

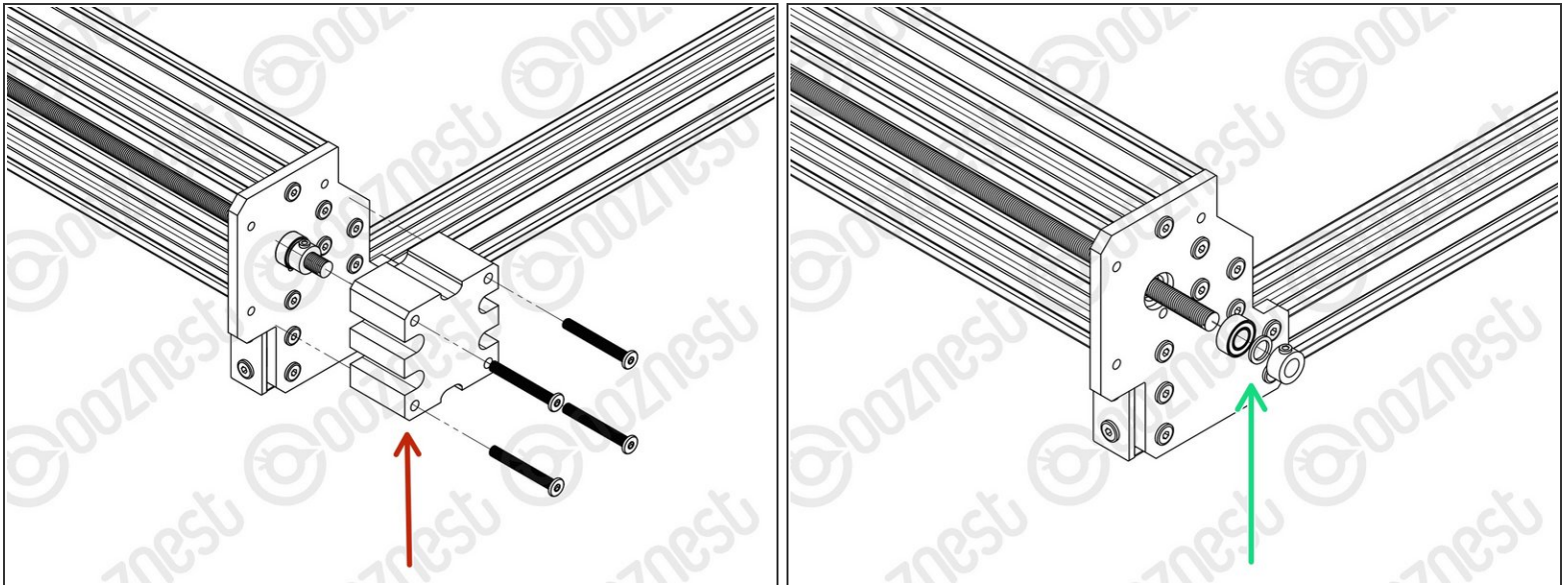


# Assembly Your WorkBee Thrust Bearing Kit - V2.1-V2.3.1

Written By: Robert

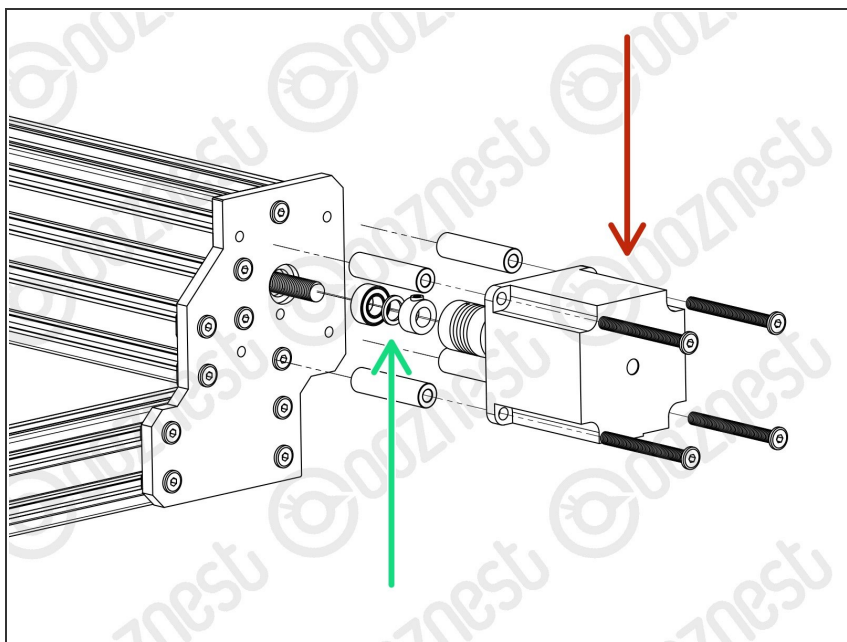


## Step 1 — Remove Old Parts - Part 1



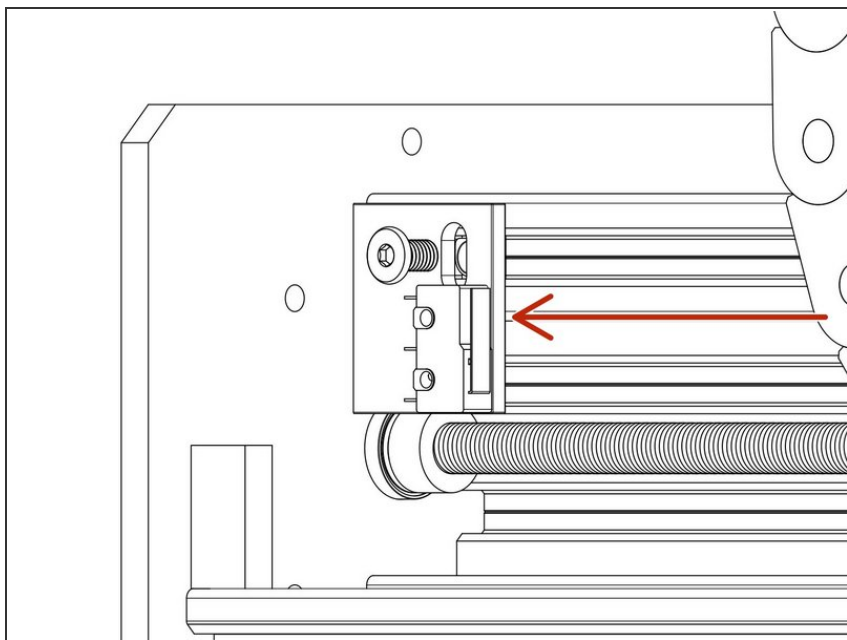
- Remove all Lead-Screw-Caps from the X, Y-Left & Y-Right Axis.
  - ① You will need to put these back later. So put them in a safe place.
- From underneath the Lead-Screw-Caps, remove the Clamping-Collars, Bearing-Shims & Flanged-Radial-Bearings.
  - ① We supply new parts to replace these. So they can be discarded, or kept for spares.

