

## 019 – ASSEMBLING THE HOTEND

Take the bag labelled with 31 out of the box. You should have these parts. **Take EXTRA care with the small NTC THERMISTOR! It is very fragile.**



If on the other hand you have the parts shown in the picture below (**NTC Thermistor not shown in this picture**) you will have to assemble the heater block first. Note how the heater cartridge and the heater block are not assembled in the picture below.



To assemble the heater block select these parts:



Insert the small grub screw into the heater block.



Insert the heater cartridge as shown in the picture below.



Make sure the orientation is correct; note the small holes on the side of the heater block.



Tighten the grub screw (do not over tighten!). You have now finished the heater block assembly. From this point on the manual will use pictures of the heater block assembly with the heater cartridge sealed into the heater block. Both versions (with grub screw and the one with red sealant) have the same function.



Next slide the white plastic spacer into the aluminium bracket. You may need to use some force.



Slide the copper barrel into the white spacer. **Watch the orientation closely.**



Screw on the white plastic barrel.



Take the heater block (again it does not matter if you have the version with the small grub screw, they are the same).



Slide the 2 sleeves of the cartridge, cut them in half and slide two of them back onto the heater cartridge.



Cut the wires of the heater cartridge in half.

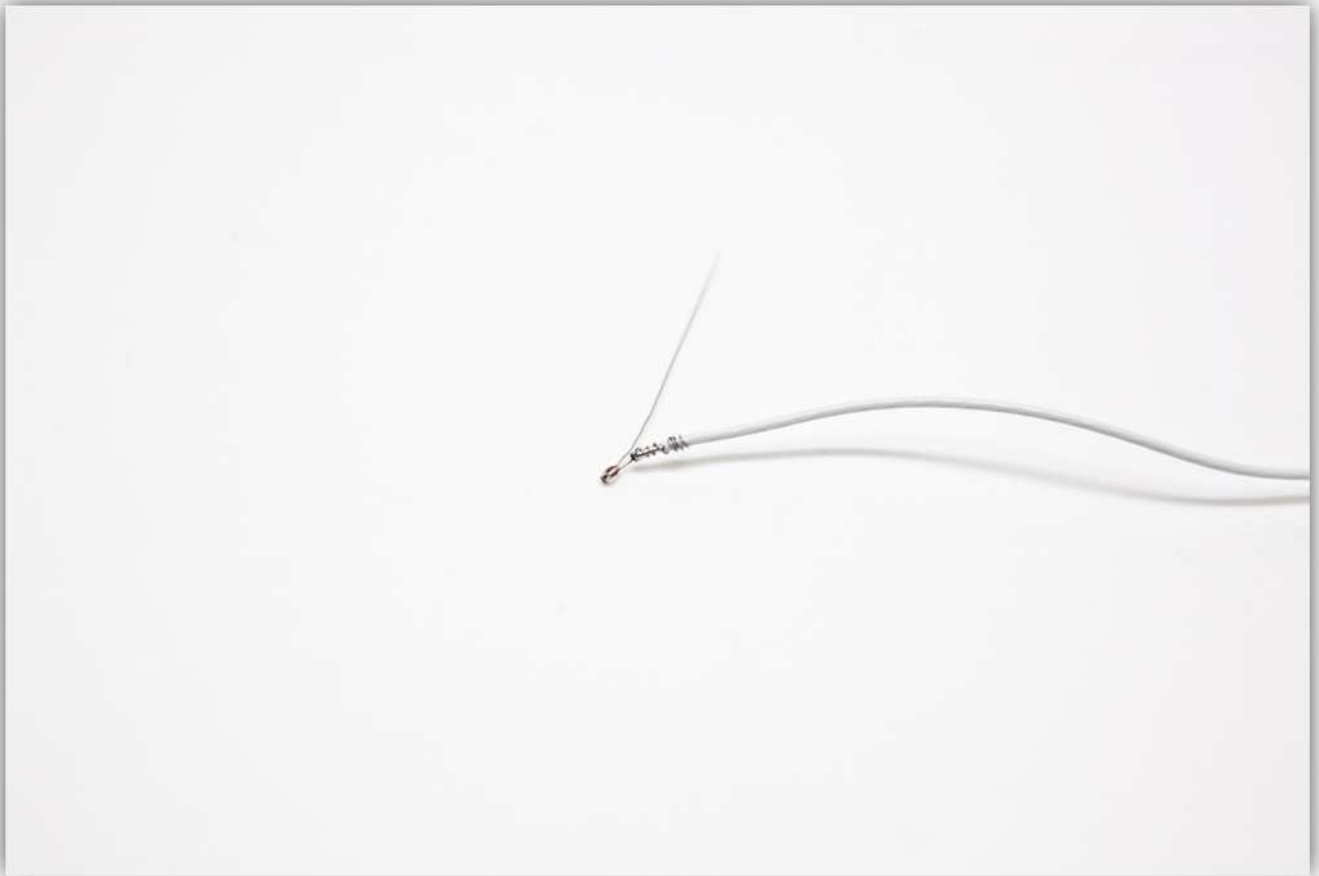




Strip 5 mm (0.2") all the ends of the wires you have cut. Take the two loose wires.



**Carefully (!)** wrap one leg of the NTC onto the bare wire. Solder it in place.



**Carefully (!)** wrap the other leg of the NTC onto the second bare wire. Solder it in place.



Slide the 2 remaining sleeves over the connections.



Use the small washer and the small copper screw to **lightly** fasten the wires to the heater block. **Make sure that the glass bead of the NTC fits snugly in the small hole and that you don't over tighten the small screw (this could cause a short circuit between the 2 wires!!)**



Use a small tie-strip to hold the wires of the NTC and the heater block together.



Slide the big washer over the copper barrel.



Slide the heater block over the copper barrel. **Watch the orientation!**



Screw the nozzle on the copper barrel. **Tighten it firmly. You can unscrew the white plastic barrel and use another wrench on the copper barrel to tighten the nozzle firmly. Do not forget to screw the white plastic barrel back on firmly afterwards.**

**Warning:**

**If you do not tighten these pieces firmly enough you risk having a leaking extruder. This is irreparable.**

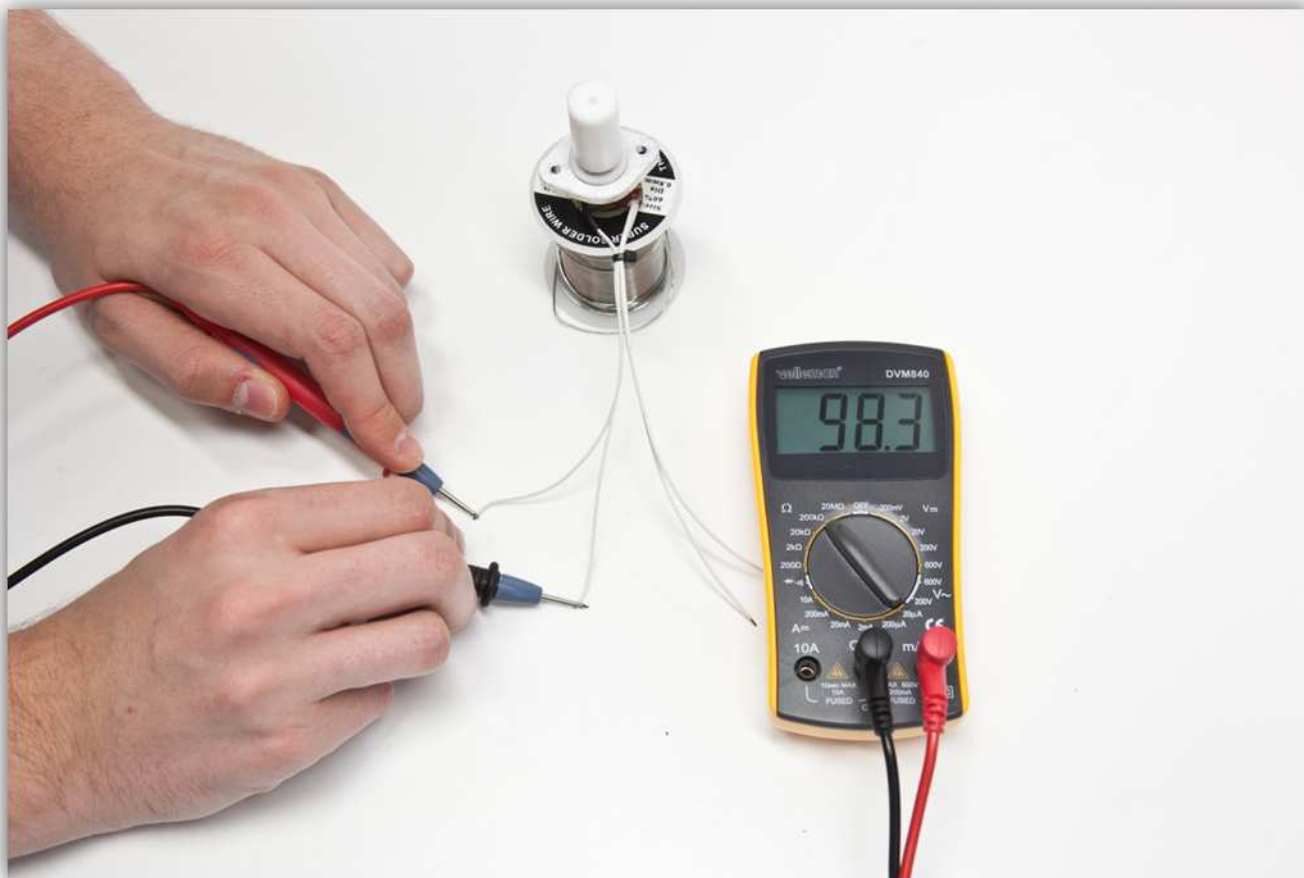
**If you use too much force you can strip the threads of the barrel rendering the piece useless!**

