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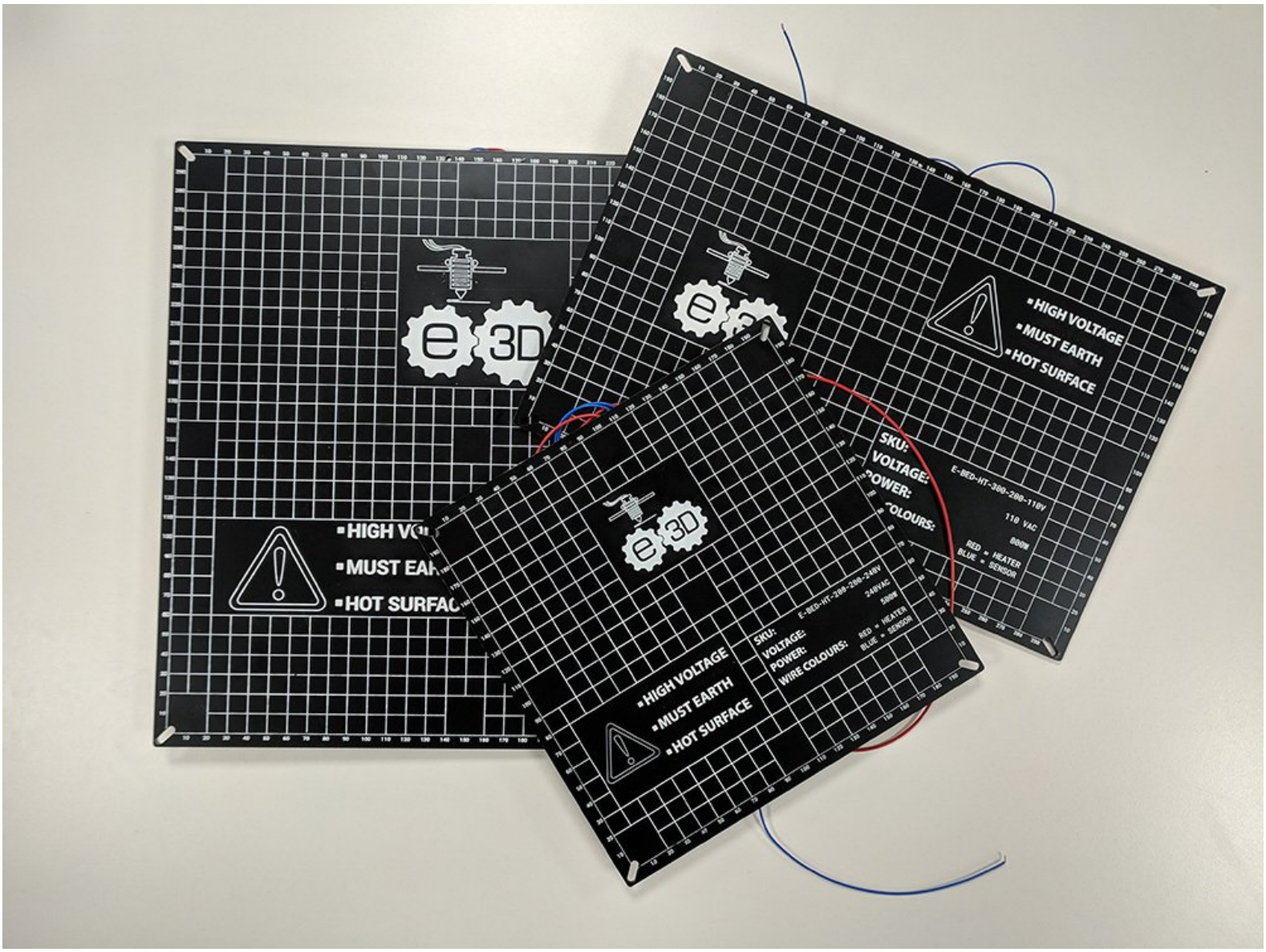
High temperature bed assembly guide.

High-temperature beds. 300x300mm, 300x200mm, 200x200mm.

Written By: Dan Rock



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INTRODUCTION

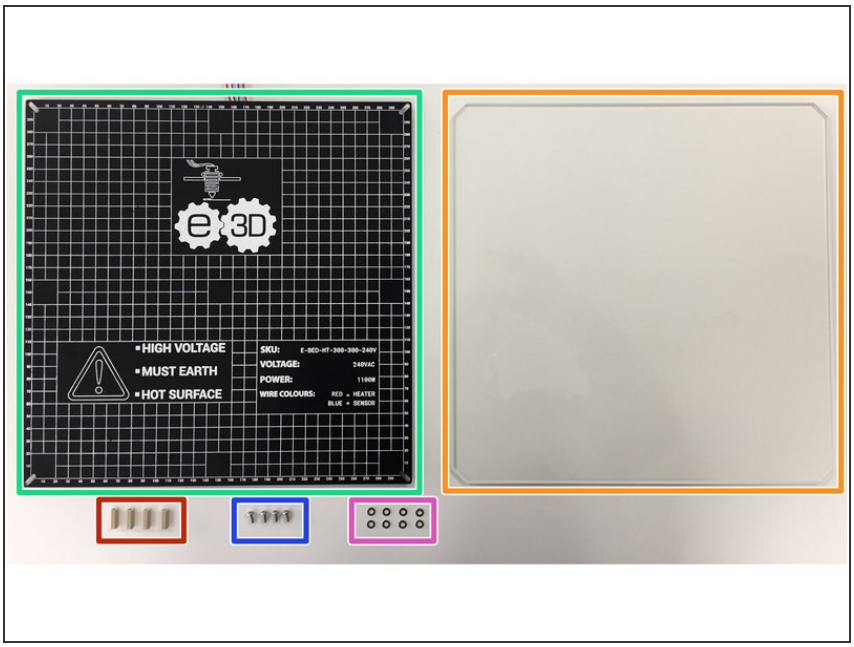
This guide is for the assembly of the high-temperature heater beds. it is important to mention that these beds run off **mains voltage** (240vac/ 110vac) and **can be dangerous if not wired correctly.**

Do not mount the bed on printed plastic parts, you should mount it on a metal frame to avoid melting. **These beds are capable of reaching up to 250°C**

This guide is for the 300 x 300 mm, 300 x 200 mm and 200 x 200 mm heated beds. The guide shows a 300 x 300 mm bed but the same applies to all sizes.