## Step 2 — Remove Old Parts - Part 2



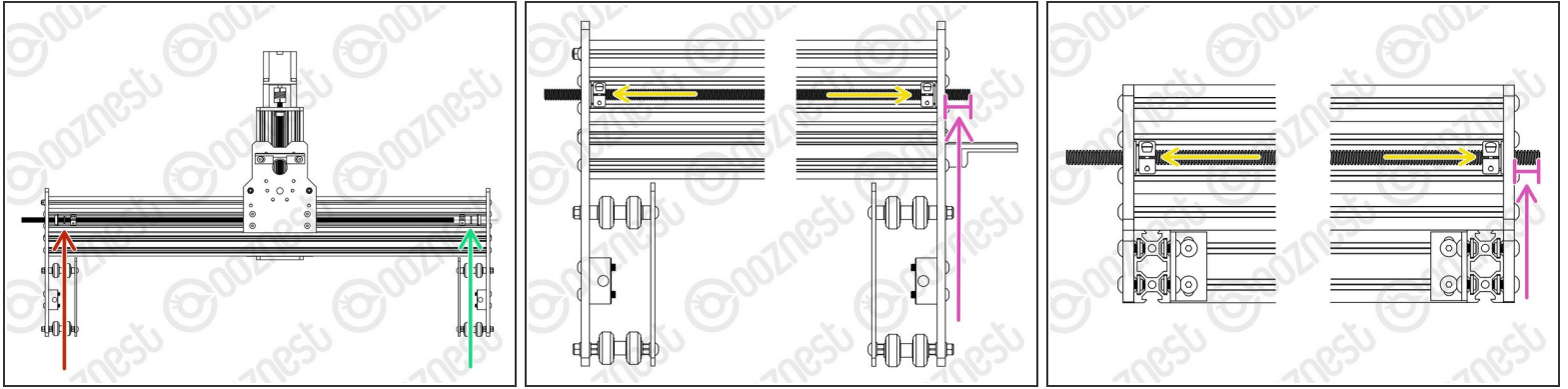
- Loosen the Flexible-Coupler from the Stepper-Motor and Lead-Screw on the X, Y-Left & Y-Right Axis.
- Disconnect and remove the Stepper-Motors, M5-Low-Profile-50mms and 4 x Aluminium-Spacer-40mms.
- ⓘ You will need to put these back later. So put them in a safe place.
- Remove the Clamping-Collars, Bearing-Shim & Flanged-Radial-Bearings.
- ⓘ We supply new parts to replace these. So they can be discarded, or kept for spares.

