01. Electronics

Electronics

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021

docs.imade3d.com/

Page 1 of 26

Step 1 — ↳ Twist Locks

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021

docs.imade3d.com/
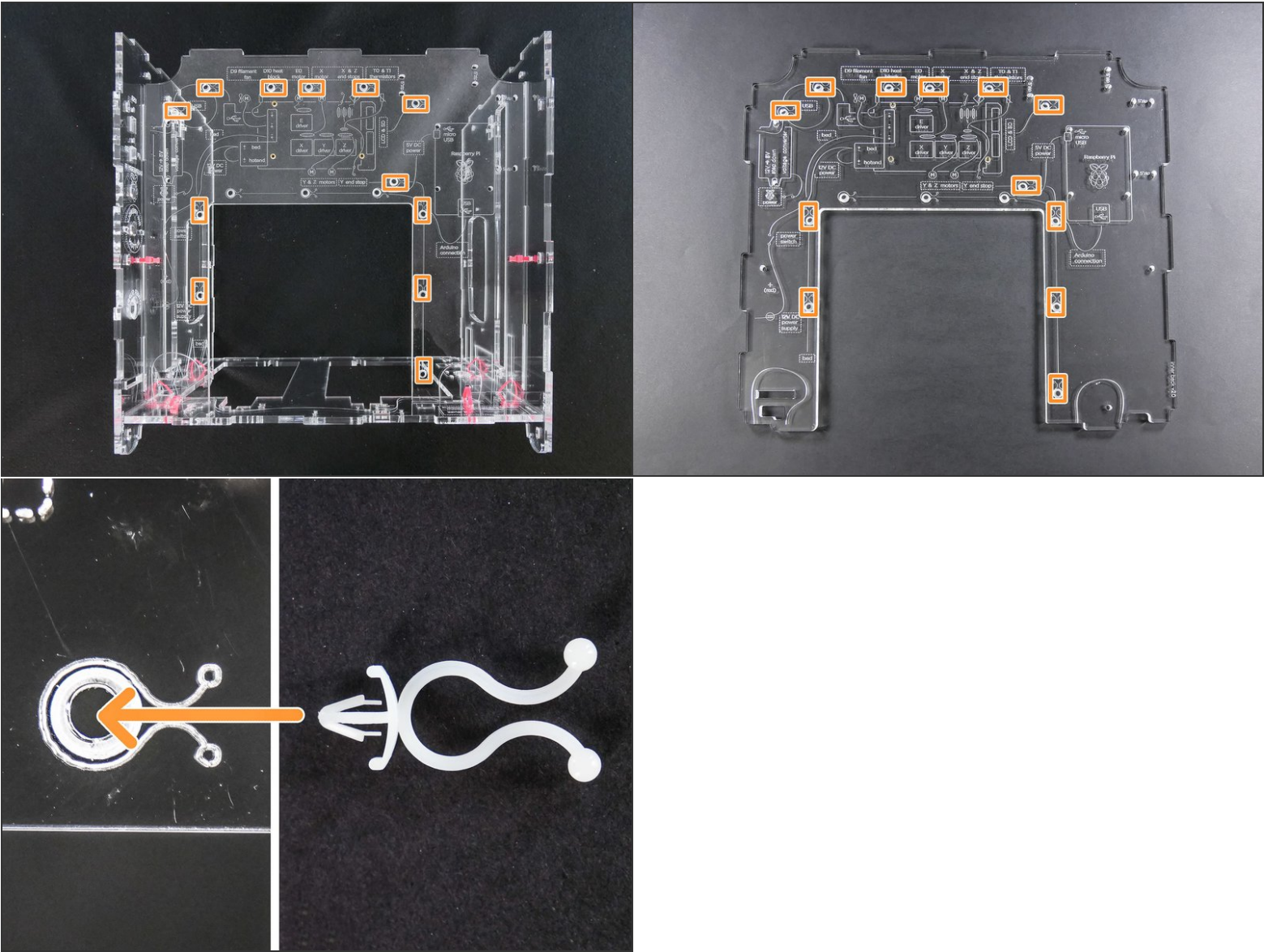
Page 2 of 26

Step 2

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021

docs.imade3d.com/

Page 3 of 26

Step 3

This document was generated on 2021-12-24 12:40:14 AM (MST).
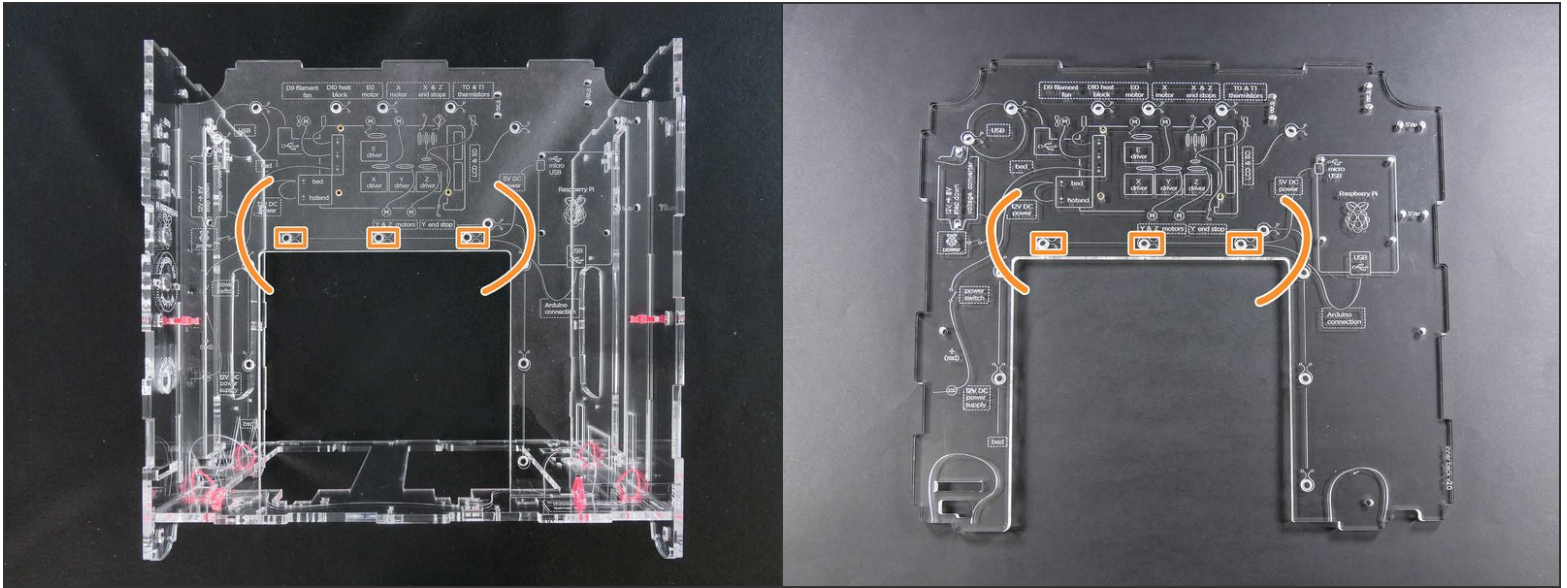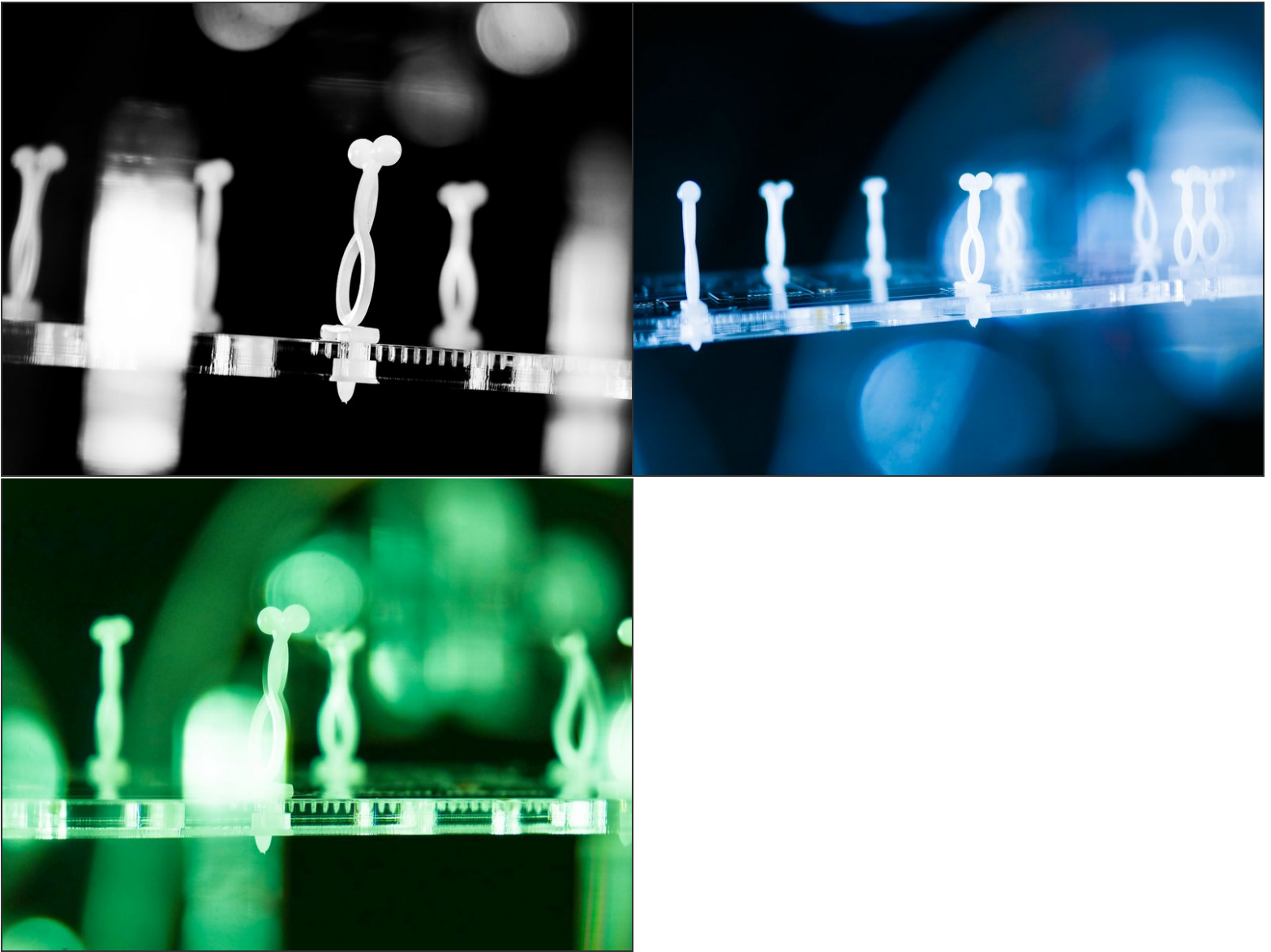
© 2021