Please note that the dimensions 300 x 300mm refers to the print area ie the silk screen printed area. the full dimentions can be found on the drawings.

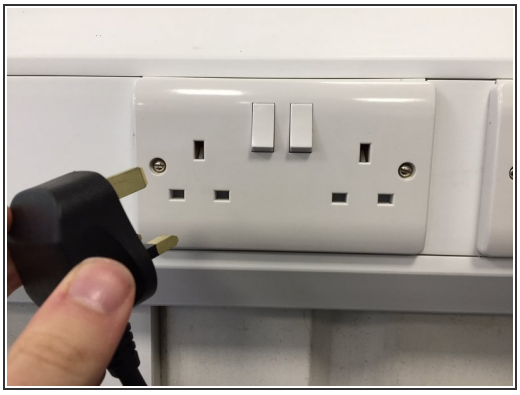
Step 1 — Gather Parts.



- Gather parts:
  - x1 Heated Bed
  - x1 Borosilicate Glass 314 x 314 mm
  - x4 Plastic Spacers (PPS)
  - x4 m3 button head 7.5mm screws
  - x8 washers

⚠ Make sure the glass used is Borosilicate, other glass may crack/break.

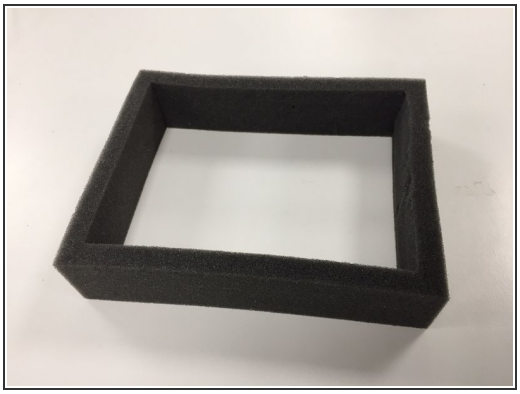
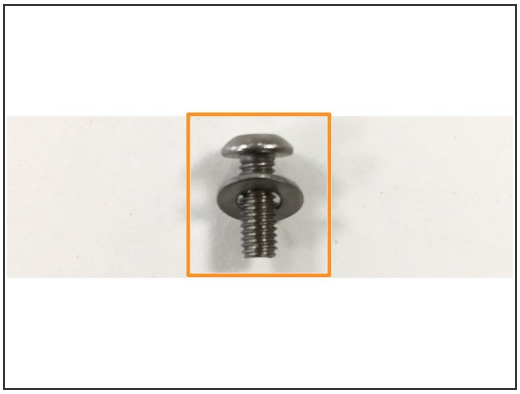
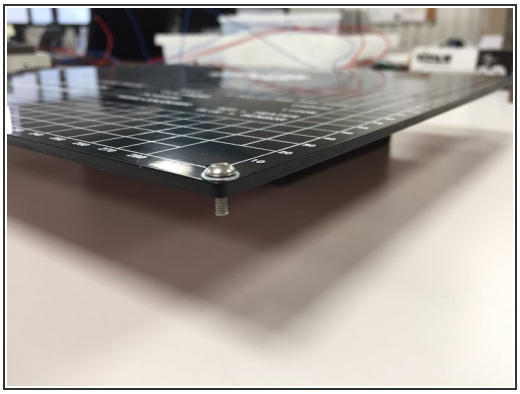
Step 2 — Safety warning.



⚠ Before doing anything make sure the printers power supply is not plugged into the wall.

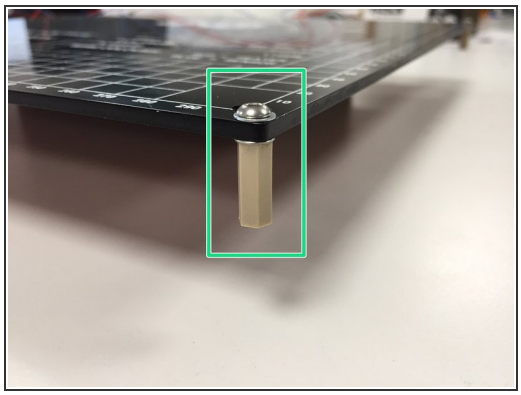
ⓘ It is better to completely remove the plug, rather than just turning it off.

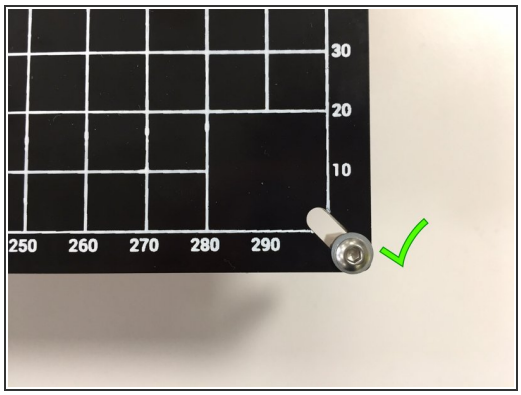
Step 3

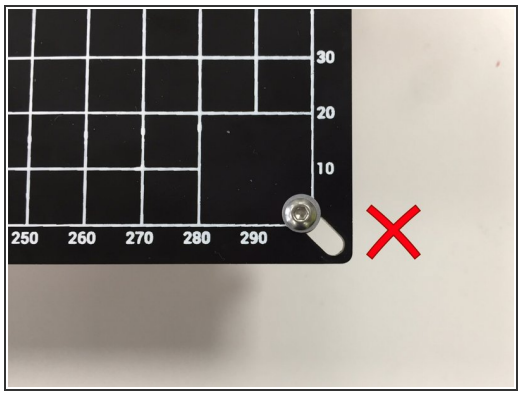




- You may find it easier to elevate the heated bed for this step. For this example a piece of scrap foam has been used.
- Place a washer on one of the 4 m3 screws.
- Place the screw and washer into the slot on the bed.
- Do this on all 4 of the corners.

