PRINT
BUILD
DEVELOP
YOUR OWN ROBOT

How to build your robot

www.pib.rocks/build

assembly instructions for:

Motor Calibration

pib#4 advanced

Important note

In order to use the motors for pib´s movement it is important to **calibrate** them before building them into pib.

Pib has two different motors build in, in total **26** if 2 arms.
They can be calibrated in the same way.

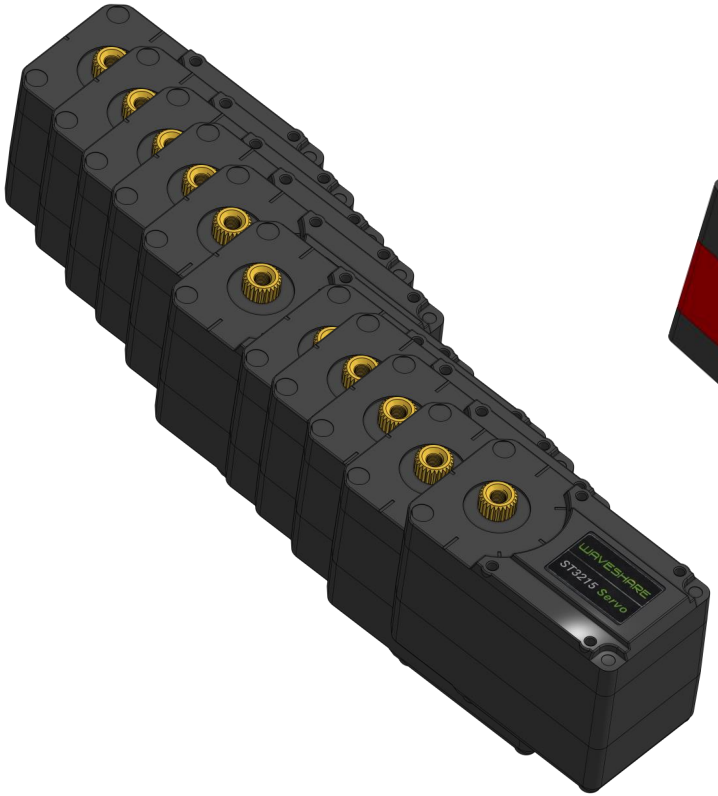
For this tutorial you will need the shown parts from the table.
Additionally, we suggest to first build **pib´s head** and install the **software to the Raspberry Pi** as you will need to use this for the calibration.

You can find the tutorials here:
https://pib.rocks/build/how-to-build-pibs-head/
https://pib.rocks/build/how-to-install-raspberry-pi/

Non-printable parts
20 x **E27**-STS3215
6 x **E18**-STS3095
1 x **E13-**SPL-82
1 x **E14**-Power_Supply
1 x **E17**-Waveshare_servo_driver – servo adapter
10 cm (red-black) **power cable**

Step 0

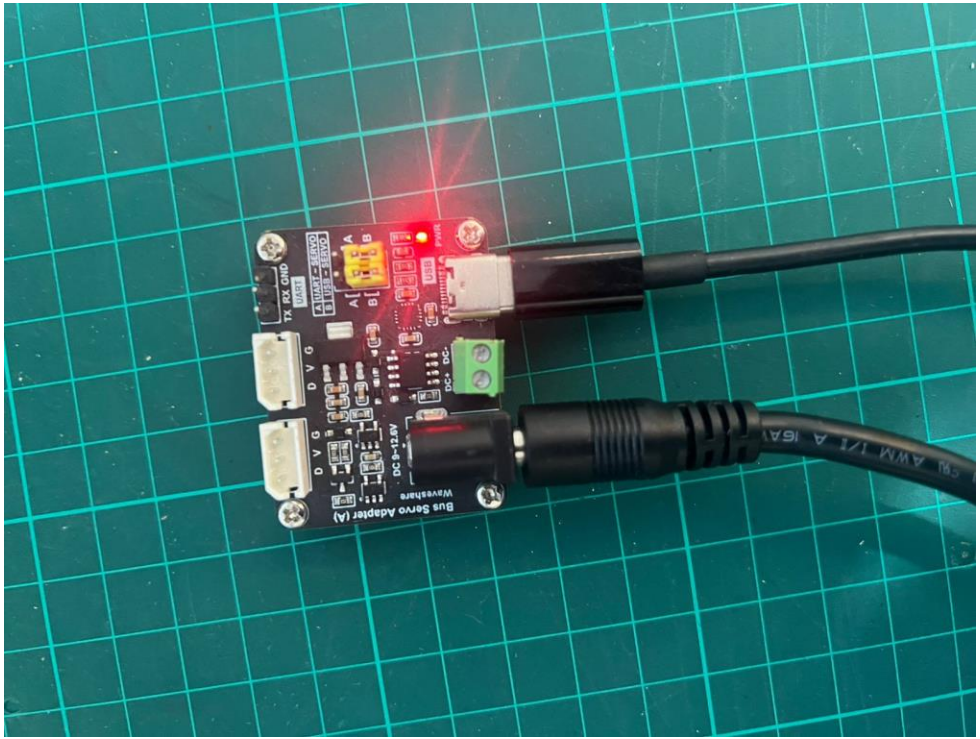
Make sure **all motors** in are calibrated according to this tutorial



