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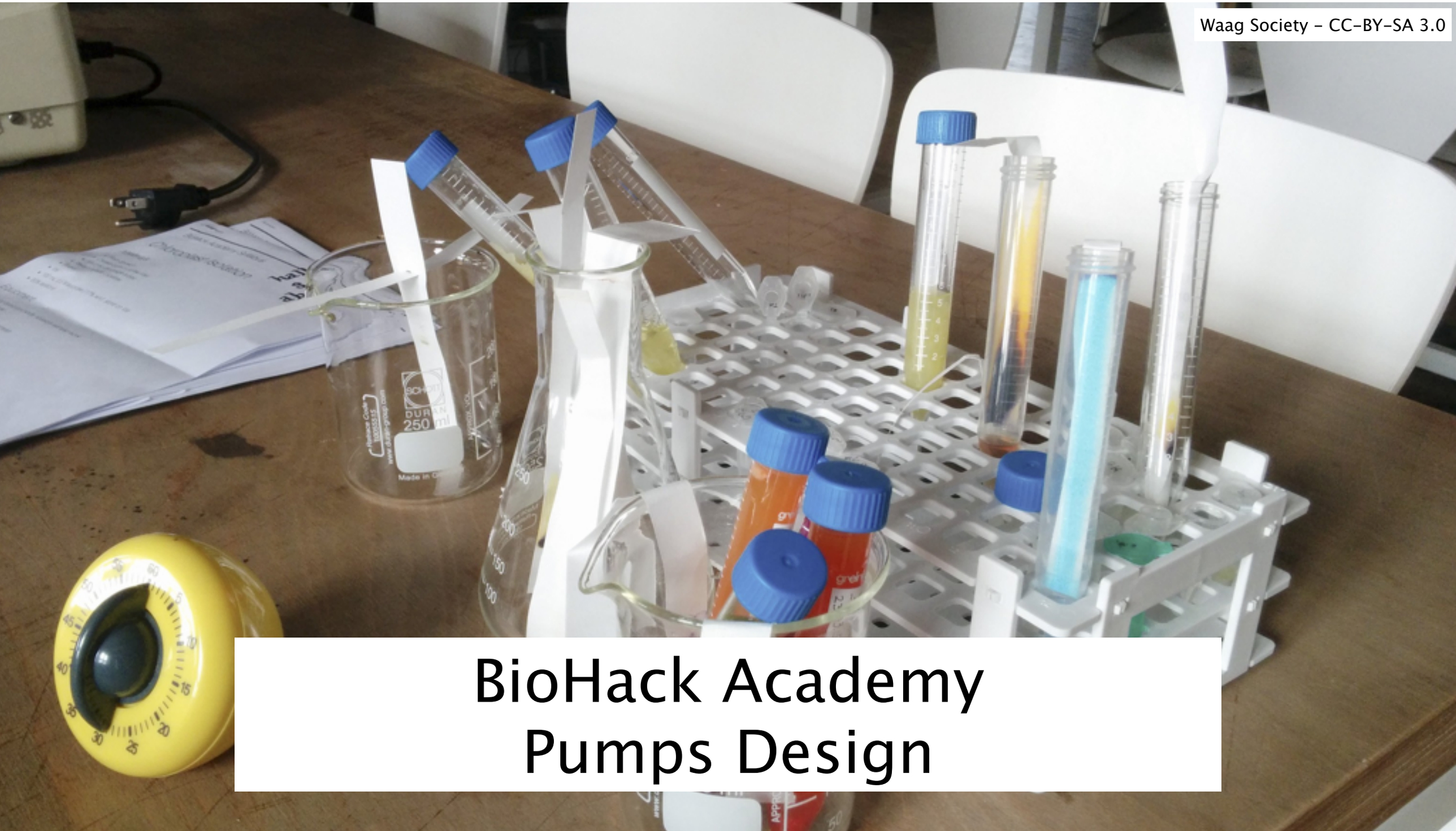

