

Assembly guide:

MiKo-mini



Version 1.0

Date: 24-12-2024



Revision:

REV	Date	Description
1	24-12-2024	First release



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1: Introduction

This document will describe how to assemble MiKo-mini. We apologize for any inconvenience you may encounter. If you find any mistakes in this document, please let us know by emailing info@mikobots.com.

Using the product is at your own risk.

To ensure the safe operation of the robot arm, you need to have sufficient knowledge of electronics. If you are unsure how to proceed, please do not attempt it and ask a professional.

All measurements in this document are in millimeters (mm) or specified otherwise.

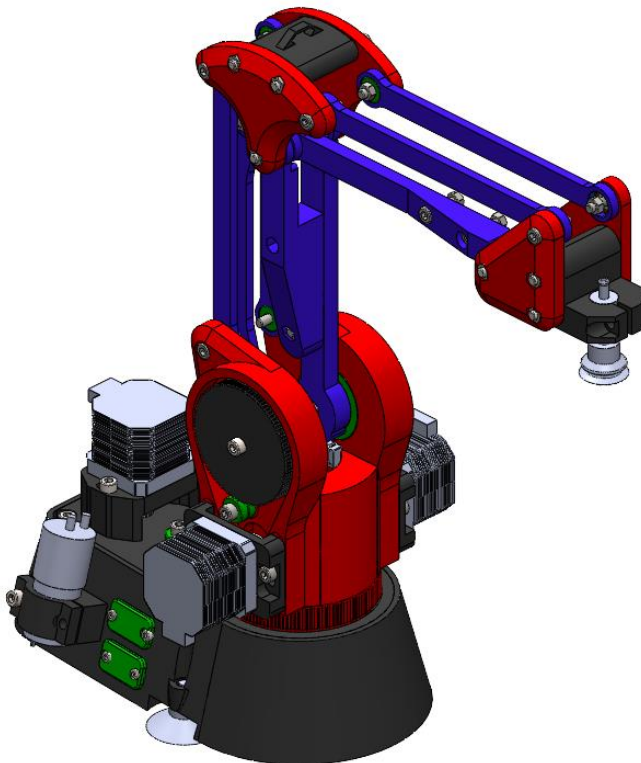
2: Print files

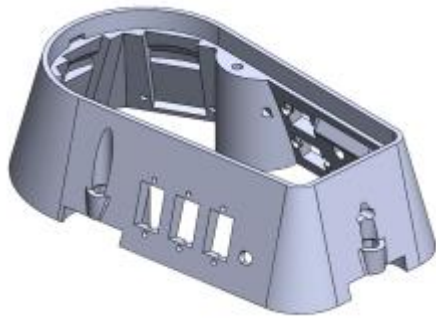
In this chapter you will find all the parts that you need to print for the robot arm. We recommend using PETG filament for most of the parts because it has a higher glass transition temperature than PLA and is still easy to print.

We recommend using a filament with higher stiffness, such as PLA-CF, for certain components, particularly the robot arm's links. A stiffer material significantly better the robot's accuracy. In the table starting on the following page, you will find a list with all the 3d printed parts, with a comment if they needed to be print with PLA-CF. While it is not necessary, using PLA-CF will greatly improve the robot's rigidity.

The general print settings that we have used for the parts are:

- Layer height: 0.2mm
- Walls: 2
- Infill: 20%





Art. name: MiKo_mini_P001

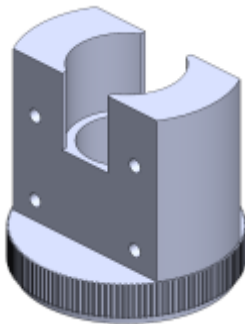
Revision: 000

Quantity: 1

Infill: 20%

Walls: 2

Comments:



Art. name: MiKo_mini_P002

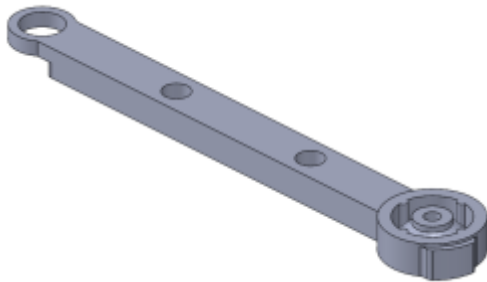
Revision: 000

Quantity: 1

Infill: 20%

Walls: 2

Comments:



Art. name: MiKo_mini_P003

Revision: 000

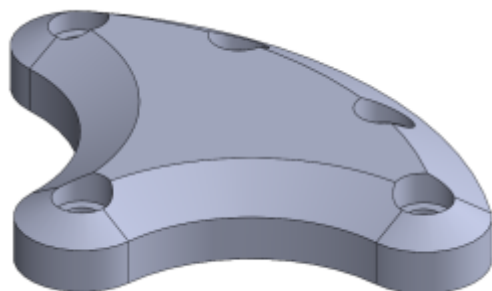
Quantity: 1

Infill: 20%

Walls: 2

Comments:

PLA-CF



Art. name: MiKo_mini_P004

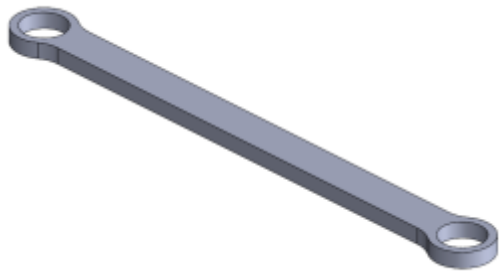
Revision: 000

Quantity: 1

Infill: 20%

Walls: 2

Comments:



Art. name: MiKo_mini_P005

Revision: 000

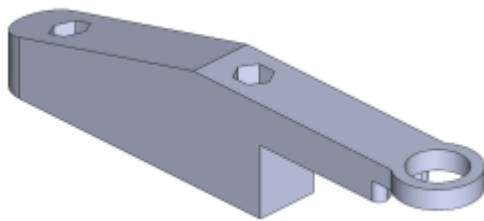
Quantity: 4

Infill: 20%

Walls: 2

Comments:

PLA-CF



Art. name: MiKo_mini_P006

Revision: 000

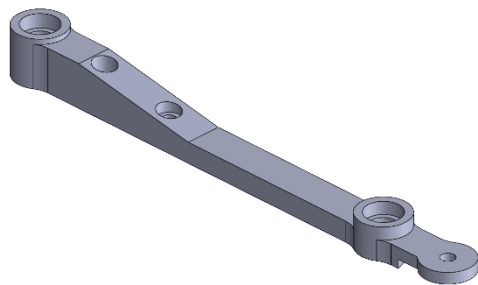
Quantity: 1

Infill: 20%

Walls: 2

Comments:

PLA-CF



Art. name: MiKo_mini_P007

Revision: 000

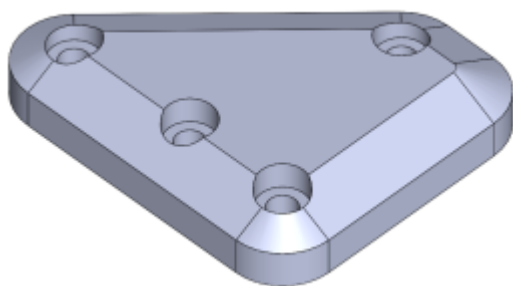
Quantity: 1

Infill: 20%

Walls: 2

Comments:

