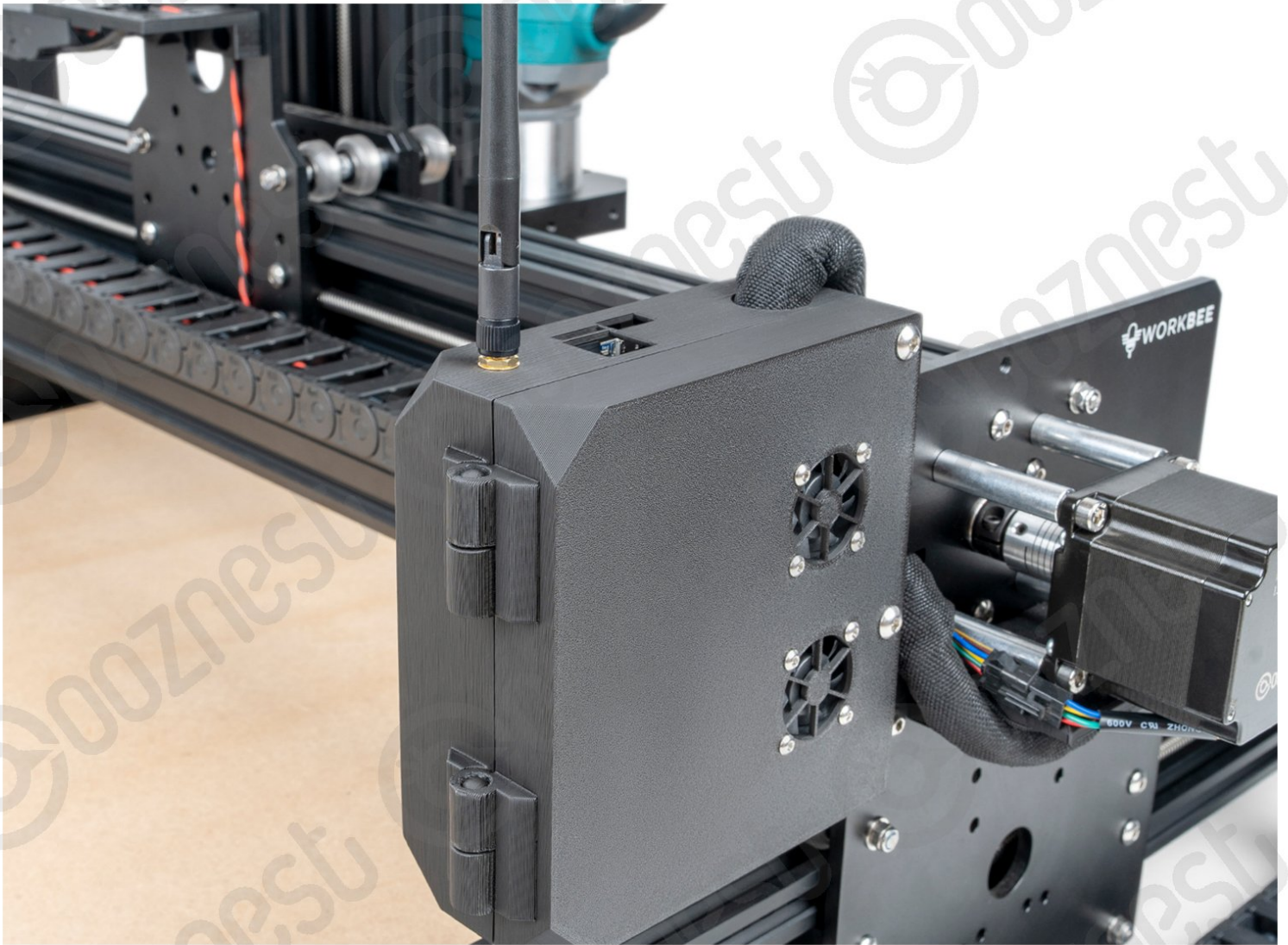


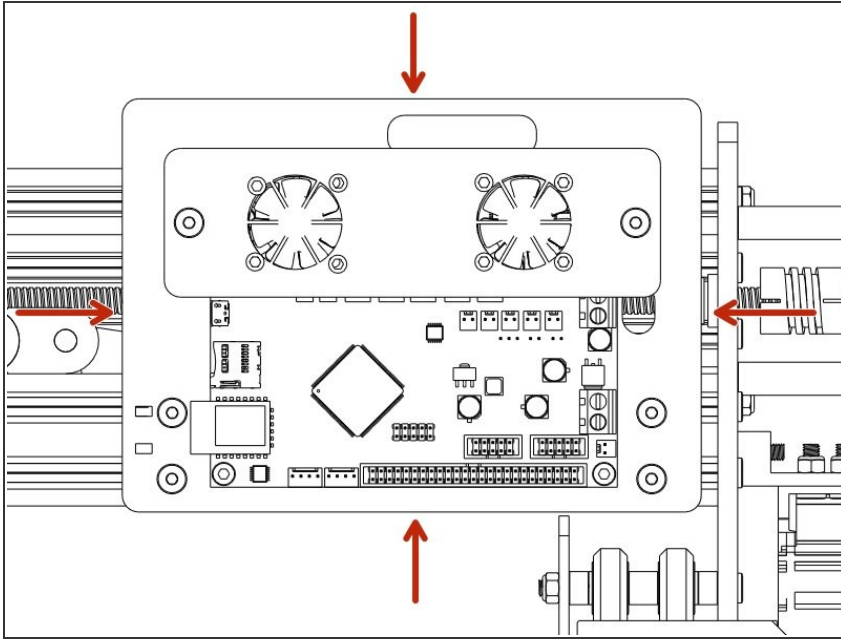


Assembling Your Original WorkBee Z1+ Controller Case

Written By: Ryan Christy



Step 1 — Remove Old Mount



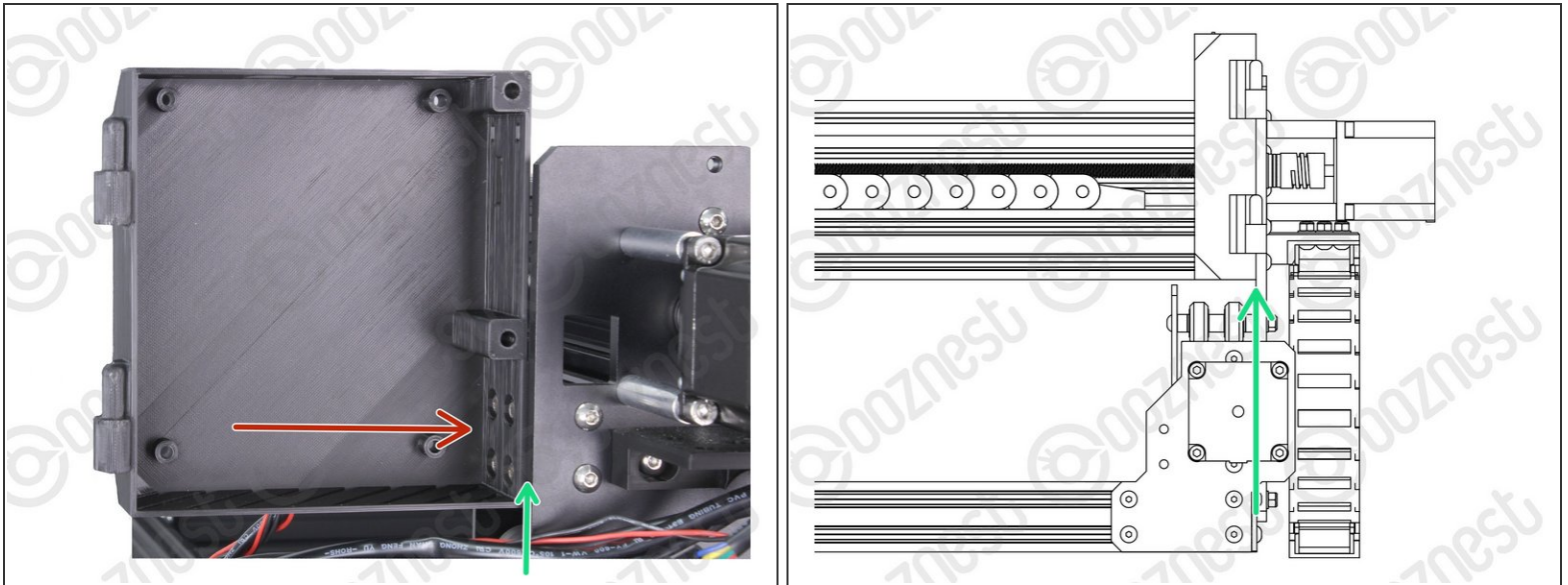
- Disconnect all wires to the Controller.
- Remove the old mount and all hardware.
