



## MK10 All Metal Hotend Kit installation instructions

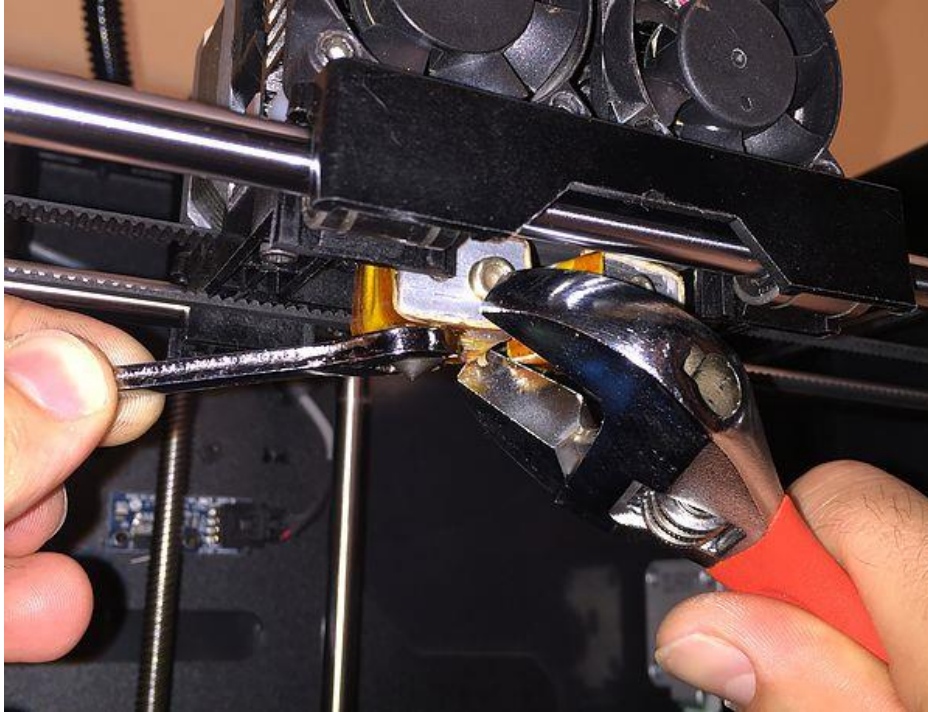


### Tools needed:

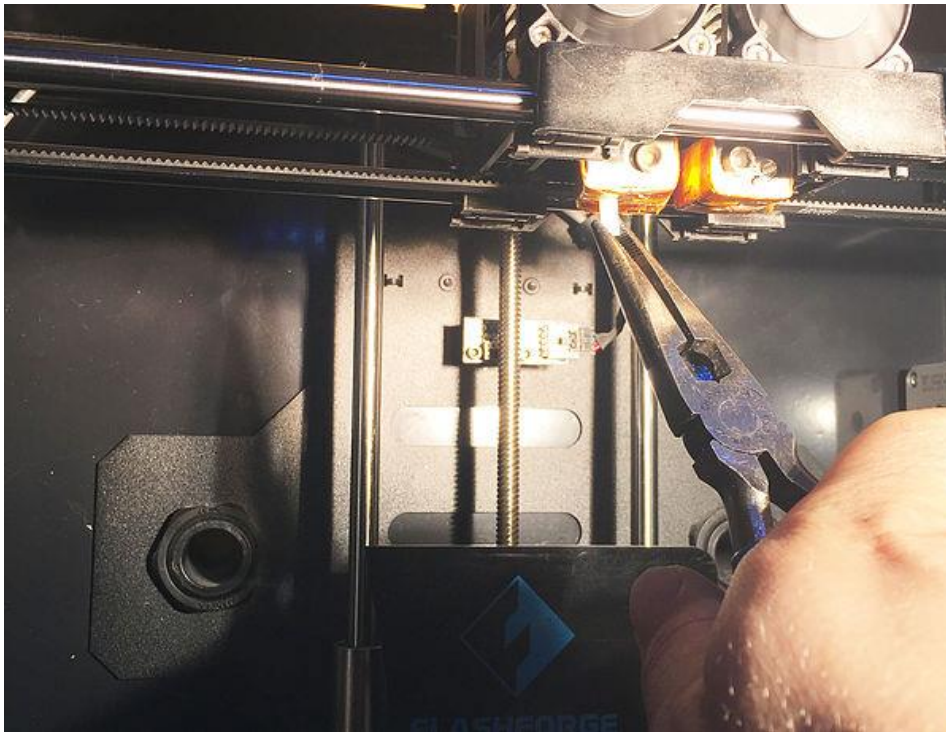
- Adjustable wrench (1 inch)
- Cutters
- Needle nose pliers
- 9mm wrench
- 2.5mm hex wrench
- 2mm hex wrench
- Sharpie/marker
- Round file
- Thermal Compound (included in kit)



1. Preheat left and right nozzle

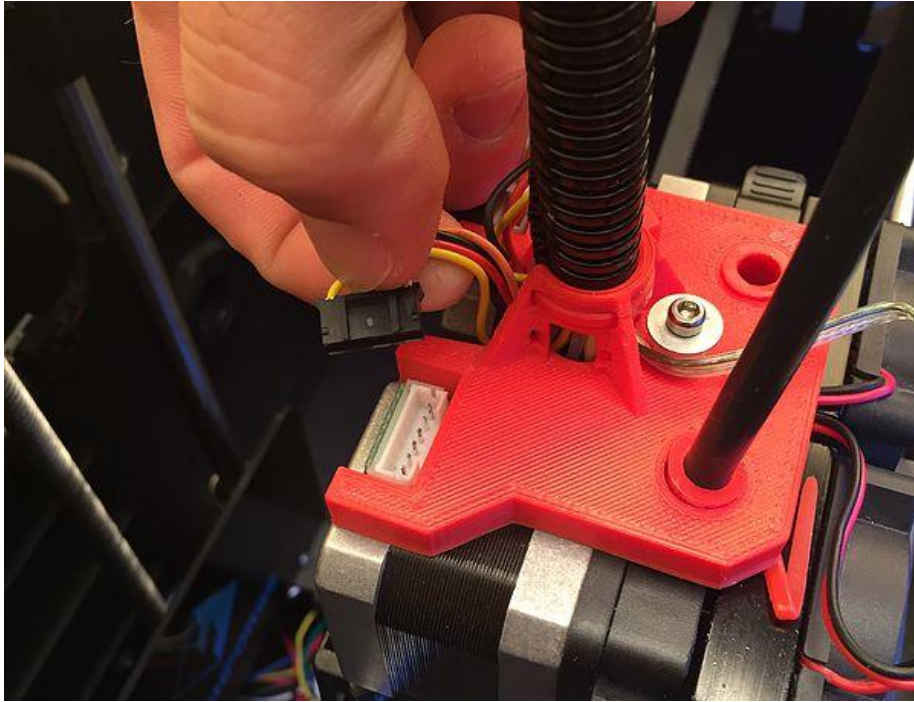


2. Remove original nozzle while supporting heater block with adjustable wrench. **Be very careful, nozzle is extremely hot.** Use 9mm wrench for the nozzle.