PLA-CF



Art. name: MiKo_mini_P008

Revision: 000

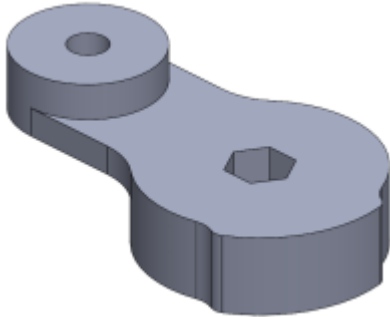
Quantity: 1

Infill: 20%

Walls: 2

Comments:

PLA-CF



Art. name: MiKo_mini_P009

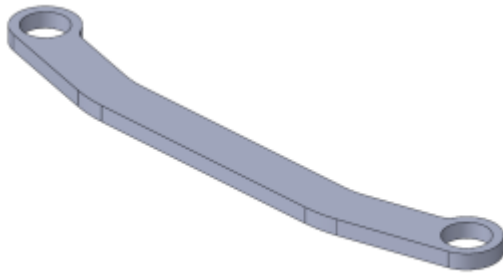
Revision: 000

Quantity: 1

Infill: 20%

Walls: 2

Comments:



Art. name: MiKo_mini_P010

Revision: 000

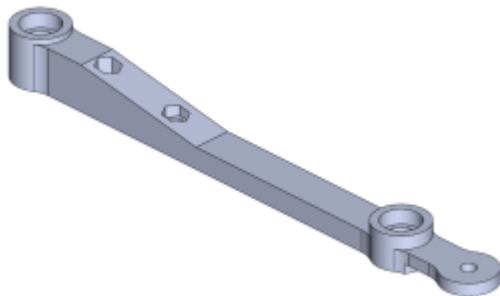
Quantity: 1

Infill: 20%

Walls: 2

Comments:

PLA-CF



Art. name: MiKo_mini_P011

Revision: 000

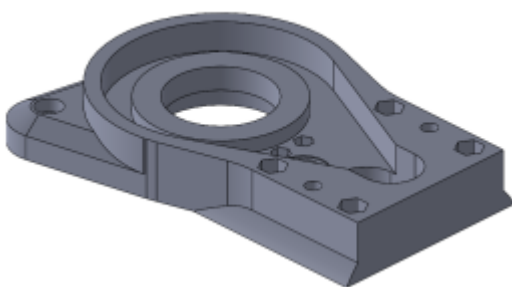
Quantity: 1

Infill: 20%

Walls: 2

Comments:

PLA-CF



Art. name: MiKo_mini_P012

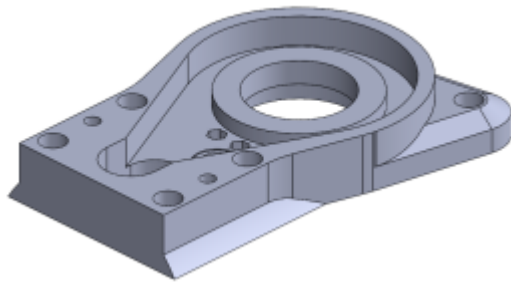
Revision: 000

Quantity: 1

Infill: 20%

Walls: 2

Comments:



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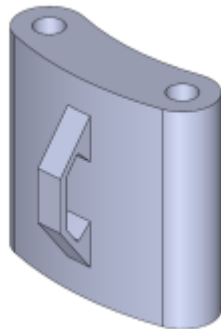
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Walls: 2

Comments:



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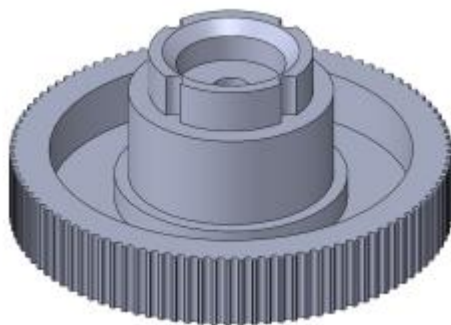
Revision: 000

Quantity: 1

Infill: 20%

Walls: 2

Comments:



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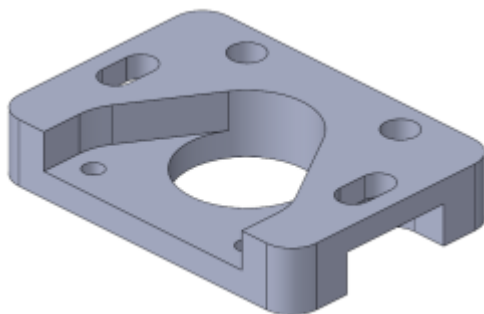
Revision: 000

Quantity: 2

Infill: 20%

Walls: 2

Comments:



Art. name: MiKo_mini_P016

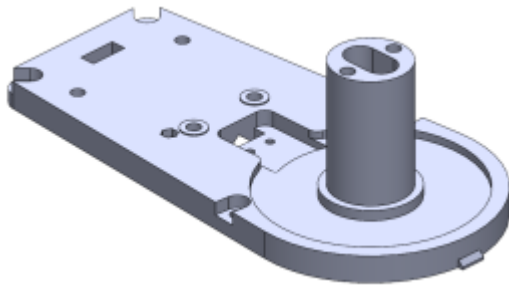
Revision: 000

Quantity: 2

Infill: 20%

Walls: 2

Comments:



Art. name: MiKo_mini_P017

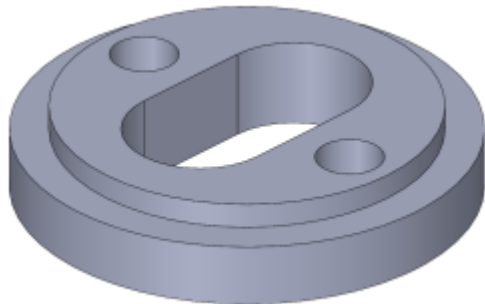
Revision: 000

Quantity: 1

Infill: 20%

Walls: 2

Comments:



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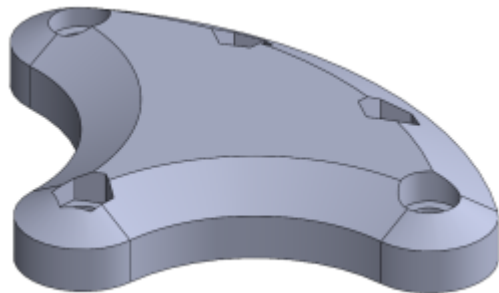
Revision: 000

Quantity: 1

Infill: 20%

Walls: 2

Comments:



Art. name: MiKo_mini_P022

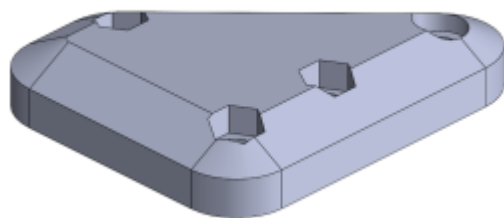
Revision: 000

Quantity: 1

Infill: 20%

Walls: 2

Comments:



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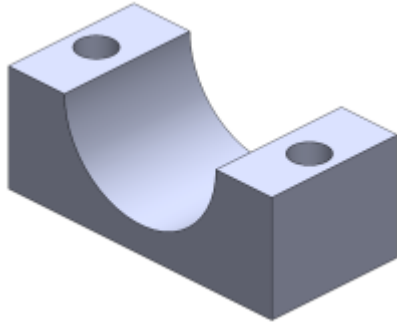
Revision: 000

Quantity: 1

Infill: 20%

Walls: 2

Comments:



