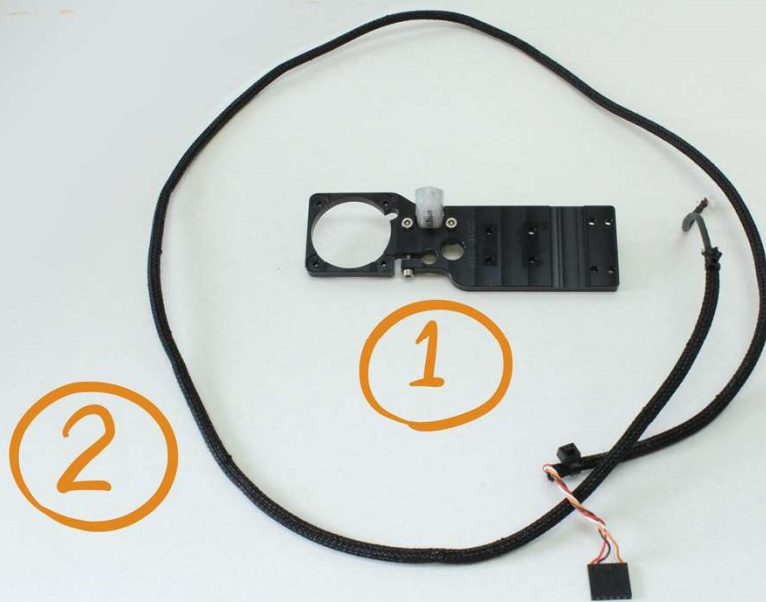


MAKERGEAR

M3-ID 3D Printer Rev. 0
to Rev. 1 Upgrade Guide





You will be upgrading your printer with:

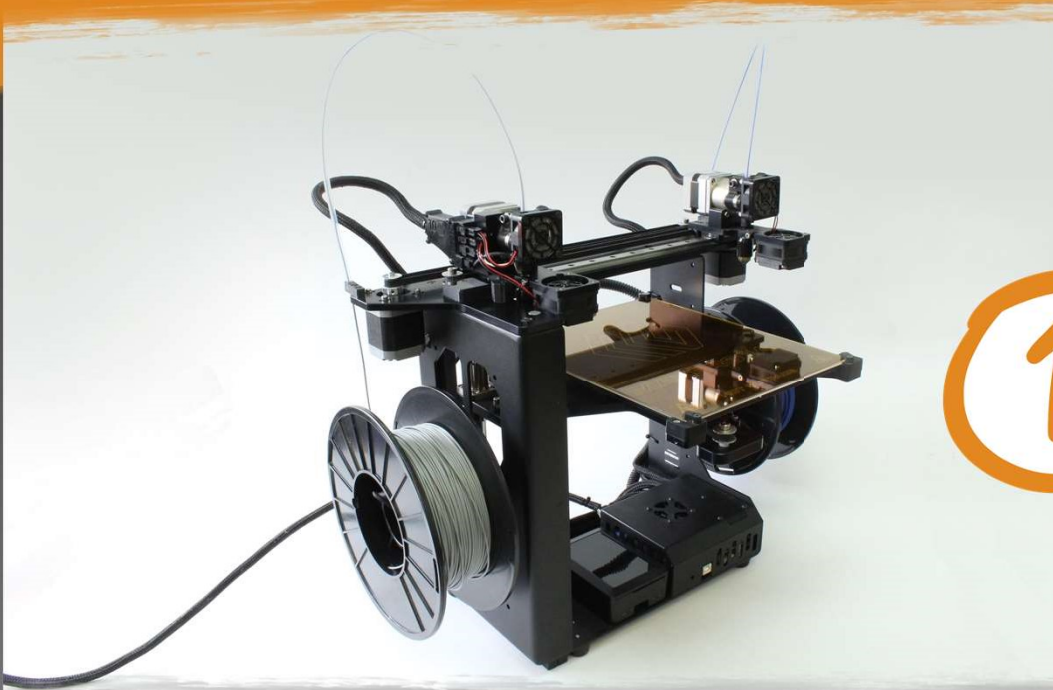
1. M3ID-REV-1 T0 Extruder Mounting Plate
2. BLTOUCH cable
3. Zip ties
4. Four (4) M3 Bed Hold Down Clips
5. Insulative sleeve

All of the fasteners you will need are already in your printer so make sure you don't misplace them during disassembly.

The tools you will need are as follows:

- 2 mm hex driver
- 2.5 mm hex driver
- 3 mm hex driver

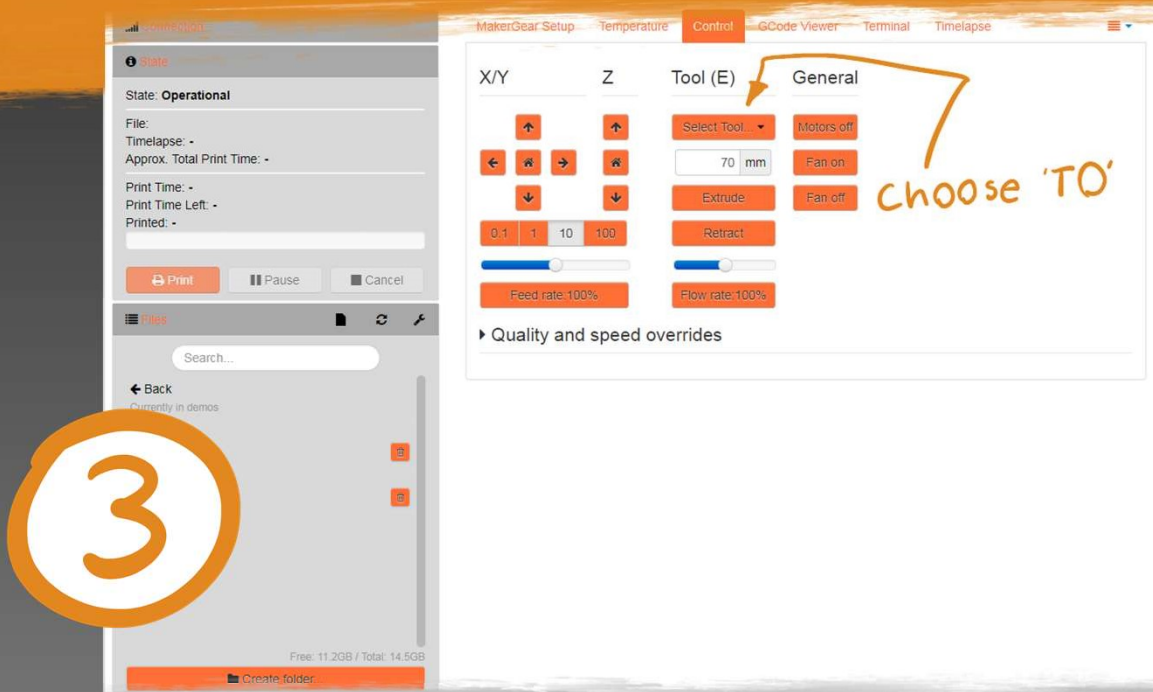




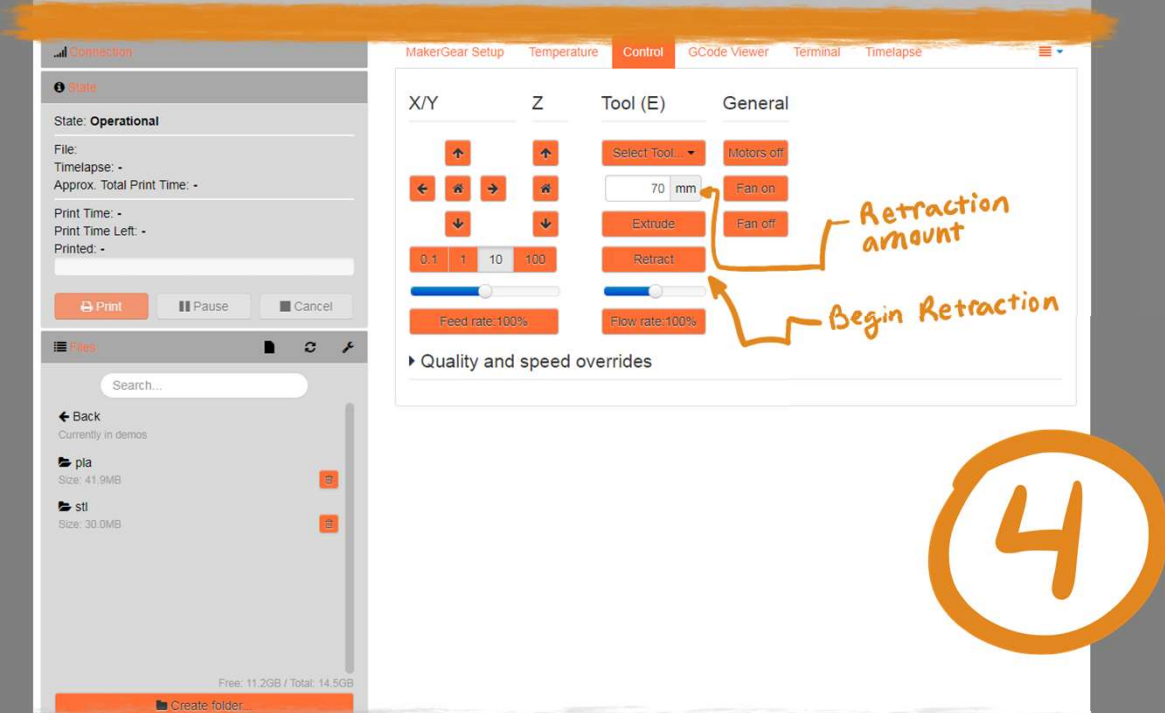
If you have filament loaded in the T0 extruder you will need to remove it. If not, please skip to step 6.

	Actual	Target	Offset
Tool 0	23.8°C	off °C	0 °C
Tool 1	23.8°C	off °C	0 °C
Bed	23.8°C	off °C	0 °C

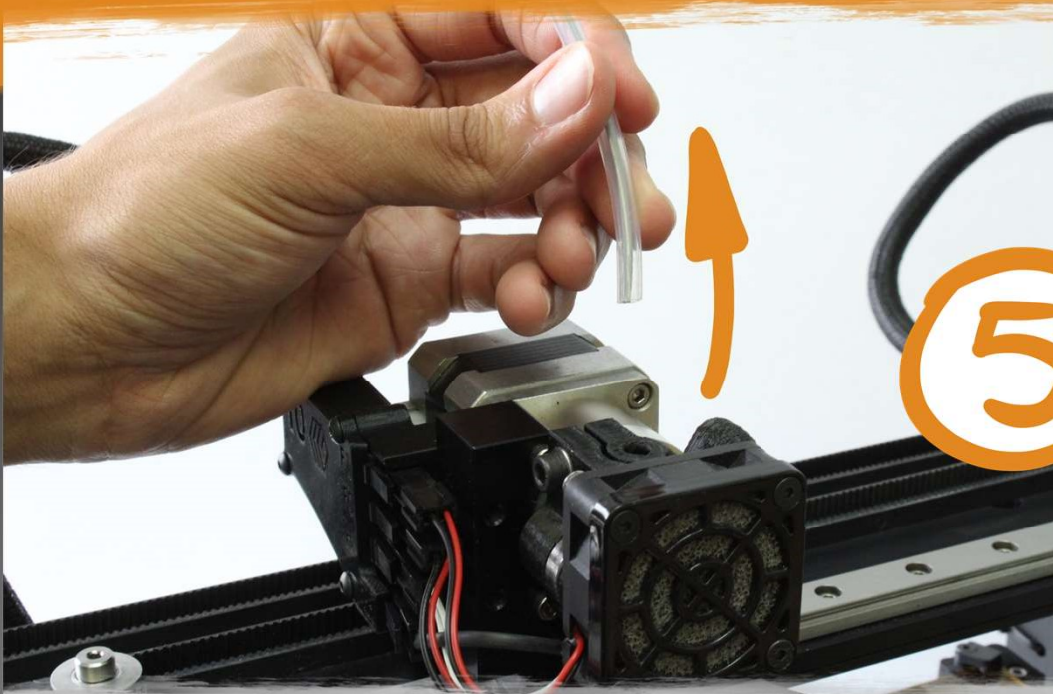
Open Octoprint and heat up your hotend. Set the hotend to the printing temperature of the loaded filament (e.g. ABS: 265 C, PLA: 215 C).



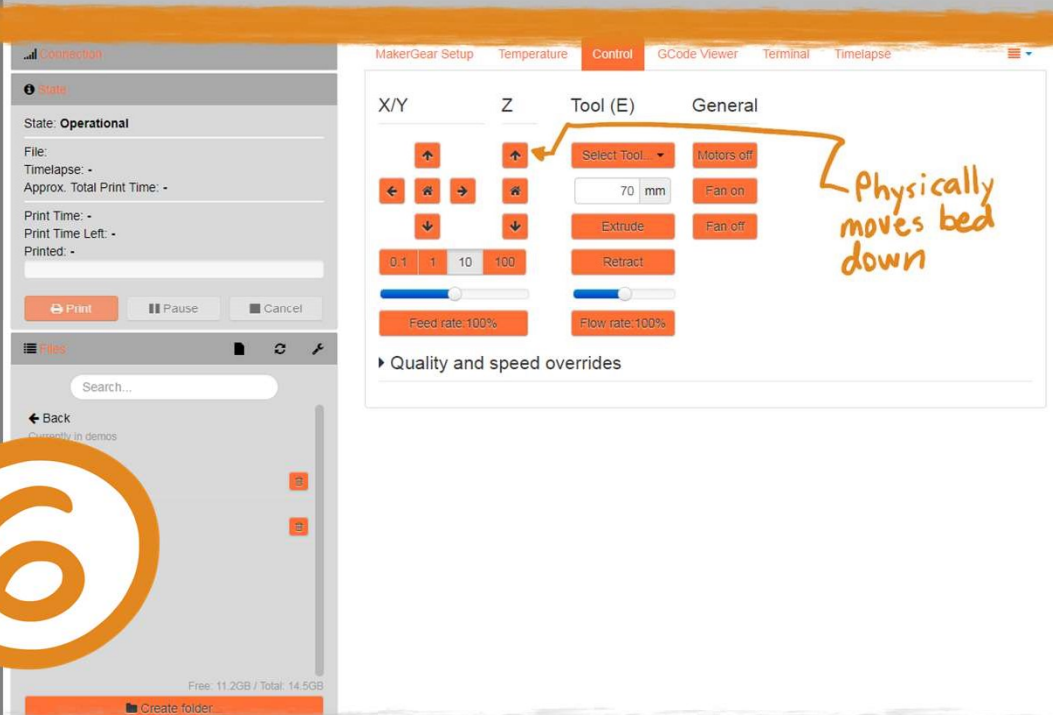
Select T0 as your tool.



Retract the 'T0' extruder by at least 70 mm.



Remove the filament and filament guide tube from 'T0'.



Home the Z-axis with the house shaped button. Move the Z-axis down by around 30 mm (this will give you room to remove the RAMBo case top later).



7

Shut down the printer's raspberry pi through Octoprint or by holding down the reset button for 10 seconds.



8

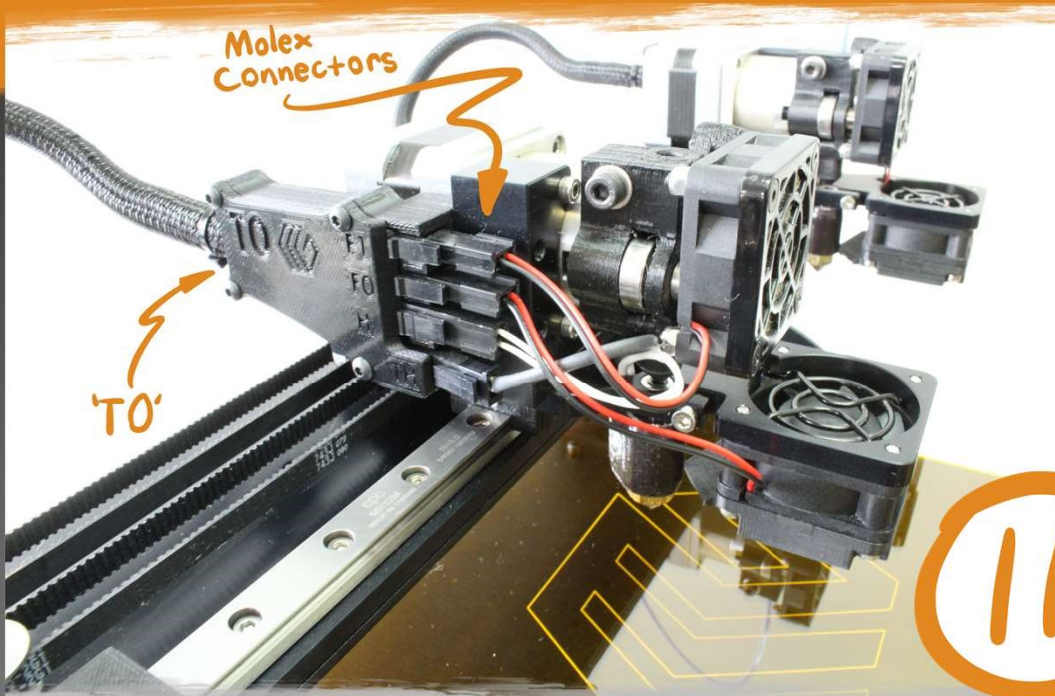
The raspberry pi's green light will turn off when it is properly shut down.