Step 4



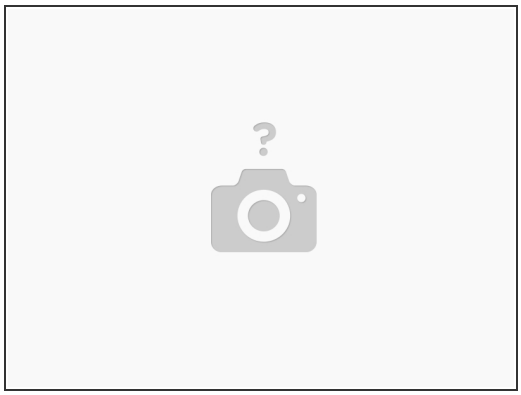




- Place the second washer on the screw on the underside of the bed.
- Screw on the plastic spacer to fasten the parts together.
- Make sure the screw head is positioned all the way to the end of the slot closest to the outside edge.
- Do this for all 4 corners.

⚠ Do not completely tighten the screw in the slot, make sure the screw is able to slide in the slot when the bed heats up and expands.

Step 5

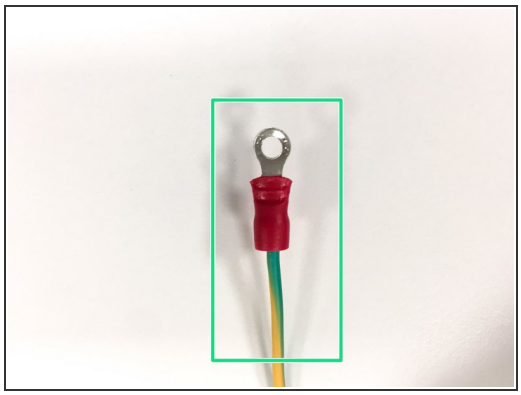
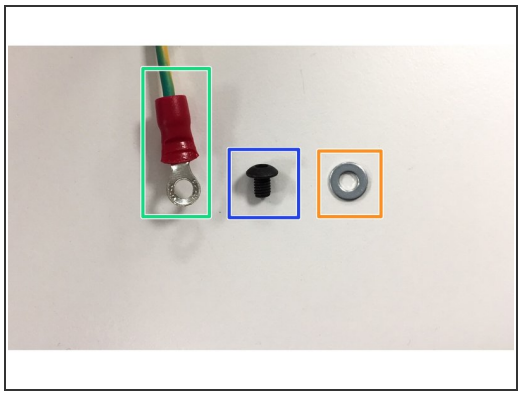
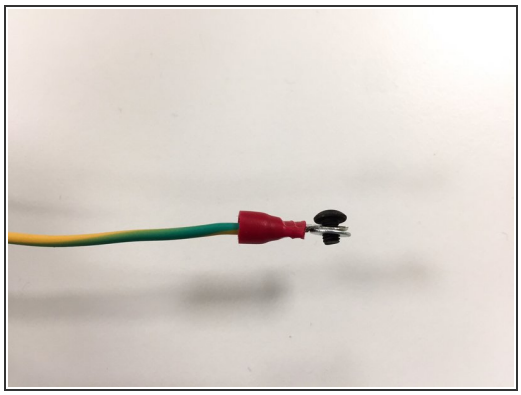


- You can now mount the bed onto your printer.

⚠ Make sure that you do not mount the bed on any plastic parts as these can melt/ catch fire.

ⓘ Make sure you insulate any melt-able/ burnable components. either above or below the bed.

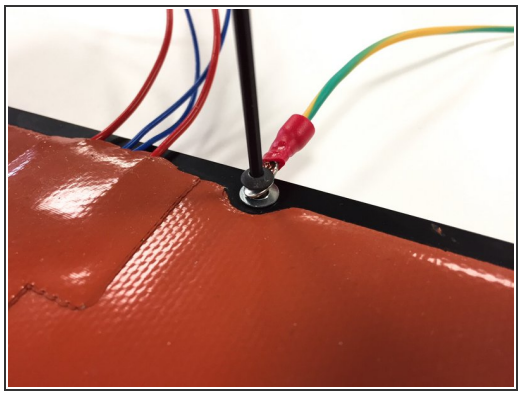
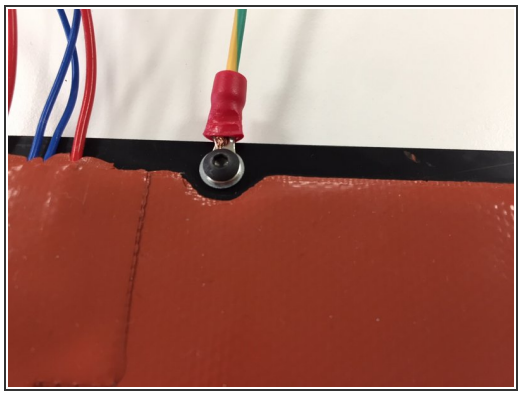
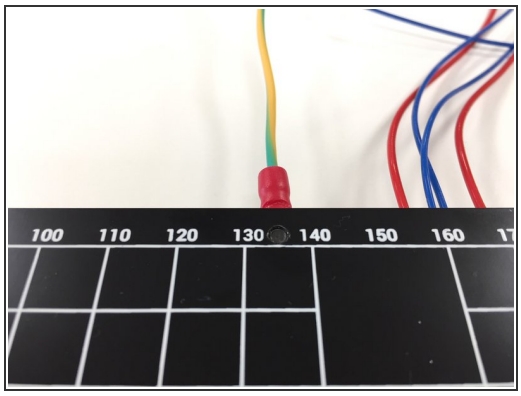
Step 6

- Prepare a Ground/Earth wire with a ring crimp.
- Gather a washer.
- And a M3 3.5mm screw.

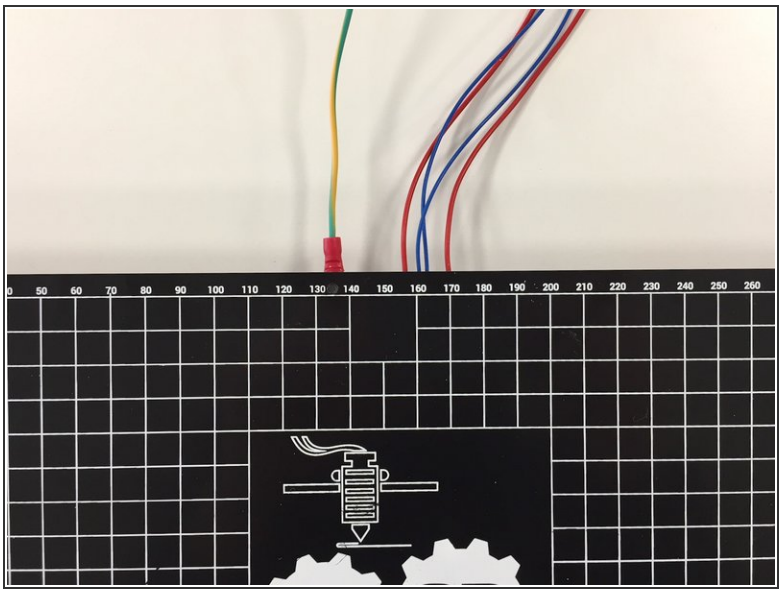
⚠ Make sure to use a wire of at least **14AWG**

