

Switch Input Module

ASSEMBLY GUIDE

Intro

The LipSync is a sip and puff joystick that emulates a computer mouse. It is used by people with little or no arm and hand movement to control their phone, tablet, or computer independently.

When a switch input module is added to a LipSync, it allows two assistive switches to replace the existing sip and puff functionality. This means that left and right clicks of the mouse can be controlled by switch interfaces. This adaption is suitable for users who have low lung capacity or those who can't form their lips around the mouthpiece.



Part 1

BUILDING THE LIPSYNC AND SWITCHES

Converting a regular Lipsync into a switch adapted requires:

1. A fully built and tested LipSync (Mouse, Wireless, Macro, or Gaming). Download all the necessary files and directories to assemble a LipSync:

LipSync:

<https://github.com/makersmakingchange/LipSync/blob/master/README.md>

LipSync Wireless:

<https://github.com/makersmakingchange/LipSync-Wireless/blob/master/README.md>

LipSync Macro:

<https://github.com/makersmakingchange/LipSync-Macro/blob/master/README.md>

LipSync Gaming:

<https://github.com/makersmakingchange/LipSync-Gaming/blob/master/README.md>

2. Two assistive switches (<http://tiny.cc/MMCswitches>). Note: wireless switches are not compatible.
3. Two 6' 3.5mm male to male mono cables to connect the assistive switches to the LipSync.

Part 2

COMPONENTS AND EQUIPMENTS

All components for the Switch Input Module can be purchased through the links listed under each item.

Alternatively, refer to the Bill of Materials (BOM).

The tools required to build the switch module are:

- Solder (60Pb/40Tn)
- Soldering iron (set at 350°C)
- Flush cutters
- Wire strippers
- Safety glasses
- Desolder pump (optional)



(1) 3D Printed Switch Modification Module



(1) 3.5mm Stereo Cable Extension
[Primecables.ca](#)
[Amazon.ca](#)
[Allelectronics.com](#)



(2) 10K Resistor, 1/4 W

BROWN | BLACK | ORANGE | GOLD

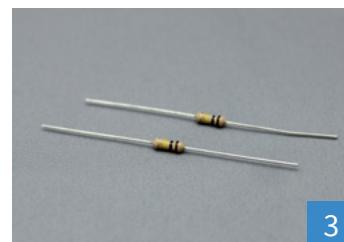
[Digikey.ca](#)

[Digikey.com](#)



(2) Zip tie
[Mouser.ca](#)

*Or from the dollar store or hardware store. Must be 2 mm width.



(2) 100K Resistor, 1/4 W

BROWN | BLACK | YELLOW | GOLD

[Digikey.ca](#)

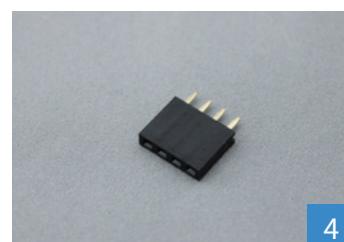
[Digikey.com](#)



(1) 3.5mm Stereo Channel Separator

[Amazon.ca](#)

*Refer to the Bill of Materials (BOM) for the specific cable.



(1) 4-pin Female Header

[Digikey.ca](#)

[Digikey.com](#)



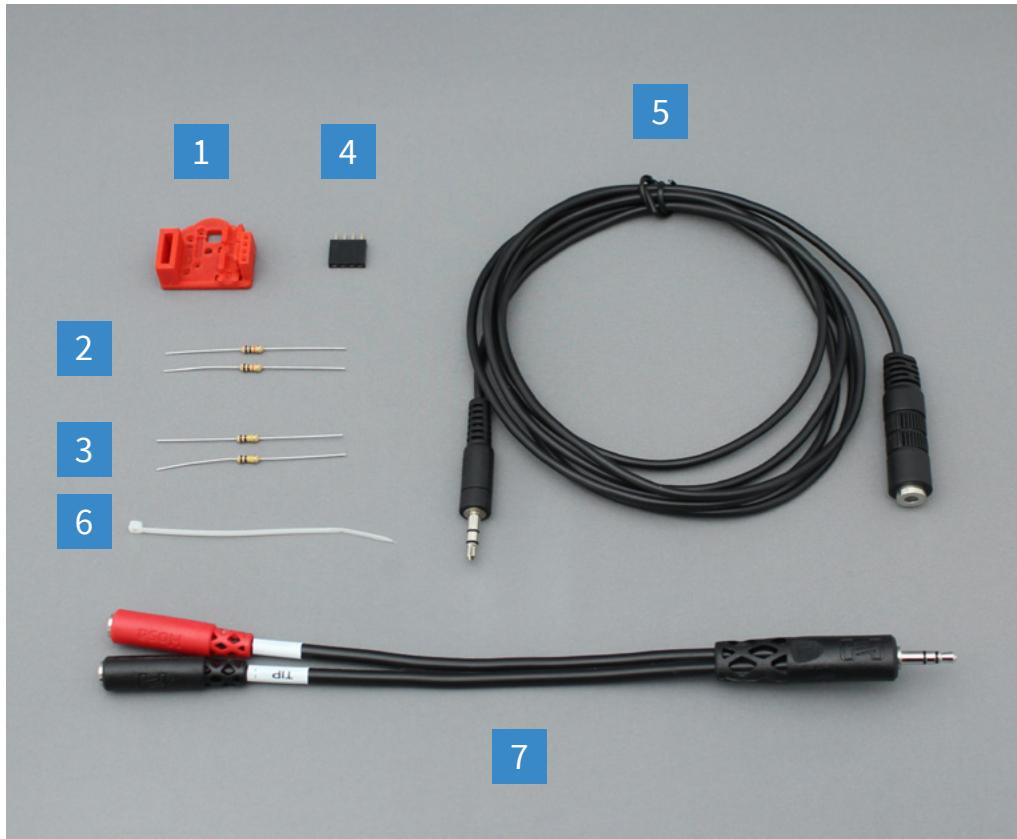
= Solder the part outlined in the white outline



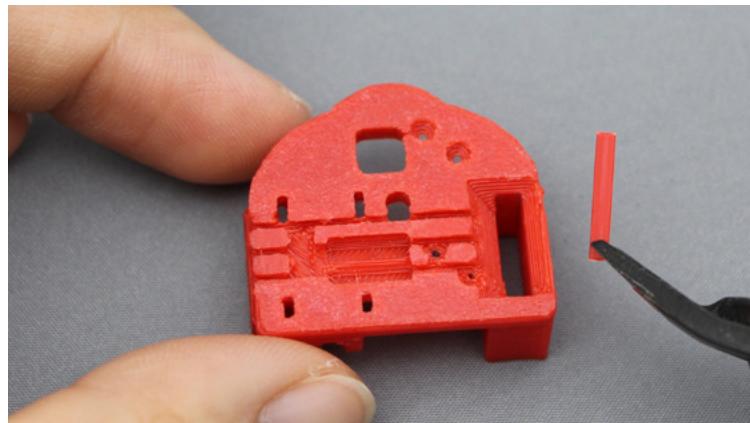
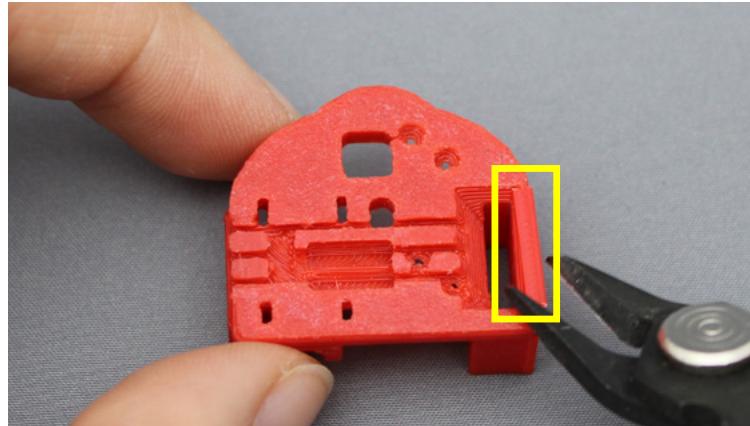
= Component number

