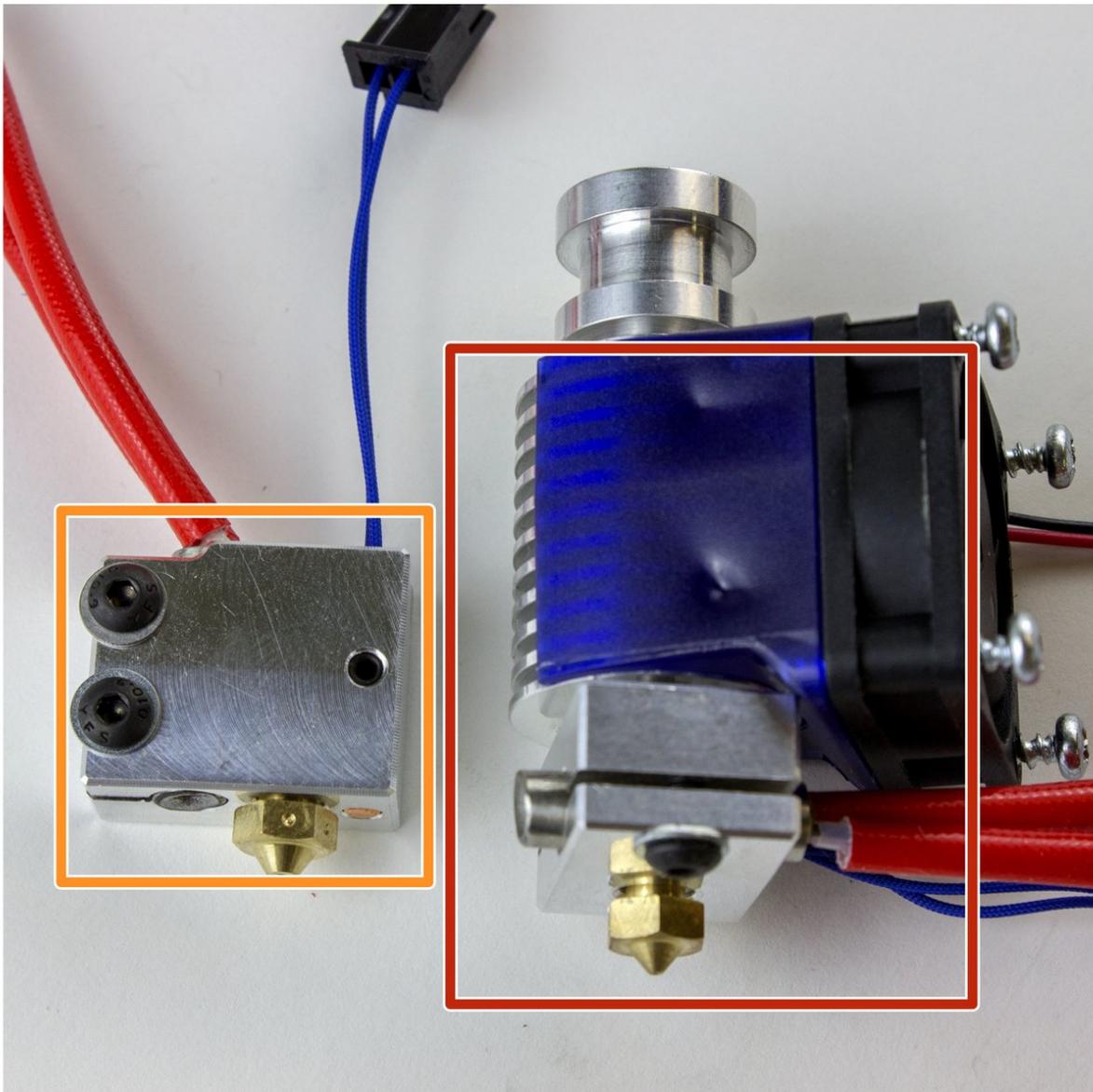


Upgrading to a Volcano

Learn how to upgrade your existing V6 or Lite6 to a Volcano heater block.

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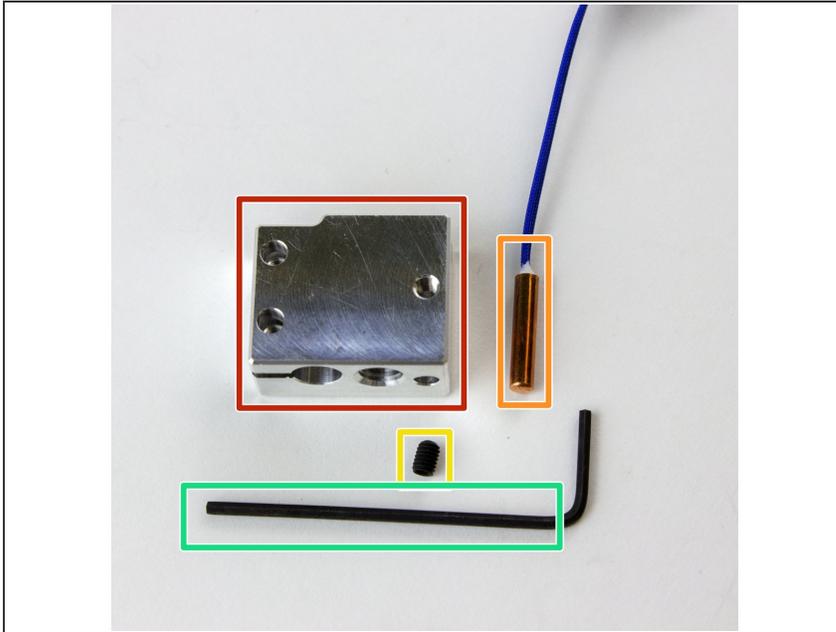
 **TOOLS:**