- ⓘ To assemble the new Controller Case, only the Controller and Wires are needed.
- ⓘ All other parts removed can be discarded.

Step 2 — Mounting Bolts



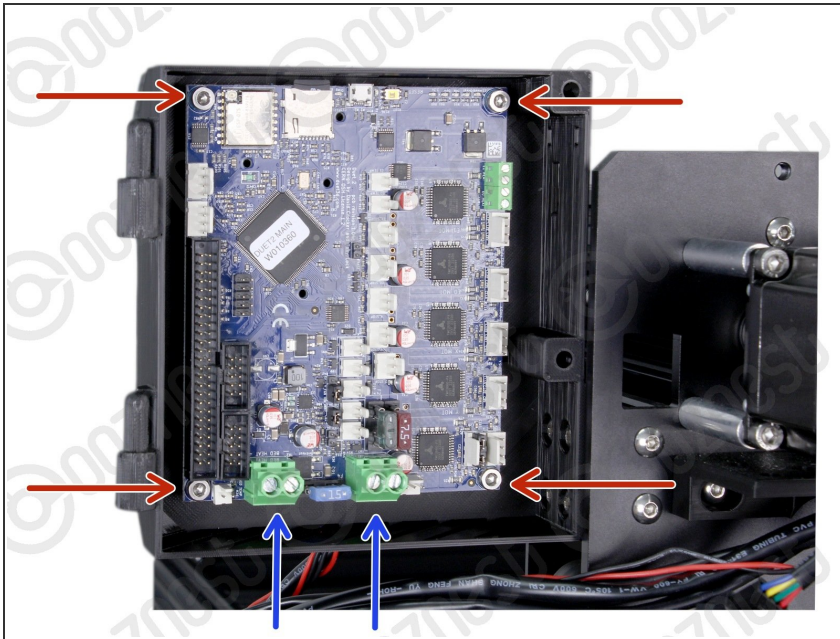
- Insert 4 x M5-Button-Head-Bolt-12mm through the holes on the Controller-Case-Body
- Slightly thread a M5-Drop-In-Tee-Nut onto each bolt.