## Step 3 — Remove Old Parts - Part 3



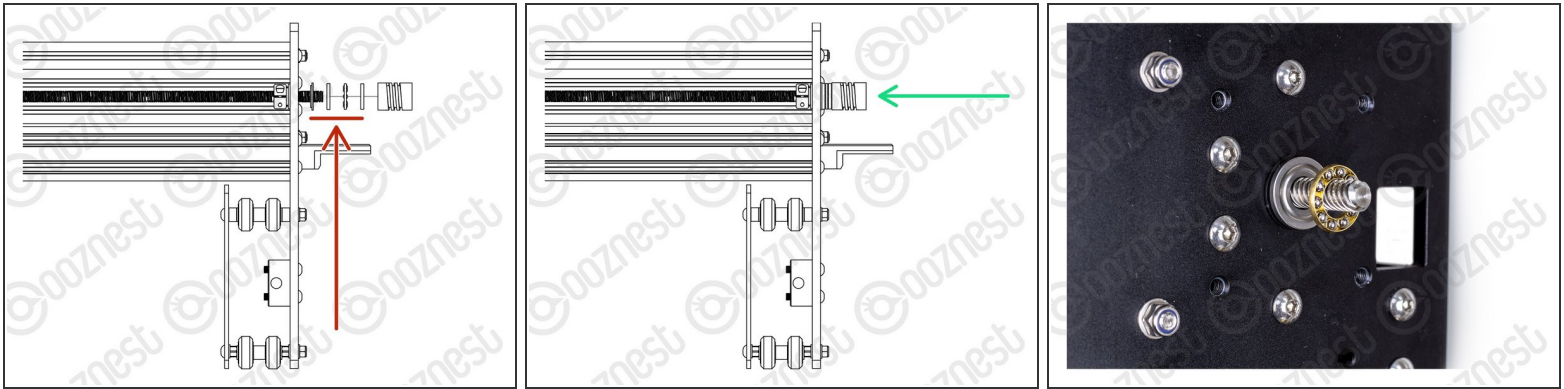
- The X-Limit-Switch-Mount is going to be replaced later in the guides.
- Take the X-Limit-Switch-Mount off the machine.
- Remove the Limit-Switch from X-Limit-Switch-Mount.
- ⓘ Leave the Limit-Switch hanging from the X-Gantry.
- ⓘ Put the 2 x M3-Plastite-Screw-8mm, M5-Low-Profile-8mm and M5-Drop-In-Tee-Nut in a safe place.

## Step 4 — Radial Bearings



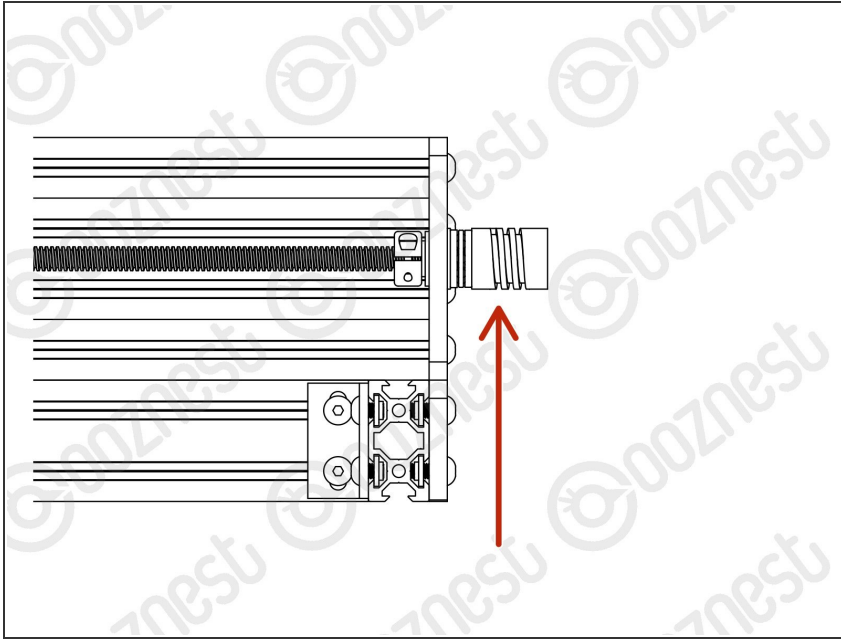
- Starting with the X-Axis. Thread back the Lead-Screw so the end of it is on the inside of the extrusion channel.
- Then slide onto the Lead-Screw a Clamping-Collar - -> - Rubber-Bushing - -> - Flanged-Radial-Bearing.
- Repeat for the opposite end of the Lead-Screw.
- Adjust the Lead-Screw so there is 14mm protruding from the Stepper-Motor side of the X-Axis.
  - Seat the Flanged-Radial-Bearings into the Y-Carriages, slide the Rubber-Bushing against the Flanged-Radial-Bearings and finally slide the Clamping-Collars so they are against against the Rubber-Bushings.
  - Slightly tighten the Clamping-Collars.
- Repeat all the above points for Y-Left & Y-Right Axis, like Image 3.