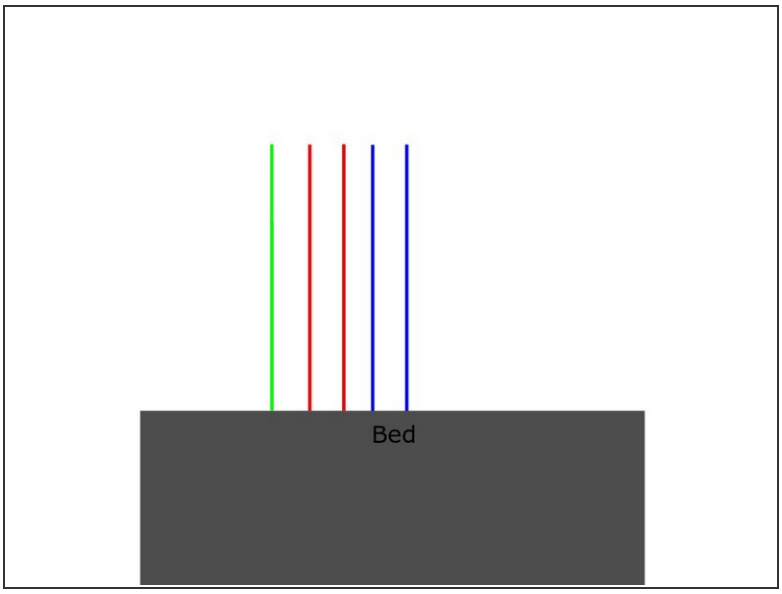
Step 7

- Fasten the ground wire into the ground hole.
- The screw should not stick out of the top of the bed otherwise it will foul the glass.

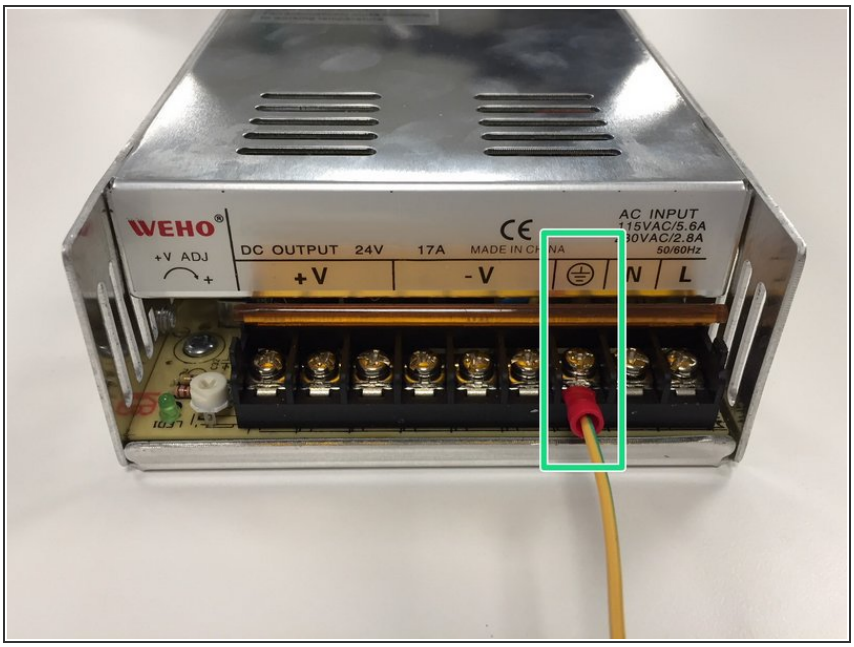
Step 8 — Wiring





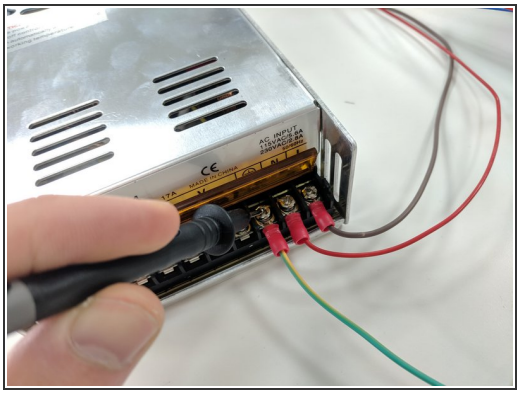
- At this point there should be 5 wires coming out of the bed.
- The Earth/Ground wire (ideally using yellow and green Earth/Ground wire)
- Two red wires (these are the heater wires)
- Two blue wires (these are the thermistor wires - Semitec 104GT)

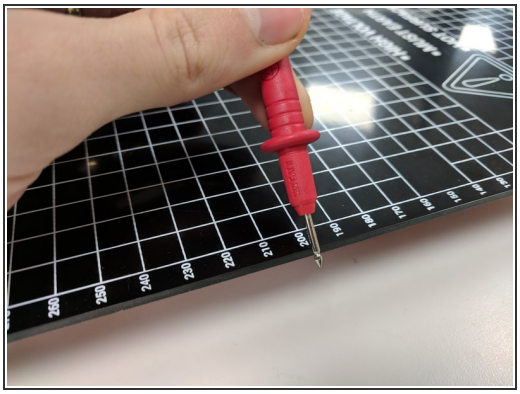
Step 9 — Connect earth to power supply.



- Connect the other end of the earth/ground wire to the power supply.