Step 1

1

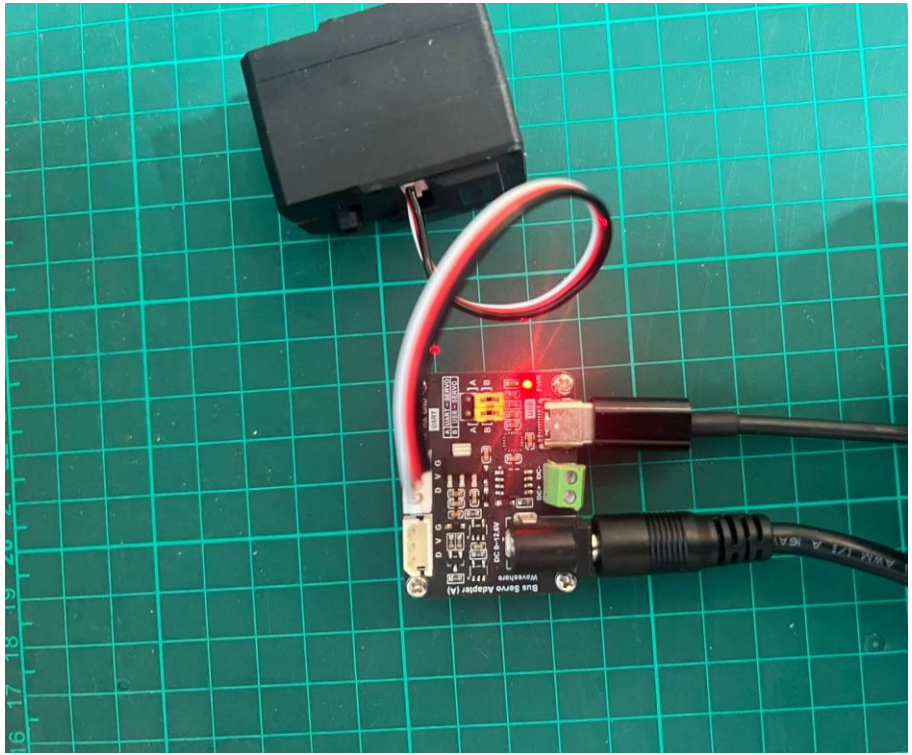
Connect output jack of **E14 power supply** into **E17 and a type C cable**



Step 2

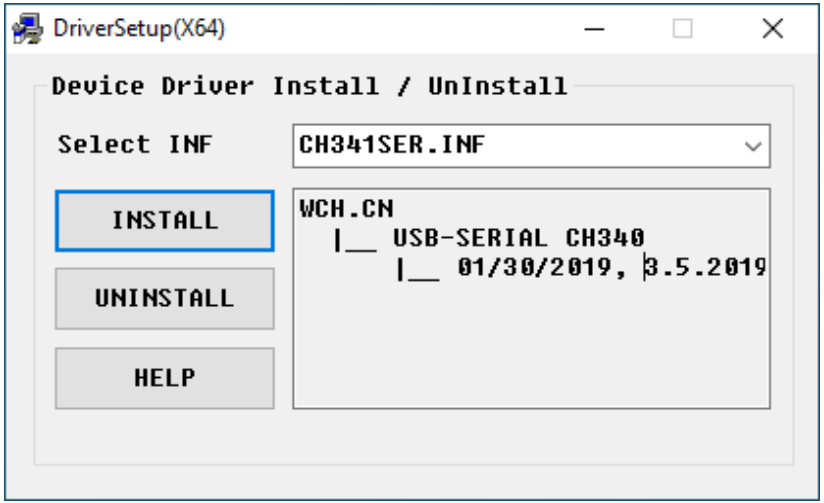
1

Connect the motors one by one to **E17** using their cable to change the ID and calibrate it



