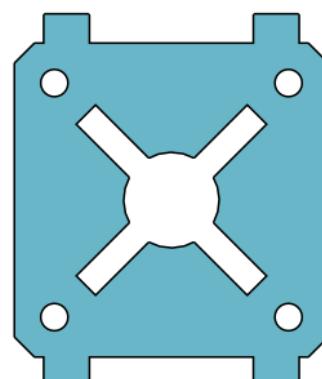
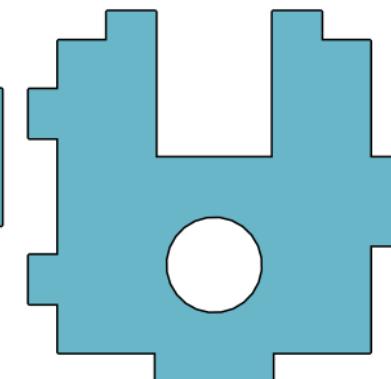
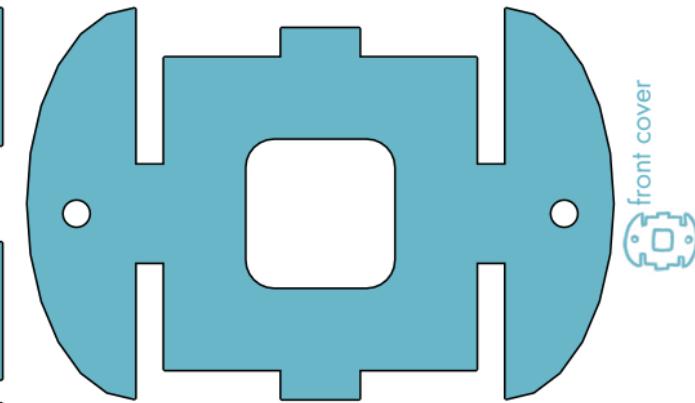
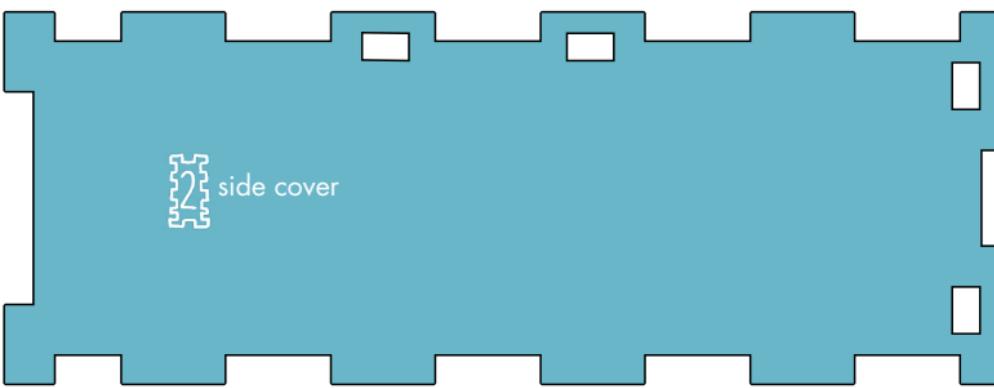
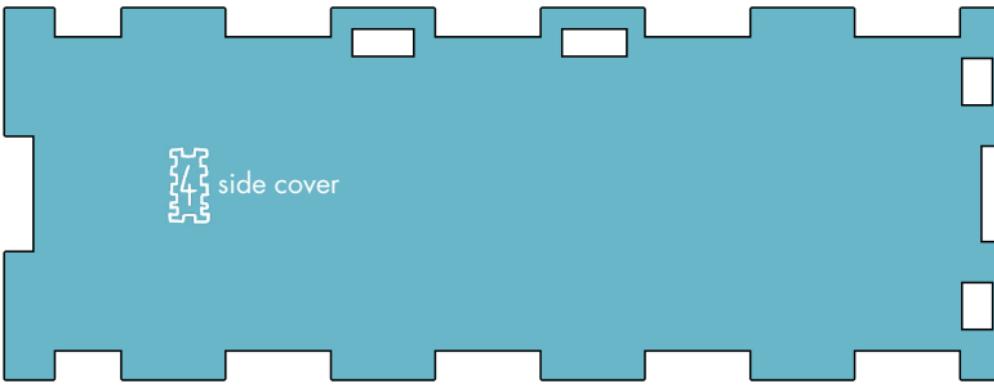
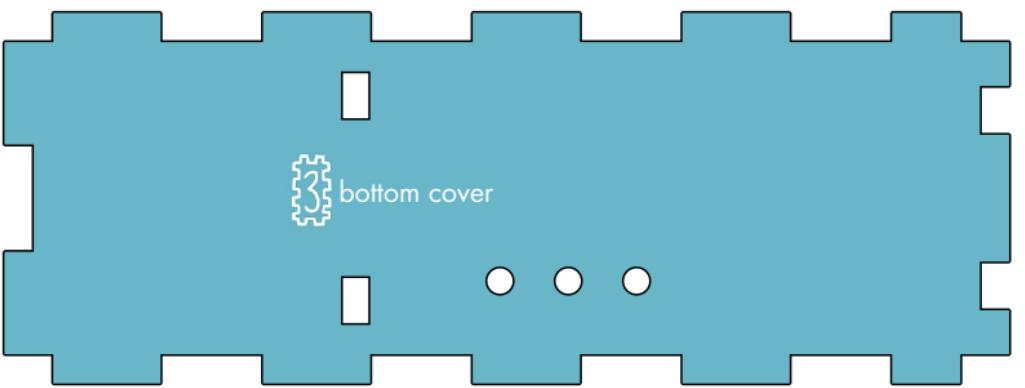
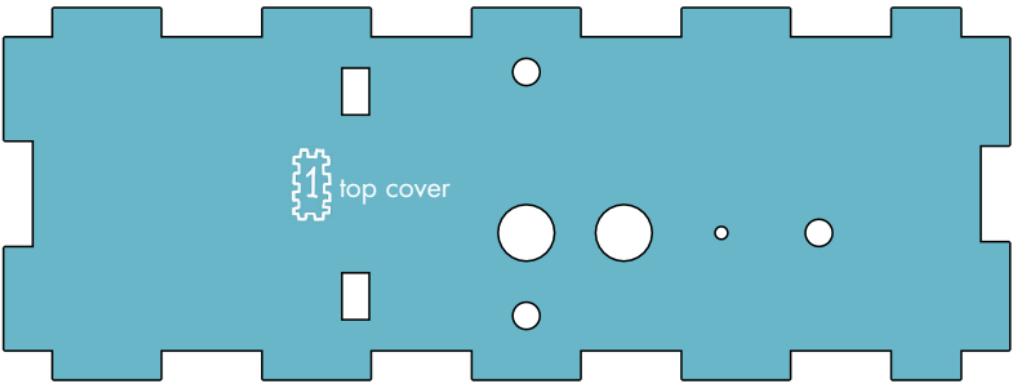
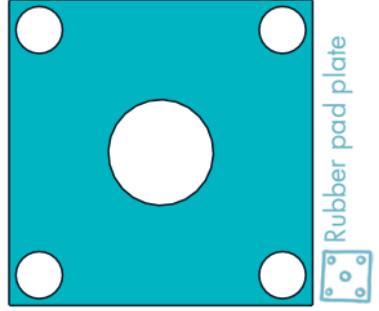


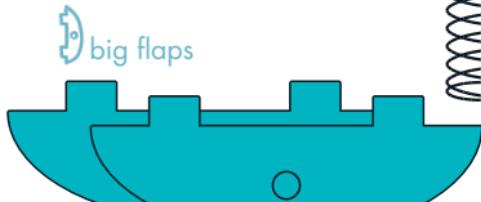
# Construction Manual



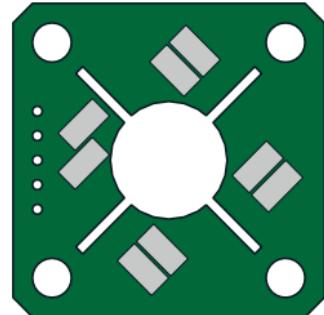




Rubber pad plate

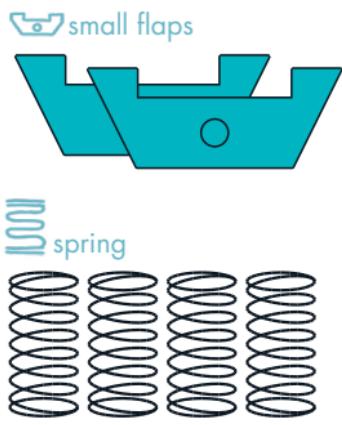
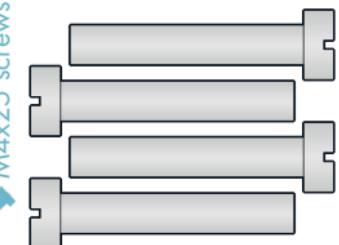


big flaps

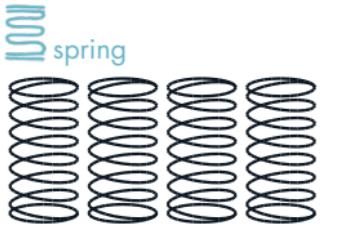


Sensor PCB

M4x25 screws



small flaps

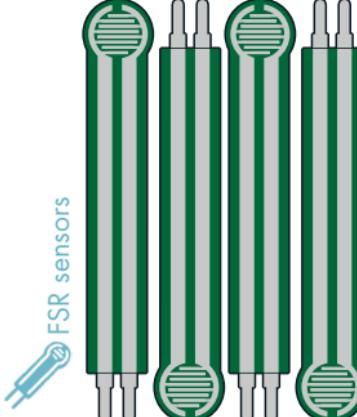


spring



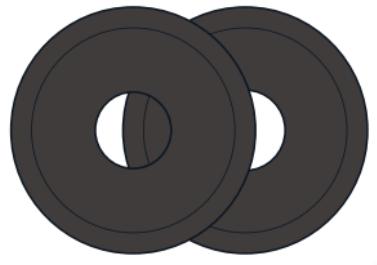
shims

FSR sensors



FSR sensors

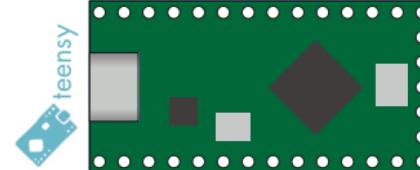
adapter nut



adapter nut

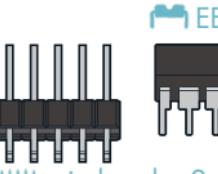


adapter screw



teensy

pin header 2x5



pin header 2x5

EEPROM



PCB

luer lock



luer lock

M3x6 screws



M3x6 screws

jack plugs



jack plugs

rubber pads



rubber pads

pin header 1x2



pin header 1x2

buzzer



buzzer

infrared LED



infrared LED

LED



LED

12R resistor



12R resistor

120R resistor

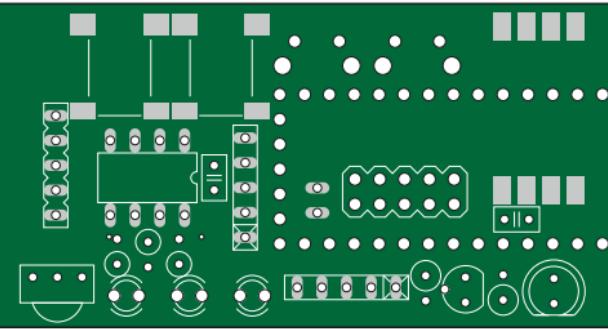


120R resistor

4k7 resistors



4k7 resistors



PCB

short-nosed button



short-nosed button

long-nosed button



long-nosed button

female pin header



female pin header

resistor networks



resistor networks

capacitors



capacitors

IR receiver



IR receiver

MOSFET



MOSFET

pressure sensor



pressure sensor

# FlipMouse Manual

Welcome!

This manual covers detailed step-by-step instructions for building the FlipMouse alternative input system. As additional tools you will need a soldering iron with a fine tip, sharp side-cutting pliers, a slotted screwdriver and optionally a PCB holder. The required materials are tin-solder (small diameter) and adhesive tape (Scotch tape).

You can find additional information including a video of the construction process and software downloads at our homepage <http://www.asterics-academy.net/flip>. If you experience problems or need replacement part, contact us at: [office@asterics-academy.net](mailto:office@asterics-academy.net)

Have fun building your FlipMouse device !

## Legend



Solder with soldering iron.



Clip with pliers.



Fix with tape.

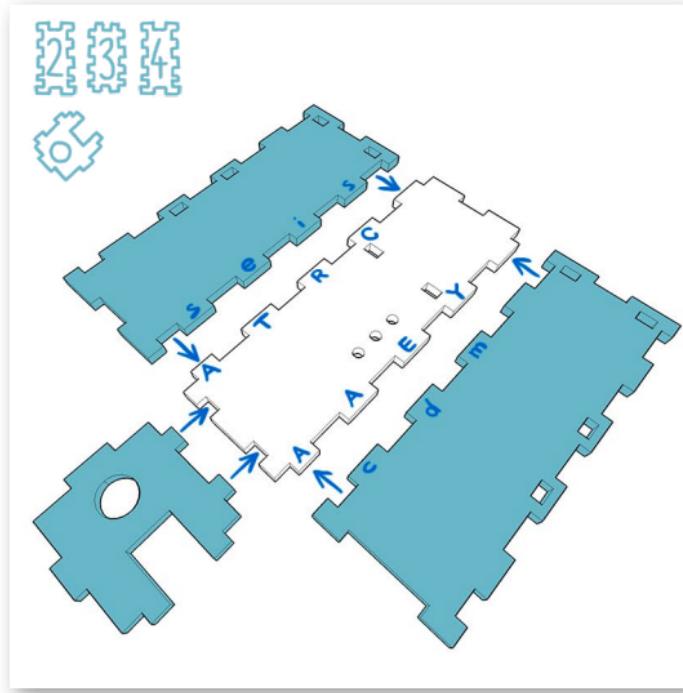
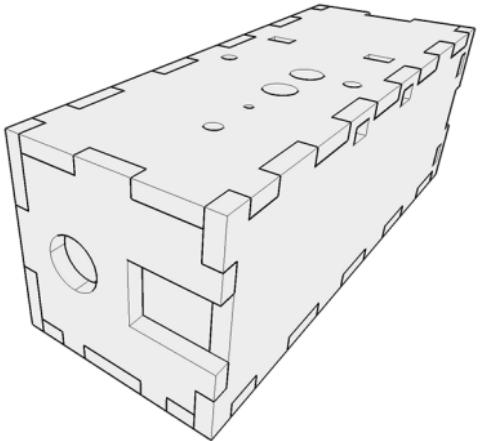


Glue with provided glue.

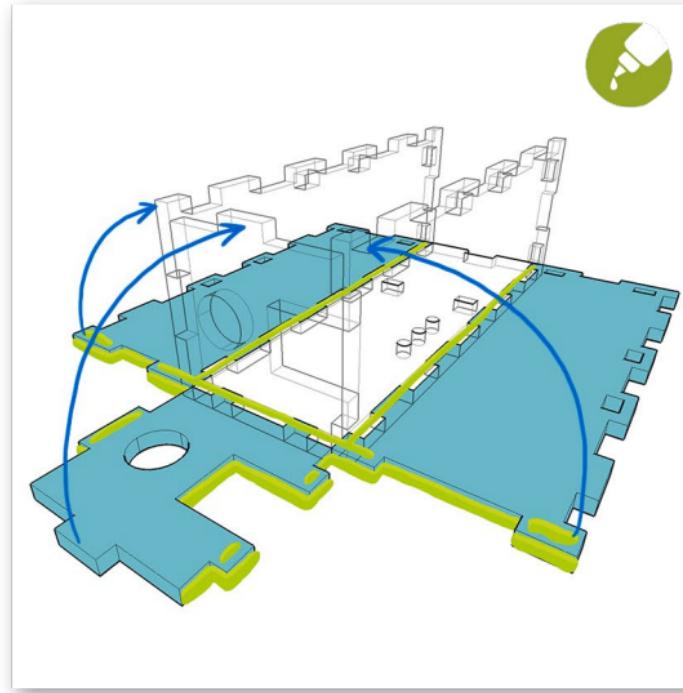


10min

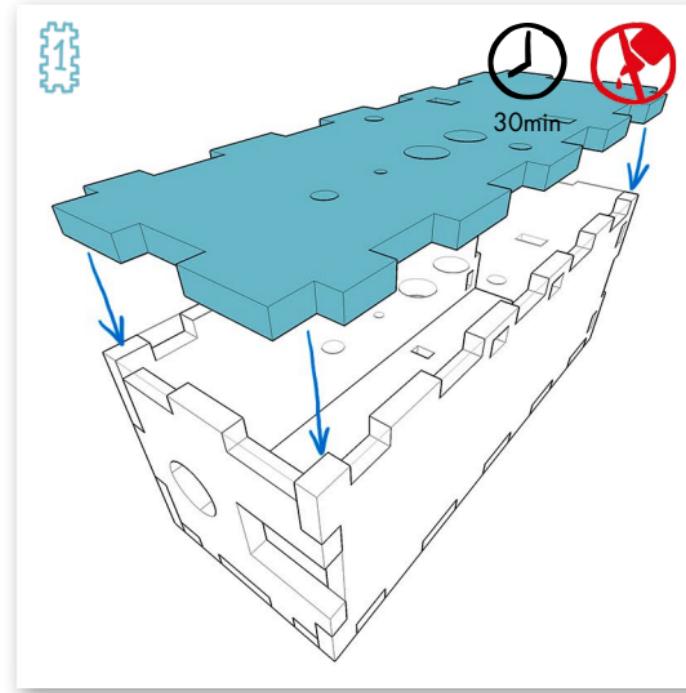
Wait the displayed amount of time.