**We recommend tightening the nozzle with a torque of 3.5 Nm.**

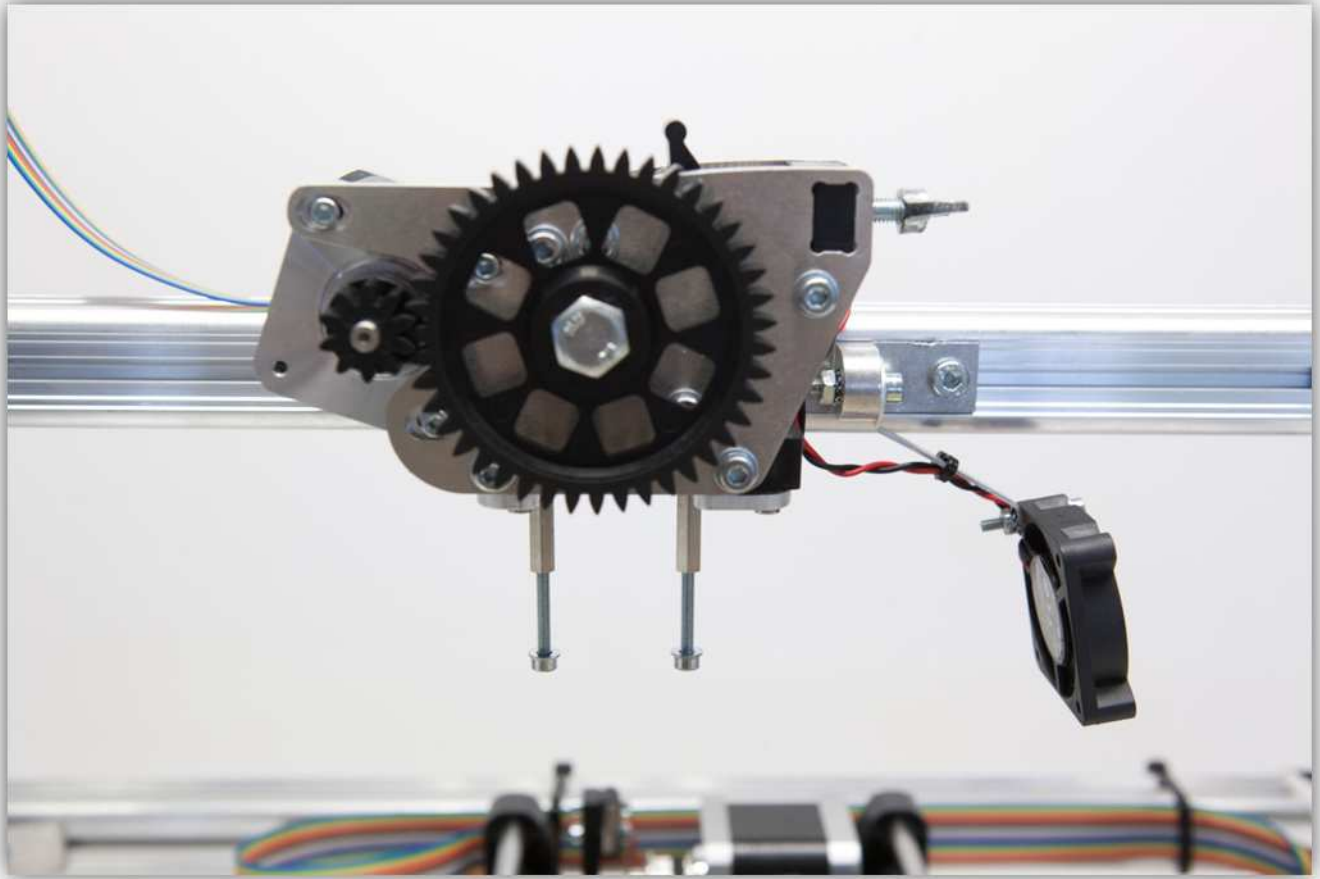




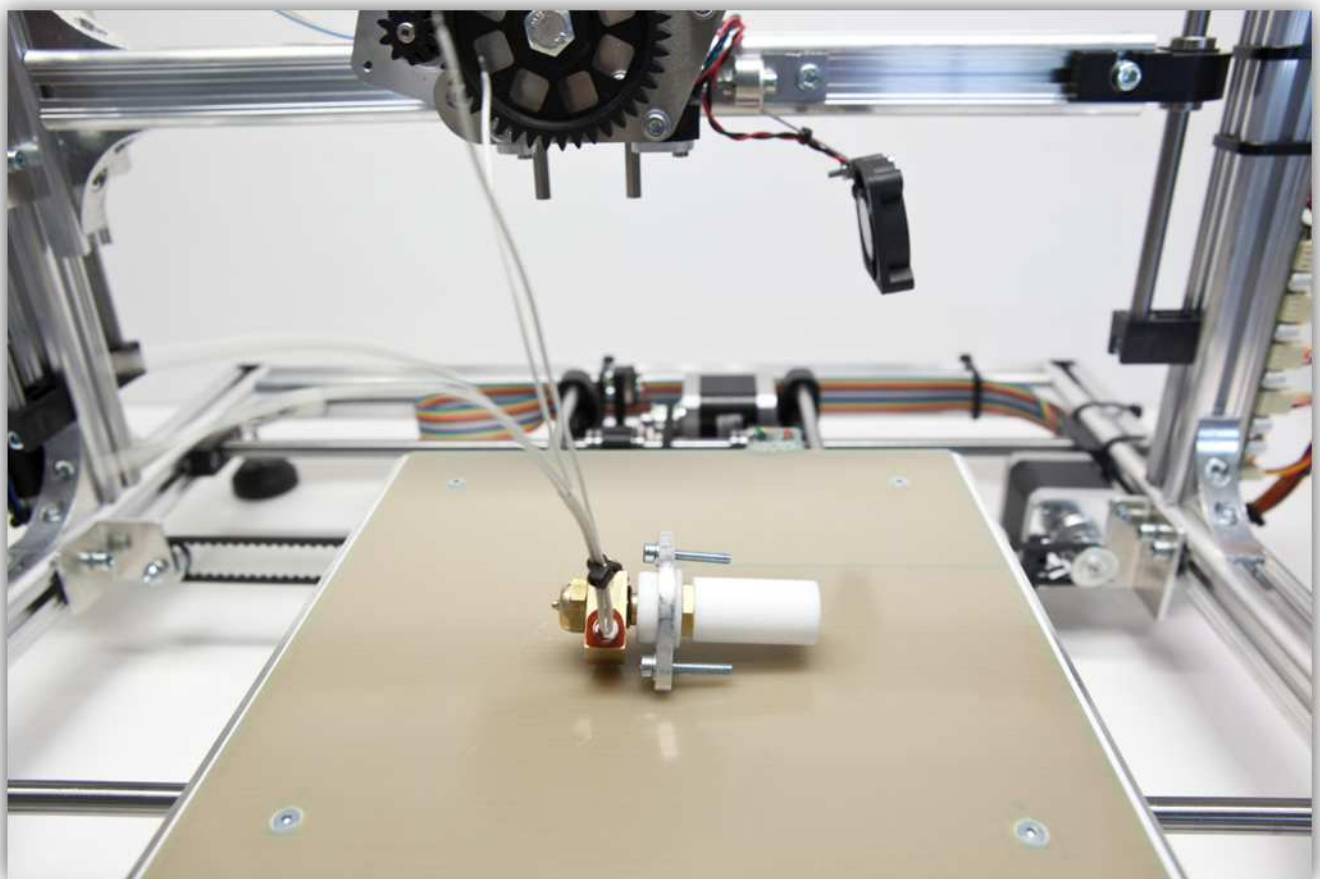
Put your multimeter on **200 k $\Omega$**  and measure the leads of the NTC. You should measure something between 70 to 100 k $\Omega$  depending how hot the NTC is. If your measurement is way lower than it is possible that the NTC is shorting out. Detach it, check it and attach it again.