docs.imade3d.com/

Page 4 of 26
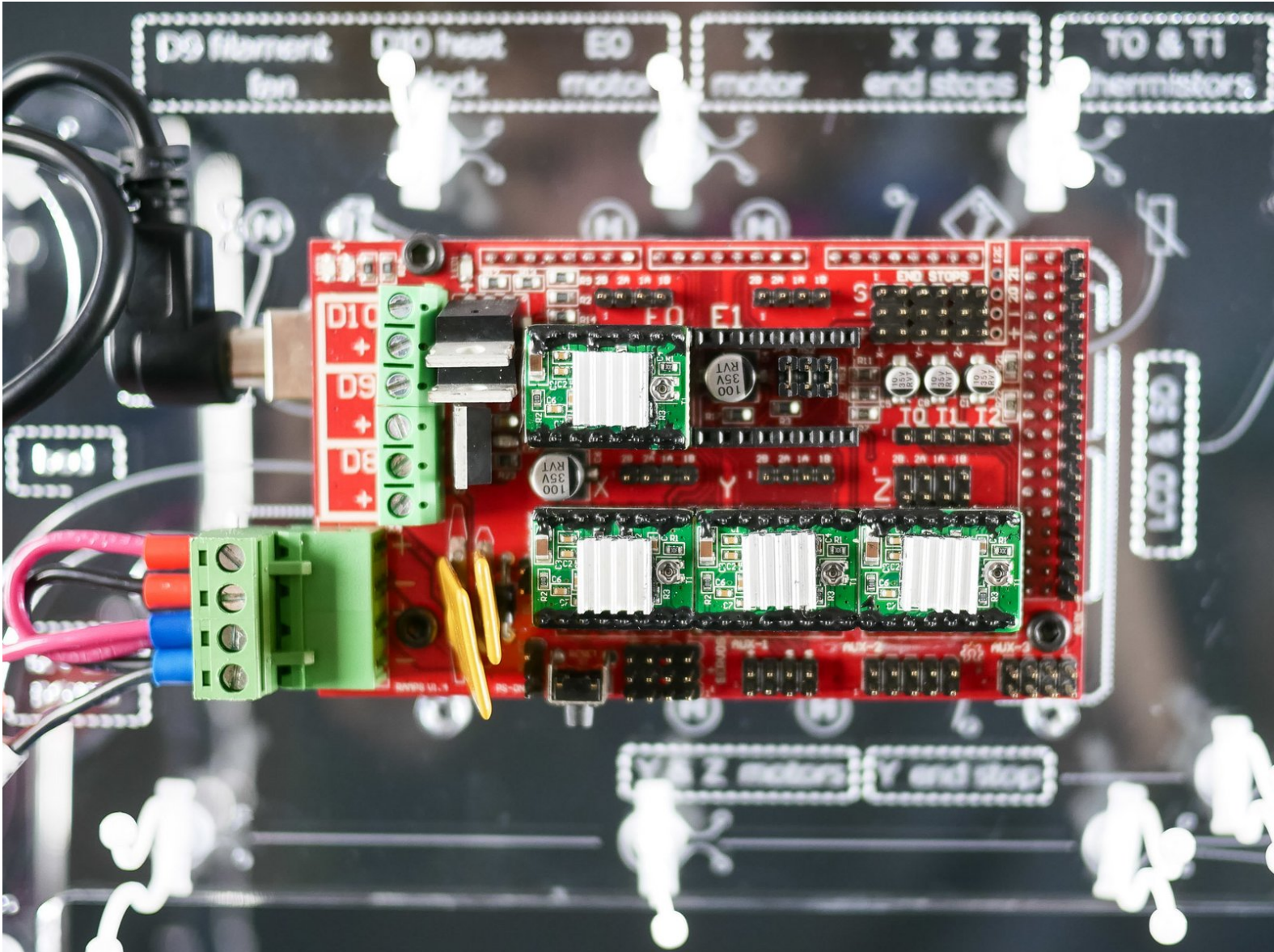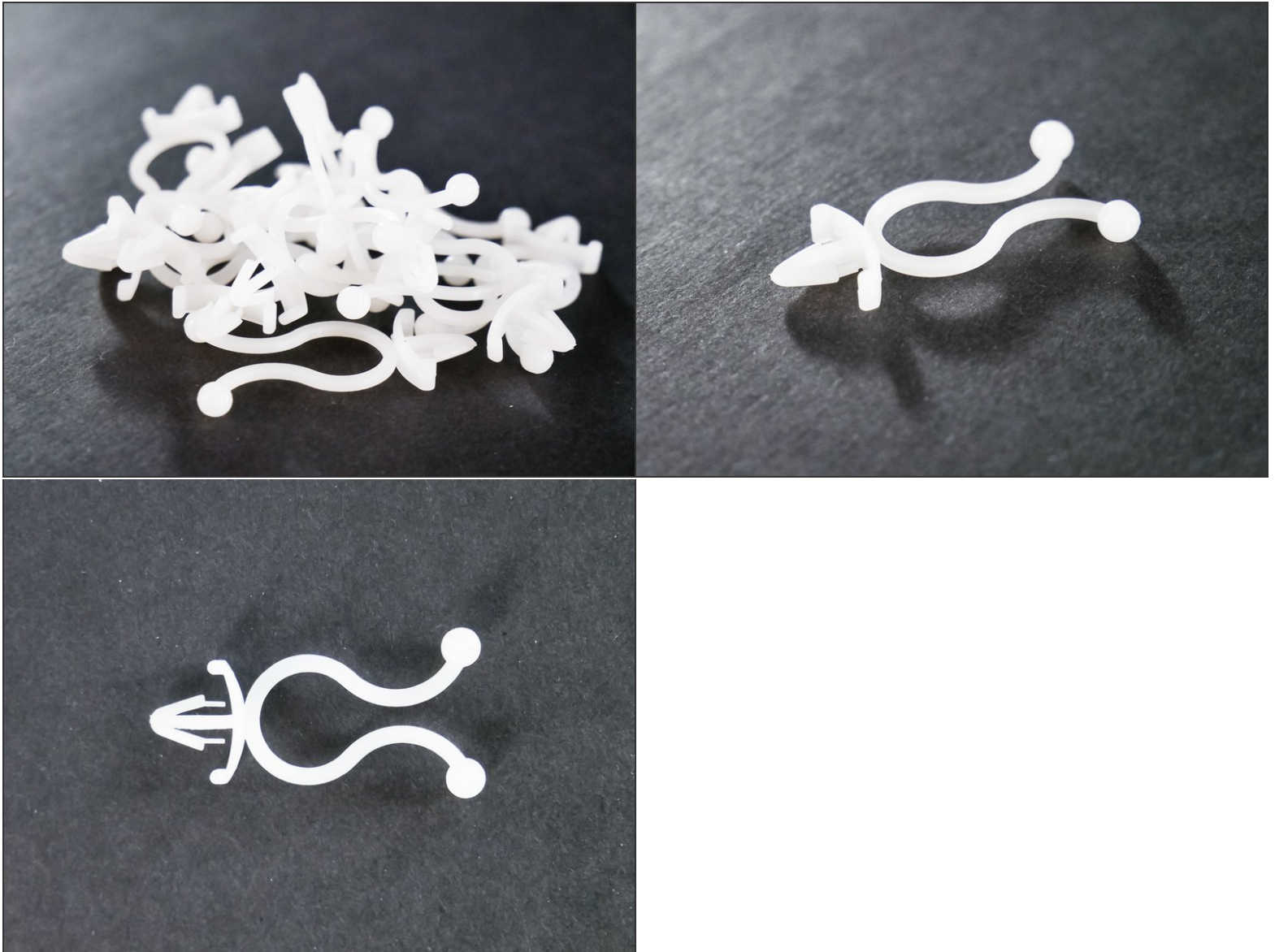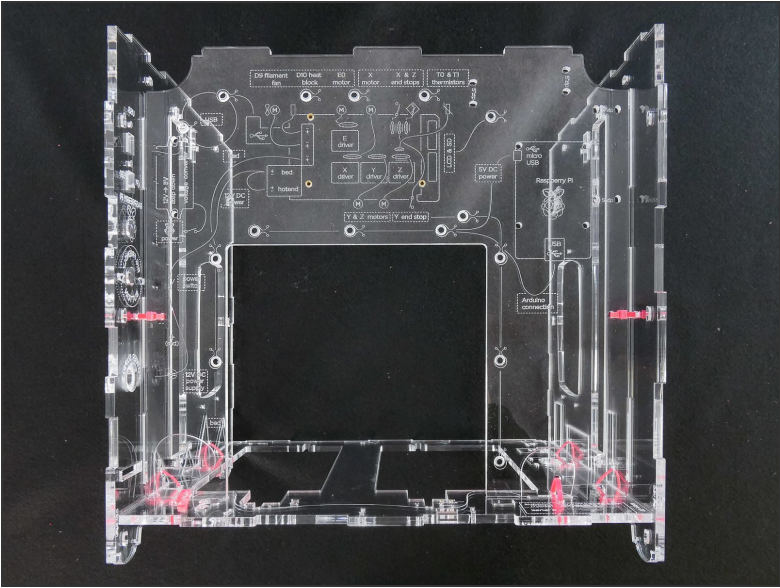
Step 4