## Step 5 — Thrust Bearings - Stepper Motor Side



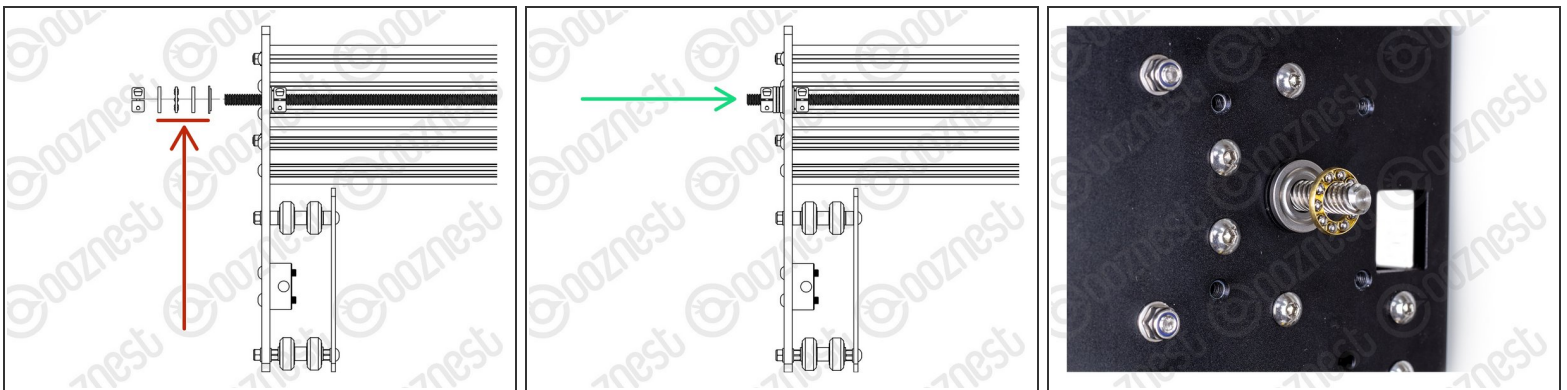
- ❗ Thrust-Bearings come in 3 parts. Thrust-Bearing-Housing-Washer, Thrust-Bearing-Caged-Roller and Thrust-Bearing-Shaft-Washer
- ❗ The Thrust-Bearing-Housing-Washer and Thrust-Bearing-Shaft-Washer look exactly the same. They are not.
- ❗ The Thrust-Bearing-Shaft-Washer has a smaller internal diameter thus it will be tighter on the Lead-Screw.
- Starting with the X-Axis, on the Stepper-Motor side slide on a Nylon-Shoulder-Washer - -> - Thrust-Bearing-Housing-Washer - -> - Thrust-Bearing-Caged-Roller - -> - Thrust-Bearing-Shaft-Washer
  - The Nylon-Shoulder-Washer seats in the 16mm hole on the Y-Carriage.
  - The Thrust-Bearing-Caged-Roller seats in the grooves on the Thrust-Bearing washers. Look at Image 3 for the correction orientation of the Thrust-Bearing-Caged-Roller.
- Finally slide on a Flexible-Coupler. While pushing the Flexible-Coupler against the Thrust-Bearing assembly, tighten Flexible-Coupler
- ❗ On the Flexible-Coupler tighten the clamping bolt first and then the grub screw.

## Step 6 — Repeat



- Repeat Step 4 for Stepper-Motor side on the Y-Left & Y-Right Axis

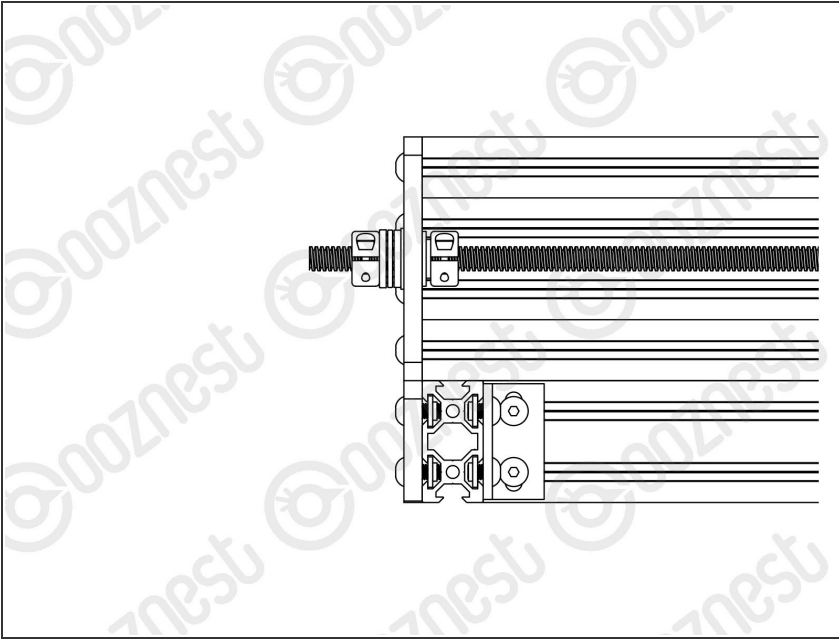
## Step 7 — Thrust Bearings - Opposite Side



- Starting with the X-Axis, on the opposite side to the Stepper-Motor slide on to the Lead-Screw a Nylon-Shoulder-Washer - ->- - Thrust-Bearing-Housing-Washer - ->- - Thrust-Bearing-Caged-Roller - ->- - Thrust-Bearing-Shaft-Washer
- The Nylon-Shoulder-Washer seats in the 16mm hole on the Y-Carriage.
- The Thrust-Bearing-Caged-Roller seats in the grooves on the Thrust-Bearing washers. Look at Image 3 for the correction orientation of the Thrust-Bearing-Caged-Roller.
- Finally slide on a Clamping Collar. While pushing the Clamping-Collar against the Thrust-Bearing assembly, tighten the Clamping-Collar.