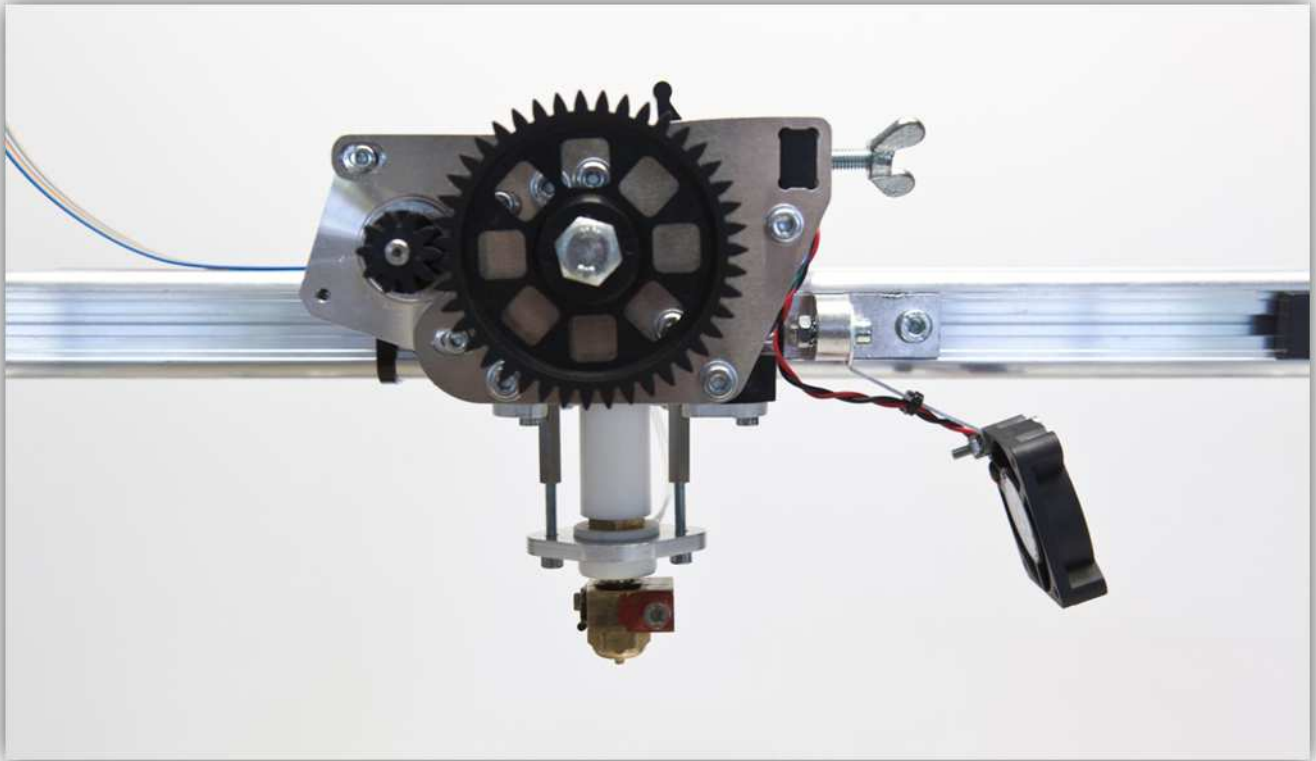
Unscrew the two bolts where the HOTEND needs to be mounted.



Slide these bolts and washer into the aluminium bracket.



Slide the white plastic barrel into the opening in the EXTRUDER BASE. Screw the bolts into the metal spacers. **Notice how the NTC side of the extruder faces away from the fan. Make sure this is correct!**



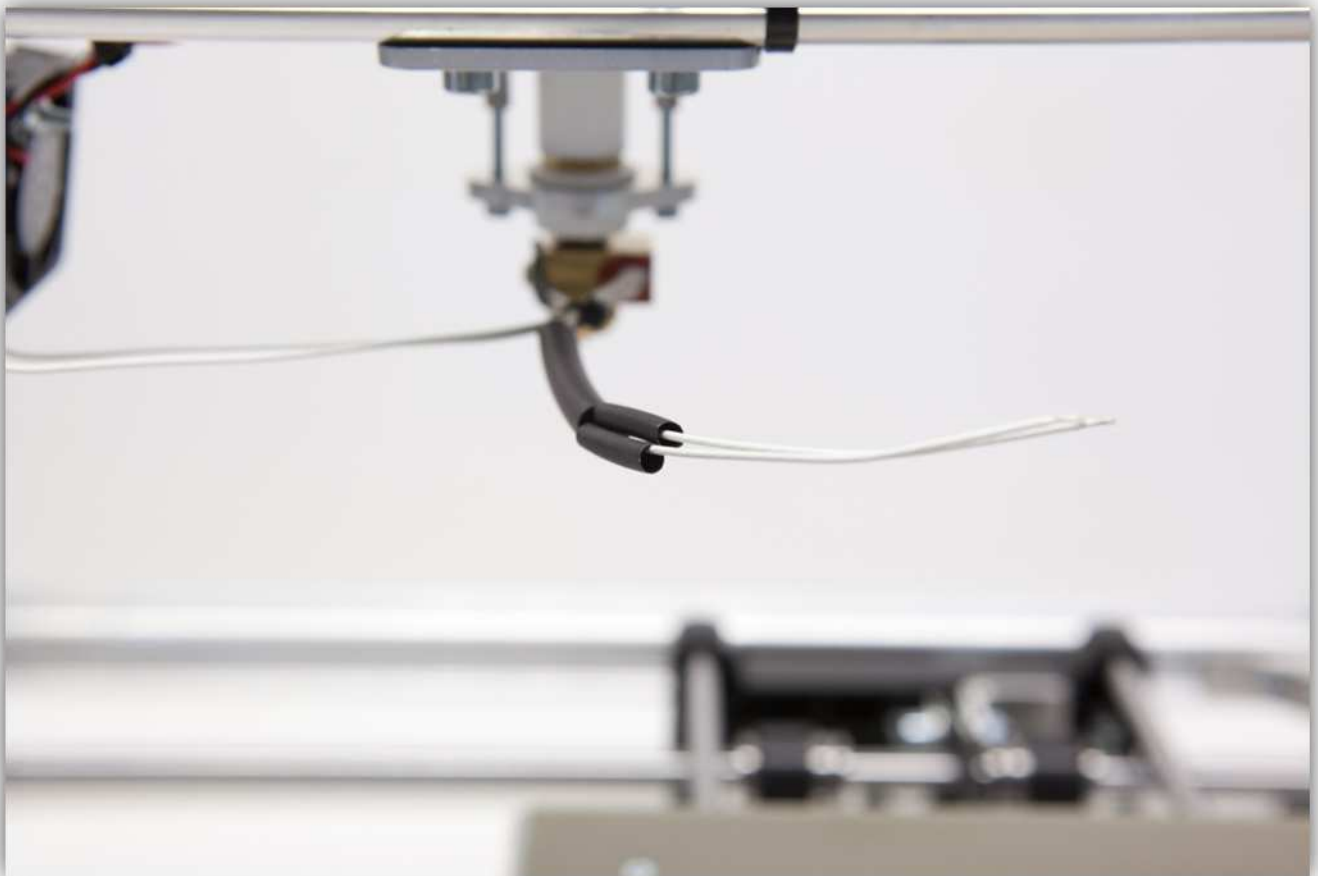
Cut 2 small pieces of the medium size heat shrink tubing of 1.5 cm (0.59") long and 1 large piece of the biggest heat shrink tubing of 4 cm (1.57"). You can find the heat shrink tubing in the bag labelled with 40.



Slide the big heat shrink tubes over the 4 wires of the HOTEND.