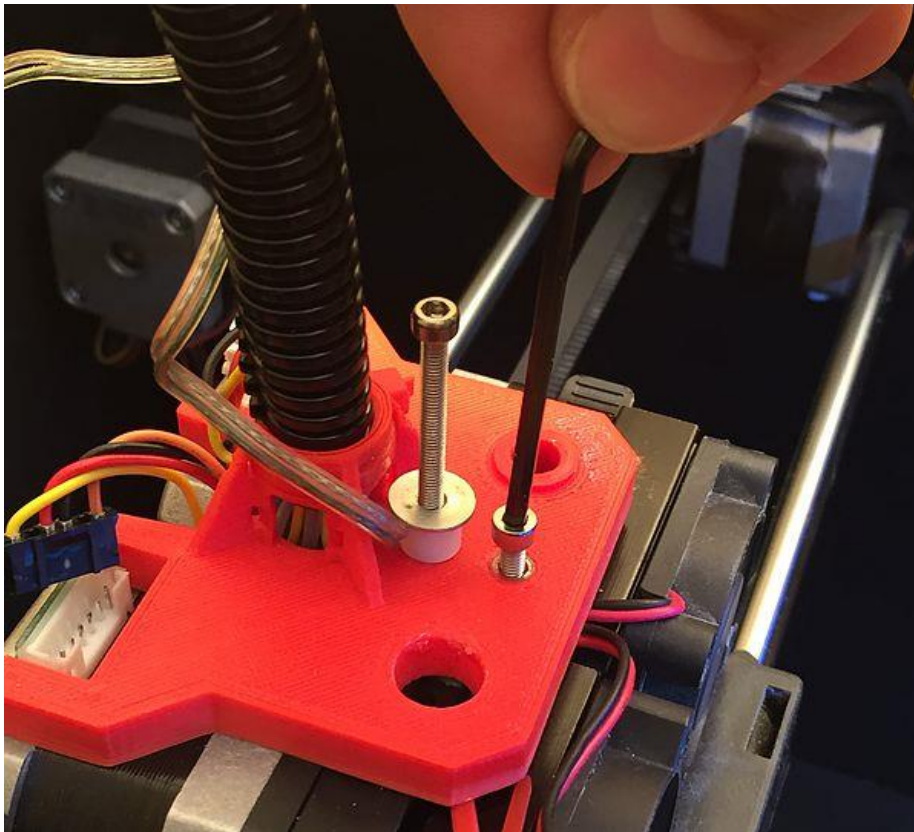


3. Remove PTFE tube using needle nose pliers. Repeat step 2 and 3 for both extruders.

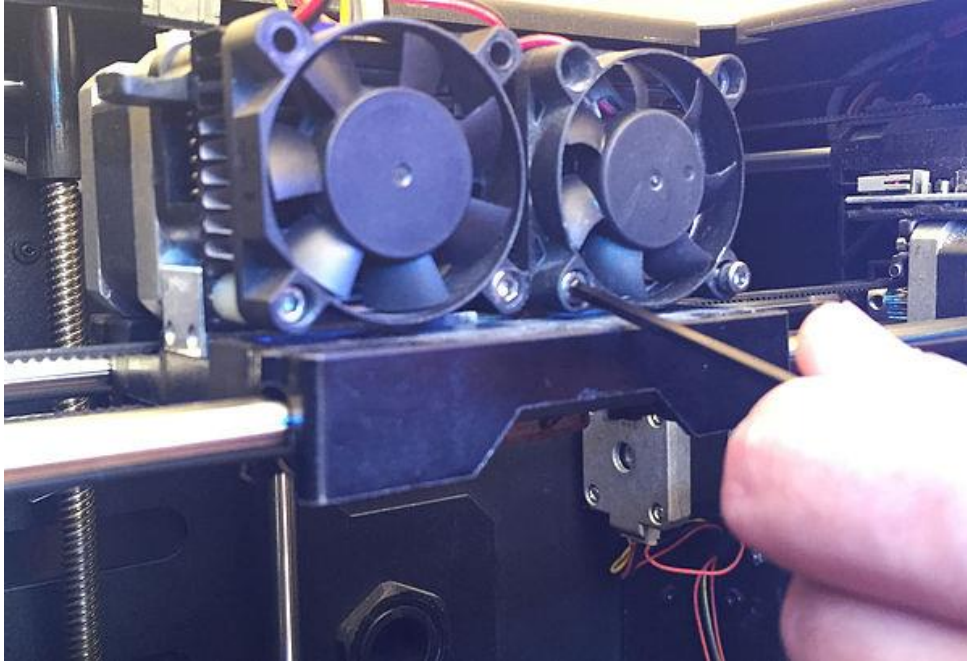
4. **Shut the power off.** Let the machine and nozzle cool down before proceeding



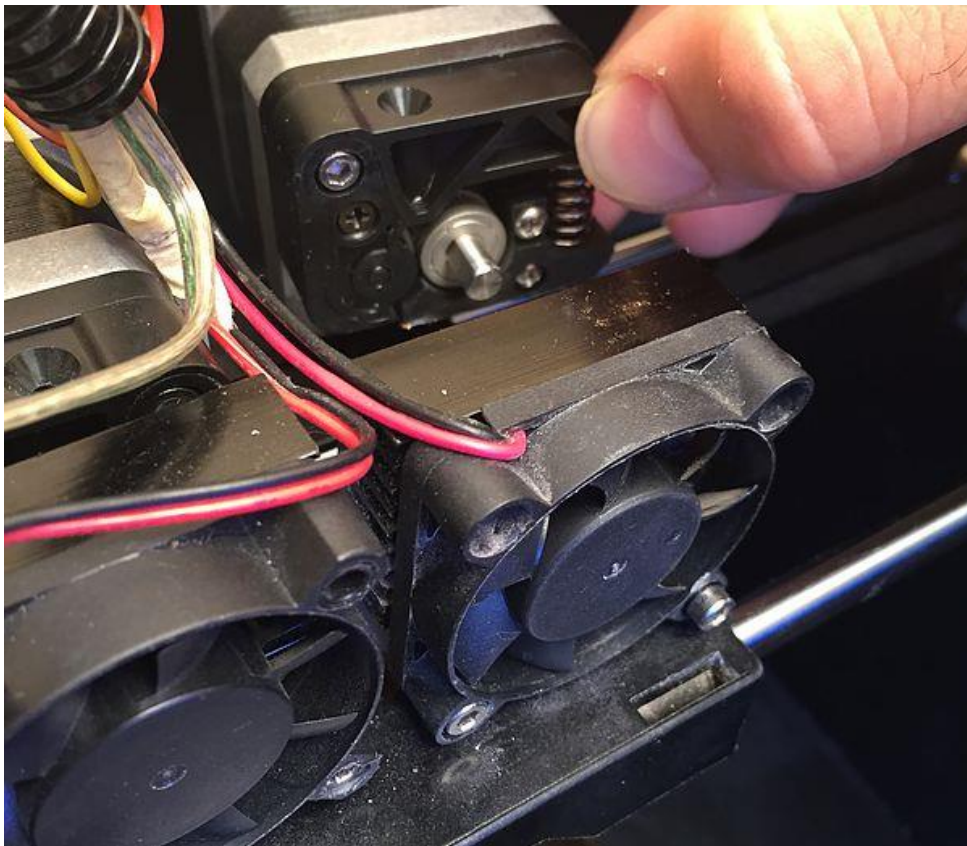
5. Unplug motor cables, both left and right.



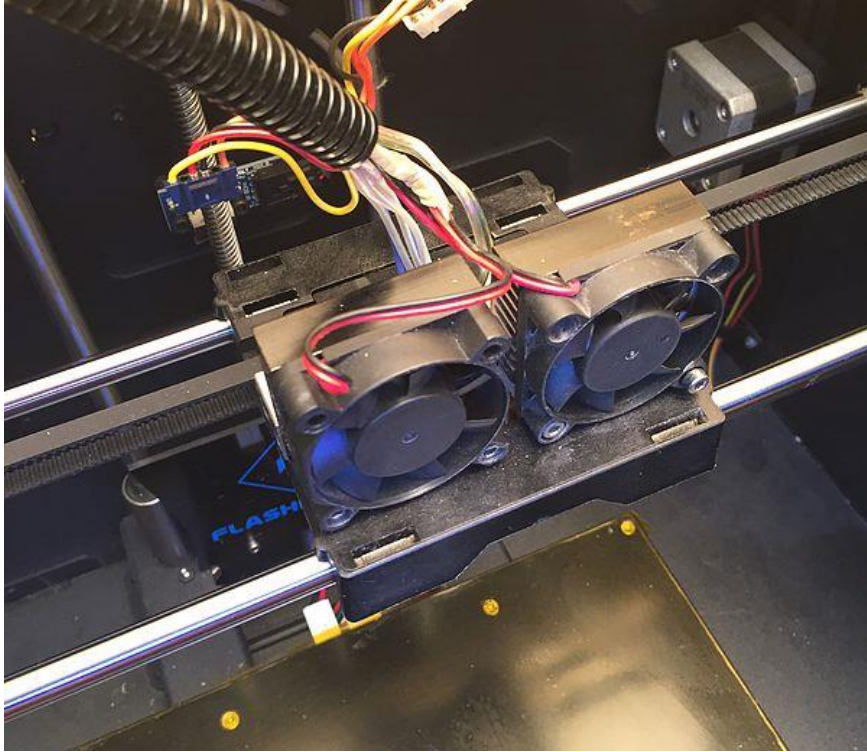
6. Remove the screws holding filament tube bracket. Remove filament tube bracket.