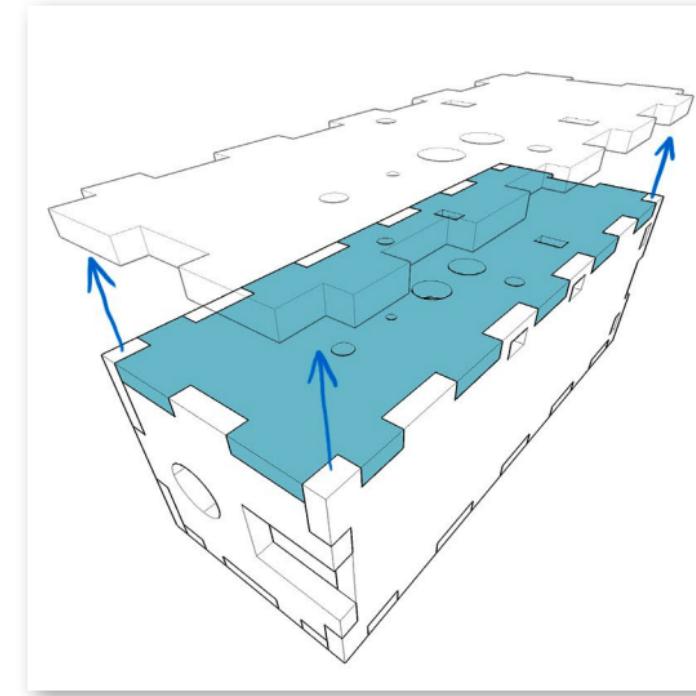
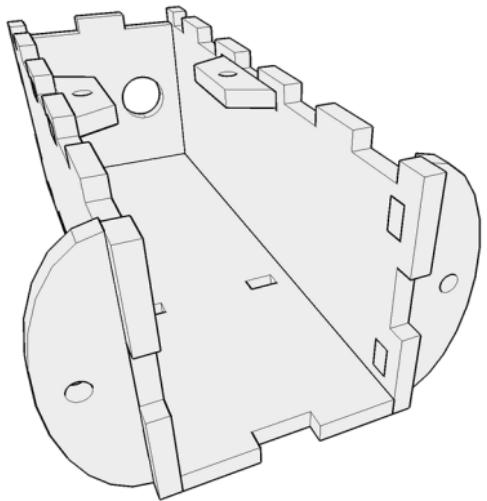
Put the pieces together, so that the words AsTeRiCs AcAdEmY are readable.



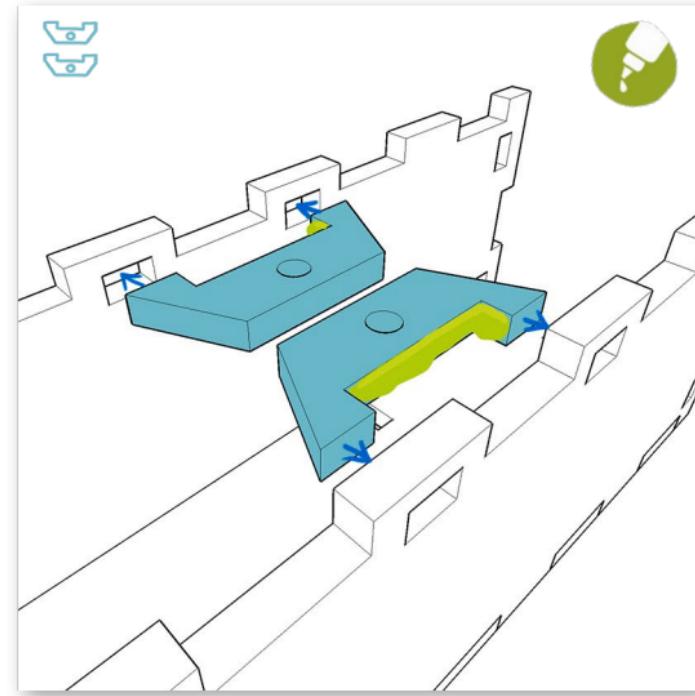
Make sure there is glue on each edge/corner.  
Glue hardens due to light exposure.  
**Attention:** glue residue can hardly be removed  
from acrylic glass!



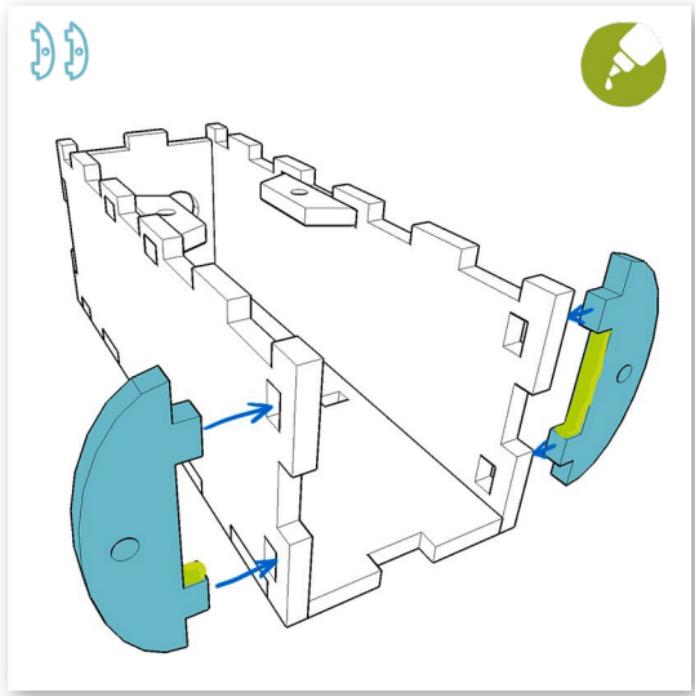
**Do not glue the top cover!** Wait 30 minutes.



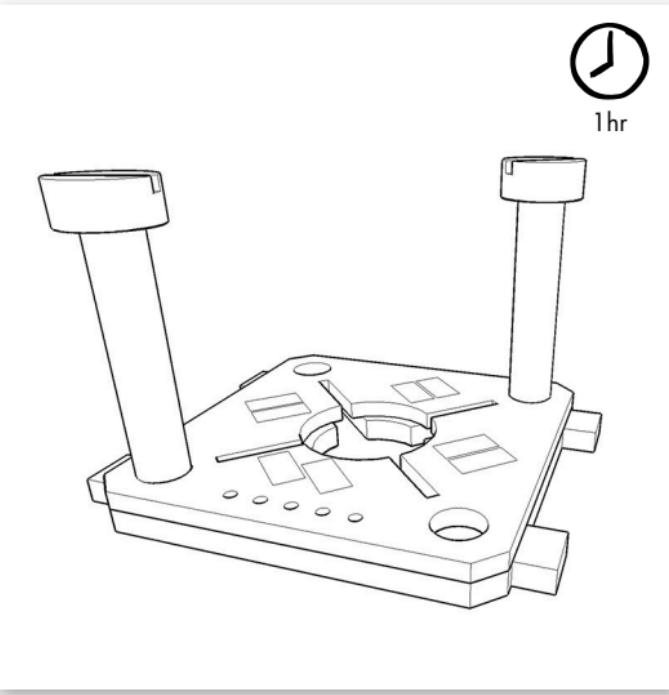
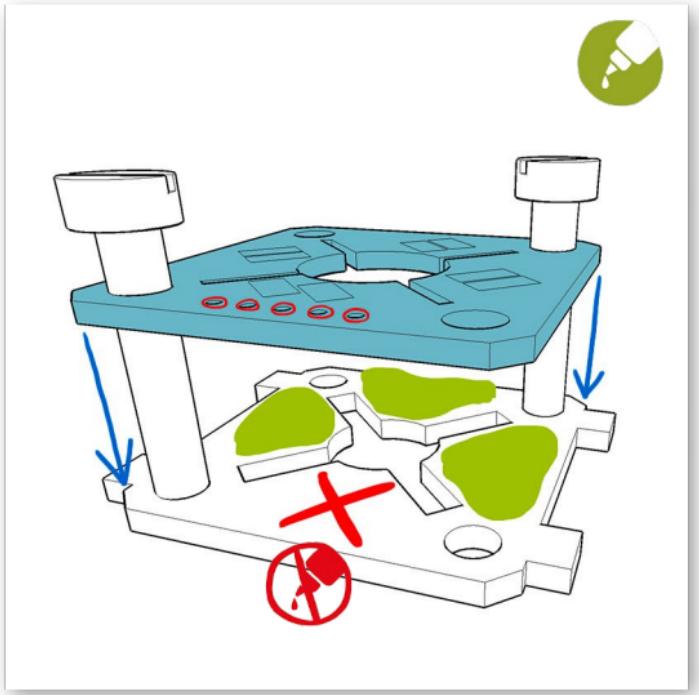
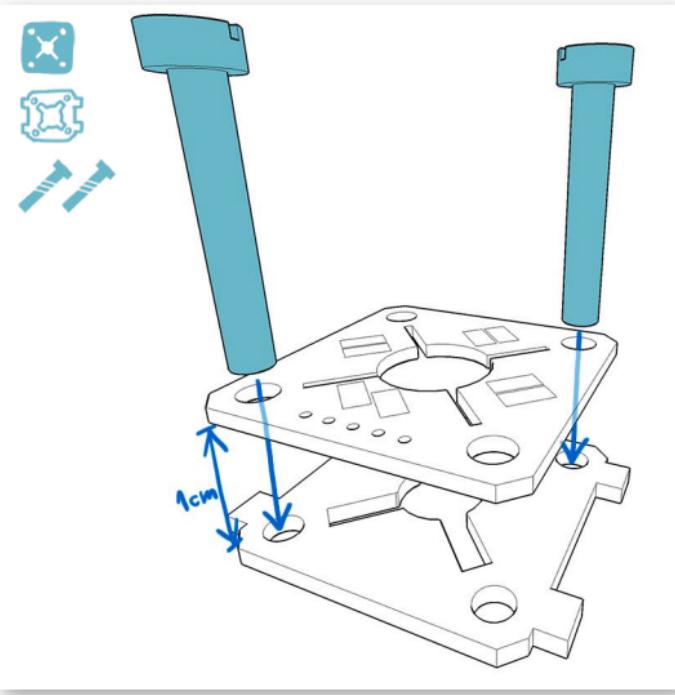
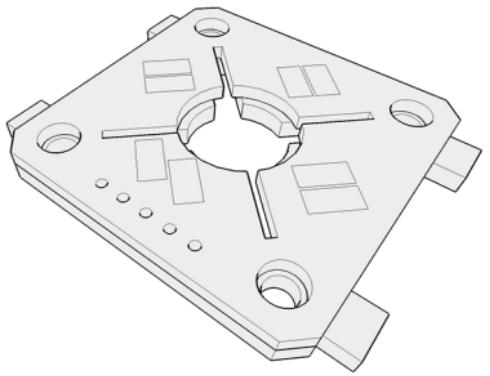
Remove the top cover.



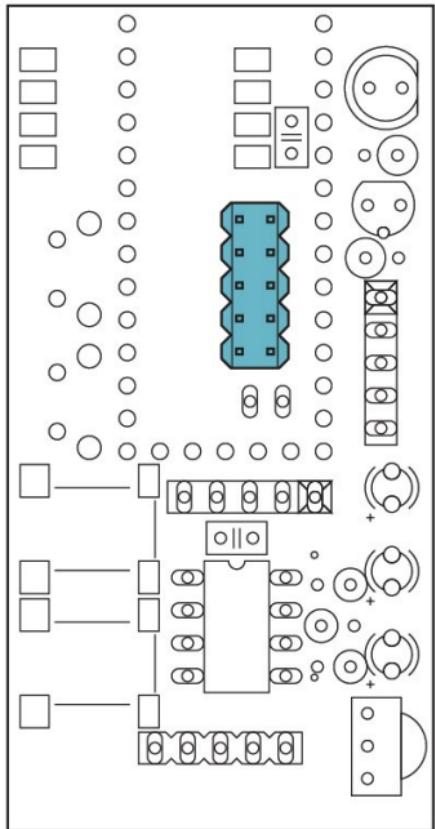
Glue the inside flaps in a straight angle.



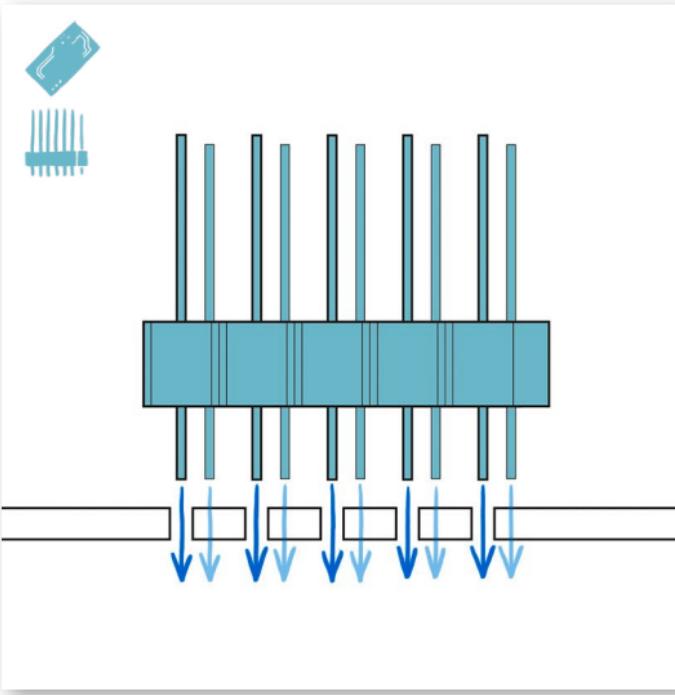
Glue the outside flaps in a straight angle.



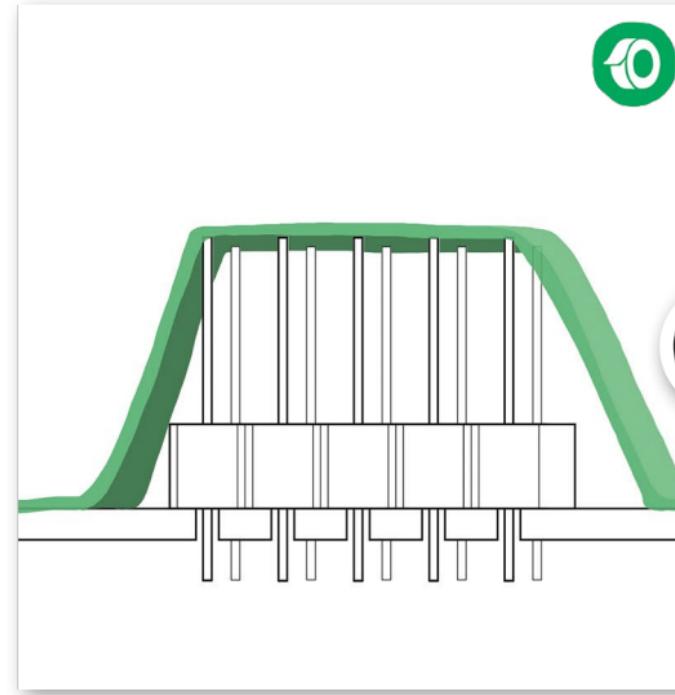
1hr



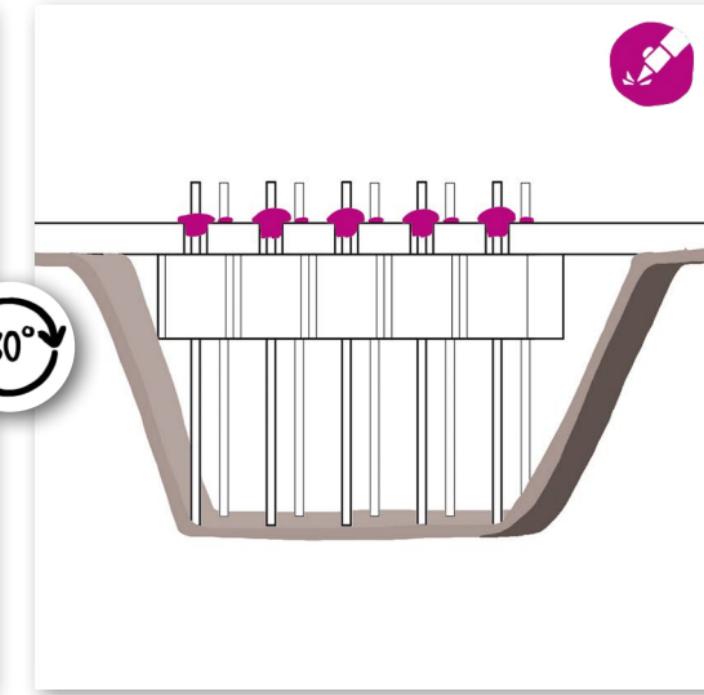
8



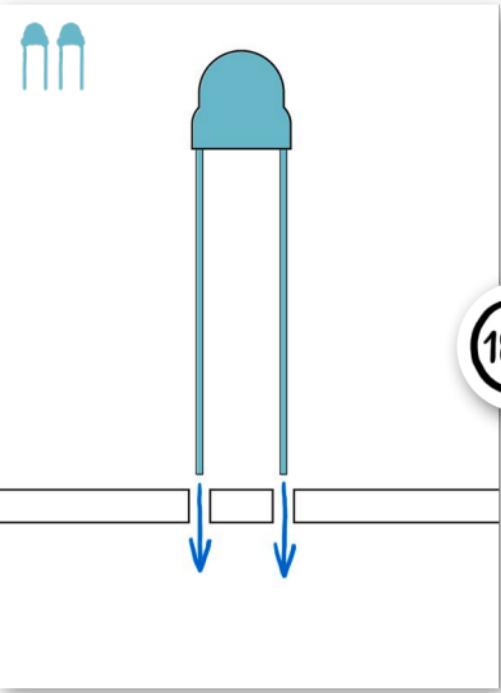
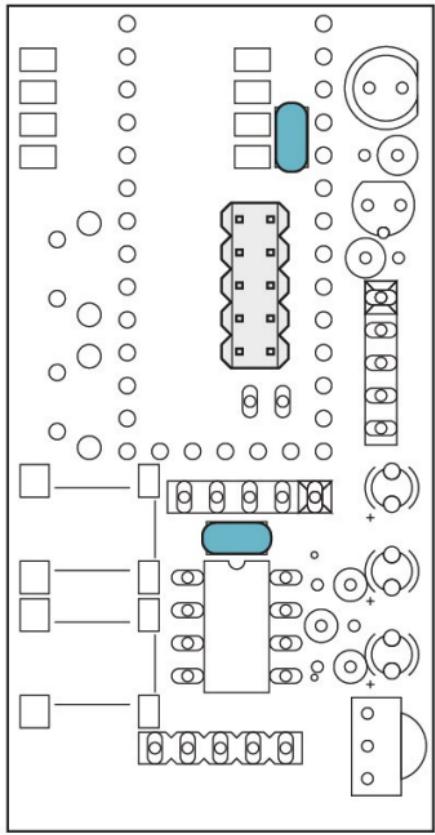
Place the pin header on top of the PCB  
NOTE: Printed text is on the top side of the PCB!