Slide the 2 medium size heat shrink tubes over the 2 wires of the heater cartridge. **Make sure these are the wires of the heater cartridge and not the ones of the NTC!**

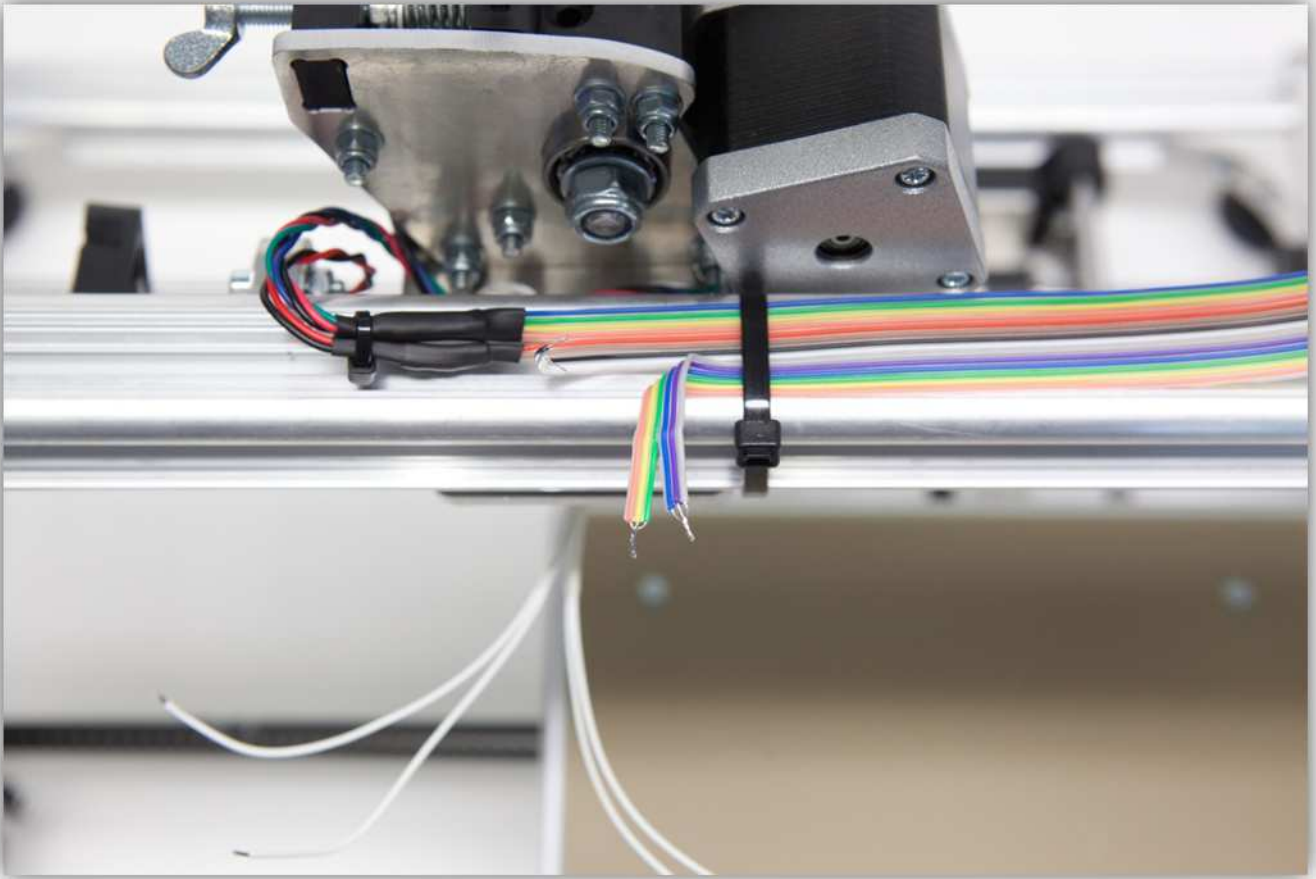


Tin the wires of the heater cartridge.

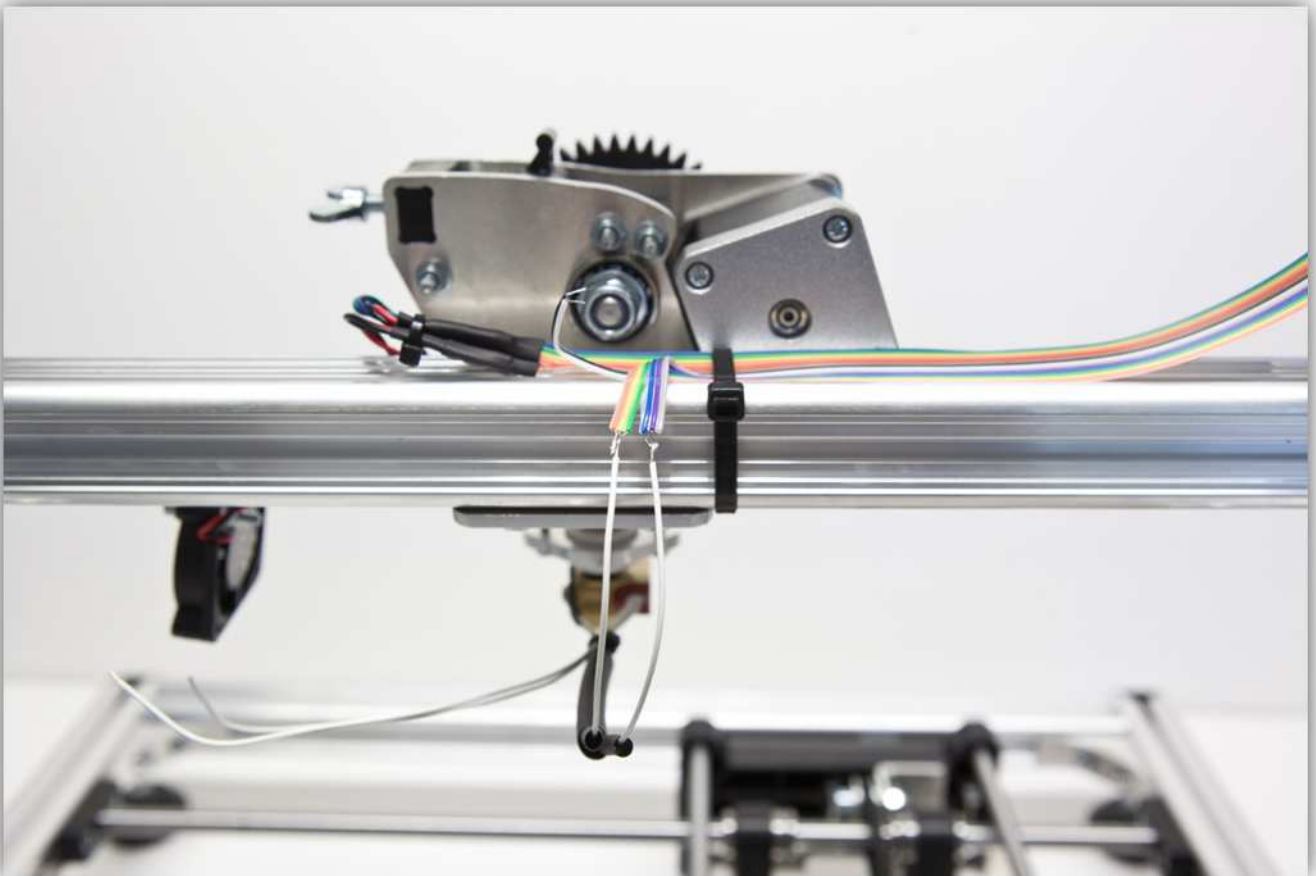


Take the 2 groups with the following wires:

