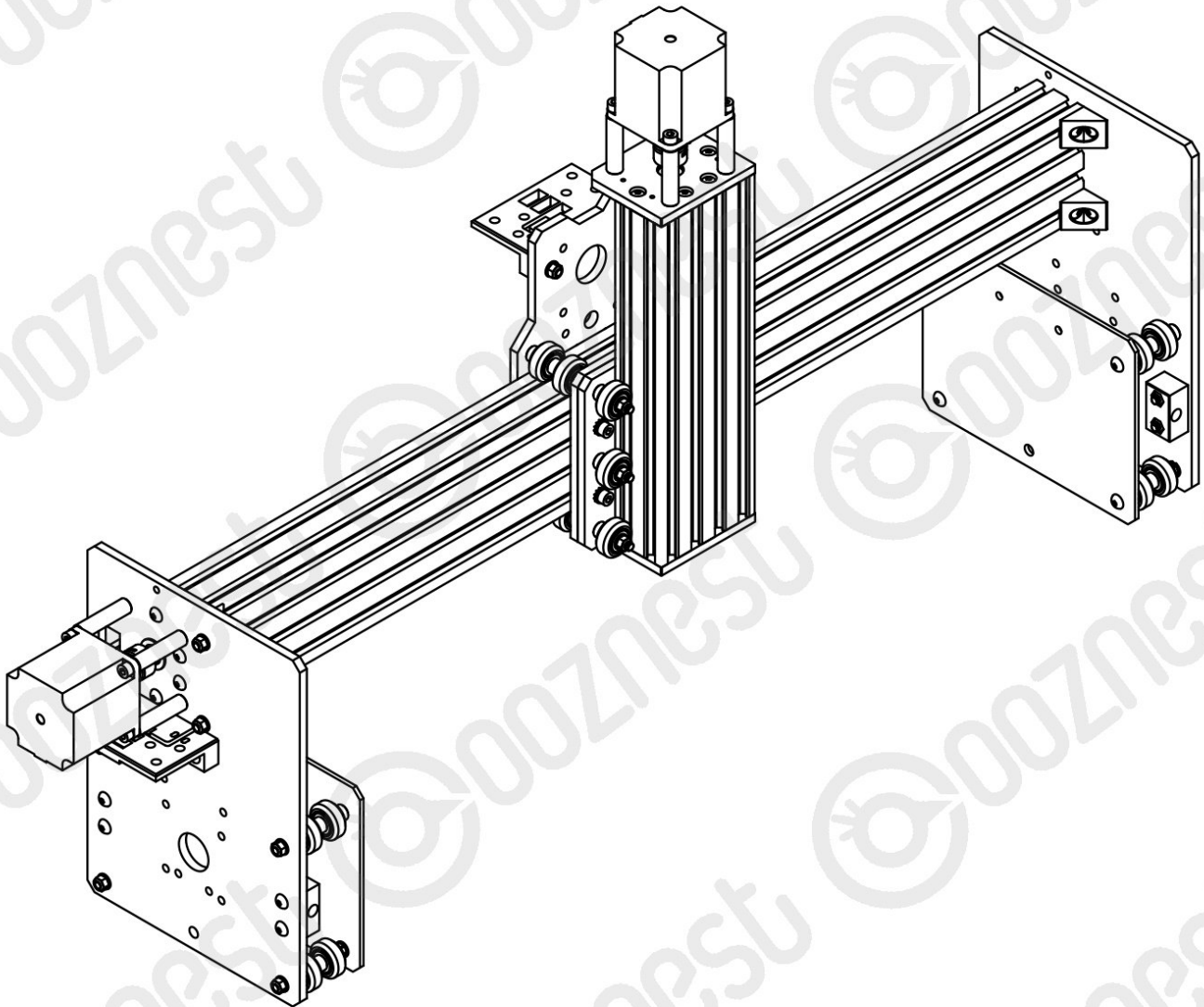


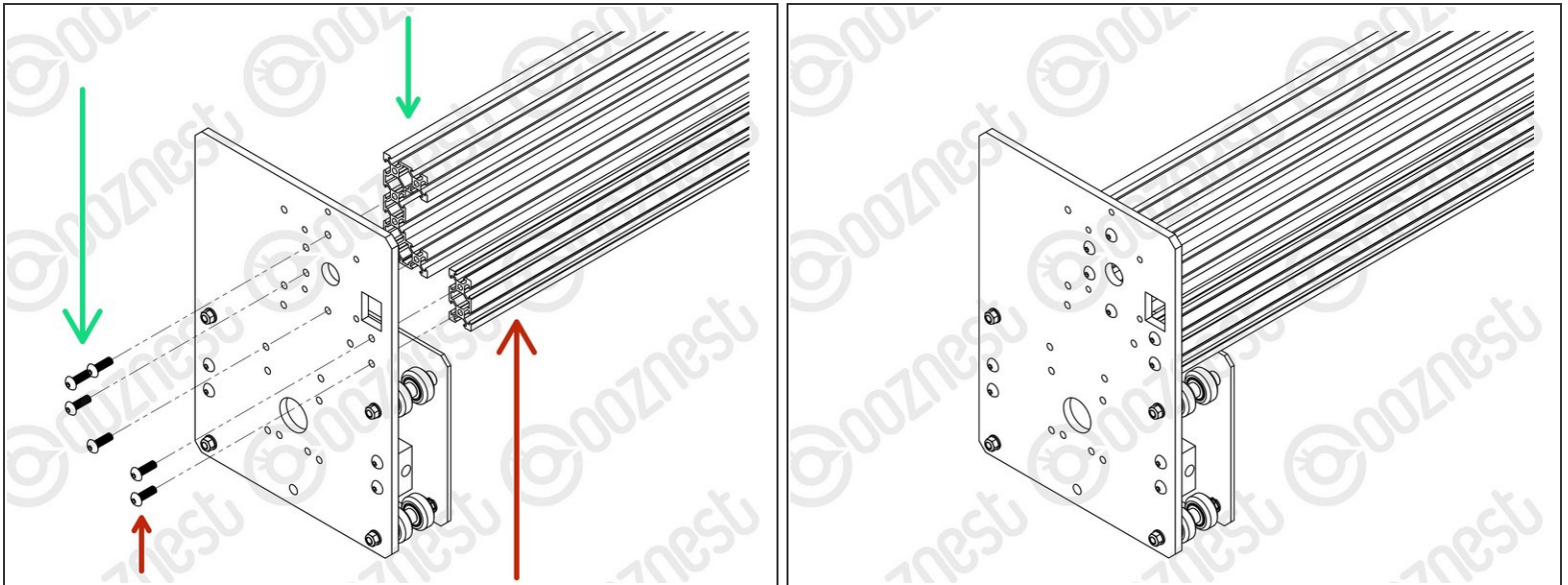


4. X-Gantry Assembly

Written By: Ryan Christy



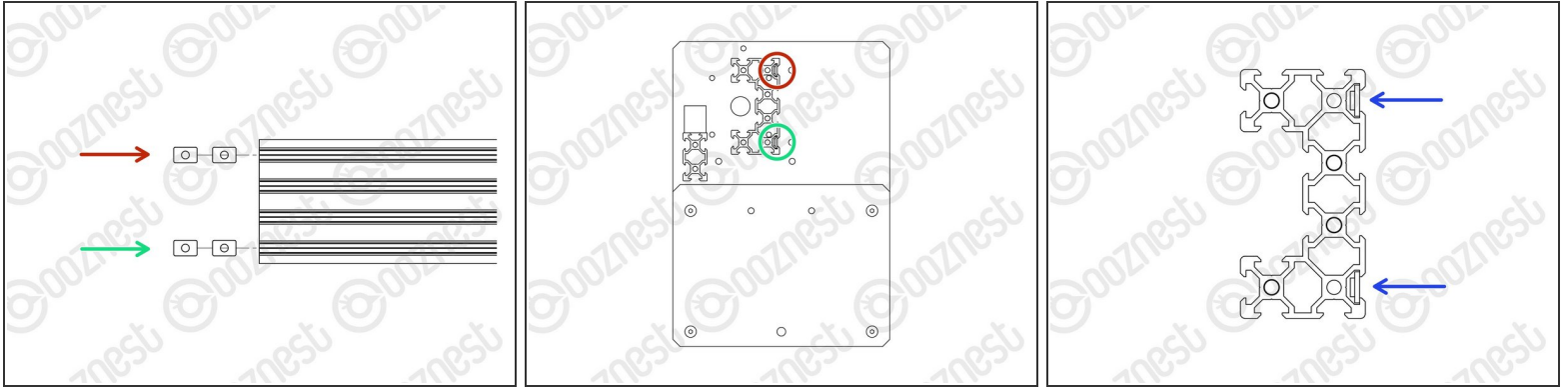
Step 1 — Extrusions



i Make sure you build the machine on a flat surface.

- Attach Extrusion-B to the back two holes on