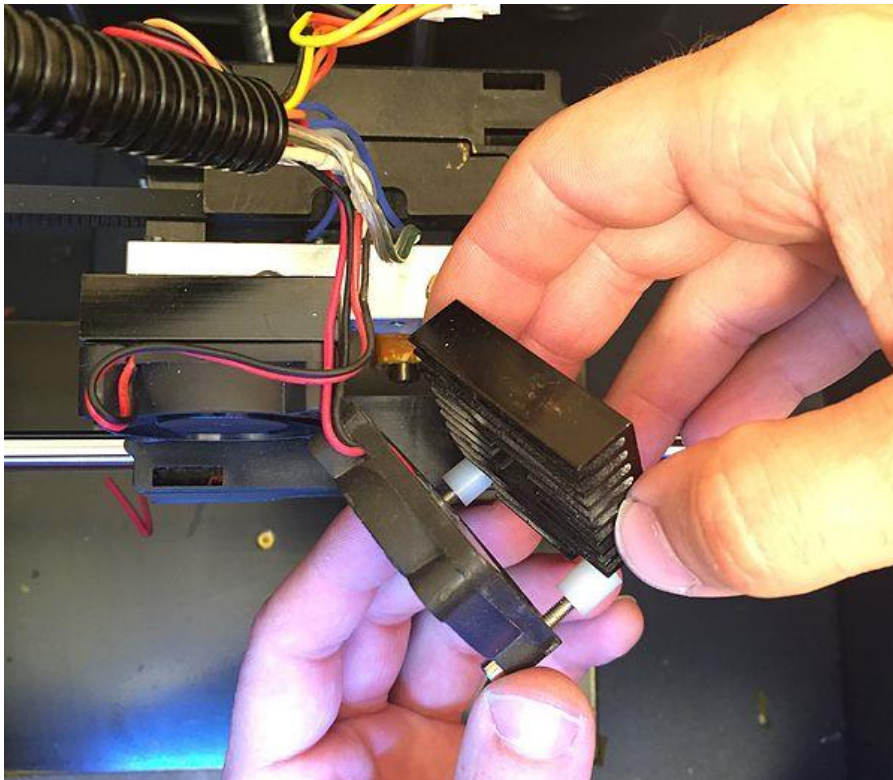
7. Unscrew the screws holding extruder cooling fan.



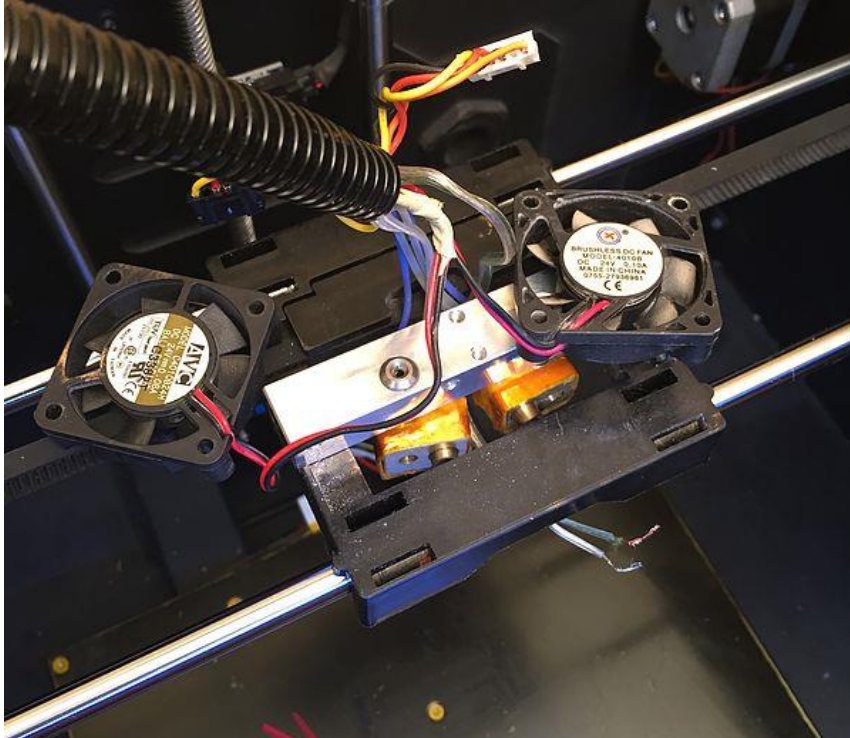
8. Remove extruder motor assembly.



9. Repeat step 7 and 8 for the other extruder.



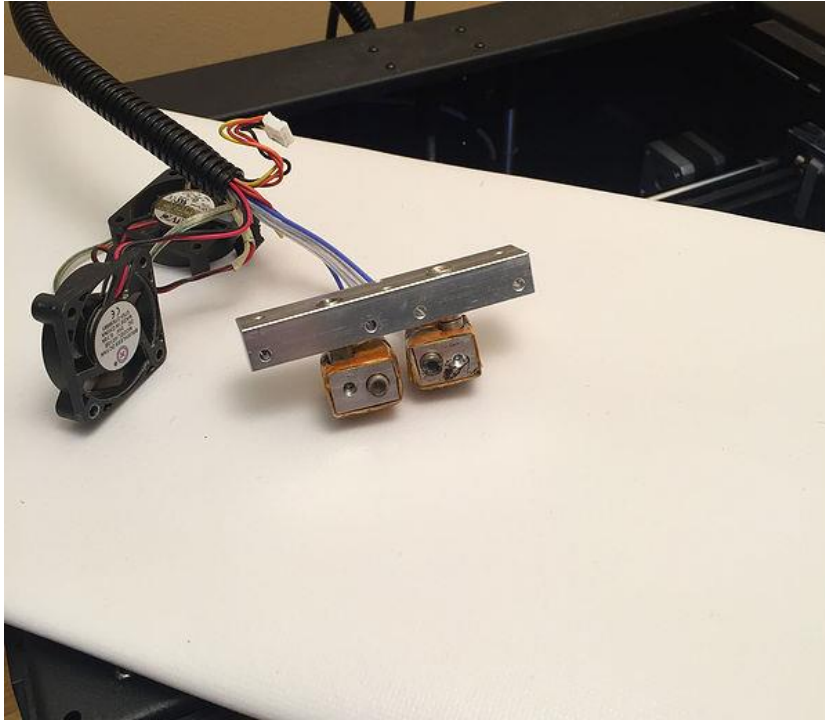
10. Take apart and set aside all the hardware holding fan to heatsink.