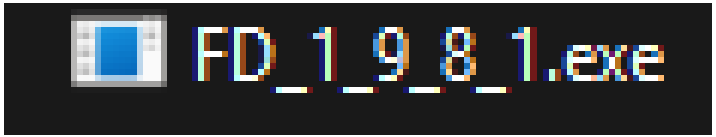
Step 3a

Download the software package from this link and setup serial driver by clicking on the CH34x_install_Windows_v3_4.exe file and procceed with setup wizzard



Step 3b

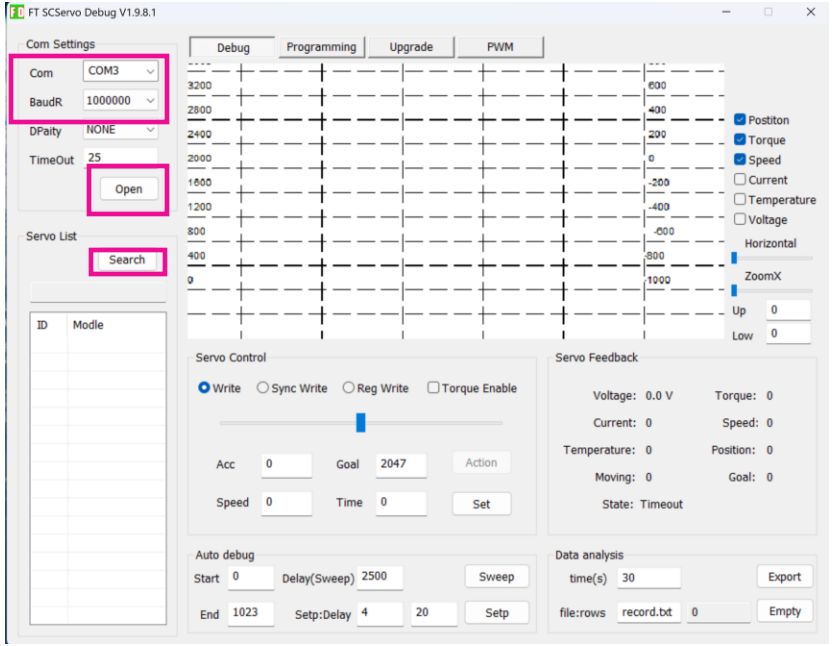