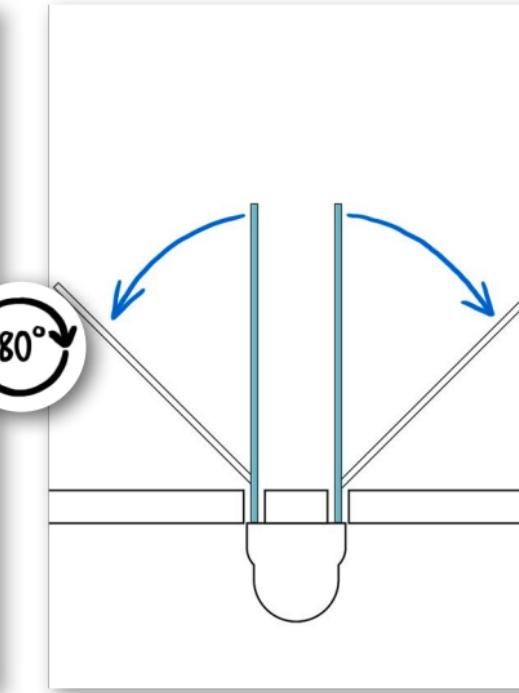
Use tape to fix the part.



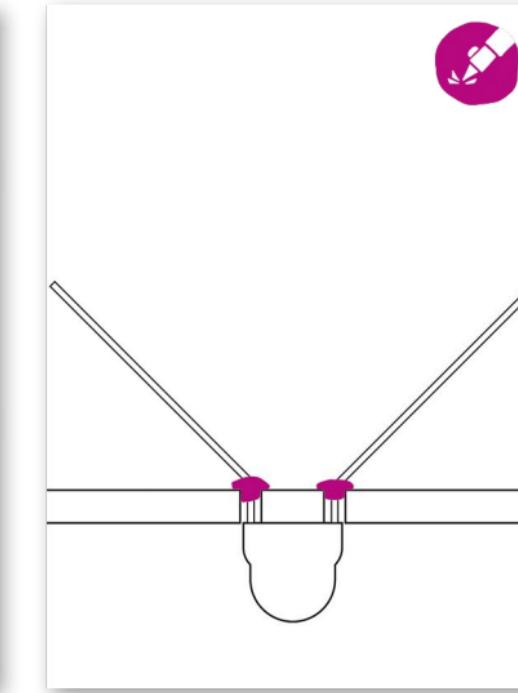
Solder and remove the tape.



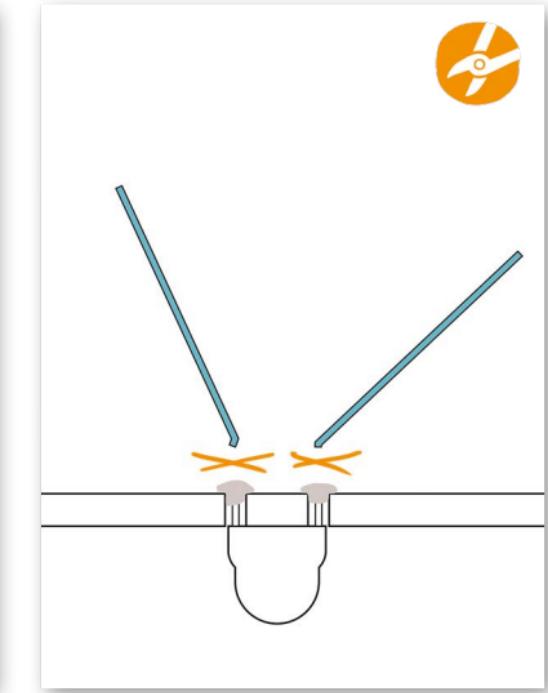
Place the capacitors.



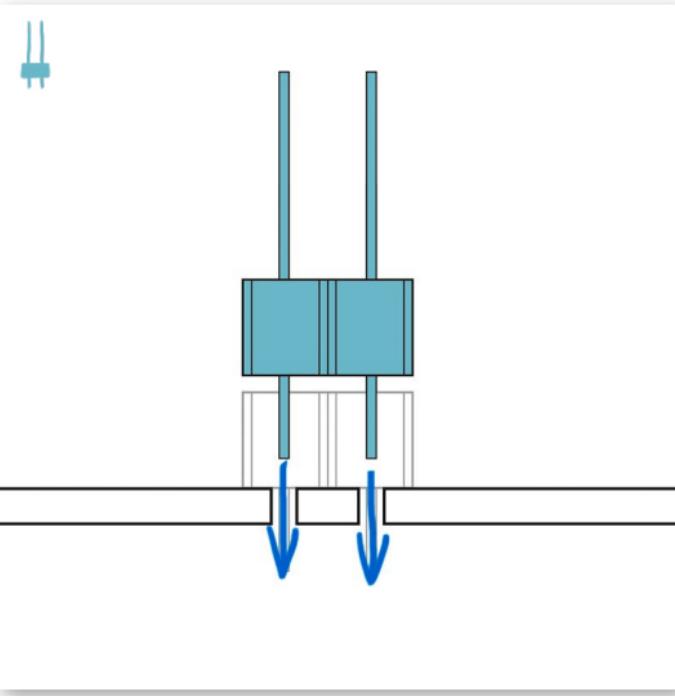
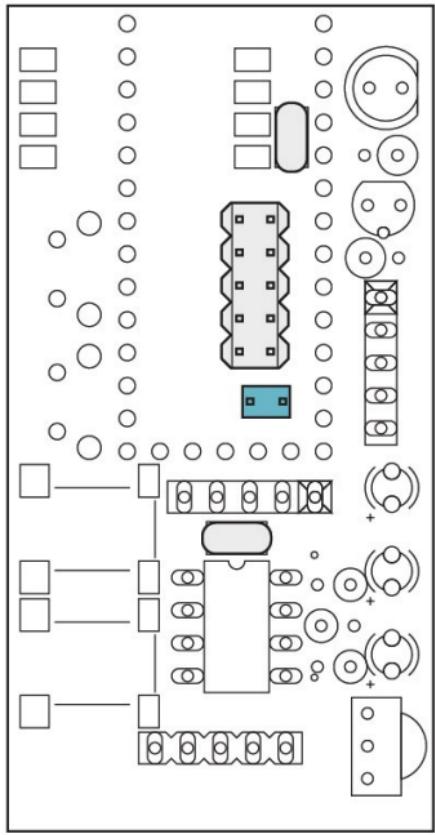
Bend the pins to fix the part.



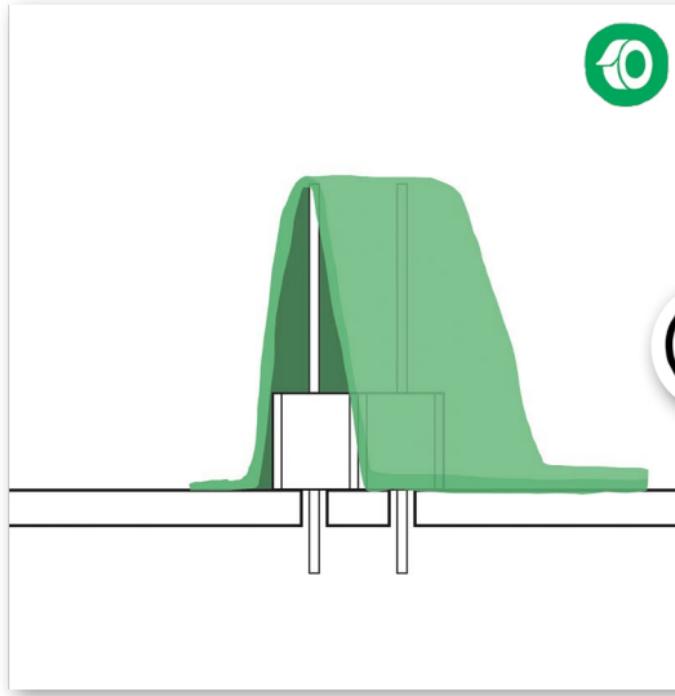
Solder the pins.



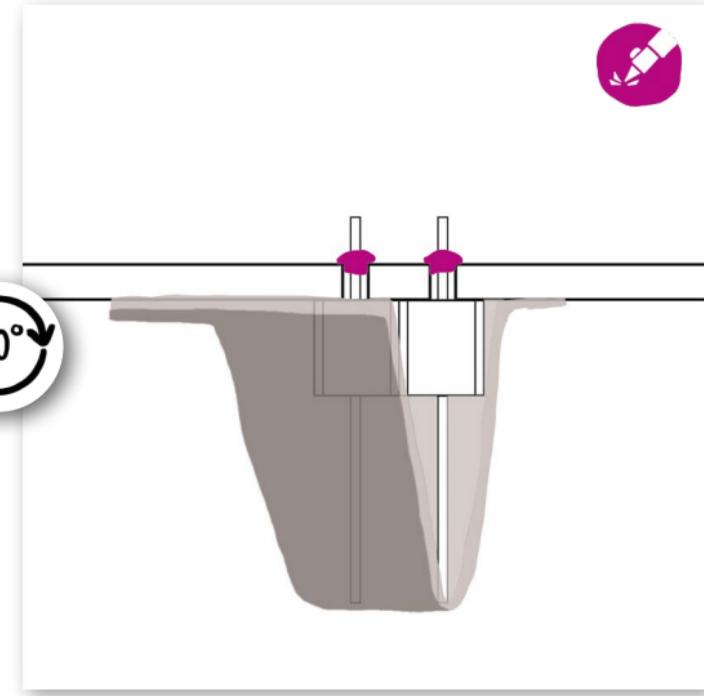
Clip the remaining pins of the capacitors.



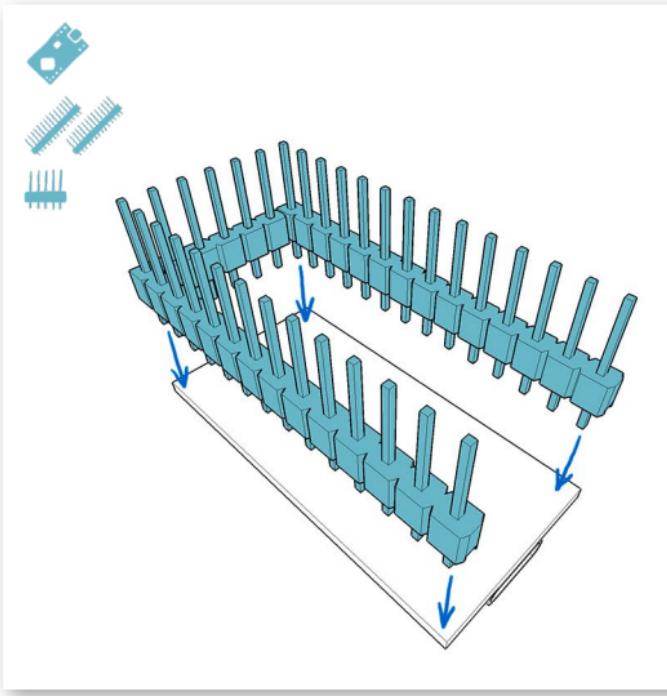
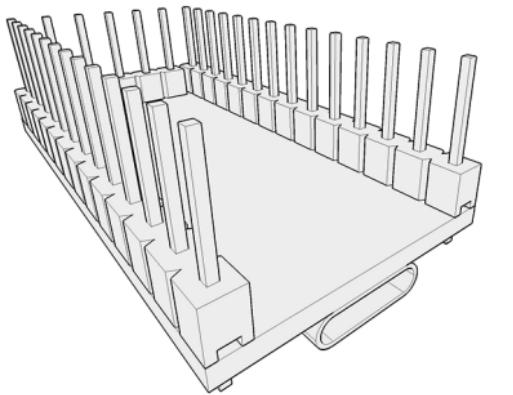
Place the pinheader.



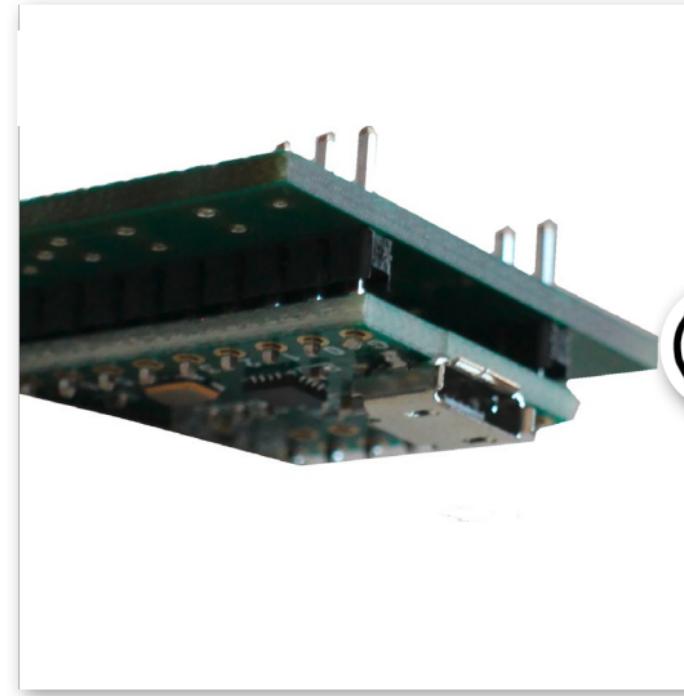
Use tape to fix the part.



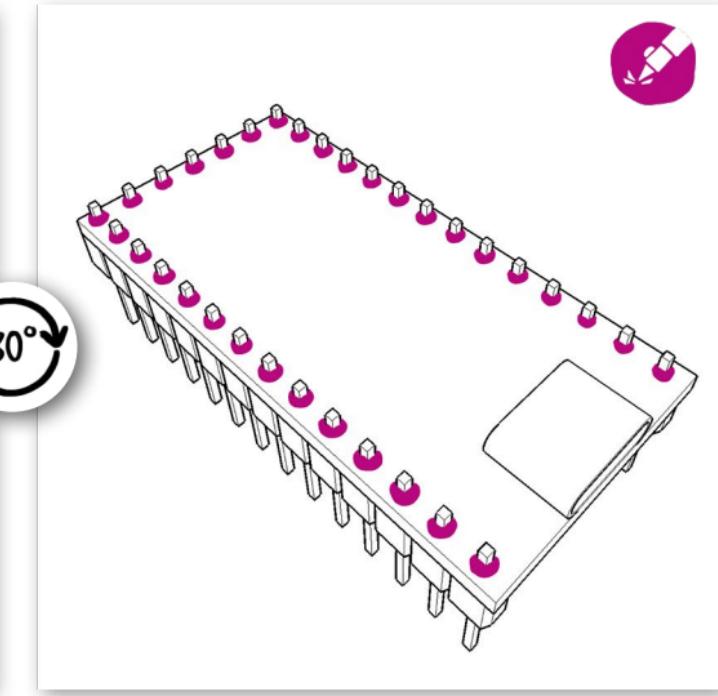
Solder and remove the tape.



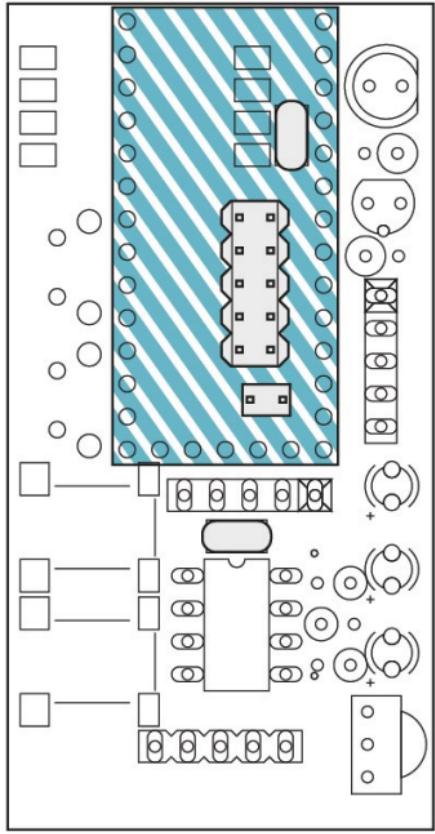
Place the 3 pin headers on the Teensy.  
Take care of the orientation: note the position of the Teensy USB jack! The Teensy is placed on the bottom of the PCB!



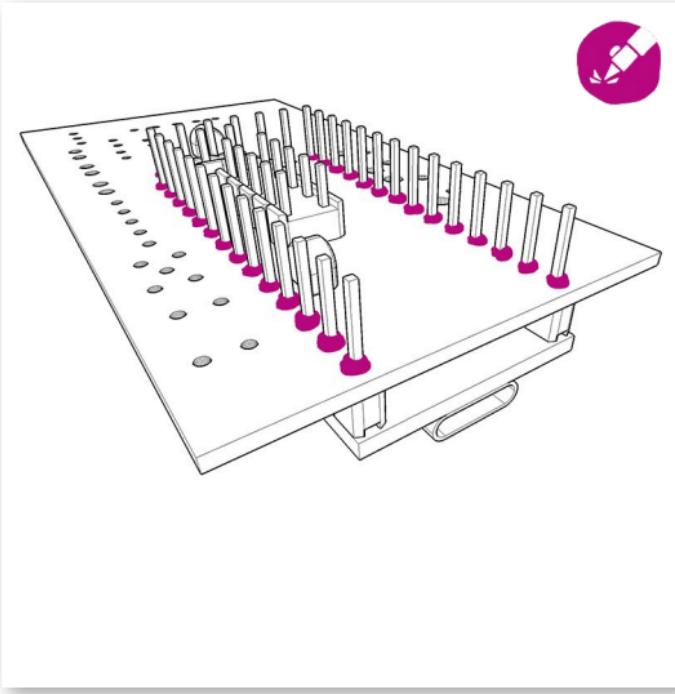
Place the Teensy board on the PCB.



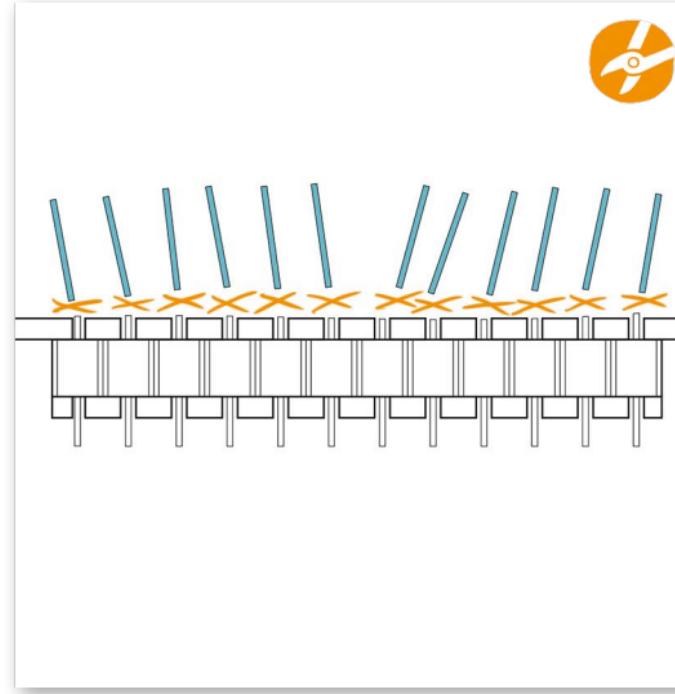
Solder the pins on the Teensy.  
Don't leave space between Teensy, pin headers and PCB!