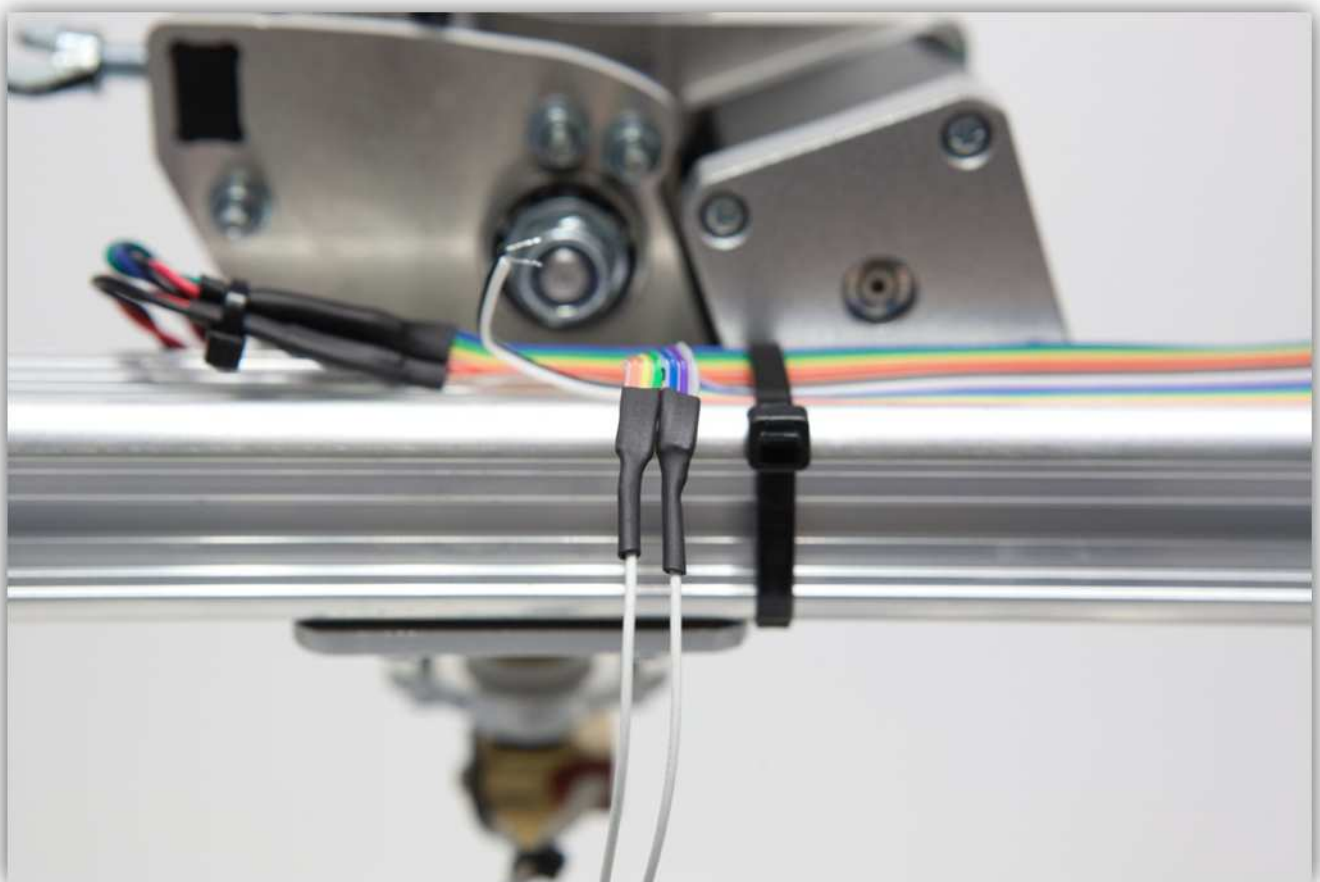
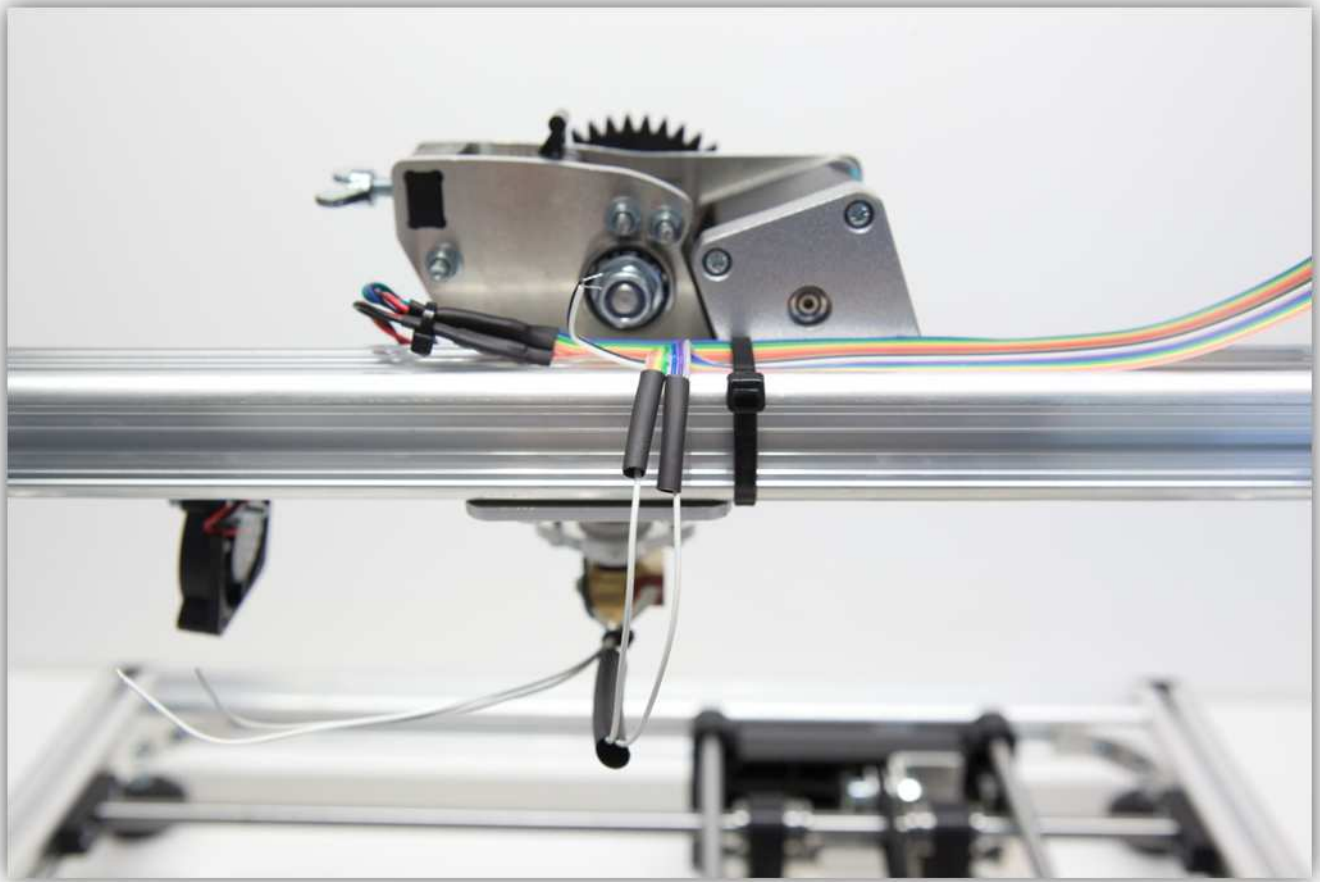
- Group 1: **Grey, Violet, Blue**
- Group 2: **Green, Yellow, Orange**



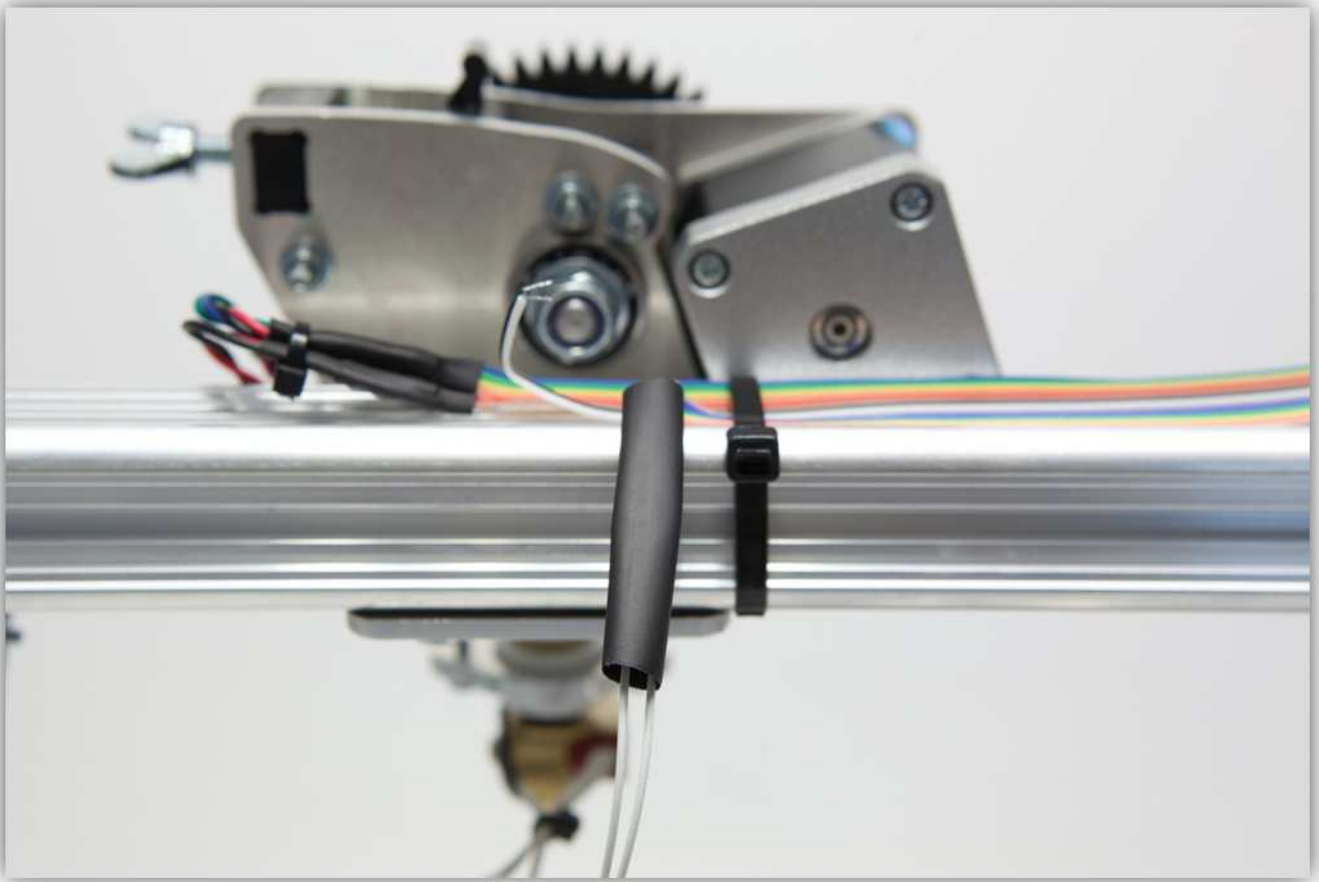
Solder the 2 wires of the heater cartridge to the 2 groups.



