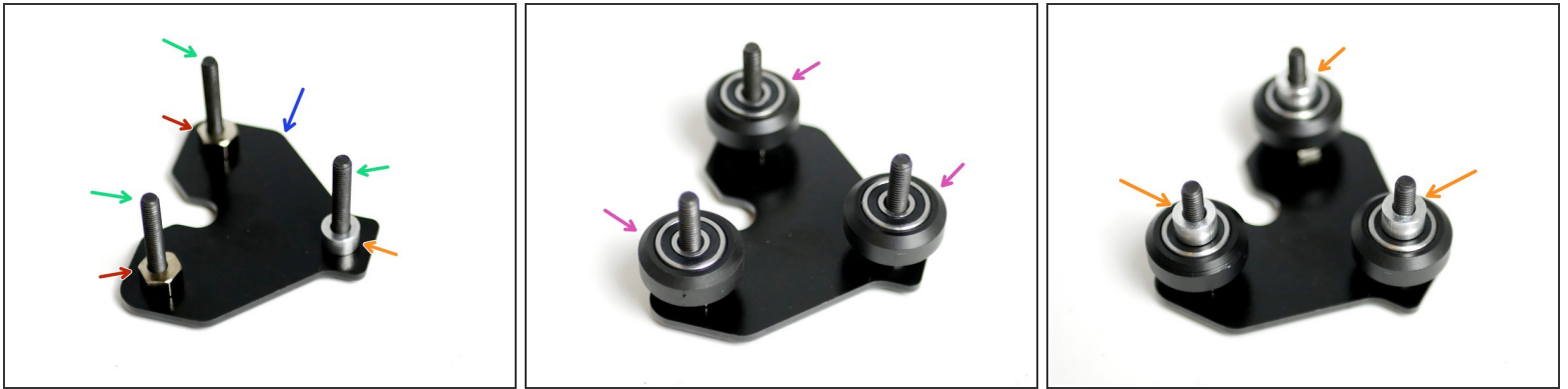
## Step 9 — Aligning the Leadscrew



- Loosen the bolts holding the z-Motor and adjust its position until the leadscrew is straight when looking at it from behind.
- Tighten the motors bolts when happy with the position.
- ☑ The alignment of the leadscrew doesn't have to be perfect, but the closer to being straight the better. The spring coupling will compensate for any imperfections.



## Step 10 — Guided Y-Idler Assembly



**⚠ All steps after and including this one are for the Proforge 2S assembly.**

**i** Install the rollers onto the the guided Y-Idler bracket:

- Guided Y-Idler bracket
  - ☒ Lay flat matching the image.
- Three M5 x 35mm Bolts
- Four M5 Spacers. One against bracket, three on top of rollers
- Two Eccentric Spacers
- Roller Assembly

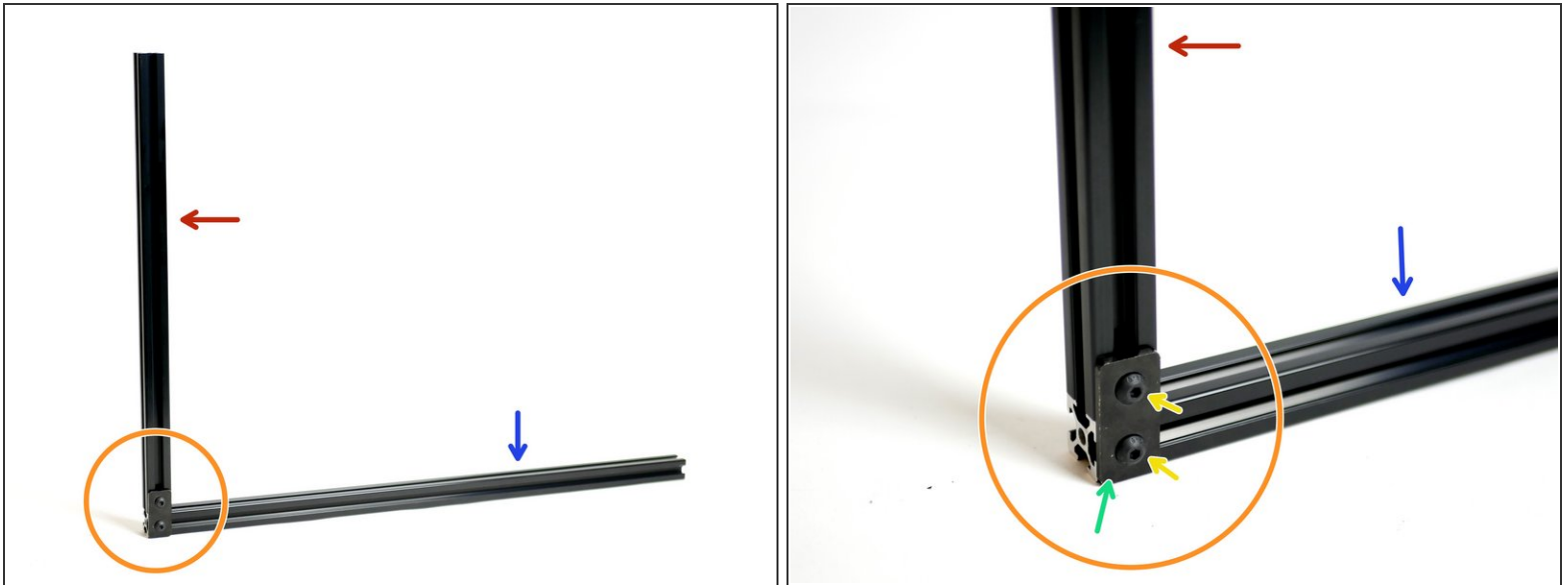
## Step 11 — Guided Y-Idler Assembly Cont.