the Y-Carriage-Right using 2 x M5-Button-Head-Bolt-16mm.
- Attach Extrusion-E to the four non-threaded holes on the Y-Carriage-Right using 4 x M5-Button-Head-Bolt-16mm.

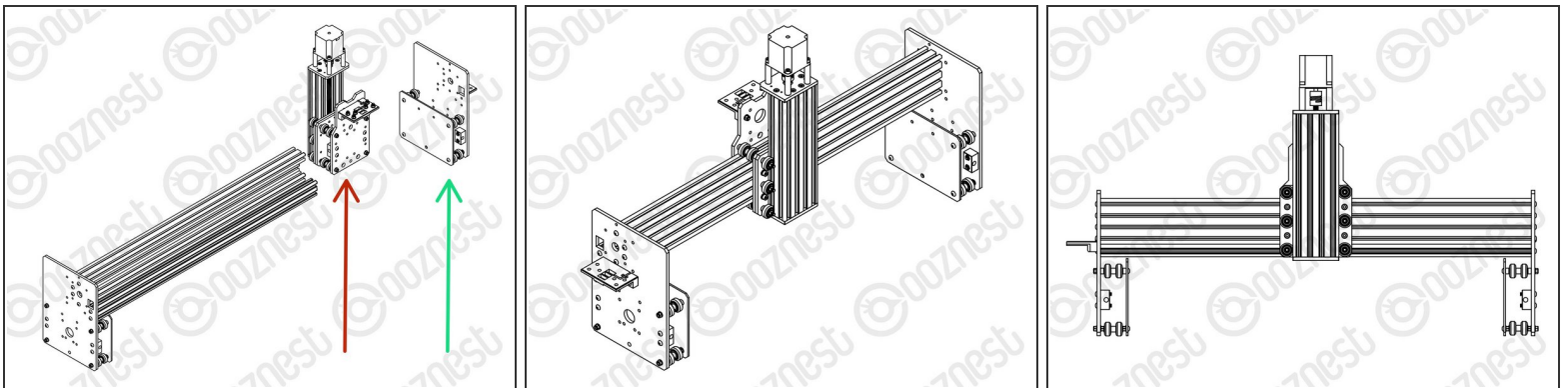
Step 2 — Tee Nuts



⚠ Before the Y-Carriage-Left can be attached, M5-Tee-Nuts need to be inserted.

- Insert 2 x M5-Tee-Nuts into the front-facing **top** slot of Extrusion-E.
- Insert 2 x M5-Tee-Nuts into the front-facing **bottom** slot of Extrusion-E.
- M5-Tee-Nuts going forward should always be orientated as seen in Image 3.
- The flat face of the M5-Tee-Nut should be facing outwards.