BioHack Academy
Pumps Design

Content

- Syringe pump
- Peristaltic pump

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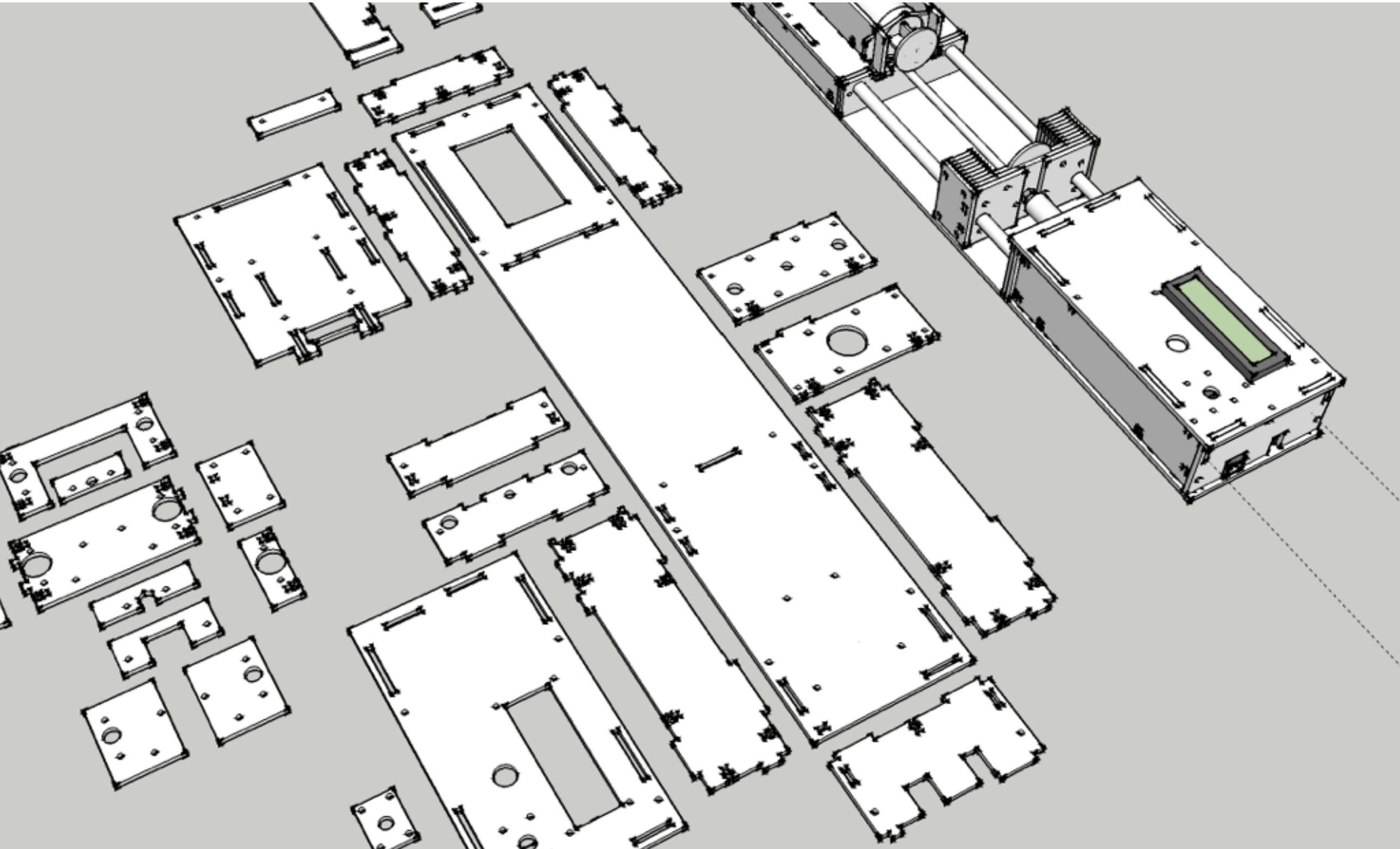
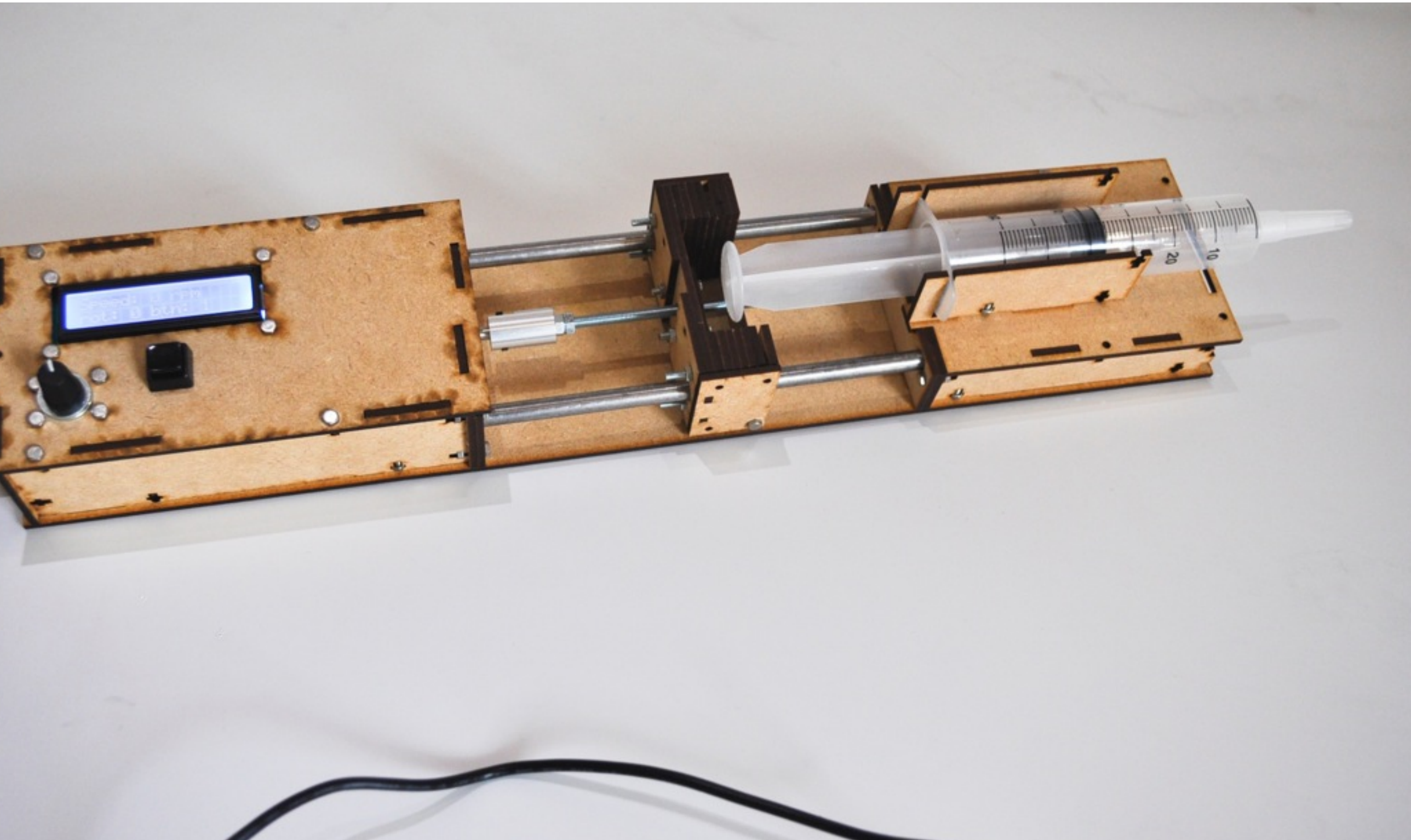
Syringe Pump