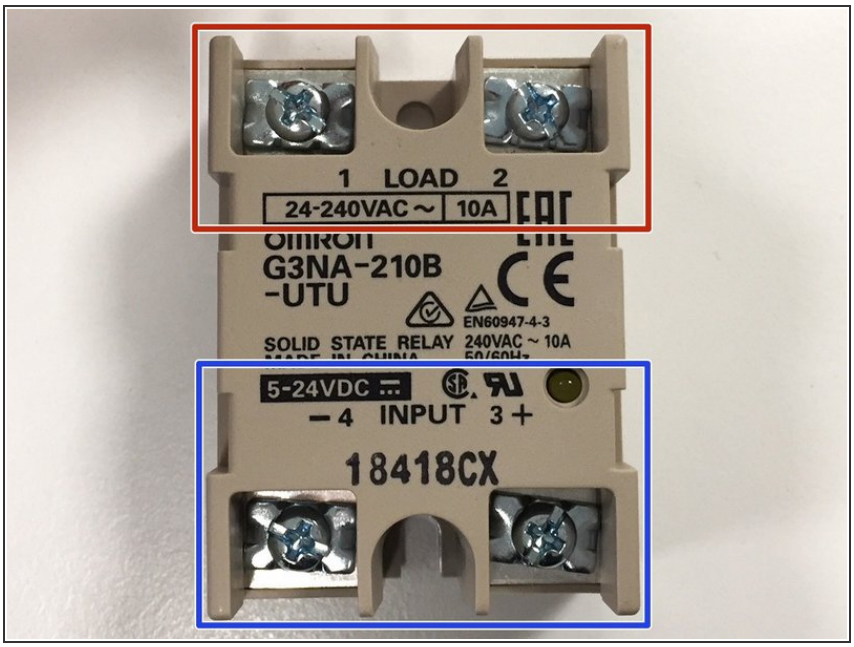
Step 10 — Checking for continuity





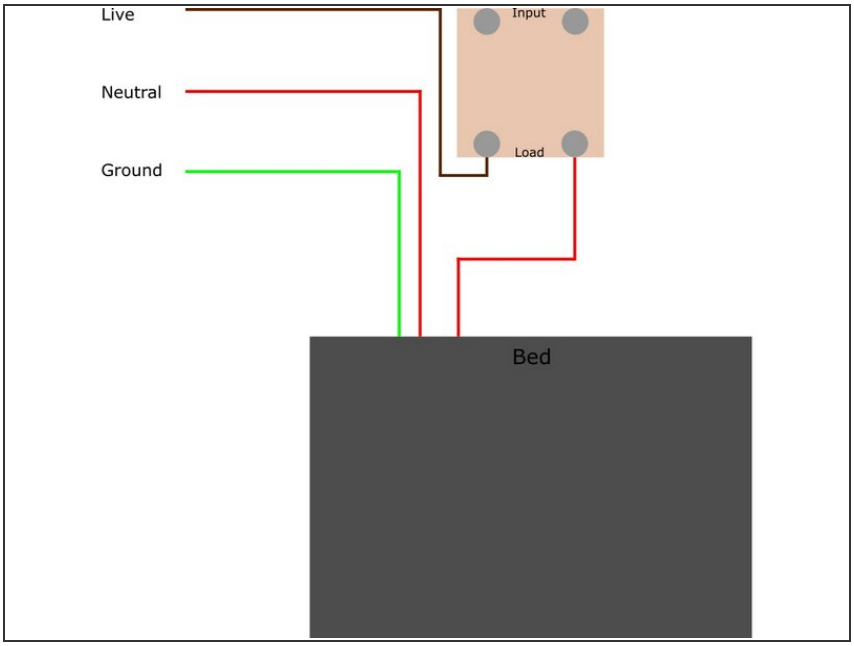
- Make sure the Ground/ Earth connection is good before proceeding by using a multimeter
  - Touch one of the probes onto the earth/ground terminal of the power supply
  - Connect the other probe to the edge of the bed or any other part where bare metal is visible (inside the mounting holes works too)
  - Set your multimeter to the lowest resistance rating (often this is 200Ω)
  - Only proceed to the next step if you obtain a reading of less that 1Ω

Step 11 — Connecting to the SSR



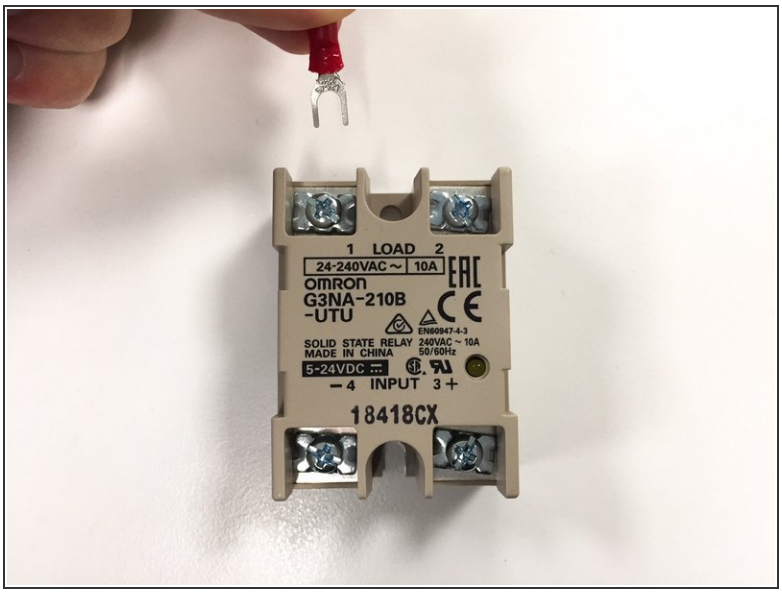
- The SSR allows you to power the heated bed with mains power 110/240 VAC but control the PMW via your 12/24 VDC control board.
- The Load side is where you will be connecting the live to the bed. 110/240 VAC.
- The Input side is where you connect the positive and negative from the Heated bed output of the control board. 12/24 VDC

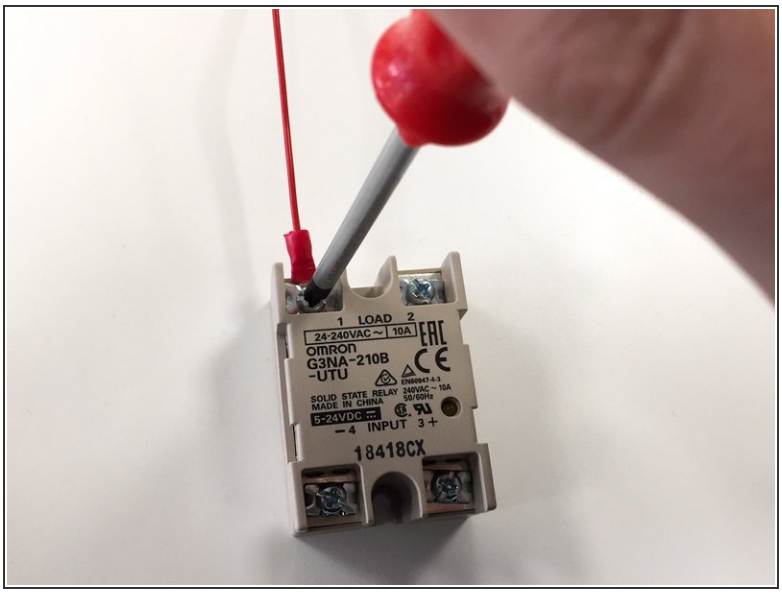
Step 12 — Wiring Diagram Part 1



- Bed to SSR Load Diagram.