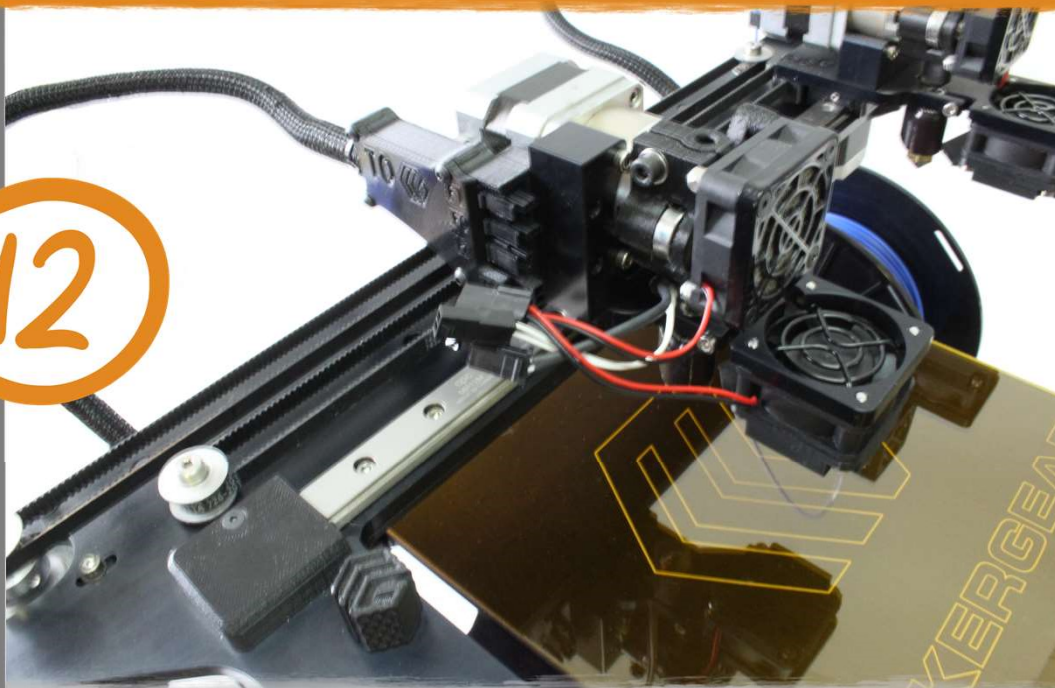
Locate your 6-pin power connector in the back of your printer.



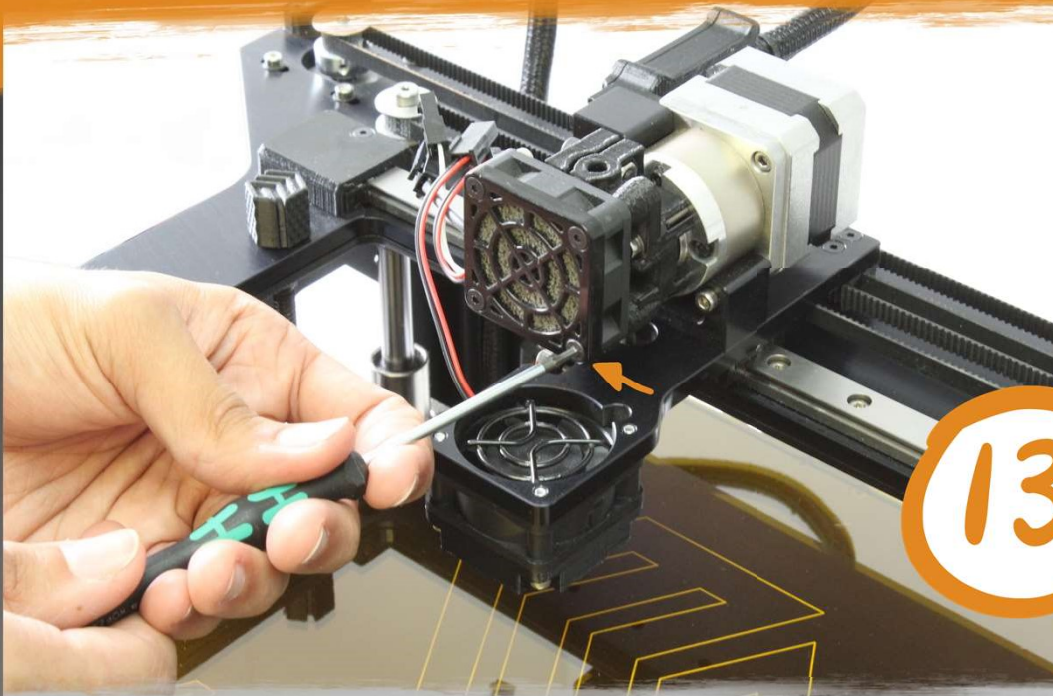
Shut off the printer's 24V power supply and pull out the 6-pin power connector in the back of the printer.



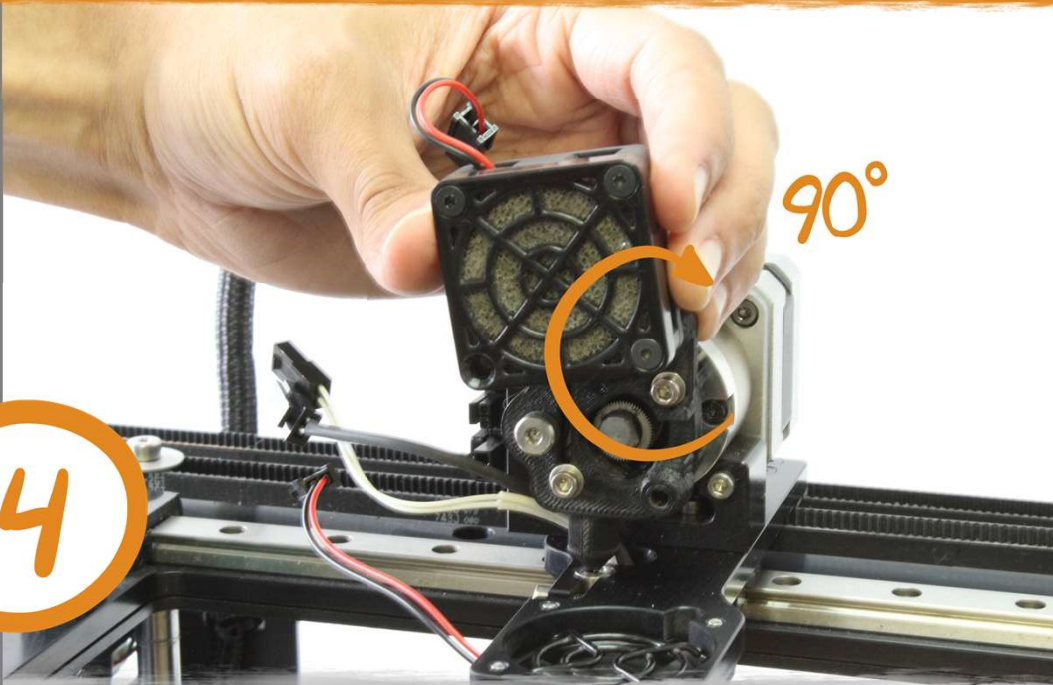
Make sure you are working on the correct extruder! Looking at the front of the printer, we will be modifying the left extruder, it is marked as 'T0'.



Unplug all of the molex connectors from the extruder. Each one has a lever that needs to be pressed to release the connector.



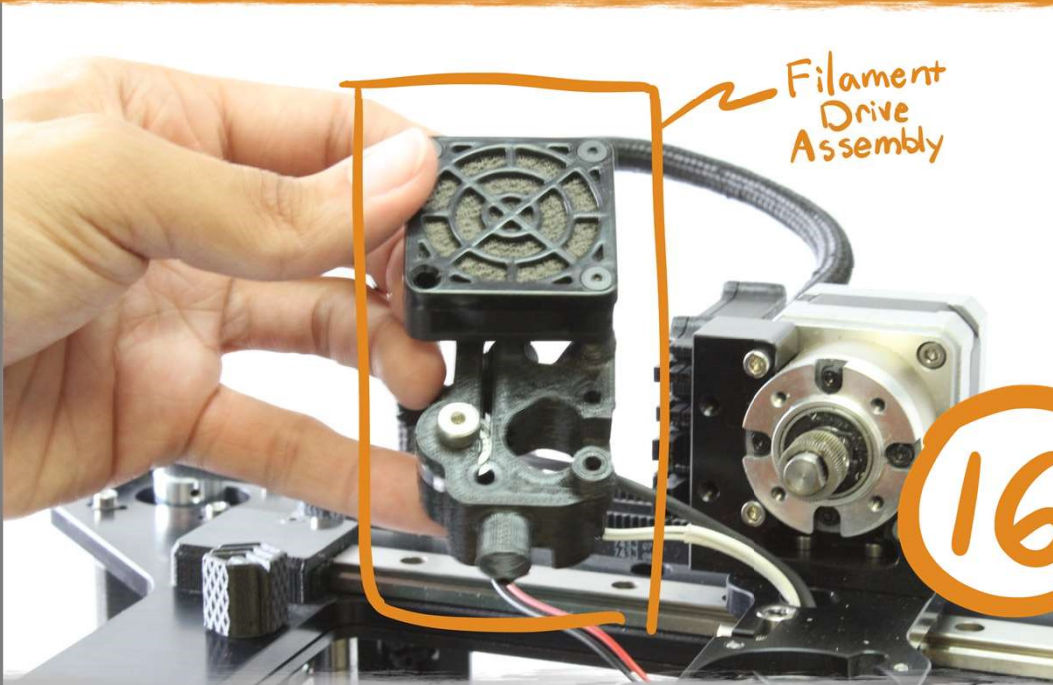
Use a 2 mm hex driver to remove the M3x45mm flat head screw in the bottom-right of the filament drive fan.



Rotate the filament drive fan clockwise to expose the screw heads beneath.

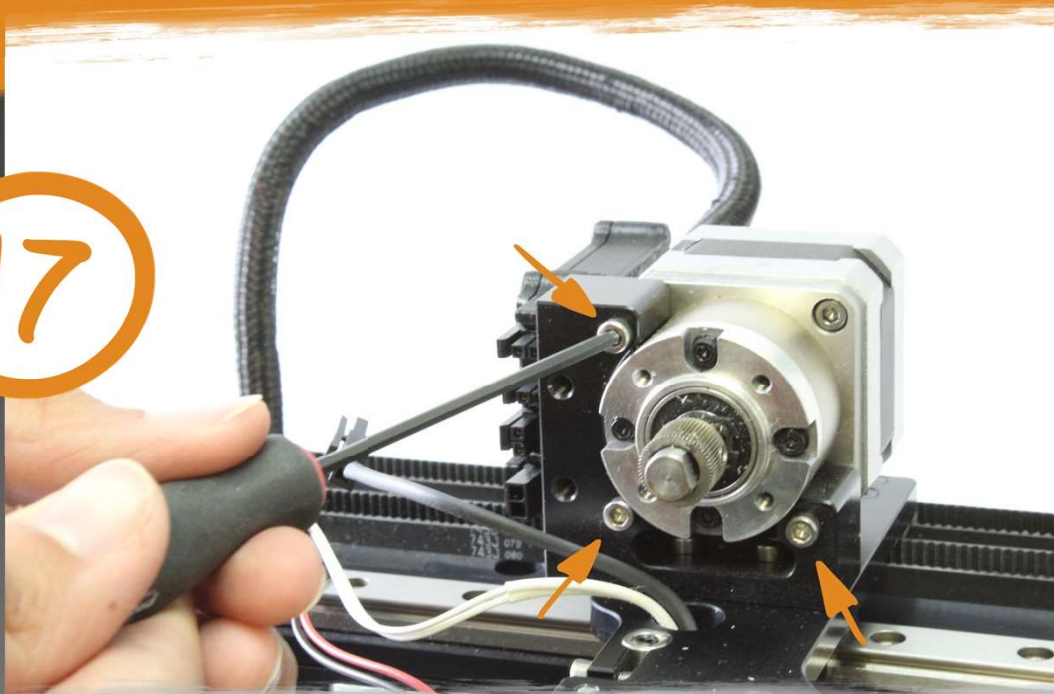


Use a 2.5 mm hex driver to remove the two (2) M3x25mm screws from the filament drive. These screws have M3 washers on them so make sure they stay together.



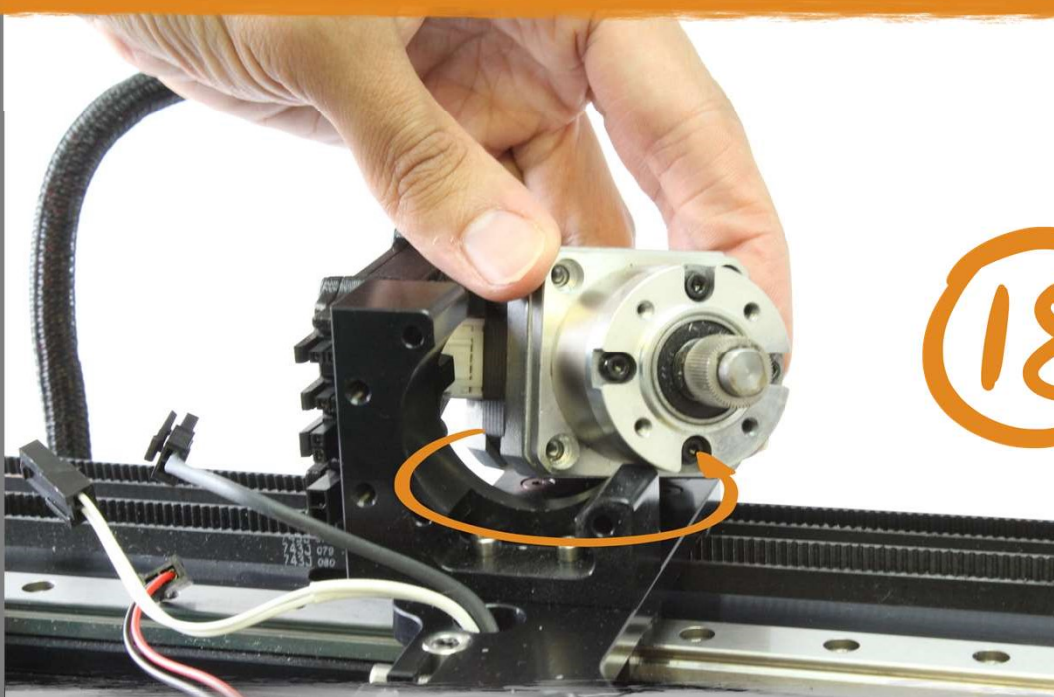
Now the filament drive assembly is free and can be set aside for later use.

17



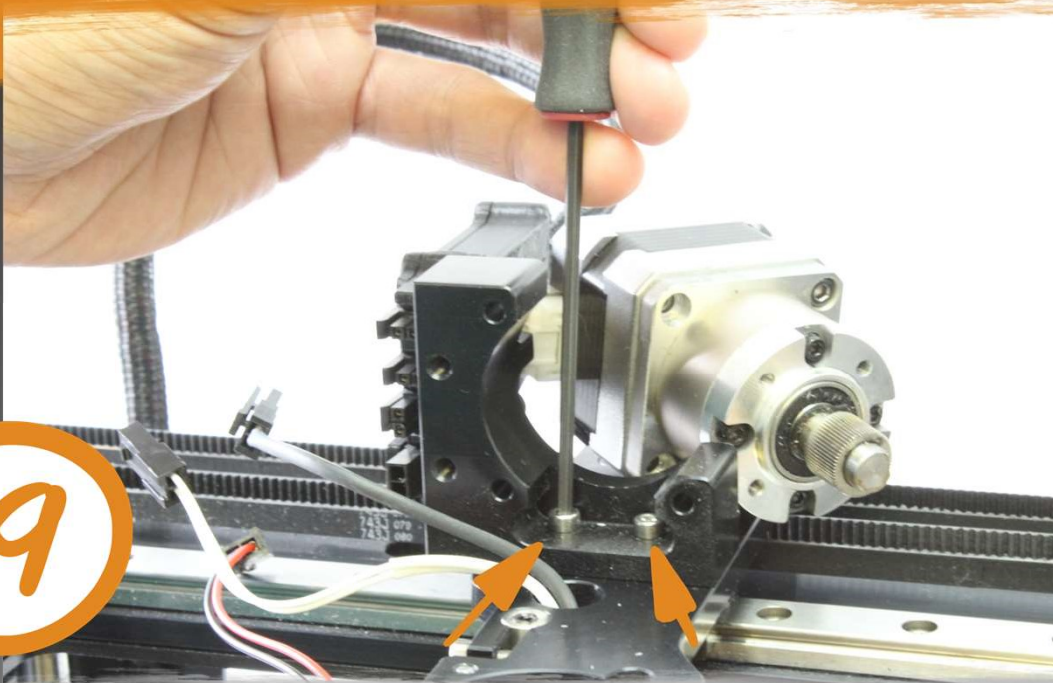
Use a 2.5 mm hex driver to remove the three (3) M3x25mm screws from the motor mount.