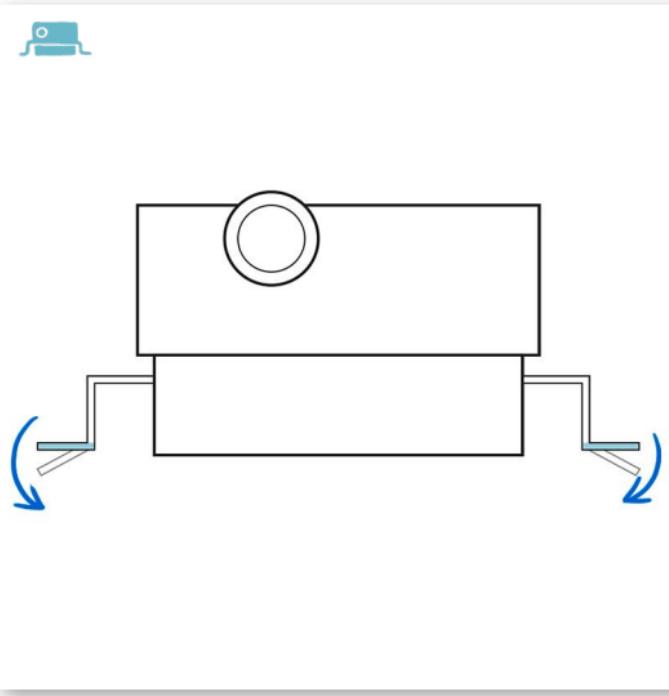
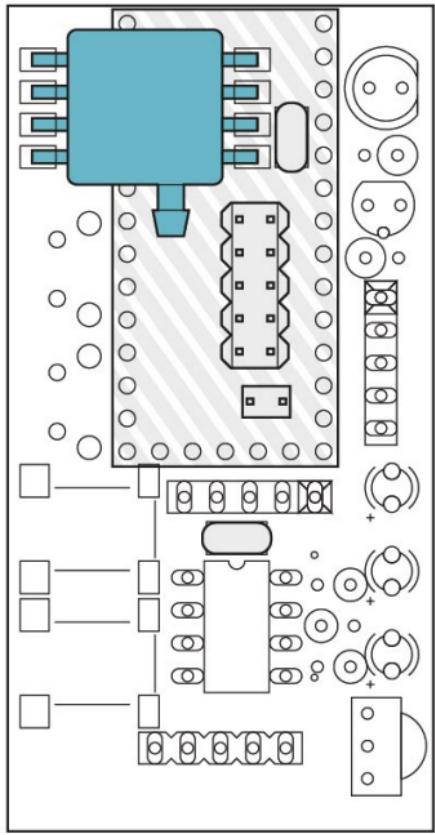
12



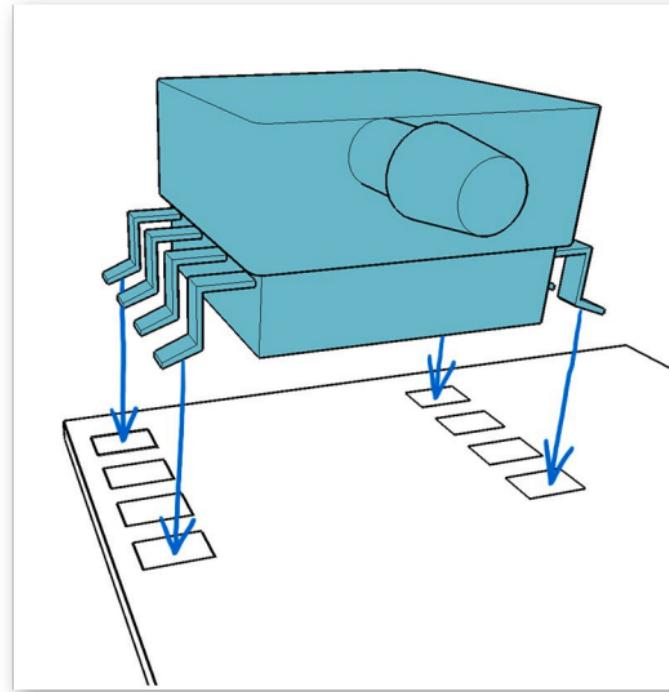
Solder the pins of the Teensy on the PCB.  
Don't leave space between Teensy and PCB.



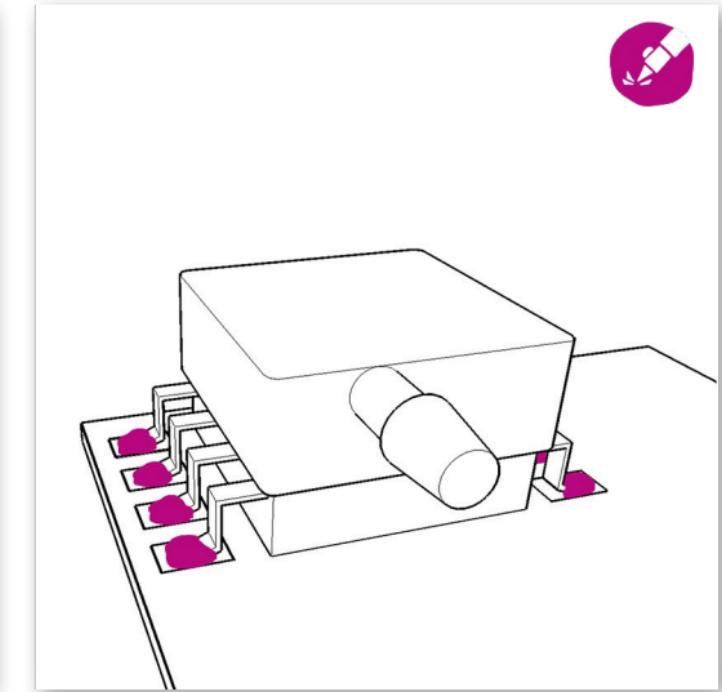
Make sure that the pins are clipped very close  
to the PCB surface



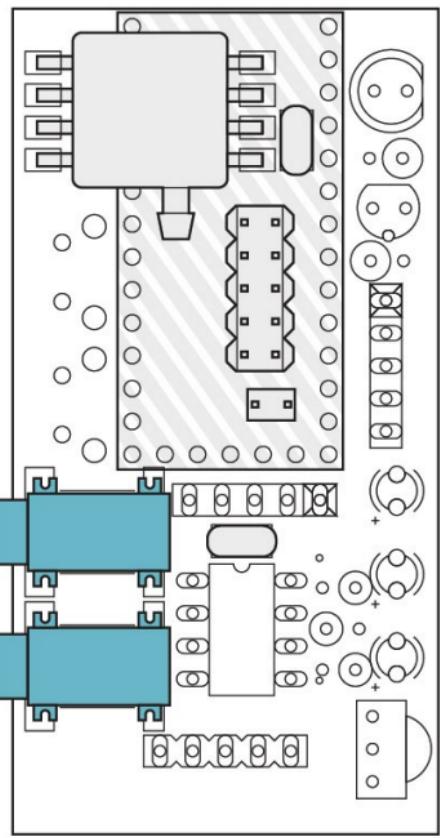
Bend the pins of the pressure sensor downwards.



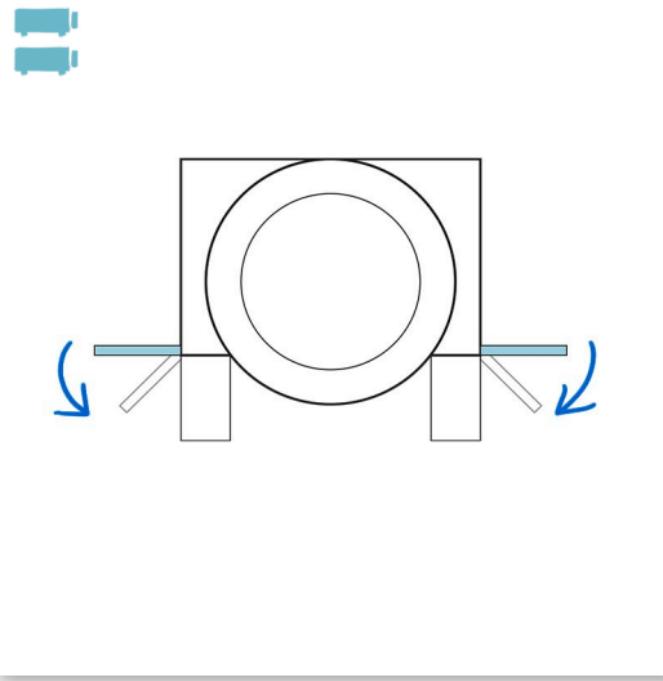
Place it on the PCB.



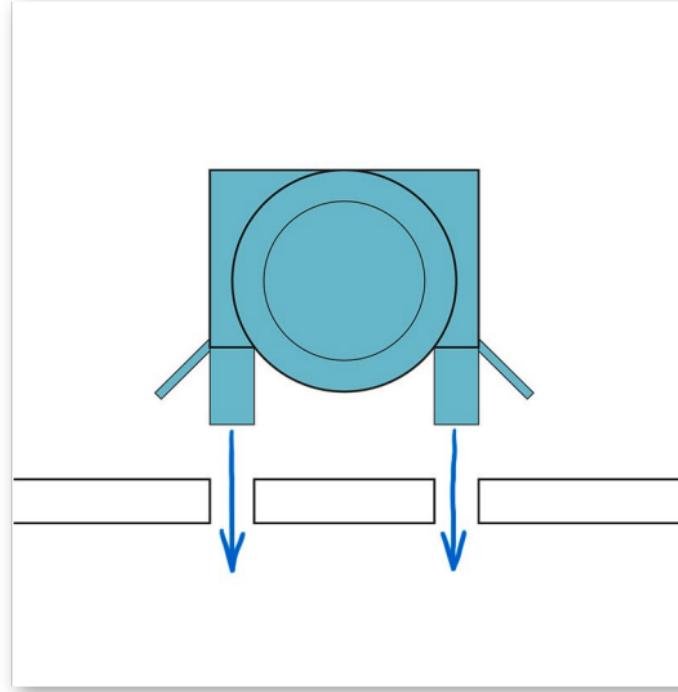
Solder it.



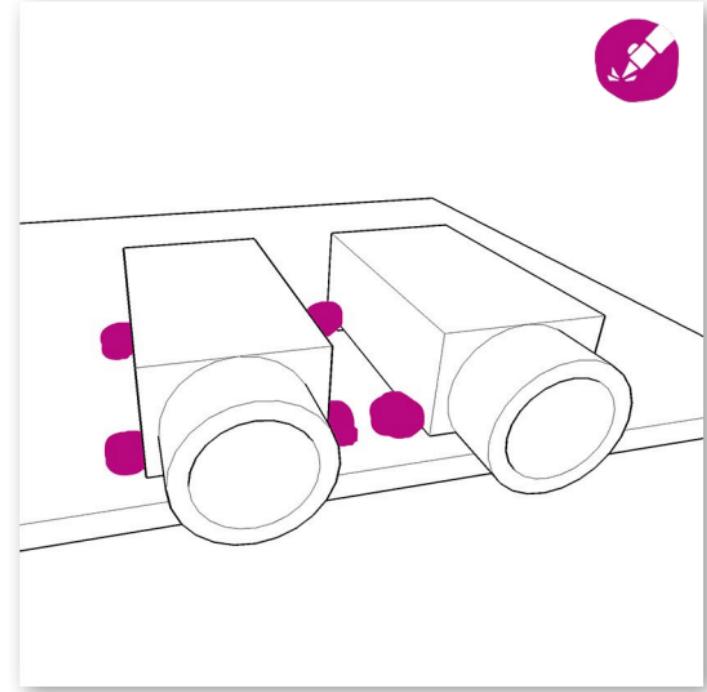
Bend all 4 pins of the jack plugs downwards.

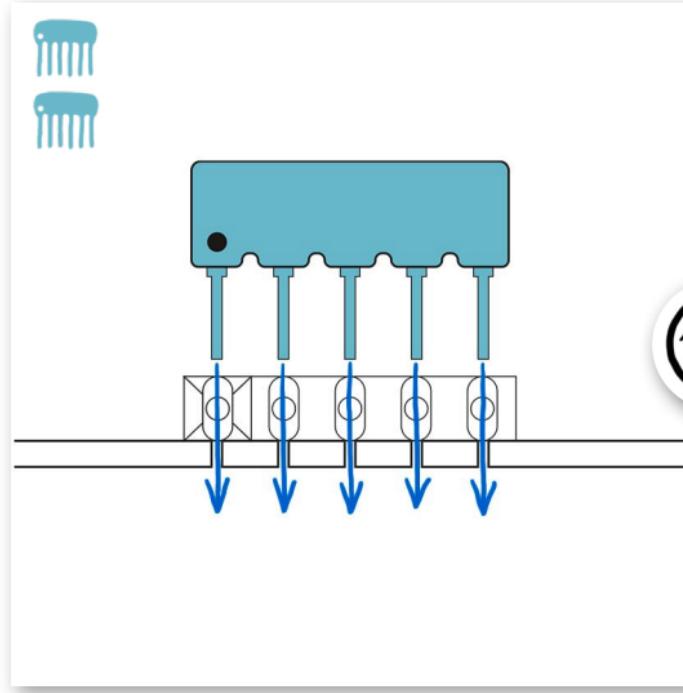
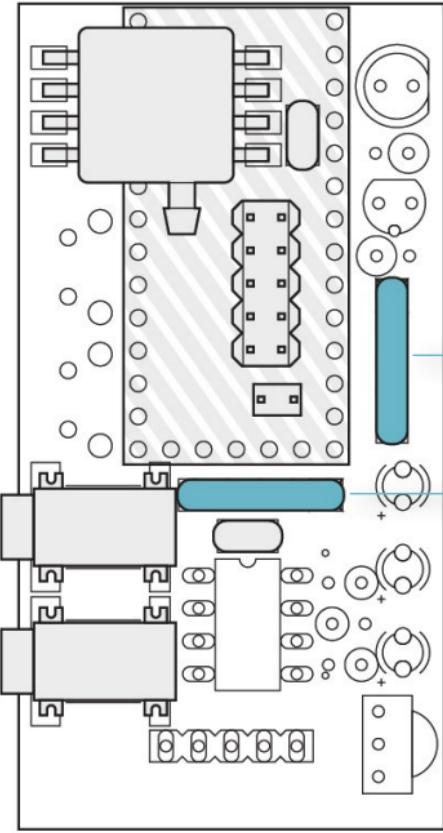


Place them on the PCB.

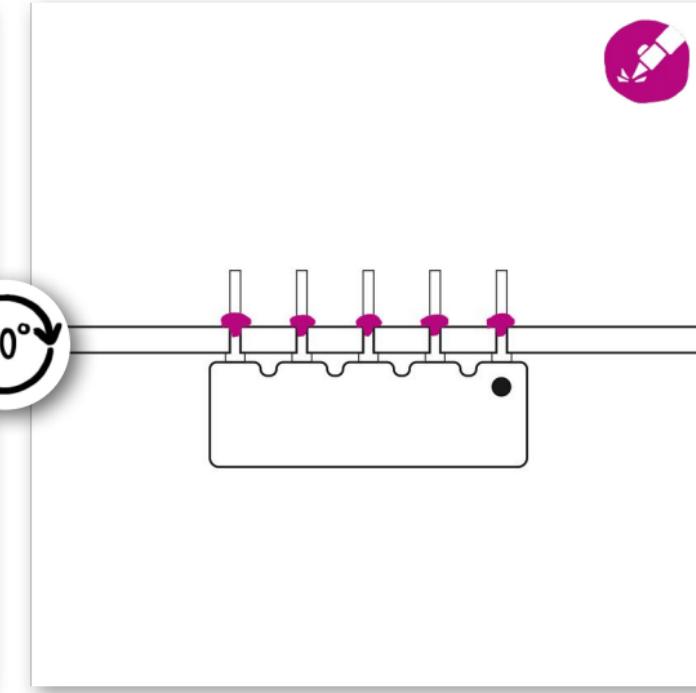


Solder the pins. Make sure that they are connected but avoid short cuts (fine solder tip needed)