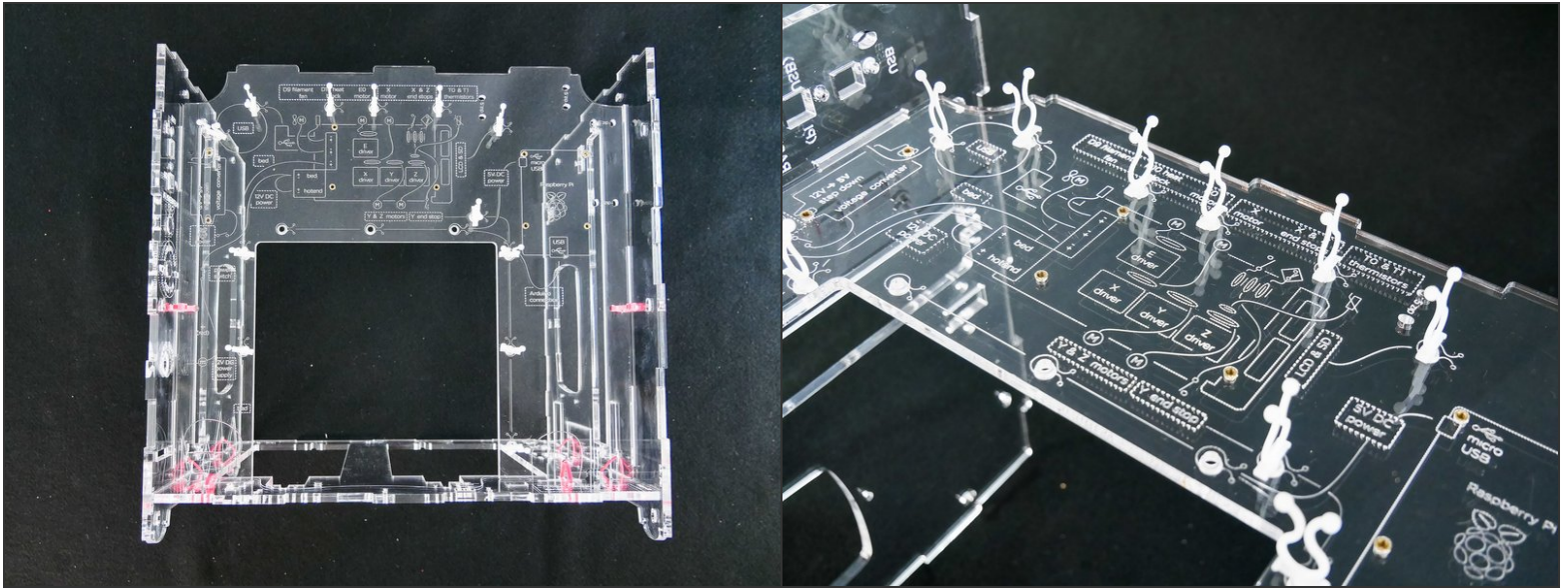ⓘ PS: **Don't worry** about these three. They are used for the Raspberry Pi upgrade. You may use them later or not.

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021

docs.imade3d.com/

Page 5 of 26

Step 5

- All this beauty...

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021   docs.imade3d.com/   Page 6 of 26

Step 6 — Looking good!

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021

docs.imade3d.com/

Page 7 of 26

Step 7 — ↳ Arduino + RAMPS

- M3x25

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021

docs.imade3d.com/

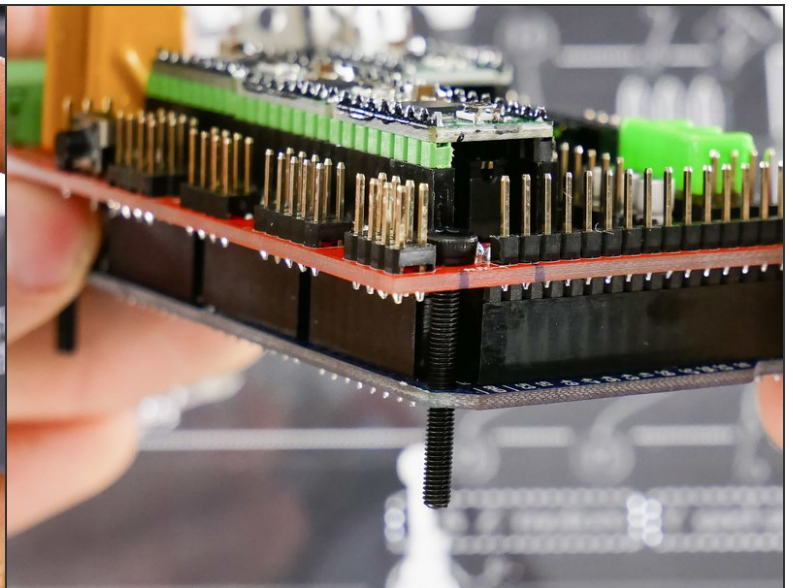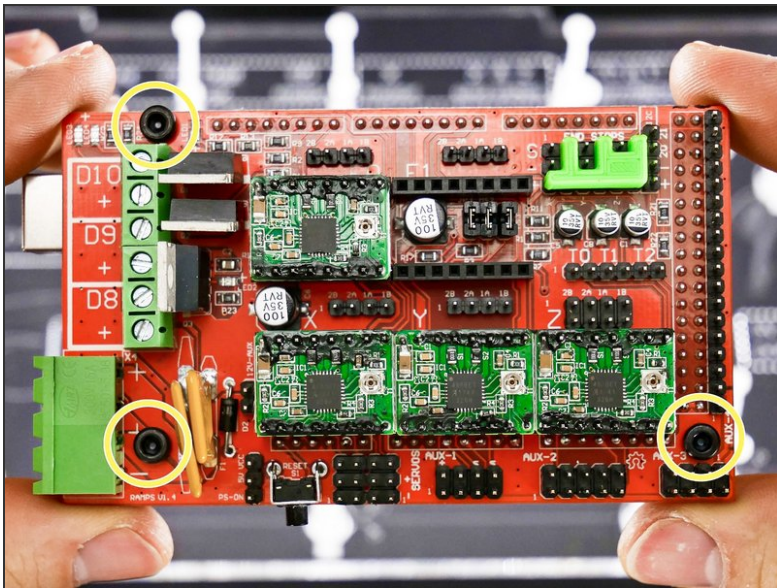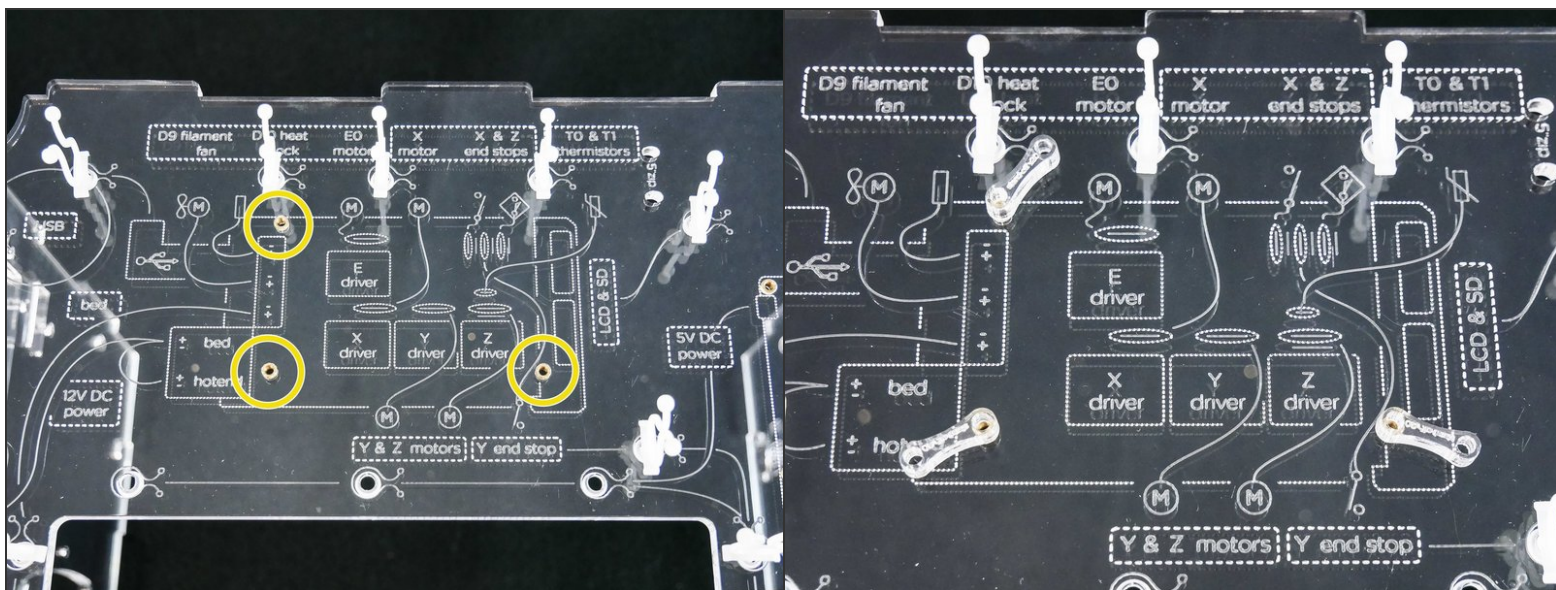Page 8 of 26
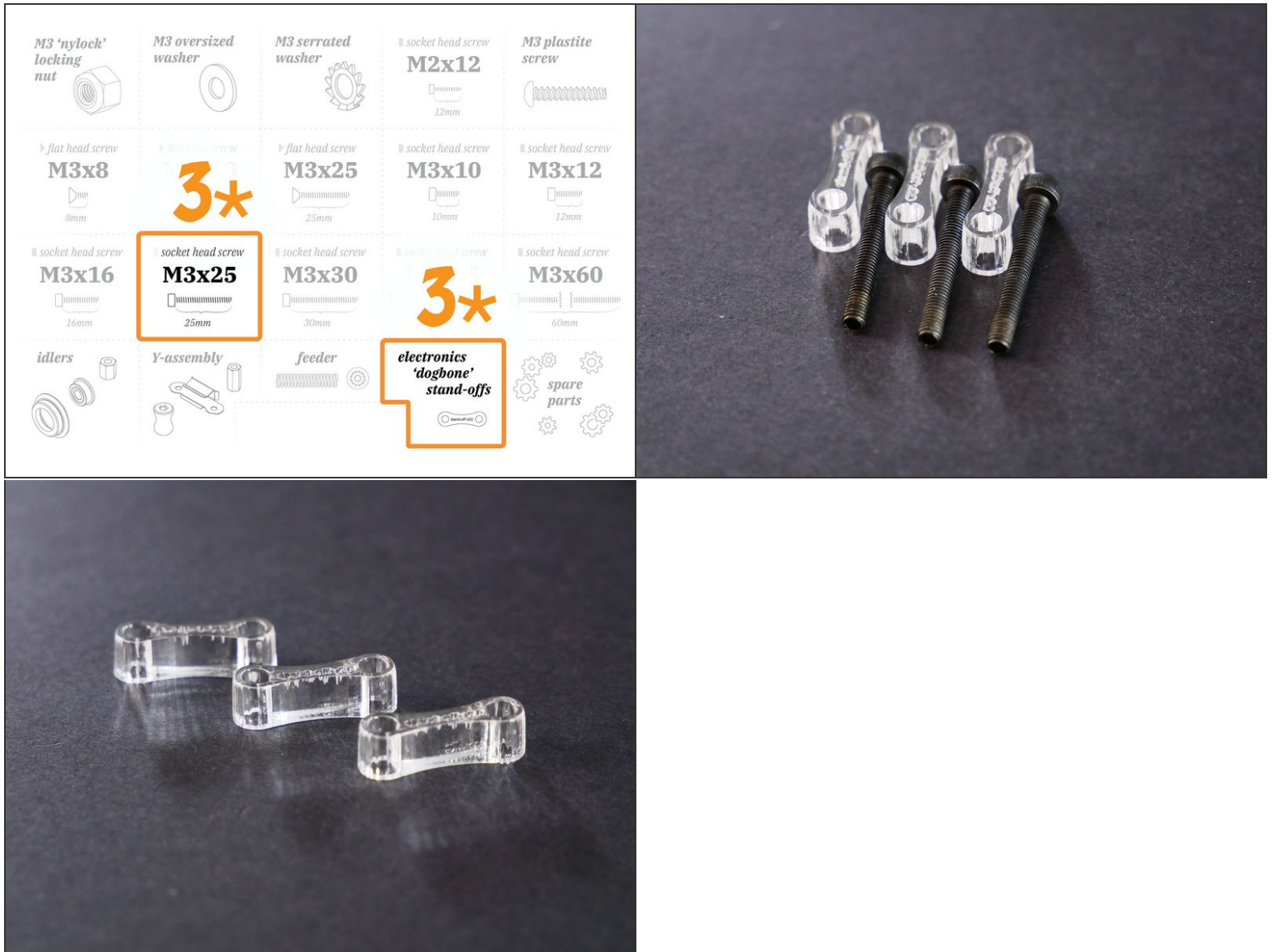
Step 8
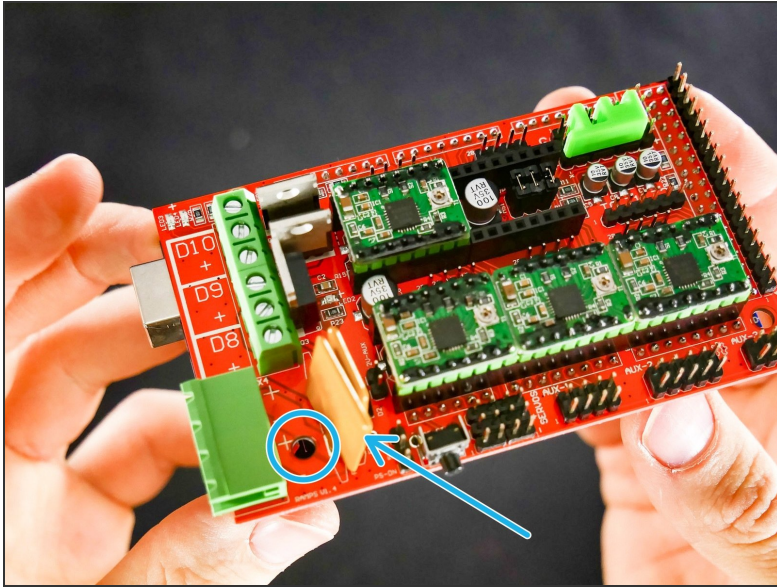
- These yellow rectangular fuses may be hiding this hole. Fearlessly but **gently** bend them away.