Part 3

ASSEMBLING THE MODULE



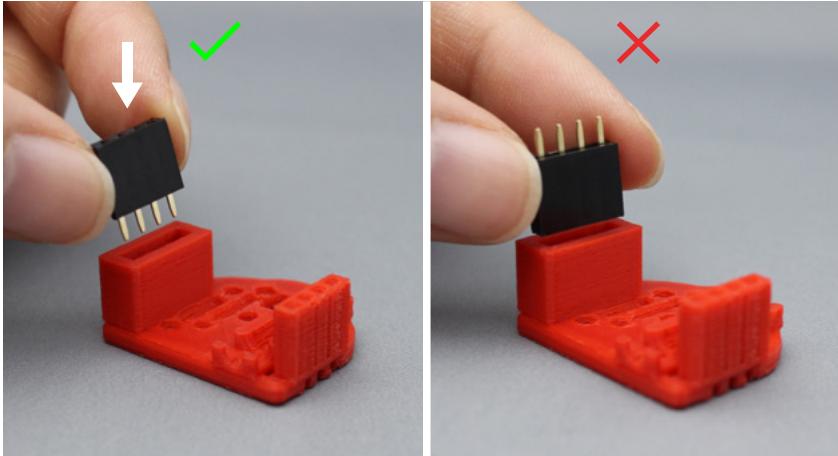
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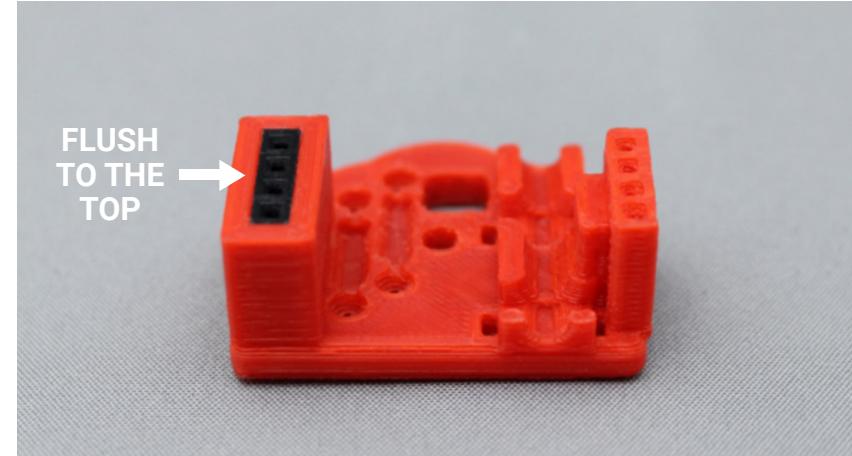
01.

Remove the small piece of 3D printed support material (in yellow). Clear the holes and channel grooves with a flush cutter.

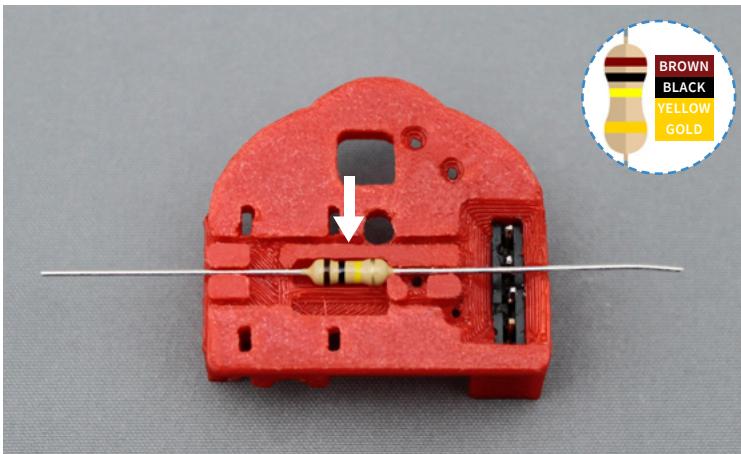
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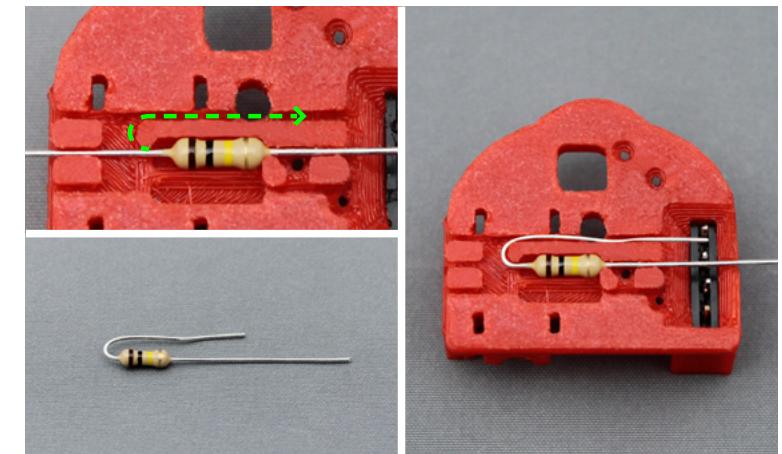


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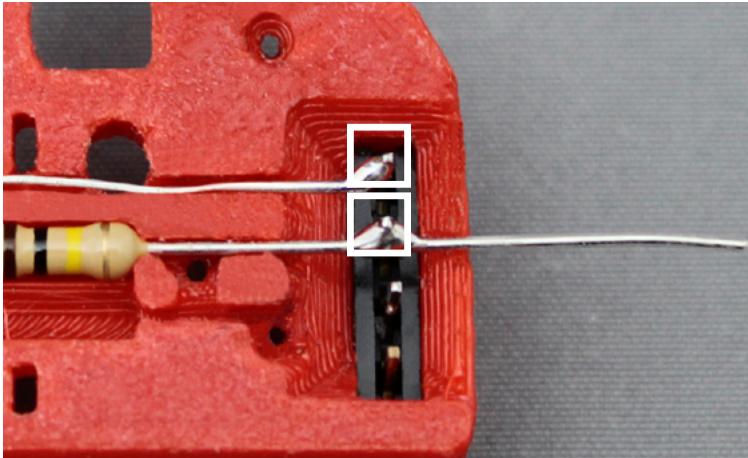


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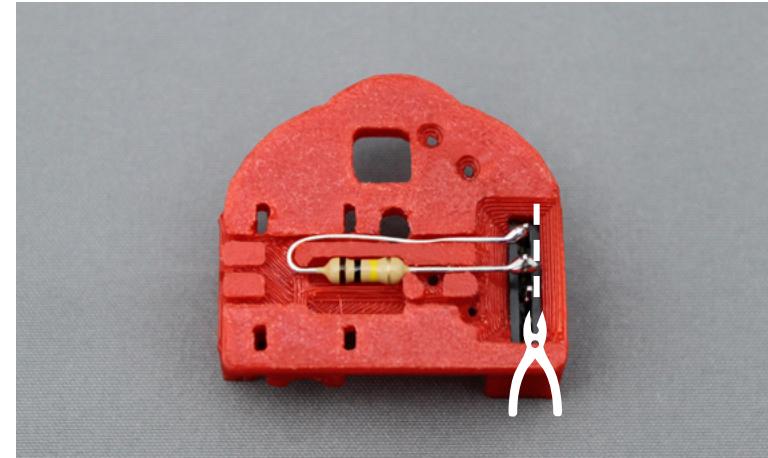