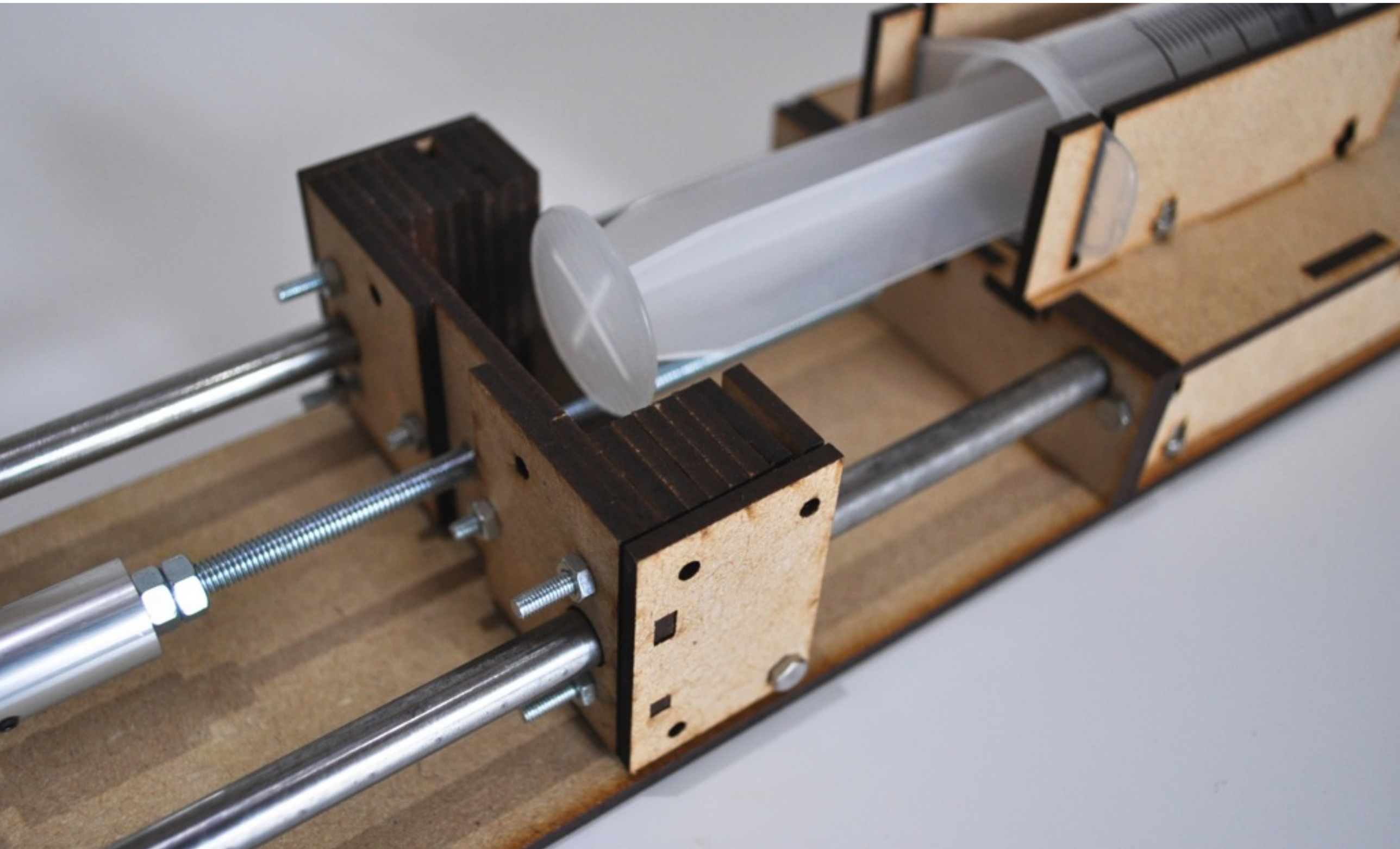
BioHack Academy design



BioHack Academy design



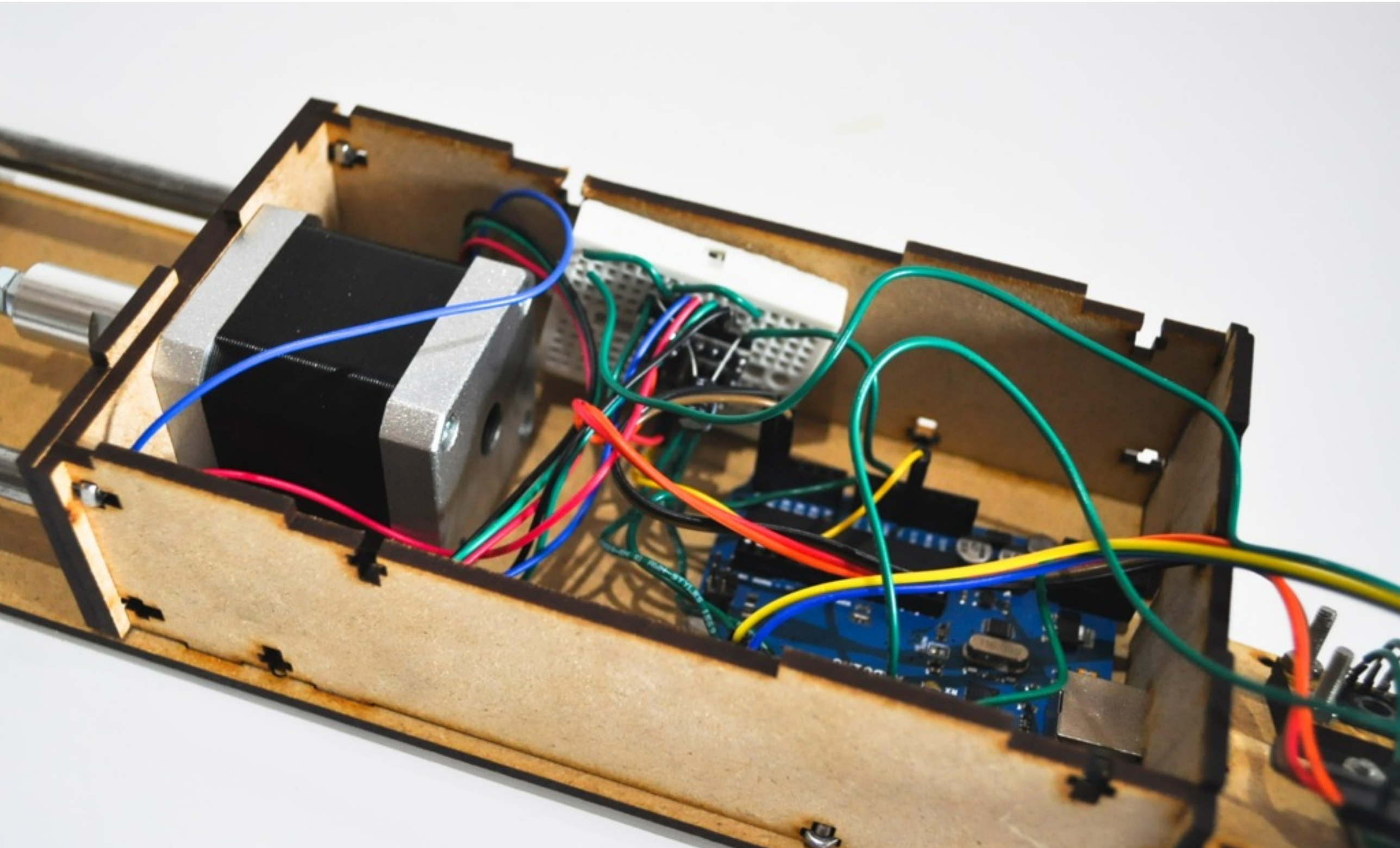
BioHack Academy design



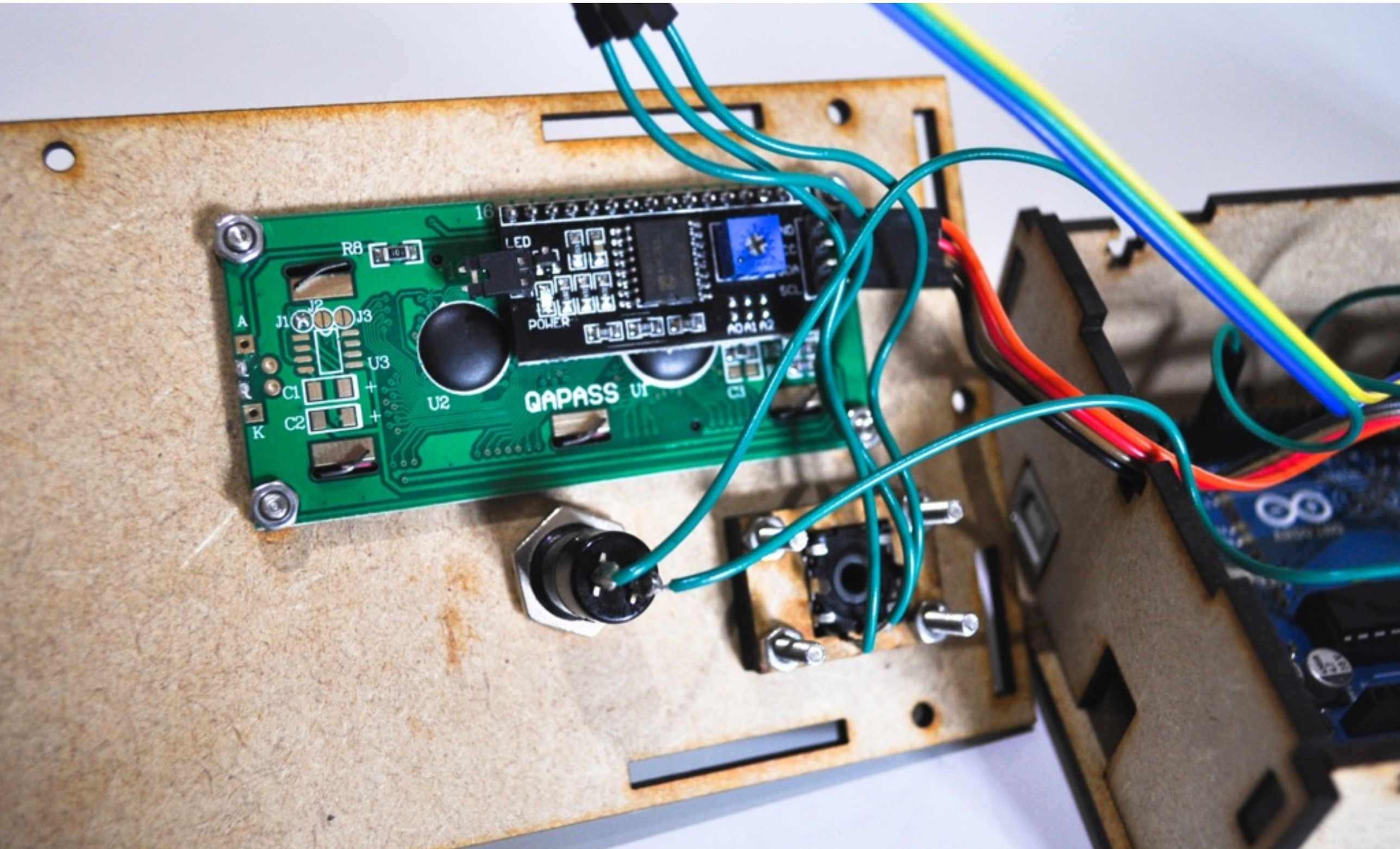
Bill of Materials

#	Amount	Description
1		1 NEMA17 Stepper motor
2		1 Pololu Stepper Driver
3		1 8mm smooth rod
4		1 Axis coupling
5		1 M5 threaded rod
6		3 Hexagonal M5 nut
7		1 100 uF capacitor
8		1 Rotary encoder
9		1 Knob
10		1 Button
11		2 10K resistor
12		2 10nF capacitor
13		2 100nF capacitor
14		1 12V 5A Power supply