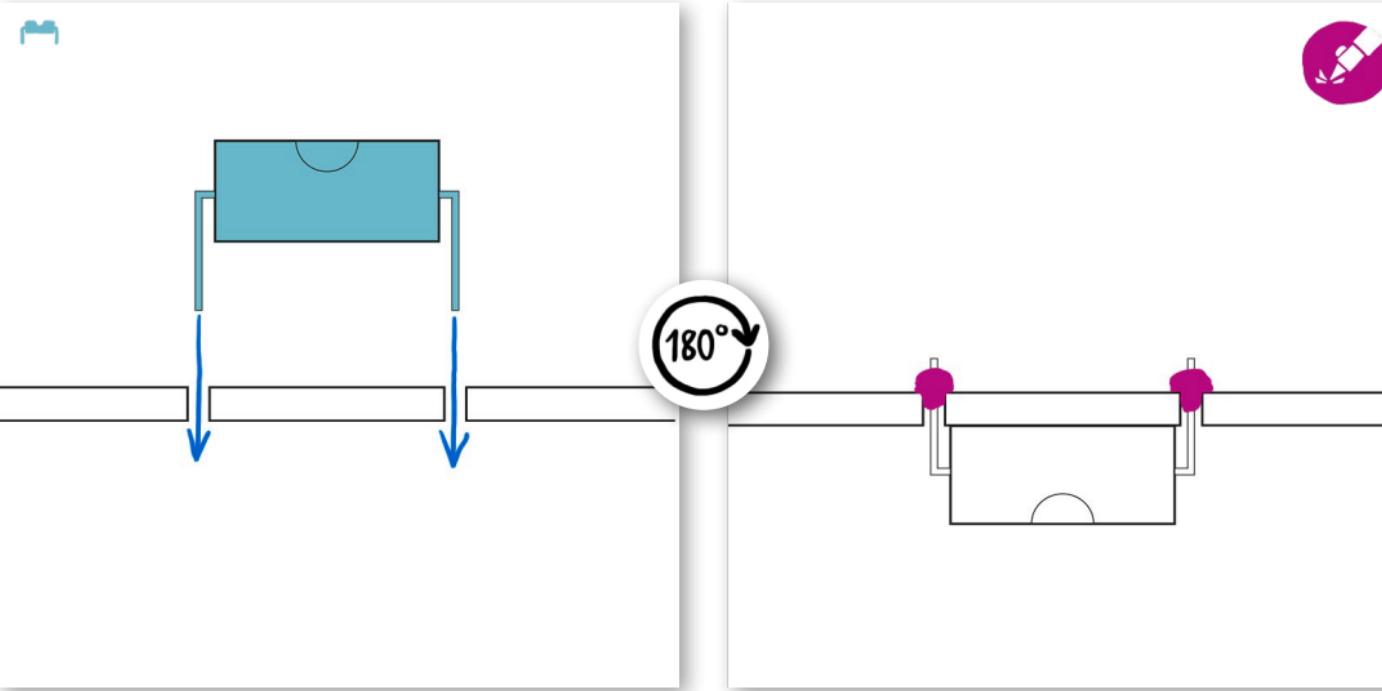
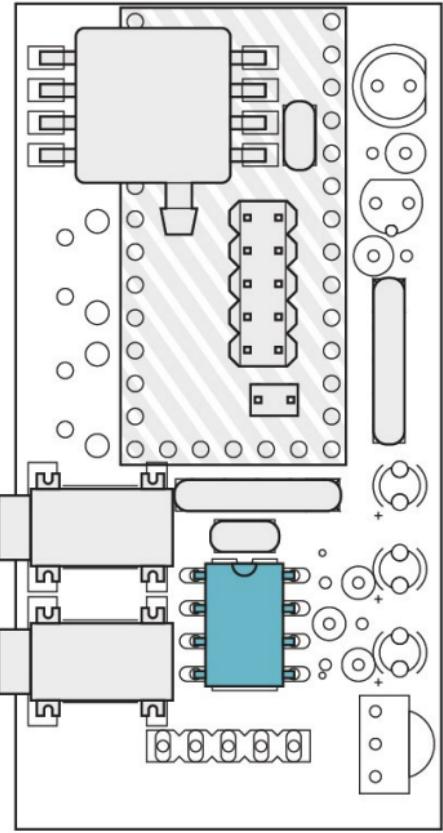




Place the resistor networks. There is a cross on the PCB  
and a point on the part.  
**TAKE CARE OF THE TEXT ON THESE PARTS!**

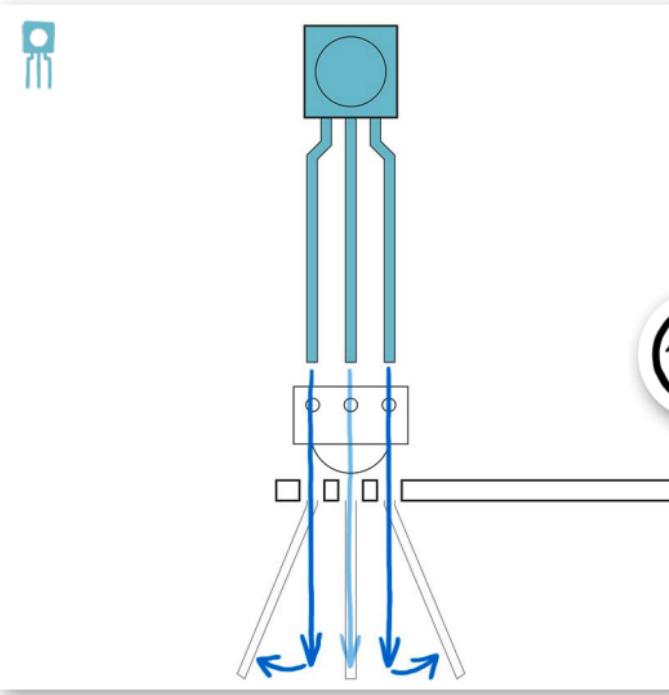
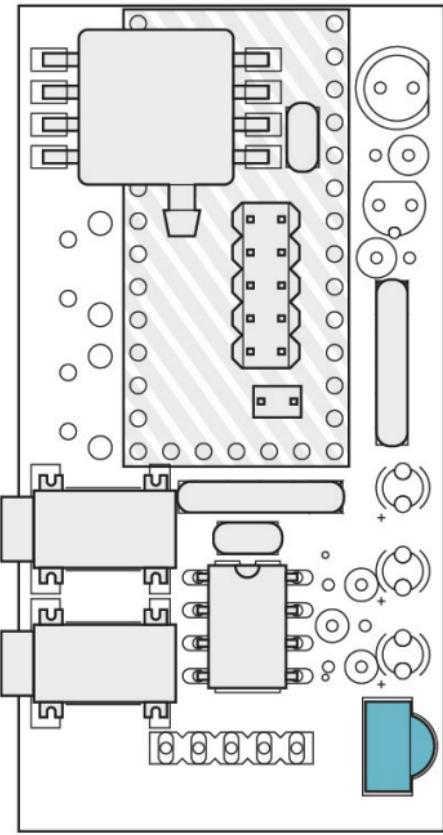


Check again if the parts are placed correctly!  
Solder these pins.

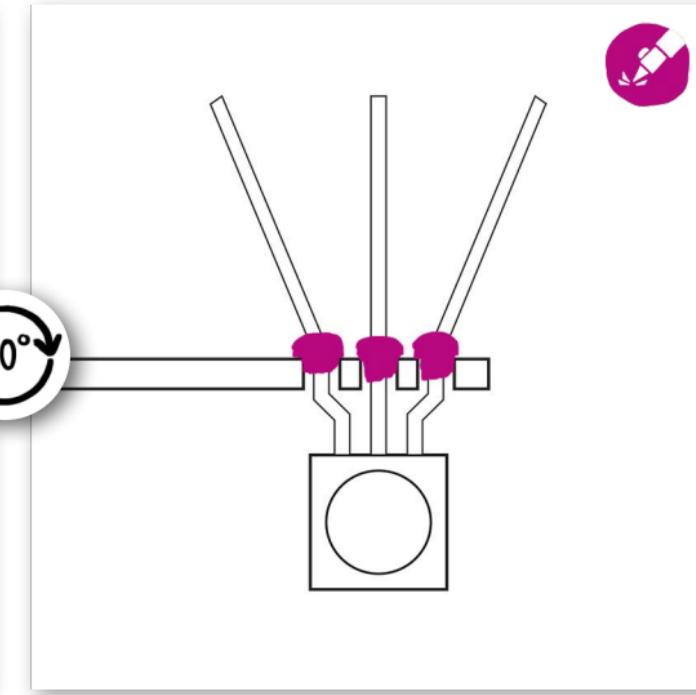


Place the EEPROM.

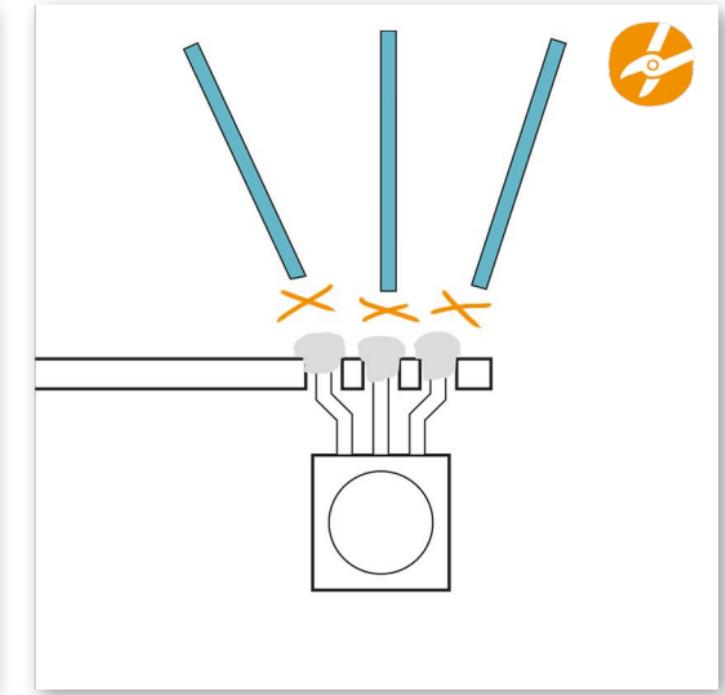
Solder it.



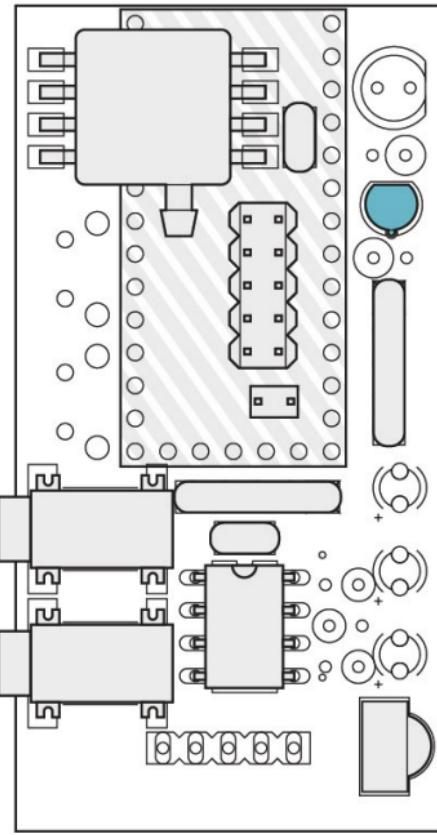
Place the IR receiver and bend pins.



Solder it.

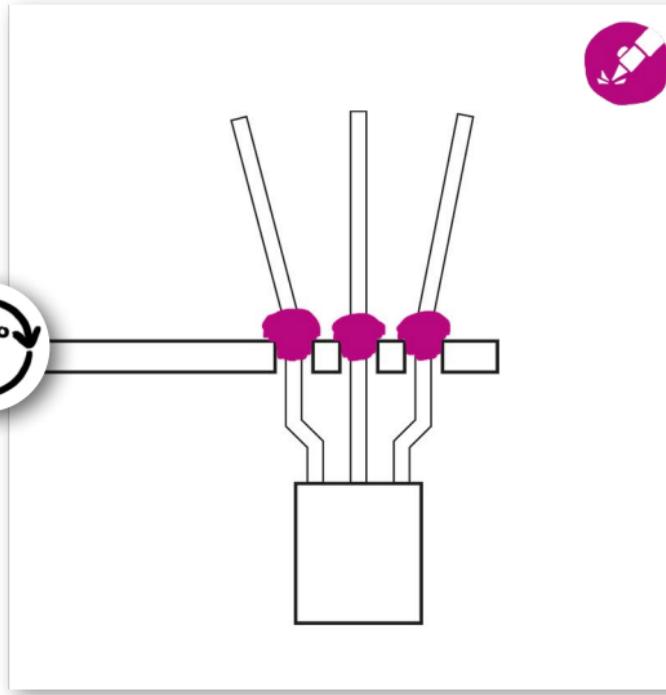
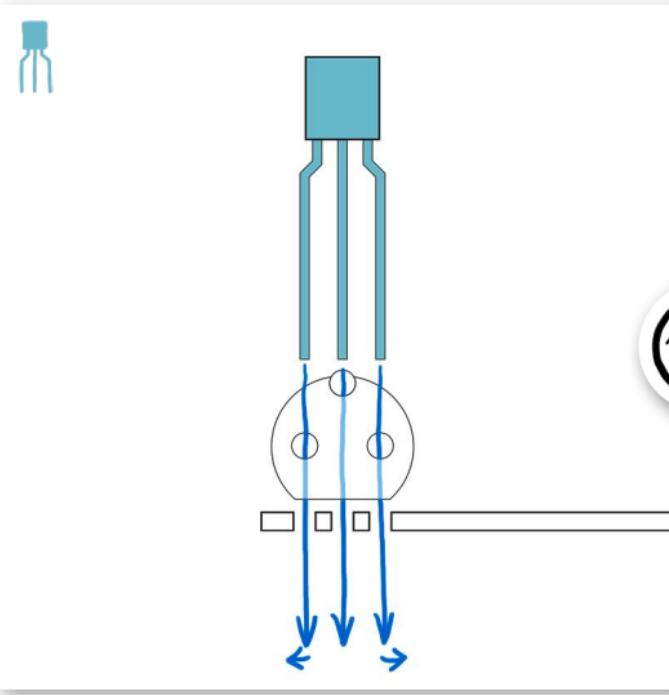


Clip the pins.

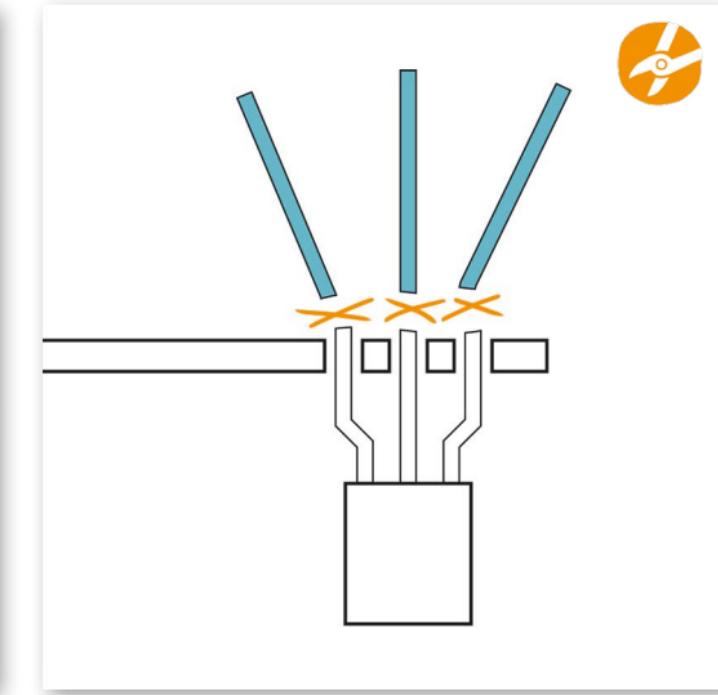


18

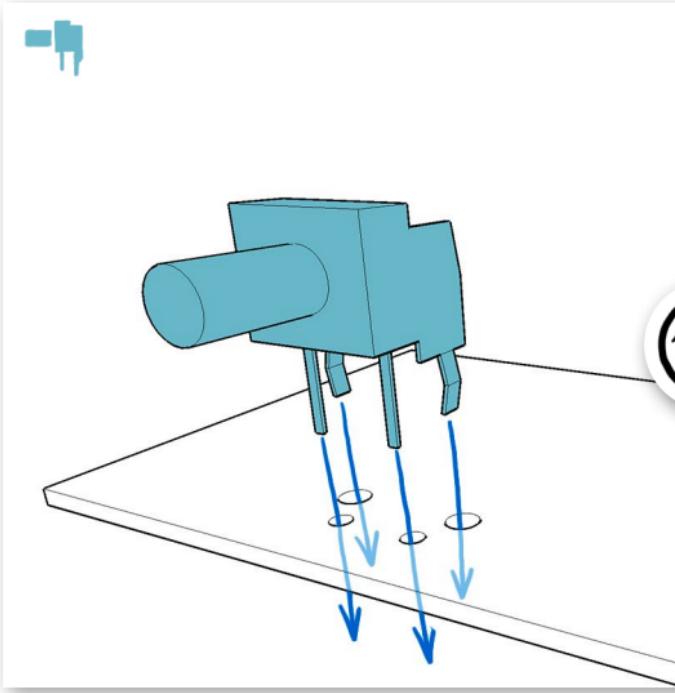
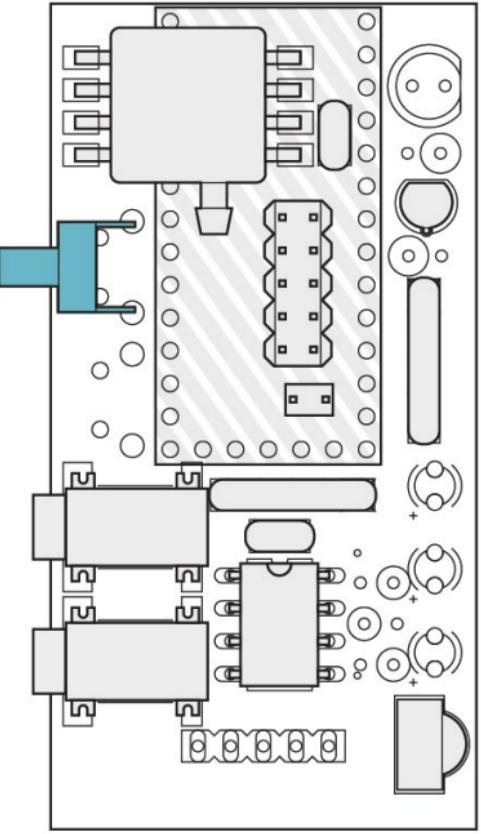
Place the MOSFET,  
bend the pins to fit into the PCB.



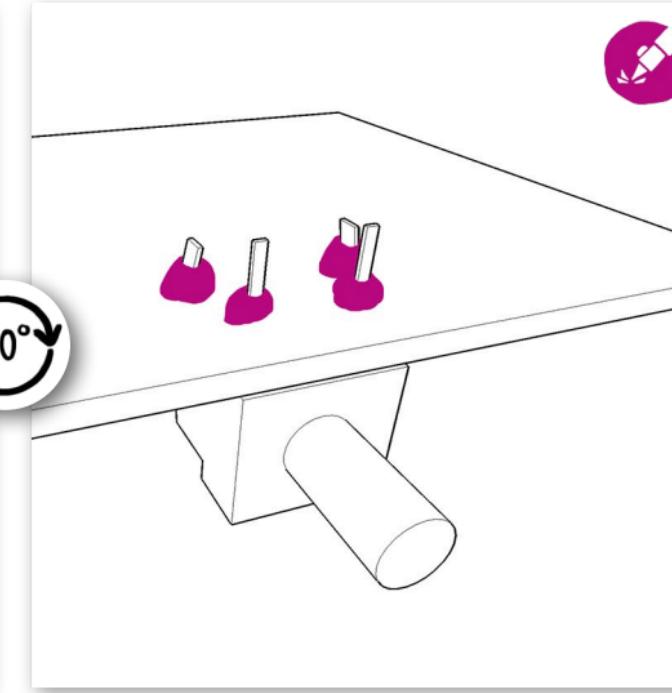
Solder it.