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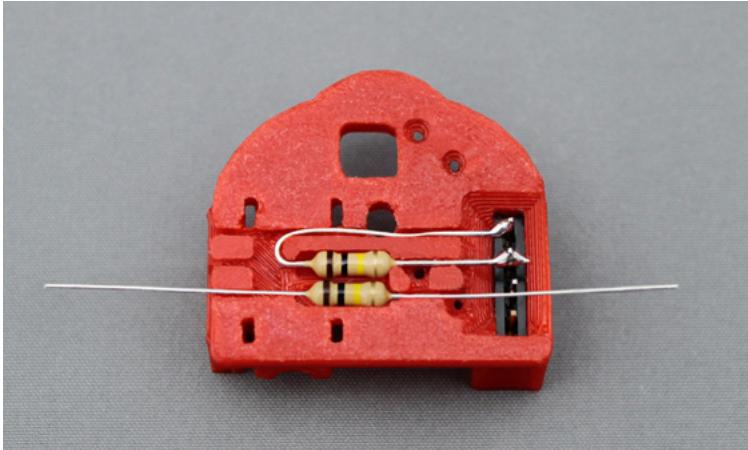


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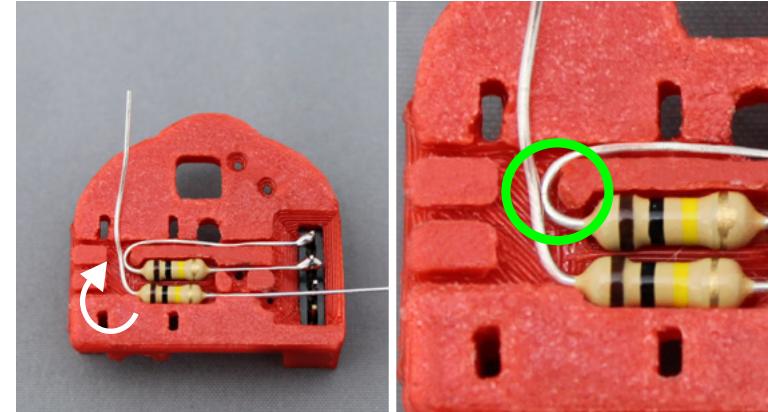


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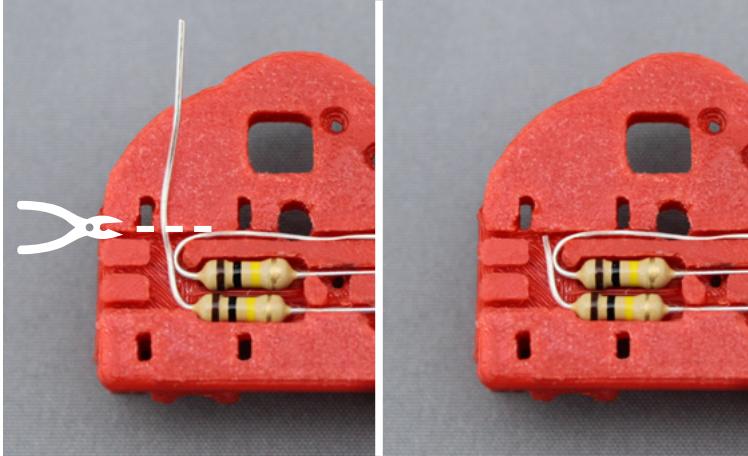
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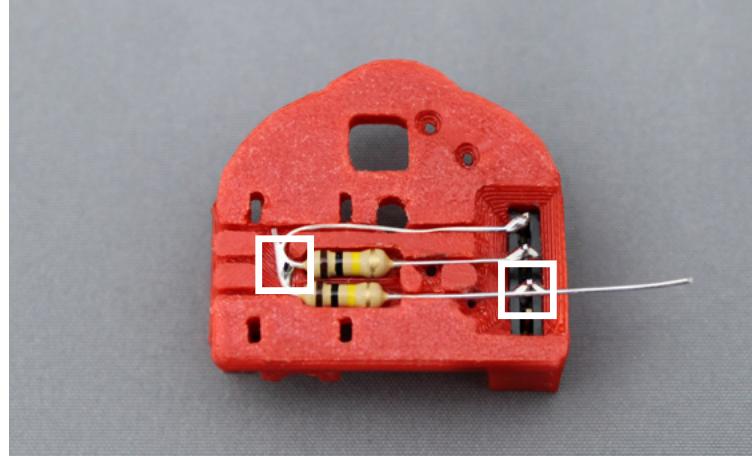
Bend the left lead towards the square hole. Both resistor leads should touch (in green).

09.

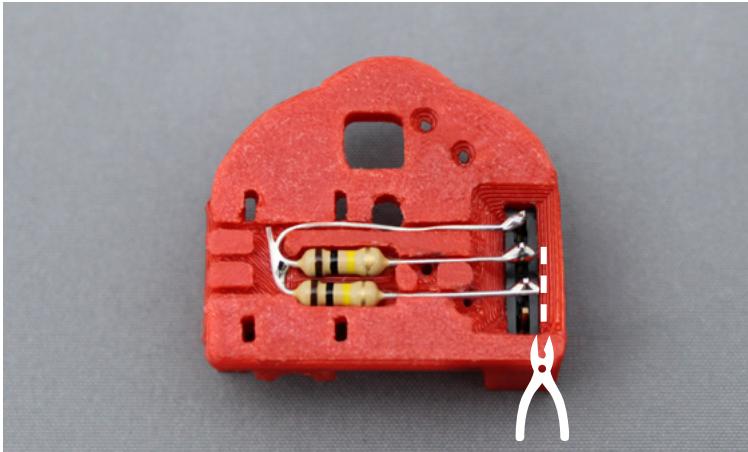


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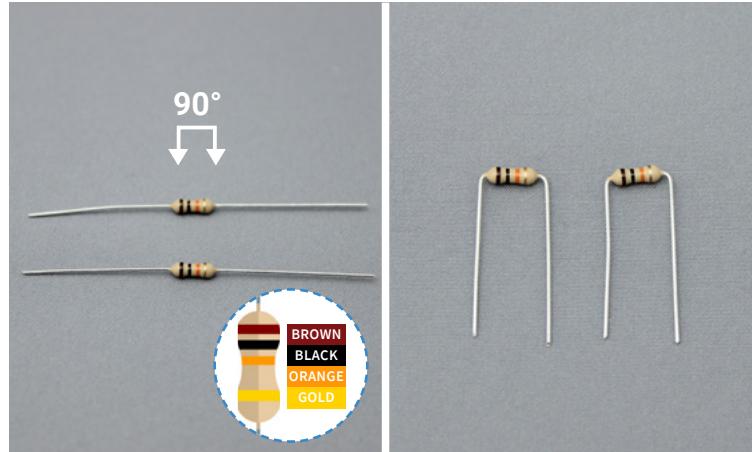
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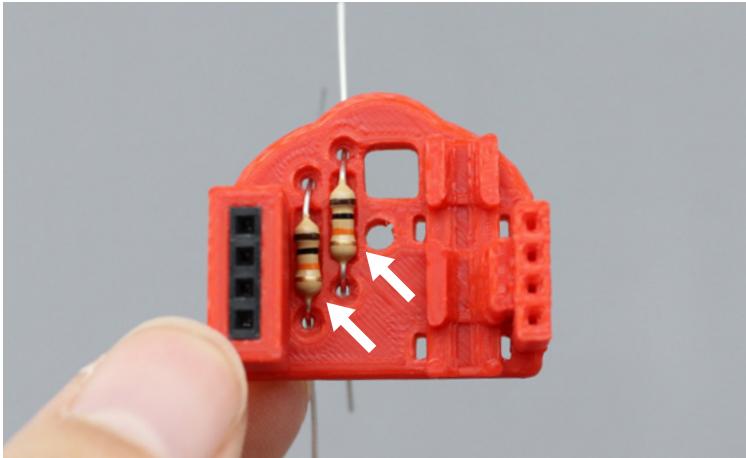