① Complete the assembly by securing the guided Y-Idler support bracket:

- Two M5 Nyloc Nuts
  - ☑ Tighten loosely so that the eccentric nut can still turn.
- One M5 T-Nut

## Step 12 — Frame Assembly



 Secure together the two remaining aluminium beams:

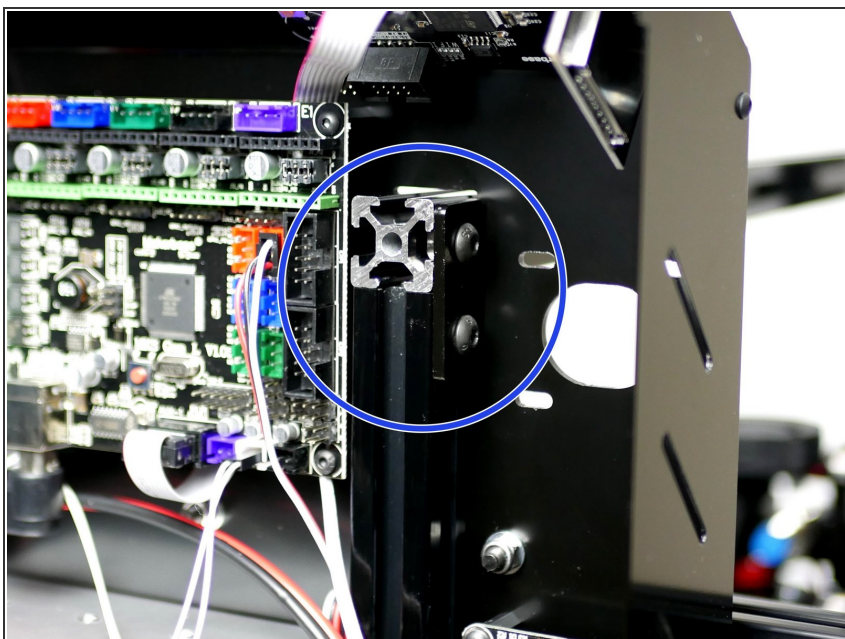
- With the 500mm beam laid flat and the 360mm beam on top of it vertically, the metal bracket should be fixed to the **right hand side** like shown in the image.
- 2020 x 500mm
- 2020 x 360mm
- Extrusion Bracket
- Two M5 x 8mm bolts and T-nut Assemblies