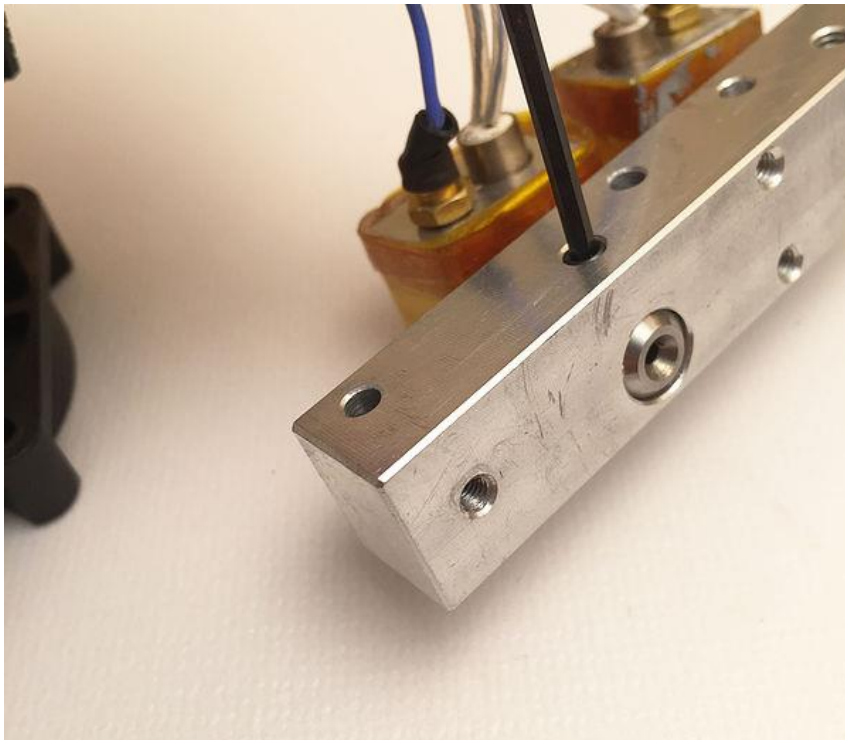
11. Repeat step 10 for the other extruder.



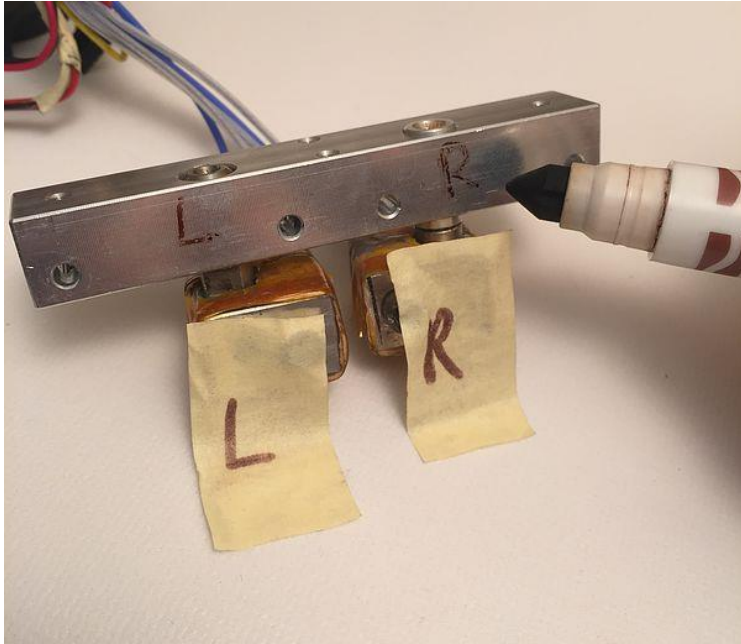
12. Remove the cooling bar assembly from the carriage. There are 2 screws at the bottom of the carriage holding the cooling bar. Remove them using 2.5mm hex wrench.



13. Set the whole cooling bar assembly on cardboard or other platform and set it on top of the printer like shown in the picture.



14. loosen set screw located on the back of the cooling bar. The set screw clamps and holds thermal barrier tube in place.



15. Repeat step 14 for the other extruder. Before removing thermal tube, somehow mark which heating block goes where. In our case we marked it with a marker on cooling bar and tape on the heater block. If you use marker for the heater block, don't forget to wipe it off before heating it again.



16. Remove both thermal tubes from the cooling bar. This part can be easy or difficult depending on how hard those set screws holding the thermal tube were tightened at the factory. In our case they were stock really hard there. We had to really pound on them to get them out.

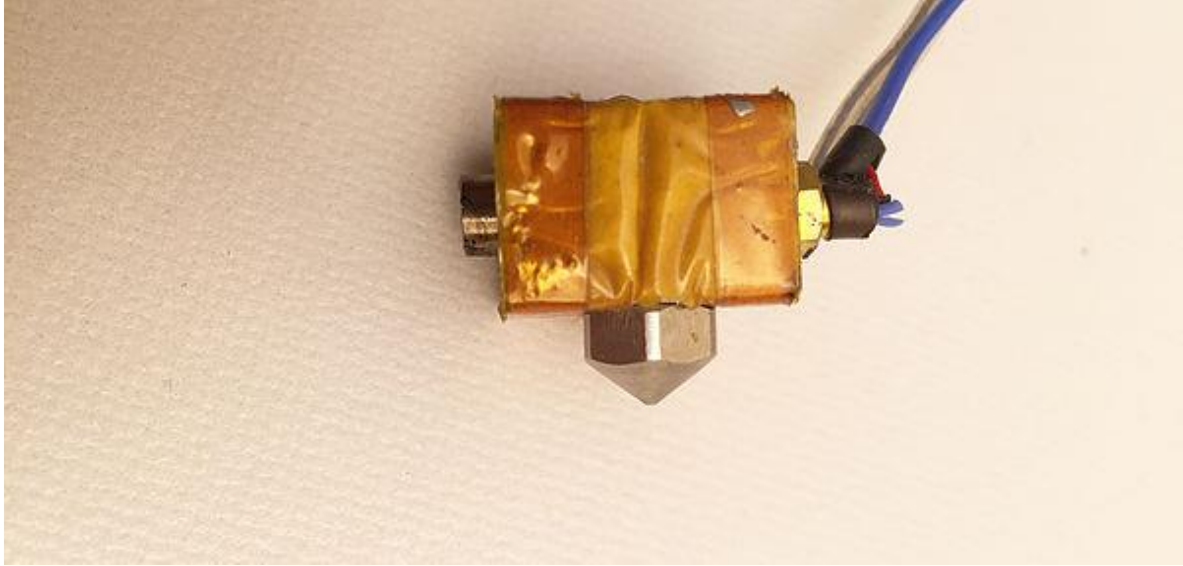




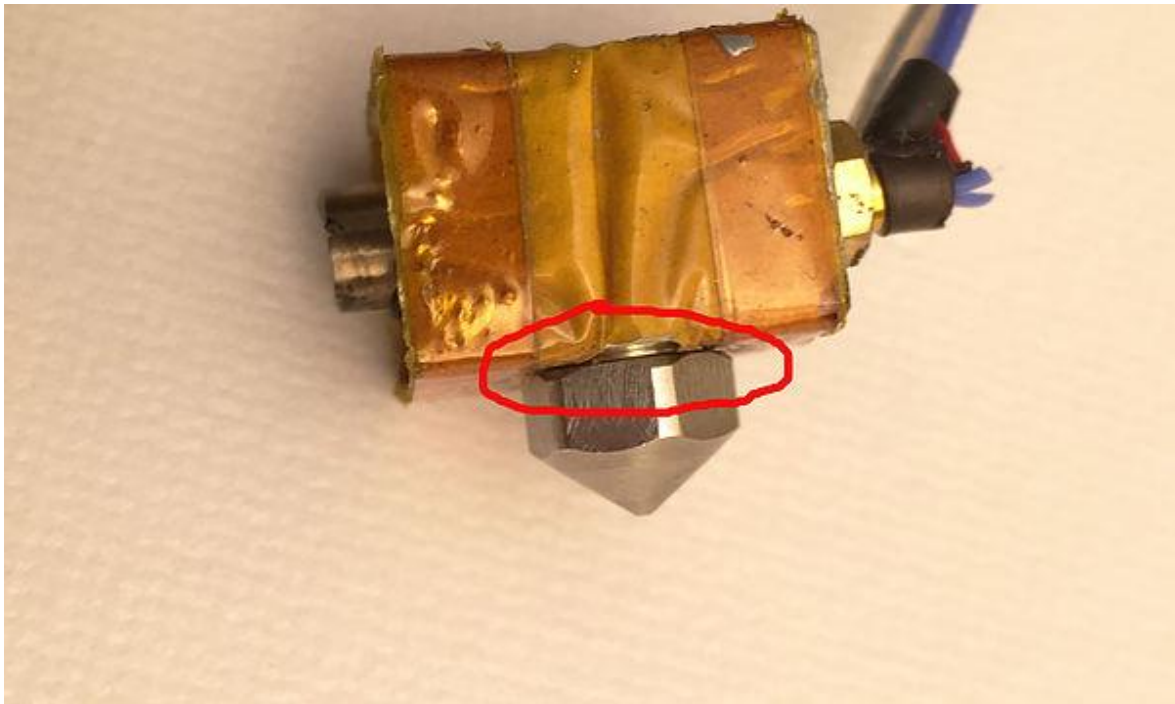
17. After taking both thermal tubes out. Clean both bores with 800 grit sandpaper. If you have round file, file a little groove on the set screw side. This groove will let you easily slide the new thermal barrier tube in a future. Make sure you don't file on a wrong side, the other side is important for heat transfer.