Step 13





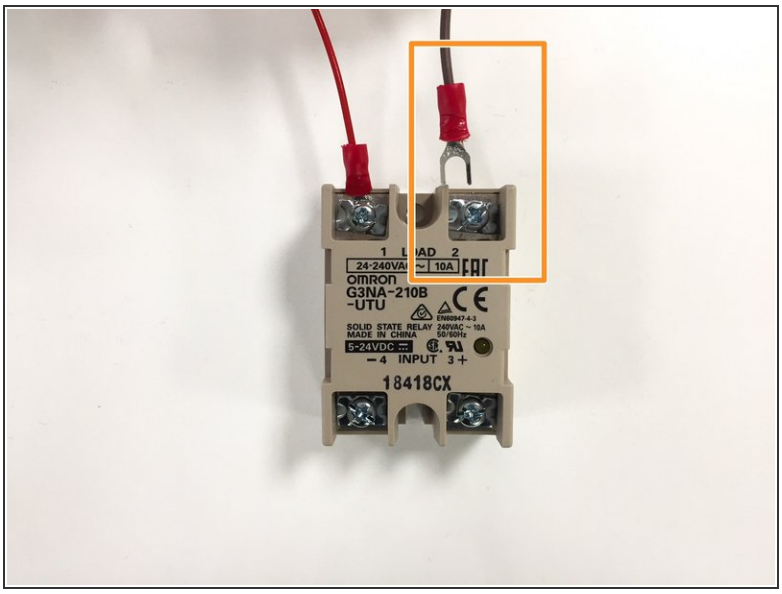
- connect one of the red wires from the heated bed to one of the pins on the Load side.
- It doesn't matter which red wire you choose, to keep things simple for later use the number 1 terminal on the SSR.

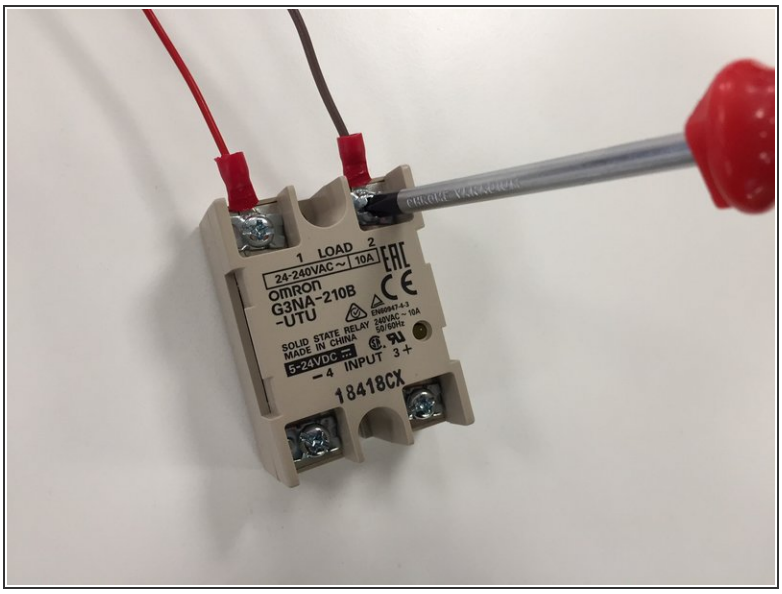
ⓘ Make sure you use a well crimped fork connector.

⚠ Before you move on make sure it is connected to the Load side. VAC

ⓘ Make sure the connection is solid and won't come loose on it's own.

Step 14

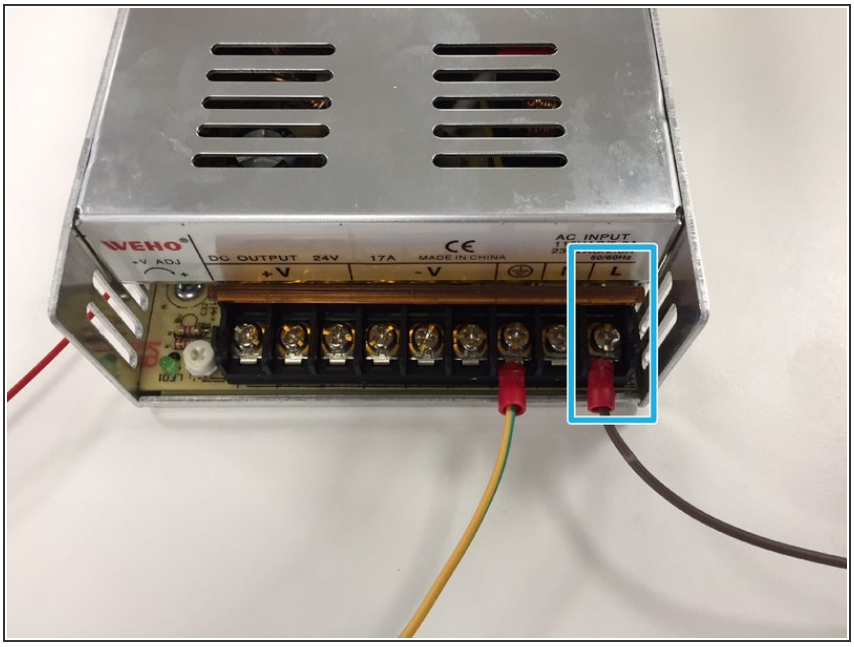




- Connect one end of the brown live wire to the Load side of the SSR in terminal 2.
- Secure the fork in the terminal using a screwdriver.