## Step 13 — Frame Install



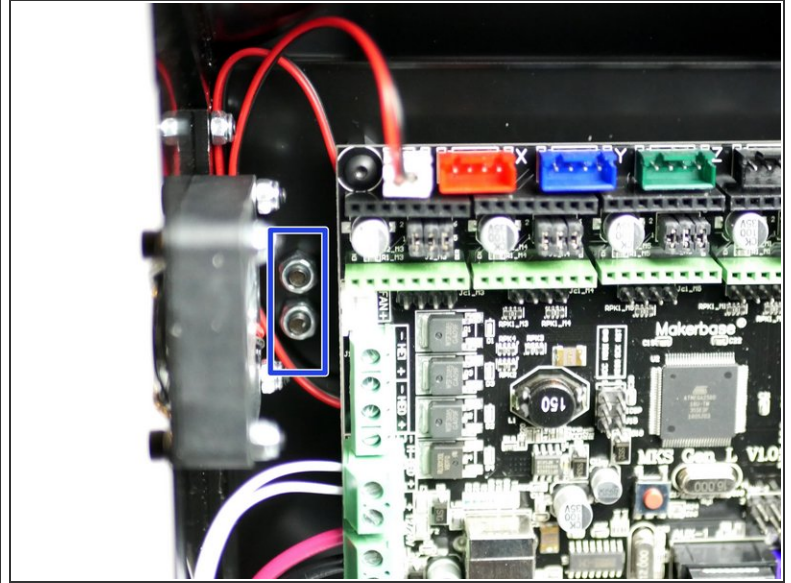
- Slide onto the 500mm beam the guided Y-Idler assembly.
- Insert the 500mm beam into the front of the Base.
- Fix the end of the 360mm beam to the spool holder with an M5 x 8mm Bolt and M5 T-Nut.
- Secure the other side with an extrusion bracket, two M5 x 8mm bolts and M5 T-Nuts.

## Step 14 — Frame Install Cont.



- Fix an extrusion bracket with two M5 x 8mm bolts and M5 T-Nuts onto the bottom of the 2020x500mm beam connecting it to the 2020x360mm beam under the base.
- ☑ Only one of the frame here will have an extrusion bracket fixed to it.
- ☑ Make sure the bottom of the 500mm beam is level with the side of the 360mm one.

## Step 15 — Front Support Beam



- Fix the bottom of the support beam to the base with two M4 x 10mm bolts and M4 Nyloc Nuts.

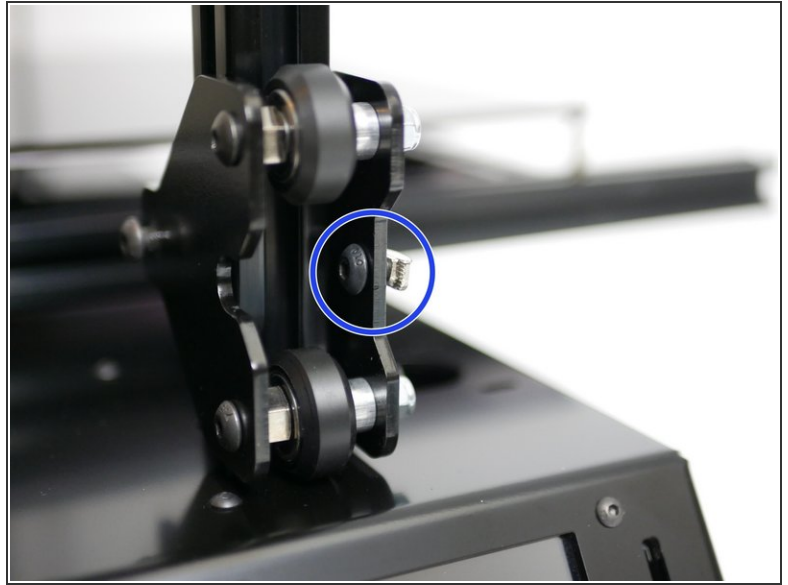
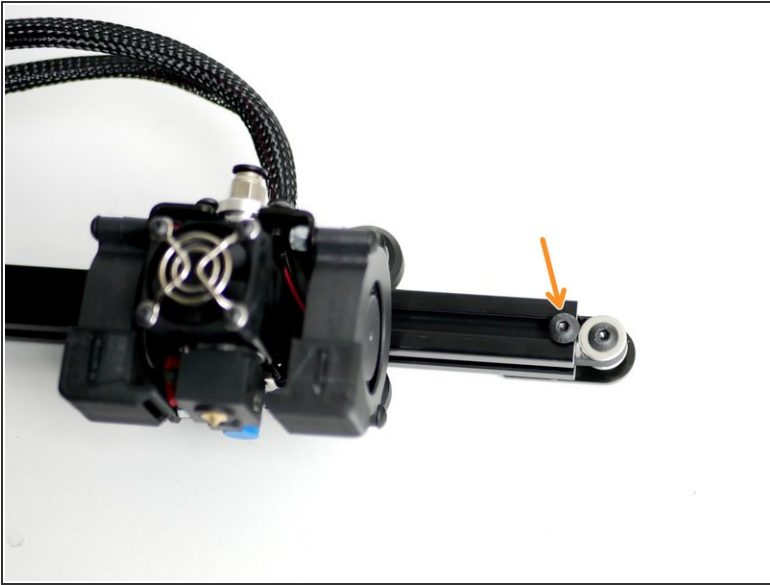
## Step 16 — Front Support Beam Install Cont.