Art. name: MiKo_mini_P024

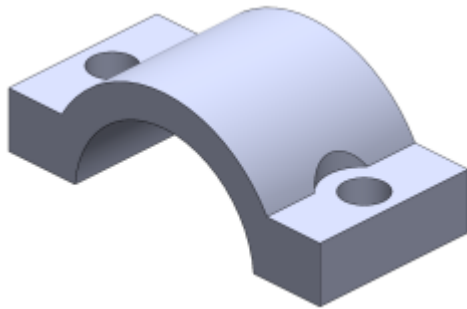
Revision: 000

Quantity: 1

Infill: 20%

Walls: 2

Comments:



Art. name: MiKo_mini_P025

Revision: 000

Quantity: 1

Infill: 20%

Walls: 2

Comments:



Art. name: MiKo_mini_P026

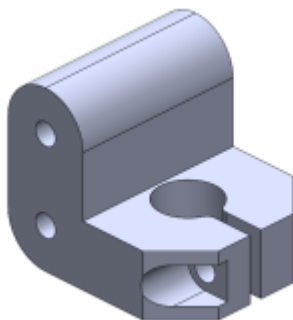
Revision: 000

Quantity: 1

Infill: 20%

Walls: 2

Comments:



Art. name: MiKo_mini_P027

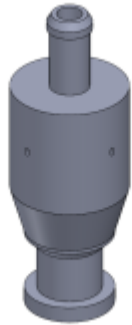
Revision: 000

Quantity: 1

Infill: 20%

Walls: 2

Comments:



Art. name: MiKo_mini_P028

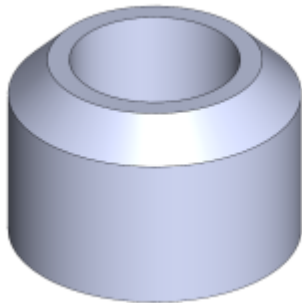
Revision: 000

Quantity: 1

Infill: 20%

Walls: 2

Comments:



Art. name: MiKo_mini_P029

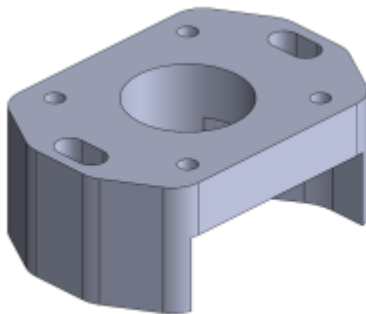
Revision: 000

Quantity: 2

Infill: 20%

Walls: 2

Comments:



Art. name: MiKo_mini_P032

Revision: 000

Quantity: 1

Infill: 20%

Walls: 2

Comments:



3: BOM

In this chapter, you will find all the parts that you need to buy for the magnetic tool. If you see any mistakes or have any questions, you can email us at info@mikobots.com or ask the question in the [Discord server](#). We have tried to provide a link to a shop for each component, but these links could change or become invalid. We will try to update the links regularly.

Please remember that you are solely responsible for ensuring the parts meet the safety requirements for your country.

Before ordering the parts, it's recommended to first read the whole document.



Bearings

Name	QTY.	Description	shop
BEARING_01	26	Bearing 5x14x5 (605)	Link
BEARING_07	4	Bearing 30x42x7 (6806)	Link
BEARING_09	2	Axial bearing Ø52x35x4 (AXK3552 2AS)	Link

Electronics

Name	QTY.	Description	shop
ELECTRONICS_001	3	Micro Limit Switch (Roller Lever)	Link
ELECTRONICS_004	1	ESP32 38 pin	Link
ELECTRONICS_013	1	5.5 x 2.1 mm jack female with cable 20 cm	Link
ELECTRONICS_016	1	Relay 3.3V 2 channel	Link
ELECTRONICS_020	2	Wago 221-415	Link
ELECTRONICS_025	2	Terminal FDD1.25-187, 0.5-1mm ² , 4.8x0.5	Link
ELECTRONICS_026	3	Driver expansion board	Link
ELECTRONICS_027	3	3.81mm Terminal Block 3p	Link
ELECTRONICS_028	2	3.81mm Terminal Block 2p	Link
ELECTRONICS_029	1	ESP32 38PIN Expansion Board	Link
ELECTRONICS_030	1	Magnet 12V MH-P20/15	Link
ELECTRONICS_031	1	Usb-c male to Usb-c female cable 10cm	Link
ELECTRONICS_032	1	5.5 x 2.1 mm jack male screw	Link

Fasteners

Name	QTY.	Description	shop
DIN 912 M3x10	35	Hexagon socket Head Cap Screws M3x10	Link
DIN 912 M5x20	23	Hexagon socket Head Cap Screws M5x20	Link
DIN 912 M5x35	10	Hexagon socket Head Cap Screws M5x35	Link
DIN 912 M5x60	12	Hexagon socket Head Cap Screws M5x60	Link
DIN 125 M5	15	Washer M5	Link
ISO 4032 M3	26	Hexagon regular nut M3	Link
ISO 4032 M5	48	Hexagon regular nut M5	Link

Motors

Name	QTY.	Description	shop
MOTOR_01	3	Stepper motor Nema 17 L38	Link



Drivers

Name	QTY.	Description	shop
DRIVER_03	3	TMC2208 stepper driver	Link

Vacuum

Name	QTY.	Description	shop
VACUUM_01	1	Suction cup Ø25 DP	Link
VACUUM_03	0.8	Hose Ø6x4	Link
VACUUM_04	1	Mini Air Pump DC 12V	Link

Suction cup

Name	QTY.	Description	shop
SUCTION_CUP_01	3	Suction cup ØM5x13 Ø38mm	Link

Belts

Name	QTY.	Description	shop
BELT_10	1	Timing belt GT2 L390 W10	Link
BELT_11	2	Timing belt GT2 L264 W10	Link

Pulley

Name	QTY.	Description	shop
PULLEY_08	3	Pulley GT2 16T B5 W10	Link

Cables

Name	QTY.	Description	shop
CABLE_01	2m	Cable 2 wire, 22 AWG/ 0.34 mm ²	Link
CABLE_03	3	Nema 17 cable 50 cm	Link
CABLE_07	28	Dupont female - female 10cm *	Link
CABLE_08	6	Dupont female - female 30cm	Link

Important note

It is your own responsibility to ensure that the components meet the safety requirements in your country.

* To make the dupont wires fit better you could use this kit

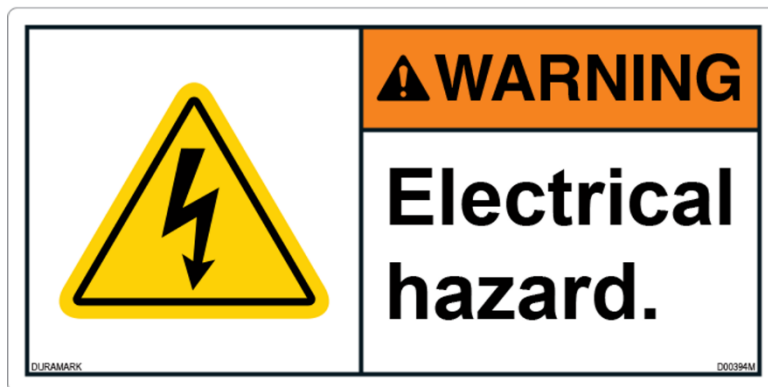
[Link](#)

4: Schematic and wiring

In this chapter, you will find the information regarding the schematic and electronics of the robot arm.