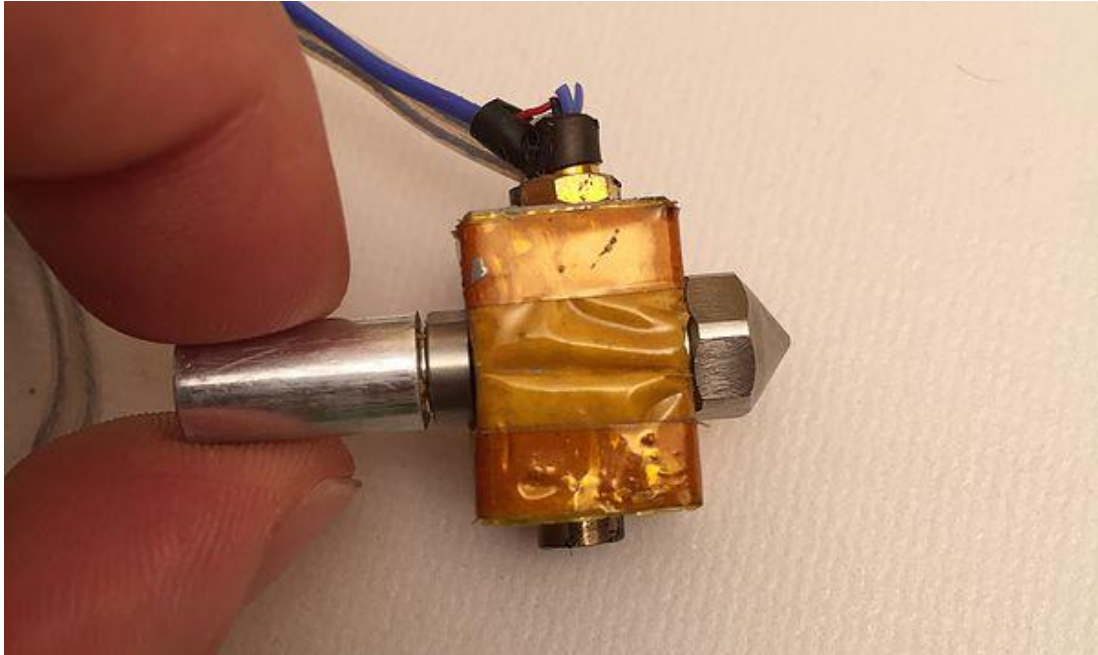
18. Unscrew and remove thermal tube from left and right heater block.



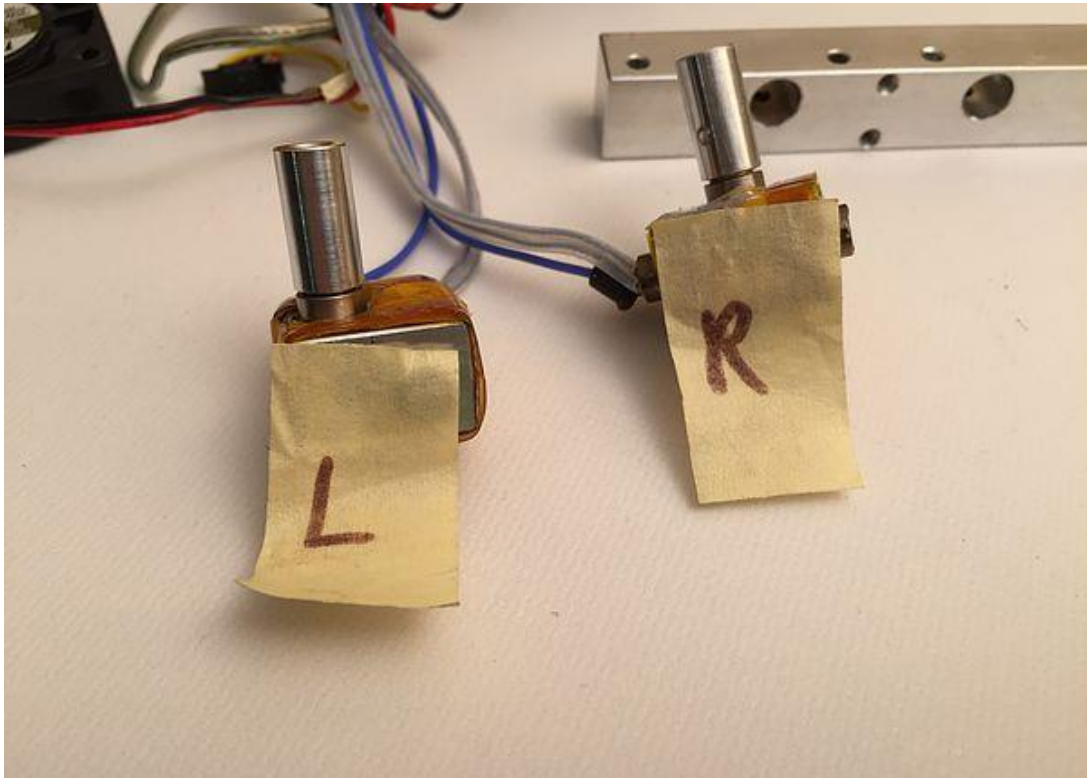
19. Install Micro Swiss Allmetal Hotend Nozzle. Screw it in all the way, until it bottoms out.



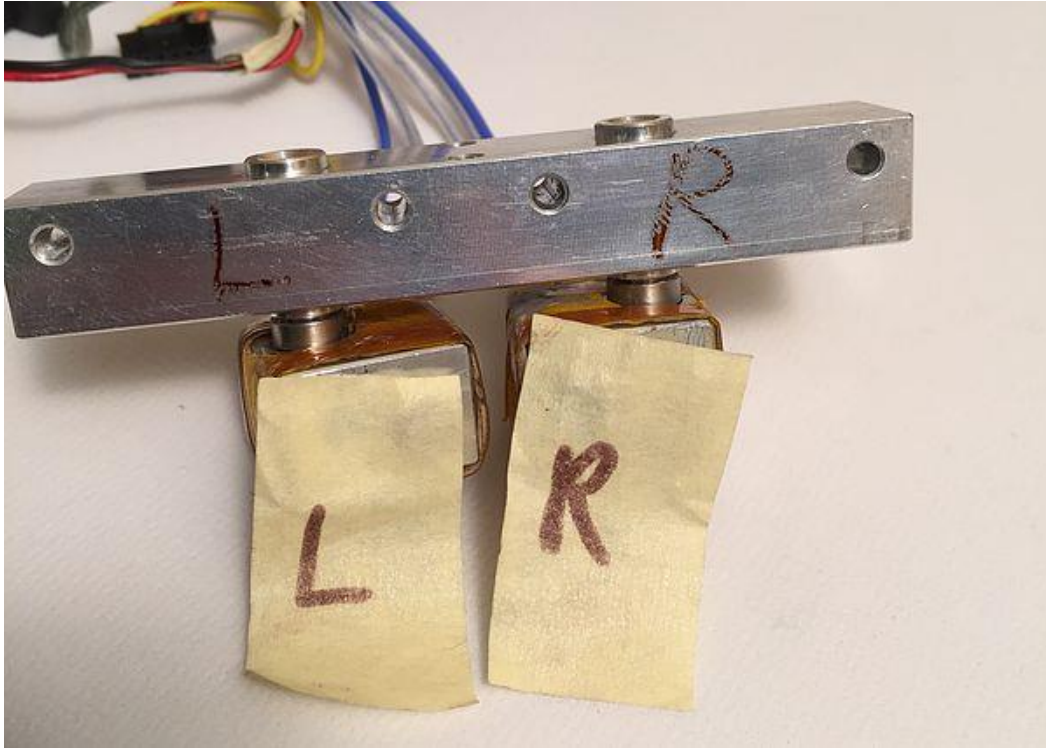
20. Then back off 1/4 of the turn.