- Hex Wrench, 2.5mm (1)
- Hex Wrench, 1.5mm (1)

 **PARTS:**

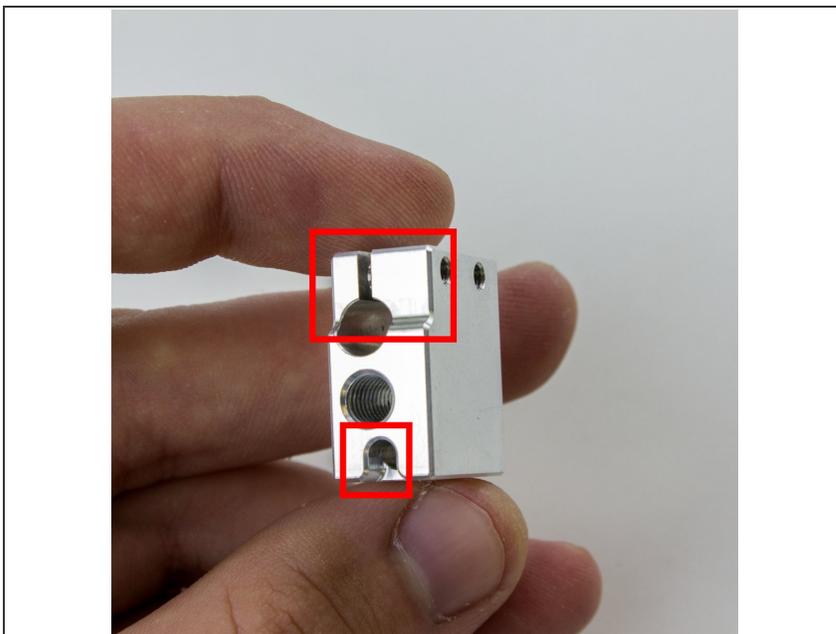
- Volcano Nozzles (1)
- Volcano Heater Block (1)
- M3 Washer (2)
- M3x10 Socket Dome Screw (2)
- Ziptie (1)
- M3 Grub Screw (1)
- Plastic Screws (1)
- Heater Cartridge (1)
- Thermistor Cartridge (1)
- Extension Wires (1)
- Thermal Paste Sachet (1)

Step 1 — Thermistor Parts



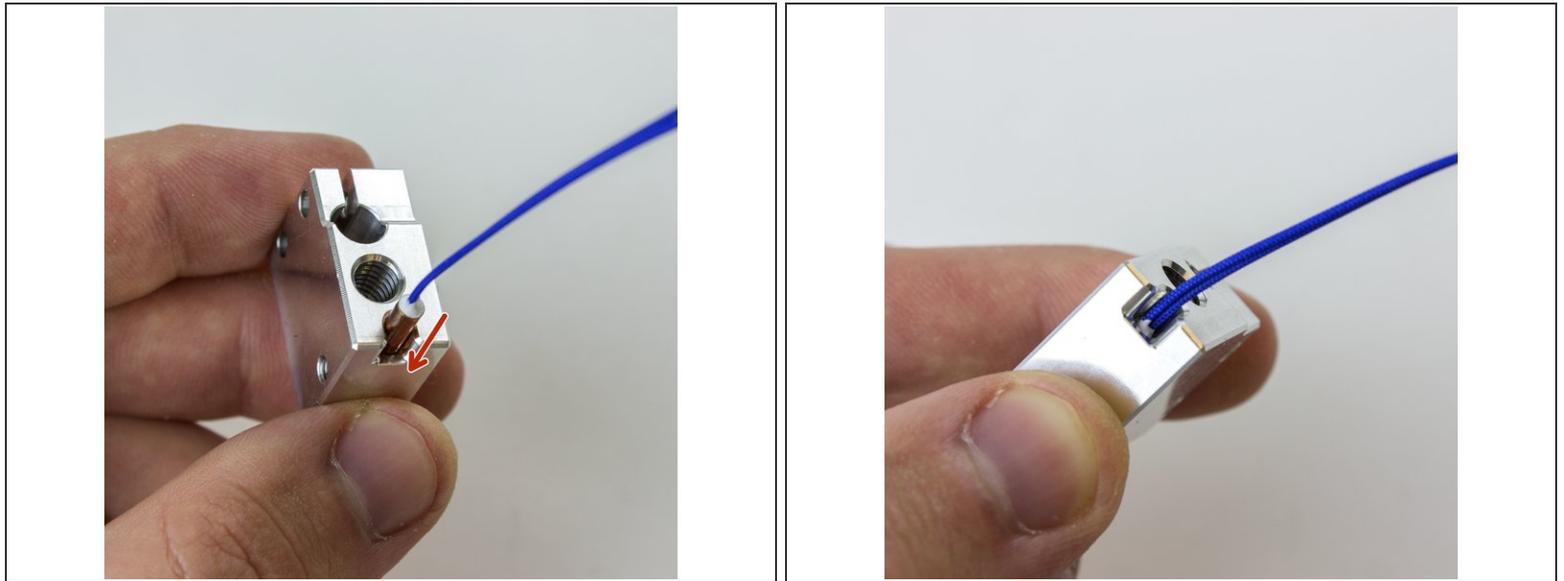
- Gather the following:
 - Thermistor Cartridge
 - Volcano Heater Block
 - Smaller, 1.5mm Hex Wrench
 - One of the M3 Grub Screws