Step 3 — X-Carriage



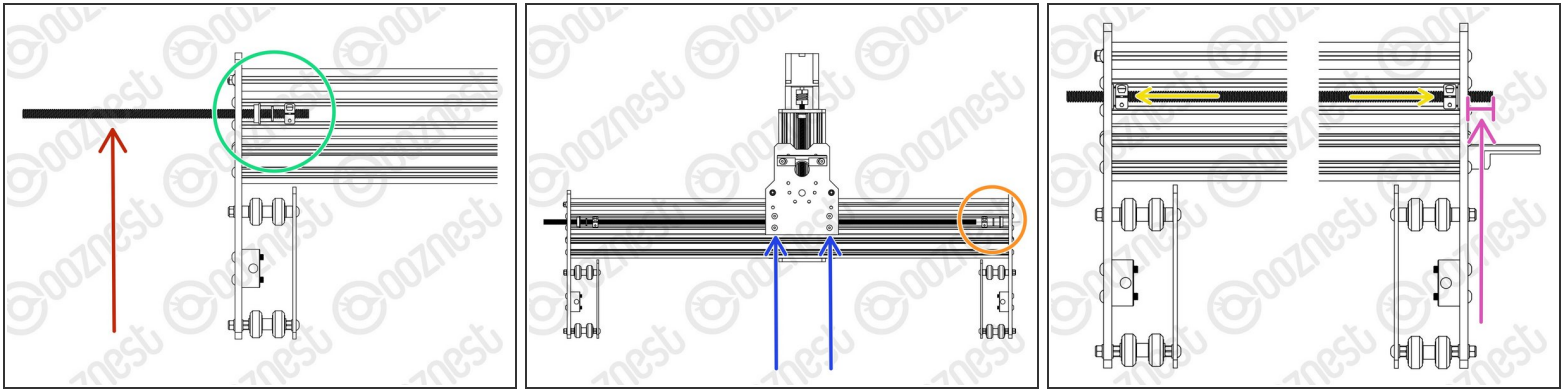
- Slide the X-Carriage onto Extrusion-E in the orientation seen in Image 1.
- Repeat [Step 1](#) of this guide for the Y-Carriage-Left

(i) Moving forward this assembly will be known as the X-Gantry.

⚠ Place the X-Gantry onto a flat table and check both Y-Carriages are sitting flat on the table.

⚠ Loosen the bolts holding Extrusion-E/B and adjust if needed.

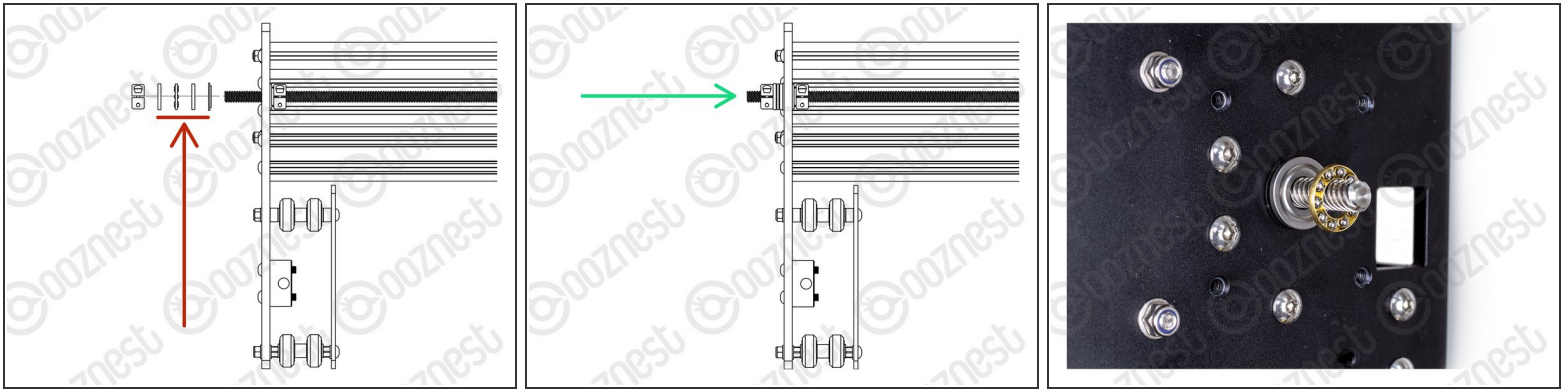
Step 4 — Lead Screw



i This Step and the next two Steps has the X-Gantry orientated so we are looking at the back of it. So the Y-Carriage-Right is on your lefthand side.