Slide the medium size heat shrink tubes over the solder joints and heat them up so they shrink.



Now slide the big piece of heat shrink tubing over the 2 medium size pieces, heat the big piece so it covers and protects the 2 heat shrunk joints.



Cut 2 small pieces of the smallest heat shrink tubing of 1.5 cm (0.59") long and 1 large piece of the medium size heat shrink tubing of 4 cm (1.57"). You can find the heat shrink tubing in the bag labelled with 40.





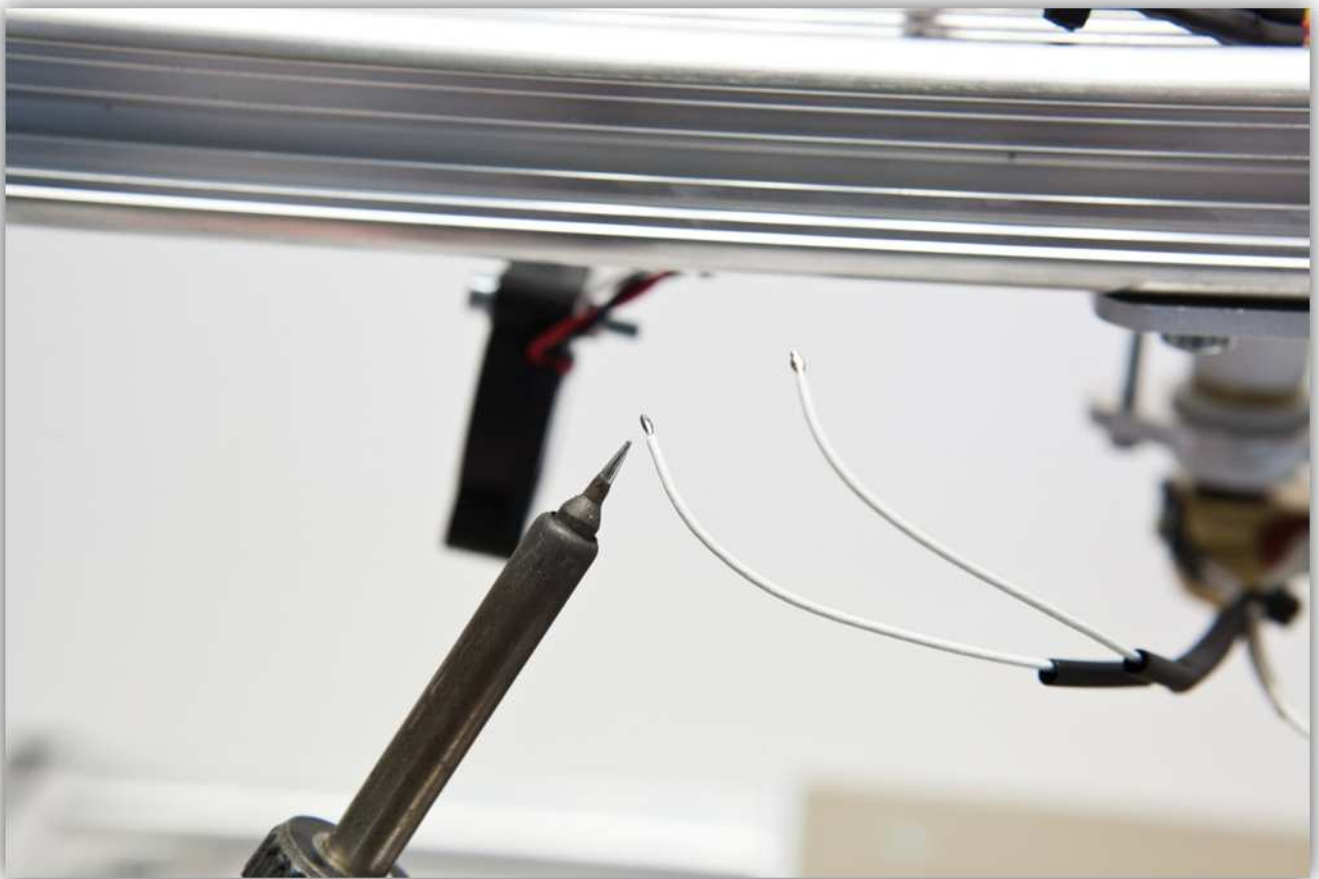
Slide the medium size heat shrink tubes over the 2 wires of the NTC. **Make sure these are the wires of the NTC.**



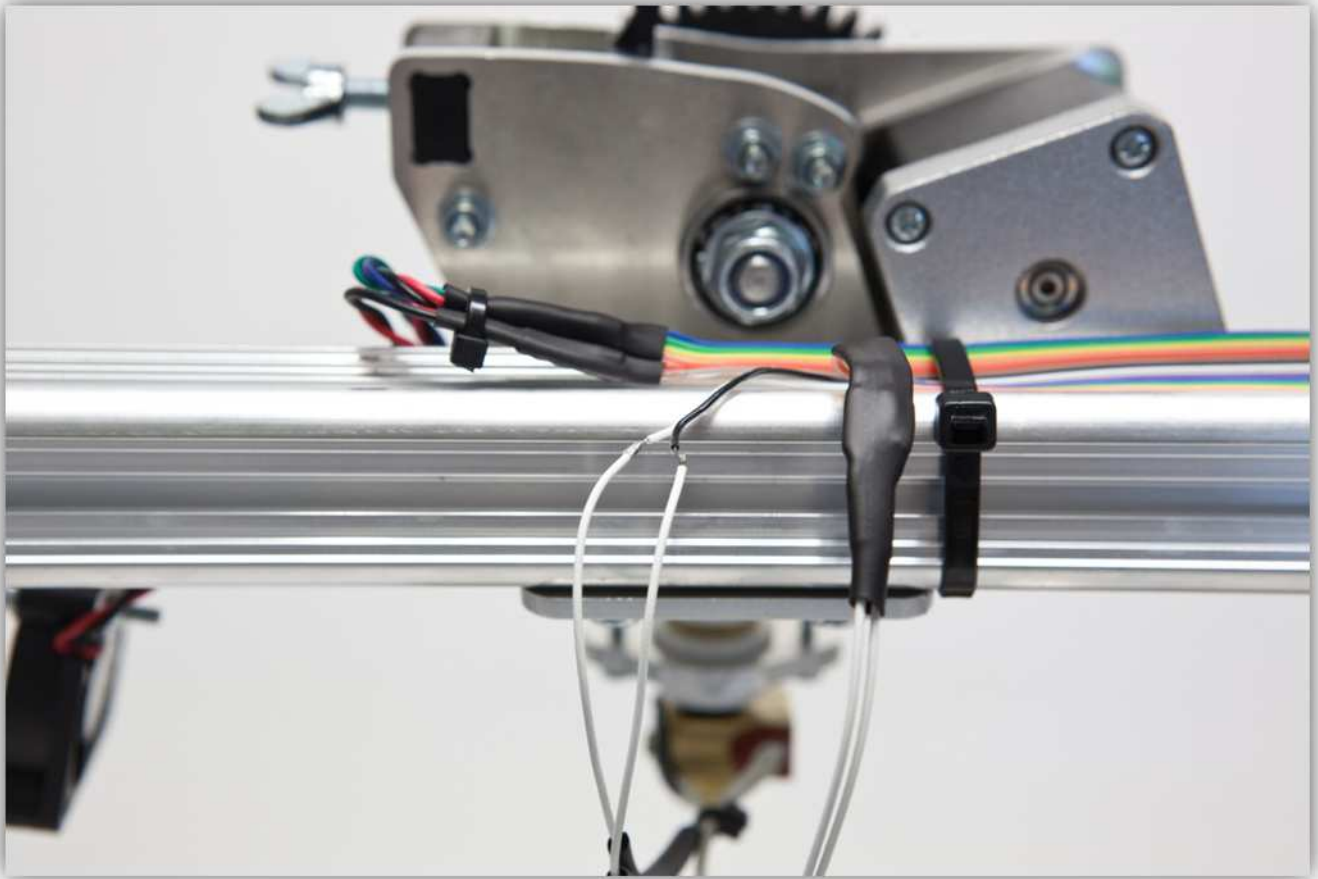
Slide the 2 medium size heat shrink tubes over the 2 wires of the NTC.