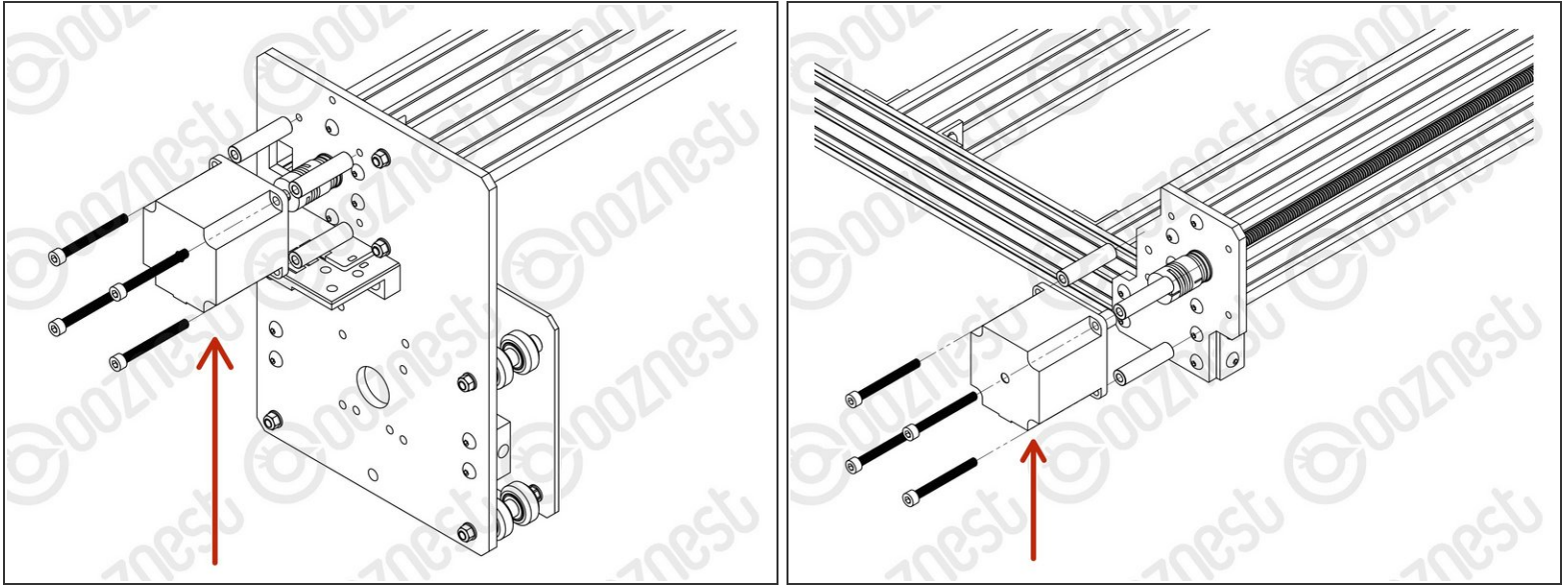
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## Step 8 — Repeat



- Repeat Step 6 for Y-Left & Y-Right Axis

## Step 9 — Stepper Motors



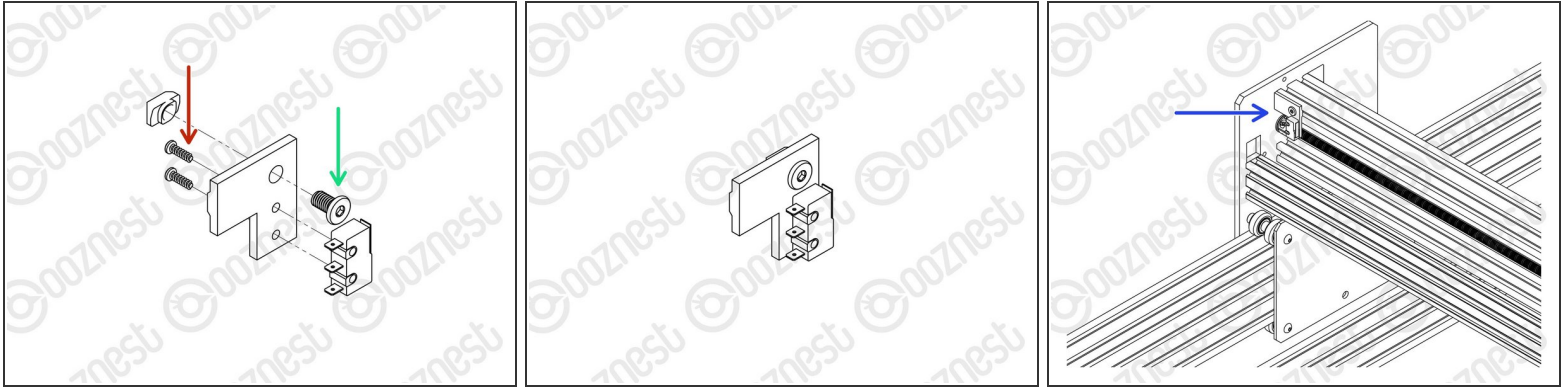
- Reattach and reconnect all Stepper-Motors using the previously removed M5-Low-Profile-50mms and 4 x Aluminium-Spacer-40mms

**⚠ On the Stepper-Motor side make sure the Flexible-Coupler grub screw is on the flat portion of the Stepper-Motor shaft.**

- Once in position, tighten the clamping bolt first, then the grub screw.