Open the FD_1_9_8_1.exe file

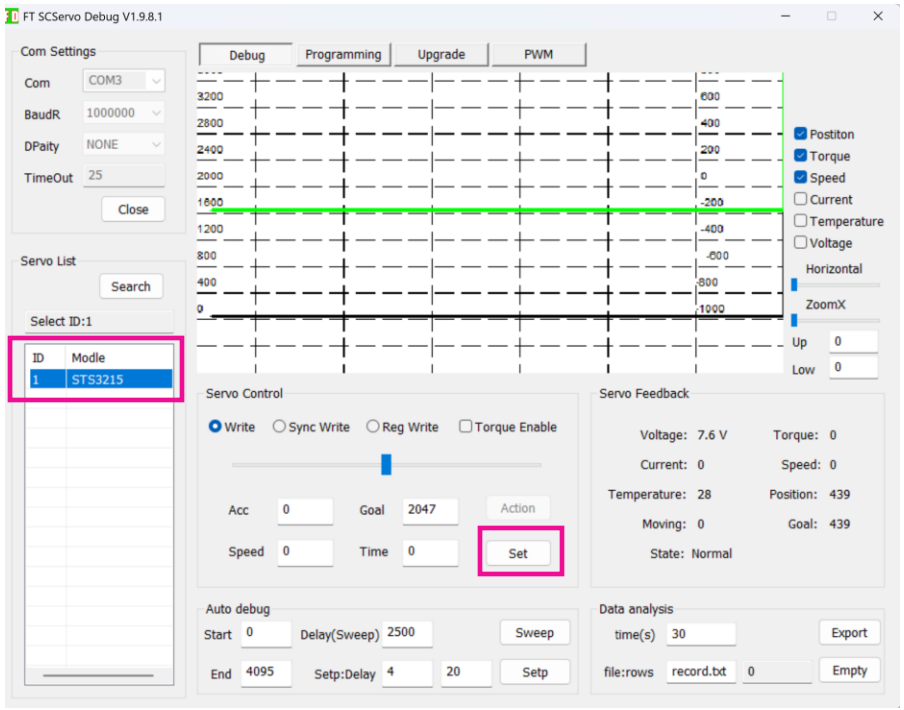


Step 4

1

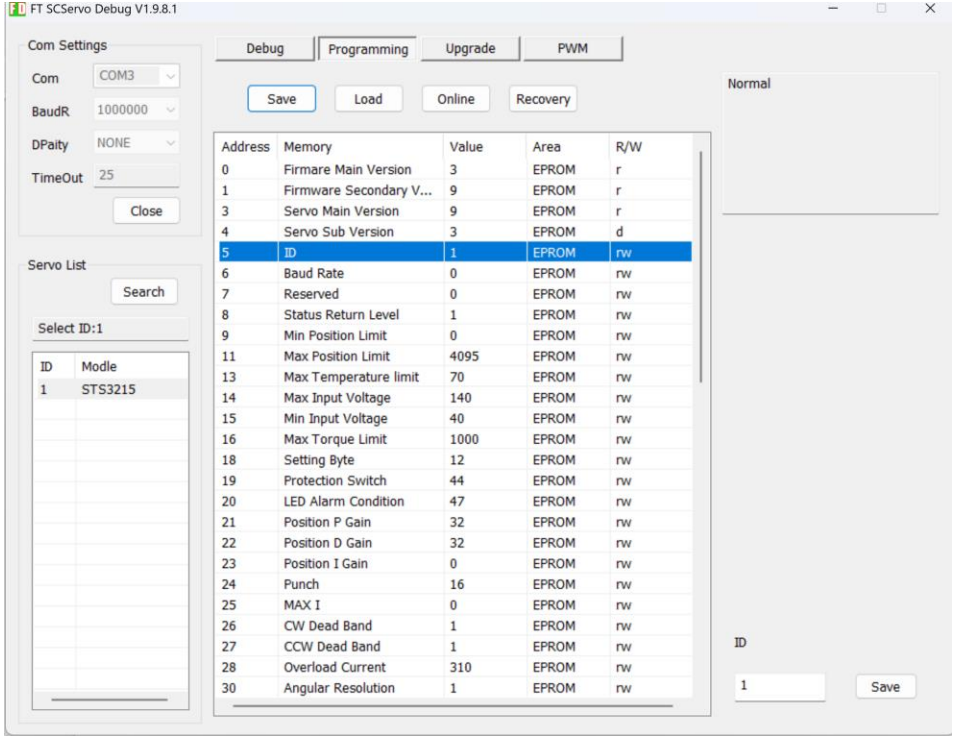
Click on com and select the open one, choose baud rate 1000000, click search and open. Finally select the shown motor and click set to the middle position 2047