Please remember that you are working with electronics, and even though the robot arm operates at only 12V, there are still potential dangers. Incorrect wiring or mishandling of components can lead to short circuits, electric shocks, or damage to the robot arm and its parts. Always double-check your connections and follow safety guidelines. If you are not confident in your knowledge of electronics, please seek assistance from a professional to ensure safe assembly and operation.

You can find the schematic in the appendix.

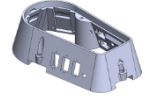




5: Assembly instructions

The instructions are written with care to include every step of the assembly process.

Step 1:

Items	QTY	Description
MiKo_mini_P001		
CABLE_01	0.16m	Cable 2 wire, 22 AWG/ 0.34 mm ²

Instruction:

Cut the wire at a length of 160mm and strip both ends of the cable 4-5 mm. Next pull the cable through the hole as shown below.

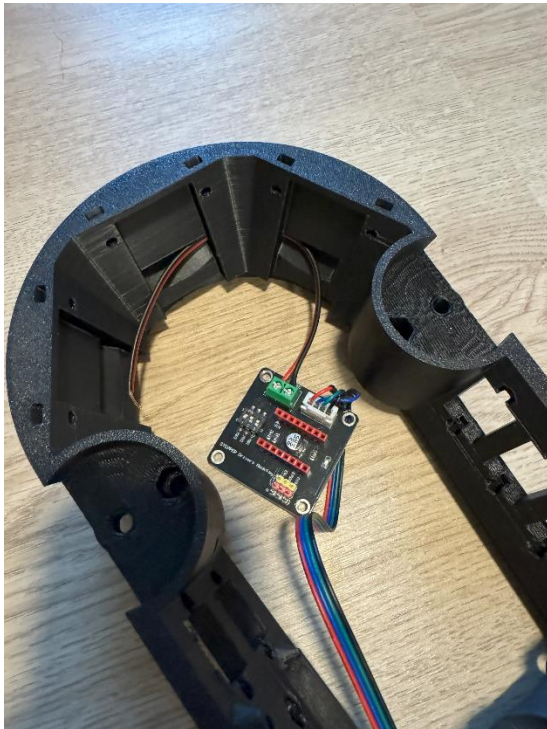


Step 2:

Items	QTY	Description
ELECTRONICS_026	1	Driver expansion board
CABLE_03	1	Nema 17 cable 50 cm

Instruction:

Connect the cable of step 1 to the driver expansion board, and connect the nema 17 cable to the expansion board.

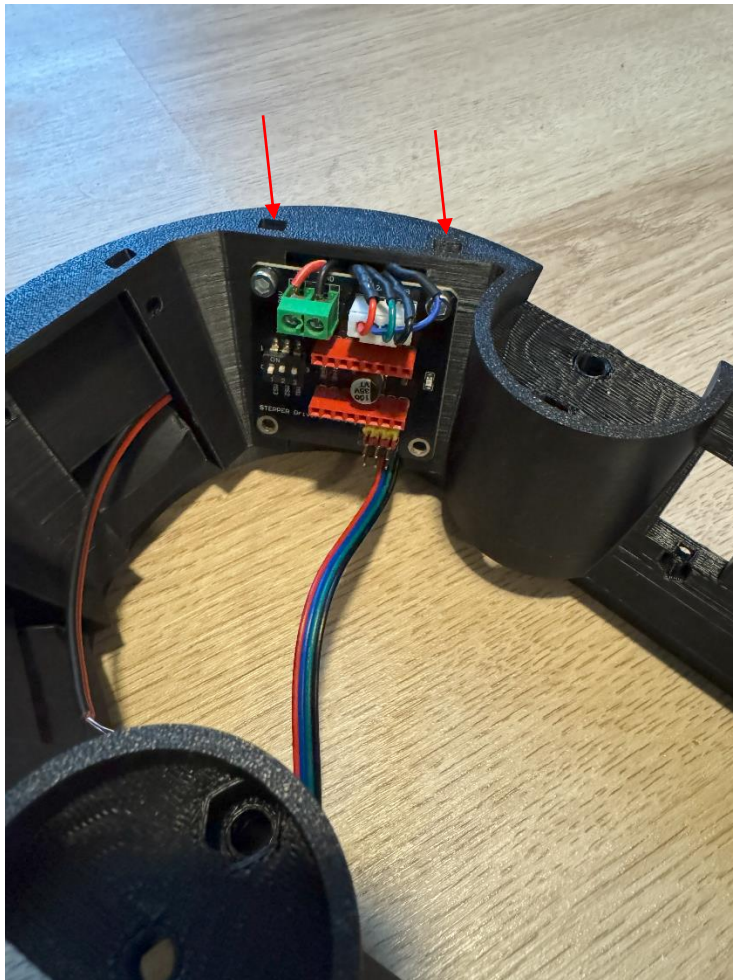


Step 3:

Items	QTY	Description
DIN 912 M3x10	2	Hexagon socket Head Cap Screws M3x10
ISO 4032 M3	2	Hexagon regular nut M3

Instruction:

Insert the 2 M3 nuts in the 3d printed parts, next use the m3 bolt to screw the expansion board to the 3d printed part.

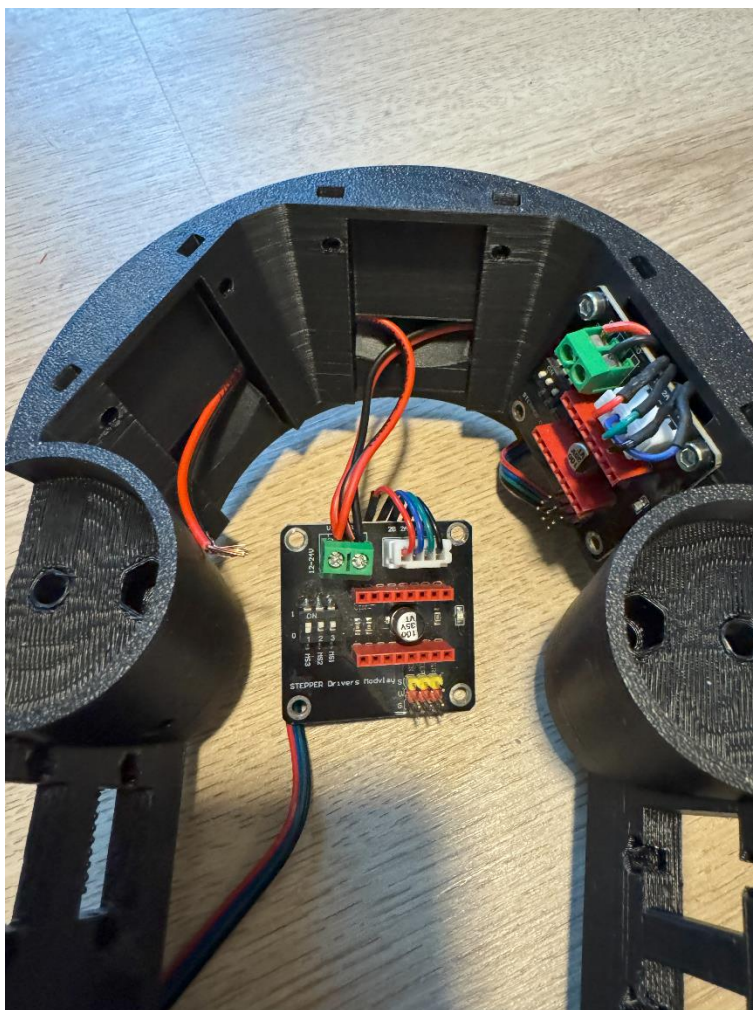


Step 4:

Items	QTY	Description
CABLE_01	0.16m	Cable 2 wire, 22 AWG/ 0.34 mm ²
CABLE_03	1	Nema 17 cable 50 cm
ELECTRONICS_026	1	Driver expansion board

Instruction:

Cut the cable a length of 160mm, connect this cable with the cable of the earlier step to the expansion board. Next connect the nema 7 cable to the expansion board.