18



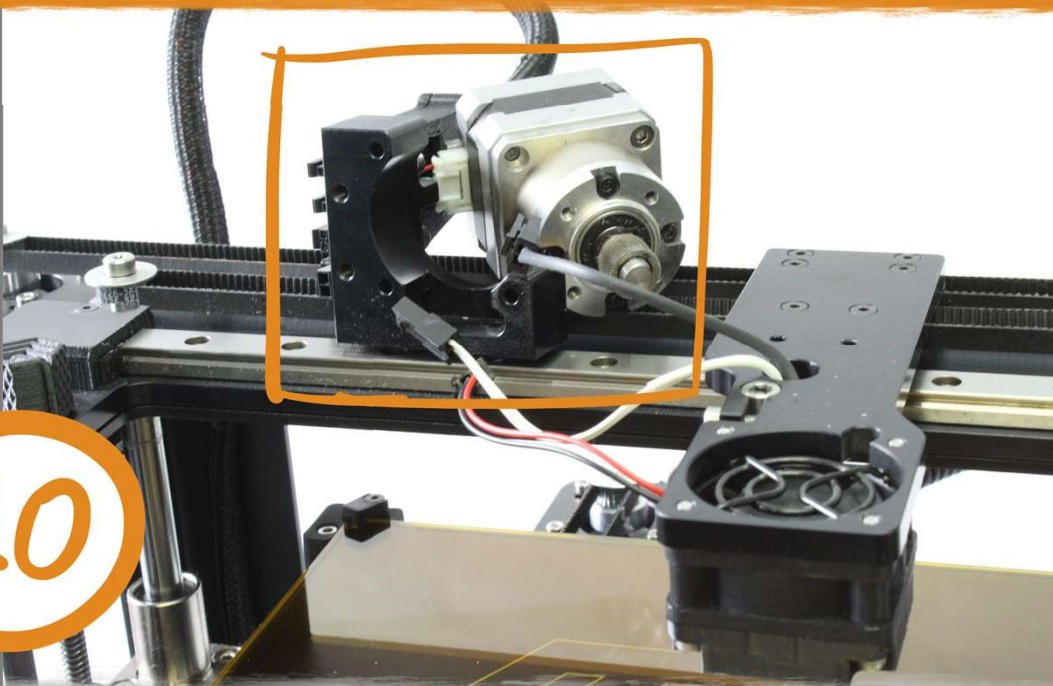
Gently move the extruder motor aside to expose the screws beneath. The motor is connected to a cable; this cable can be left attached to the motor, but if it is detached we have steps for reattachment later.

19

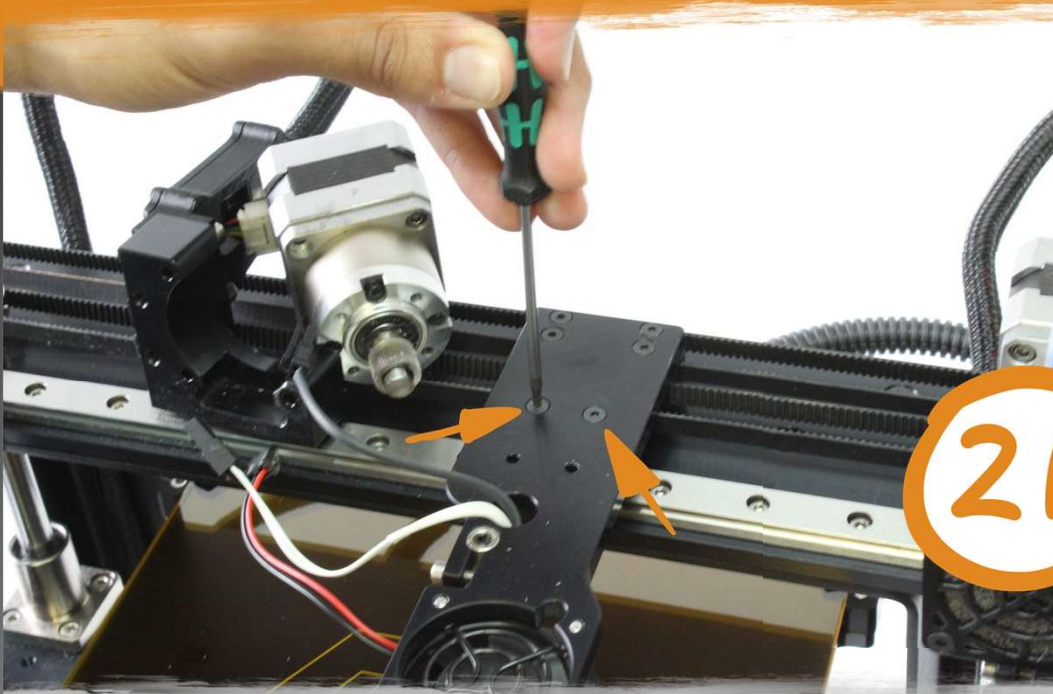


Use a 2.5 mm hex driver to remove the two (2) M3x14mm screws from the motor mount.

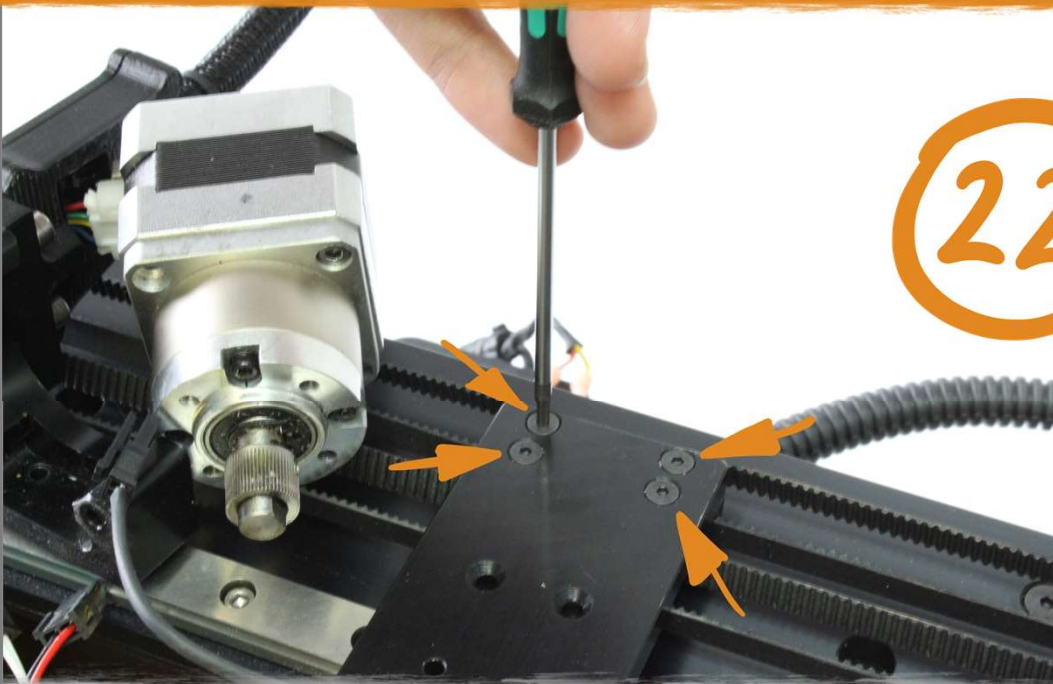
20



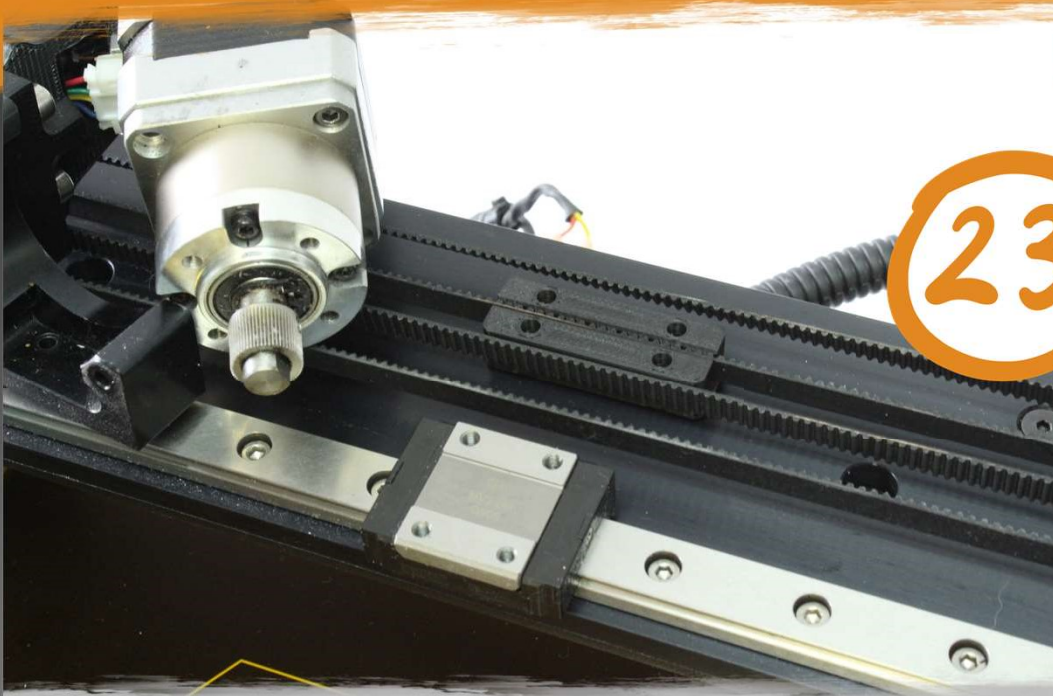
Now everything on top of the hotend mounting plate is free and can be set aside. It is set on the top plate in the picture, but it can also be set on the bed.



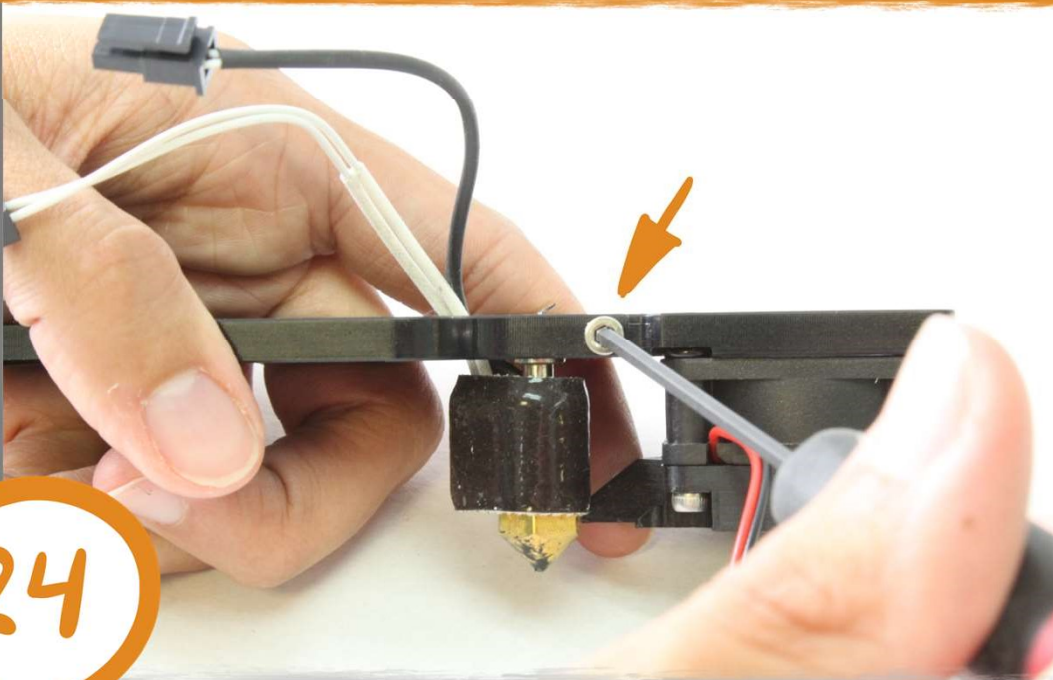
Use a 2 mm hex driver to remove the two (2) M3x10 flat head screws from the hotend mounting plate.



Use a 2 mm hex driver to remove the four (4) M3x16 flat head screws from the hotend mounting plate.

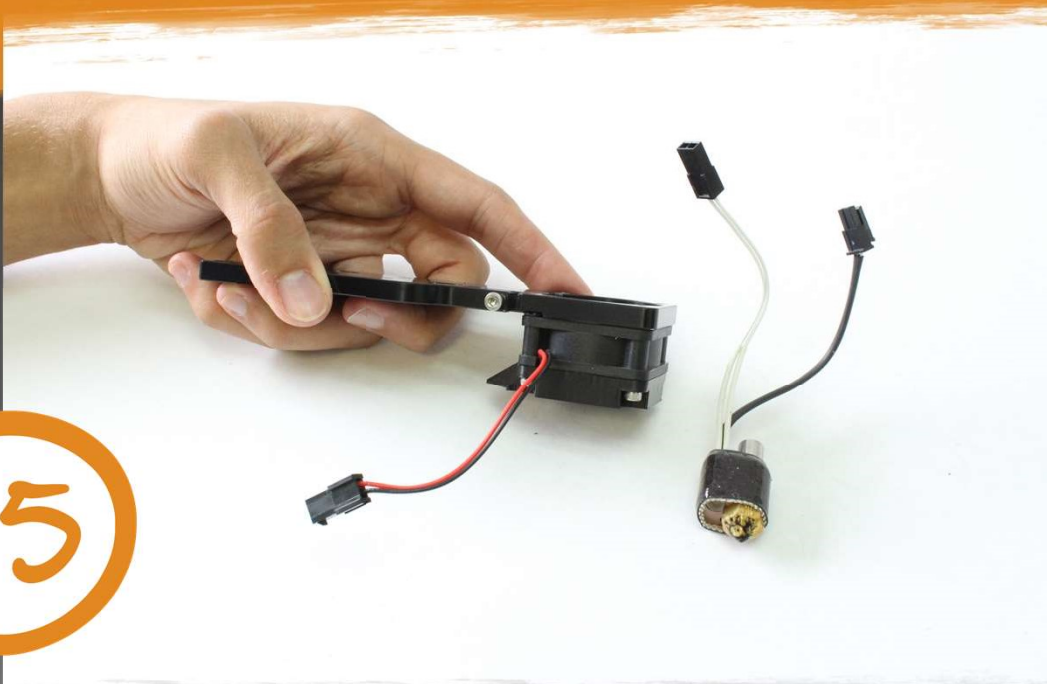


Remove the hotend mounting plate from the printer. Now we are going to move its parts to the upgrade assembly.



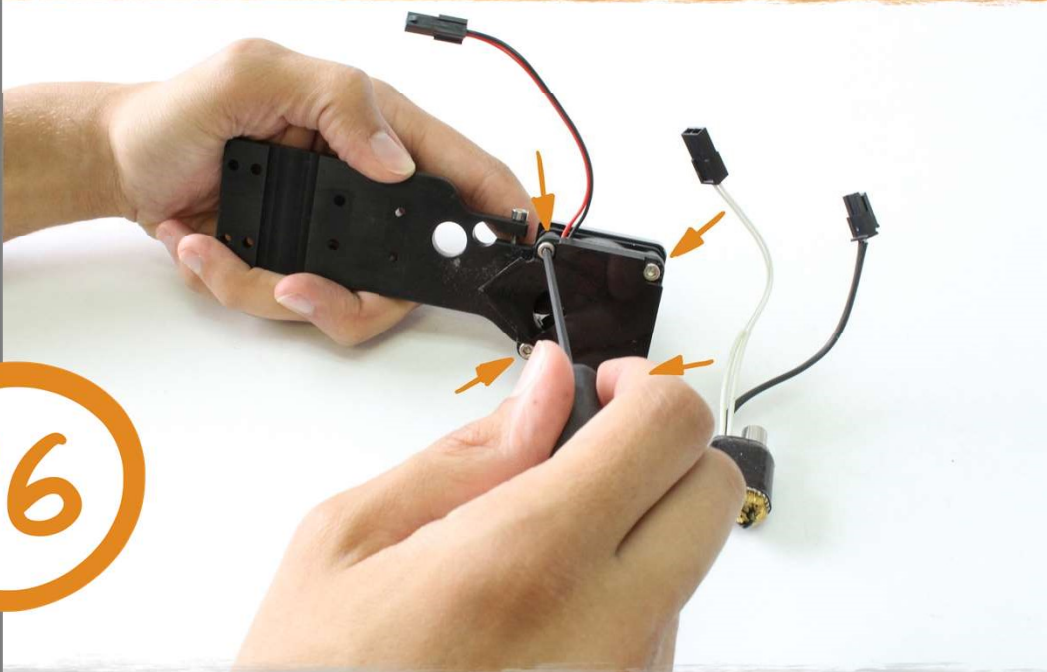
Begin by loosening the hotend with a 2.5 mm hex driver.