Step 2 — Orient Heater Block



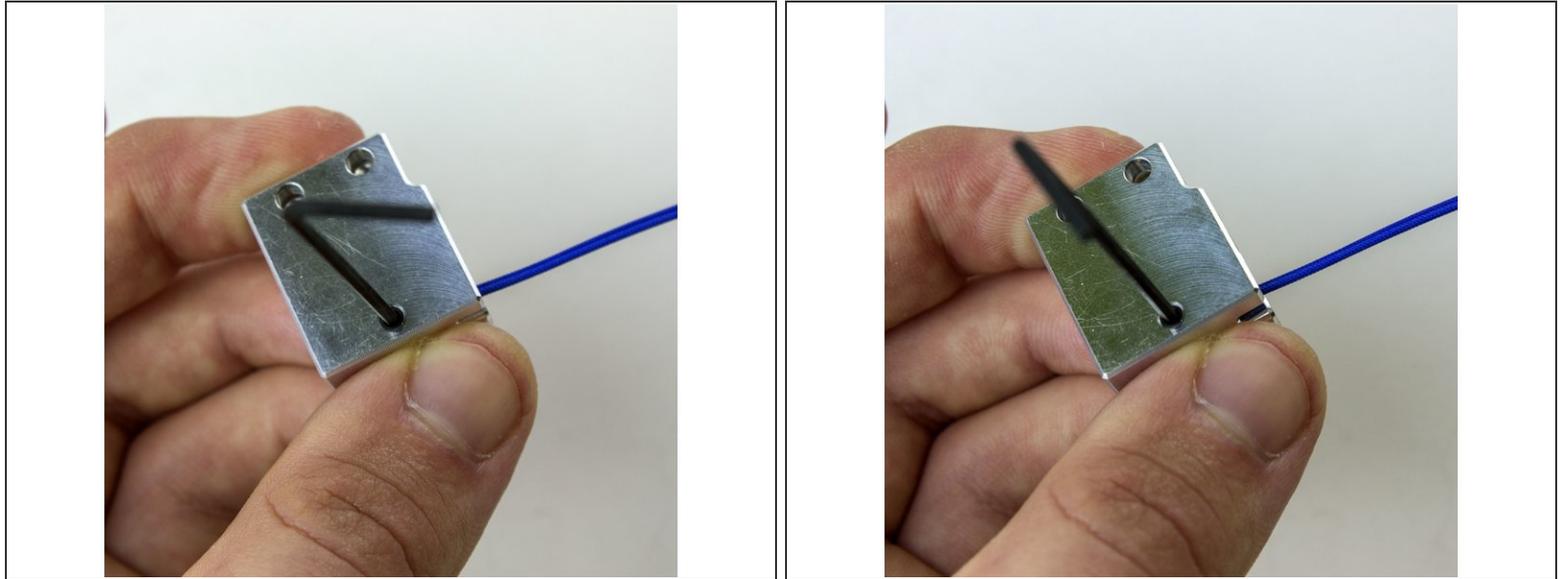
- Make sure you're looking at the side of your heater block that has little indents for wiring on it.

Step 3 — Slide in Thermistor



- Slide in the thermistor cartridge all the way

Step 4 — Secure Thermistor



- Screw in the grub screw until it just touches the thermistor cartridge
- Tighten the screw by another 1/8th of a turn.

 Do not over tighten the screw, or you will damage the thermistor cartridge. If the thermistor can't be pulled out with gentle tugging you should be fine.