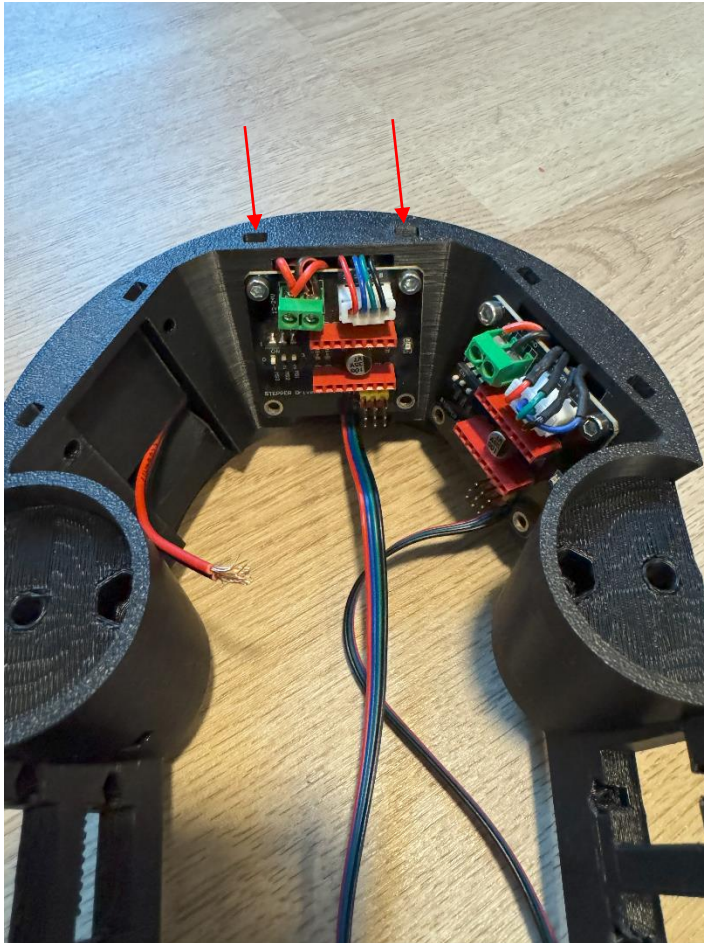


Step 5:

Items	QTY	Description
DIN 912 M3x10	2	Hexagon socket Head Cap Screws M3x10
ISO 4032 M3	2	Hexagon regular nut M3

Instruction:

Insert the two M3 nuts, next use the M3 bolts to screw the expansion board to the 3d printed part.

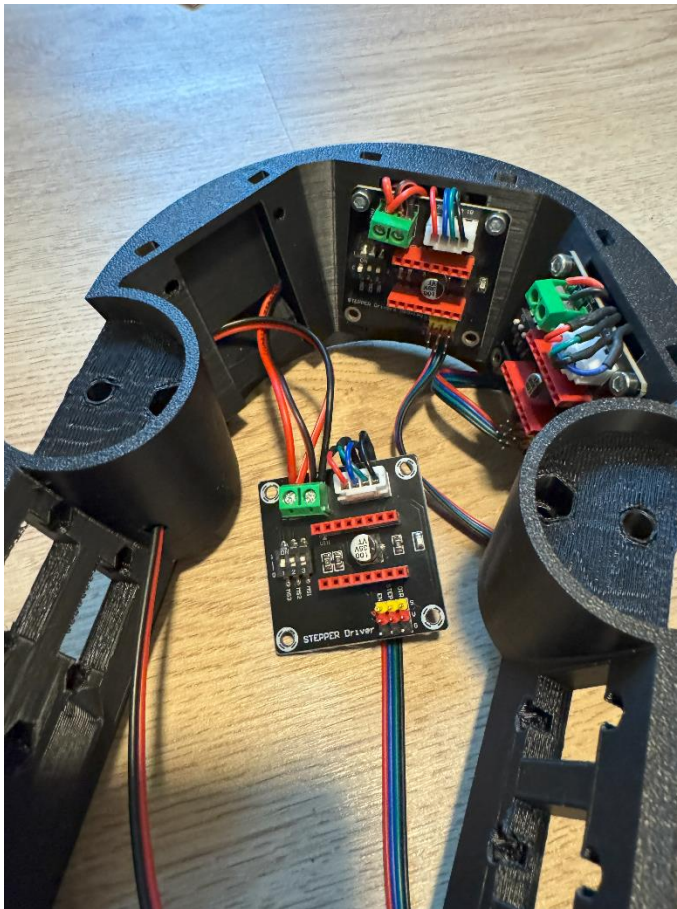


Step 6:

Items	QTY	Description
CABLE_01	0.3m	Cable 2 wire, 22 AWG/ 0.34 mm ²
CABLE_03	1	Nema 17 cable 50 cm
ELECTRONICS_026	1	Driver expansion board

Instruction:

Cut the cable a length of 300mm, connect this cable with the cable of the earlier step to the expansion board. Next connect the nema 7 cable to the expansion board.

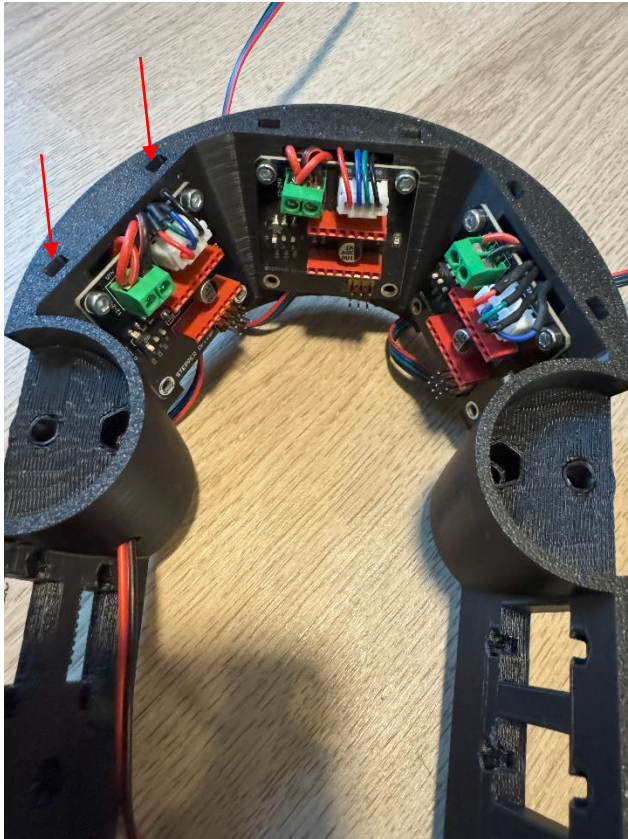


Step 7:

Items	QTY	Description
DIN 912 M3x10	2	Hexagon socket Head Cap Screws M3x10
ISO 4032 M3	2	Hexagon regular nut M3

Instruction:

Insert the two M3 nuts, next use the M3 bolts to screw the expansion board to the 3d printed part.