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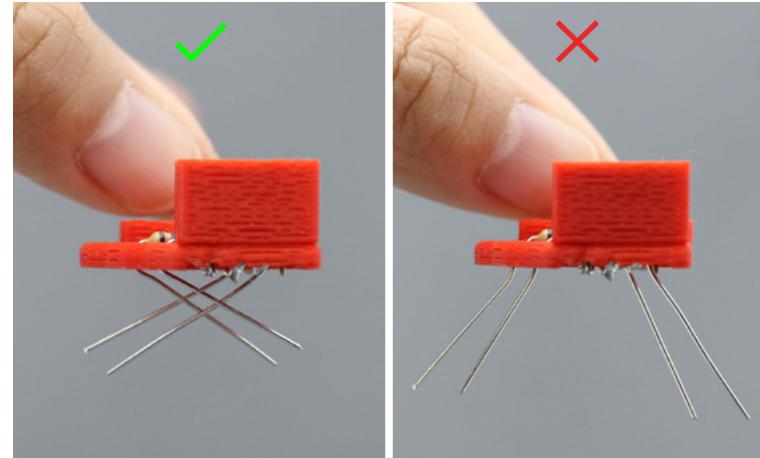


2
x 2

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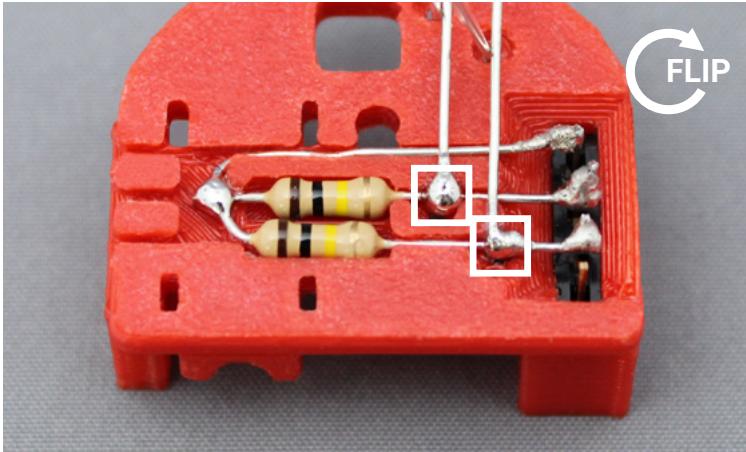


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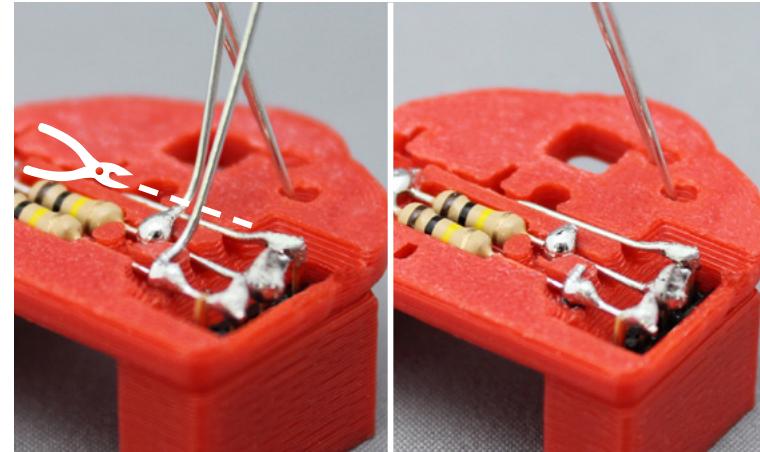
Bend the 4 leads inwards. Ensure the resistors are still flushed.

15.

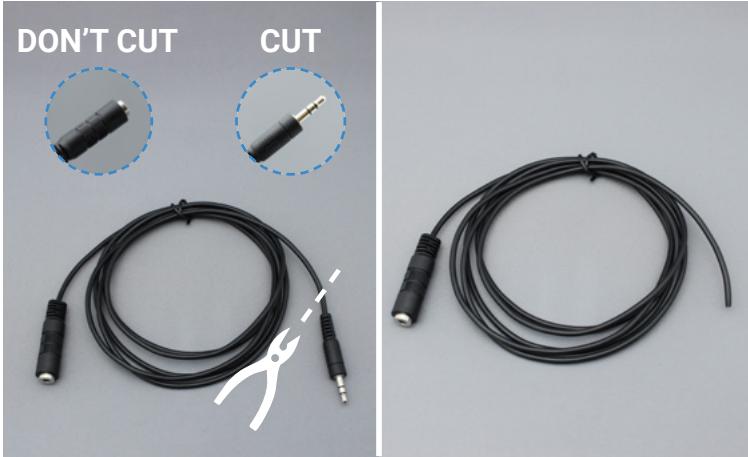


Solder the intersection where the two types of resistors meet.

16.



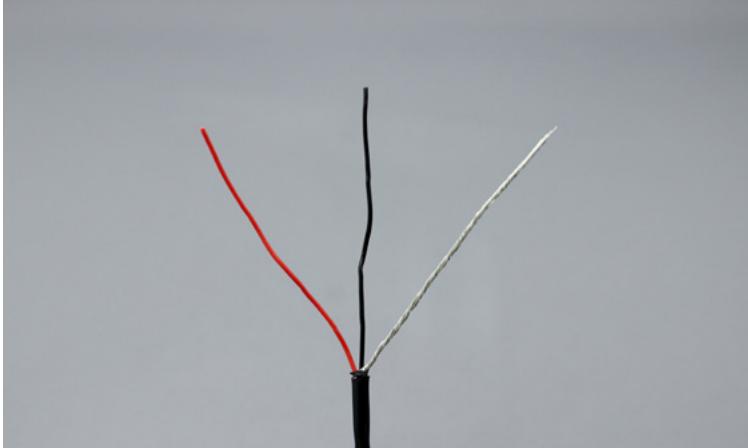
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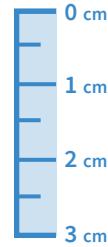
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20.

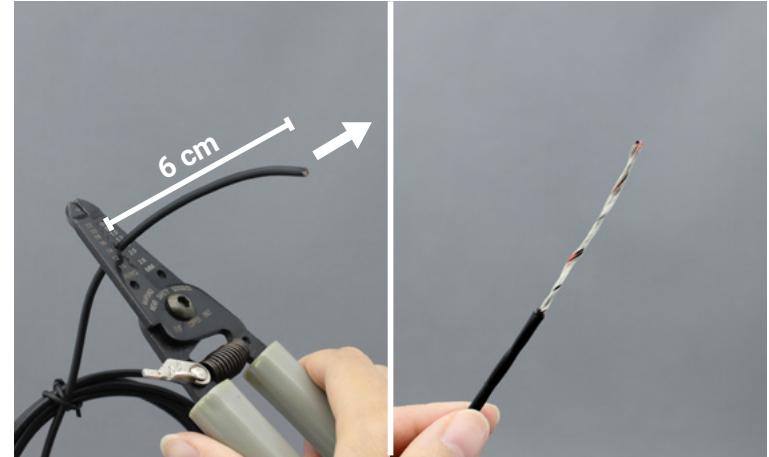
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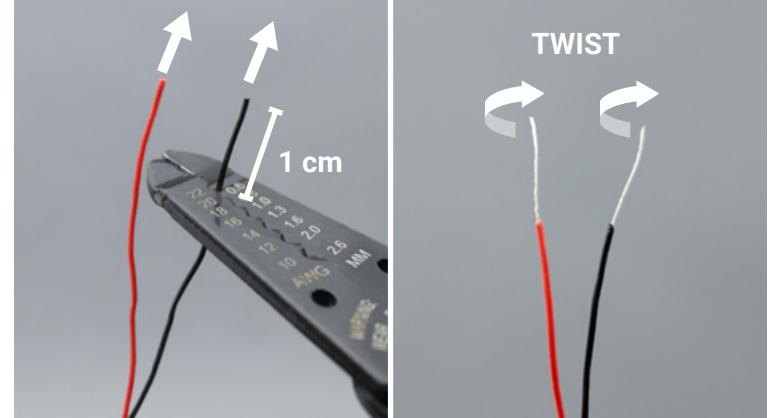
Separate the 3 wires inside.