25



Pull the hotend out and set it aside.

26



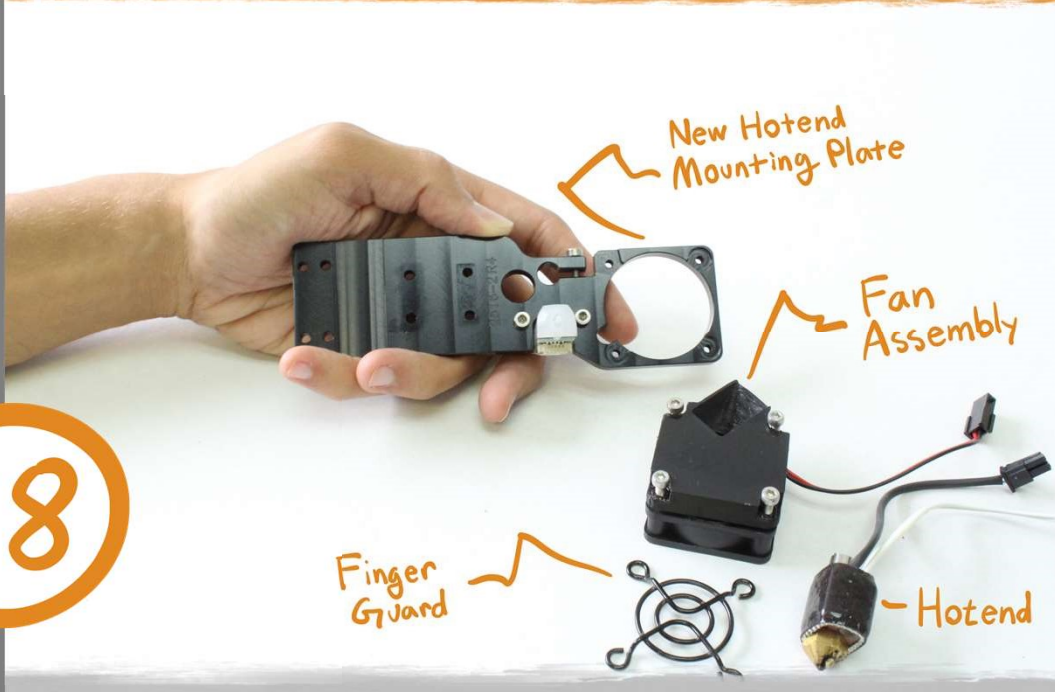
Loosen the four (4) M3x25mm screws from the hotend fan assembly.

27



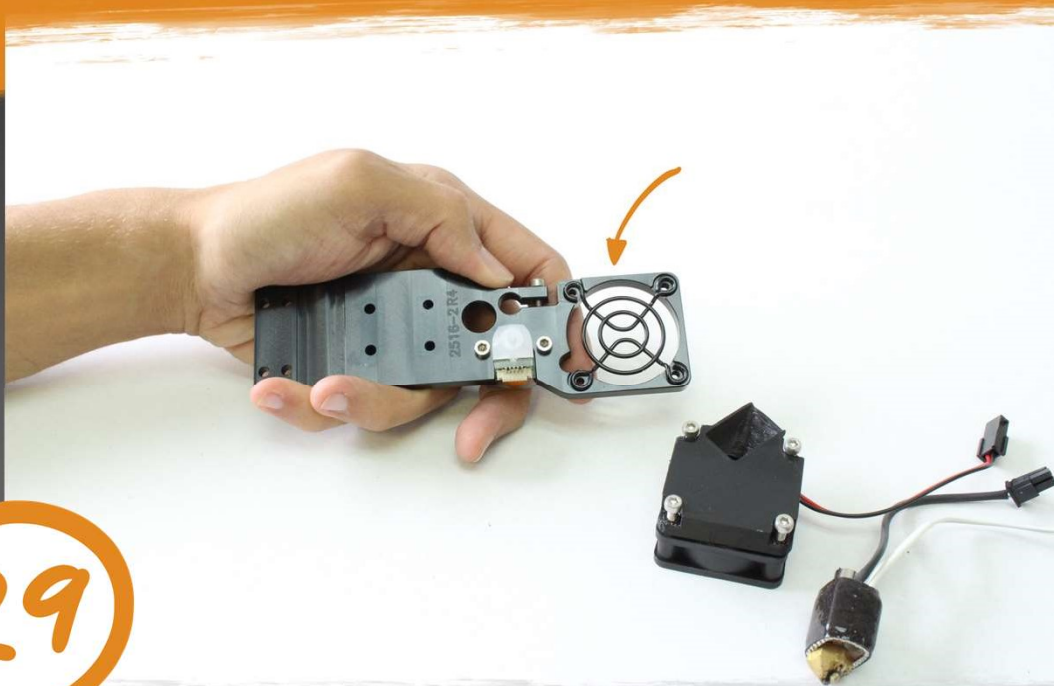
Pull off the fan assembly and finger guard and set it aside.

28



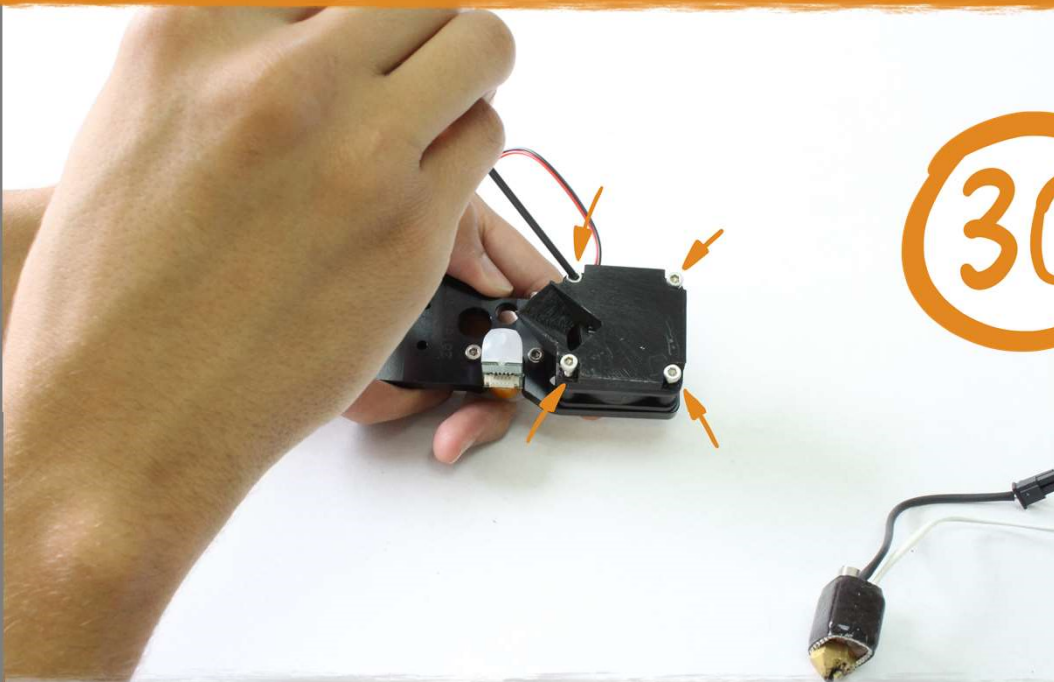
Now locate your hotend mounting plate that came with the upgrade kit that includes a BL Touch probe.

29

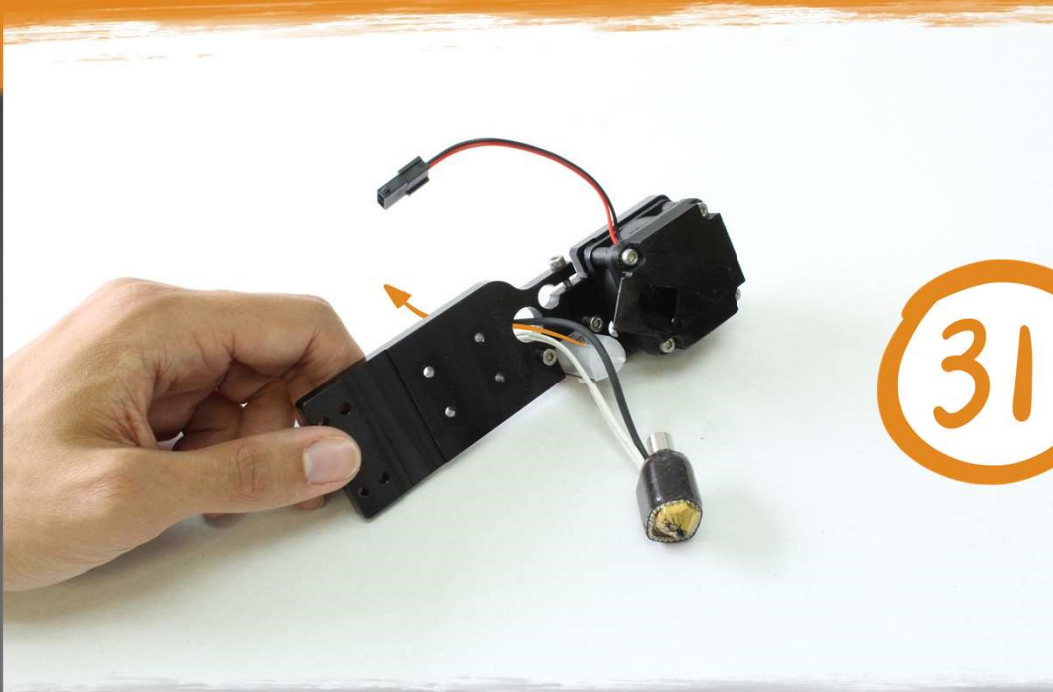


Place the finger guard into the bottom of the new hotend mounting plate. The raised side of the finger guard should be towards the top of the new hotend mounting plate.

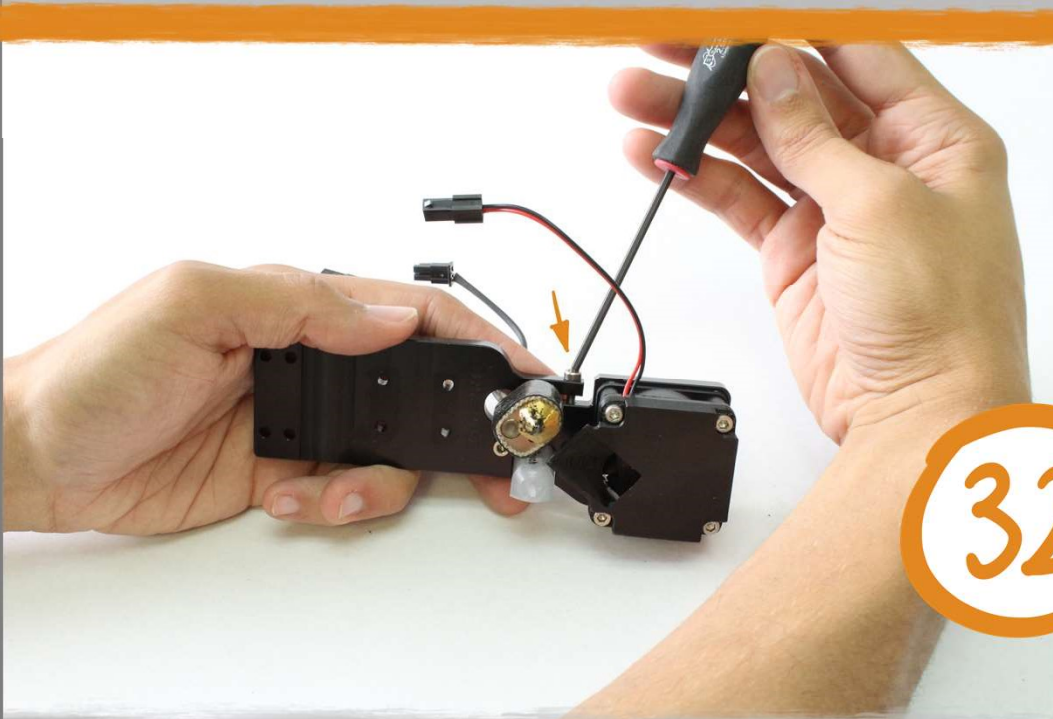
30



Use a 2.5 mm hex driver to fasten the fan assembly to the hotend mounting plate using the four (4) M3x25mm screws. Make sure the orientation is correct!



Feed the hotend connectors through the plate as shown.

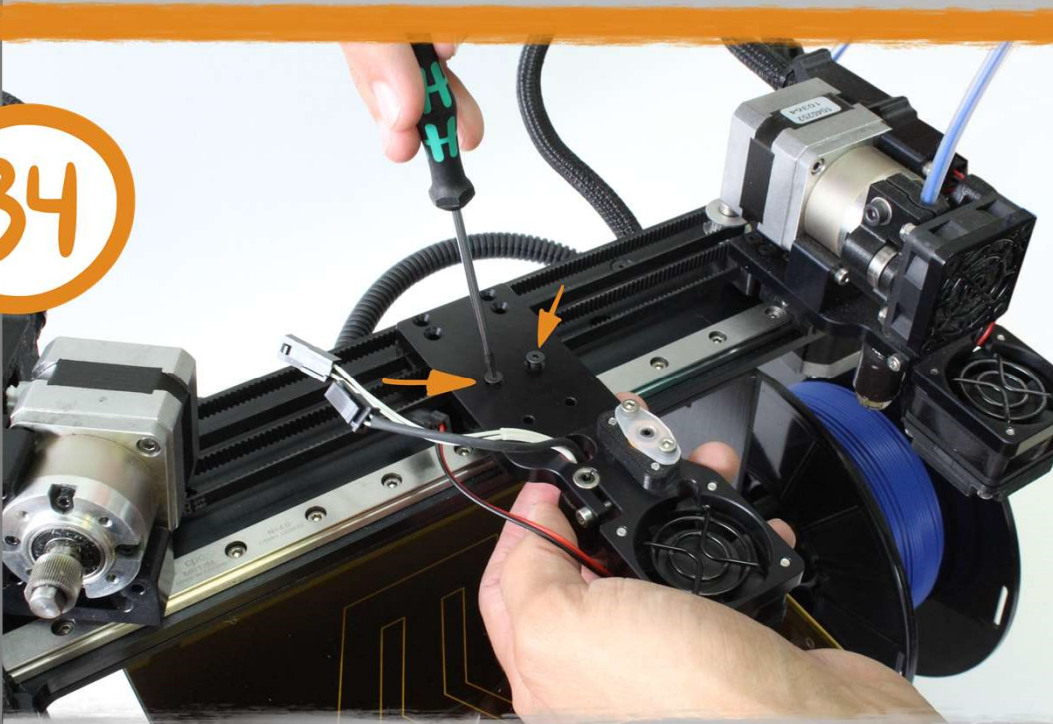


Slide the hotend into the clamp and tighten it with a 2.5 mm hex driver so that the top of the hotend is flush with the top of the hotend mounting plate.



33

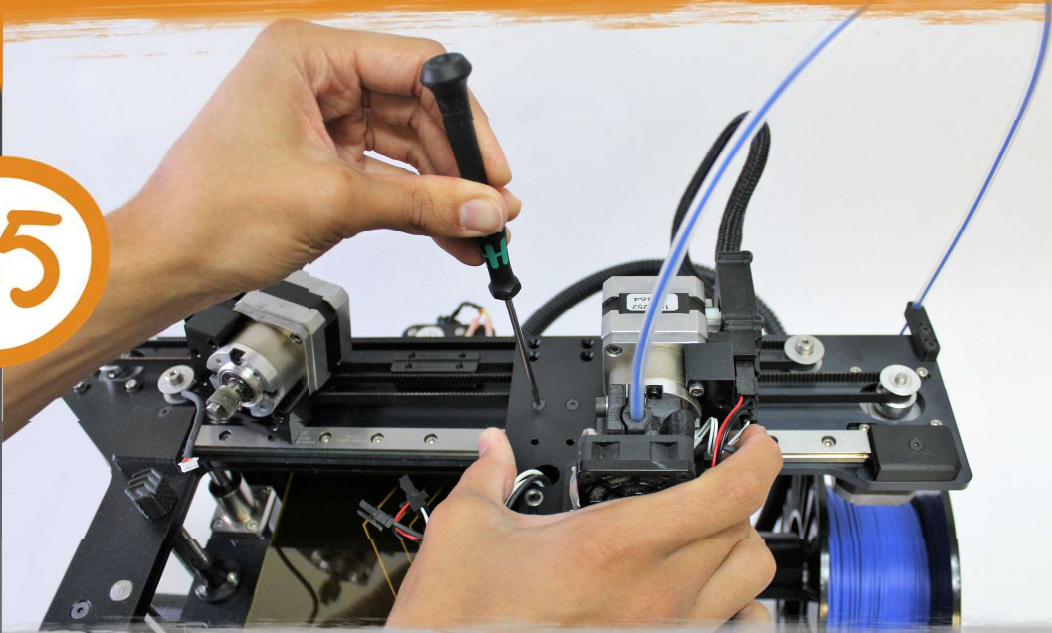
Now it is ready to be installed on the printer!