Electronics

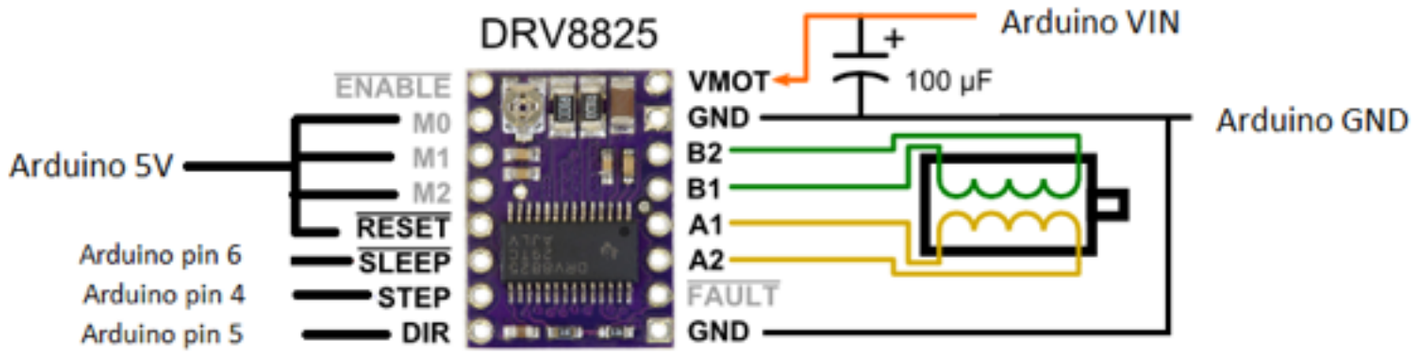


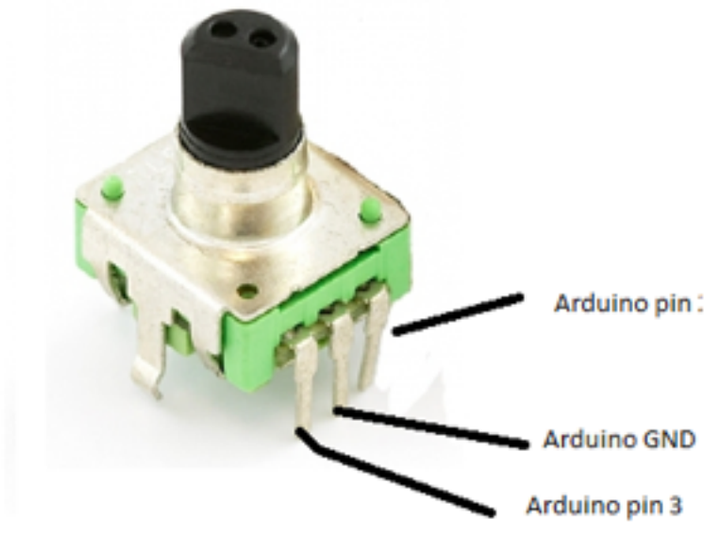
Electronics



Component Wiring

Peristaltic Pump
connection diagram





Connect to arduino
pin 7 and GND

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Demonstration

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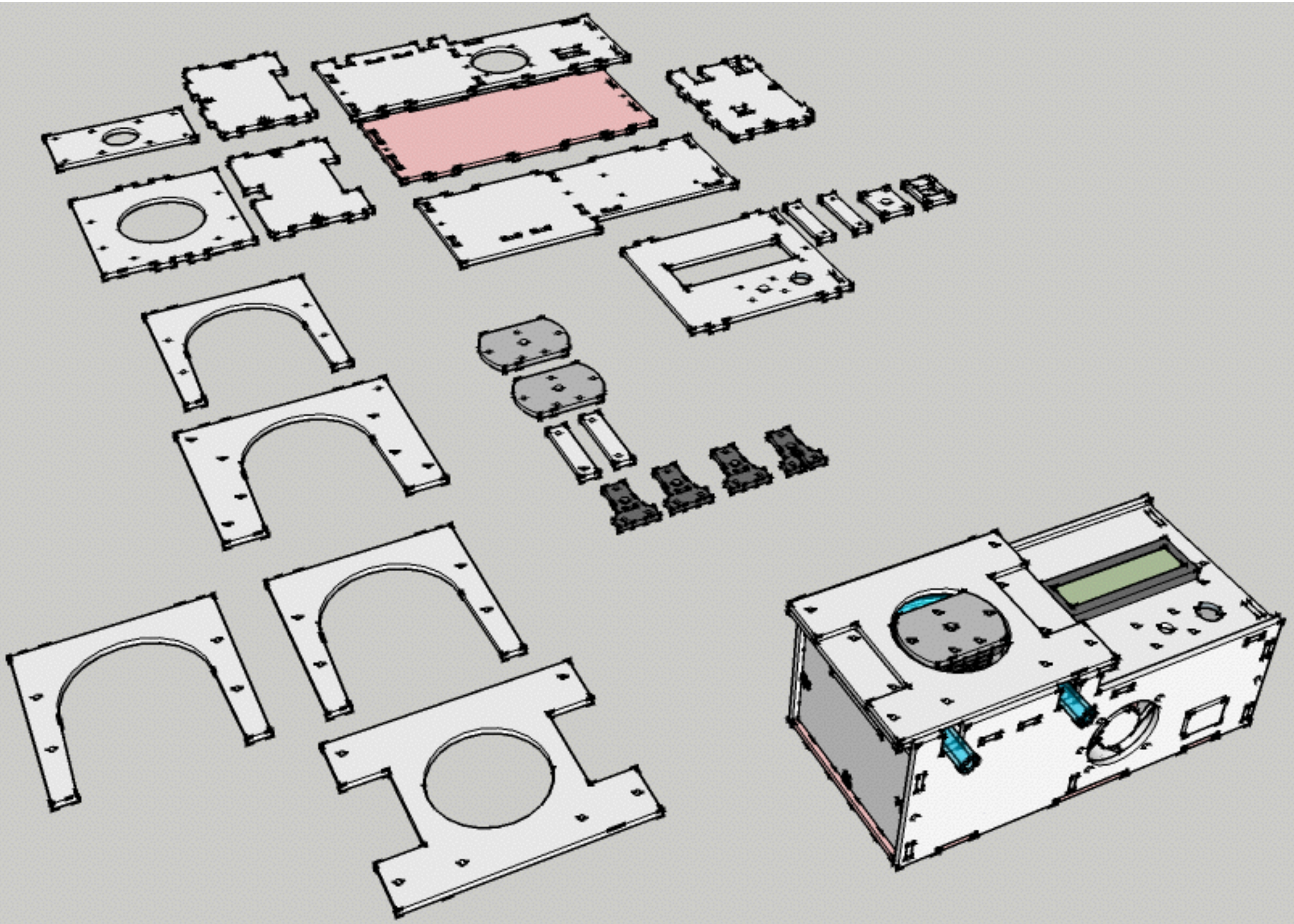
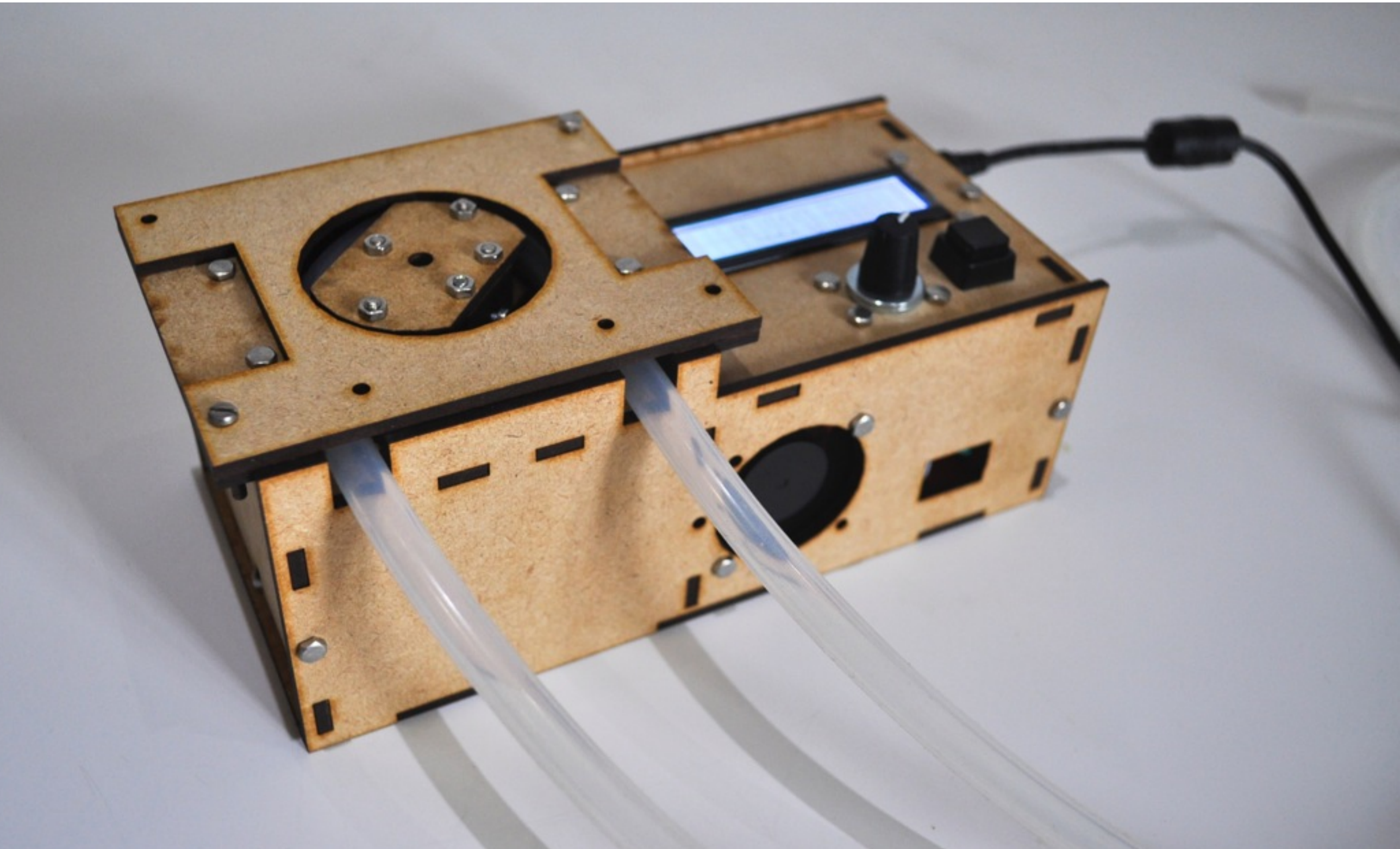
Peristaltic pump