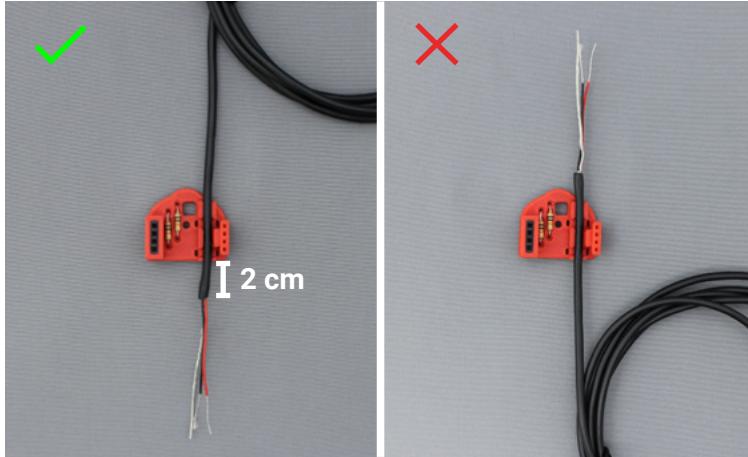
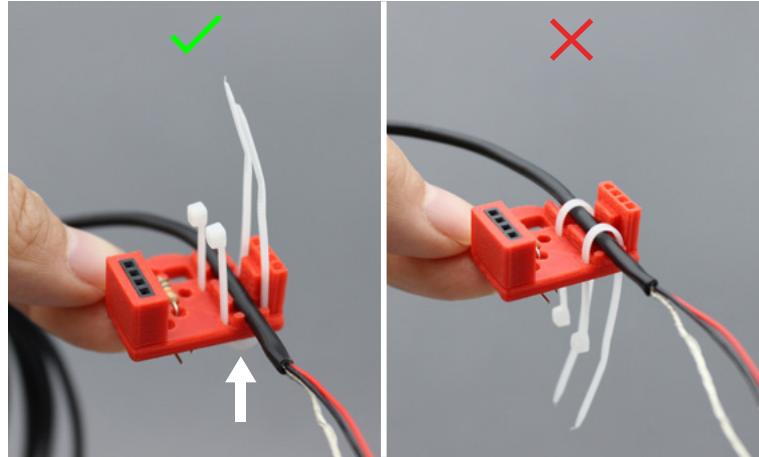
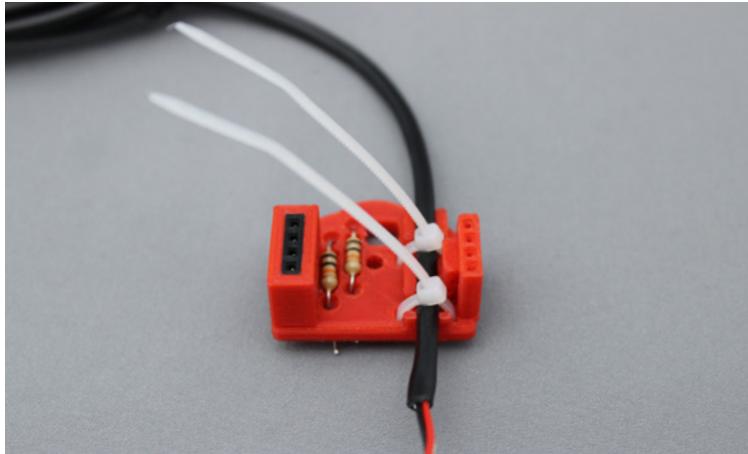
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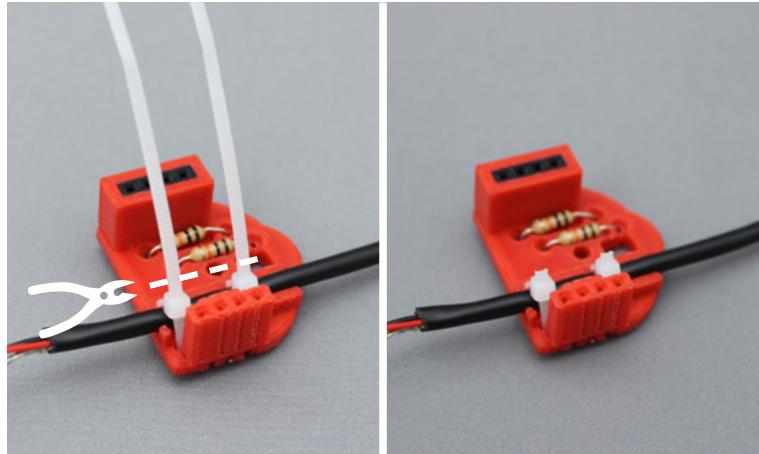
Use the wire stripper.



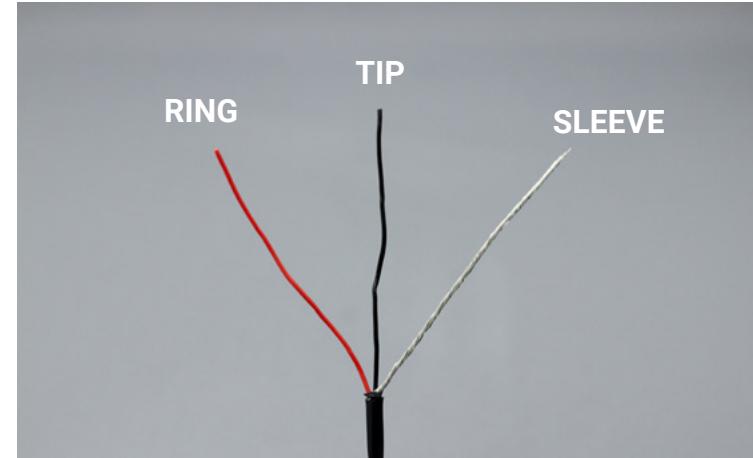
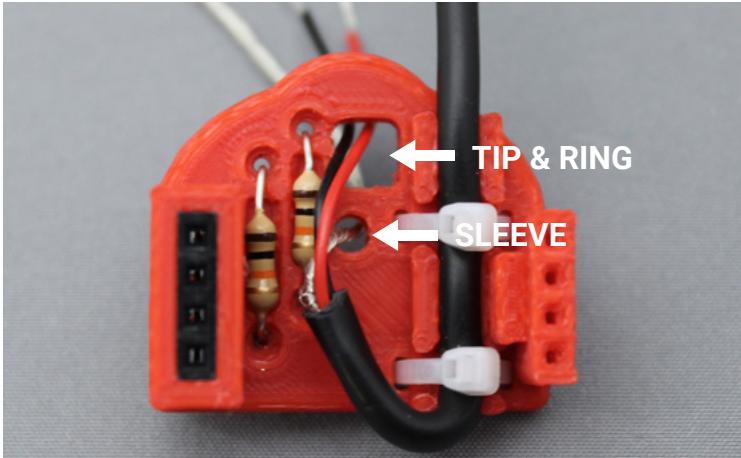
Some cables may have 3 insulated wires instead of 2. If there are 3 insulated wires, strip all 3.