Step 9

- M3x25

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021

docs.imade3d.com/

Page 9 of 26

Step 10

Step 11

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021   docs.imade3d.com/   Page 10 of 26
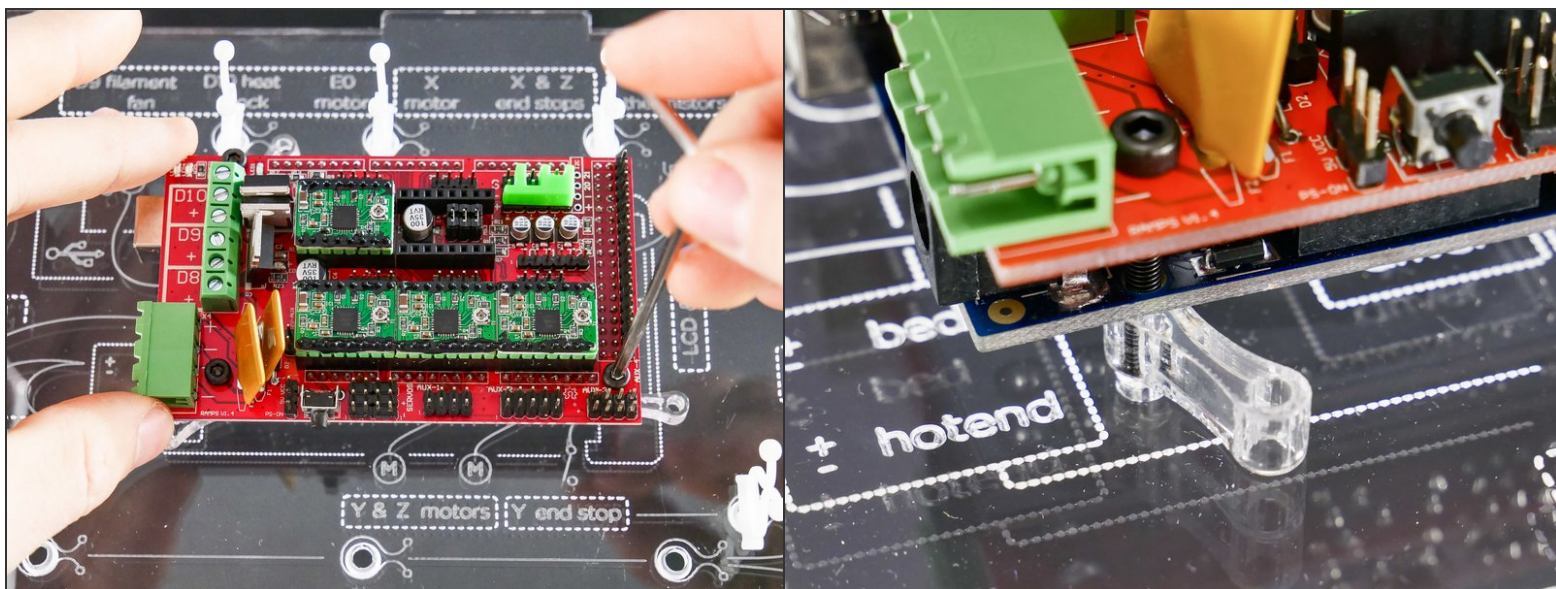
Step 12 — Looking good!
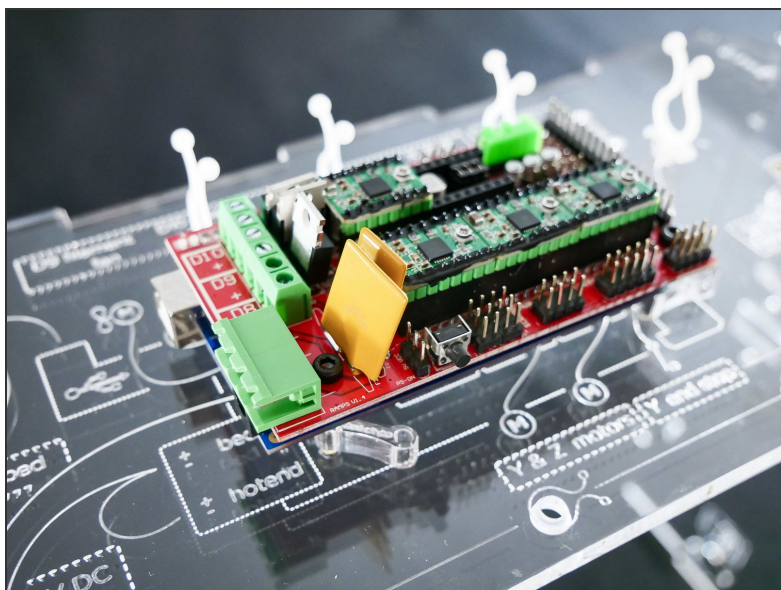
Step 13 — ↳ Power Wiring

- The Goal.