34

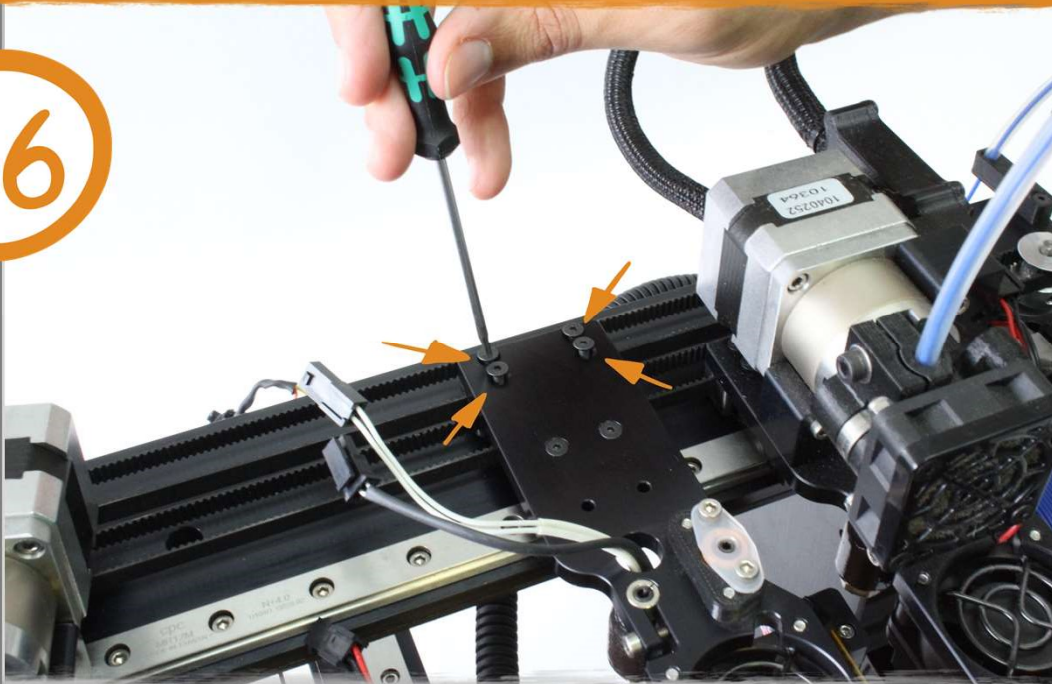
Loosely fasten the hotend mounting plate to the linear carriage with a 2 mm hex driver using the two (2) M3x10mm flat head screws from step 21.

35

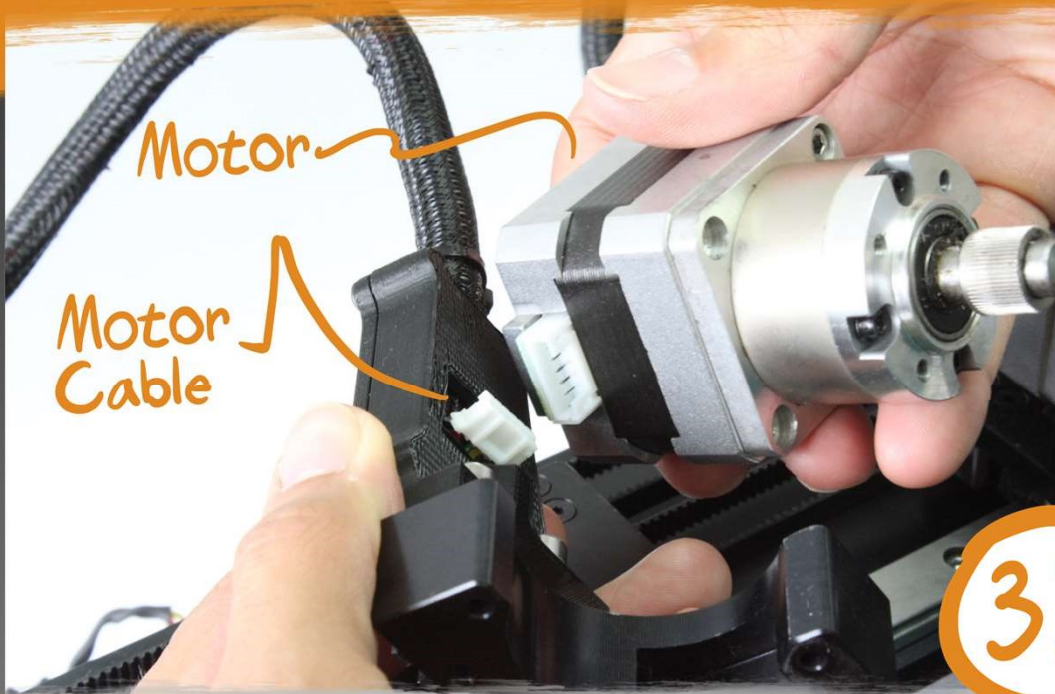


Move T0 and T1 by hand and press them together. While they are being pressed together, tighten the two screws completely. This will ensure that T0 is straight. When tightening multiple screws make sure all of the screws are loosely fastened before fastening all of them completely.

36



Fasten the hotend mounting plate to the belt clamp with a 2 mm hex driver using the four (4) M3x16mm flat head screws from step 22.

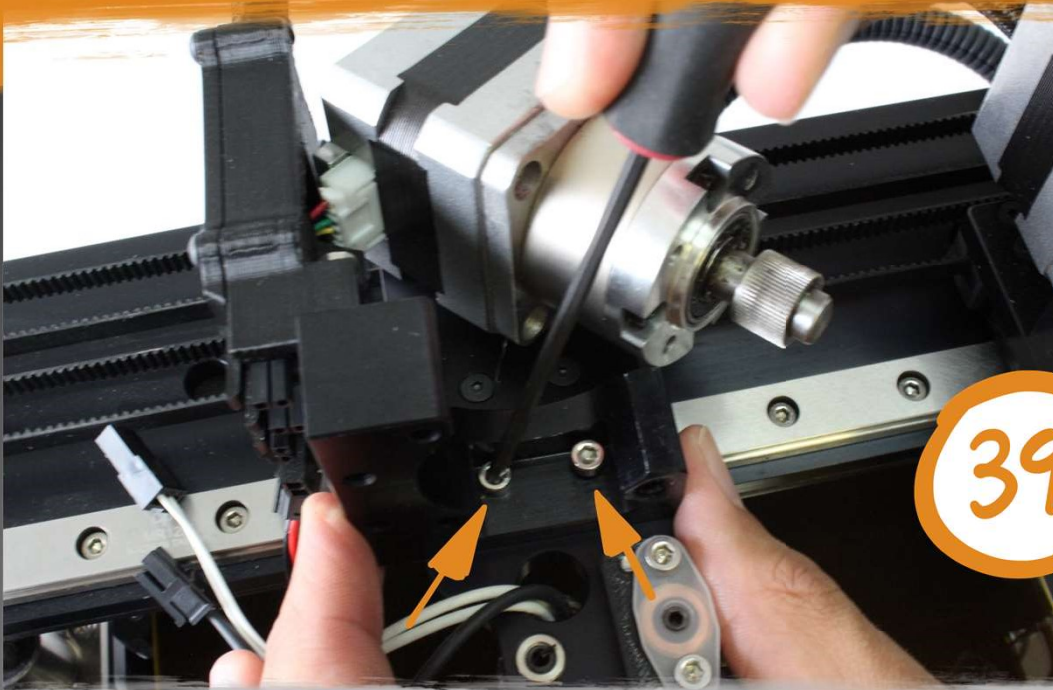


If your motor is still securely connected to its cable then skip to step 39, if not then please continue.

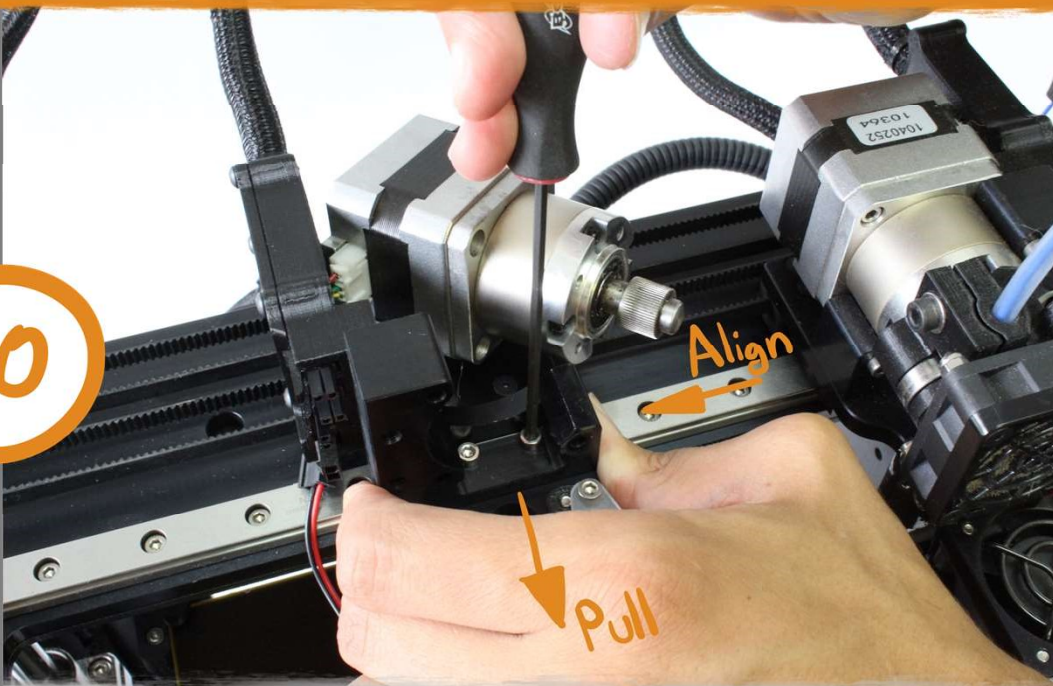
38



To connect the motor, line it up with its cable, the connector is polarized and will only go in if the 'U' shape is facing forward. After they are lined up, you can use one of your drivers to push the connector until it is fully seated in the motor as pictured in the next step.

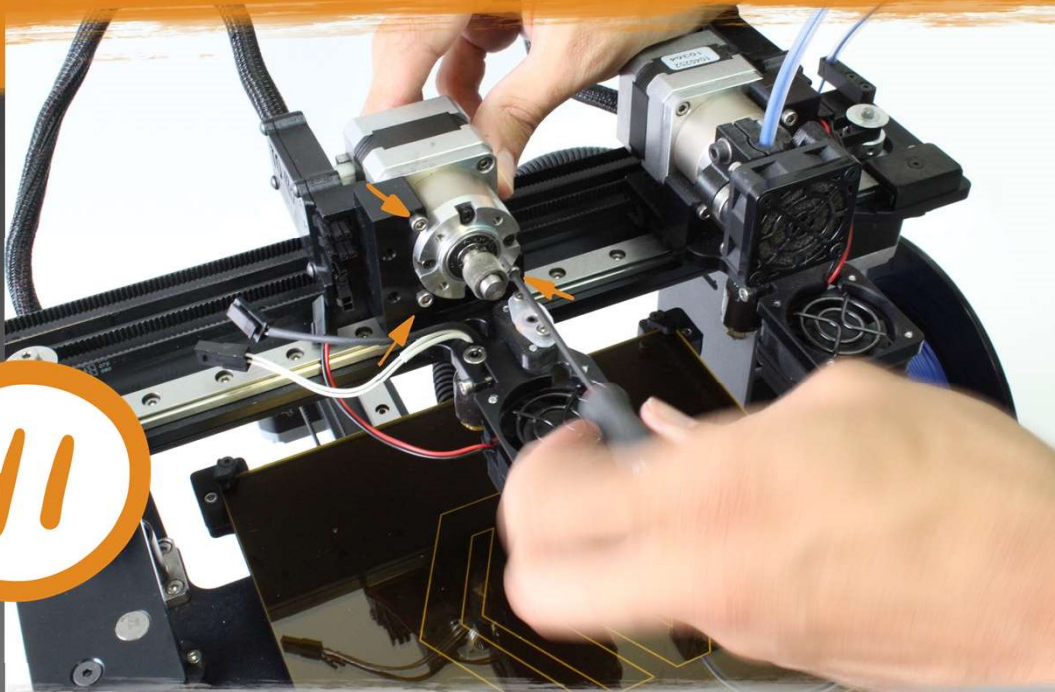


Loosely fasten the motor mount to the hotend mounting plate with a 2.5 mm hex driver using the two (2) M3x14mm screws from step 19.



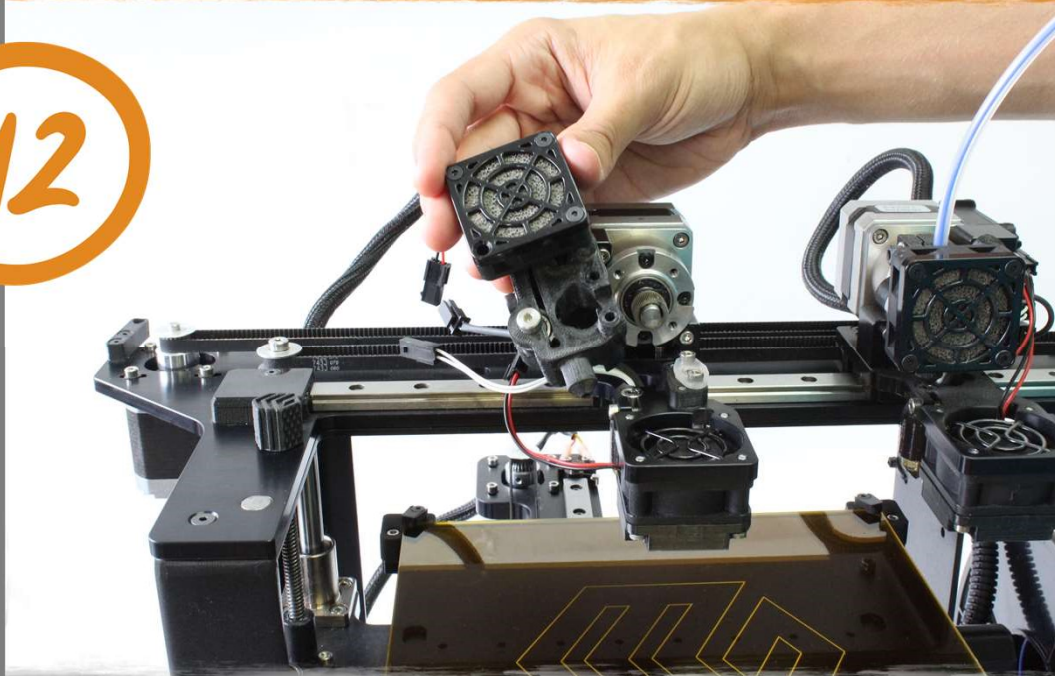
Pull the motor mount forward and line up its right edge with the edge of the hotend mounting plate. Just using a finger to feel for when they are coplanar is enough. While holding it in this position, tighten down the two screws completely.

41

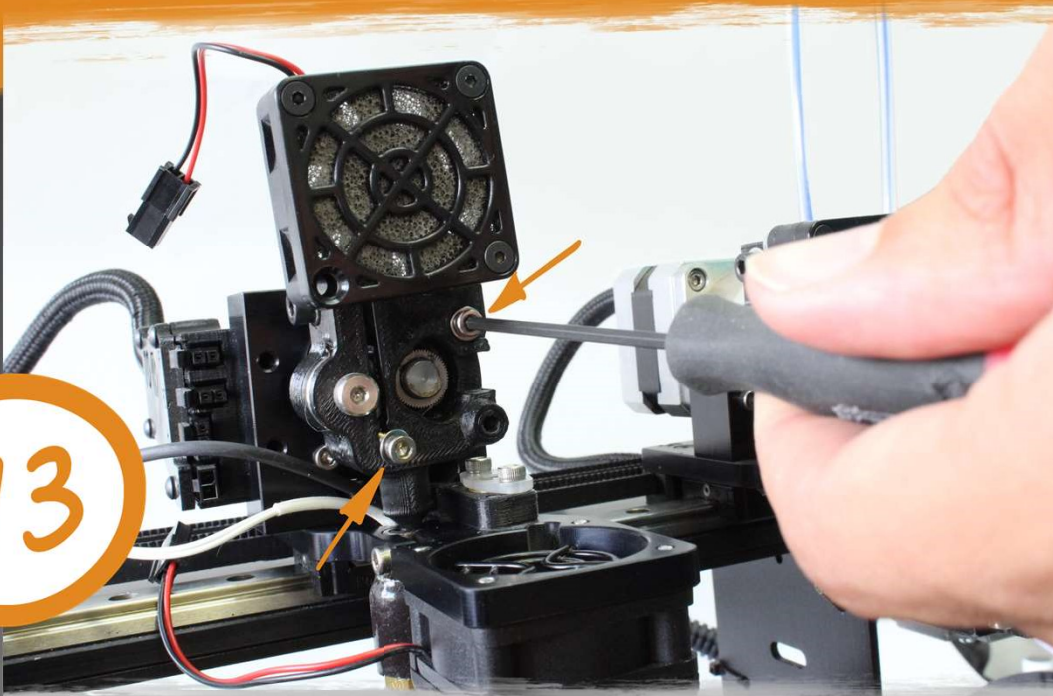


Carefully rotate the motor back into the motor mount and fasten it using a 2.5 mm hex driver with the three (3) M3x25mm screws from step 17.