- ❗ Fix the Support Beam to the top of the frame with an extrusion bracket in between:
- M5 x 8mm Bolt + M5 T-Nut
  - M5 x **10mm** Bolt + M5 T-Nut



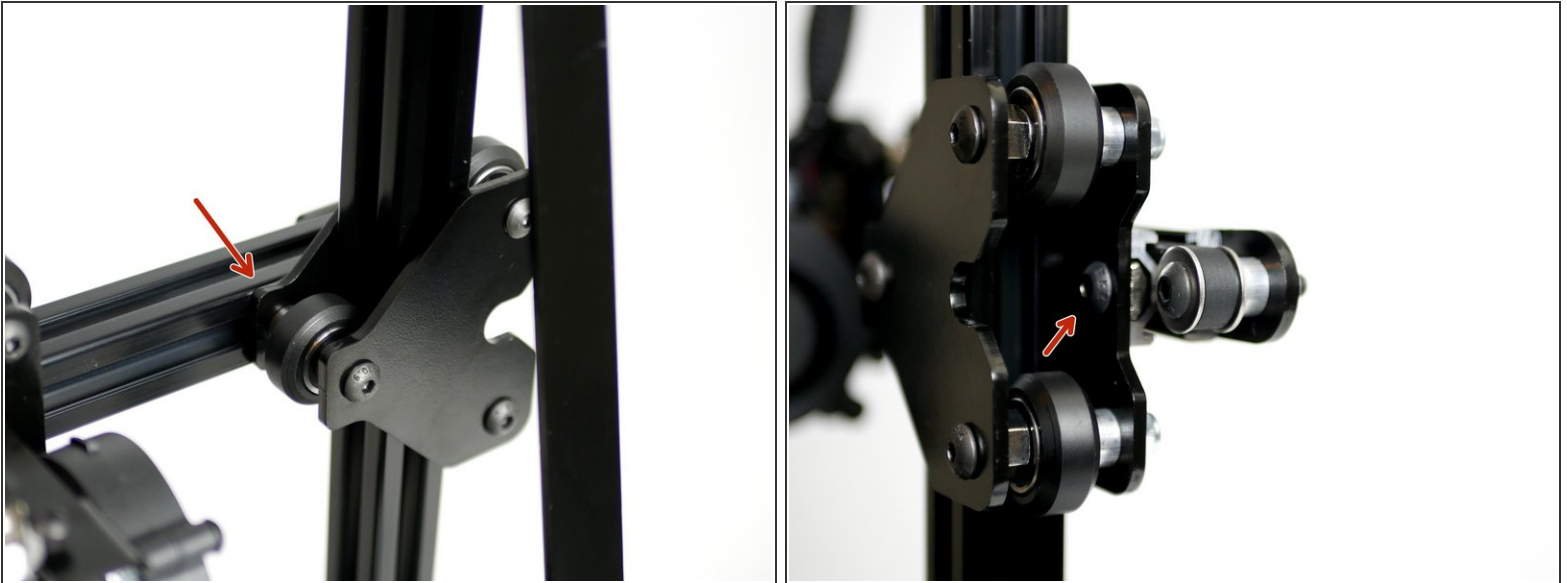
## Step 17 — Y-Idler Guided Assembly Prep.



- Remove the M5 x 8mm + M5 T-Nut from the end of the gantry beam.
- Fix the M5 x 8mm + M5 T-Nut onto the Y-Idler guided assembly.