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021

docs.imade3d.com/

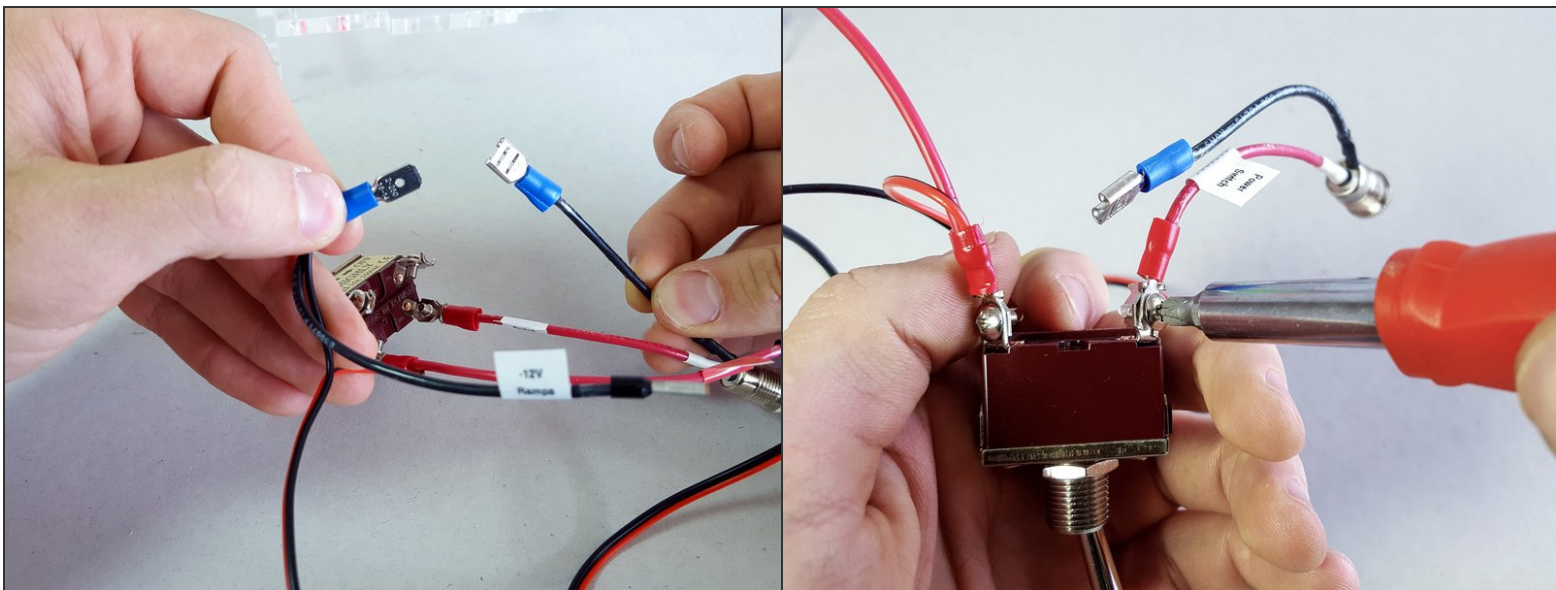Page 11 of 26
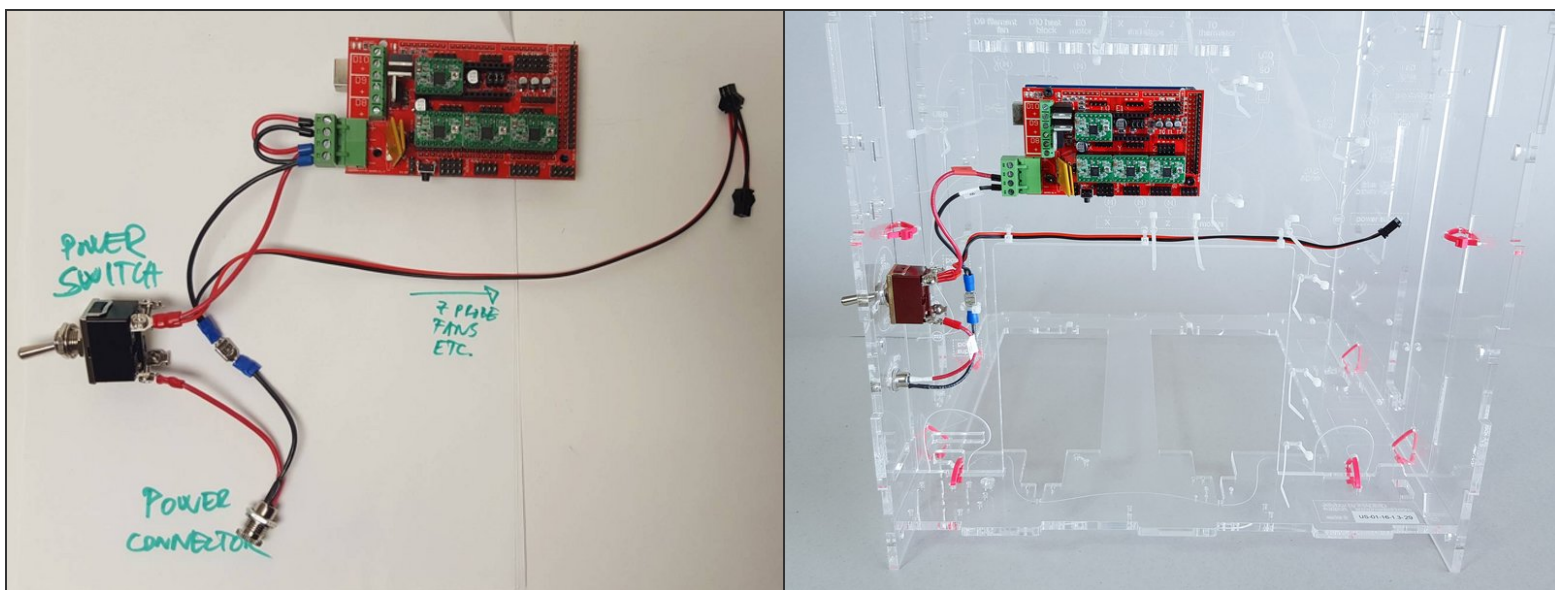
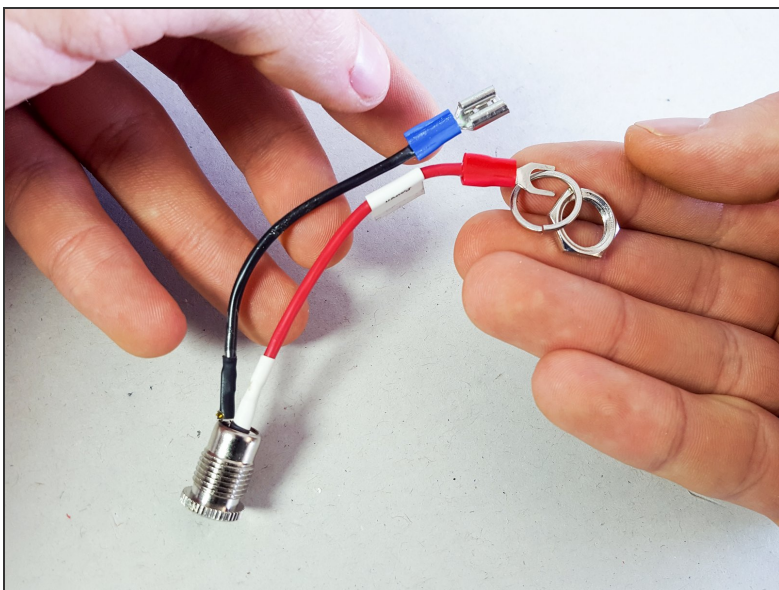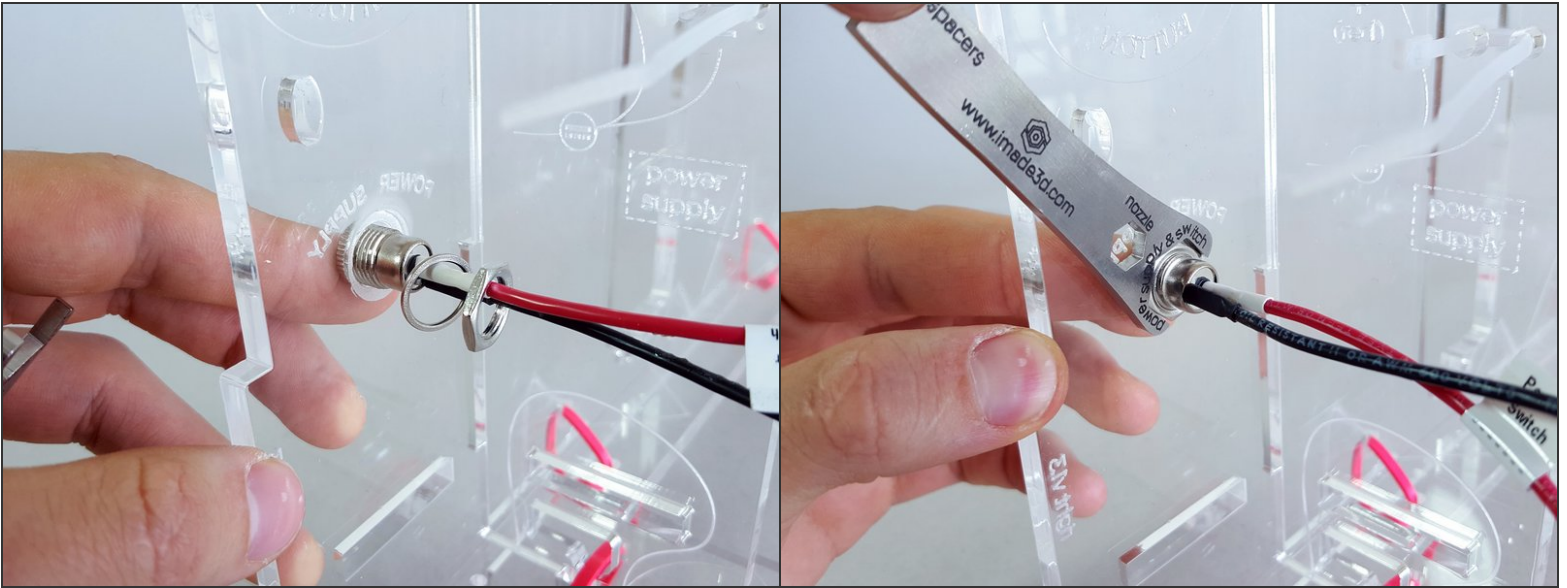## Step 14 — Power Connector

- Disconnect the power supply *connector* from the rest of the power wire harness.

Step 15

- Remove the nut and spring washer from the connector.