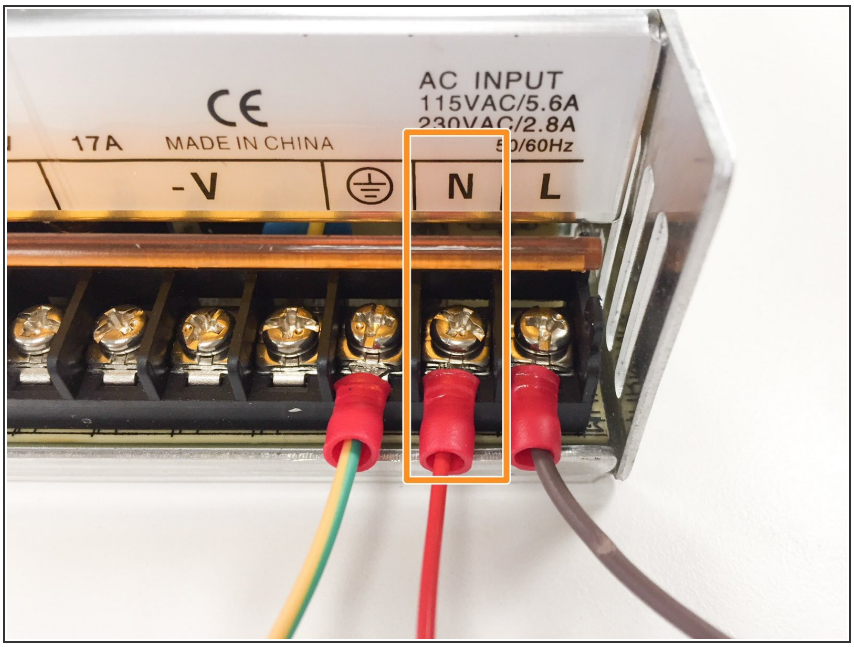
Make sure the connection is solid and won't come loose on it's own.

Step 15



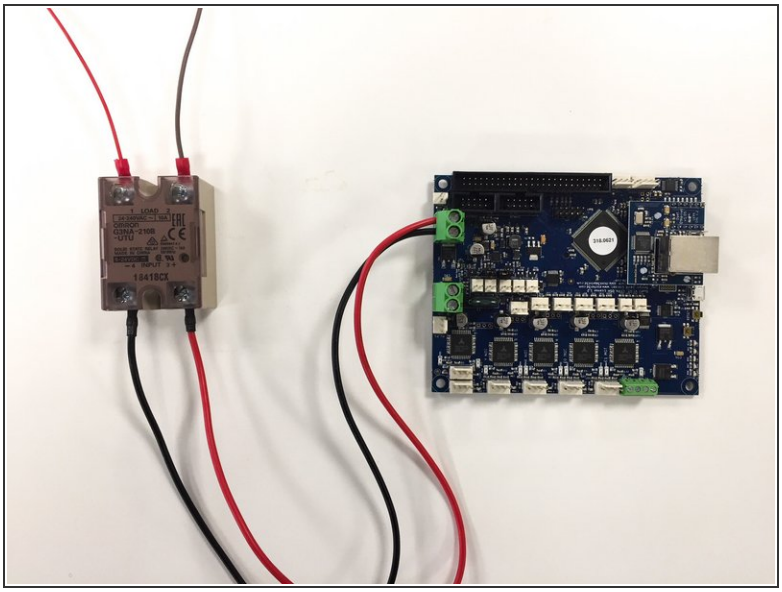
- Connect the other end of the brown live wire to the power supply.

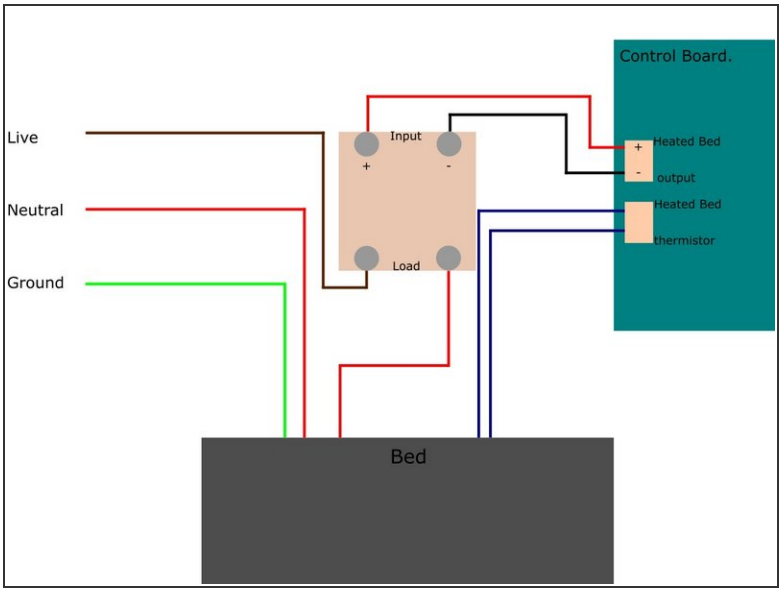
Step 16



- Connect the second red wire from the head bed into the neutral terminal of the power supply.

Step 17 — Connecting to the control board.

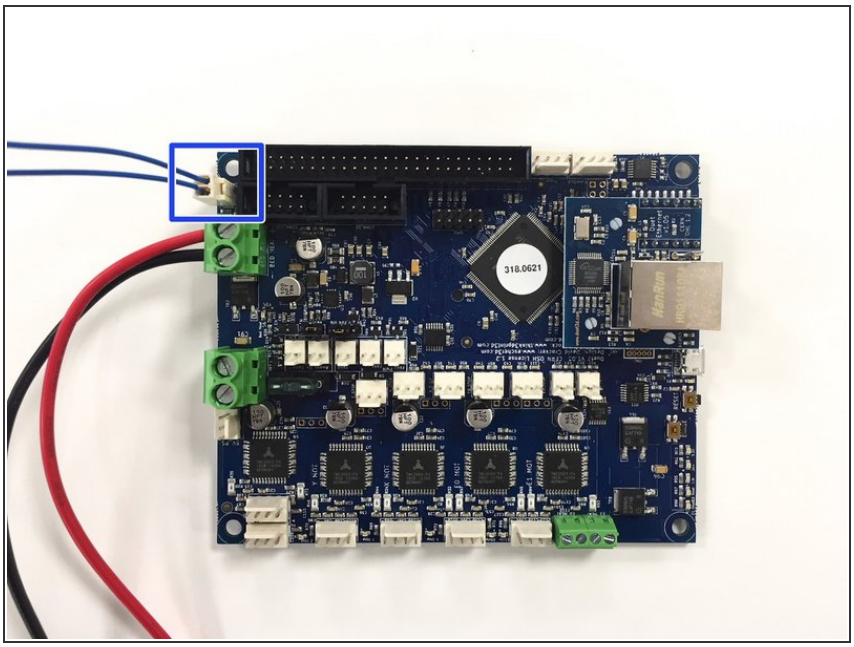




- Connect the negative from the SSR Input side to the negative from the Control board Bed output.
- Connect the Positive from the SSR Input to the Positive from the control board bed output.