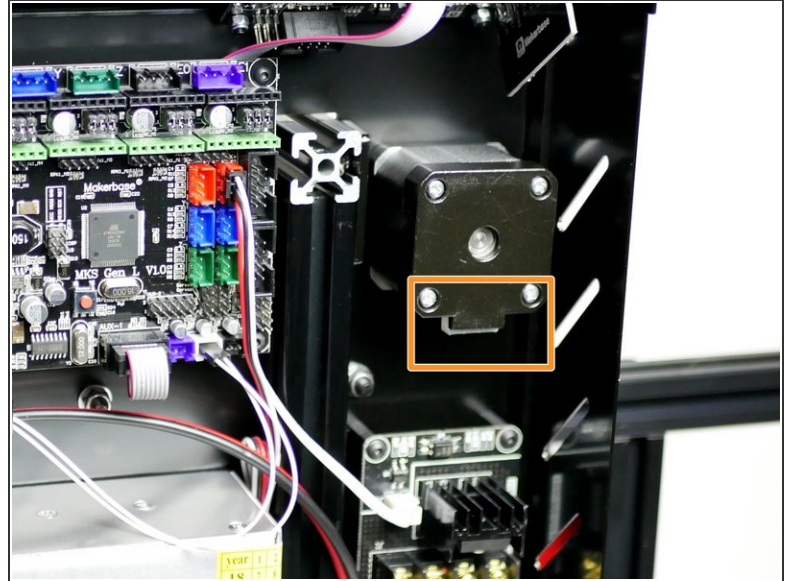
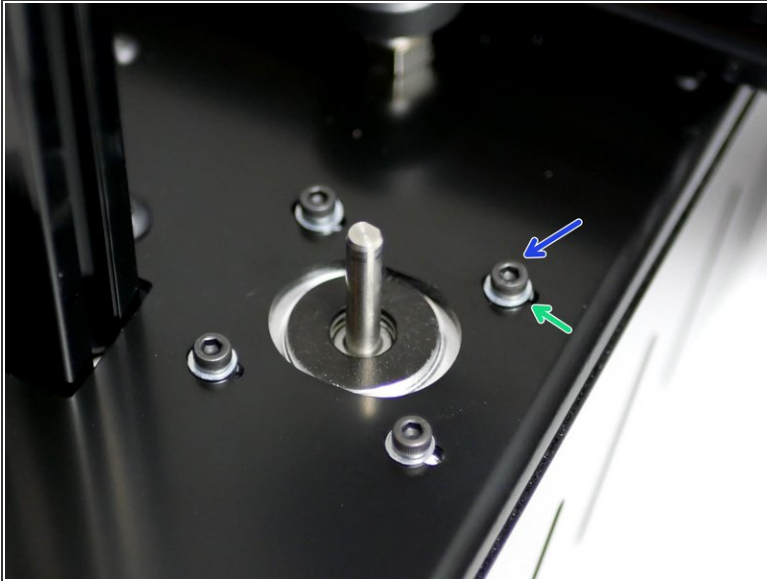


## Step 18 — Guided Y-Idler Install



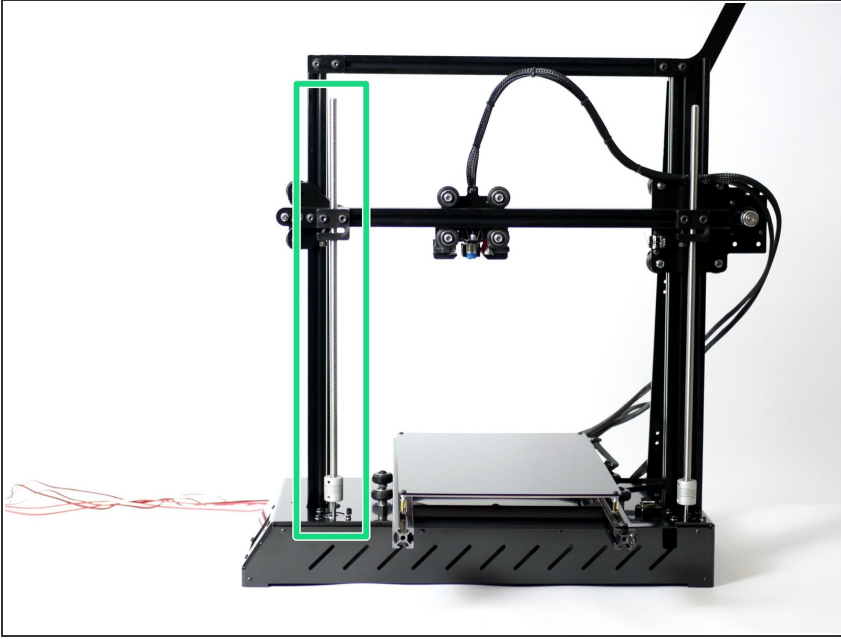
- Fix the Guided Y-Idler Assembly onto the gantry beam.
- The beam should be flush with the end of the idler assembly. Adjust the position of the Z-axis bracket onto the 2020 450mm beam if needed (Stage 3 Step 3).
- Make final adjustment of Y-Axis belt tension.
- Trim Y-Axis belt

## Step 19 — 2nd Z-Motor Install



- Fix a NEMA 17 Motor to the front of the base:
  - Four M3 x 6mm Cap Heap Bolts
  - Four M3 Washers
- Match the cable connector orientation as shown in the second image.

## Step 20 — Front Leadscrew Install (Proforge 2S)



- To install the leadscrew repeat steps 4-9 of this stage.