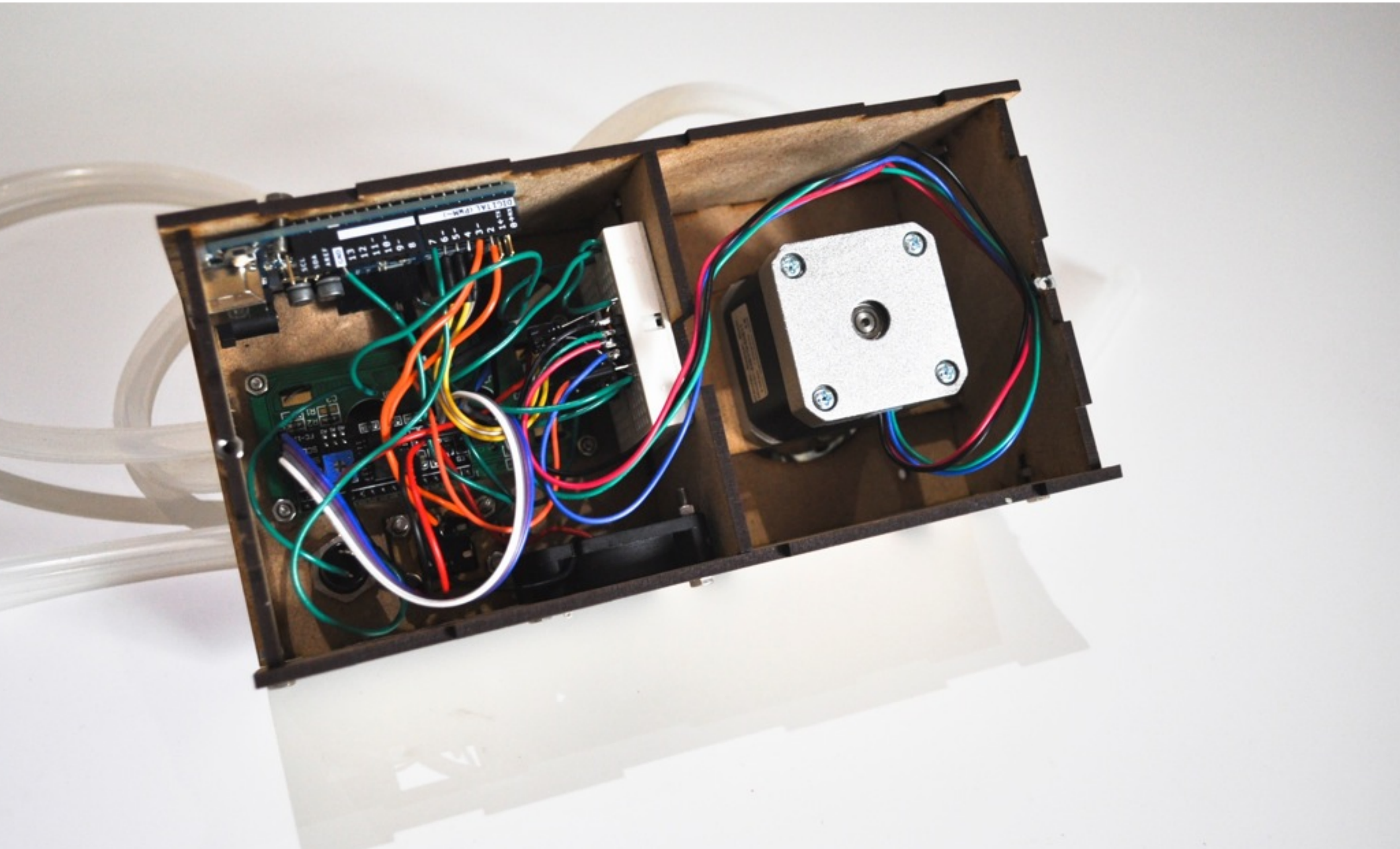
BioHack Academy design



BioHack Academy design



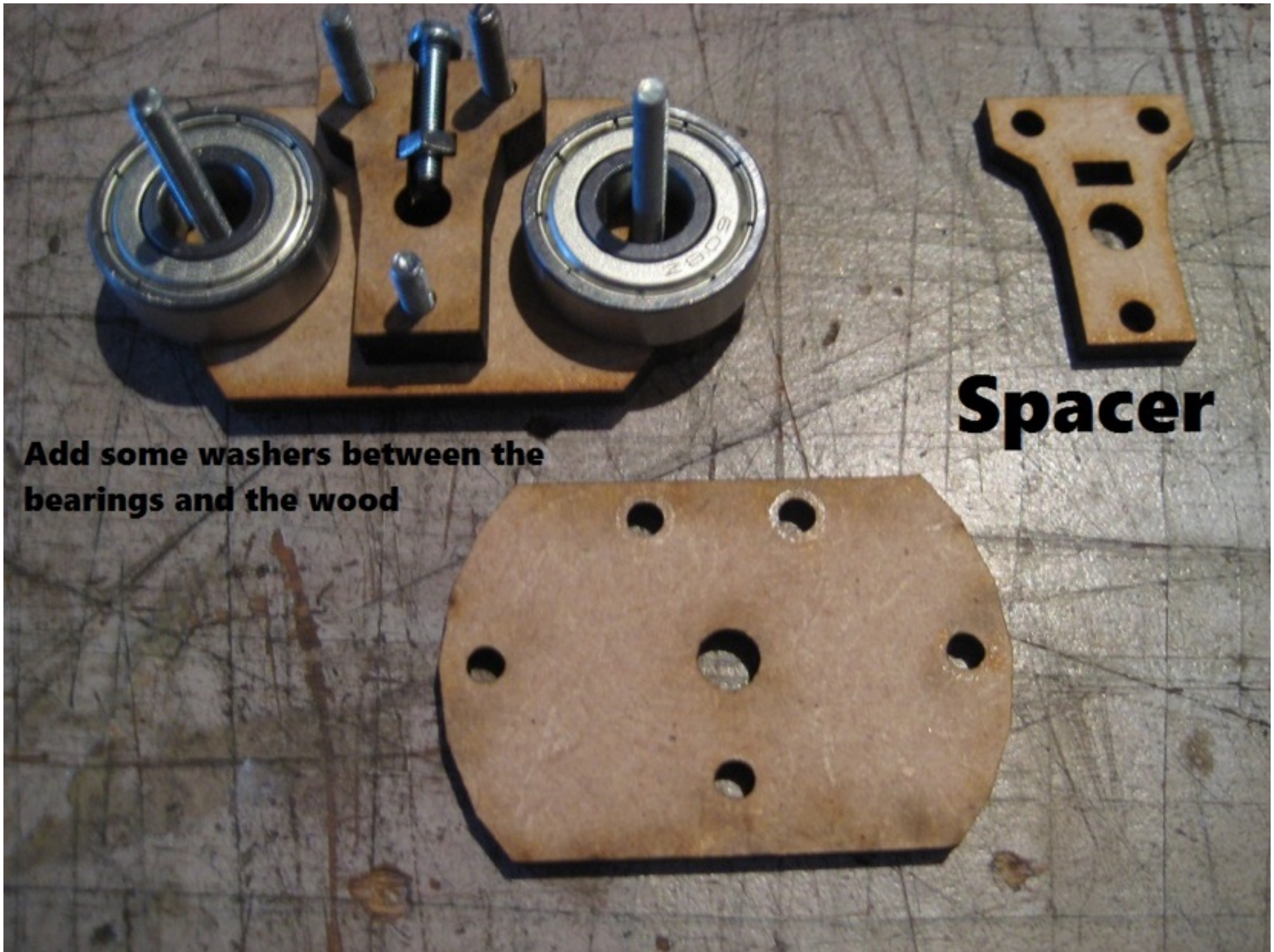
BioHack Academy design



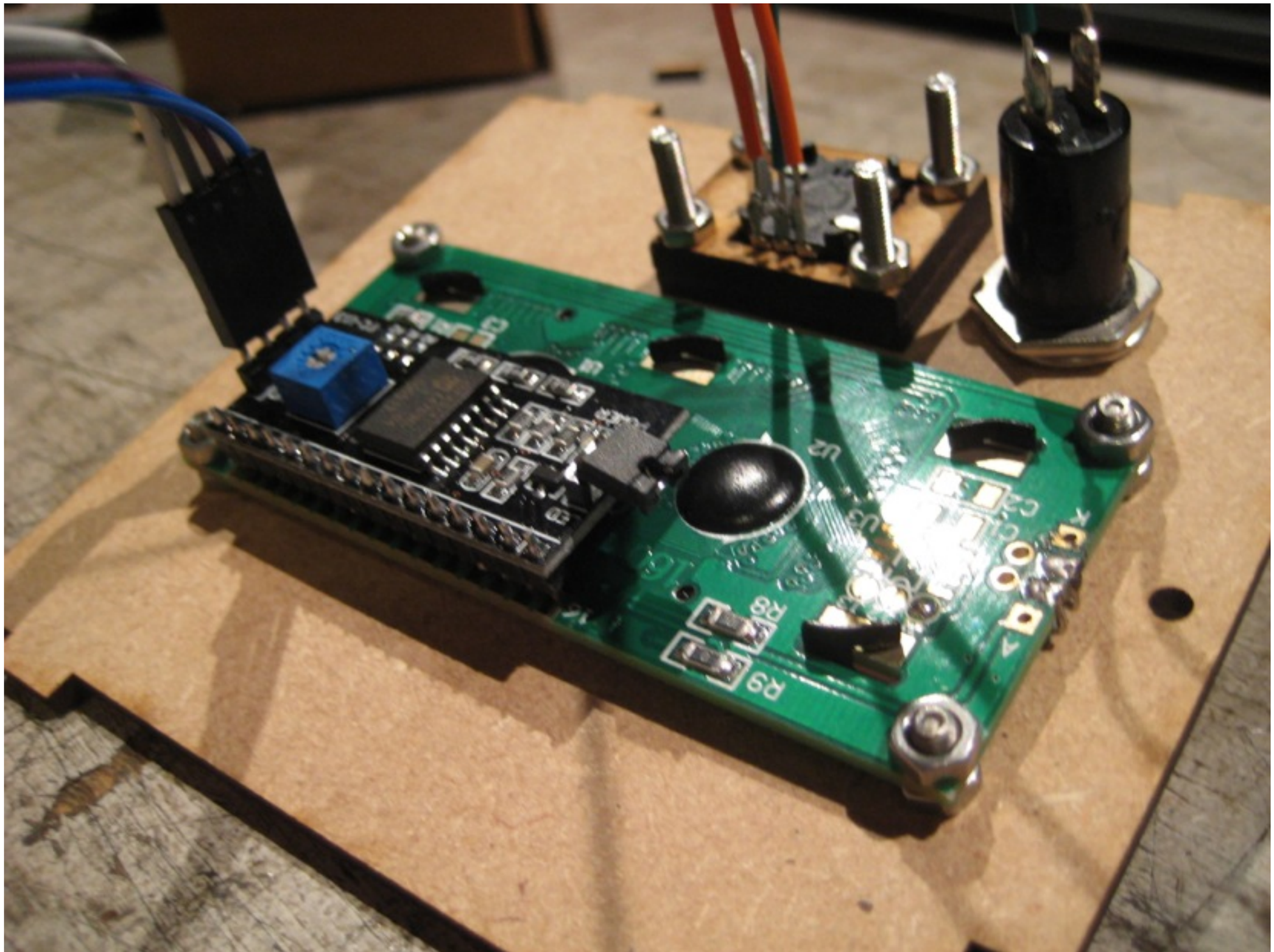
Bill of Materials

#	Amount	Description
1	1	NEMA17 Stepper motor
2	1	Pololu Stepper Driver
3	2	LM8UU Linear Bearings
4	1	100 uF capacitor
5	1	Heatsink
6	1	10 pack washers
6	1	Fan 40x40mm
7	1	Rotary encoder
8	1	Knob
9	1	Button
10	2	10K resistor
11	2	10nF capacitor
12	2	100nF capacitor
13	1	12V 5A Power supply
14	4	Rubber feet