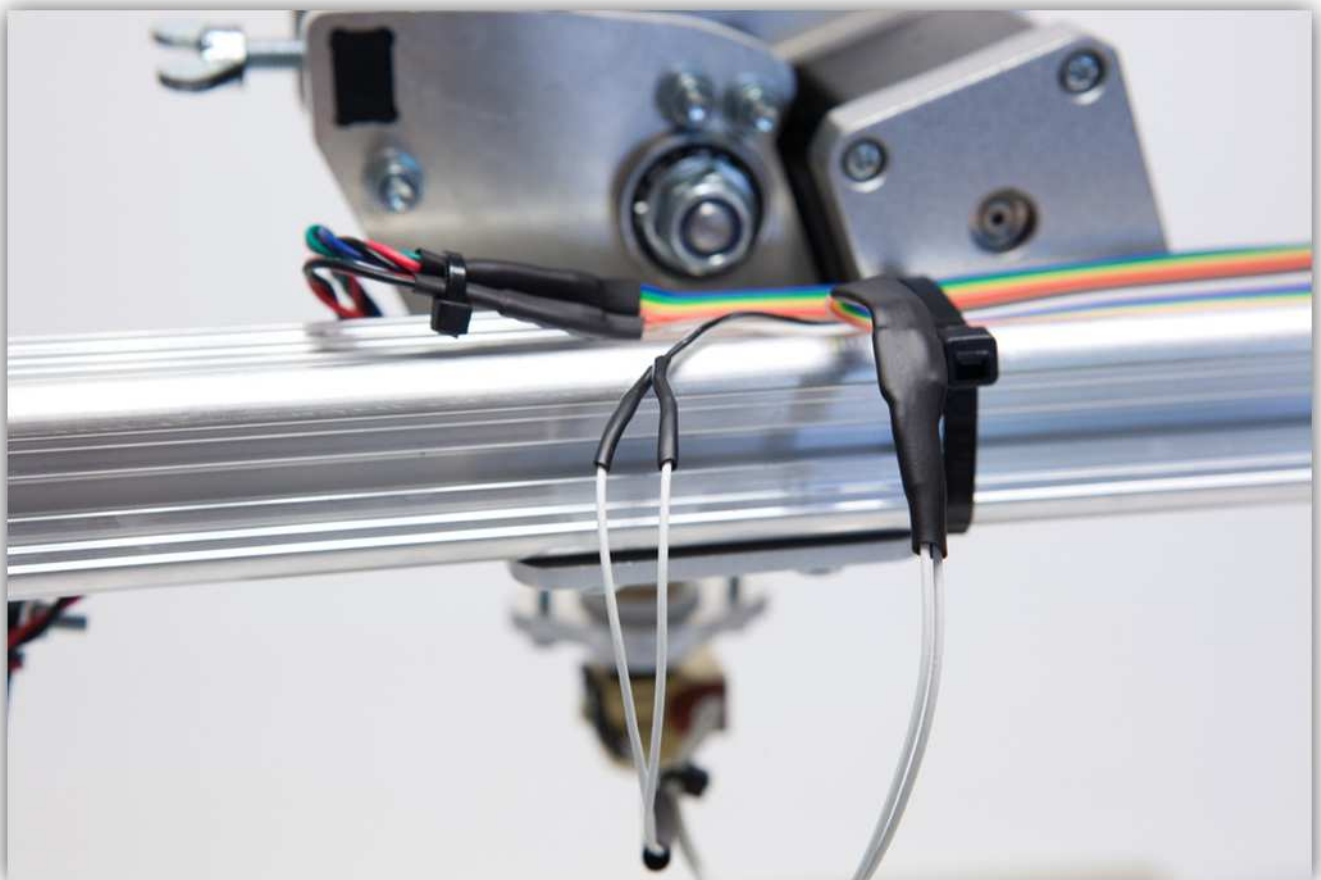
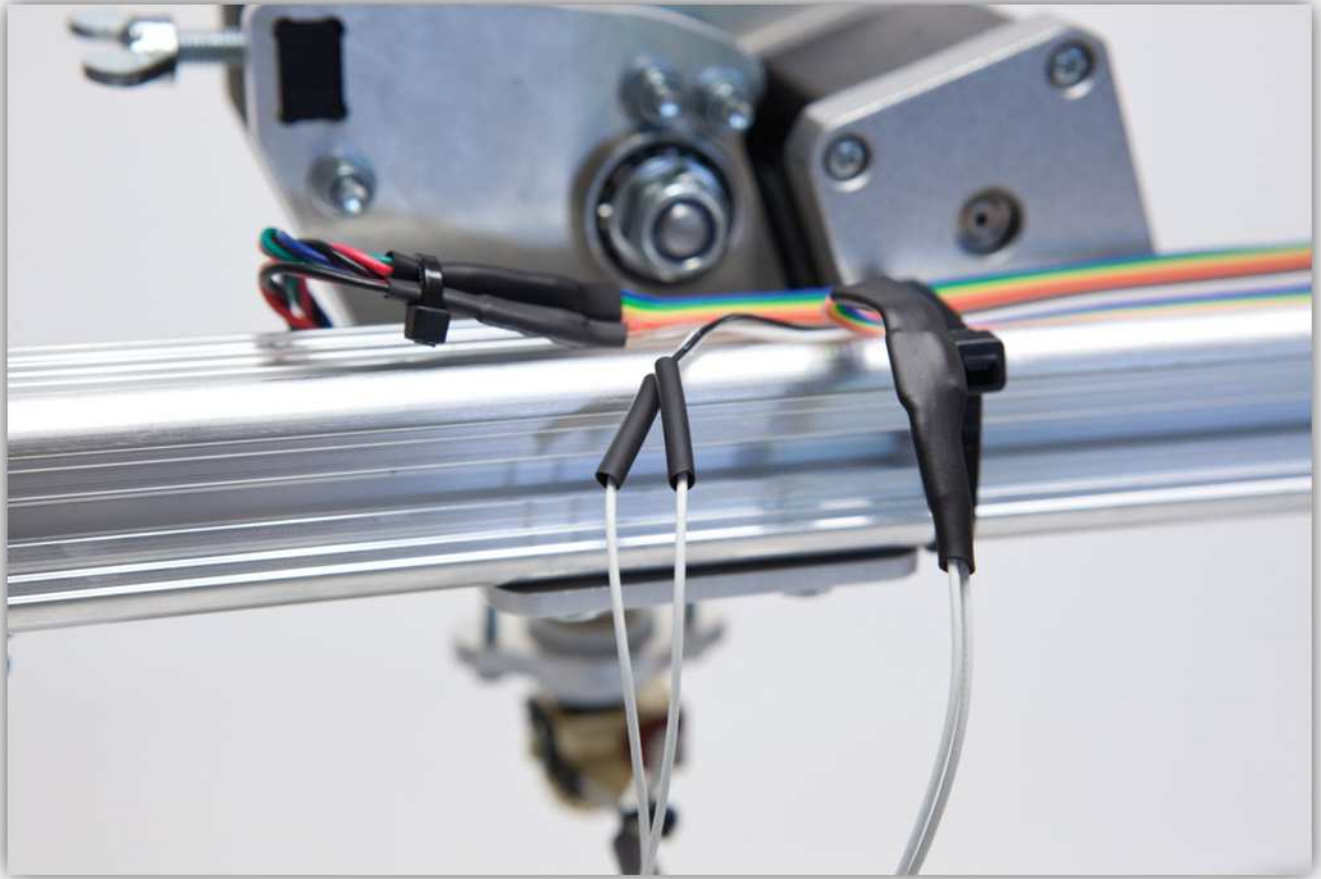
Tin the wires of the NTC.