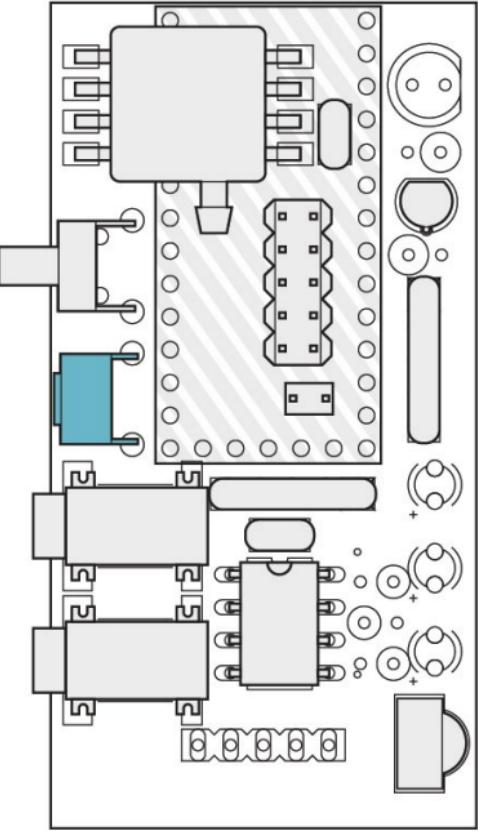
Clip the pins.



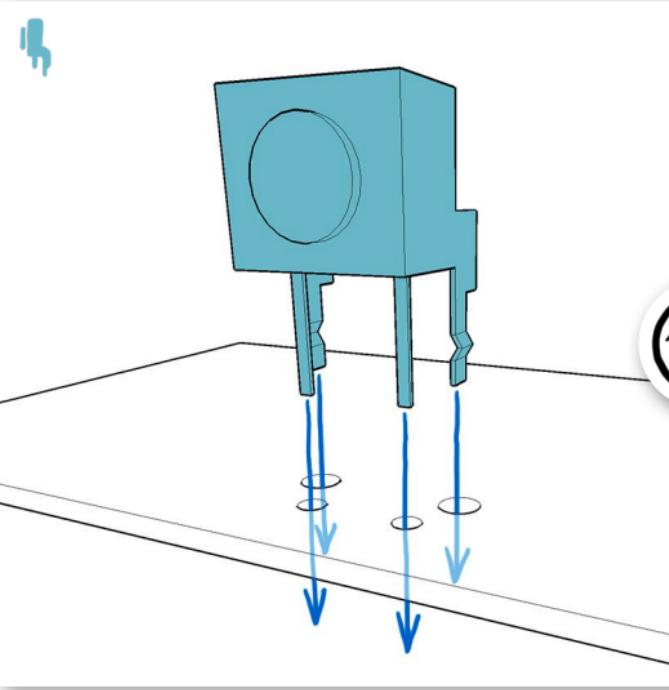
Place the long-nosed button.



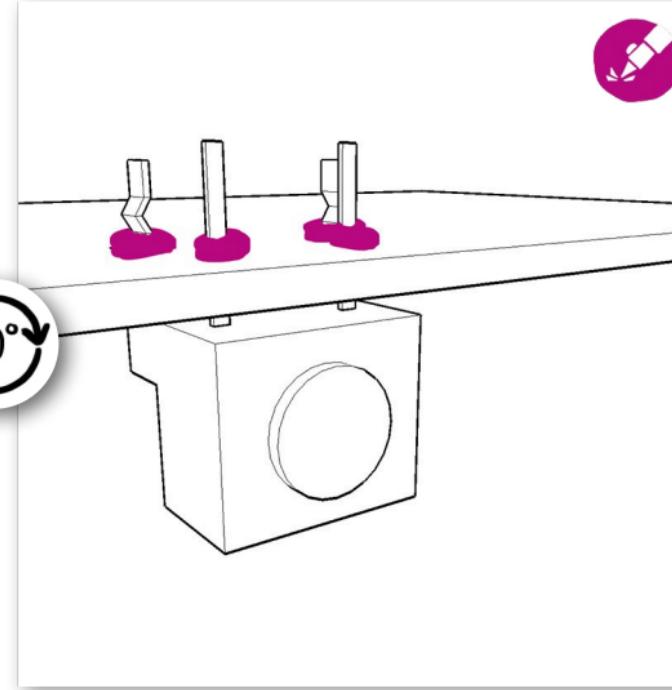
Solder it.

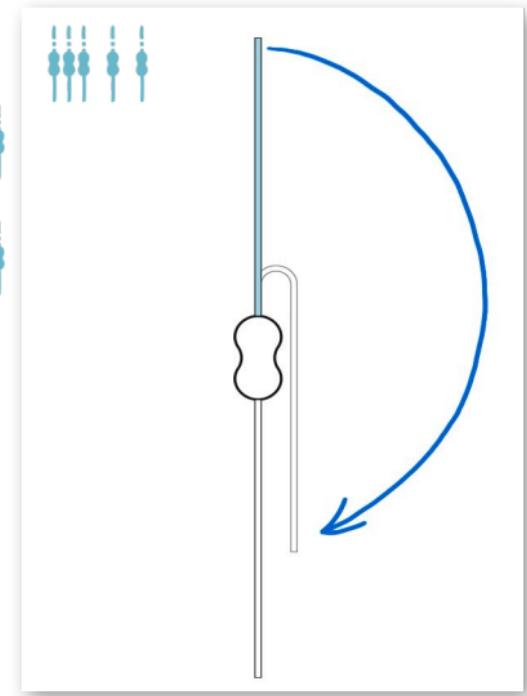
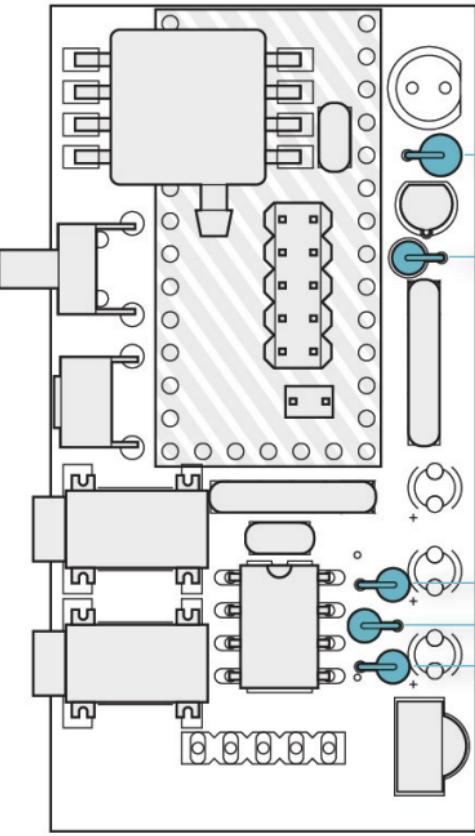


Place the short-nosed button.

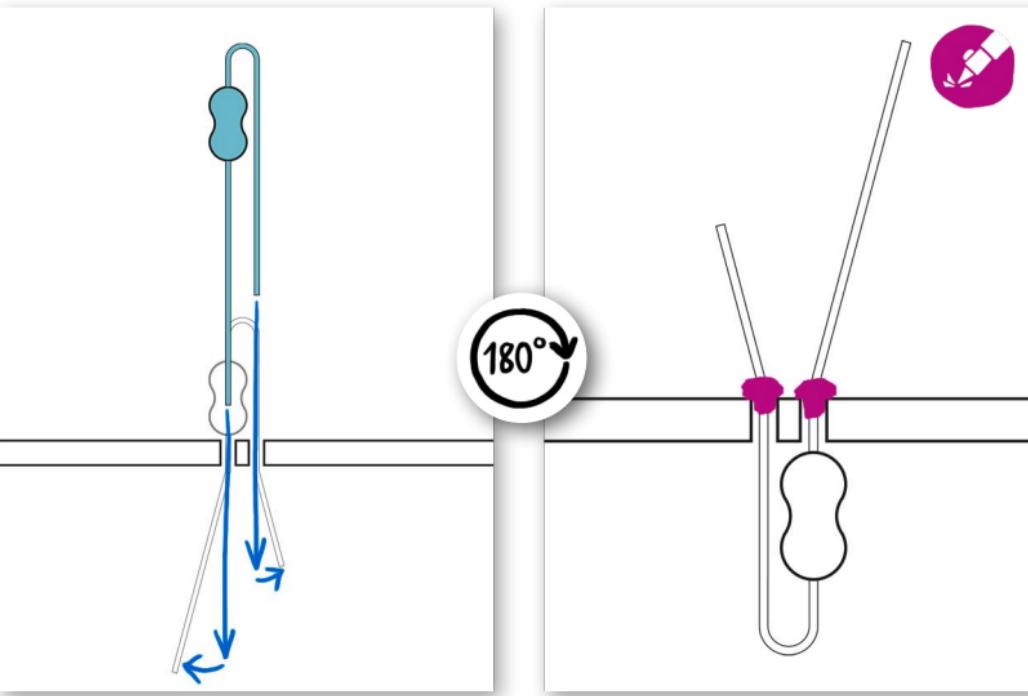


Solder it.



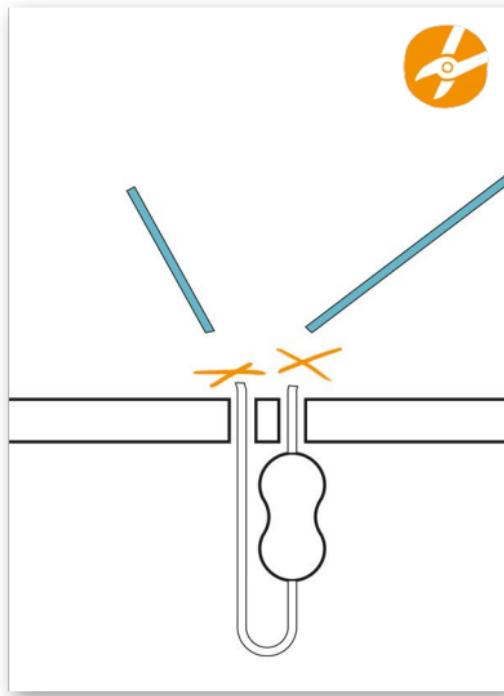


Bend one leg of each resistor as tight as possible to 180.

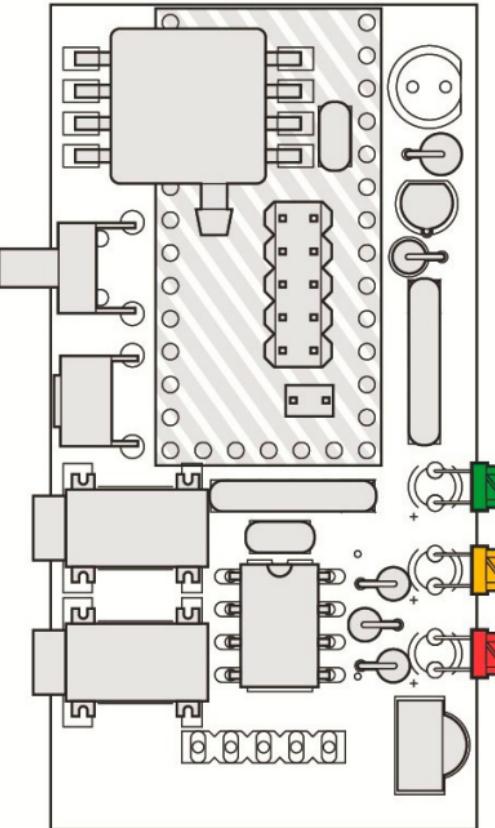


Place the resistor, bend the legs to fix it.  
Make sure to place the resistor as close as possible to the PCB

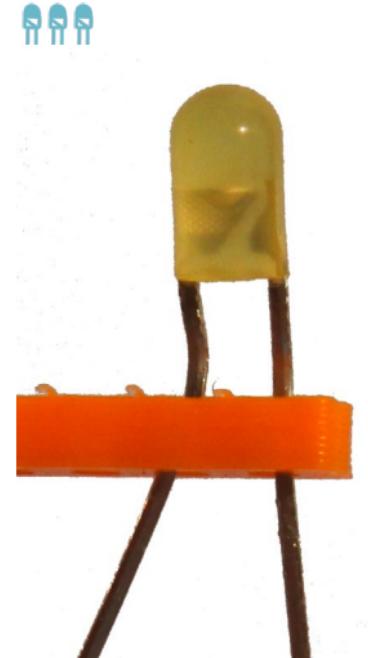
Solder it.



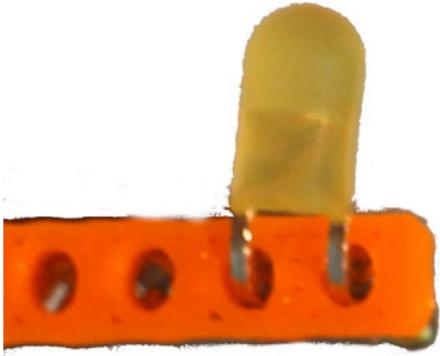
Clip the pins.



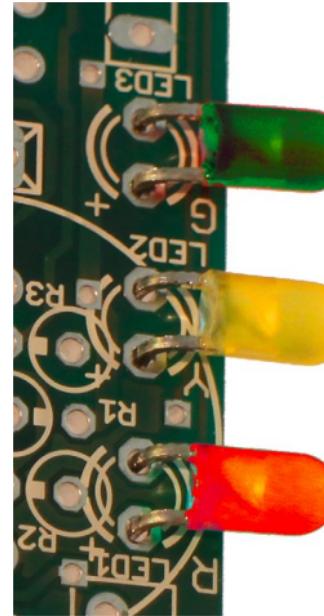
22



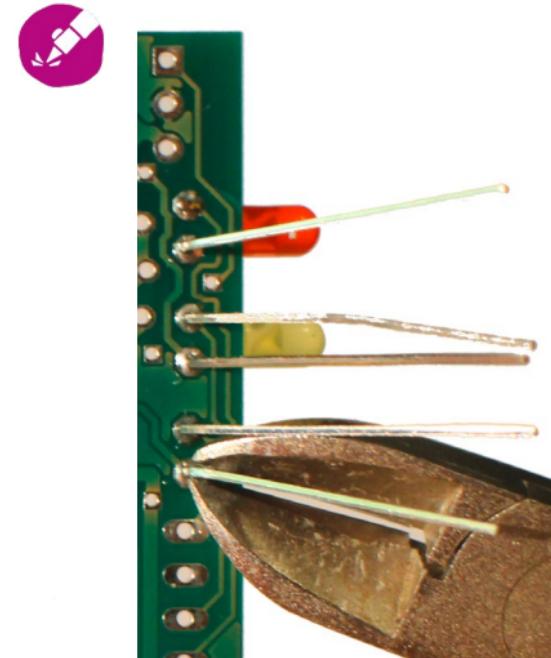
Place the LEDs with 3mm space.  
Please note the position! The smaller part  
inside the LED should be at the "+" sign  
on the PCB!



Bend the LED.  
Take care of the orientation!

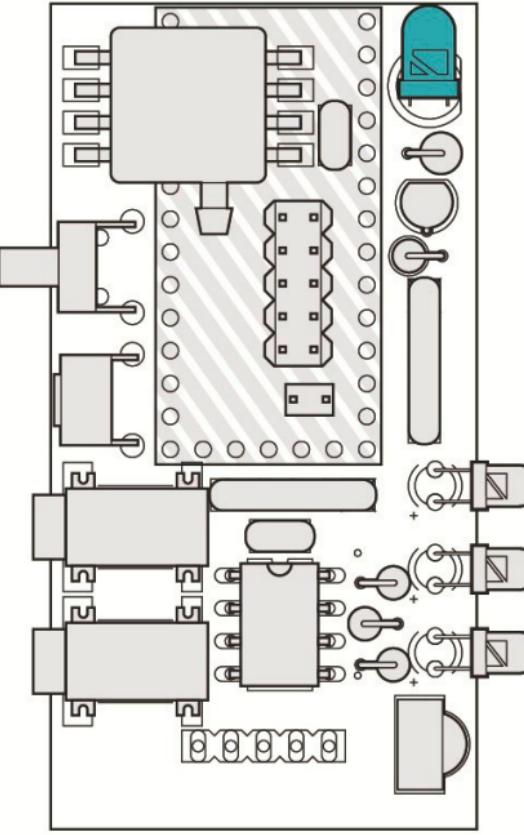


Put the LEDs to the PCB  
Take care of the orientation!



Solder, and clip the pins

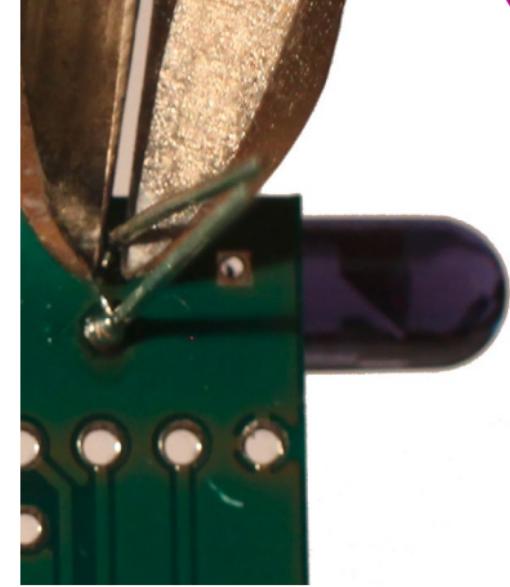




Bend the LED with 5mm pins left.  
Take care of the orientation, as it is shown on the other pictures. Inside the LED there is a bigger and a smaller part. Outside is a flat space on the housing, placed on the edge of the PCB.