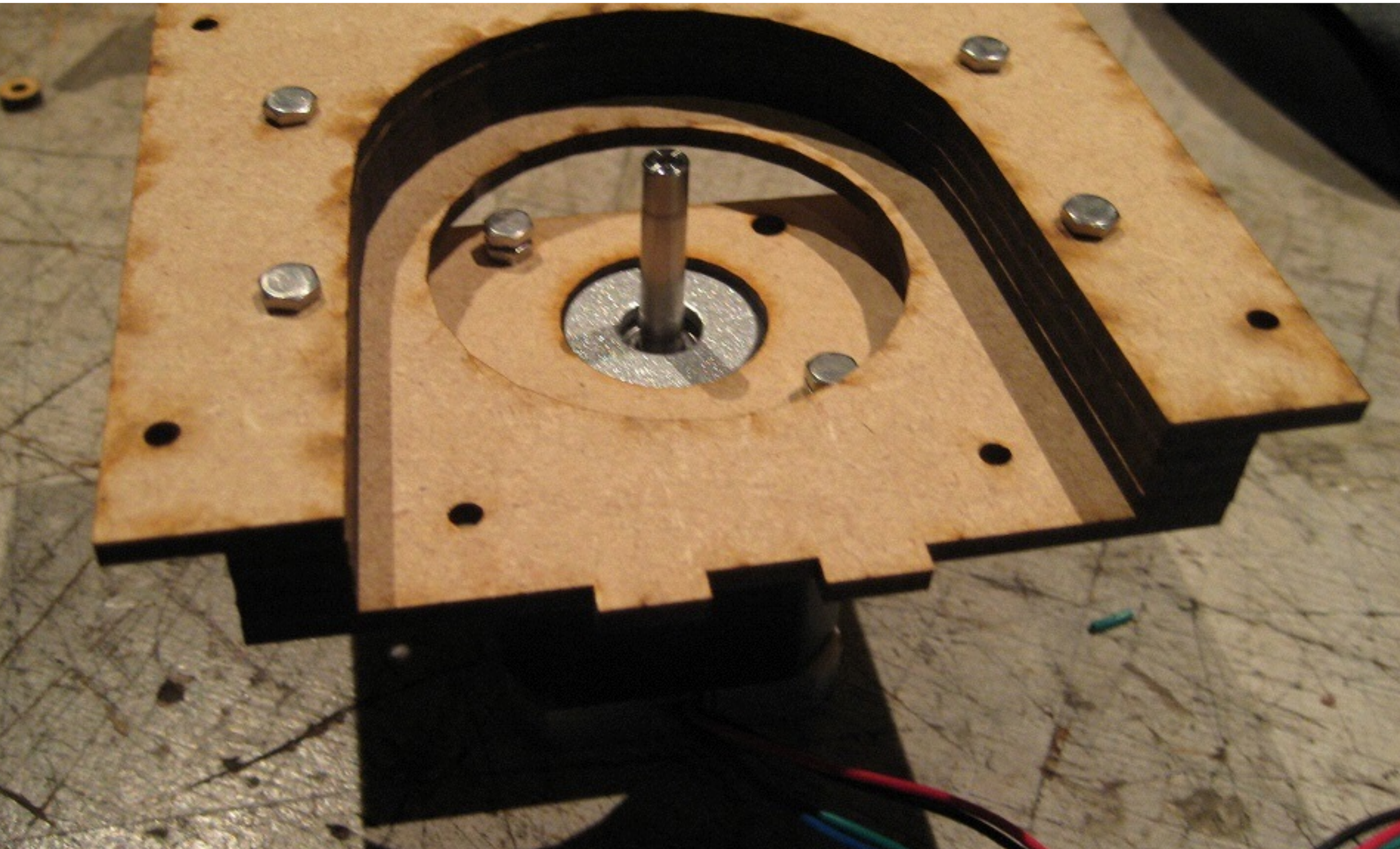
Axismounted bearings


Spacer
Add some washers between the bearings and the wood

Control panel

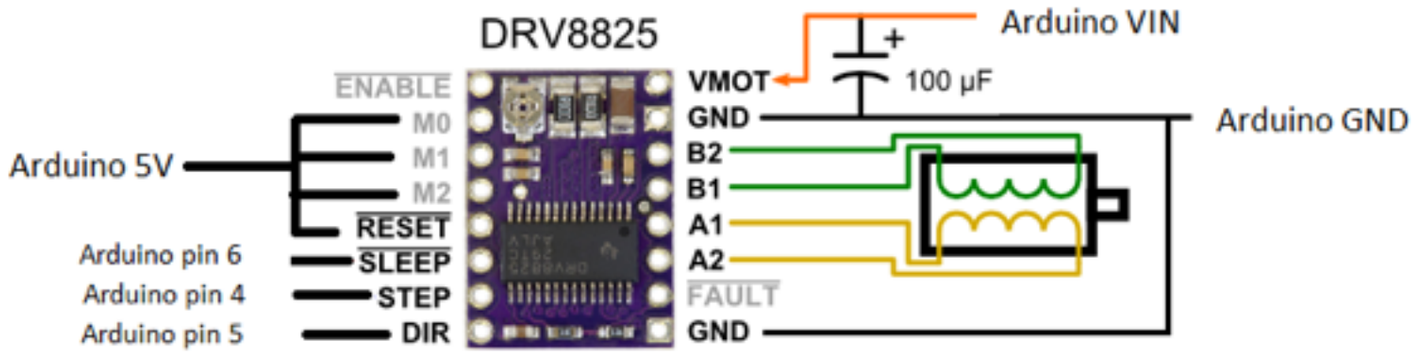


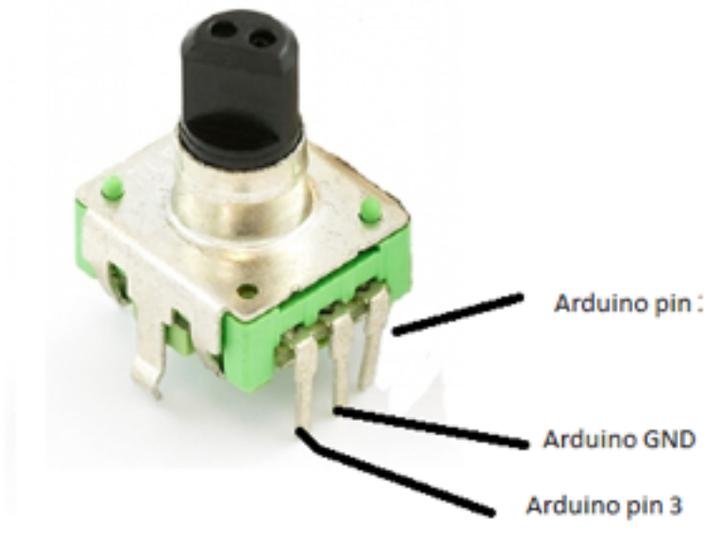
NEMA17 mount



Component Wiring

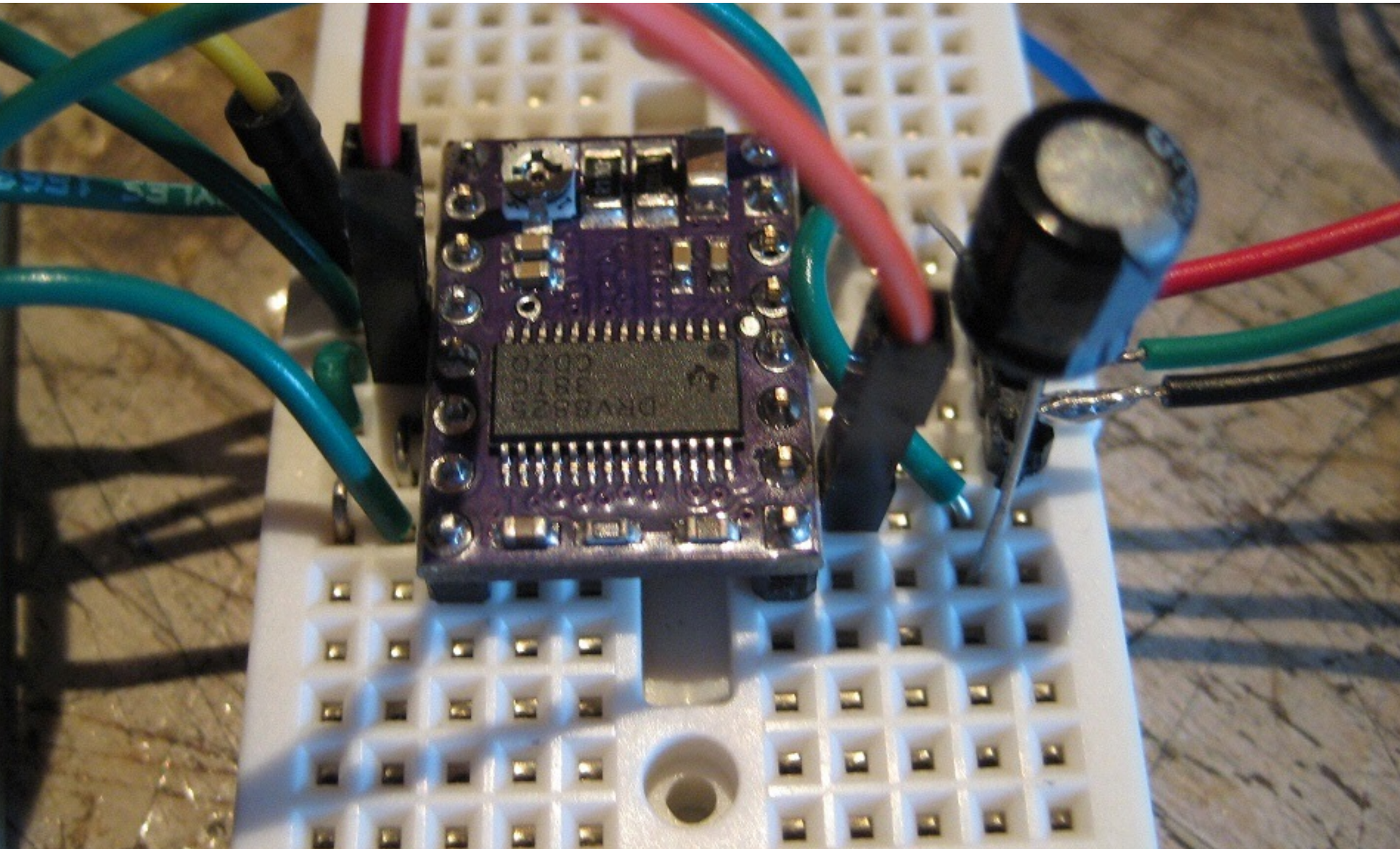
Peristaltic Pump
connection diagram



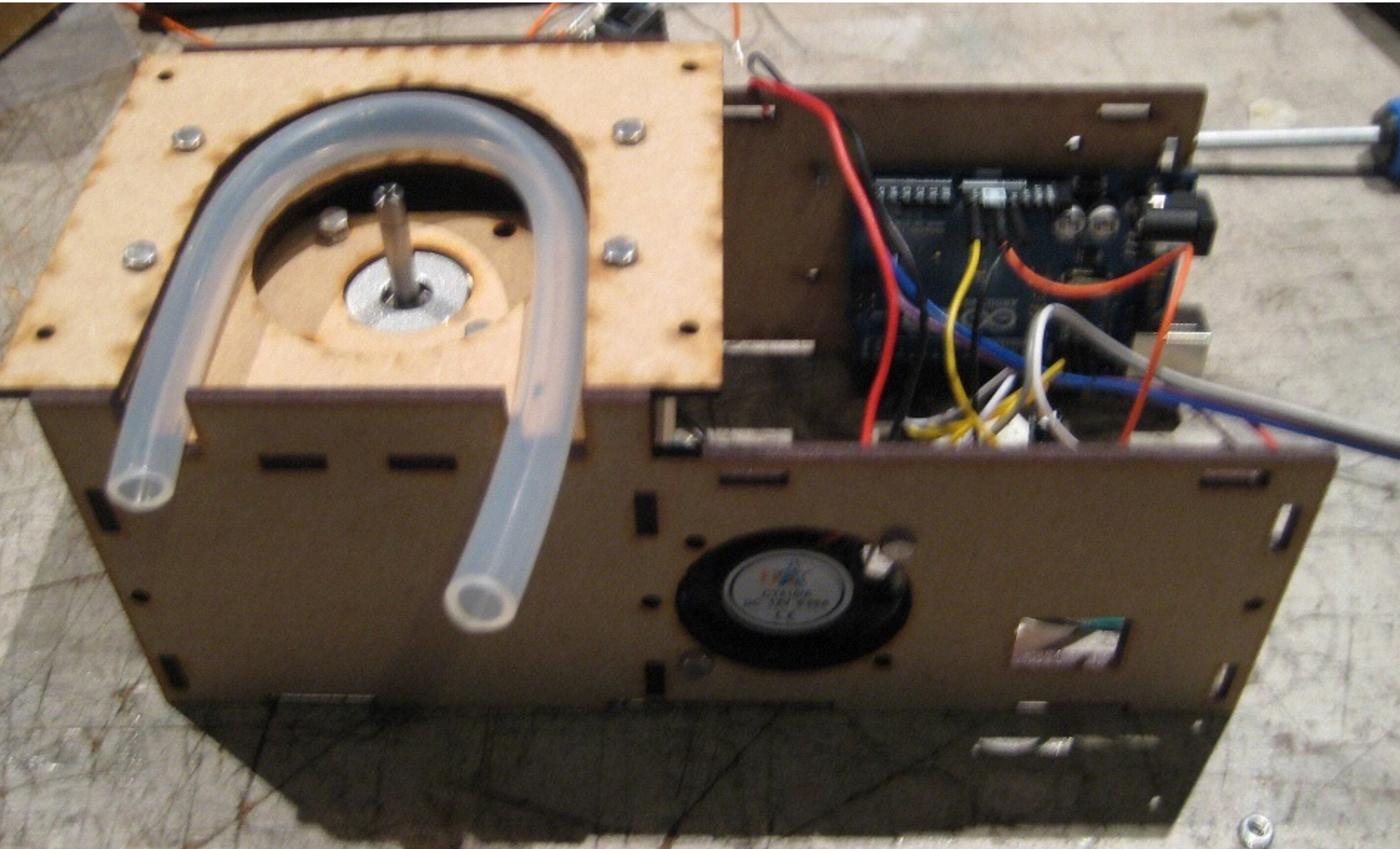


Connect to arduino
pin 7 and GND

Stepper driver



Full assembly



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Demonstration

http://www.youtube.com/watch?v=rvNwhfQSCfg

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Coming up

Graduation Ceremony

- April 21st

Assignment

- Answer the following questions in your documentation:

  - What does the reactor do? What product has been made?
  - From what designs is it derived?
  - Which parts have been custom made, by what machine?
  - What are all the components and how much do they cost?
  - How is it assembled?
  - What can be improved?