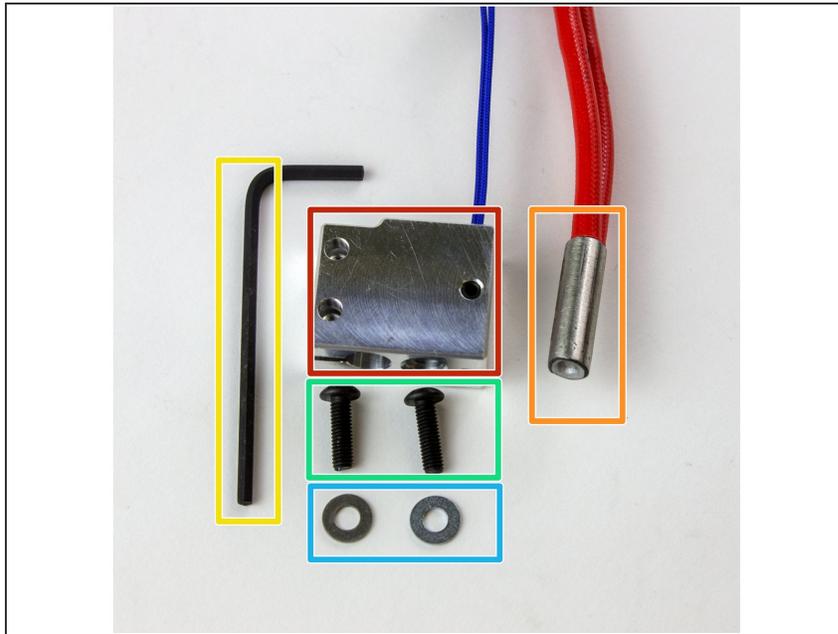
Step 5 — Test Heater Cartridge Resistance

This is within acceptable bounds
for a 12v heater cartridge



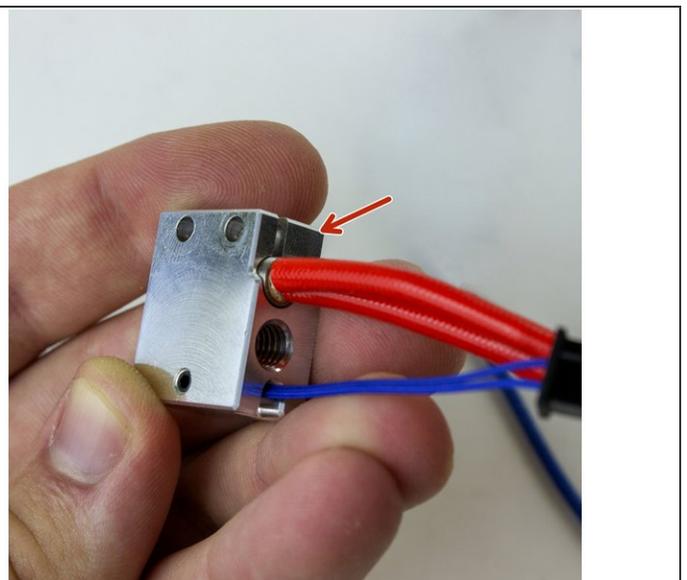
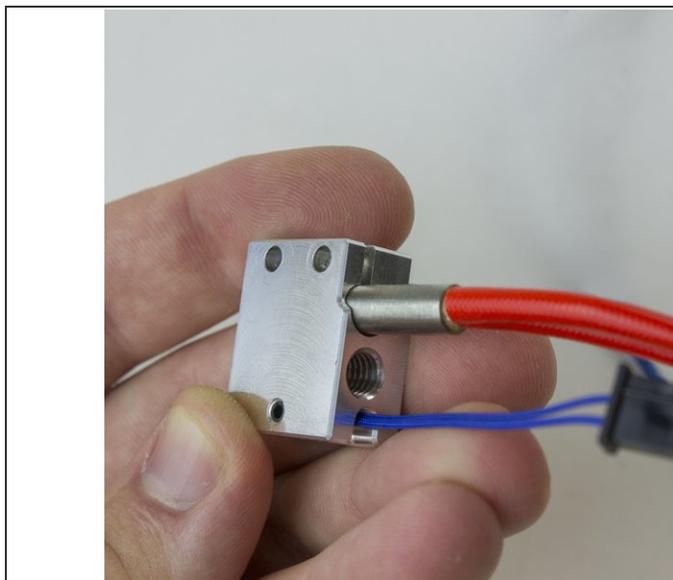
- Before you install your heater cartridge, you should double check that you got the correct voltage cartridge. They are laser etched with their voltage, but all it is worth double-checking anyway. *This process is less annoying than putting out a house fire.*
- If you have a 12v30w heater cartridge, your multimeter should read 4.8Ω
- If you have a 24v30w heater cartridge, your multimeter should read 19.2Ω
- Your cartridges resistance may deviate slightly from these numbers, which is fine. We're mostly interested in verifying which cartridge type you have.