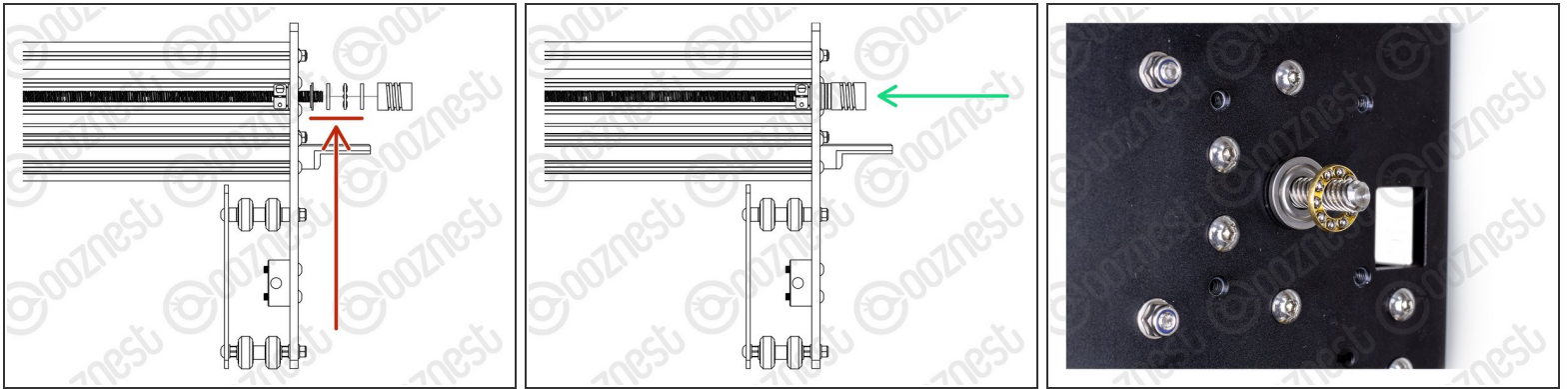
- Insert the Lead-Screw-X through the large 16mm hole on the Y-Carriage-Right so it protrudes into the channel on Extrusion-E roughly 100mm.
- Slide onto Lead-Screw-X a Flanged-Radial-Bearing ->- Rubber-Bushing ->- Clamping-Collar.
- Insert the Lead-Screw-X further into the channel, and then thread it through both Nut-Blocks on the X-Carriage.
- i** The Nut-Blocks should be loose so their position can be adjusted to allow Lead-Screw-X to thread through.
- Once through the Nut-Blocks, slide onto Lead-Screw-X a Clamping-Collar ->- Rubber-Bushing ->- Flanged-Radial-Bearing.
- Thread through Lead-Screw-X further so it goes through the large 16mm hole on the Y-Carriage-Left. Adjust the Lead-Screw so there is 14mm protruding from the Y-Carriage-Left.
- 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.