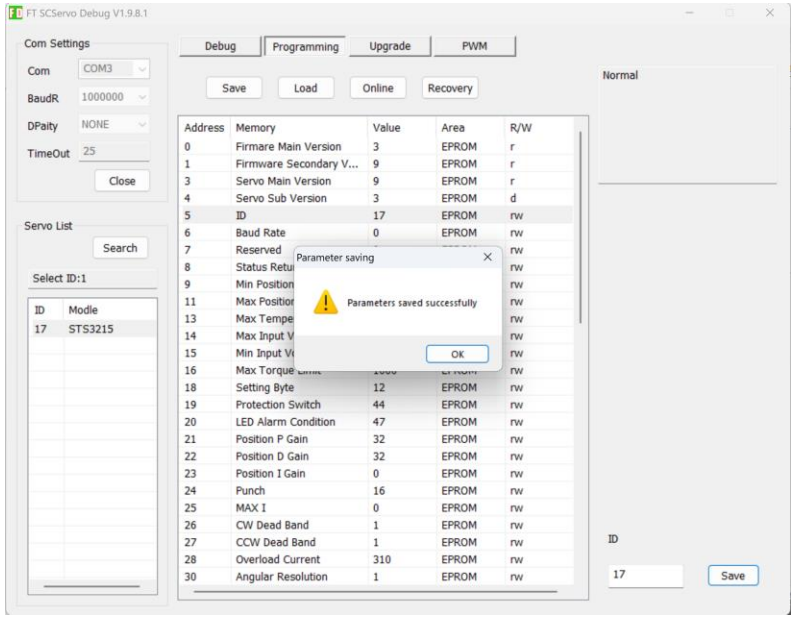




Step 5

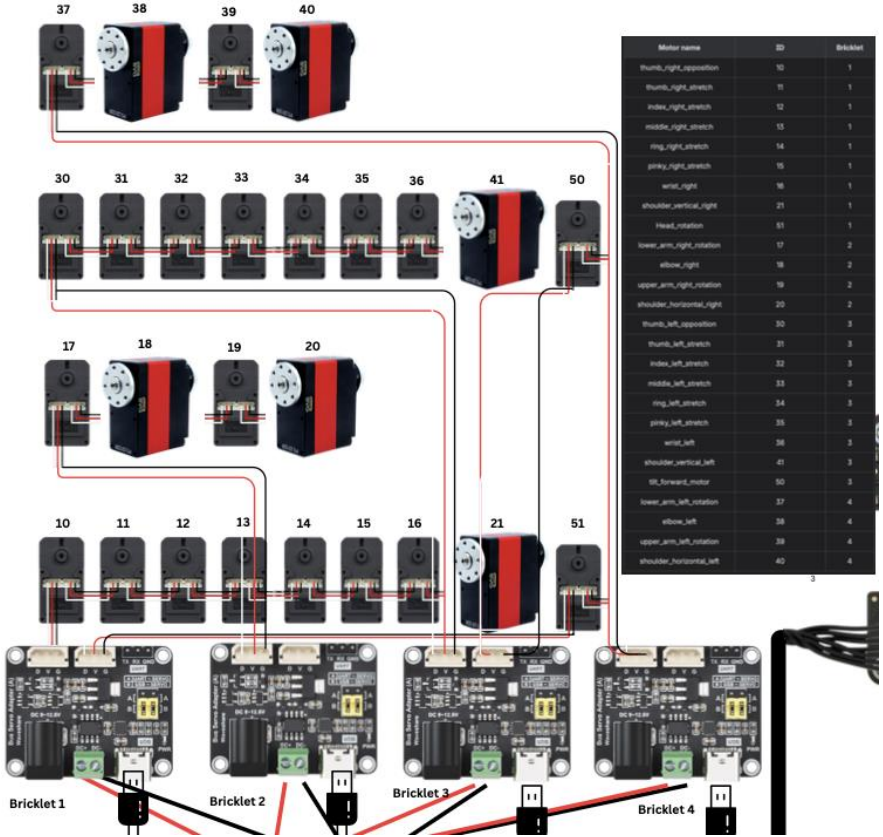
Click on programming, then change the ID of the motor according to the table in the next slide and click save





Step 5

Table of motor IDs



Motor name	ID	Bricklet
thumb_right_opposition	10	1
thumb_right_stretch	11	1
index_right_stretch	12	1
middle_right_stretch	13	1
ring_right_stretch	14	1
pinky_right_stretch	15	1
wrist_right	16	1
shoulder_vertical_right	21	1
Head_rotation	51	1
lower_arm_right_rotation	17	2
elbow_right	18	2
upper_arm_right_rotation	19	2
shoulder_horizontal_right	20	2
thumb_left_opposition	30	3
thumb_left_stretch	31	3
index_left_stretch	32	3
middle_left_stretch	33	3
ring_left_stretch	34	3
pinky_left_stretch	35	3
wrist_left	36	3
shoulder_vertical_left	41	3
tilt_forward_motor	50	3
lower_arm_left_rotation	37	4
elbow_left	38	4
upper_arm_left_rotation	39	4
shoulder_horizontal_left	40	4