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021   docs.imade3d.com/   Page 12 of 26
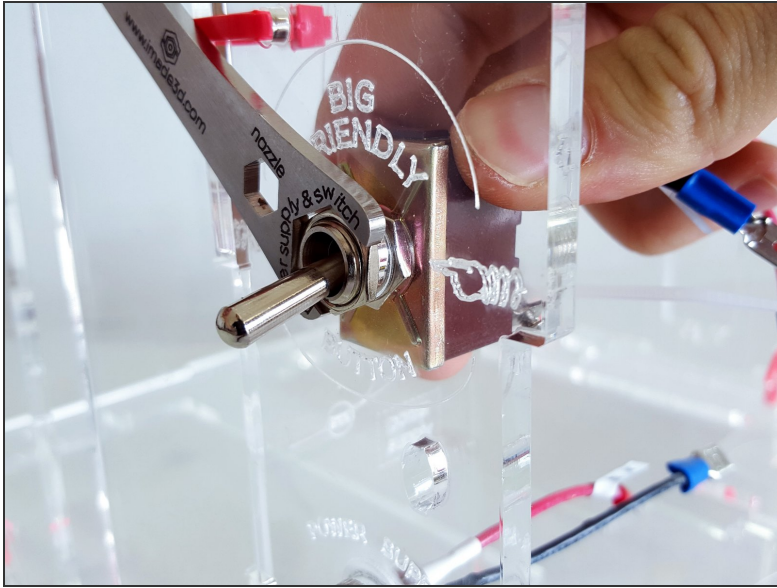
Step 16

- Insert the connector into the frame from the outside.

- Secure with the spring washer and the nut.

Step 17 — Power Switch

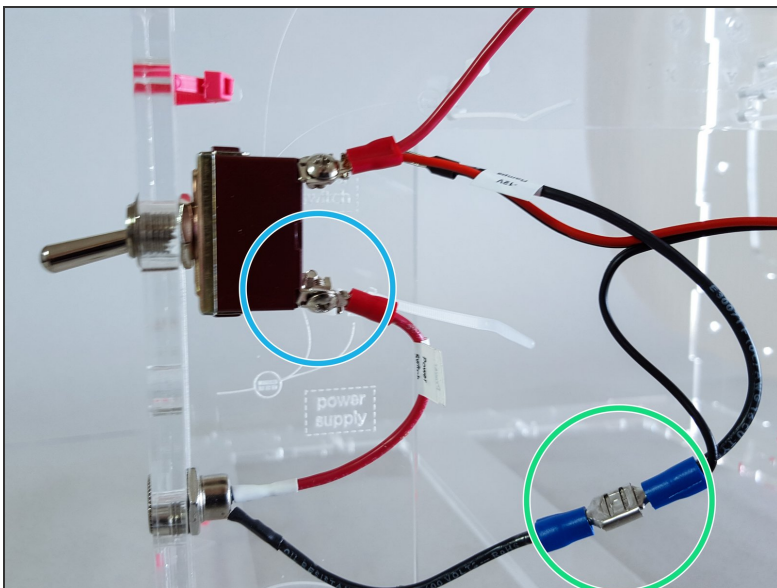- Remove one nut from the front of the power switch.

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021   docs.imade3d.com/   Page 13 of 26

Step 18

- Place the switch into the "Big Friendly Button" hole from the inside.

- Secure with the nut.

- (i) Commonly, switches are installed so that

  - bottom position = off

  - top position = on

Step 19

- Re-attach the positive terminal to the switch.

- Re-connect the negative spade connector.

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021   docs.imade3d.com/   Page 14 of 26

Step 20 — Wire up the Arduino
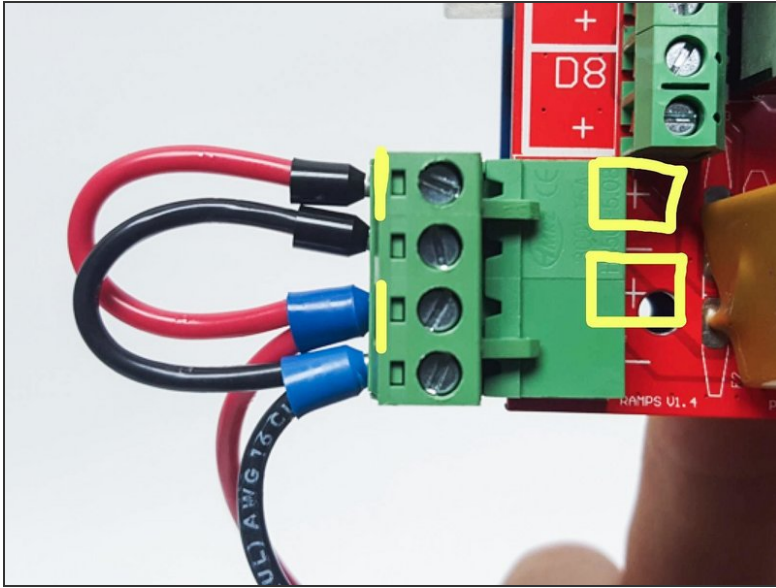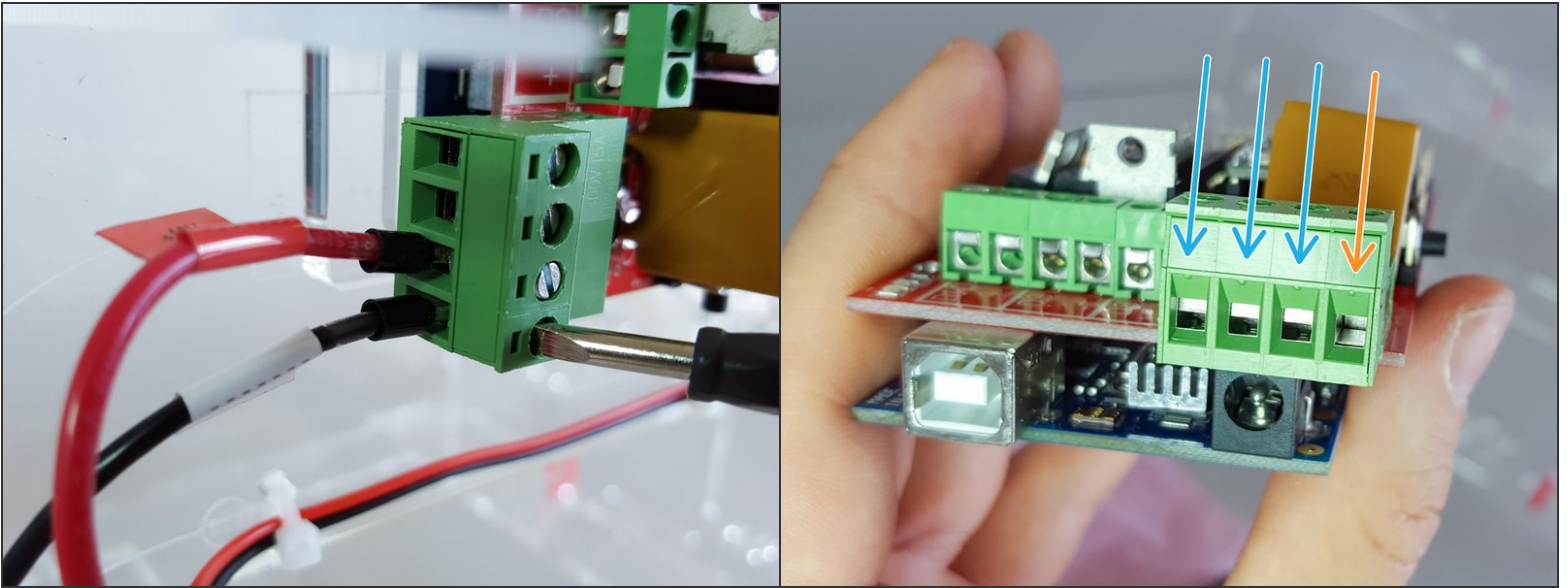

⚠ Minus MUST connect to minus and plus MUST connect to plus or you WILL destroy your board and will need to buy a replacement.

⚠ Read the wire labels. Red wire is always plus. Black wire is always minus.

ⓘ You can find little pluses and minuses on the RAMPS board next to the connector.

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021   docs.imade3d.com/   Page 15 of 26
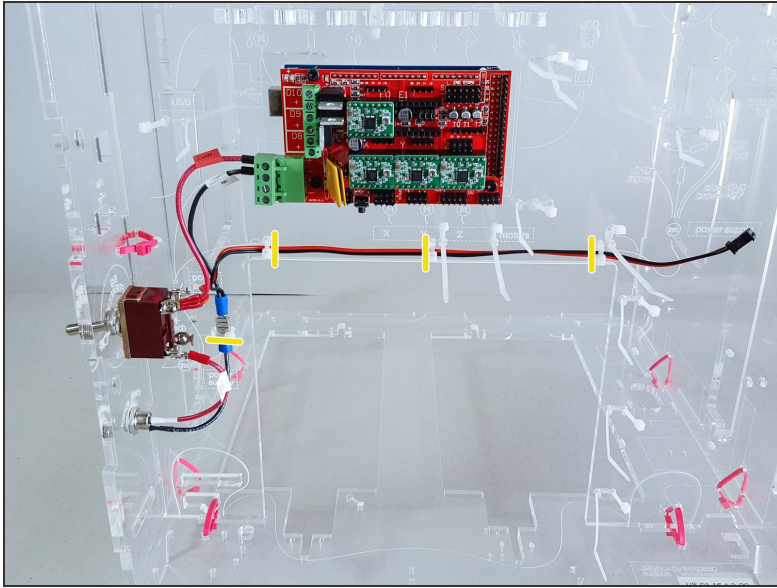
Step 21

⚠️ Make sure to properly insert the power wires into the green RAMPS power connector, and tigten them very well. If you leave this connection loose, it may lead to excessive contact oxidation, excessive resistance, and eventually to a melted connector or fire.

⚠️ The wire ends (crimps, ferrules) are thick; you need to fully open the connector.