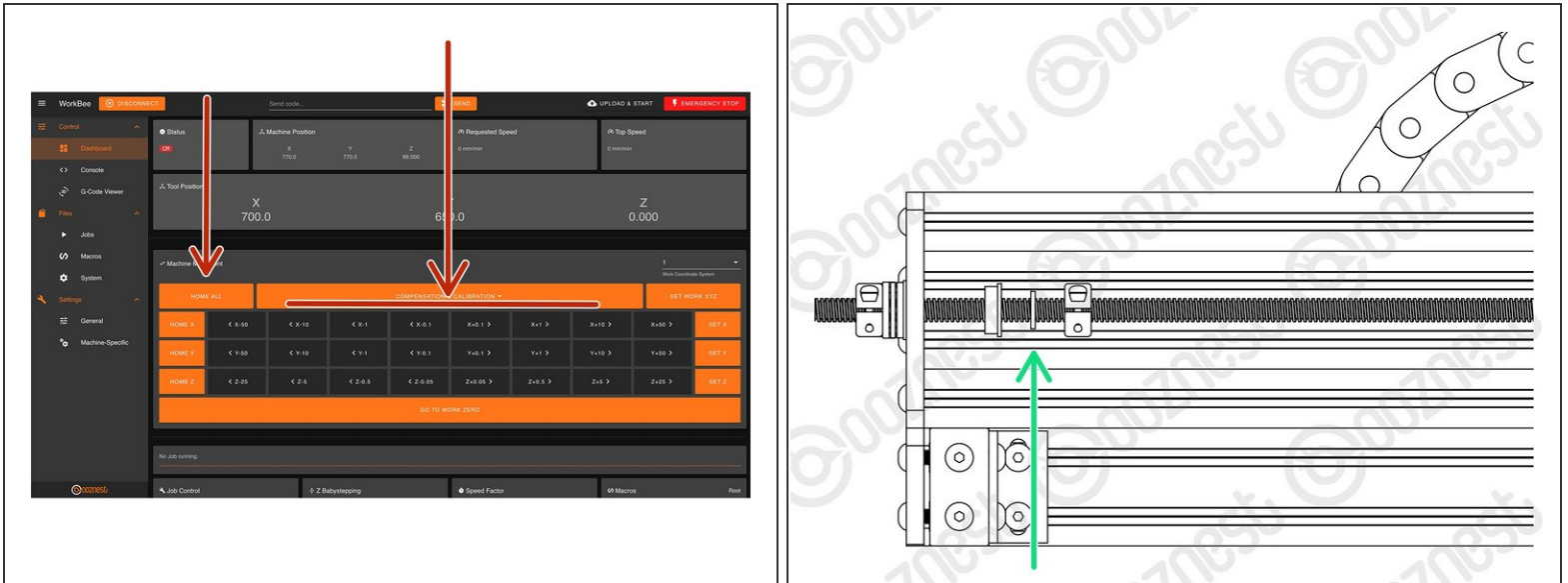
**i** The Lead-Screw side was tightened earlier in this guide.

## Step 10 — X-Axis Limit Switch



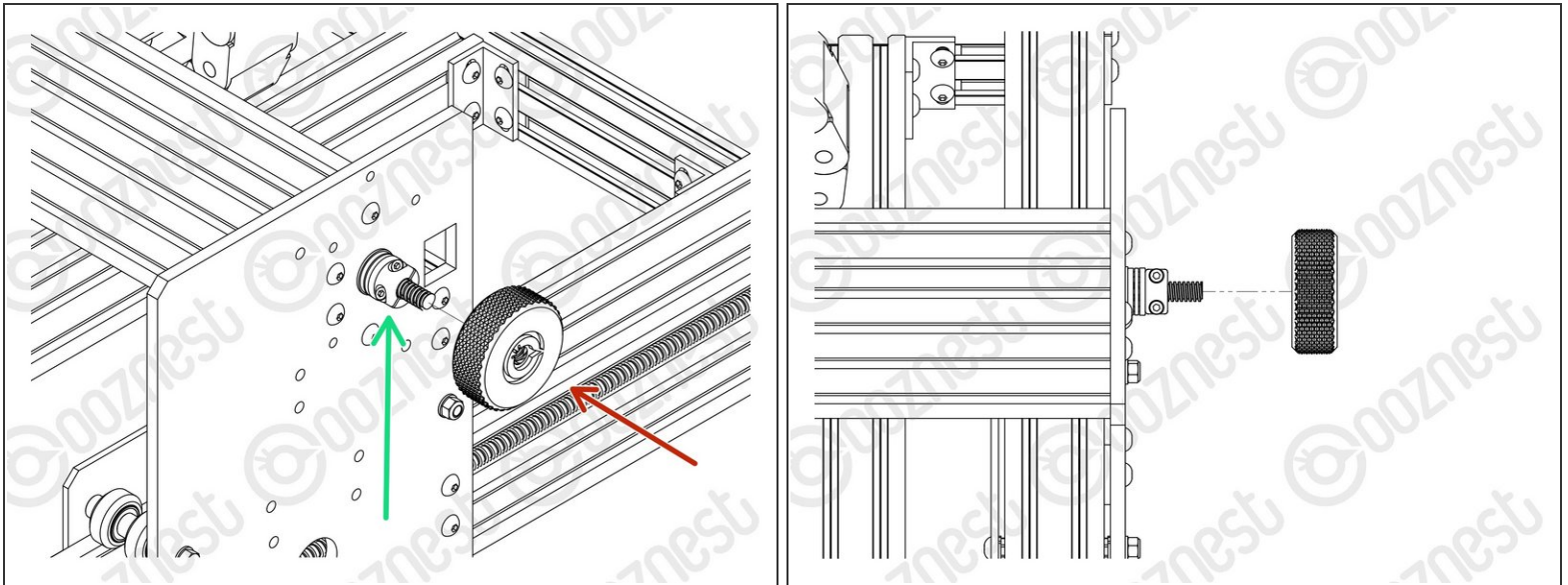
- Attach the X-Axis Limit-Switch to the X-Limit-Switch-Mount using the previously removed 2 x M3-Plastite-Screw-8mm.
- The M3-Plastite-Screw-8mm's go through the X-Limit-Switch-Mount first, then self thread into the Limit-Switch.
- ⓘ A Pozi #1 Screwdriver should be used.
- ⓘ The best technique is to thread into the Limit-Switch a small amount, then back out. Then back in further, back out, so on so fourth until the Limit-Switch is secure.
- ⚠ Do not over tighten as you can shatter the switch. Make sure the Limit-Switch is orientated correctly.
- Insert the previously removed M5-Low-Profile-8mm through the hole on the X-Limit-Switch-Mount and slightly thread on the M5-Drop-In-Tee-Nut.
- Attach the X-Limit-Switch-Mount to the back of the X-Gantry C-Beam. It should be at the left side if looking from the back. The X-Limit Switch-Mount should be up against the Y-Carriage.