Step 5 — Y-Carriage-Right Thrust Bearings



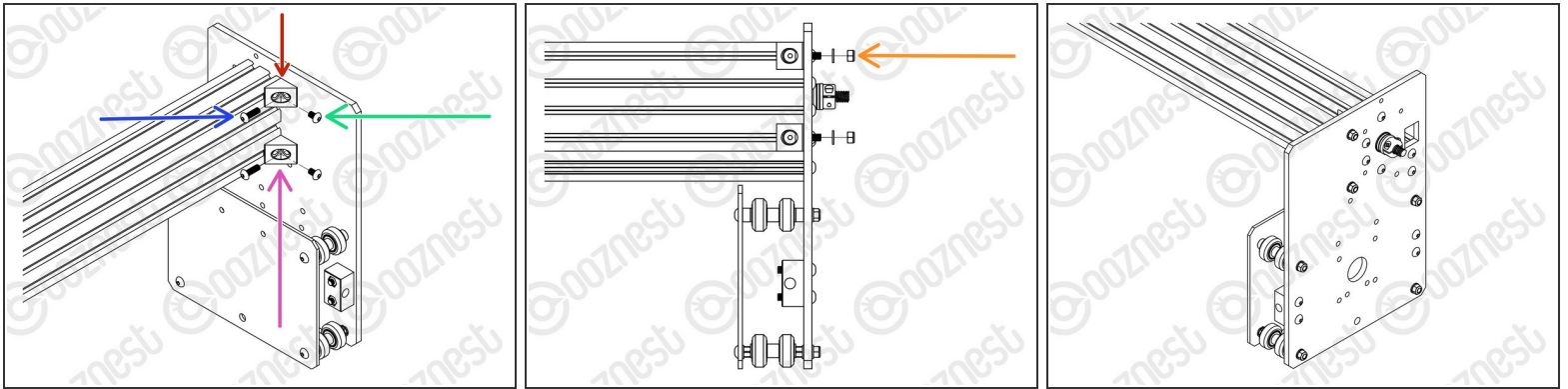
- ❗ Thrust-Bearings come in 3 parts. Thrust-Bearing-Housing-Washer, Thrust-Bearing-Caged-Roller and Thrust-Bearing-Shaft-Washer
- ❗ The Thrust-Bearing-Housing-Washer and Thrust-Bearing-Shaft-Washer look exactly the same. They are not.
 - ❗ The Thrust-Bearing-Shaft-Washer has a smaller internal diameter thus it will be tighter on the Lead-Screw.
- ⚠ Do not mix them up.
- On the Lead-Screw-X protruding from the Y-Carriage-Right (Remember it is on your left, as we are still looking from the back) 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 Clamping Collar. While pushing the Clamping-Collar against the Thrust-Bearing assembly, tighten the Clamping-Collar.

Step 6 — Y-Carriage-Left Thrust Bearings



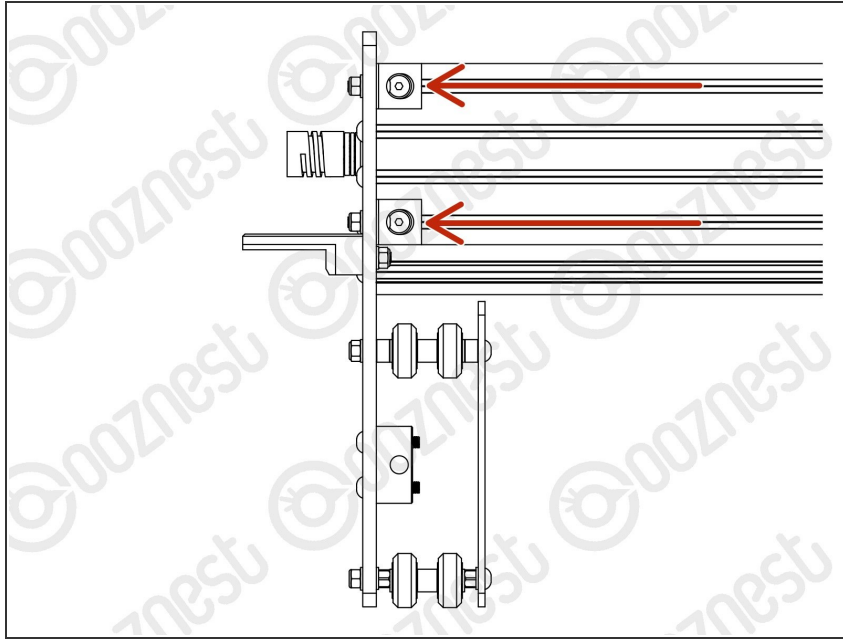
- On the Lead-Screw-X protruding from the Y-Carriage-Left (Remember it is on your right, as we are still looking from the back) slide on a Nylon-Shoulder-Washer - ->- - Thrust-Bearing-Housing-Washer - ->- - Thrust-Bearing-Caged-Roller - ->- - Thrust-Bearing-Shaft-Washer
- The Nylon-Shoulder-Washer seats in the 16mm hole on the Y-Carriage.
- The Thrust-Bearing-Caged-Roller seats in the grooves on the Thrust-Bearing washers. Same orientation as before and going forward.
- Finally slide on a Flexible-Coupler. While pushing the Flexible-Coupler against the Thrust-Bearing assembly, tighten Flexible-Coupler
- ① On the Flexible-Coupler tighten the clamping bolt first and then the grub screw.