Step 3 — Mounting



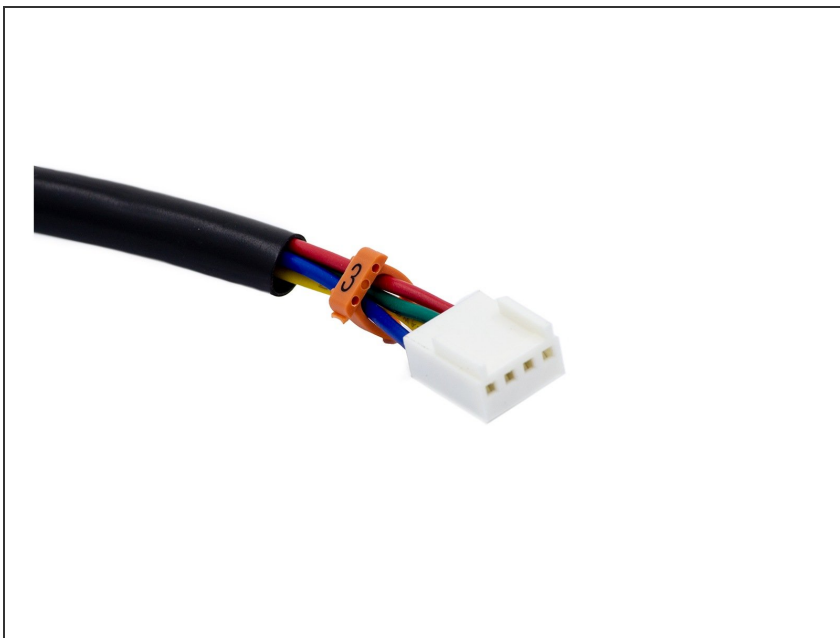
- Join the Controller-Case-Body to both slots on the back of X-Gantry 20x40 Extrusion. Using the previously inserted M5-Button-Head-Bolt-12mm.
 - It should be pushed up against the Y-Carriage. See Image 2.
- ① Using a 3mm Hex Key Ball driver would be easiest.
- ⚠ Make sure the M5-Drop-In-Tee-Nuts are engaged with the slots on the Extrusion.

Step 4 — Controller Mounting



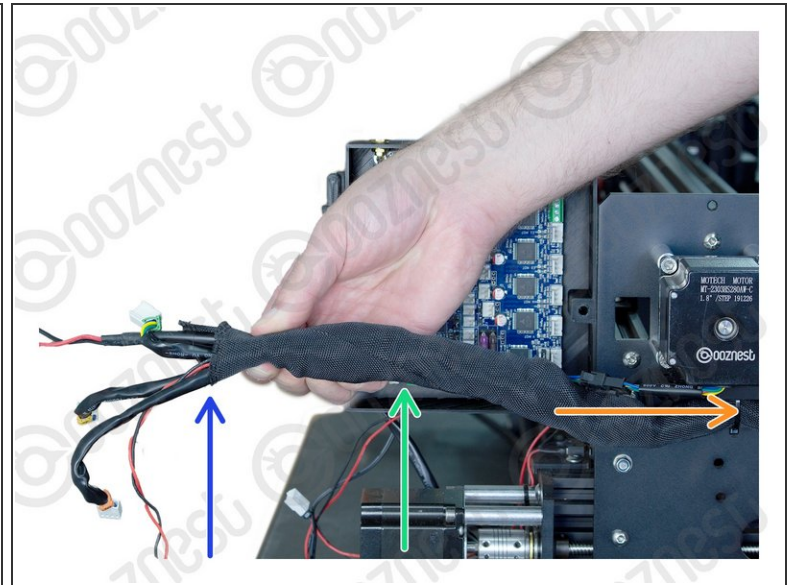
- Mount the Controller to the Controller-Case-Body using 4 x M4-Cap-Head-Bolt-16mm and 4 x M4-Nyloc-Nut.
- The 4 x M4-Nyloc-Nuts go on the back of the Controller-Case-Body.
- Make sure the Controller is orientated correctly with the two large green terminals at the bottom.