21.**22.****23.**

Cinch as snug as possible.

24.

25.



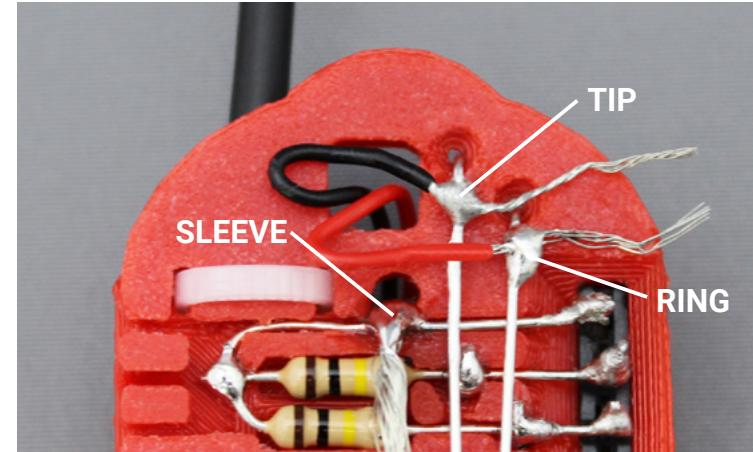
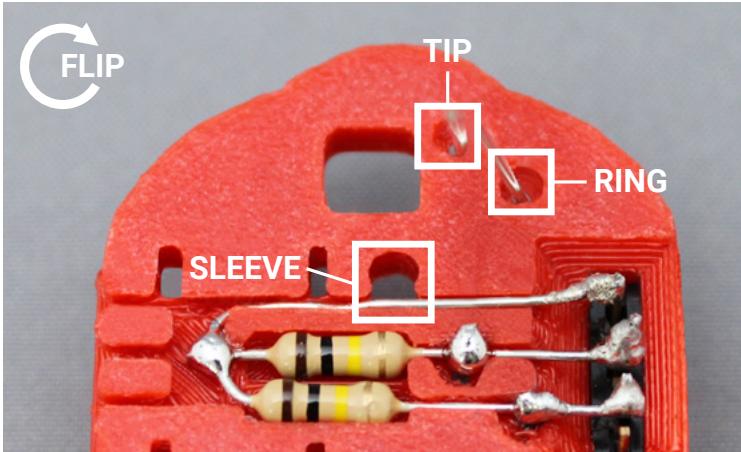
Identify which of the 3 wires is the tip, ring, and sleeve. The insulation colour is often a good indicator, though not all manufacturers follow the proper convention. If you're unsure, check with the manufacturer.

Tip: usually white, sometimes black.

Ring: usually red.

Sleeve: usually no insulation, sometimes green or black.

26.



Solder the tip, ring, and sleeve wires to the corresponding resistor leads.

Tip: 10k resistor lead (#2) closest to the square hole.

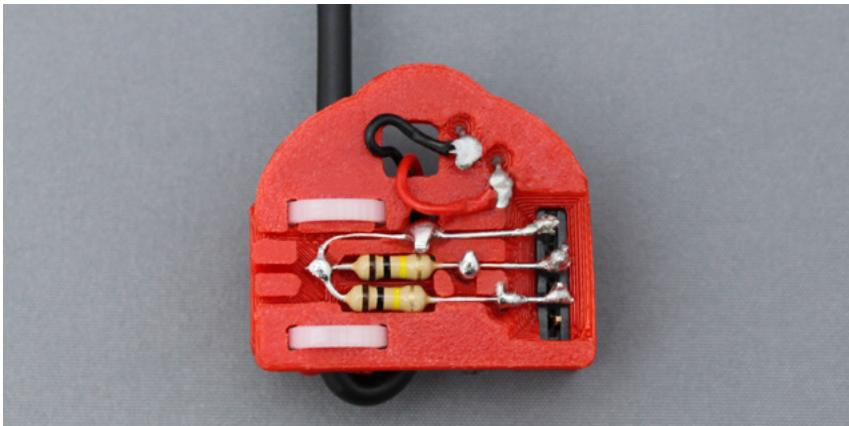
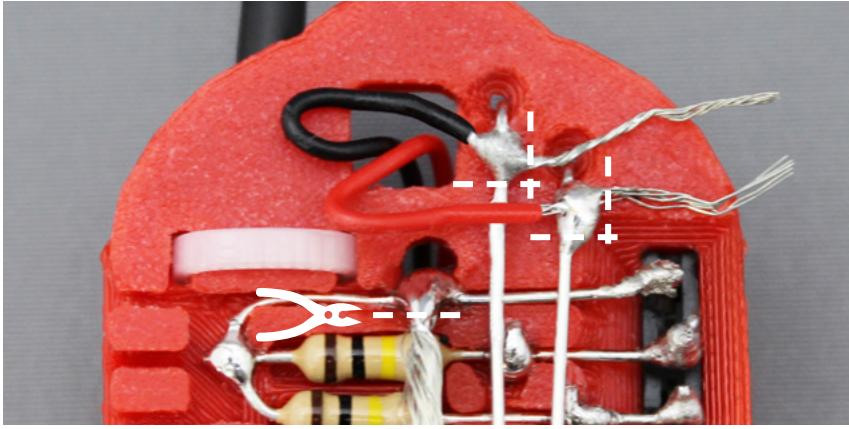
BROWN | **BLACK** | **ORANGE** | **GOLD**

Ring: 10k resistor lead (#2) farthest from the square hole.

BROWN | **BLACK** | **ORANGE** | **GOLD**

Sleeve: 100k resistor lead (#3)

BROWN | **BLACK** | **YELLOW** | **GOLD**



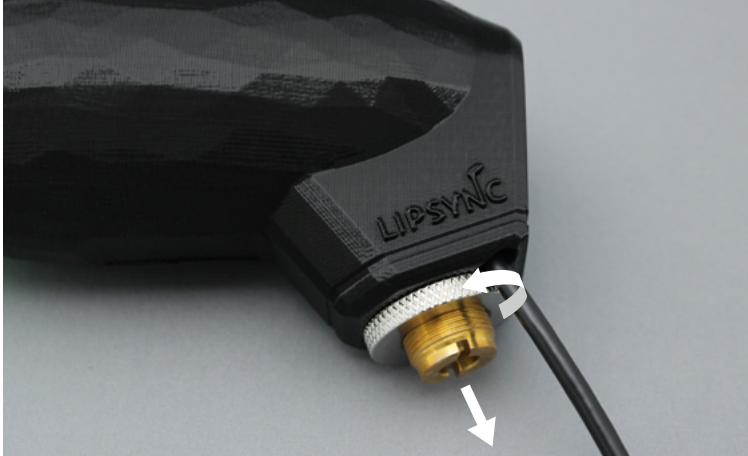
PART 4

CONVERTING THE LIPSYNC



27.

01.