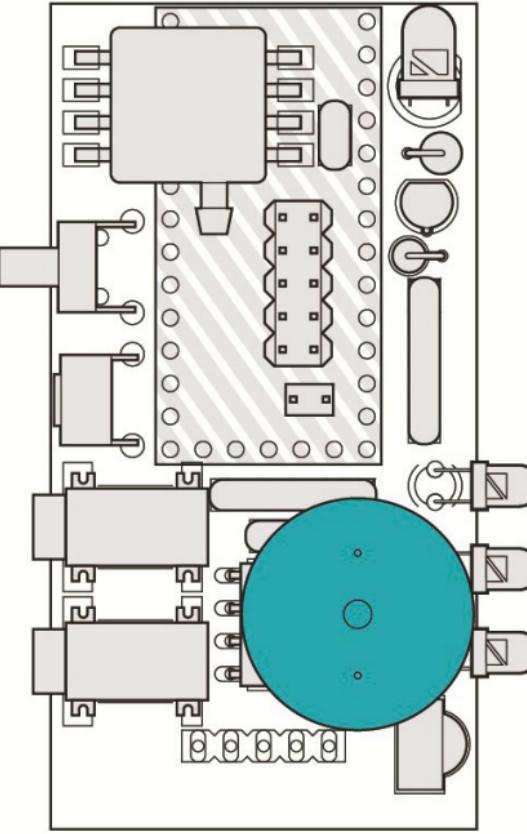


Put the LED into the PCB  
**Take care of the orientation!**

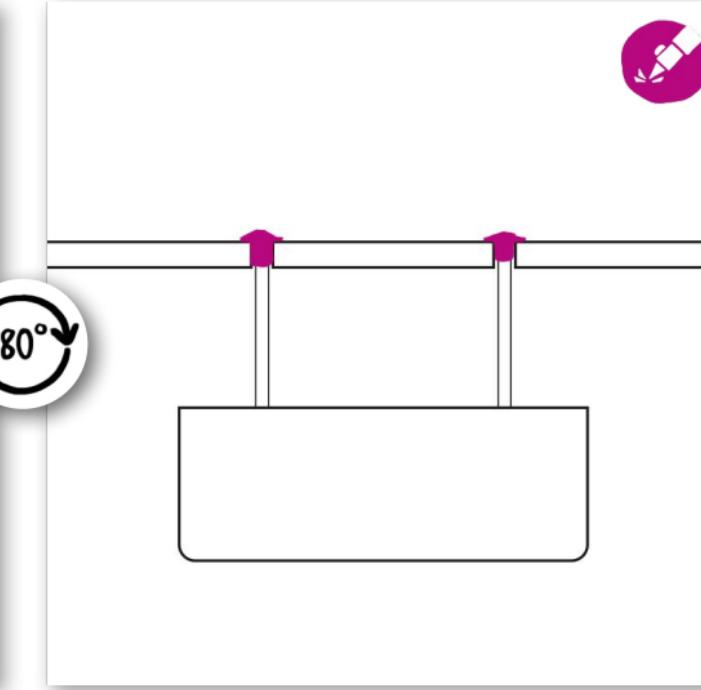
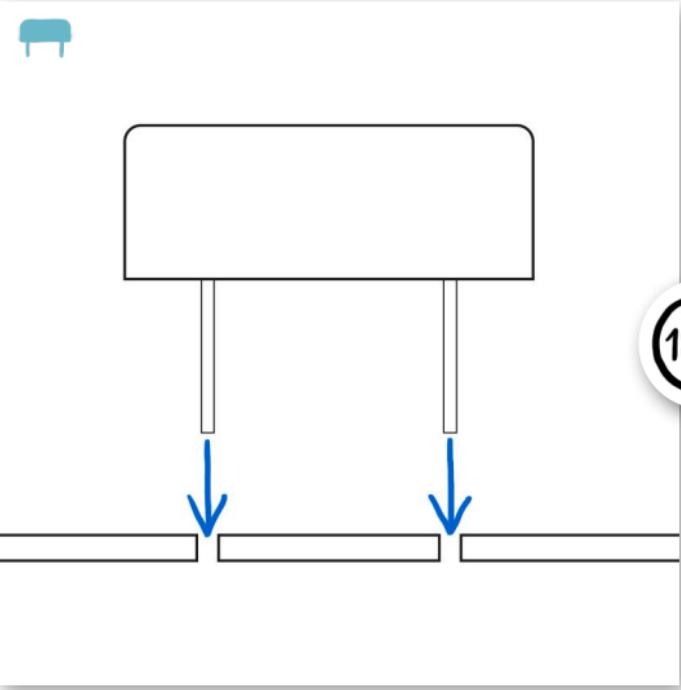


Solder the LED and clip the pins.  
**Take care of the orientation!**

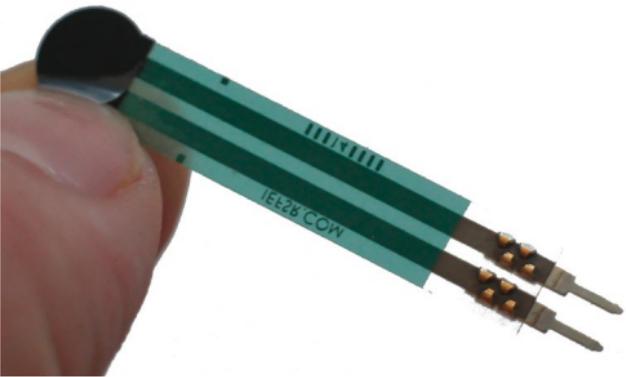
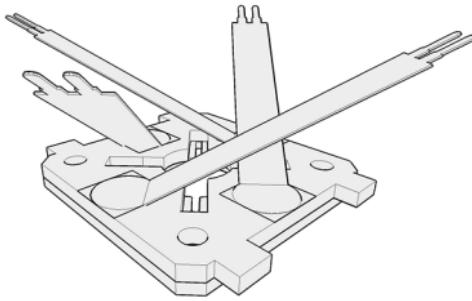




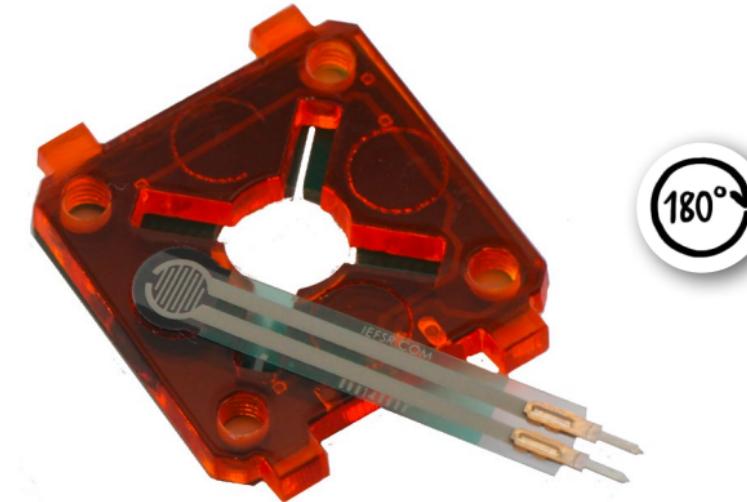
Place the buzzer over the LEDs.



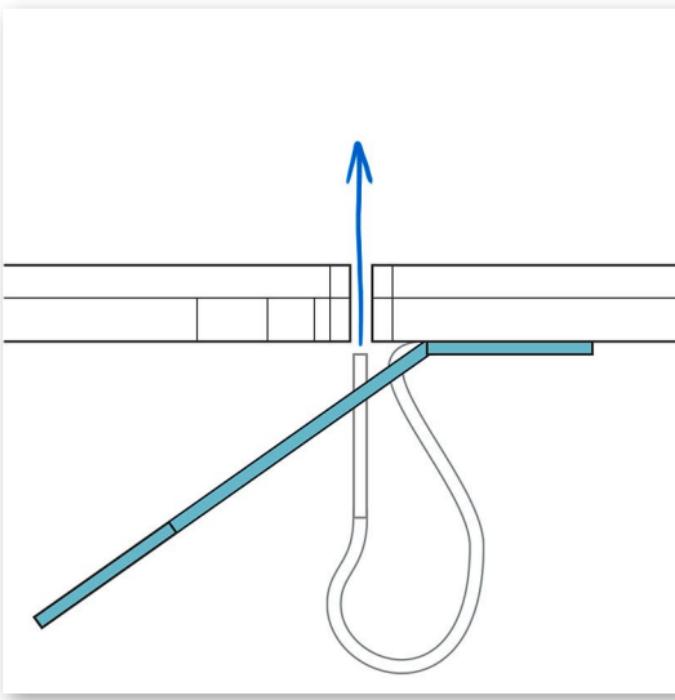
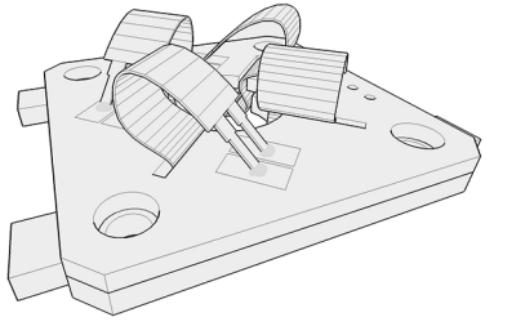
Solder it.



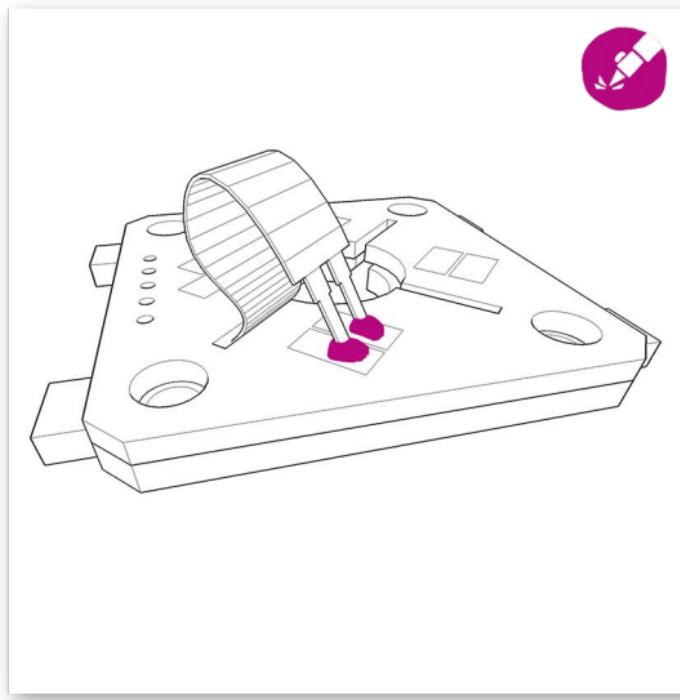
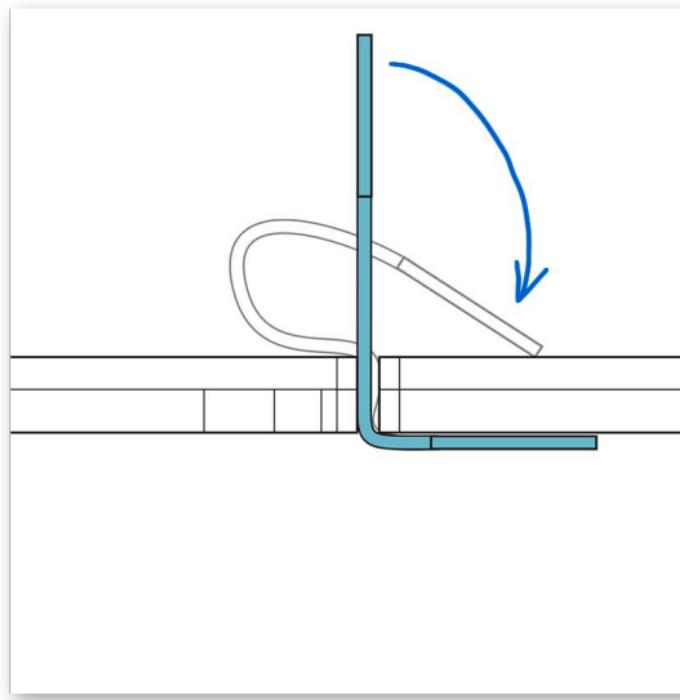
Carefully remove the cover of the 2-side adhesive tape on the sensor. Attention: this is a transparent foil on the back side.  
**DO NOT** remove the black foil!



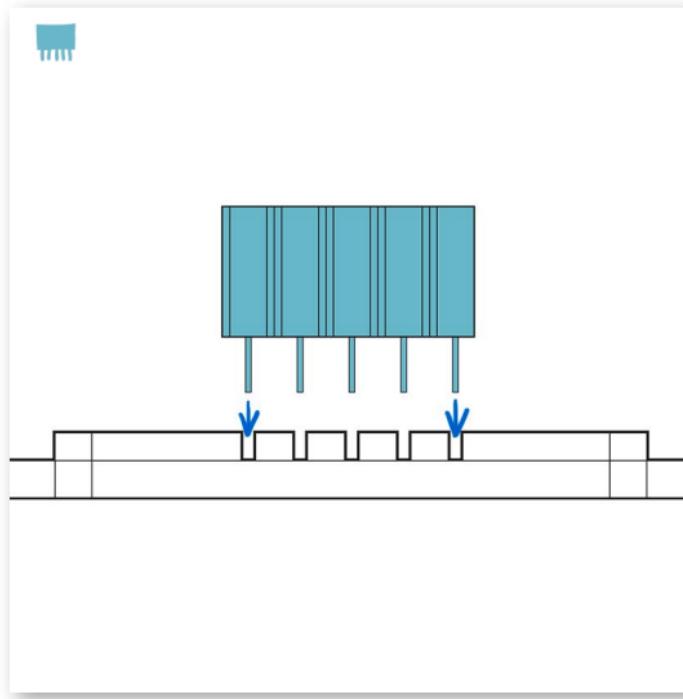
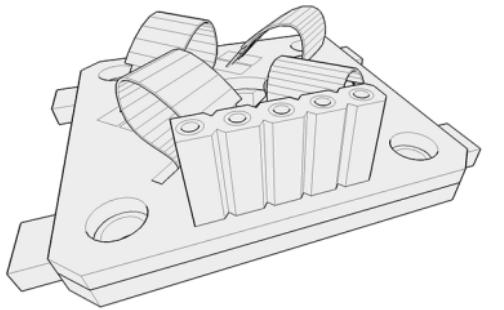
Place the sensor on the acrylic part.



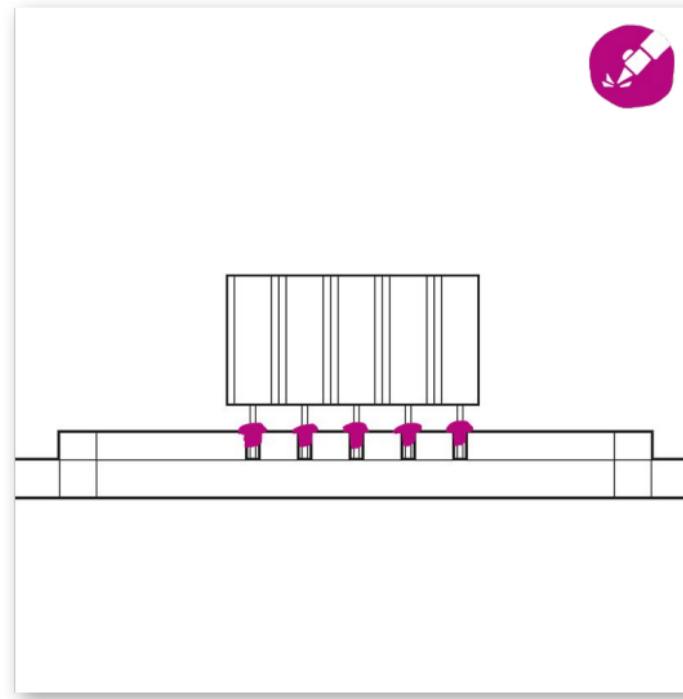
Put the pins through the cuts on the other side.



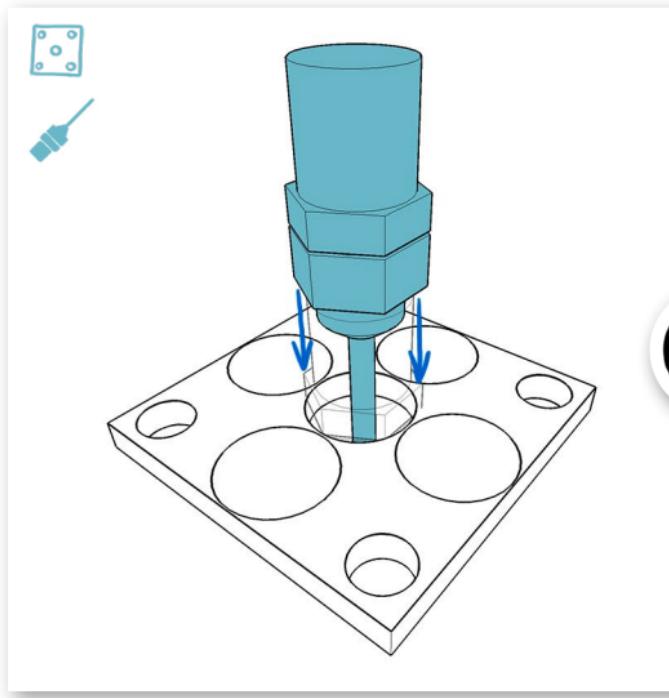
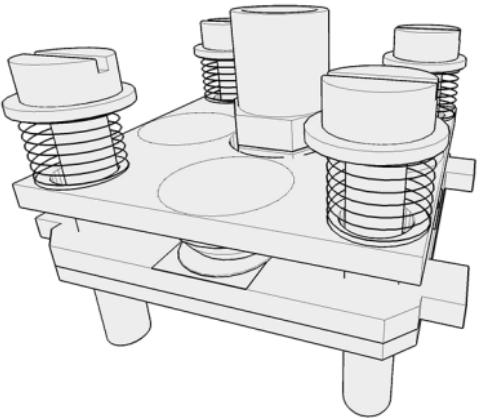
Solder the pins. Attention: do not buckle the sensor.  
Solder **for a short time**, the sensor is made of plastic.



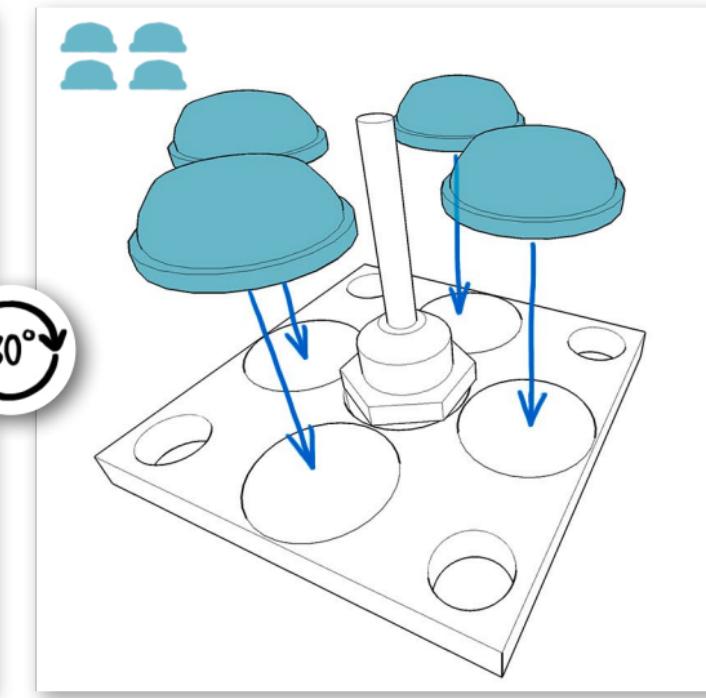
Place the pin header on the sensor carrier.