Step 5

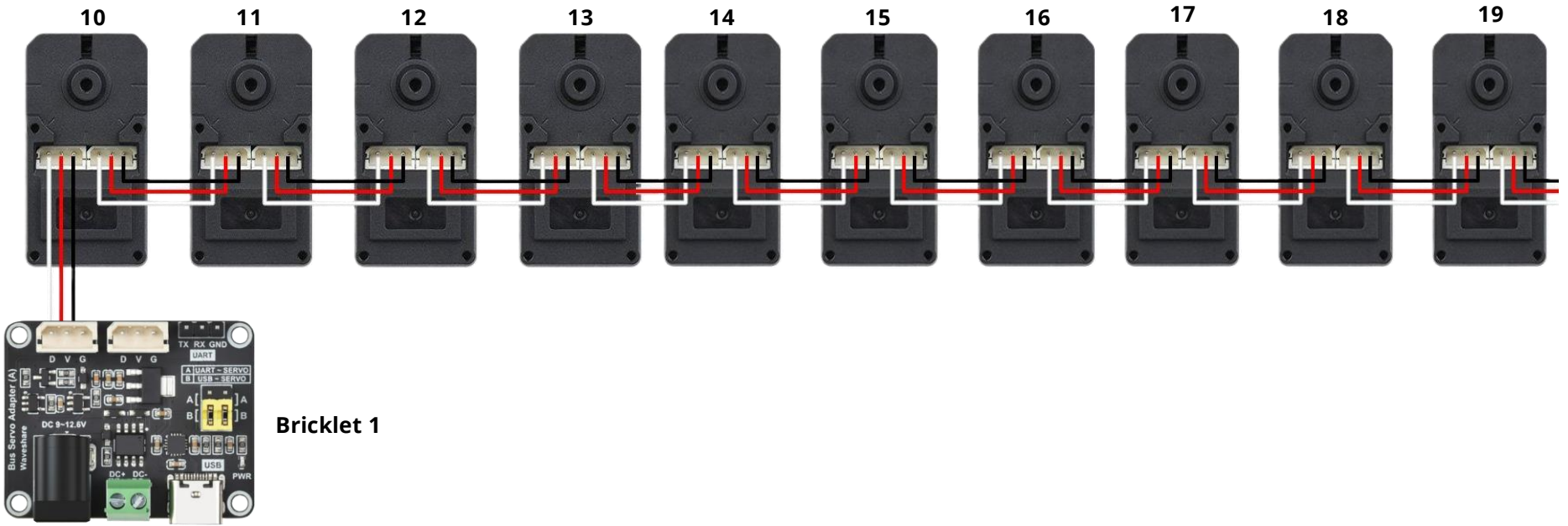
Table of motor IDs

Motor name	ID	Bricklet
thumb_right_opposition	10	1
thumb_right_stretch	11	1
index_right_stretch	12	1
middle_right_stretch	13	1
ring_right_stretch	14	1
pinky_right_stretch	15	1
wrist_right	16	1
shoulder_vertical_right	21	1
Head_rotation	51	1
lower_arm_right_rotation	17	2
elbow_right	18	2
upper_arm_right_rotation	19	2
shoulder_horizontal_right	20	2
thumb_left_opposition	30	3
thumb_left_stretch	31	3
index_left_stretch	32	3
middle_left_stretch	33	3
ring_left_stretch	34	3
pinky_left_stretch	35	3
wrist_left	36	3
shoulder_vertical_left	41	3
tilt_forward_motor	50	3
lower_arm_left_rotation	37	4
elbow_left	38	4
upper_arm_left_rotation	39	4
shoulder_horizontal_left	40	4

Note

This can only happen after calibration. Serial servos are connected with a method called Daisy chain. Every servo has 2 ports, use one to connect from one motor to another and the second one to connect to the designated bricklet. Meaning that only motors from the same bricklet should be daisy chained and one wire goes from the motor you started daisy chaining from to the designated bricklet.

Below is an example



Bricklet 1

Note

For all the next steps you have 3 options of wires to use with the servo motors, all of them work well but the middle one is the best due to better fitting and different lengths which eliminate the need of extension cables

Congratulations

Remove the calibrated motors, connect the remaining motors and repeat the steps, until you have calibrated **all motors**

Once finished, you can disassemble most parts as you will need the T-Connector, bricklet cable, motors and so on in the other tutorials.

Do you need support?

Or do you need our pib.Box with all non-printable parts?

Or maybe you have some new ideas and improvements?

Please contact us.

team@pib.rocks
Send us an email.

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