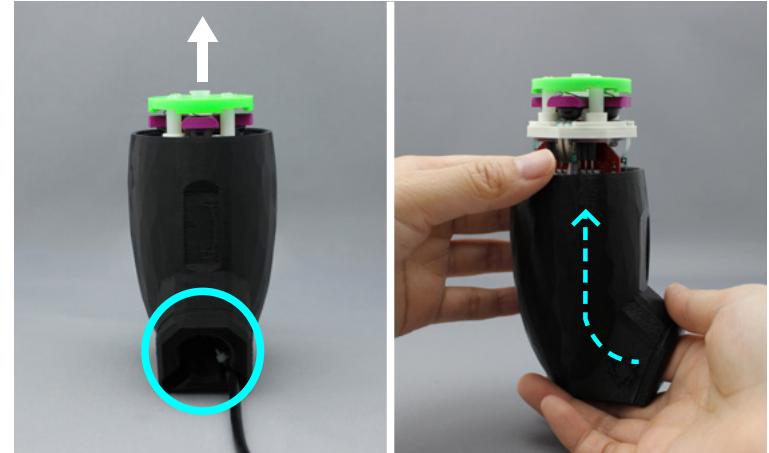
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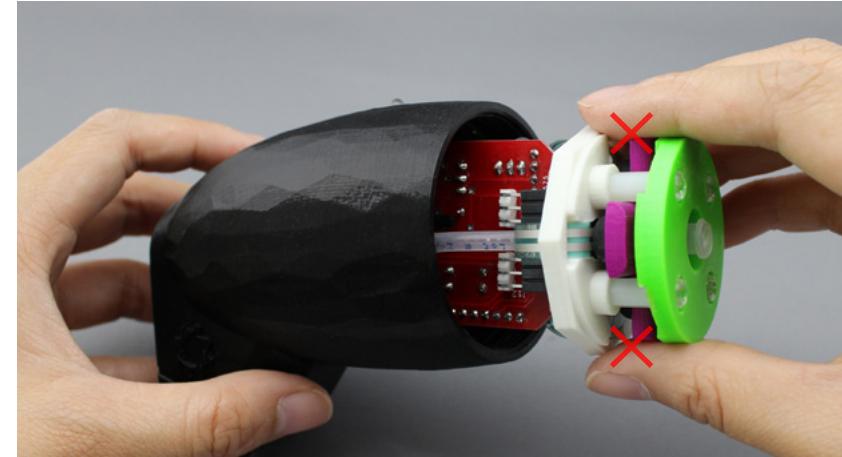
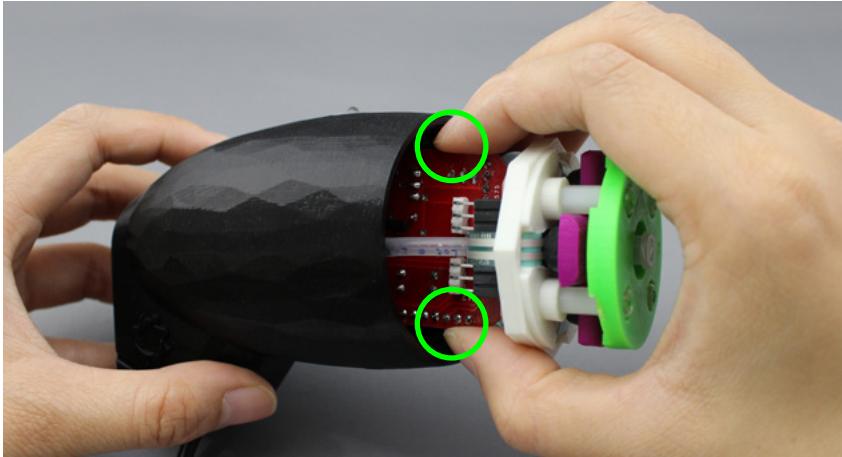
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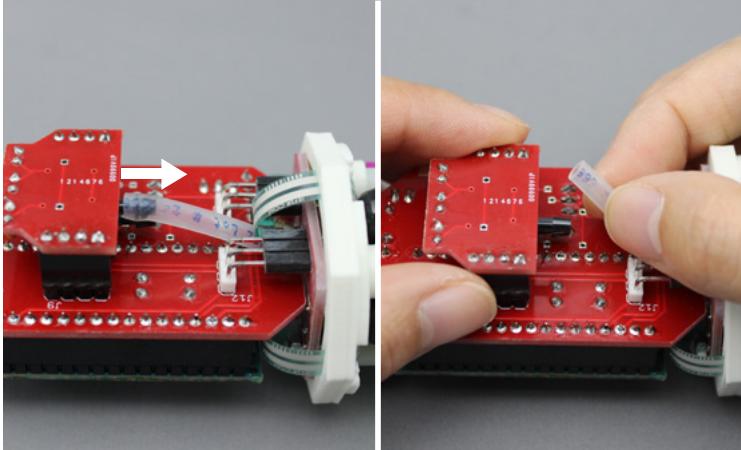


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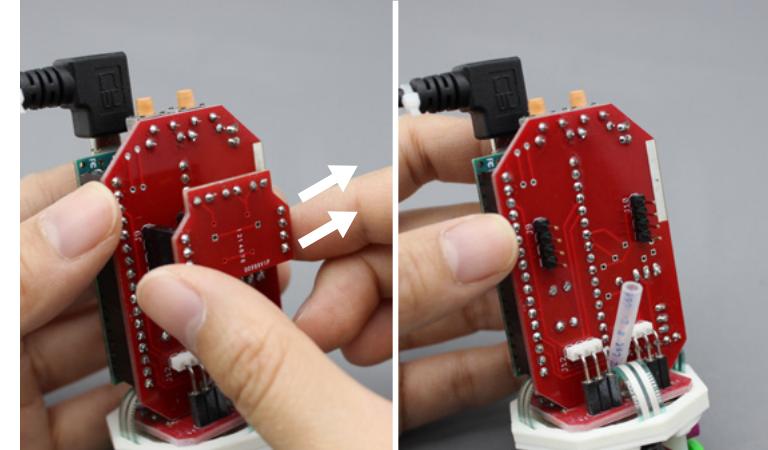
Remove the electronics from the 3D printed housing by holding onto the PCB (highlighted in green). Do not pull from the joystick assembly in the front.

06.



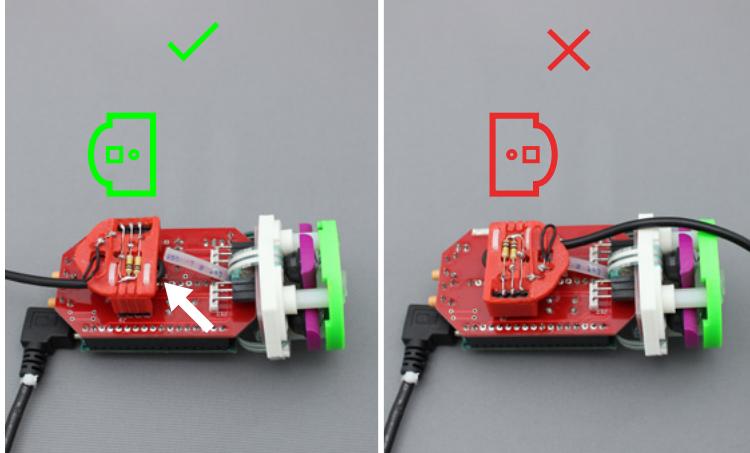
Detach the clear tubing by gently wiggling it off. Do not pull.

07.



Gently wiggle off the pressure sensor board and store it in a bag.

08.

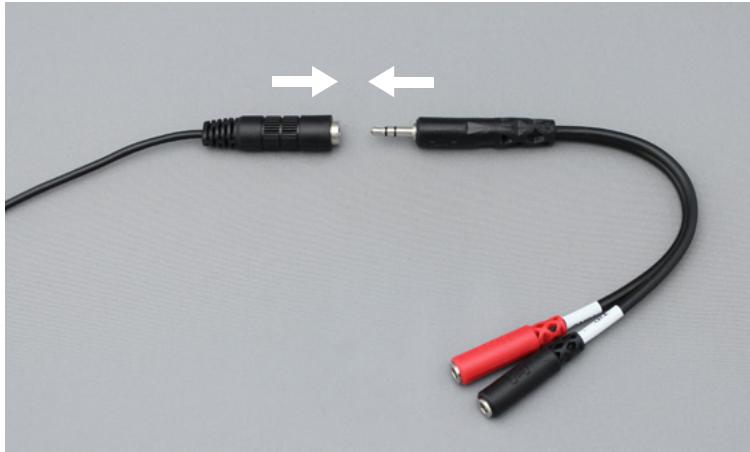


09.