21. Using finger pressure, screw in Allmetal thermal barrier tube, until it **bottoms out**.  
(make sure it bottoms out)



22. Do the same for both extruders.



23. Test fit both thermal barrier tubes if they go into cooling bar smoothly. If any of them stick, polish the bore with a sandpaper.



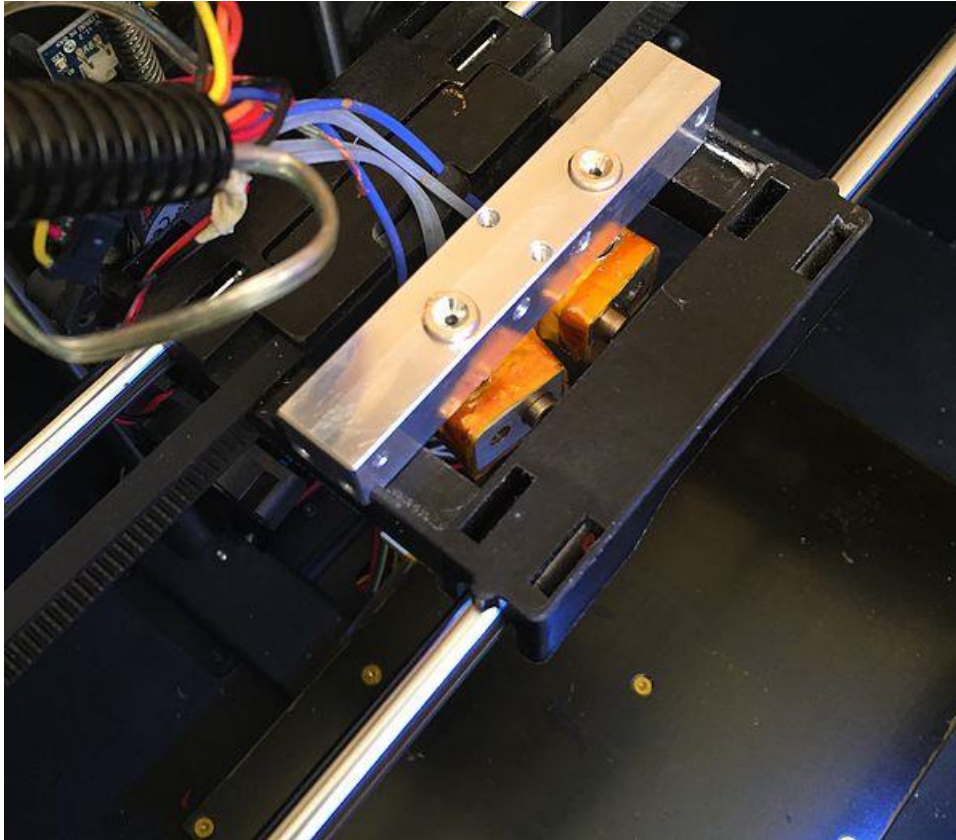
24. Put some thermal compound (included with the kit) on the **aluminum portion** of thermal barrier tube. Then evenly spread it all around the tube. Do the same for both extruders.



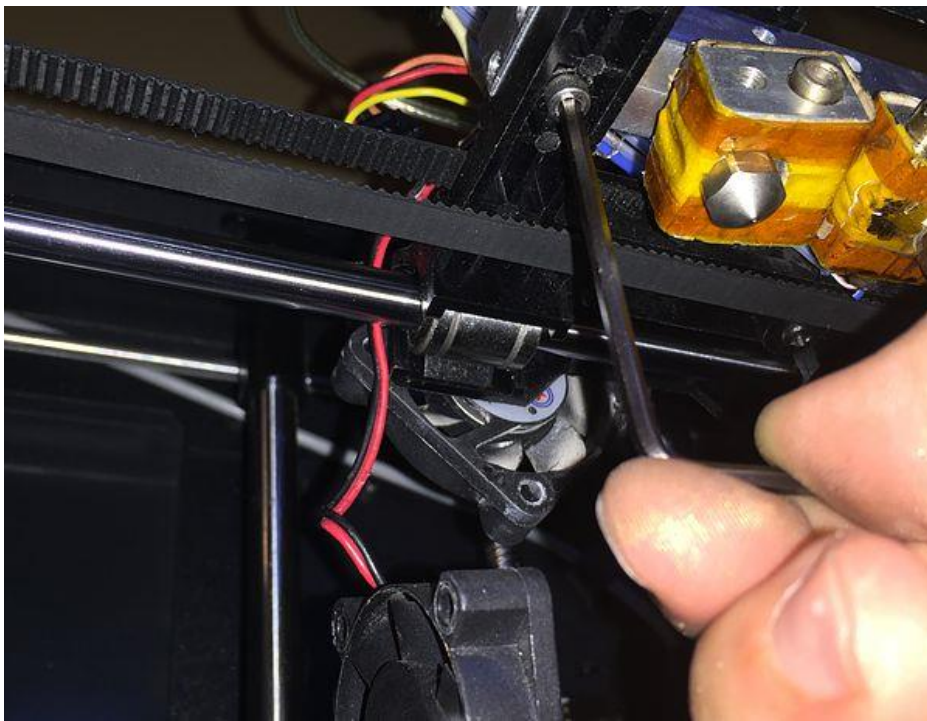
25. Install both thermal barrier tubes into the cooling bar. **Don't tighten the set screws yet.**



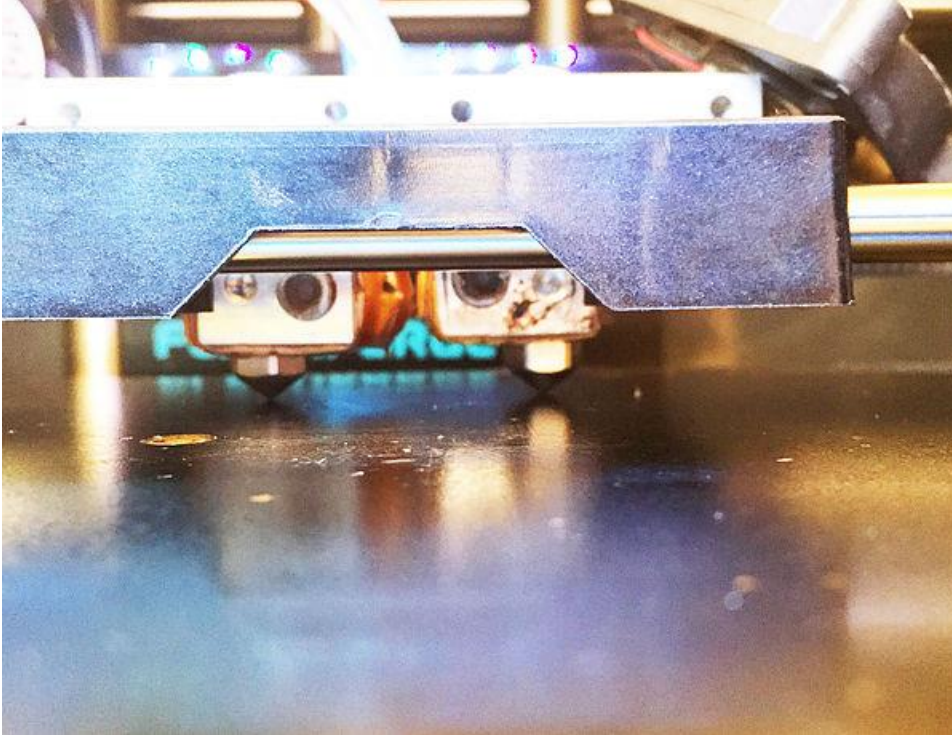
26. Adjust thermal tube height so it sticks out about .050" from the top of the cooling bar. It doesn't have to be exactly right on. Then lightly snug both set screw. Don't tighten it too much. You still need to be able to slide it to calibrate nozzle height.