42

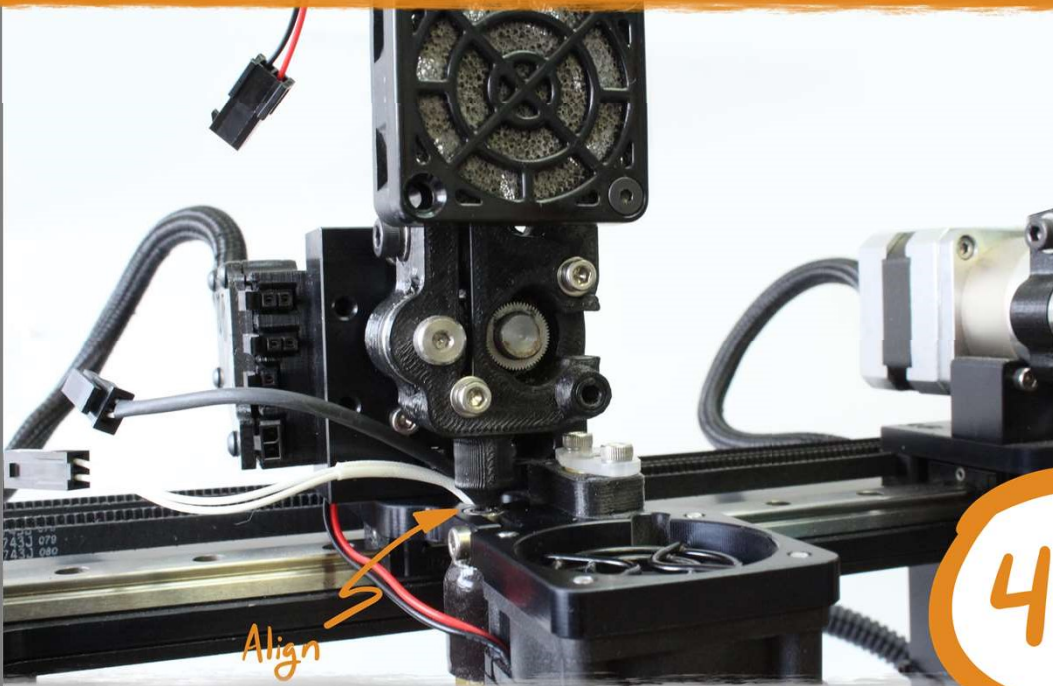


Locate your filament drive assembly from step 16.



43

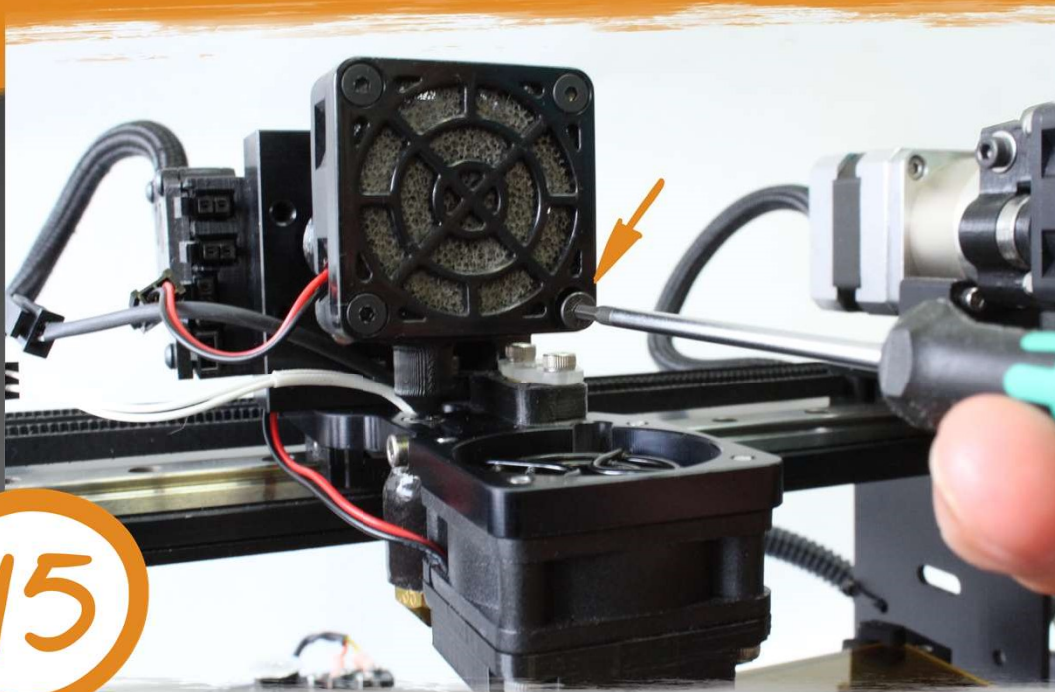
Fasten the filament drive assembly to the motor using a 2.5 mm hex driver and the two (2) M3x25mm screws/washers from step 15.



44

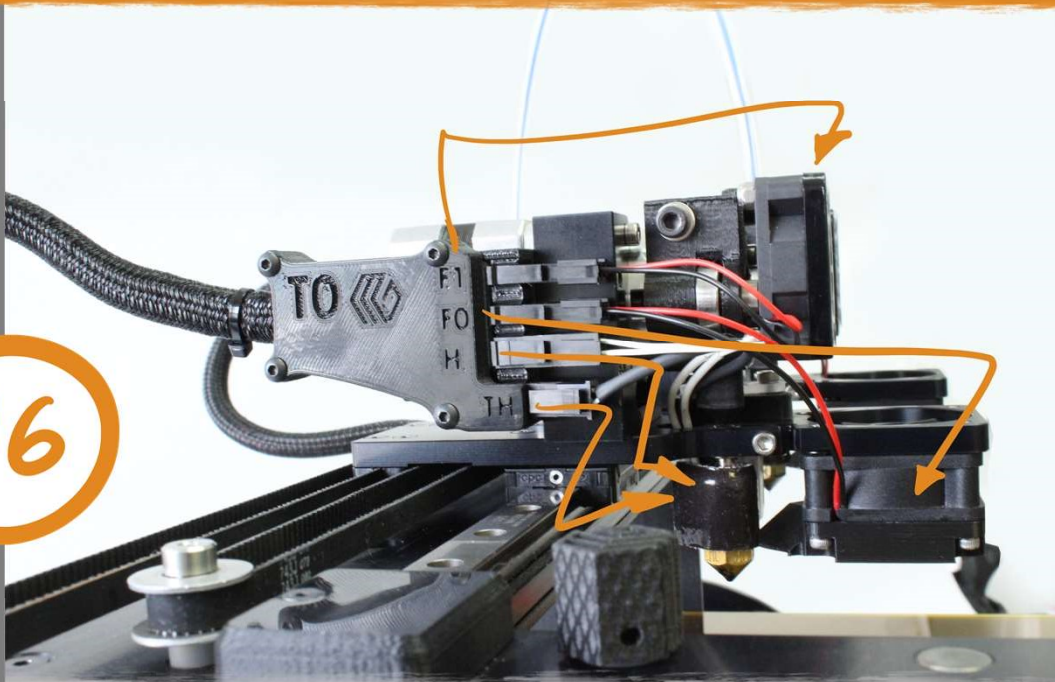
Make sure the exit for the filament drive is visually lined up with the entrance to the hotend.

45

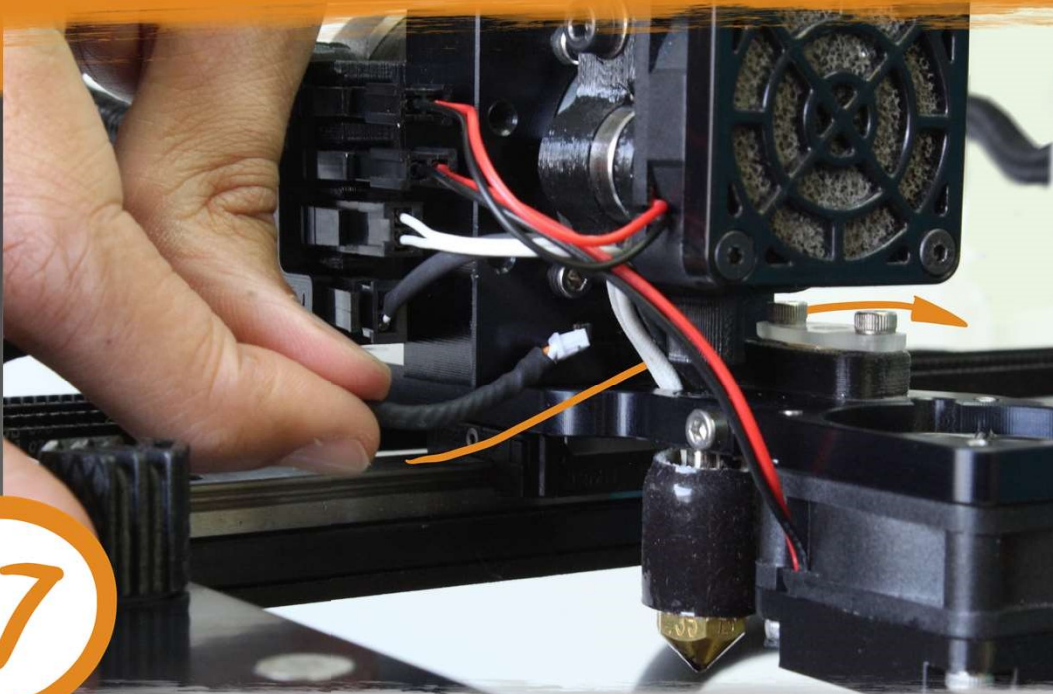


Rotate the filament driver fan down and fasten it using a 2 mm hex driver and the M3x45mm flat head screw from step 13.

46

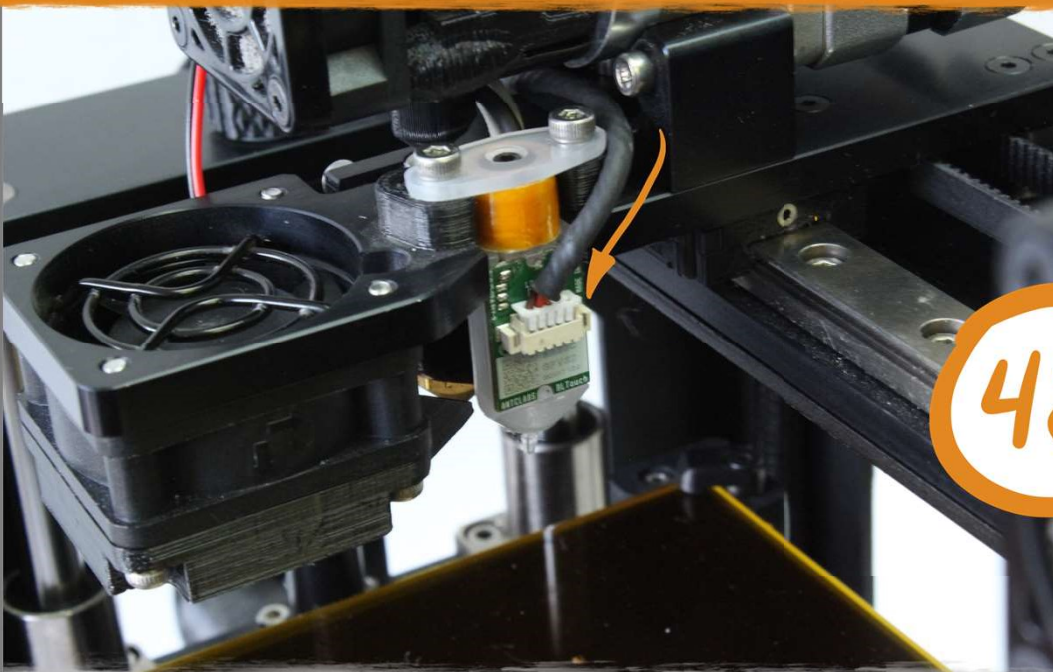


Plug in all of the molex connectors. This diagram will help you find the right positions.



47

Locate your BL Touch harness and pass it under the left side of the filament drive as shown.



48

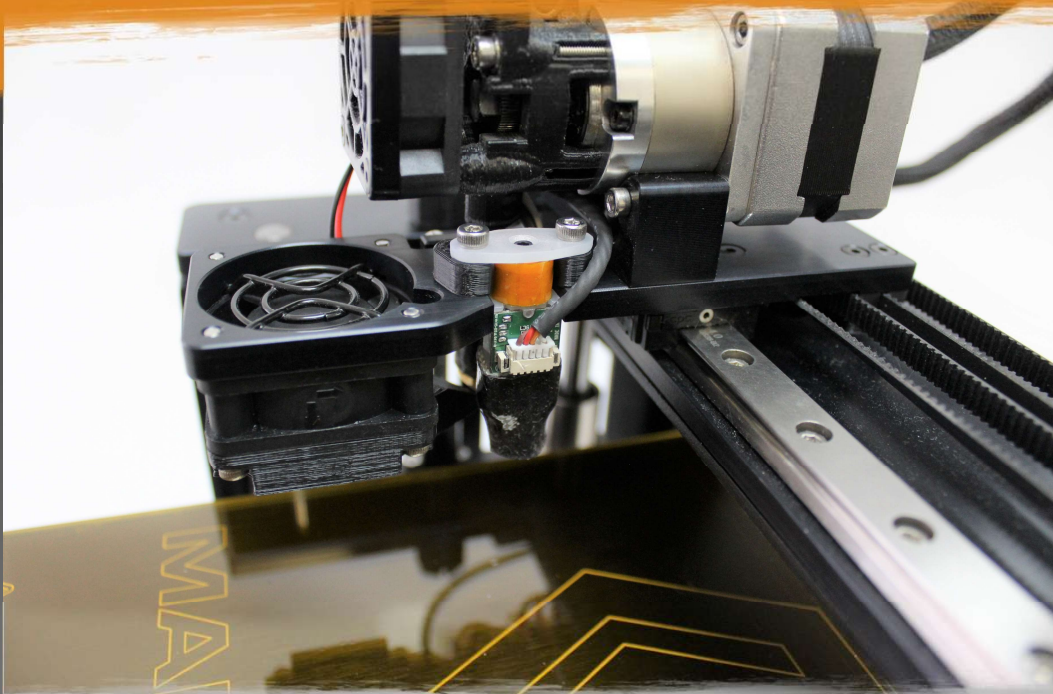
Plug it into the BL Touch. This connection is also polarized so you may need to flip it. The next instructions will show you how to install the insulative sleeve that will protect the sensor from heat.



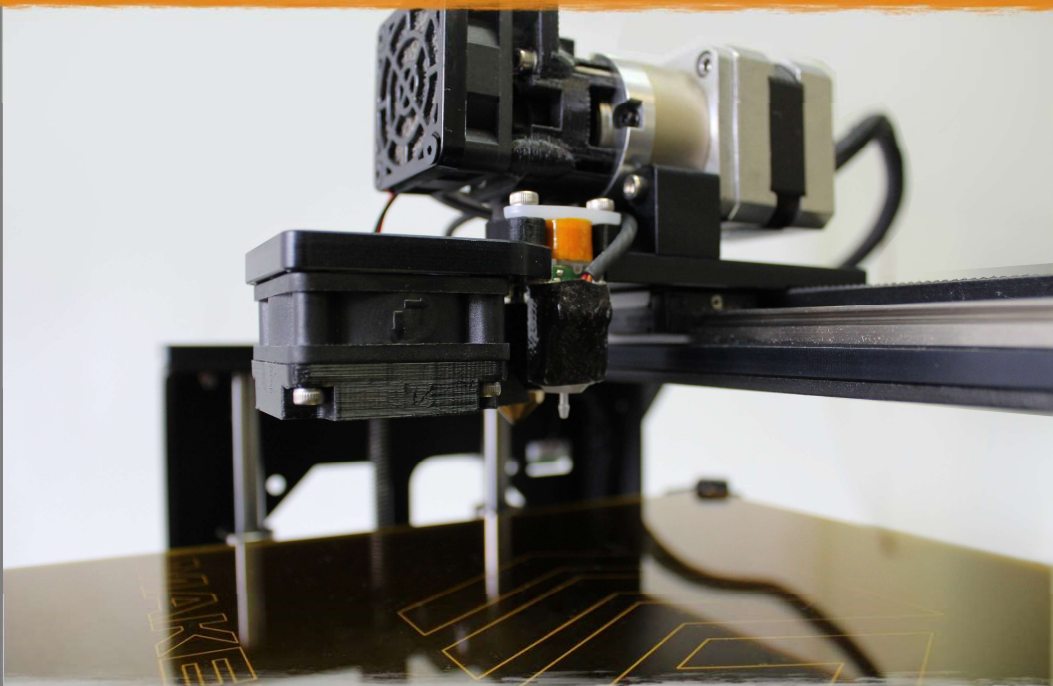
Locate the insulative sleeve that came in your upgrade kit.