Step 6 — Gather Heater Cartridge Parts



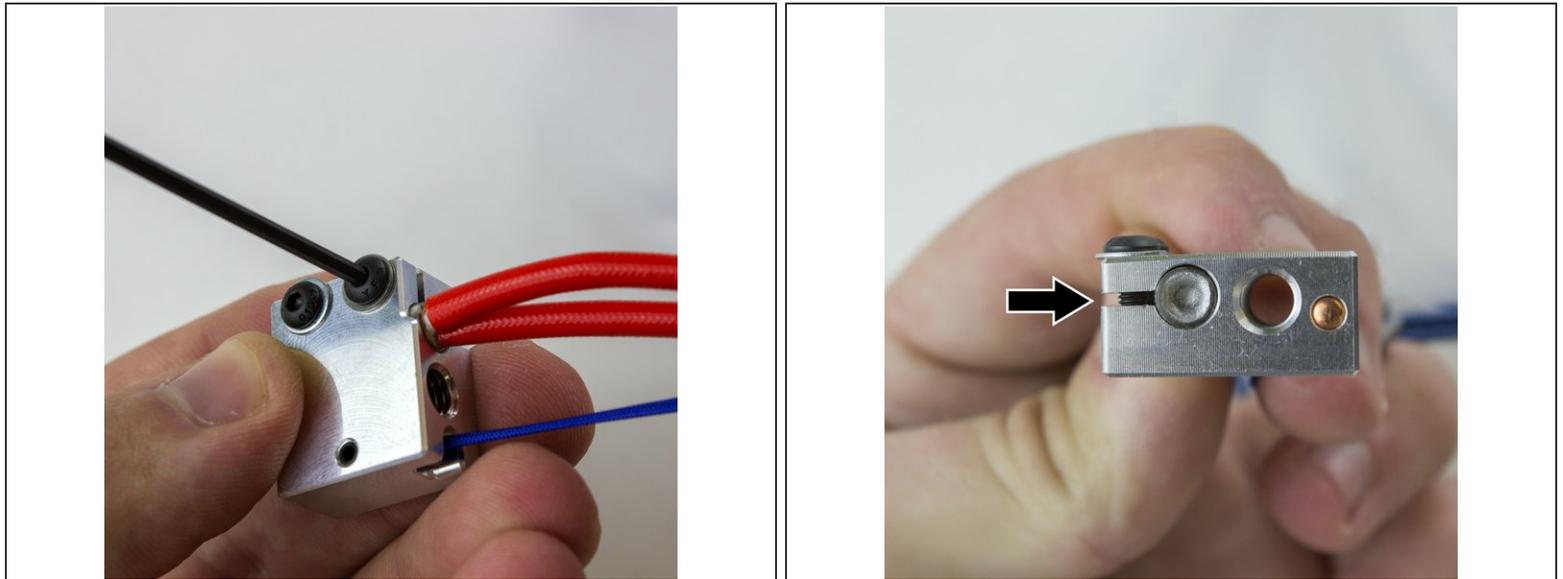
- Gather the following:
 - Heater Block
 - Heater Cartridge
 - The Larger, 2.5mm Hex Wrench
 - Two of the Longer, M3x10mm Screws
 - Two M3 Washers (optional)

Step 7 — Slide in Heater Cartridge



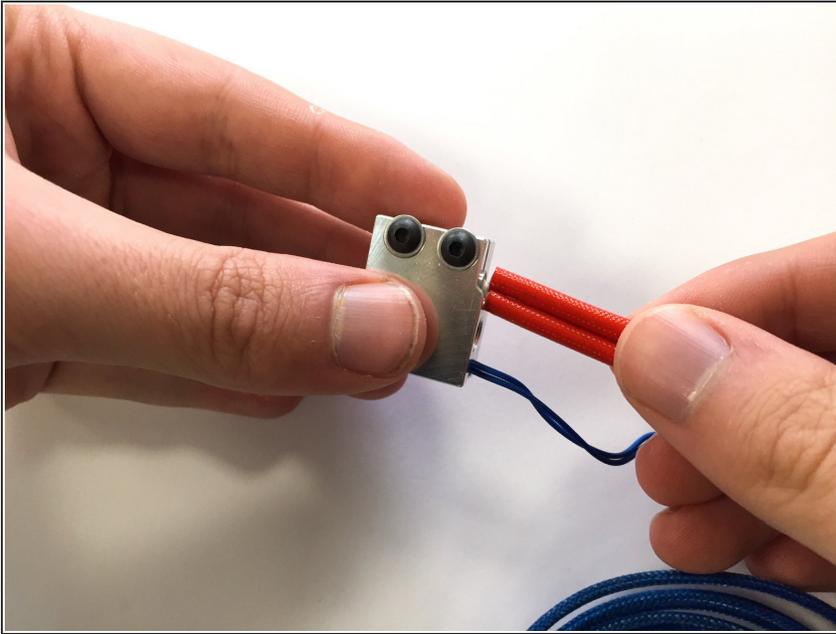
- Slide in the heater cartridge all the way. Depending on the exact size of your cartridge, it may protrude a little from the bottom of the block, which is fine.
- Remember, the wires should be coming out of the top of the heater block, which is the side with the little indent.