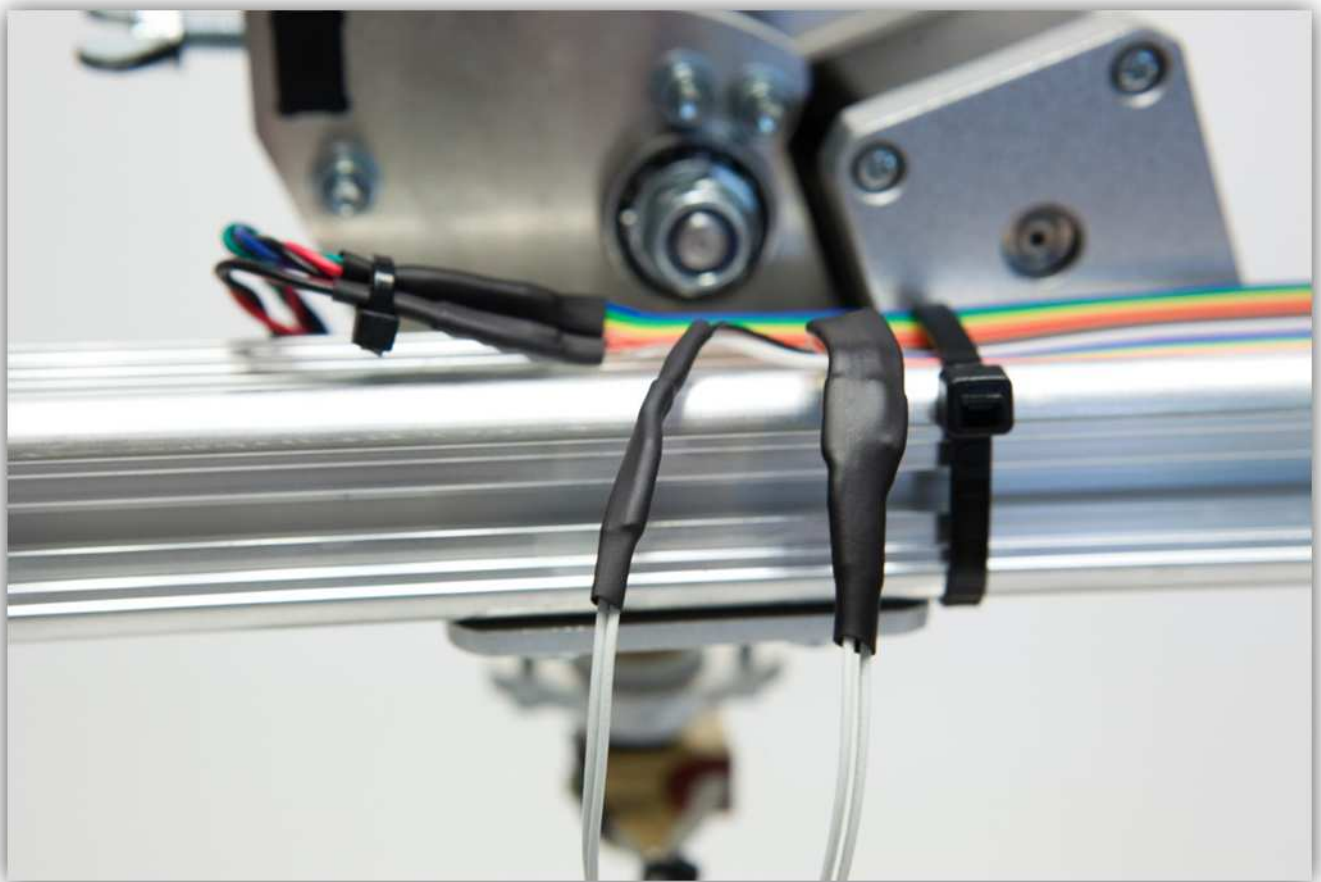
Solder the 2 wires of the NTC to the **Black** and **White** wires of the flat cable.



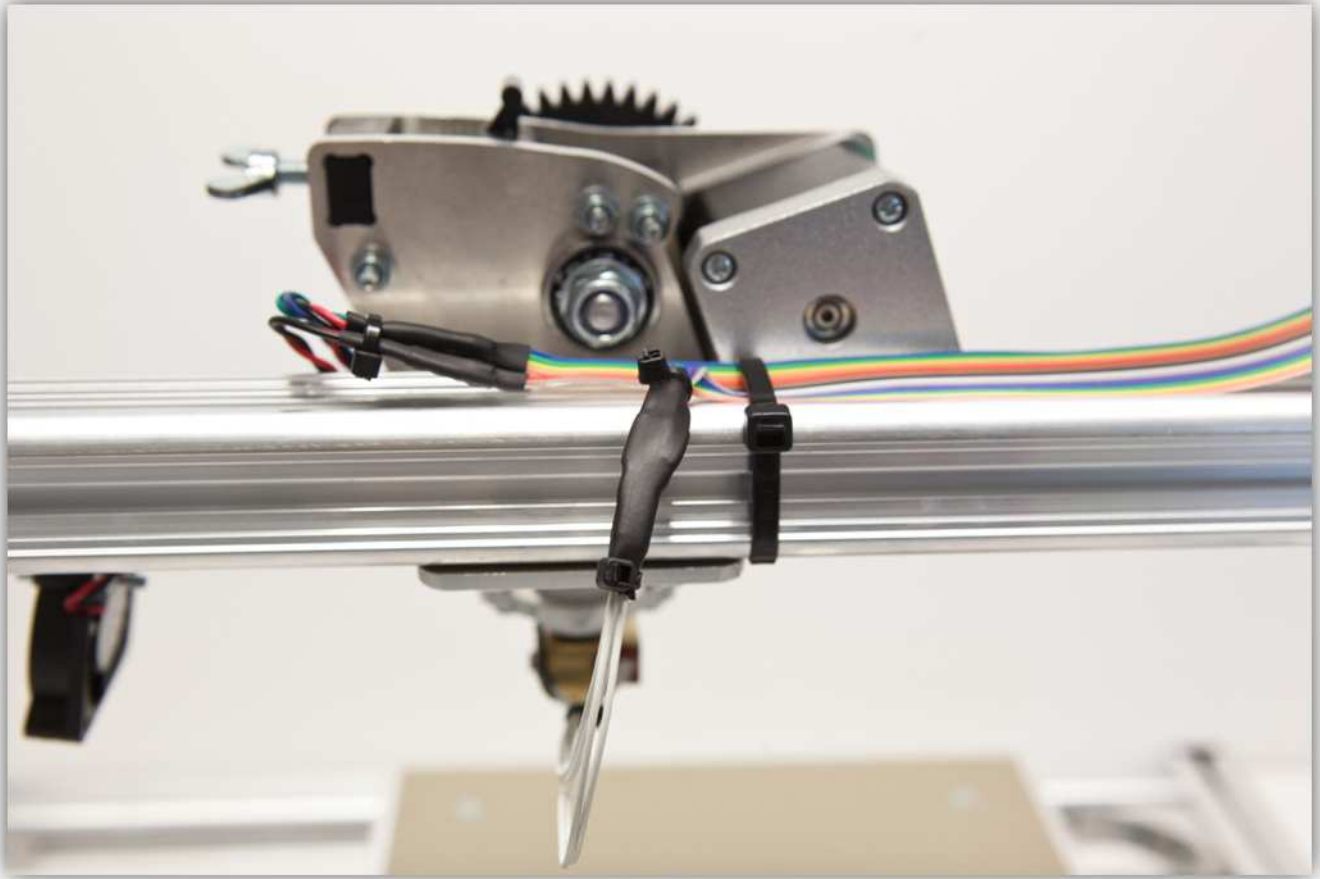
Slide the small heat shrink tubes over the solder joints and heat them up so they shrink.



Now slide the medium size piece of heat shrink tubing over the 2 small size pieces, heat is piece so it covers and protects the 2 heat shrunked joints.



Use 2 small tie strips to keep all the wires together.



Congratulations! The K8200 3D PRINTER is now finished! In the next chapters we will speak about the basics of printing, calibrating your printer, more advanced settings and so on. Make sure to read and understand these next chapters, because they contribute a whole lot to the printing quality of the K8200.