## Step 11 — Lead Screw Tensioning - Part 1



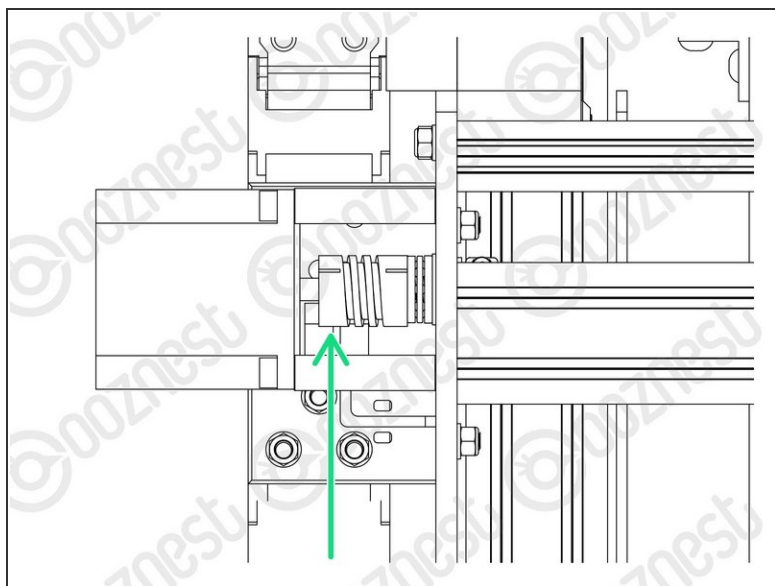
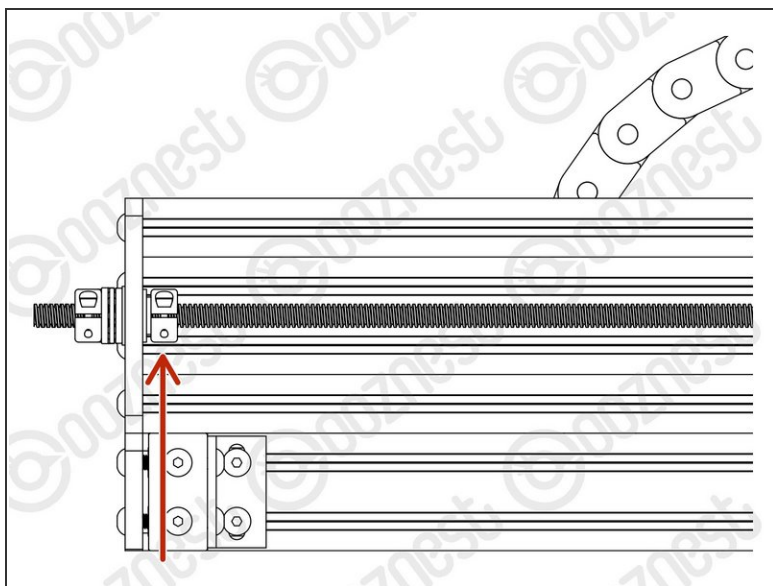
- Home the machine and use the jog buttons to move the machine roughly into the middle of the working area.
- Loosen all the Nut-Blocks on the X & Y-Carriages.
- Loosen the Clamping-Collars that are on the inside of the extrusion channel on the X & Y Axes.
  - Move all Flanged-Radial-Bearings, Rubber-Bushings & Clamping-Collars away from the plates.