- 🟠 fully open :-)

- 🔵 not fully open :-(

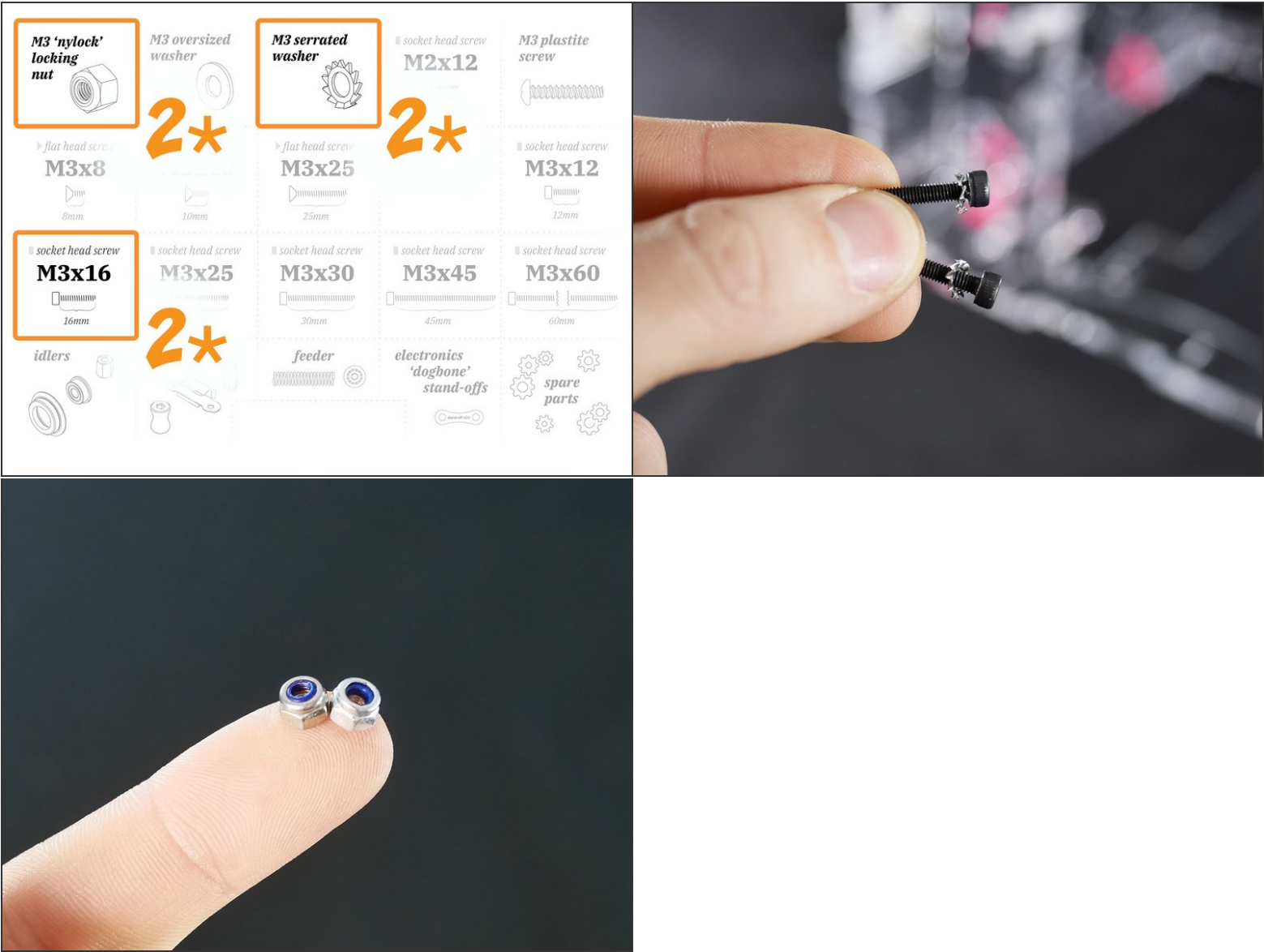This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021   docs.imade3d.com/   Page 16 of 26

Step 22 — Tidy Up

- Tidy up with 4" zip ties.

- You can tighten these only lightly by hand.
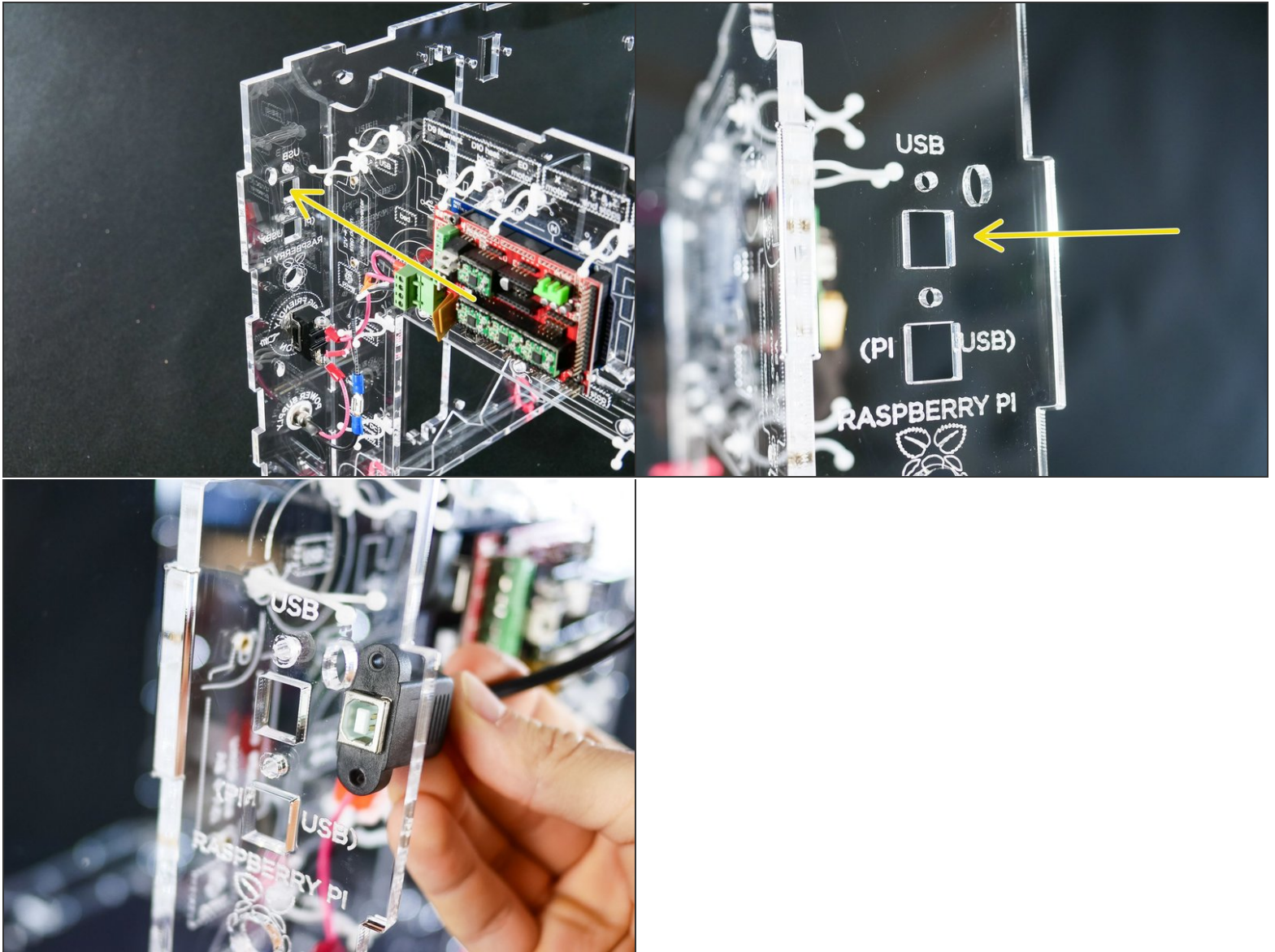
Step 23 — ↳ USB Extension

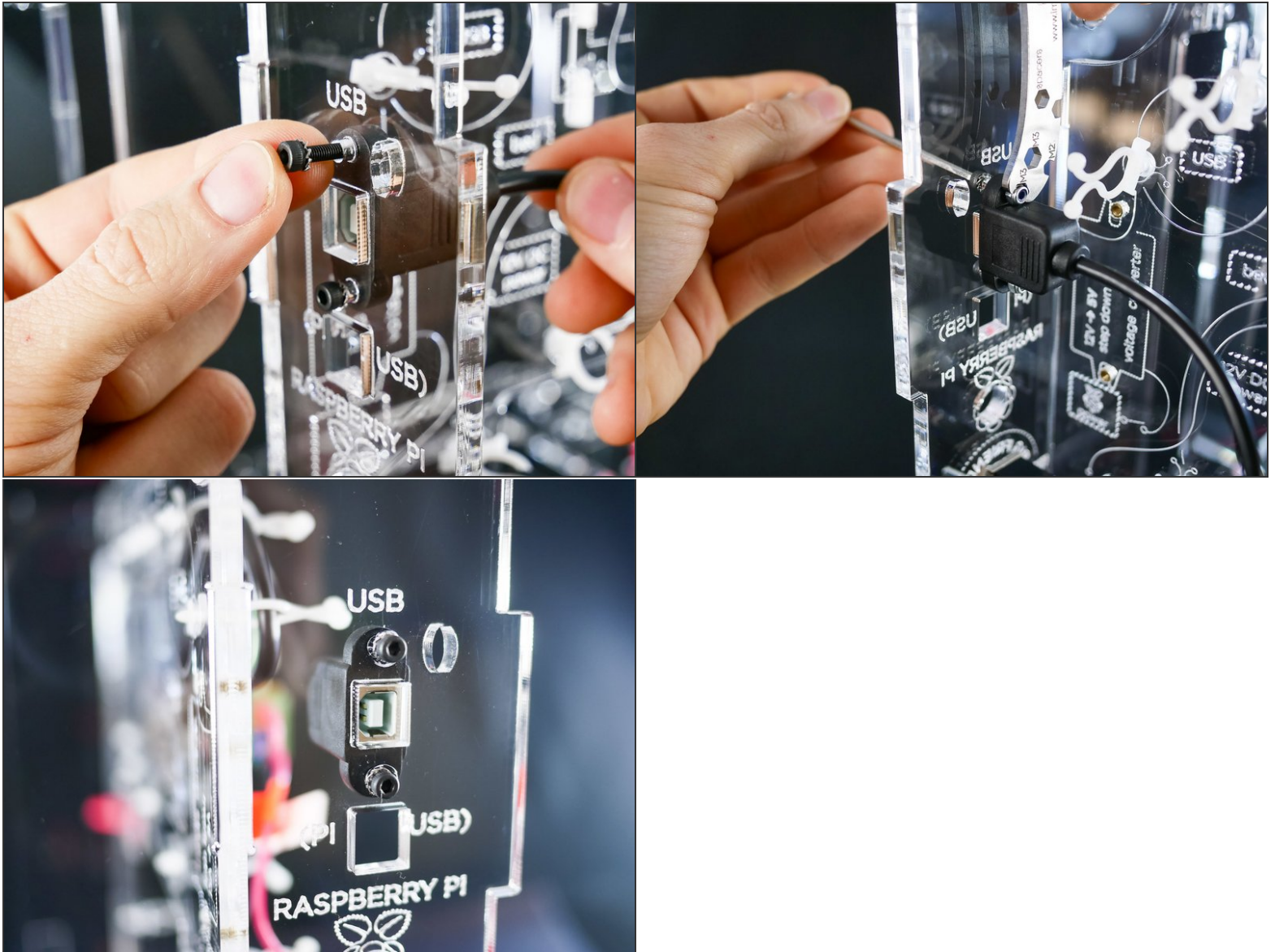This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021