Step 8 — Secure Heater Cartridge



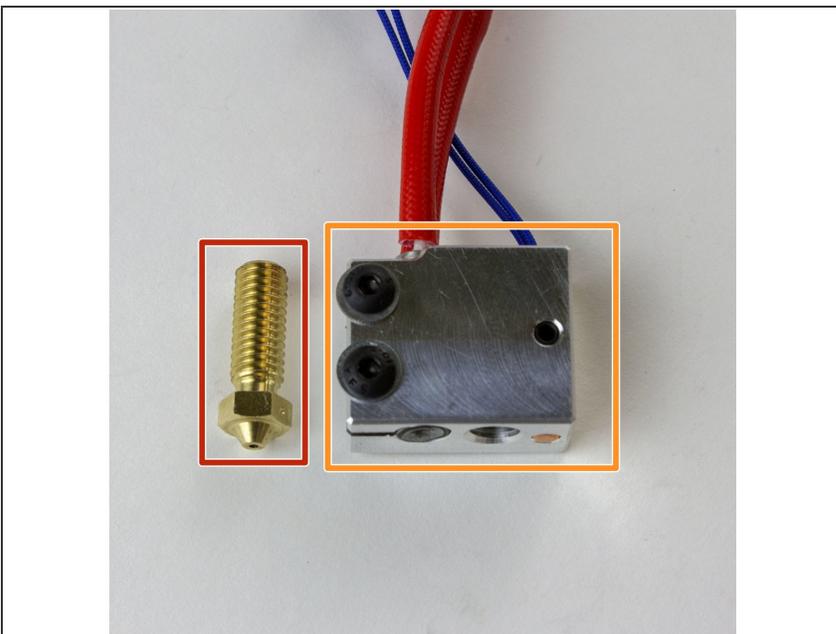
- Tighten the M3x15mm socket dome screws (with the M3 washers on them) with 2.5 mm hex wrench until the clamp deforms slightly.
- ⓘ If you don't have enough washers, that's fine, they just help clamp the cartridge.
- You do not need to worry about over-tightening the screws; the heater cartridge is made of steel and is very tough, unlike the thermistor cartridge.
- ⓘ When you eventually screw on the heater block to your heat break and heat sink, you will have to bend the heater cartridge wires down almost horizontally. This is normal. The wires are strong enough to be bent like this.
- ⚠ The screw needs to pass through a clearance hole and then into the threaded side in order to clamp the heater cartridge. Screwing directly into the threaded hole will not clamp the heater block and risk stripping the threads.

Step 9 — Tug Test



- Tug gently on both your heater cartridge and thermistor cartridge to make sure they stay in place.

Step 10 — Gather Nozzle



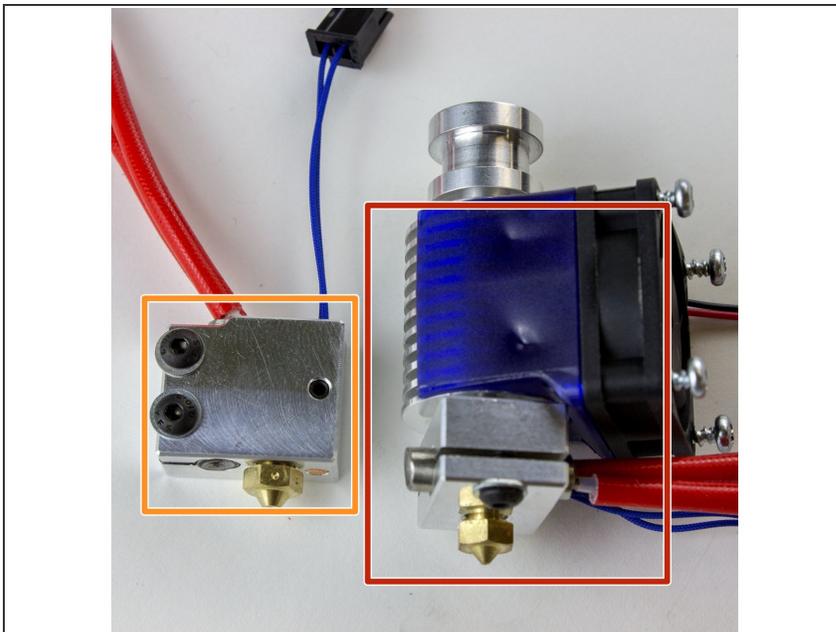
- Gather the following:
 - Volcano Nozzle
 - Assembled Heater Block