Step 8:

Items	QTY	Description
ELECTRONICS_028	2	3.81mm Terminal Block 2p
CABLE_03	0.3m	Cable 2 wire, 22 AWG/ 0.34 mm ²

Instruction:

Cut 2 cables at a length of 150mm, and strip both ends of the cable 4-5 mm. Next connect the cable to the female part of the 3.81 mm terminal block.

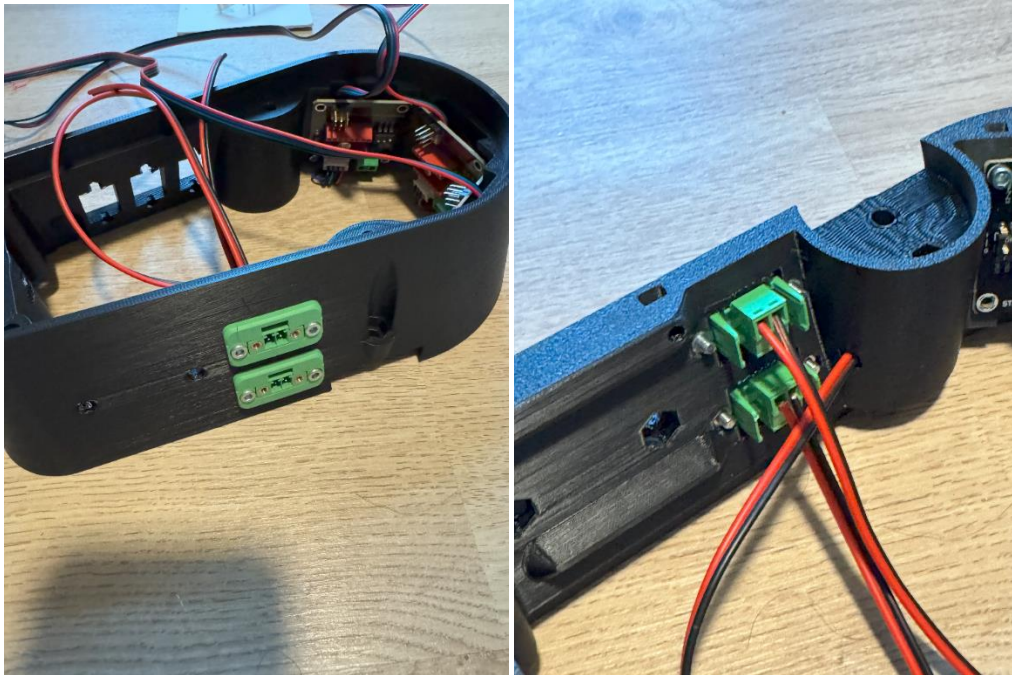


Step 9:

Items	QTY	Description
DIN 912 M3x10	4	Hexagon socket Head Cap Screws M3x10
ISO 4032 M3	4	Hexagon regular nut M3

Instruction:

Bolt the two terminal blocks of the earlier step to the 3d printed part, using the M3 bolt and nut.

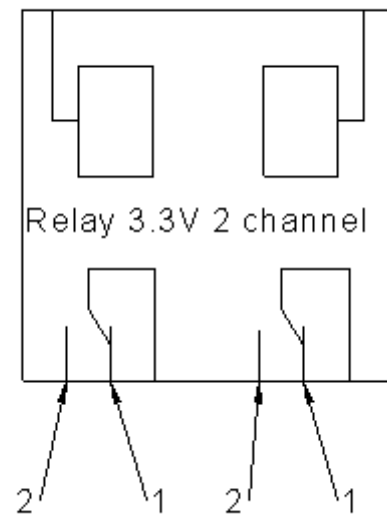
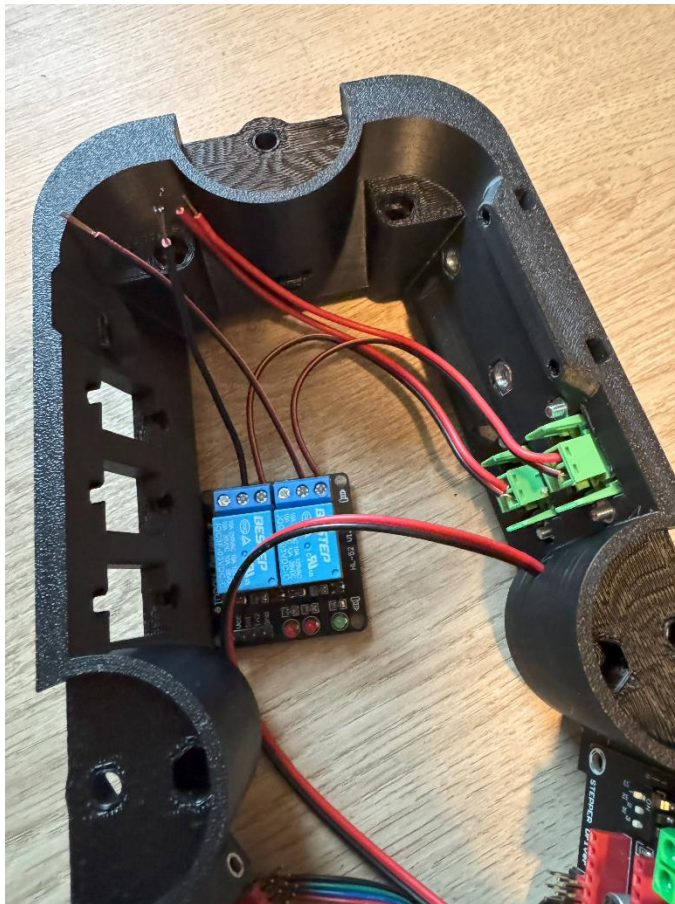


Step 10:

Items	QTY	Description
CABLE_03	0.16m	Cable 2 wire, 22 AWG/ 0.34 mm ²
ELECTRONICS_016	1	Relay 3.3V 2 channel

Instruction:

Cut two cables at a length of 80mm, separate the two wire and use only the black wire. Next connect the black wire of the terminal to the relay, position 2. Connect the black wire from this step to position 1 of the relay.