docs.imade3d.com/

Page 17 of 26

Step 24

- M3x16

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021

docs.imade3d.com/

Page 18 of 26

Step 25

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021

docs.imade3d.com/

Page 19 of 26

Step 26

- M3x16

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021

docs.imade3d.com/

Page 20 of 26

Step 27

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021

docs.imade3d.com/

Page 21 of 26

Step 28

- Twisting a wire can be *art*.

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021   docs.imade3d.com/   Page 22 of 26

Step 29 — Looking good!
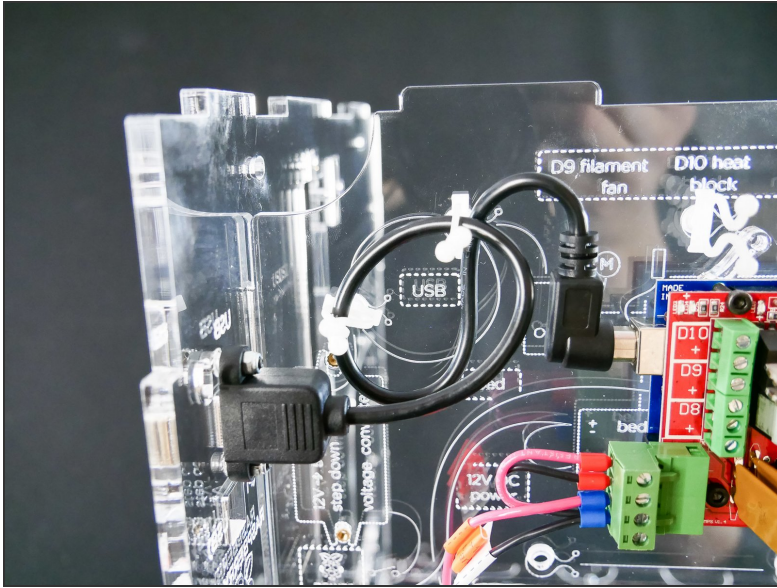
- What an elegant twist.

Step 30 — ↳ Driver Heatsinks

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021

docs.imade3d.com/

Page 23 of 26

Step 31

Step 32

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021

docs.imade3d.com/
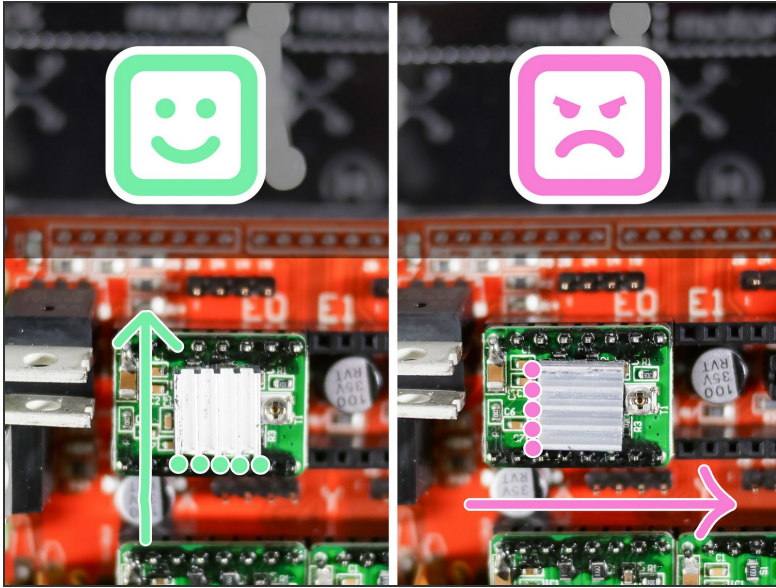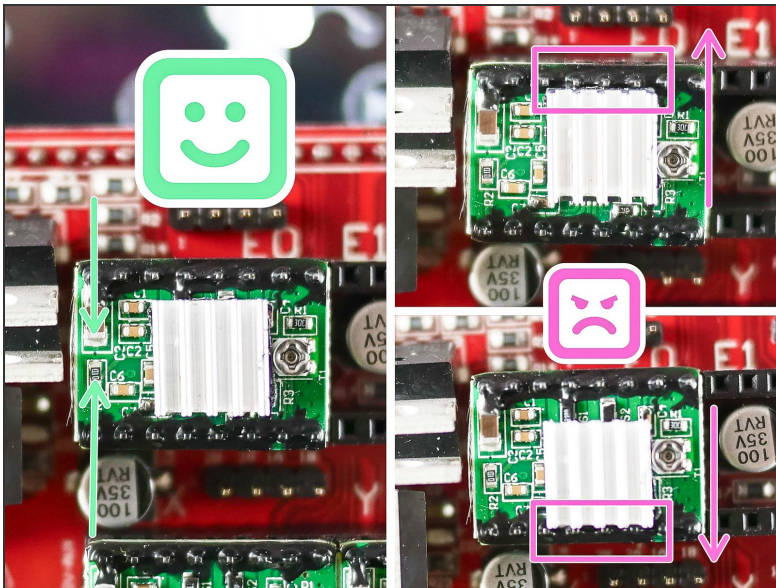
Page 24 of 26
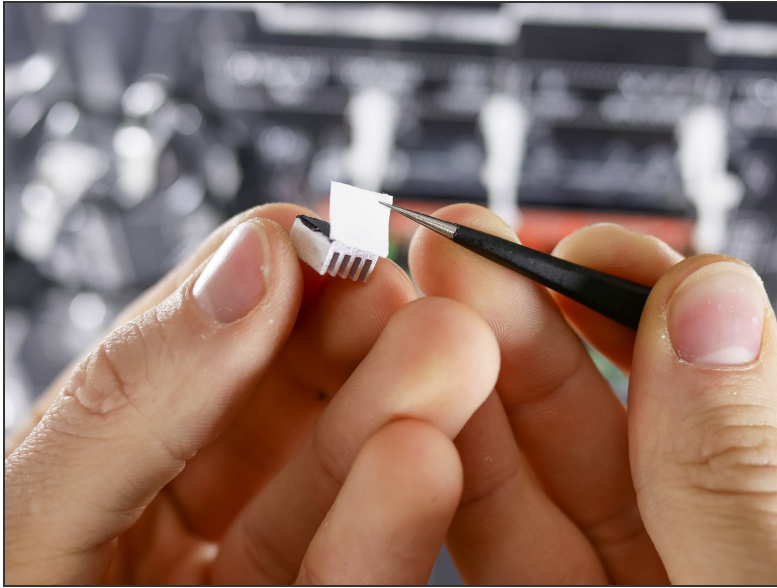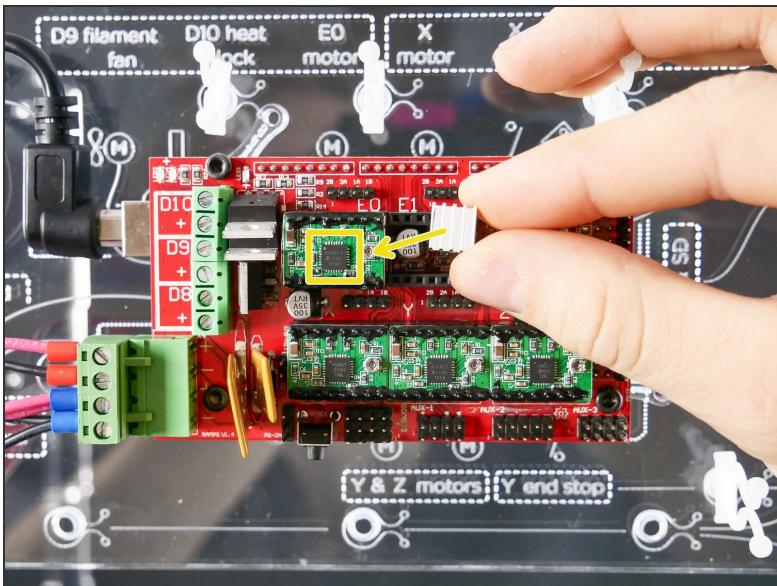
Step 33

⚠️ The ridges of the heatsink should be vertical so that the heat fleets faster.

- Heat has a tendency to rise up.

Step 34

⚠️ It is important that the heatsinks **do NOT touch** the pins on the drivers.

- The heatsinks could connect the driver pins and *burn out the driver*.

- We actually put a protective isolating liquid over the pins to protect against shortage, but it's better to just leave the pins alone.

This document was generated on 2021-12-24 12:40:14 AM (MST).

Step 35 — Looking good!

This document was generated on 2021-12-24 12:40:14 AM (MST).

© 2021

docs.imade3d.com/

Page 26 of 26