Step 5 — Wire Identifications



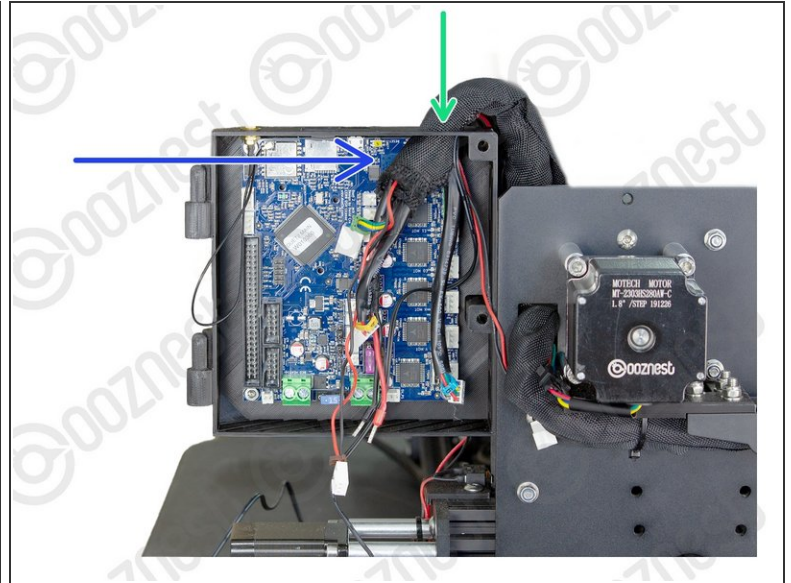
- You are going to need our Motor Wire and Limit Switch [Cheat Sheet](#). We recommend printing it off!

Step 6 — Wire Preparation



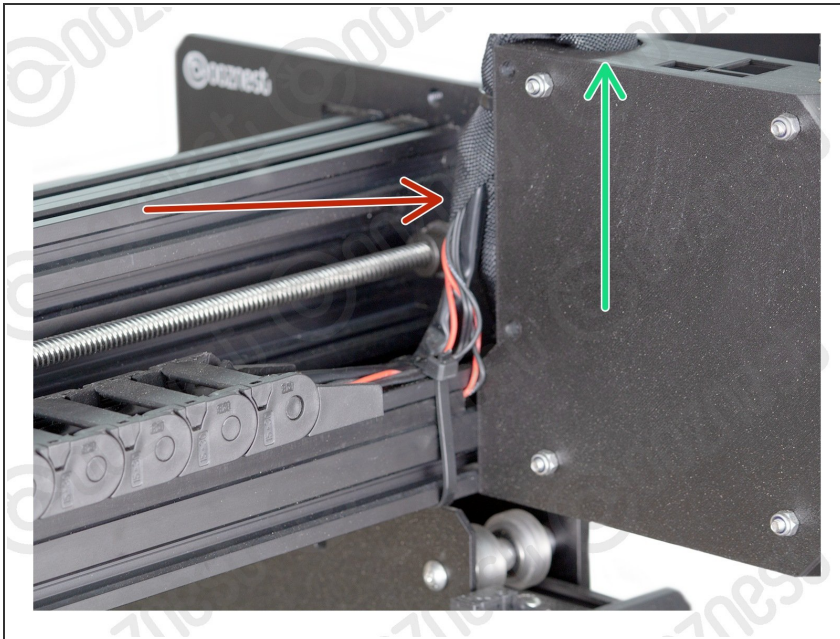
- Gather all the wires coming of Drag-Chain-Y.
- Neatly twist the wires together to form a consistent cylinder of wires. It should look like Image 1.
- ① Include the Ethernet-Cable in this bundle.
- Wrap the provided Cable-Sleeve around all the wires. It should look like Image 2.
- The Cable-Sleeve should not go right to the end.
- Excess Cable-Sleeve can go inside Drag-Chain-Y.

Step 7 — Wire Routing Part - 1



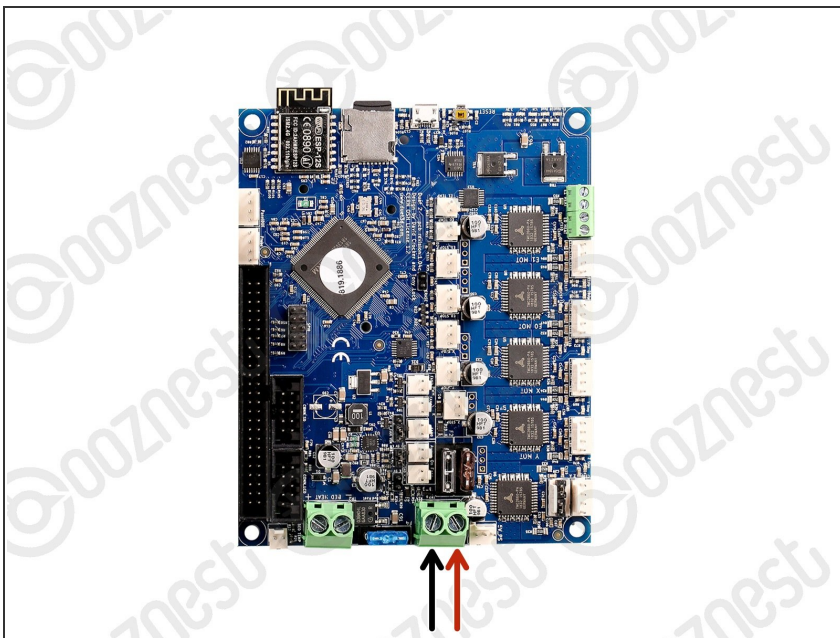
- Feed the twisted bundle of wires through the square hole on the Y-Carriage.
- Then run it up the side of the Controller-Case-Body and into the large hole on the top.
 - ⚠ Do not put the Ethernet Cable through this hole. Slip it out of the Cable-Sleeve.
- Roughly 50mm of Cable-Sleeve should be protruding into the Controller-Case-Body.
- ① Take your time to tidy up the Cable-Sleeve, and feed any back into the Drag-Chain-Y.