Step 11 — Screw in Nozzle



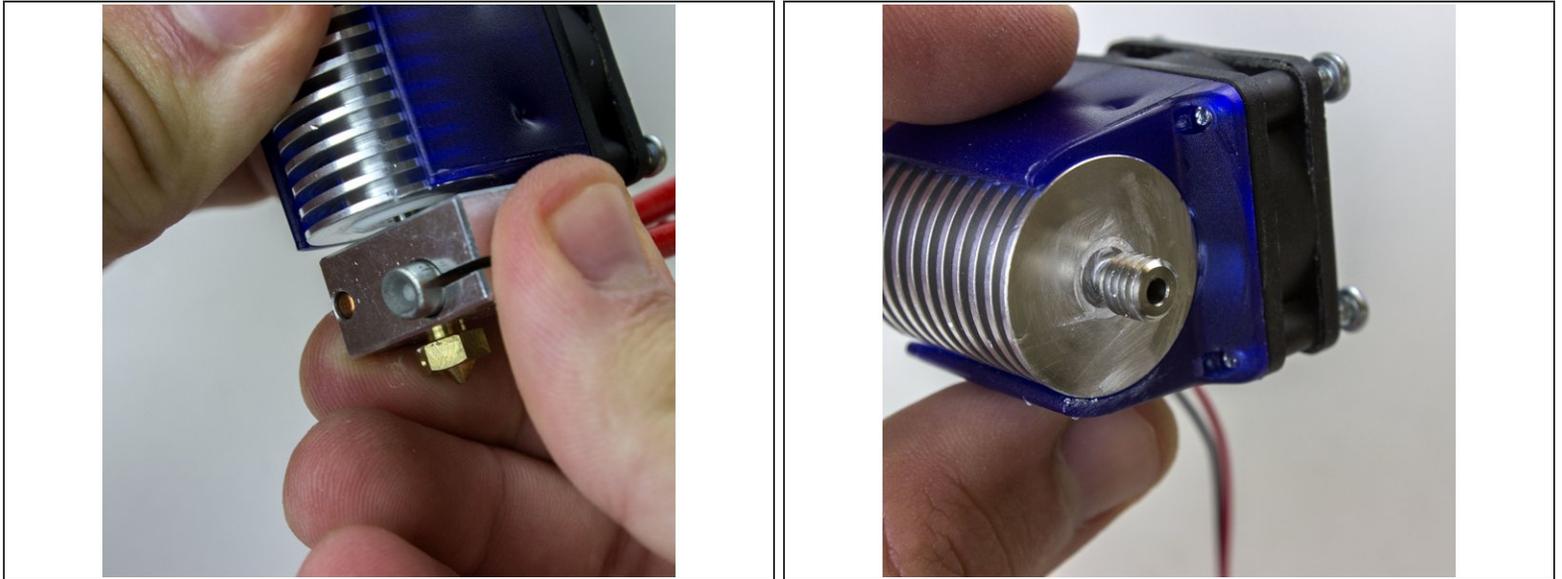
- Screw in the nozzle all the way into the heater block on the side opposite the wires from your electronics. Don't worry about tightness yet.
- Unscrew the nozzle by a 1/4 of a turn.