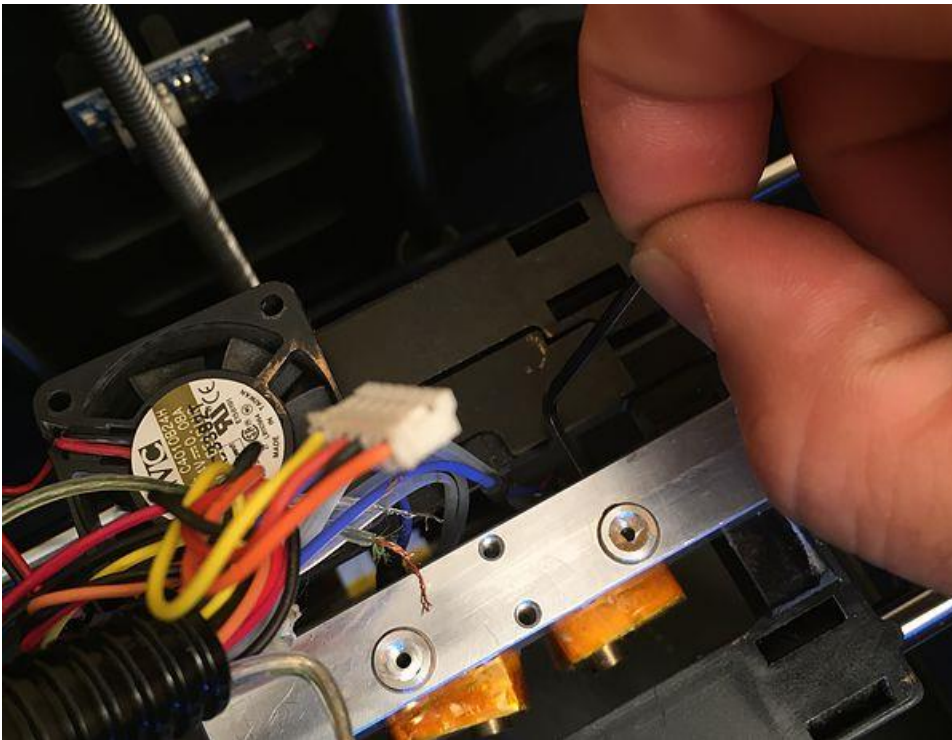
27. Install cooling bar assembly back on the carriage.



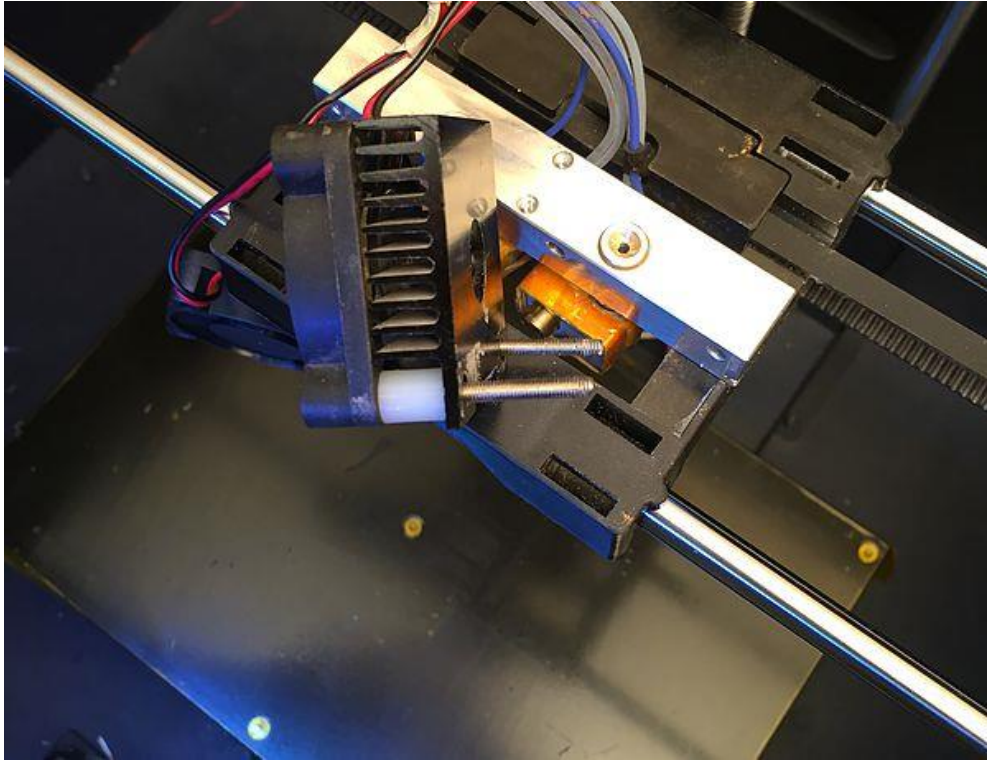
28. Tighten and secure cooling bar to the carriage.



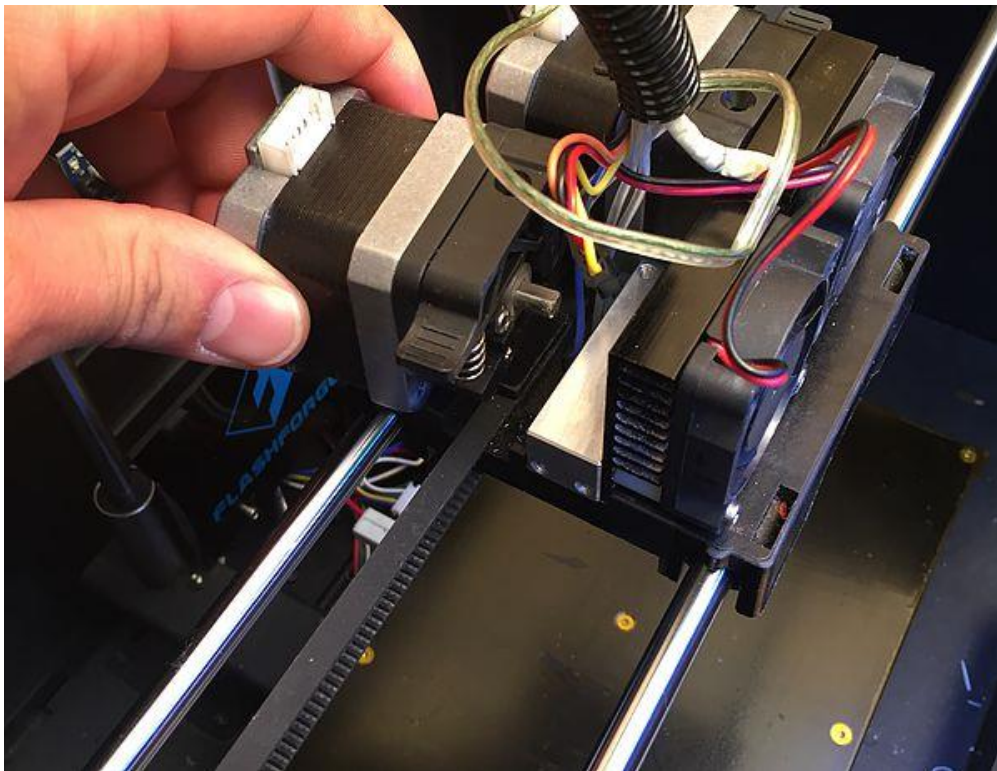
29. Bring the table by hands up to nozzle that sits lower. Then adjust the other nozzle so it sits flush on the table as well.