Step 8 — Wire Routing - Part 2



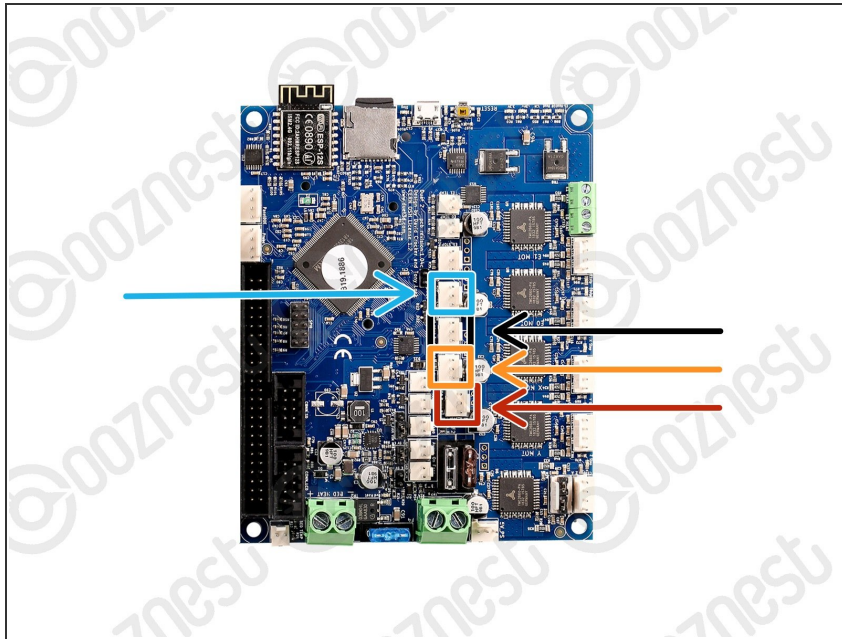
- Bring the wires from Drag-Chain-X & Limit-Switch-0, up into the side of the Cable-Sleeve.
- Feed them through the same hole in the top of the Controller-Case-Bod

Step 9 — Connecting the PSU Output Cable



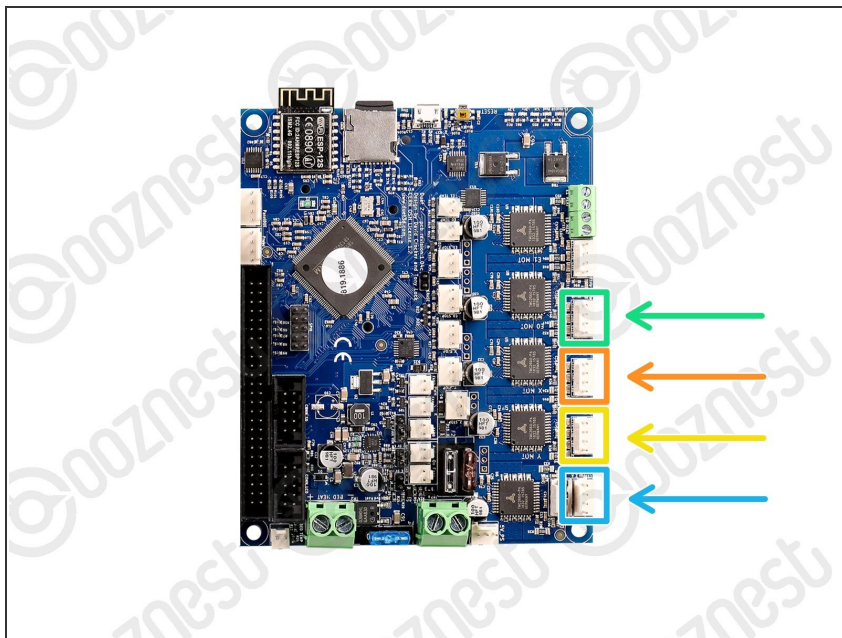
- ⚠ Make sure your Power Supply is not plugged in.
- Connect the output wire of the Power Supply into the input screw terminal on the Controller.
- ⚠ Use an Insulated Flathead Screwdriver.