Step 12 — Get your Old HotEnd



- Gather:
 - Your old V6, Lite6, or Titan Aero
 - Your new Volcano Heater Block

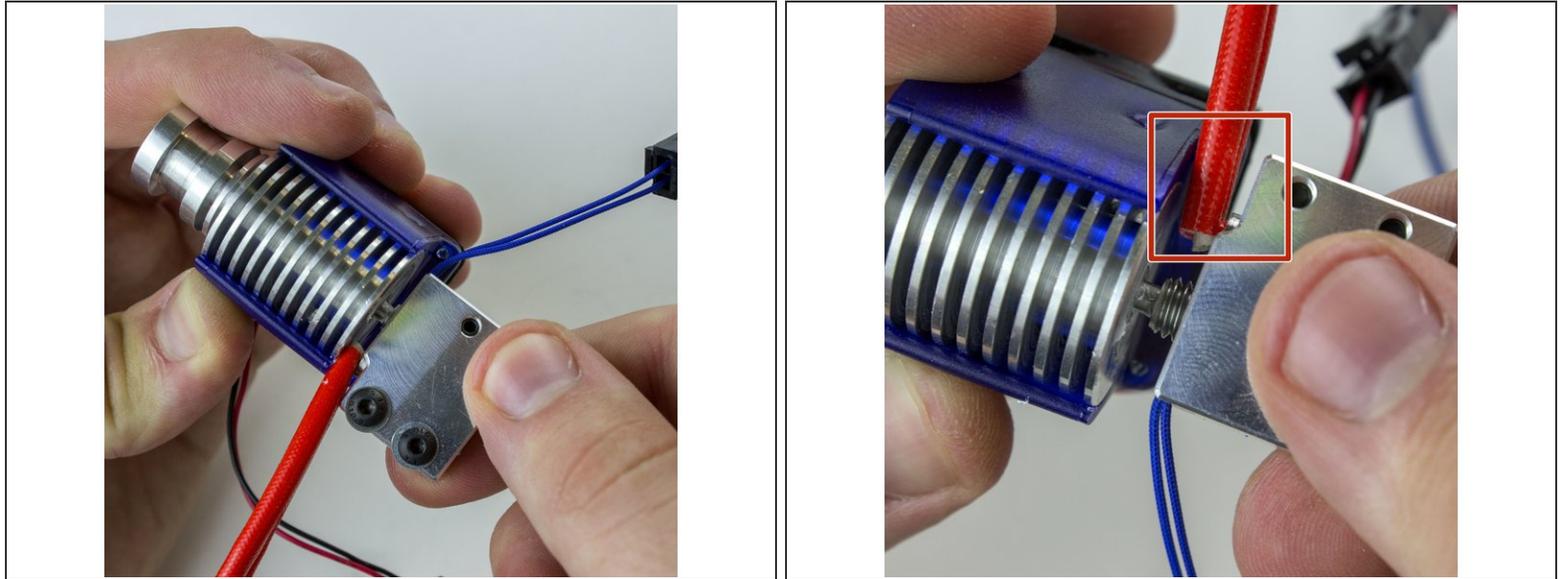
Step 13



 Make sure your printer is cooled down, powered off, and unplugged before working on it!

- Unscrew your old heater block from the rest of the HotEnd body.
- If you're working on a V6, make sure that the heat break stays screwed in to your heatsink (or screw it back in if it came out).
- ⓘ If you're having trouble unscrewing your heater block, you might want to heat up your HotEnd to loosen it a bit. **BE VERY CAREFUL THAT YOU DON'T BURN YOURSELF.**

Step 14



- Screw on your new Volcano heater block until it is hand-tight. You'll be hot-tightening again later.
- You will have to bend down the heater cartridge wires to get them to fit in the little indent at the top of the heater block. This is normal, and you won't damage it.
- ⓘ As when you built your first HotEnd, make sure that the nozzle is close to being flush with the heater block after screwing everything in. If your heater block is right up against the heatsink, you'll have issues printing.

Step 15 — Connect Wiring



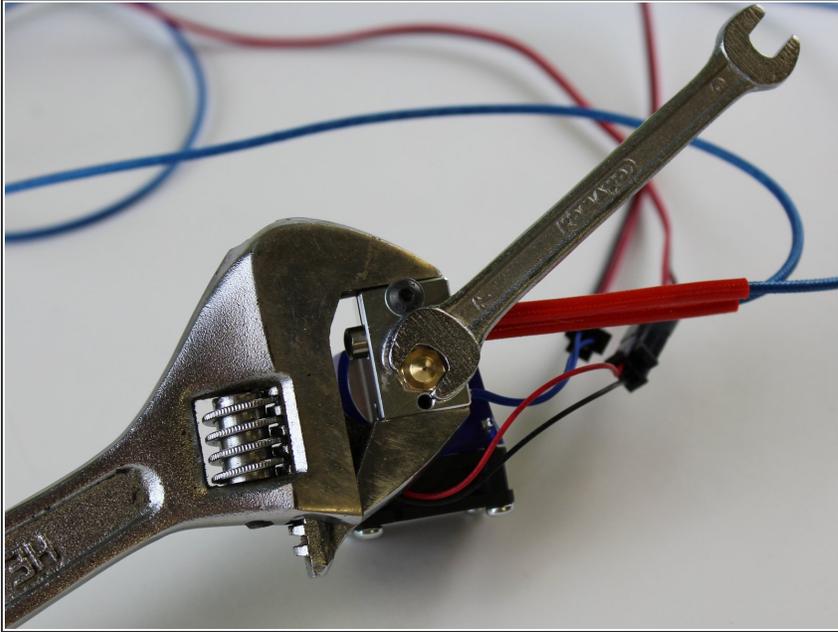
- Plug in your new electronics to your printer's electronics board. They'll go in the same places your old ones were plugged in.

Step 16 — Run PID Tune



- Since you've changed your HotEnd, you should run a fresh PID tune on your printer.
- ⚠ Make sure you have your hotend in a place where it can get hot without damaging anything or setting any fires! Mounted on your printer or held with a spanner will work fine. Take care not to touch your hotend when it heats up.
- Send the command M303 to autotune your PID. For more detailed instructions, check out [Thomas Sanladerer's video guide](#) for more information.

Step 17 — Hot-Tightening



- You need to hot-tighten your HotEnd again before using it.
- As before, heat up your printer to 285°C (240°C for the Lite6) and let it rest at temperature for a minute.
- Gently tighten the nozzle whilst holding the heater block still with a spanner and using a smaller 7mm spanner to tighten the nozzle. This will tighten the nozzle against the Heatsink and ensure that your hotend does not leak.
- You want to aim for 3Nm of torque on the hot nozzle—this is about as much pressure as you can apply with one finger on a small spanner.

Step 18 — CONGRATULATIONS



- Congratulations, you're done!

 Please remember that your new Volcano is about 8.5mm longer than your old V6, so you will likely have to adjust your Z endstop so that it doesn't smash into your build plate.

 As far as slicing settings go, you'll likely only have to update your nozzle diameter and layer height. We recommend starting with the 0.80mm nozzle, and 0.60mm layer heights.