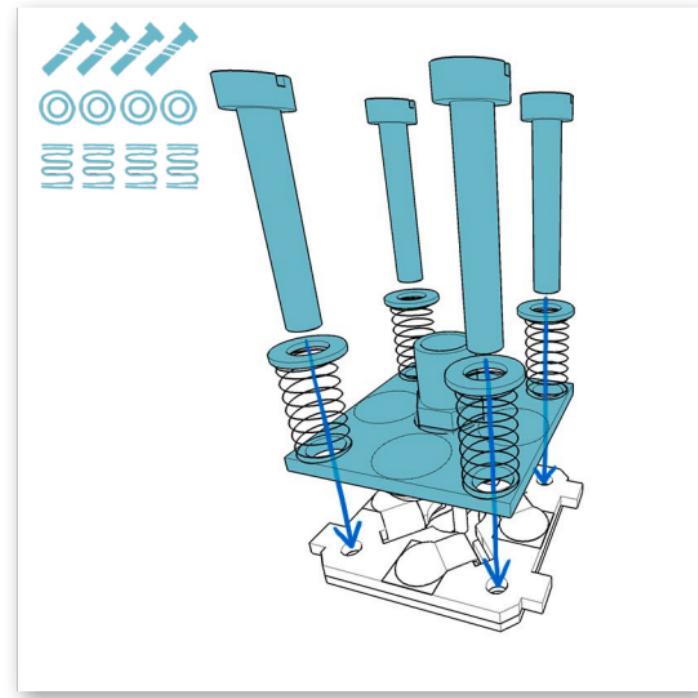
Solder one pin first, bend the pin header to a straight angle and solder the remaining pins.  
This might be tricky, use a fine solder tip.



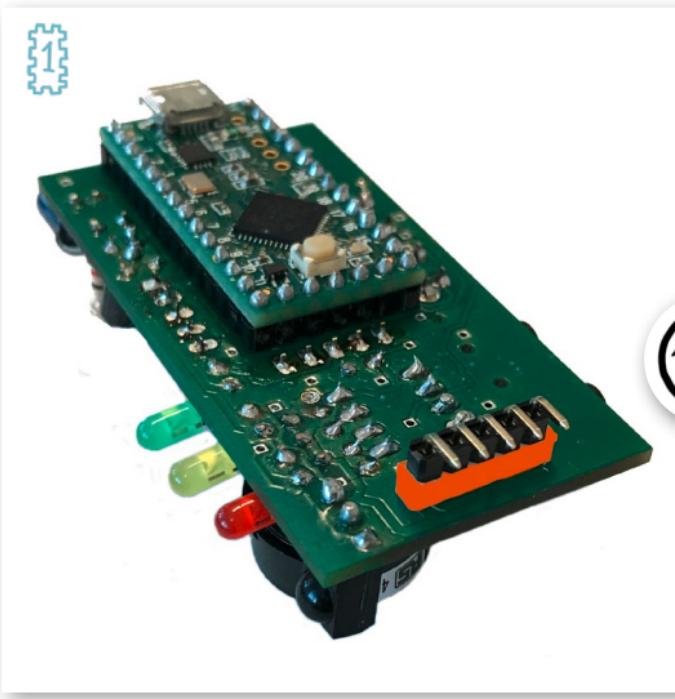
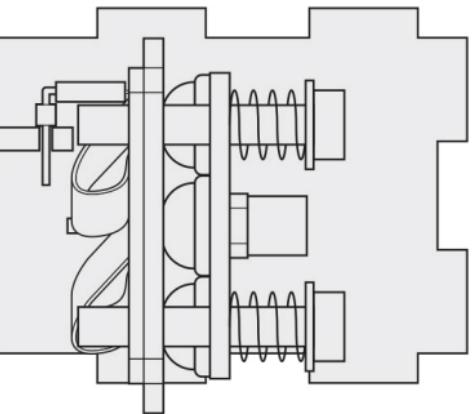
Mount the Luer lock connector with the M5 screw nut.



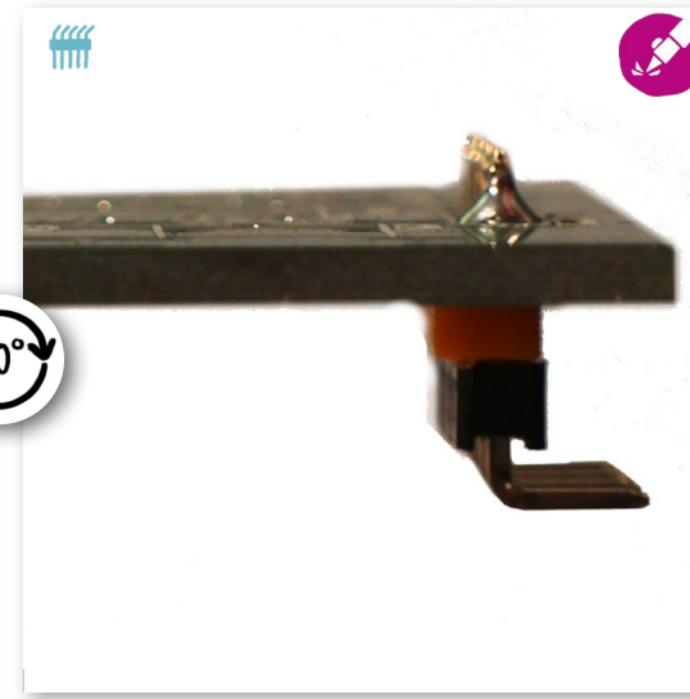
Place the rubber pads and glue the screw nut.



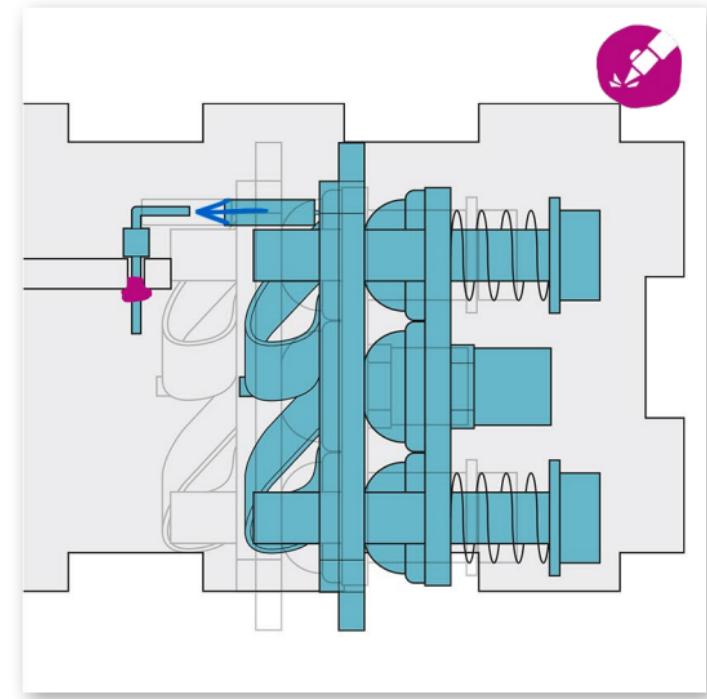
Turn all 4 screws that some force is applied,  
**not too much.**



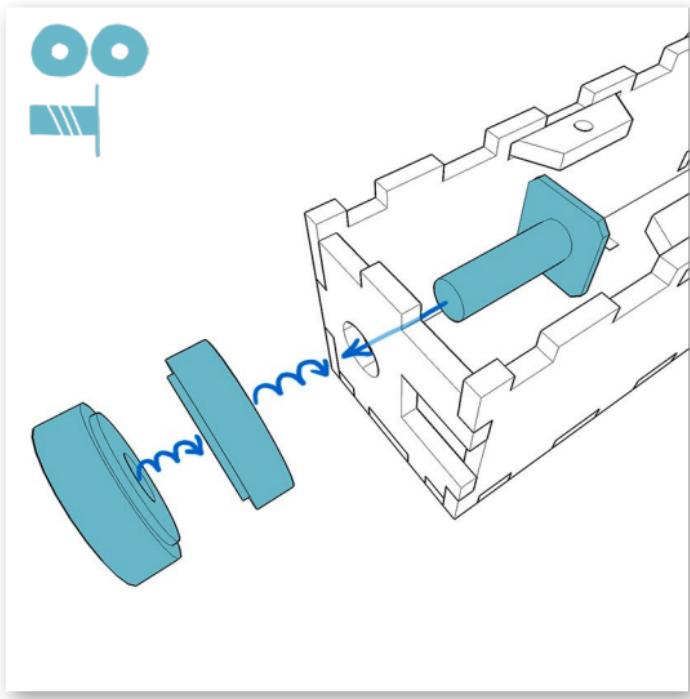
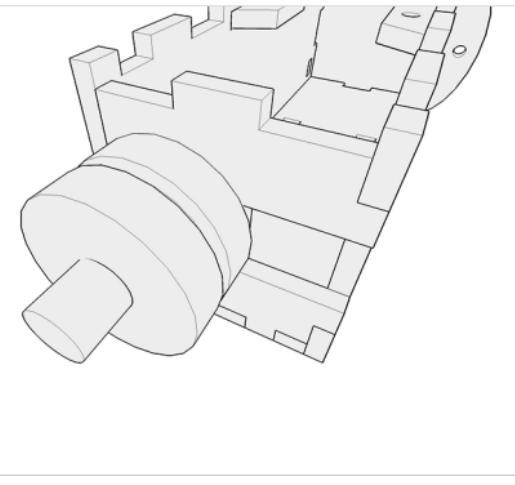
Put the 3D printed spacer and the angled pin header into the PCB. Take care of the position!



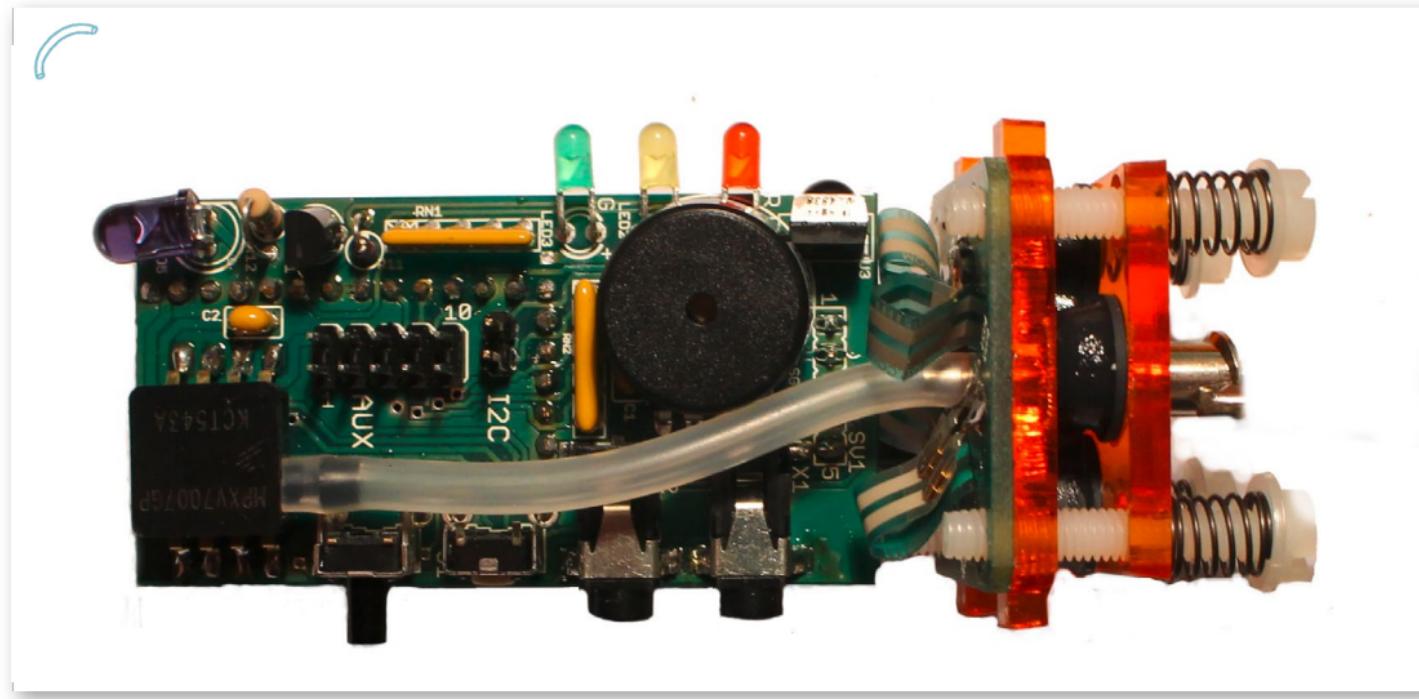
Solder the pin header. **There is no possibility to change the positioning after soldering!**



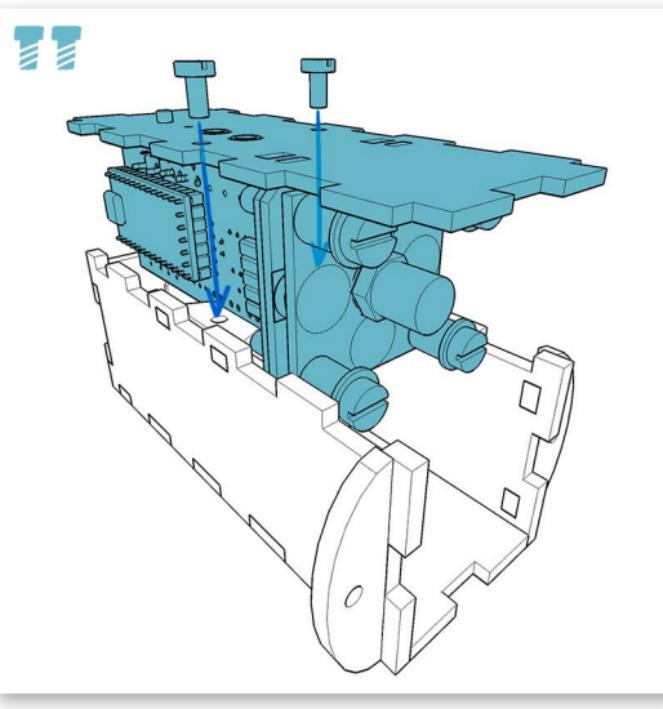
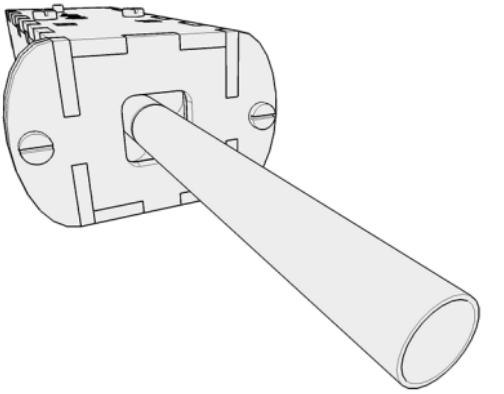
Put the main PCB and the sensor carrier together



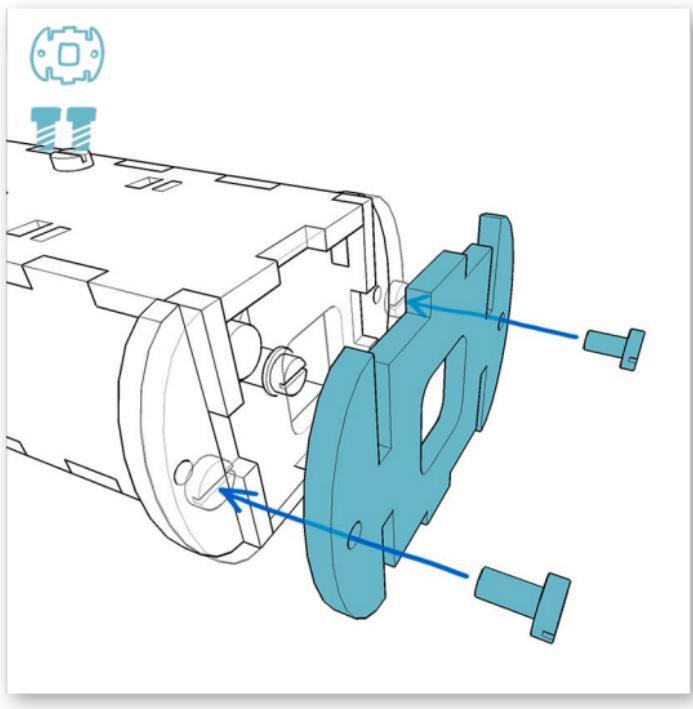
Mount the adapter.



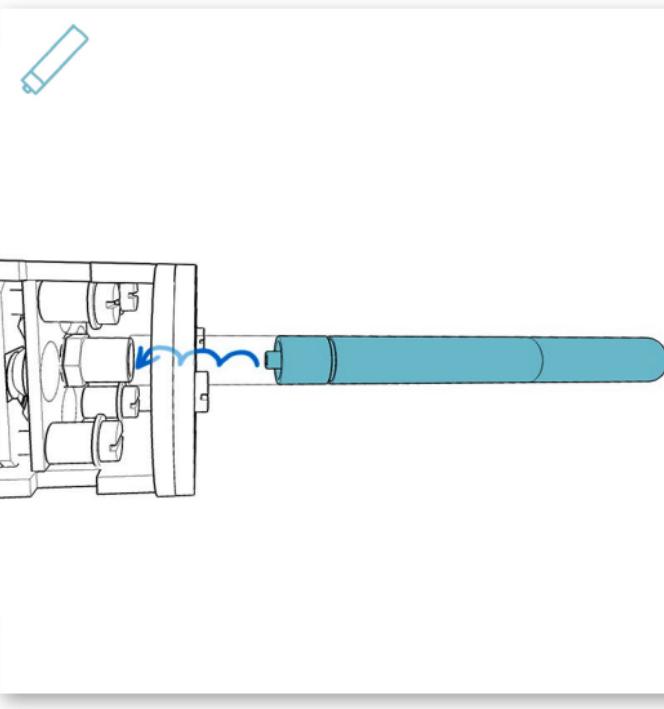
Put the tube on the pressure sensor and the sensor carrier.



Place both PCBs into the case, put it in from the front.  
Be careful to fit the LEDs to the corresponding holes.  
Mount the top cover.



Mount the front cover. Optionally remove sharp edges  
and corners using fine sandpaper.



Attach the mouthpiece.