Step 10 — Limit Switch Wires



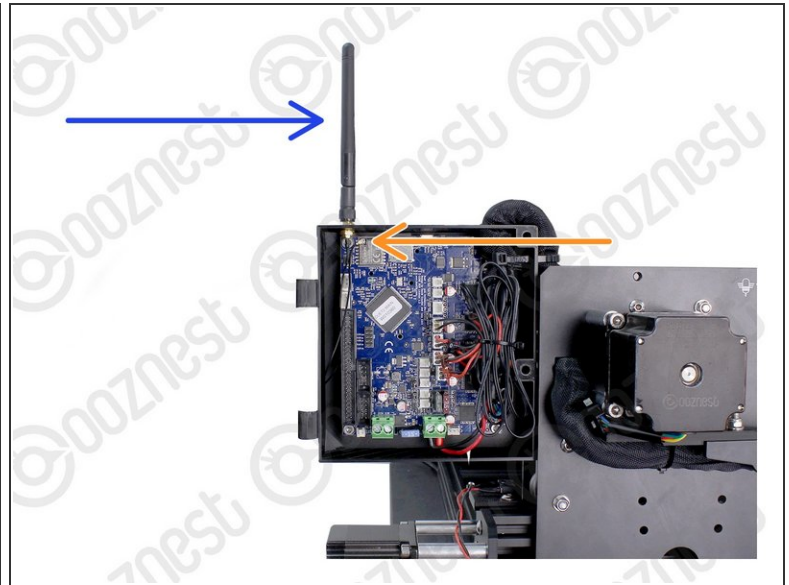
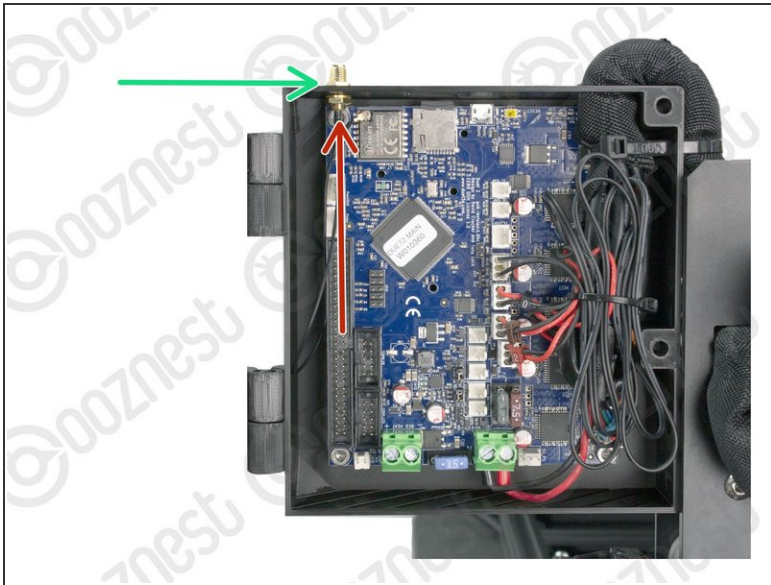
- i The connectors on the wires are keyed, so there is only one way which they can plug in.
- Plug in the limit switch wires following Image 1.
 - Limit-Switch-0 (X-Axis)
 - Limit-Switch-1 (Y-Axis)
 - Limit-Switch-2 (Z-Axis)
- The Touch Probe wire can also be plugged in.

Step 11 — Motor Wires



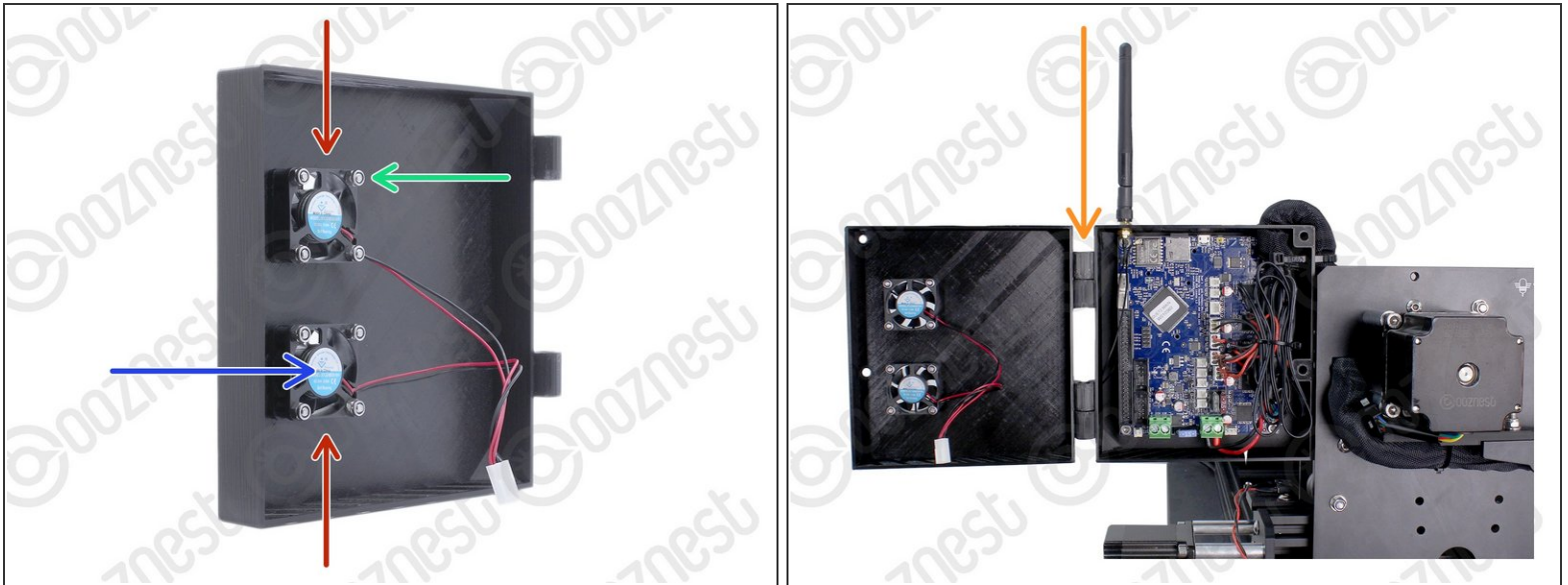
- Plug in the motor wires following Image 1.
 - Motor-Wire-5 (Y-Axis-Right)
 - Motor-Wire-3 (X-Axis)
 - Motor-Wire-4 (Y-Axis-Left)
 - Motor-Wire-6 (Z-Axis)