Step 7 — Y-Carriage-Right Angle Corners



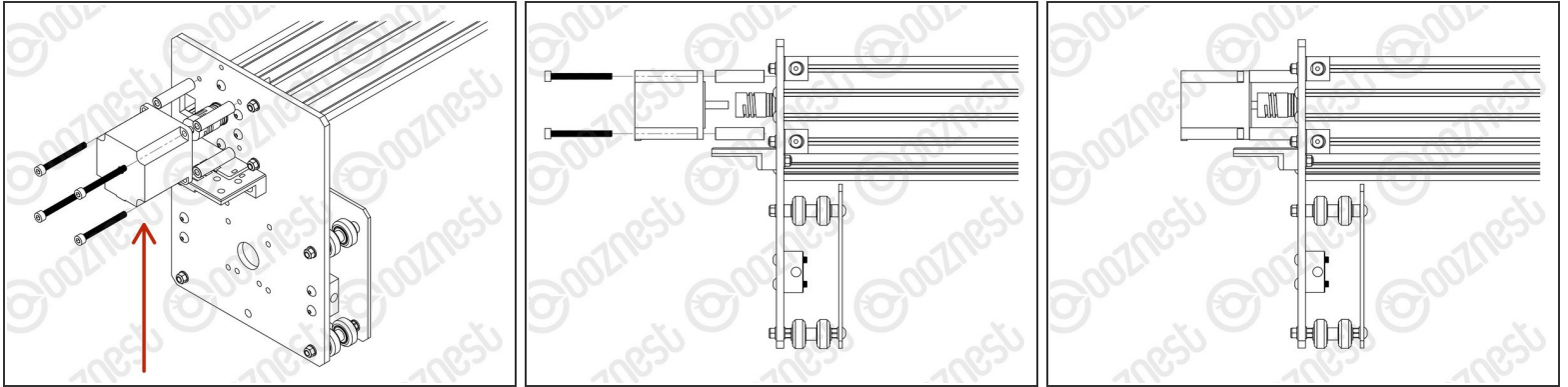
- i** For the rest of the guide, we are now looking at the X-Gantry orientated so we are looking at the front of it.
- An Angle-Corner goes in the corner between the Y-Carriage-Right and front-facing **top** slot of the Extrusion-E
 - Use a M5-Button-Head-Bolt-8mm and a previously inserted M5-Tee-Nut to attach it to Extrusion-E.
 - Insert a M5-Button-Head-Bolt-16mm through the Angle-Corner, then through the Y-Carriage.
 - Then add a Precision-Shim and M5-Nyloc-Nut on the opposite side of the Y-Carriage.
 - Repeat for an Angle-Corner between the Y-Carriage-Right and front-facing **bottom** slot of the Extrusion-E

Step 8 — Y-Carriage-Left Angle Corners



- Repeat the previous step but between the Y-Carriage-Left and Extrusion-E

Step 9 — X-Axis Stepper Motor



- Attach a Stepper-Motor to the threaded holes on the Y-Carriage-Left using 4 x M5-Cap-Head-Bolt-50mm and 4 x Aluminium-Spacer-40mms.
 - ⓘ Orient the Stepper-Motor so that the wire is facing down.
 - ⓘ The shaft of the Stepper-Motor goes into the Flexible-Coupler.
- ⚠ 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.
 - ⓘ The Lead-Screw side was tightened earlier in this guide.

Step 10 — Guide Complete



- i Put the X-Gantry to one side, and clear the table, you are going to need it.
- Guide Complete - Proceed to [5. Base Assembly](#)

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