Slip the sleeve over the bottom of the sensor.

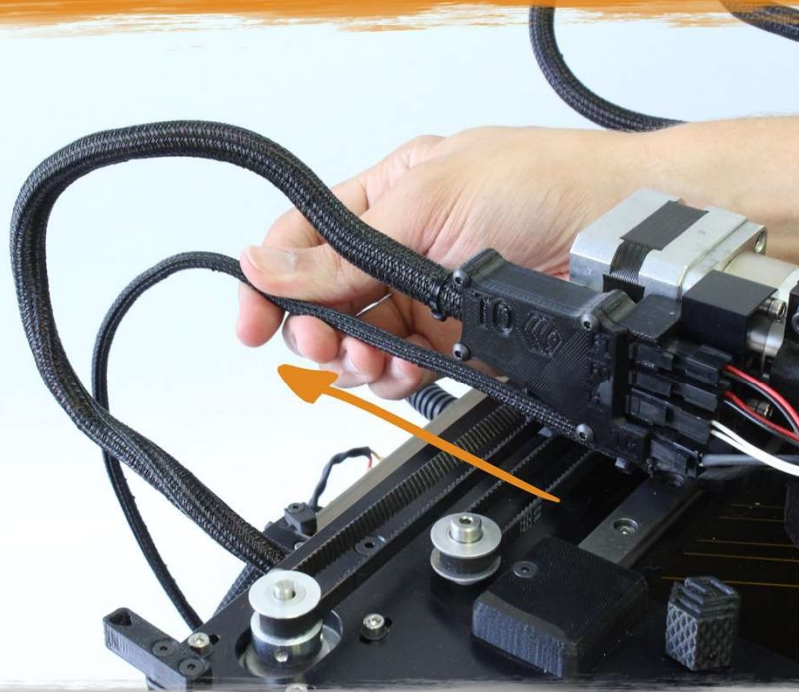


It can be a tight fit so if the sleeve gets stuck on the connector, you can use one of your drivers to widen the opening while pushing up on the sleeve.



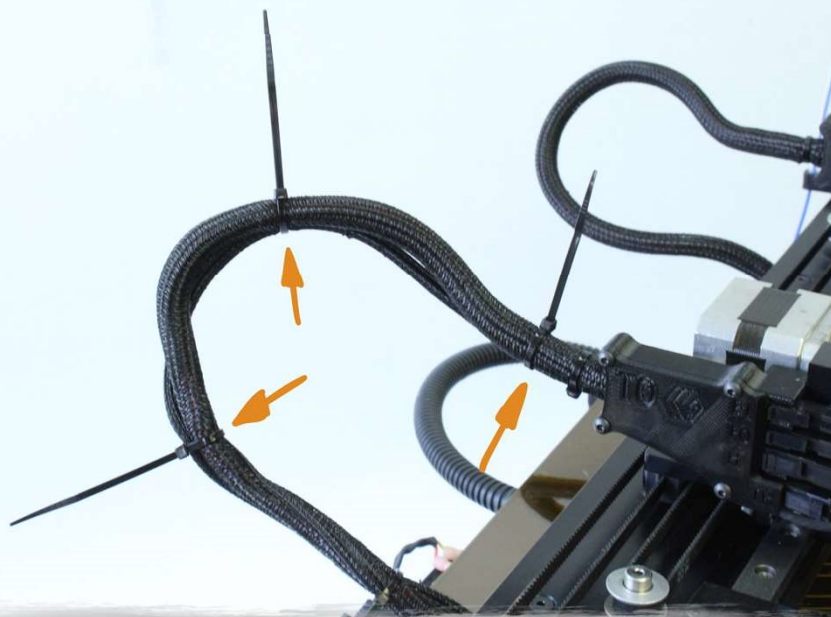
Now you can slide the sleeve up to its final position as shown.

49



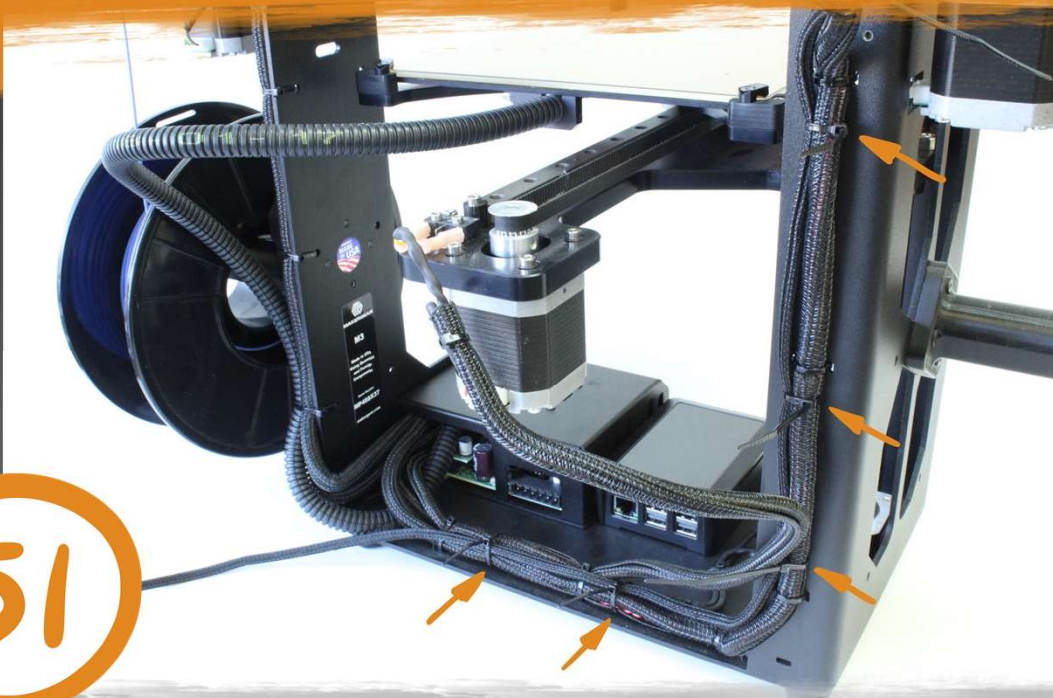
Pull the BL Touch harness taught behind the extruder as shown and zip tie it in place.

50



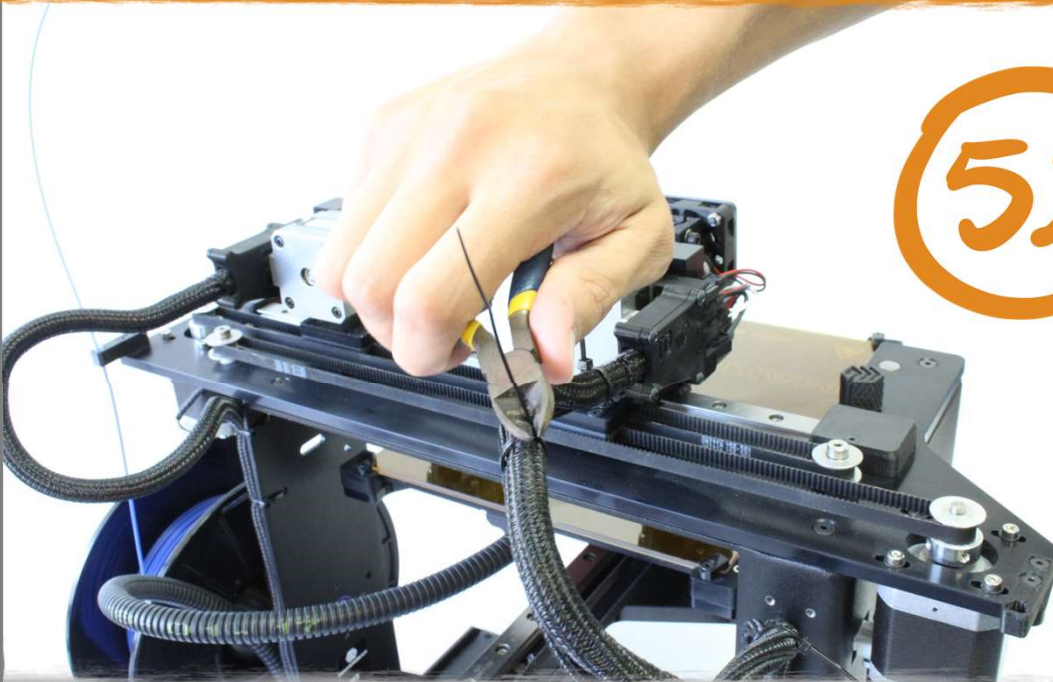
Add zip ties to anchor the BL Touch harness to the original extruder harness. The BL Touch harness should just follow the harnesses arc so zip tie placement isn't exact, but you can use these pictures for reference.

51



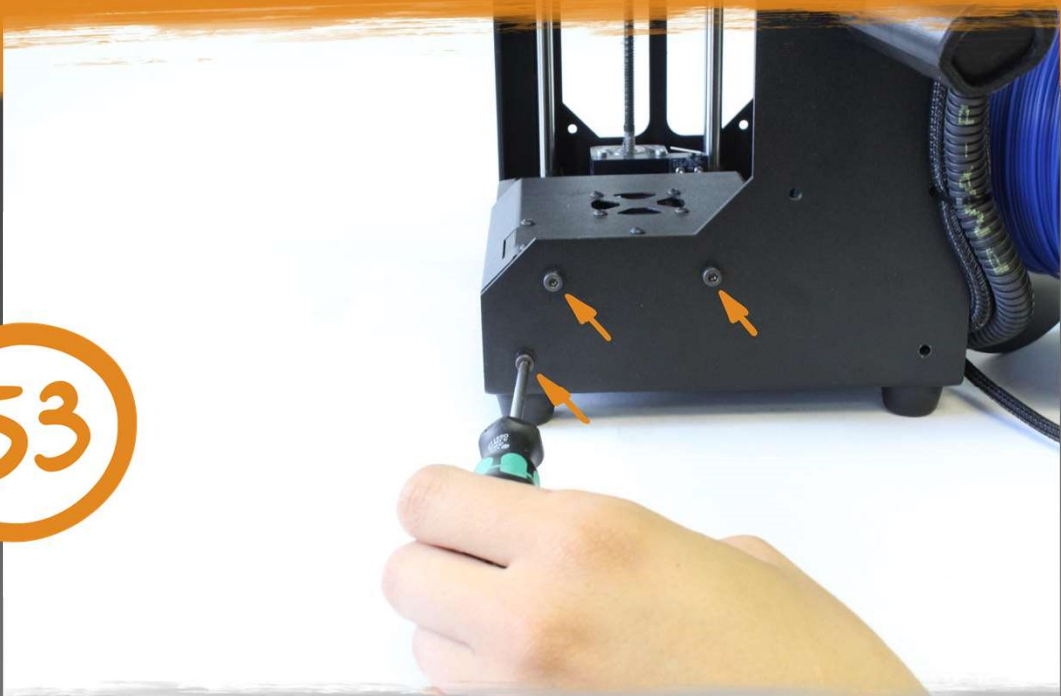
Pass the zip ties between the original harnesses and the frame until the BL Touch harness is secured all the way to the back of the RAMBo case.

52



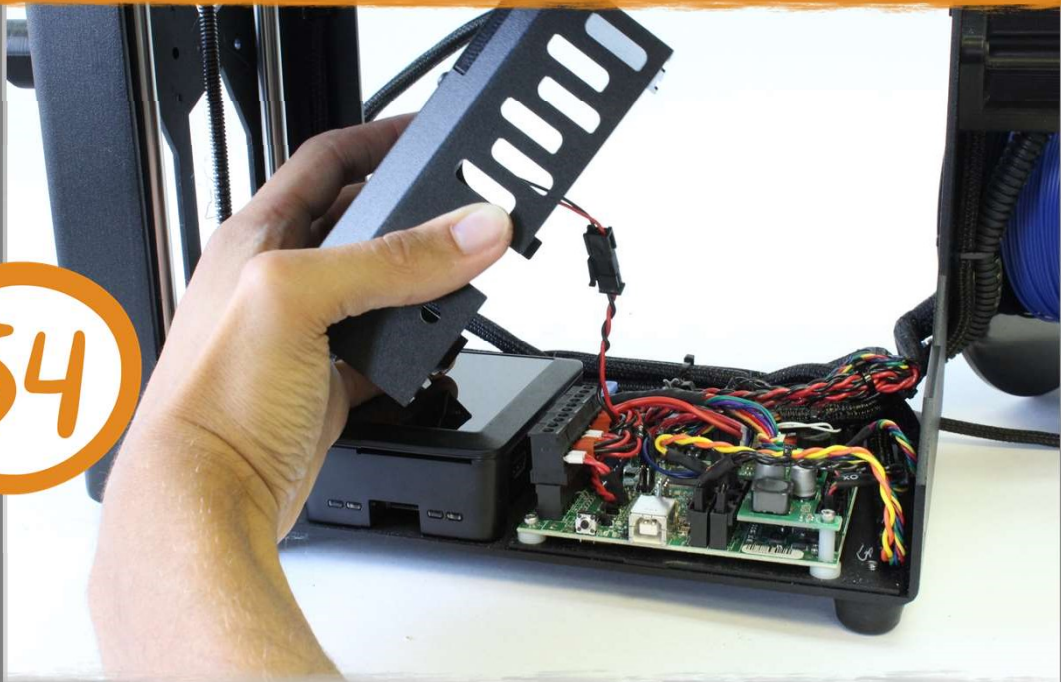
After the zip ties are tightened you can cut off the excess.

53

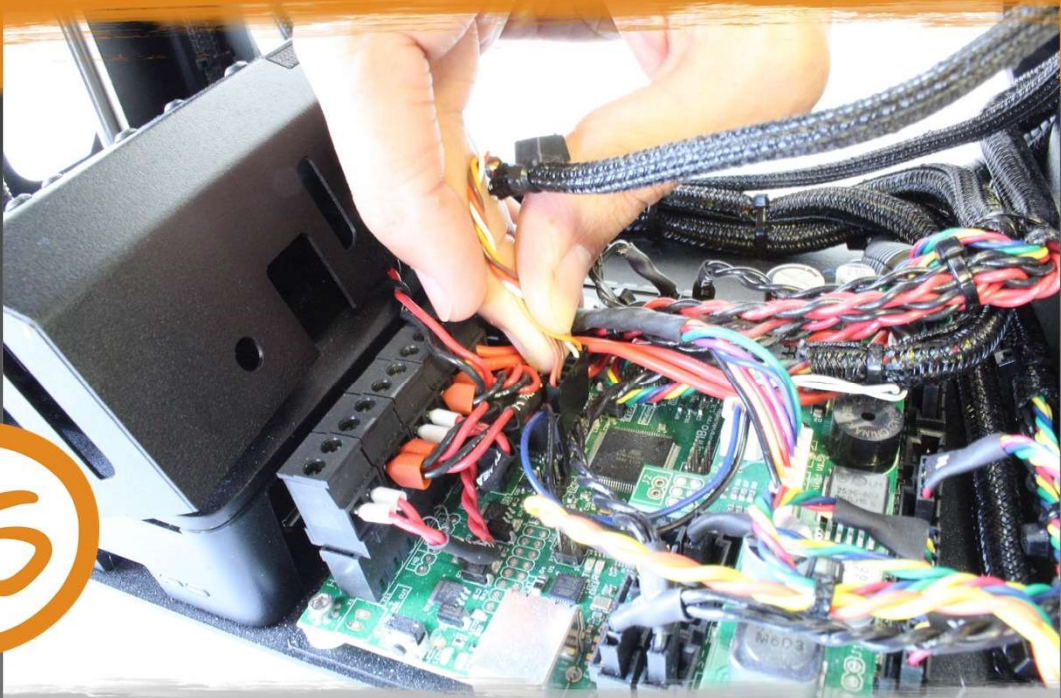


Use a 3 mm hex driver to loosen the three (3) M4x8 screws from the right side of the printer.