Step 12 — Install Antenna



- ① If you have the Wifi Controller with the External Antenna please complete this Step. Otherwise, skip to the next Step.
- ① The External-Antenna is made up of 5 pieces: Antenna-Arm, Antenna-Wire, Spring-Washer, Star-Washer and Hex-Nut.
 - Insert the threaded portion of the Antenna-Wire up into the hole of the Controller-Case-Body.
 - The Spring-Washer should be in between the shoulder of Antenna-Wire and Controller-Case-Body.
 - On the outside of the Controller-Case-Body add the Star-Washer, and then thread on the Hex-Nut.
 - Tighten this assembly.
 - Screw on the Antenna-Arm.
 - Push the Antenna-Fitting onto the Wifi Module until it clicks into place.

Step 13 — Fans



- Mount the Controller-Fans to the Controller-Case-Cover using 8 x M3-Button-Head-Bolt-16mm & 8 x M3-Nyloc-Nut.
- The Controller-Fans go on the inside of the Controller-Case-Cover.
- The M3-Nyloc-Nuts should be on the inside of the Controller-Case-Cover. See Image 1.
- The stickers on the Controller-Fans **should be visible.** See Image 1
- Hook the Controller-Case-Cover onto the hinges on the Controller-Case-Body.

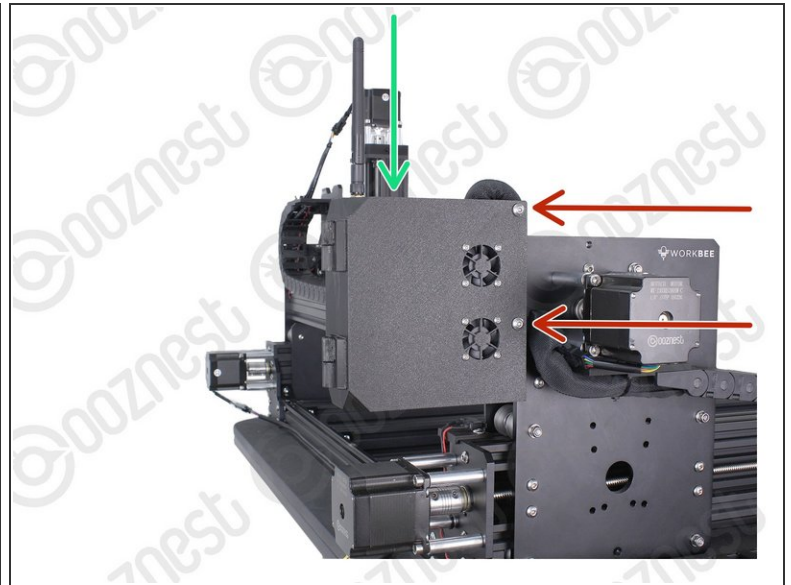
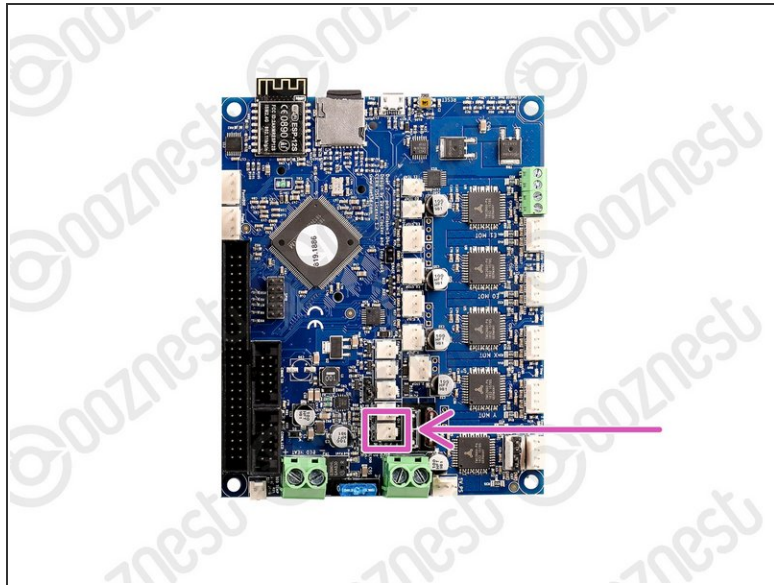
Step 14 — Wire Tidying