## Step 12 — Lead Screw Tensioning - Part 2



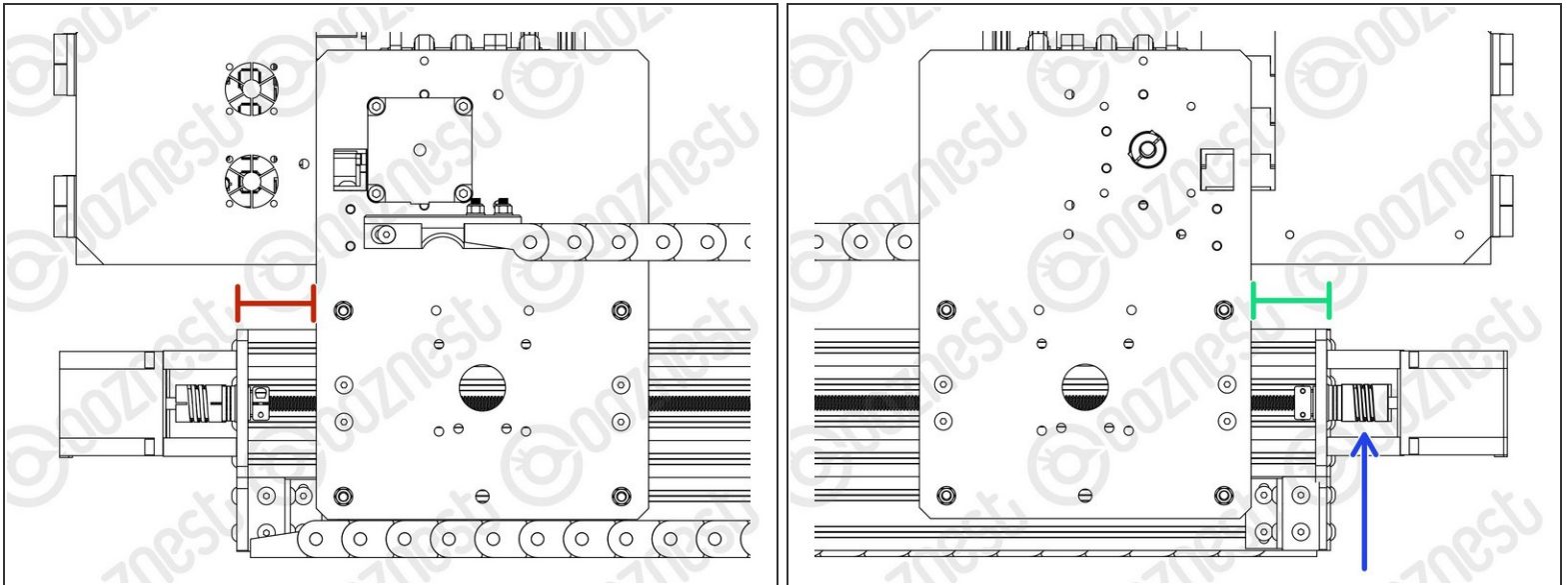
- Starting with the X-Axis, thread on the Tensioning-Knob until it is up against the Clamping-Collar.
- Then loosen the same Clamping-Collar.
- Turn the Tensioning-Knob clockwise, you will feel the Lead-Screw tension build.
- Keep turning until the Stepper-Motor clicks over.
- Keep turning, just before the point that the Stepper-Motor clicks over is the correct amount of tension for the Lead-Screw.
- While at this point of tension, tighten the Clamping-Collar that is next to the Tensioning-Knob.
- Remove the Tensioning-Knob.
- Repeat all the above for both Lead-Screws on the Y-Axis.

## Step 13 — Lead Screw Tensioning - Part 3



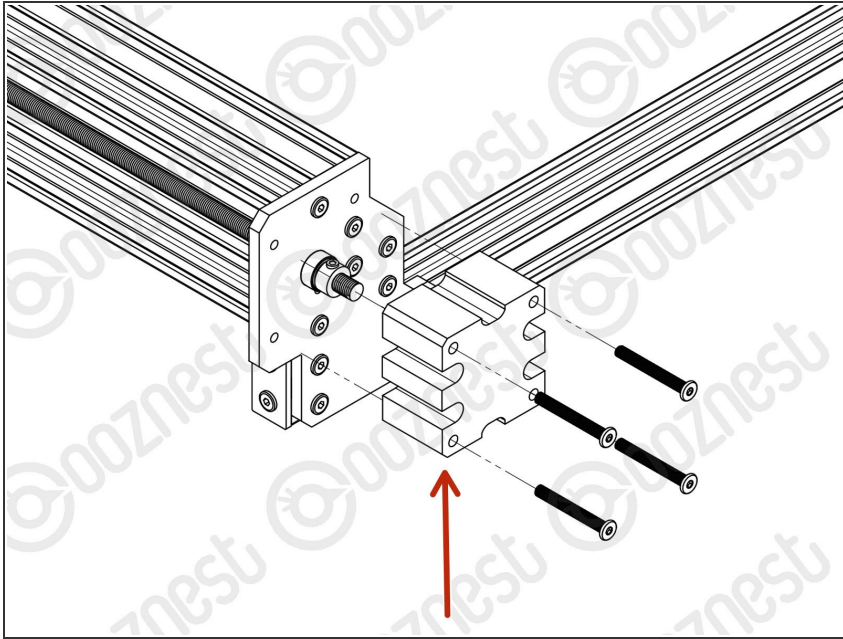
- Once all 3 Lead-Screws are tensioned, put back the Flanged-Radial-Bearings, Rubber-Bushings, and Clamping-Collars that are on the inside of the extrusion channel on the X & Y Axes.
- The Clamping-Collars only need to be pushed lightly up against the Rubber-Bushings & Flanged-Radial-Bearings.
- We need to release any tension inside the Flexible-Couplers.
  - On the Stepper-Motor side of the X & Y-Axis Flexible-Couplers completely loosen the grub screws and clamping bolts.
  - Then completely tighten the same grub screws and clamping bolts.
- ⚠ Make sure you do this to the Stepper-Motor side of the Flexible-Coupler.
- ⚠ If you loosen the Lead-Screw side you will loose all tension in the Lead-Screws and you will need to redo it.
- Tighten all the Nut-Blocks on the X & Y-Carriages. While doing so, squeeze the Nut-Blocks together to remove any backlash.

## Step 14 — Y-Axis Alignment



- Home the machine.
- Then turn the machine off.
- On the left Y-Axis (The side with the Limit-Switch) measure the distance between the back of the Y-Carriage and Y-End-Plate.
- On right Y-Axis measure the same distance.
- Rotate the Flexible-Coupler by hand until it matches the left Y-Axis.

## Step 15 — Lead Screw Caps



- Put back the Lead-Screw-Caps removed in Step 1.

Thanks for following the guide. Any issues, please contact us!