54

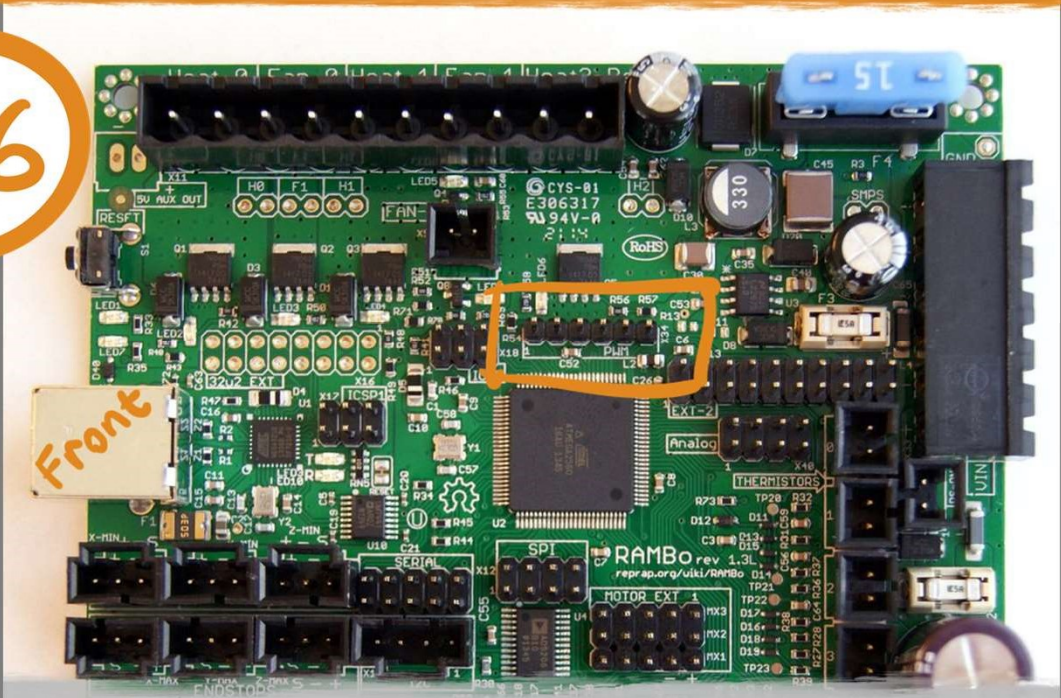


Carefully lift the RAMBo case top and set it aside.



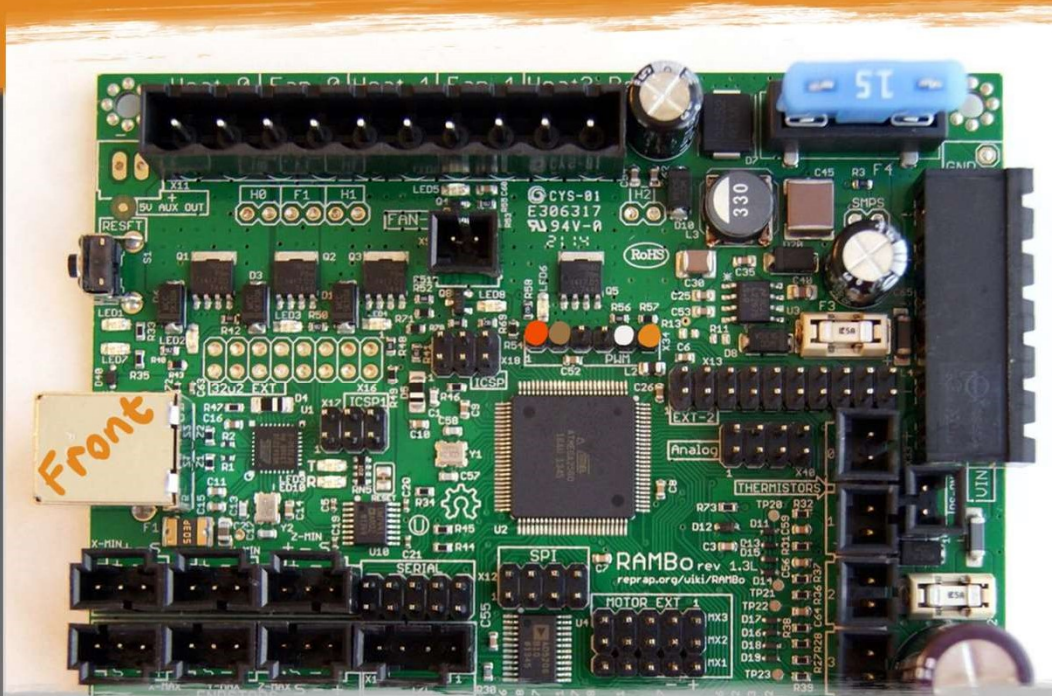
55

Plug in the BL Touch connector as shown in the next step.



56

Plug the 6-pin cable housing into the highlighted row of 6-pins. The next diagram will show you the correct orientation.



The BL Touch cable must be oriented as shown in the above diagram with the red and brown wires towards the front and the white and orange wires in the rear.



Replace the RAMBo case top. Use your finger to make sure the RAMBo case fan can still move freely. If it doesn't then rearrange the cables inside by just flexing them away from the fan.

58



Use a 3 mm hex driver to fasten the RAMBo case top to the frame using the three (3) M4x8 screws from step 53.

59



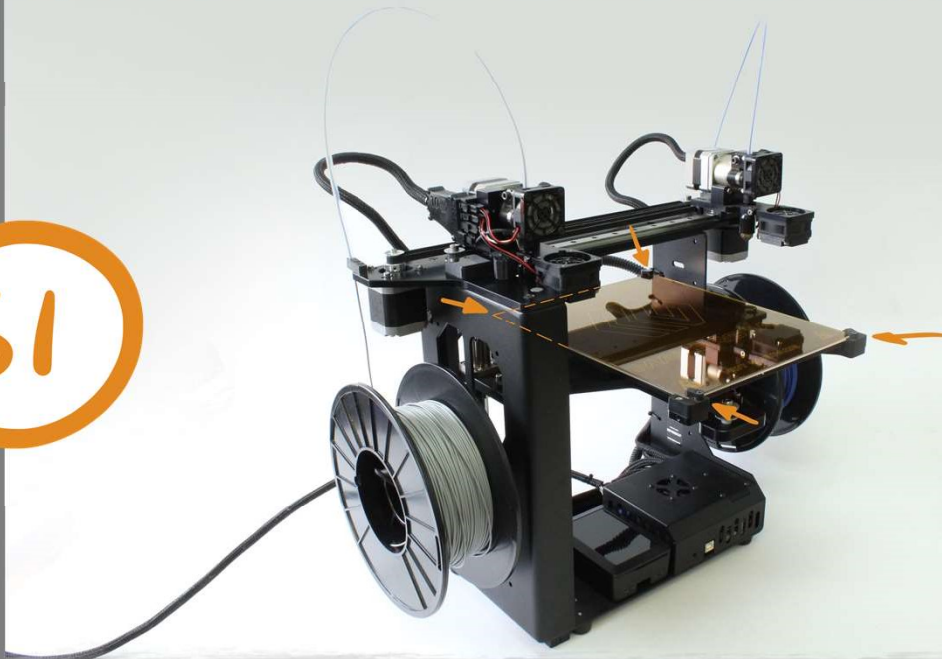
Plug the 6-pin power connector back into the RAMBo and power up your printer.



60

Locate your four (4) M3 Bed Hold Down Clips (pictured above). You will use these to replace your printer's current Bed Hold Down Clips.

61

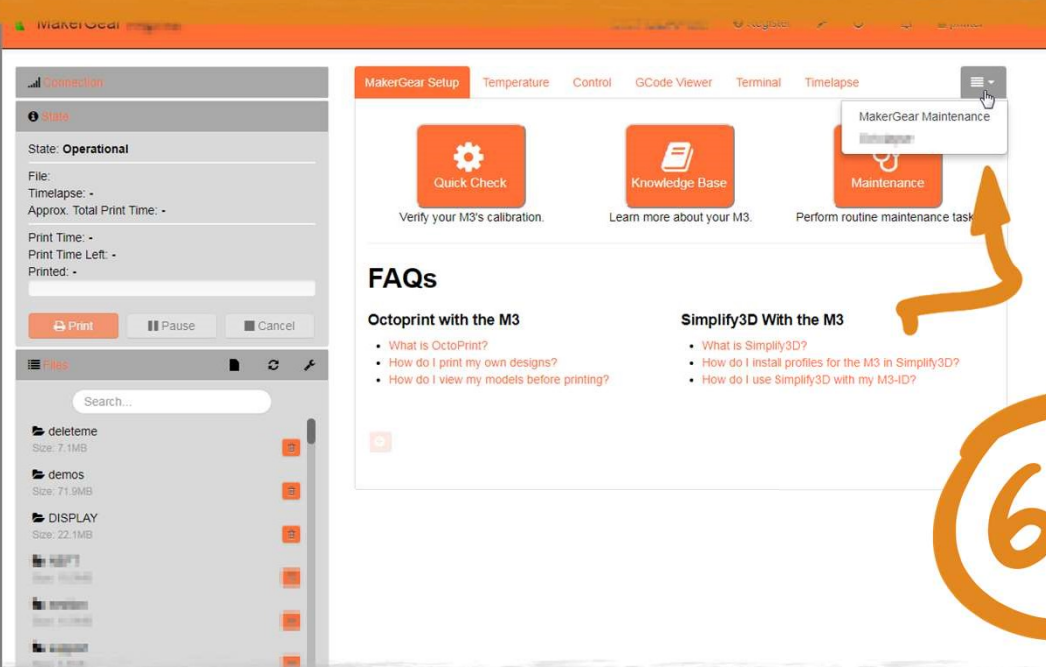


Your bed clips hold the glass down at the four corners of your bed. Remove your old bed clips using a 2 mm hex driver to unscrew the M3x22mm flat head screws. Then install the new ones with the same screws.



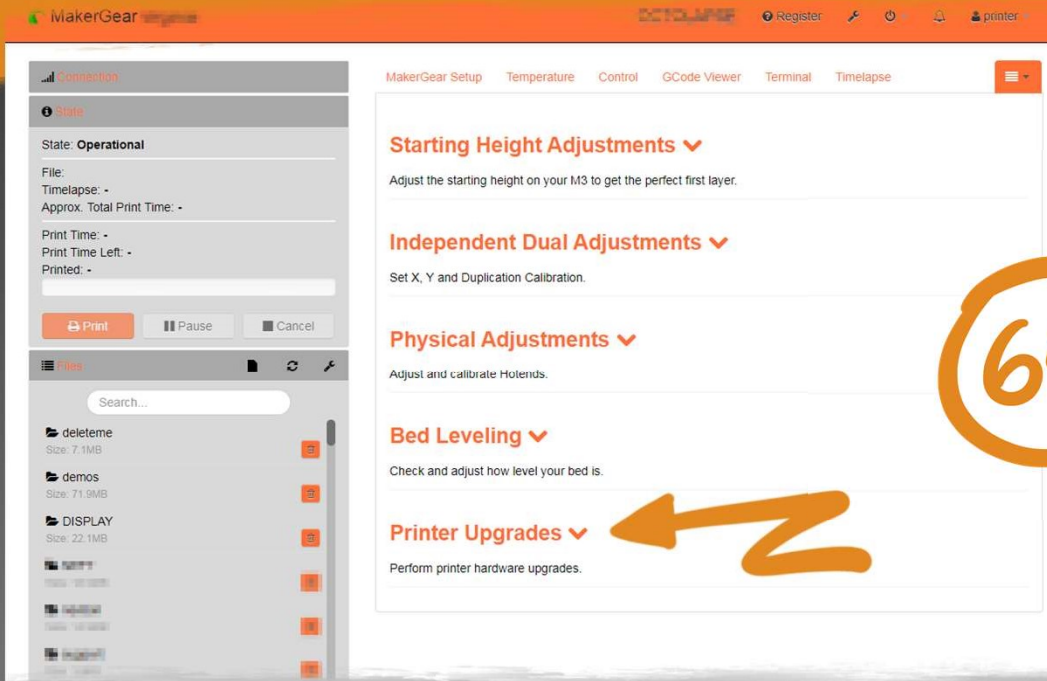
62

The bed clips should be tight enough that the bed doesn't move side to side freely. They should also be angled toward the corner of the glass as shown above.

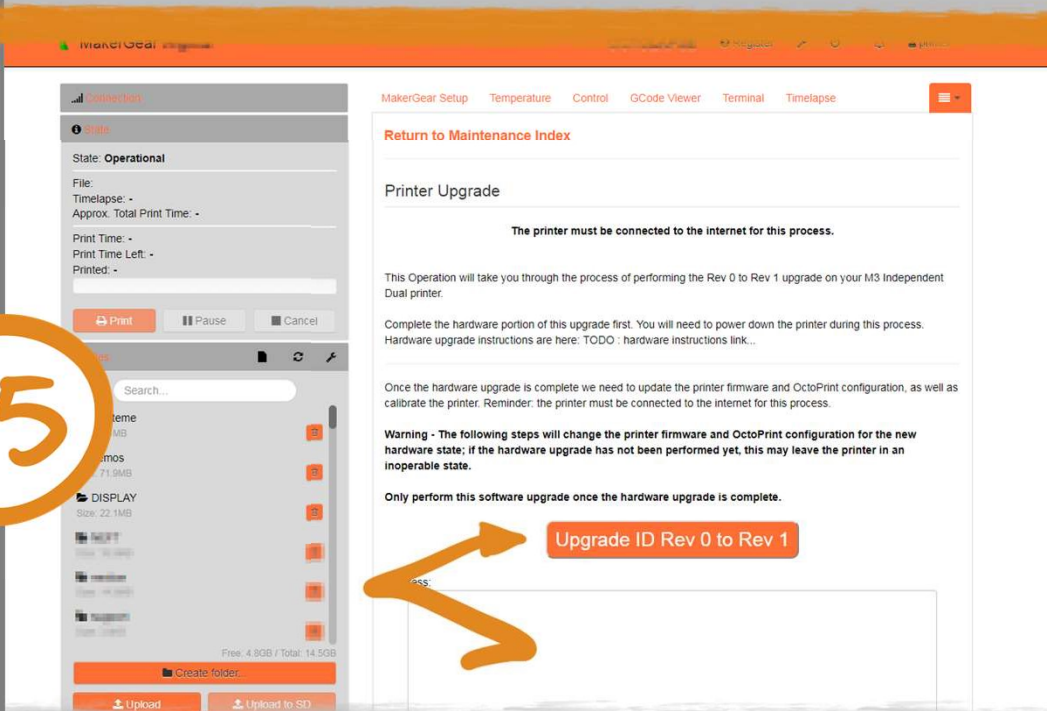


63

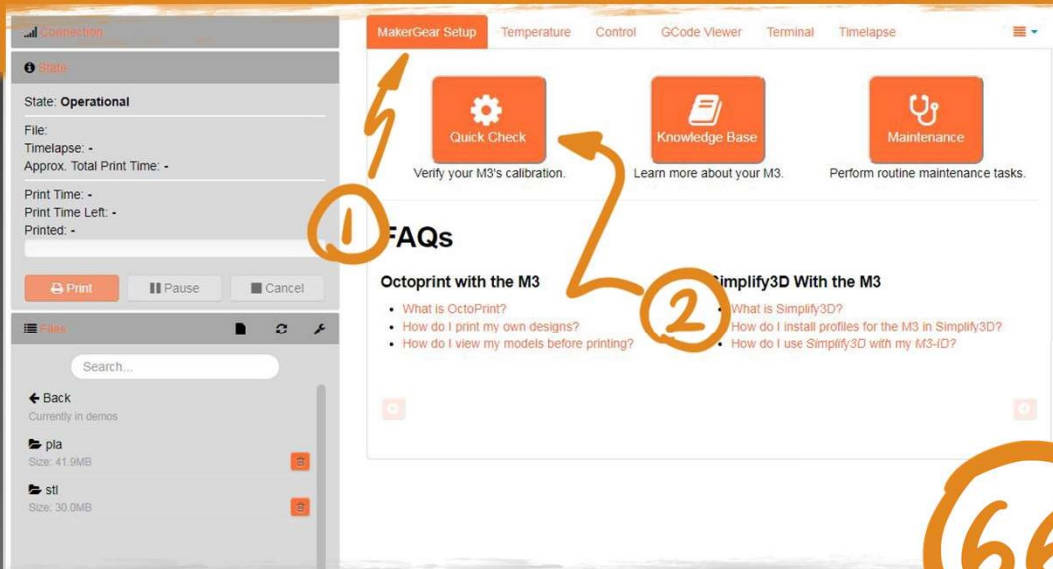
Now we are going to update your software and firmware so that your printer is compatible with its new hardware. Begin by opening Octoprint and clicking the menu button (the icon that is three horizontal stripes) then click "MakerGear Maintenance" as shown above.



In the MakerGear Maintenance tab, Click on "Printer Upgrades" to reveal the possible upgrades, then choose "Upgrade M3 ID Rev 0 to Rev 1" .



Click "Upgrade ID Rev 0 to Rev 1" to begin the upgrade process, and follow the on-screen instructions. Once the upgrade begins it will take around an hour to complete.



After Octoprint is done upgrading, navigate to the “MakerGear Setup” tab (1), then click the “Quick Check” button (2) to begin calibrating your printer.



After calibrating your printer you are ready to start printing!