⚠ This is a DC connection so polarity is important.

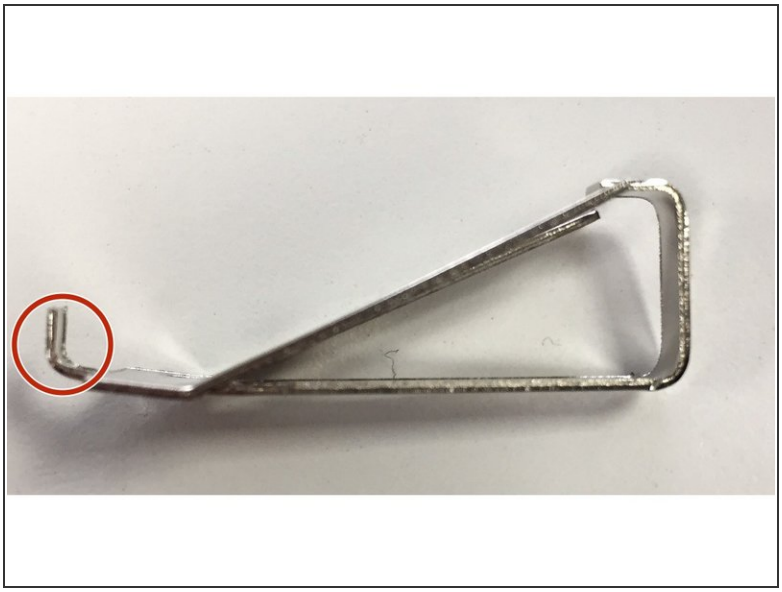
Step 18

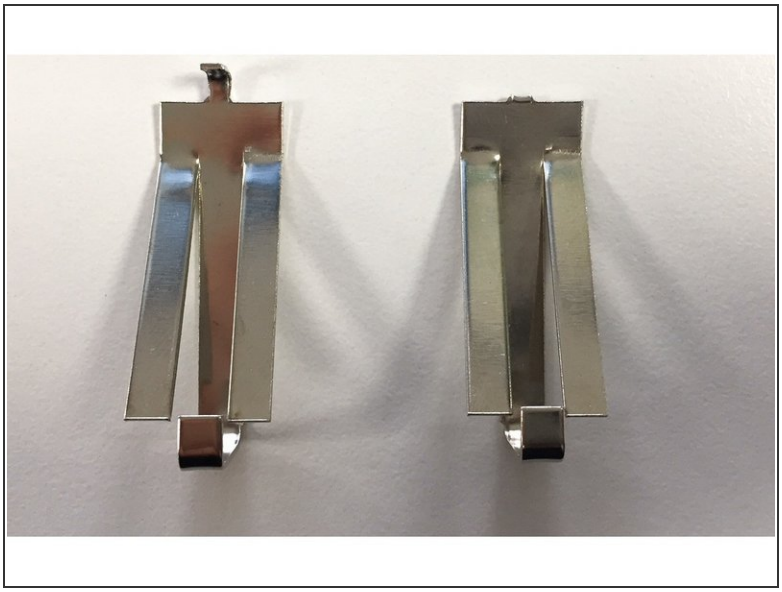


- Connect the two blue thermistor wires to the temperature sensor pin on the control board.

ⓘ In this example I have used the connector that comes with the Duet WiFi/Ethernet boards.

Step 19 — Modify the swiss clips.



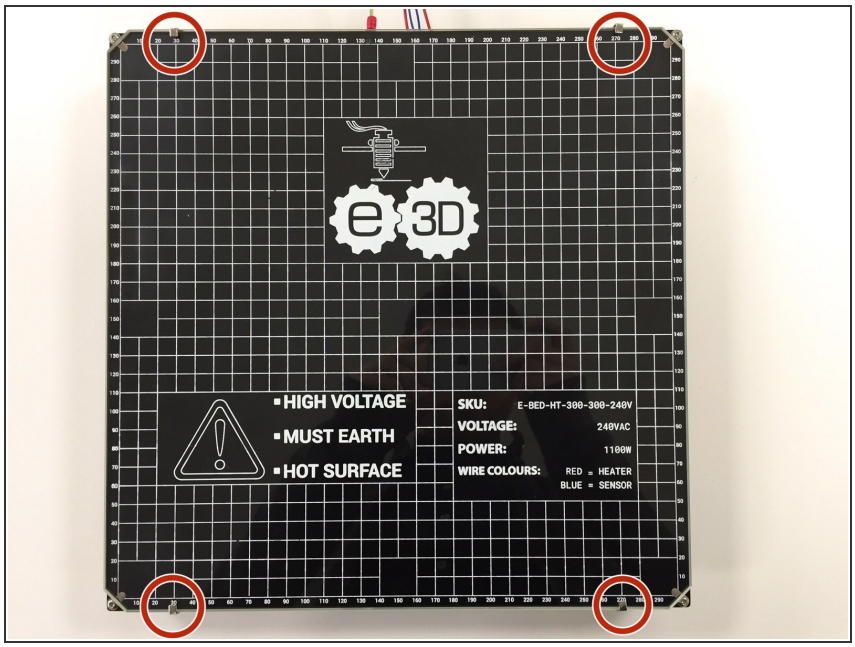


- Swiss clips often come with a tab on the end which can damage the silicone beds.

⚠ DO NOT USE THE CLIPS IN THIS CONFIGURATION

- Use a pair of pliers to remove this tab before using them to secure your glass plate.

Step 20 — Securing the Borosilicate Glass



- Secure the Borosilicate glass to the high temperature bed using the modified Swiss clips.

ⓘ You can also use bulldog clips for this, which don't require any modification.

Fo additional information:

https://e3d-online.com/blog/2018/10/22/%...