30. Completely tighten both set screws.

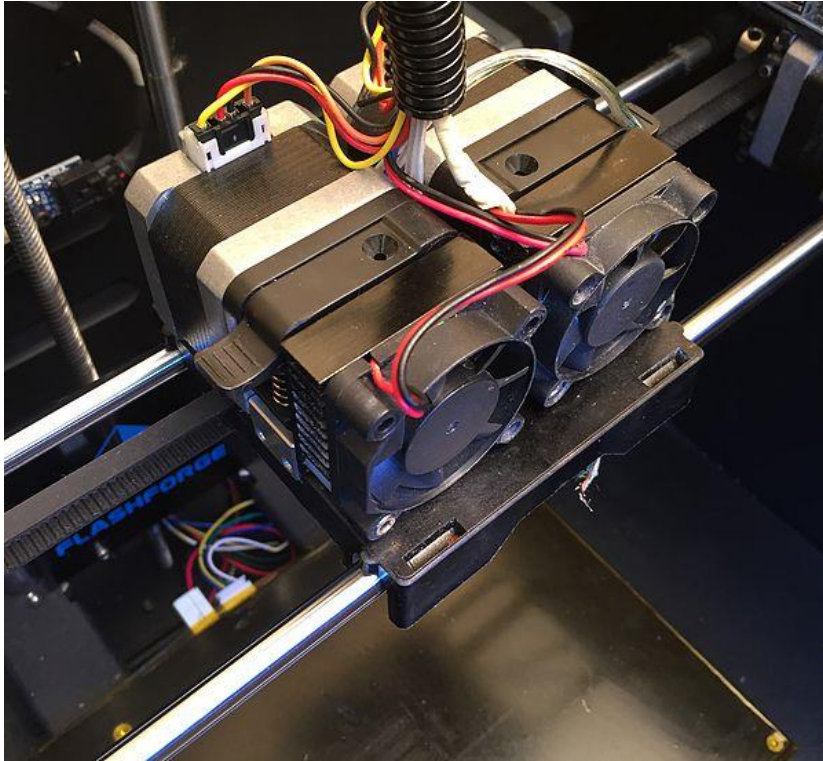


31. Assemble cooling fan to heatsink as shown.

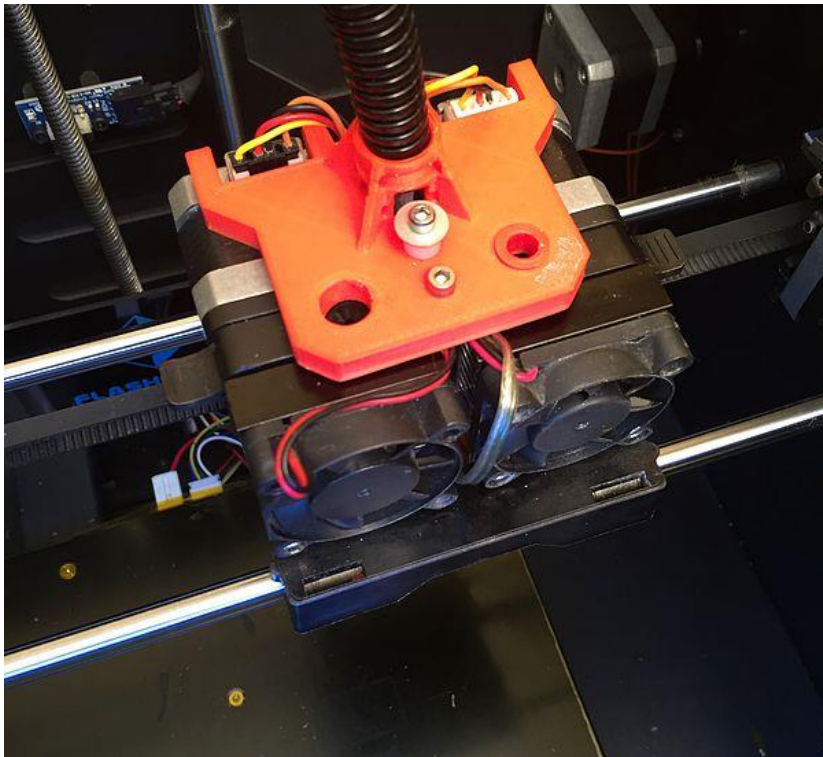


32. Install both extruder motors back on the carriage.





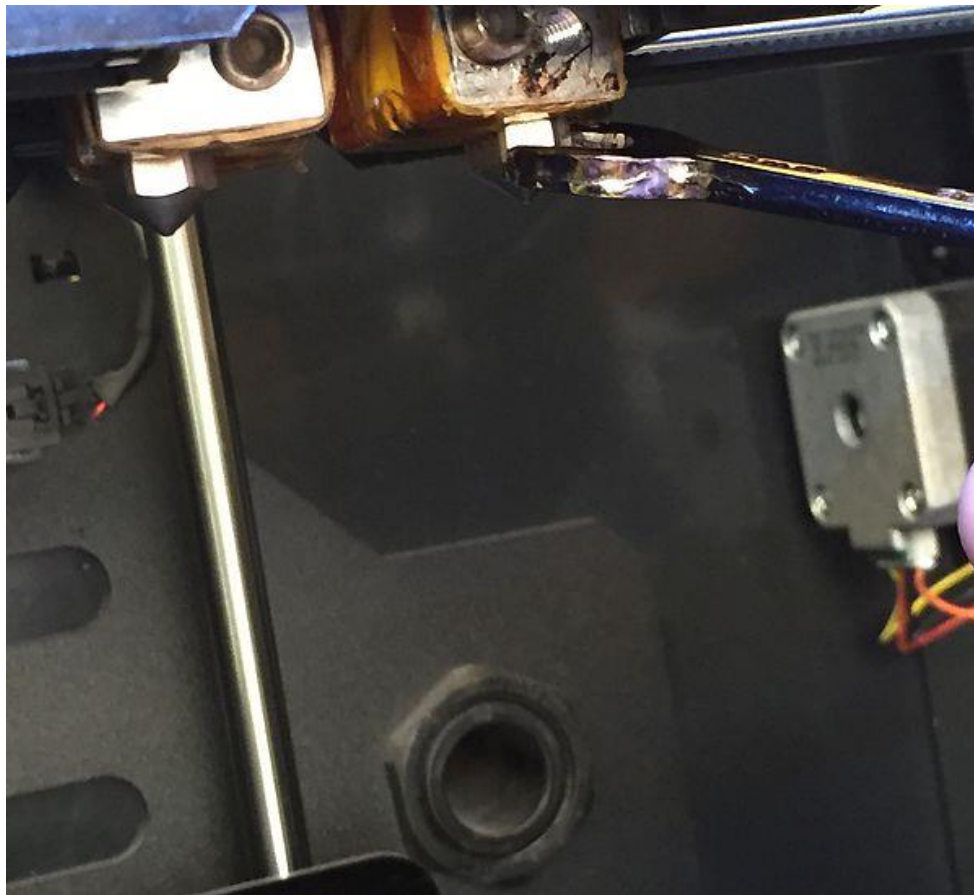
33. Reconnect both extruder motors.



34. Install filament tube bracket.



35. Preheat both nozzles.



36. Tighten and seal both nozzles using 9mm wrench.

37. Relevel the build plate. Be careful, nozzle height was changed. Start out low and then bring the table up.

Tips to get best results with All Metal Hotend:

- Reduce retraction amount. Allemetal hotend needs a lot less retraction. We had luck printing PLA with as little as 0.5mm retraction, without oozing. For PETG, try 1.0mm retraction.
- For PLA, you might need to increase extruder temperature 10-15 degrees.
- If temperature is not stable after conversion, PID tuning might be required.
- Highly recommend to change stock Wanhao i3 extruder gear to D4 style gear.

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