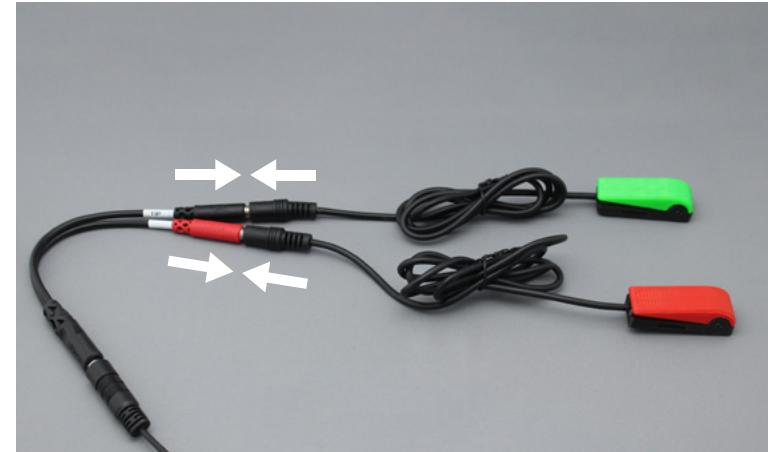
Plug the LipSync USB into a computer. Do not touch the LipSync or computer mouse during initialization (LED will blink red and green).

10.



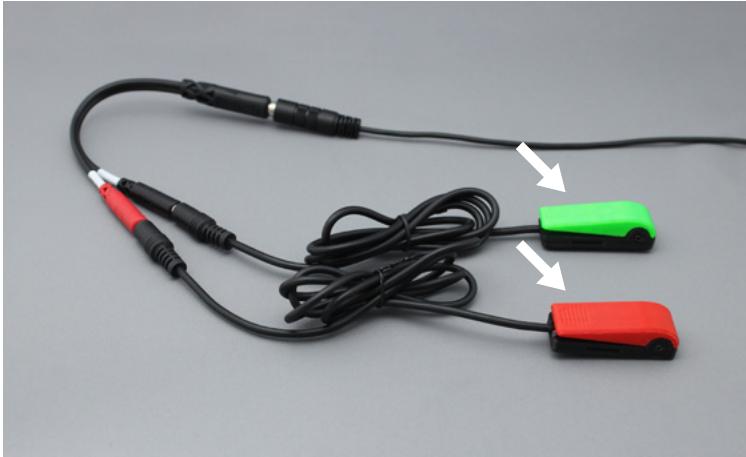
Connect the channel separator cable into the female jack.

11.



Connect 2 assistive switches into the channel separator cable.

12.



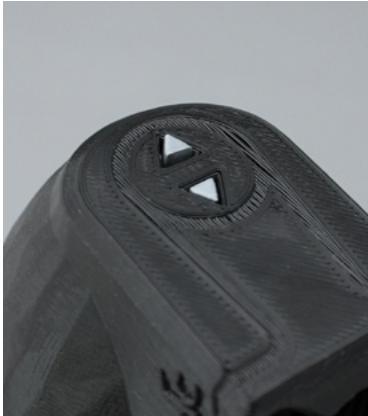
Test the LipSync on the computer by pressing on the connected switches.

Switches plugged into the red jack (labelled "Ring") will perform a **right click / sip**.

Switches plugged into the black jack (labelled "Tip") will perform a **left click / puff**.

If the left/right click is incorrect or behaves irradically, please see the Quality Check Guide document before proceeding.

13.



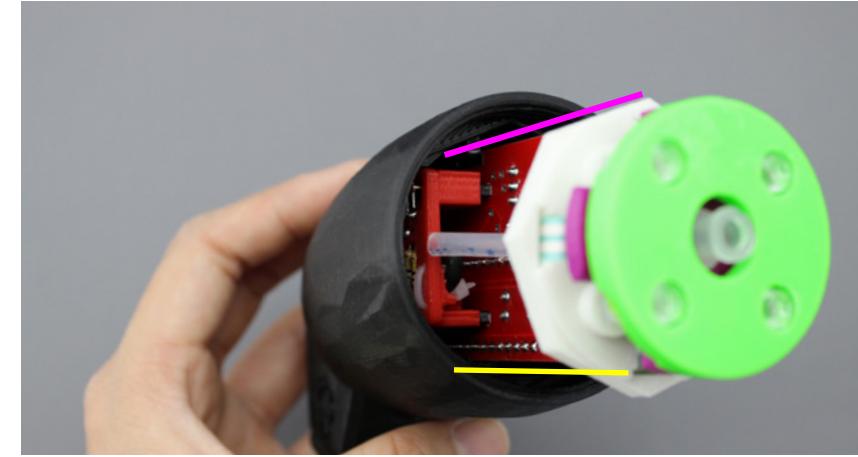
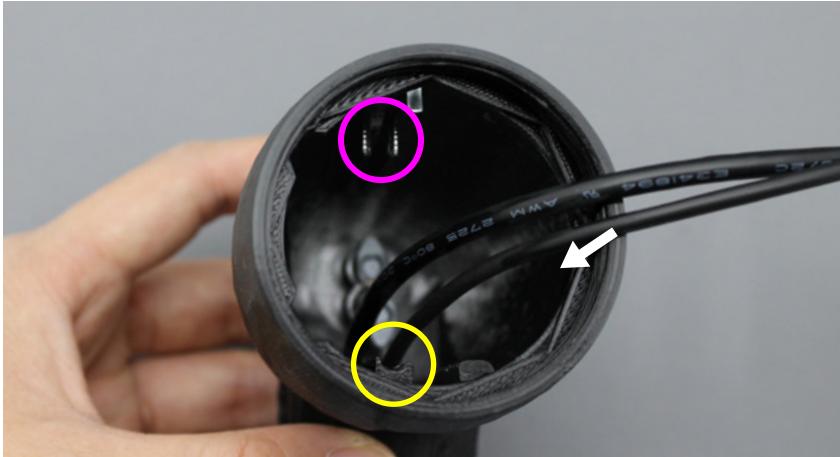
Reassemble the LipSync. Use tweezers to reinstall the buttons if they've fallen out.

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14.

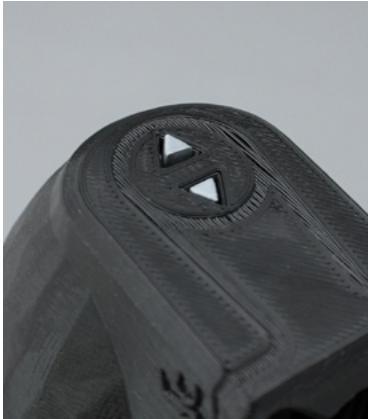


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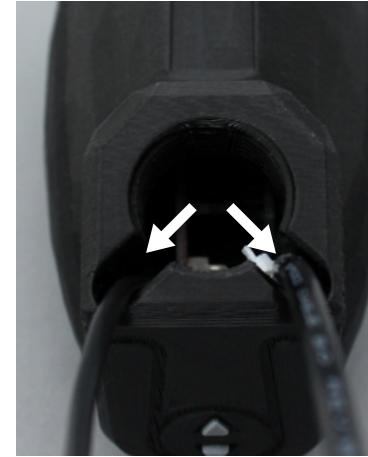
Slide the PCB along the internal slots that's on the inside of the LipSync shell.

16.



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17.



18.



19.