- Bundle the excess cable inside the Controller-Case and add a small cable tie around the bundle.
- On the side of the Controller-Case use a large cable tie to secure the bundle of wires inside of the Cable-Sleeve to the Controller-Case.
 - The large cable tie should go around the Cable-Sleeve bundle inside and outside the Controller-Case to sandwich it all together.
- Tidy up the Cable-Sleeve on the outside controller and feed any excess back into Drag-Chain-Y.
 - Use a large cable tie to secure the bundle to the Drag-Chain-Mount.
- Use a large cable tie to secure the wires from Drag-Chain-X & Limit-Switch-0 to Extrusion-B

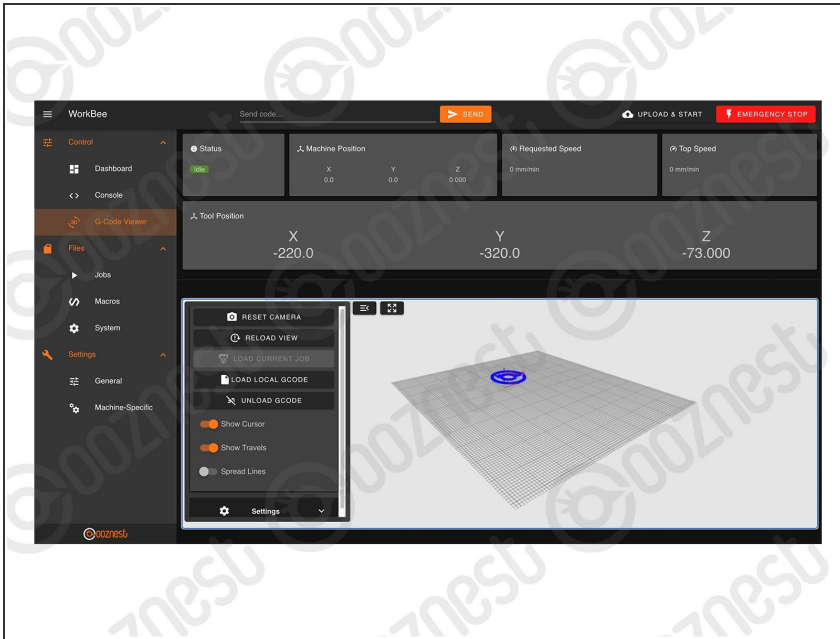
⚠ Make sure your wires look nice and neat like all the Images.

Step 15 — Closing The Cover



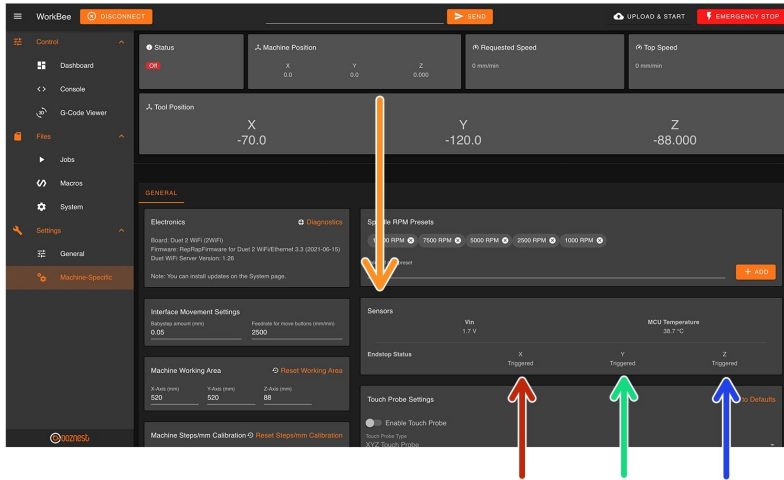
- Plug the Controller-Fans into the Controller following Image 1.
- Close the Controller-Case-Cover to the Controller-Case-Body.
 - Secure it using 2 x M5-Button-Head-Bolt-60mm and 2 x M5-Nyloc-Nut.
 - The 2 x M5-Nyloc-Nuts go on the back of the Controller-Case-Body.
- If you have the Ethernet version of the controller, you can now plug the Ethernet-Cable into the top of the Controller.

Step 16 — Update Firmware



- If you haven't already done so update your firmware to the latest version [How To Update WorkBee Firmware V1.0.7 > V3.3.0-1.2](#)

Step 17 — Test Limit Switches



- On the same page, under the Panel called 'Sensors' we can test the Limit Switches.
- Activate the X-Axis limit switch with your finger and hold.
- The Endstop Status should change to 'Triggered'
- ⚠ It is normal for there to be a delay between pressing the limit switch and the status being updated. Please do not be concerned, the board will stop the motor instantaneously.**
- Repeat this procedure for the Y-Axis Limit Switch.
- Repeat this procedure for the Z-Axis Limit Switch.

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