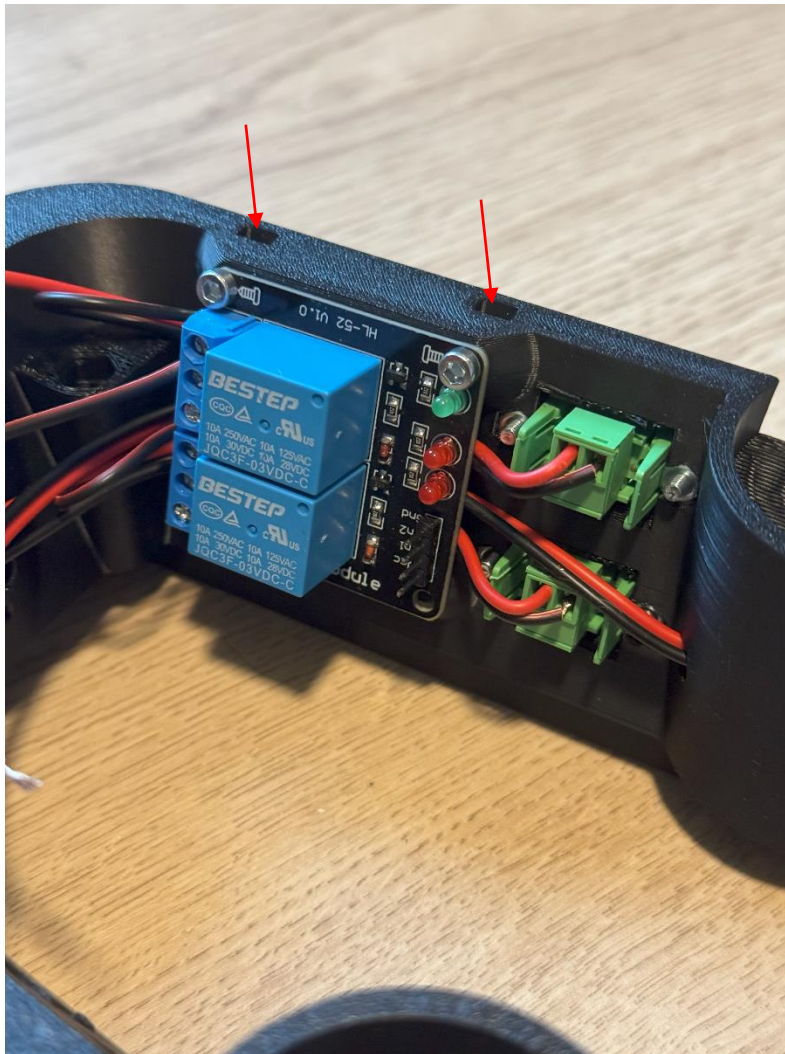


Step 11:

Items	QTY	Description
DIN 912 M3x10	2	Hexagon socket Head Cap Screws M3x10
ISO 4032 M3	2	Hexagon regular nut M3

Instruction:

Insert the two M3 nuts, next use the M3 bolts to screw the relay to the 3d printed part. Guide the cable behind the relay, also the cable of the expansion boards.

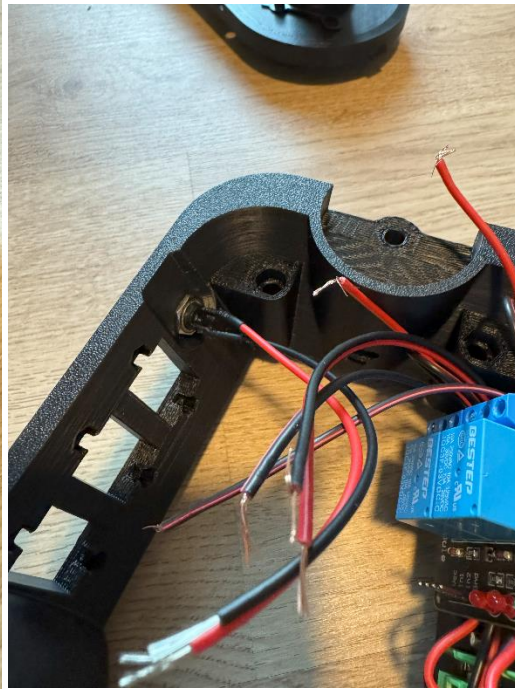


Step 13:

Items	QTY	Description
ELECTRONICS_013	1	5.5 x 2.1 mm jack with cable 20 cm

Instruction:

Cut the cable of the 5.5mm jack at a length of 100mm, and strip the end of the cables 4-5mm



Step 14:

Items	QTY	Description
ELECTRONICS_032	1	5.5 x 2.1 mm jack male screw
CABLE_01	0.08m	Cable 2 wire, 22 AWG/ 0.34 mm ²

Instruction:

Cut the cable at a length of 80mm and connect it to the 5.5 mm jack.

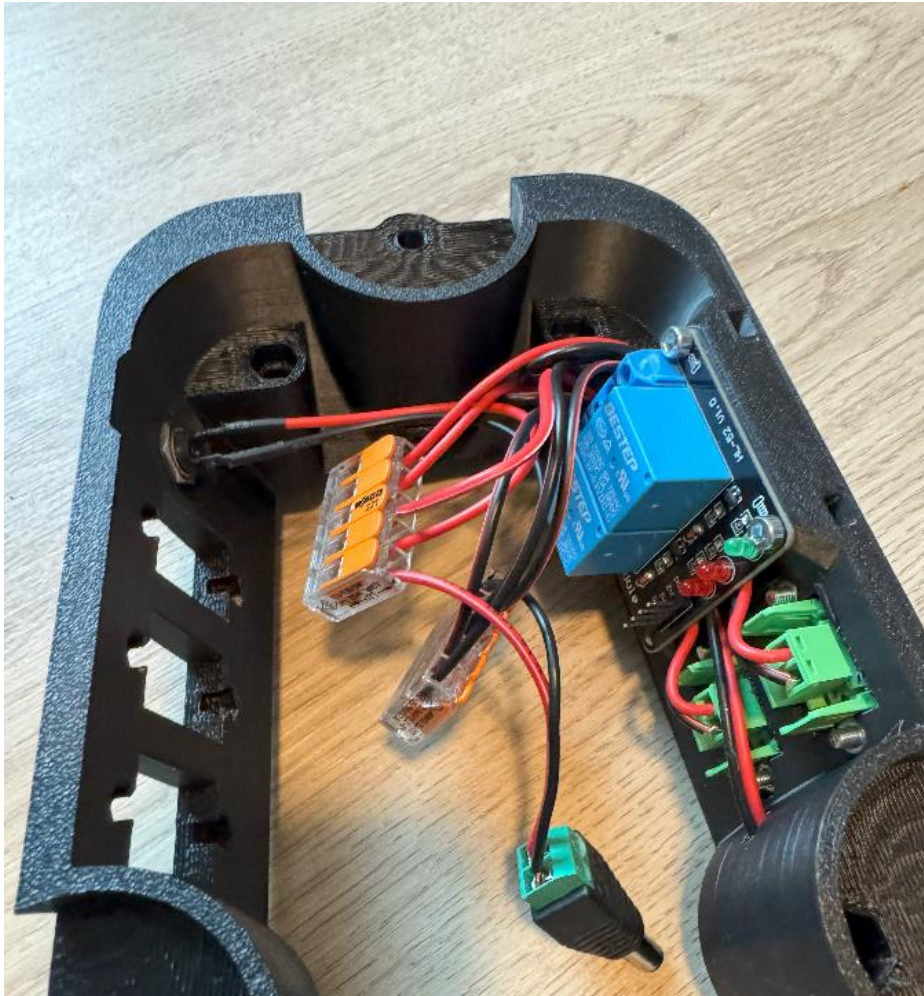


Step 15:

Items	QTY	Description
ELECTRONICS_020	2	Wago 221-415

Instruction:

Connect all the cables together using the Wago 221-415 connector

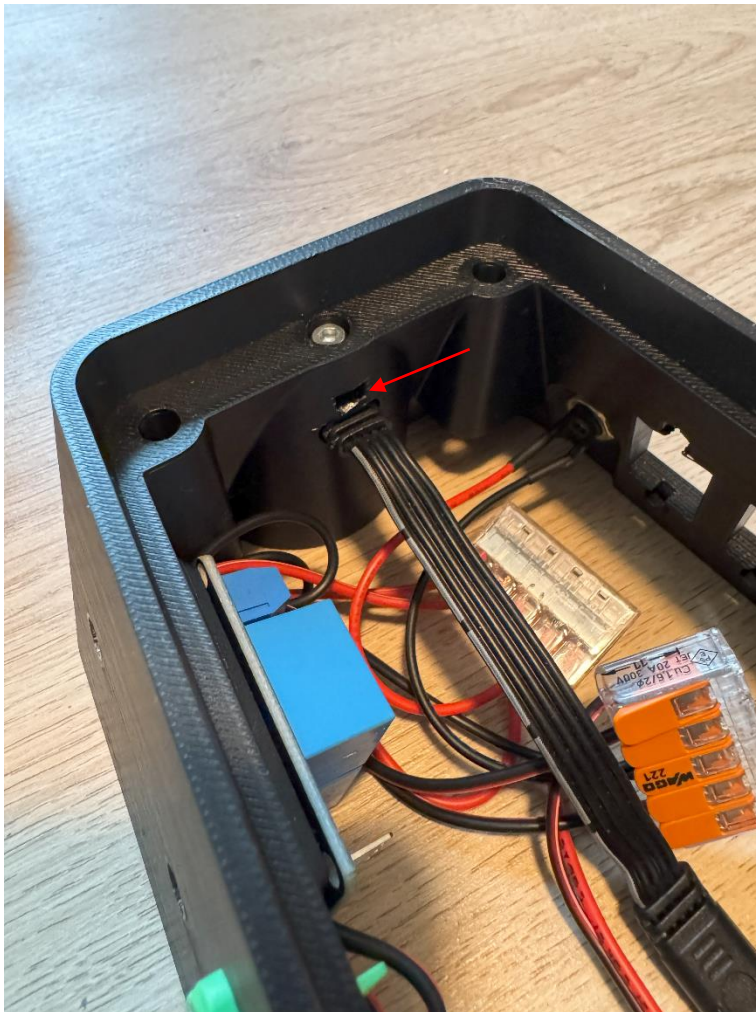


Step 16:

Items	QTY	Description
DIN 912 M3x10	1	Hexagon socket Head Cap Screws M3x10
ISO 4032 M3	1	Hexagon regular nut M3
ELECTRONICS_031	1	Usb-c male to Usb-c female cable 10cm

Instruction:

Push the usb-c cable in the hole. Next Insert the M5 nut in the 3d printed part, to fasten the usb-c cable use the M3 bolt and tighten it carefully.

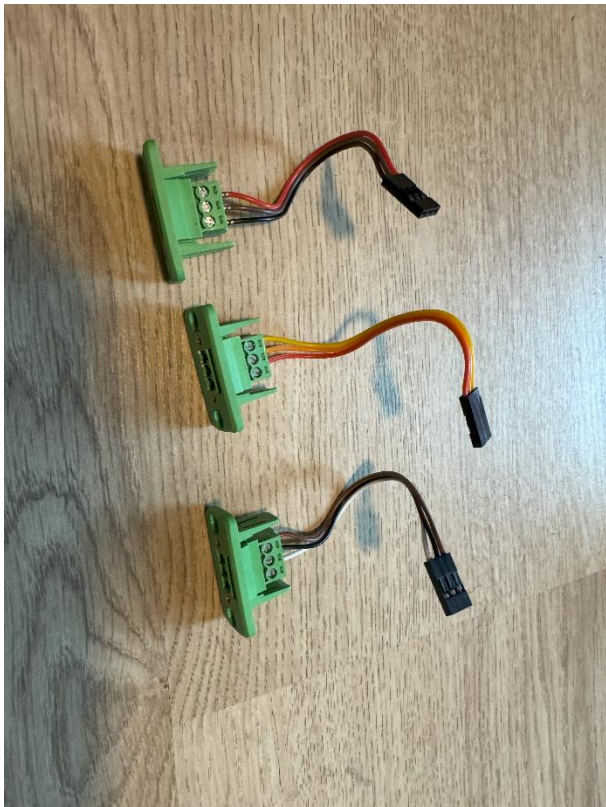


Step 17:

Items	QTY	Description
ELECTRONICS_027	3	3.81mm Terminal Block 3p
CABLE_07	9	Dupont female - female 10cm

Instruction:

Remove on both side of the dupont cable the black connector, using a small screwdriver or a knife. On one side you will use a 3 way connector, the other side will be connected to the terminal.

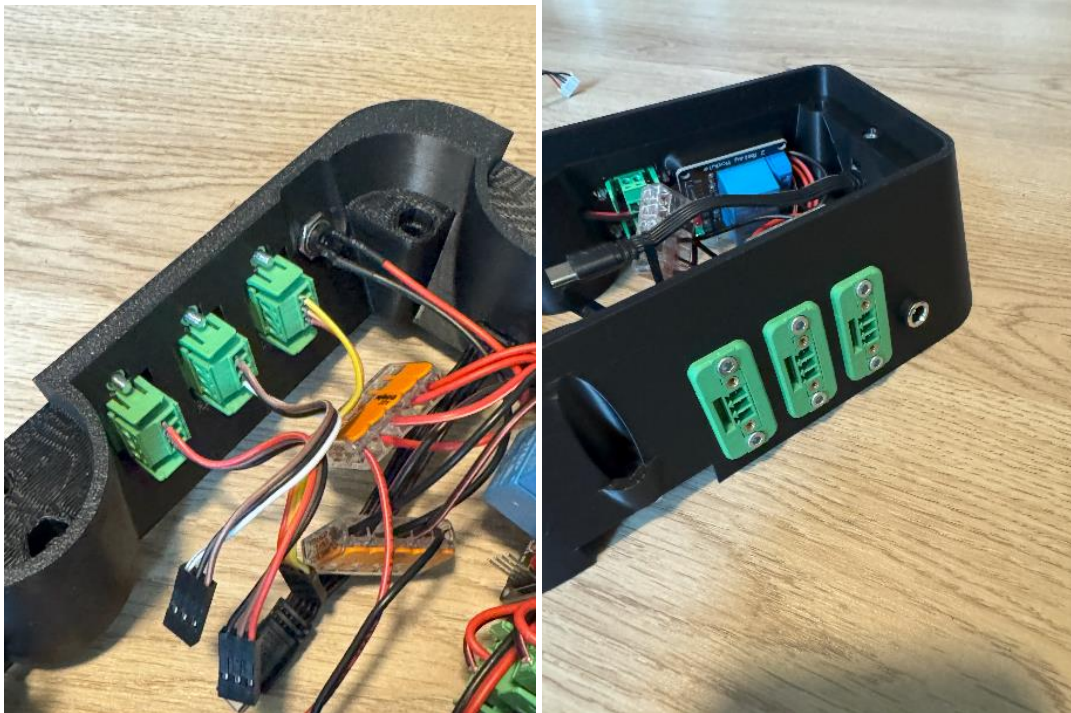


Step 18:

Items	QTY	Description
DIN 912 M3x10	6	Hexagon socket Head Cap Screws M3x10
ISO 4032 M3	6	Hexagon regular nut M3

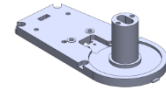
Instruction:

Bolt the three terminal blocks of the earlier step to the 3d printed part, using the M3 bolt and nut.



Step 19:

Items	QTY	Description
MiKo_mini_P017	1	
ISO 4032 M3	2	Hexagon regular nut M3
ISO 4032 M5	2	Hexagon regular nut M5



Instruction:

Insert the nuts into the 3d printed part



Step 20:

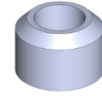
Items	QTY	Description
Limit switch	1	
ISO 4032 M3	2	Hexagon regular nut M3
DIN 912 M3x10	2	Hexagon socket Head Cap Screws M3x10

Instruction:



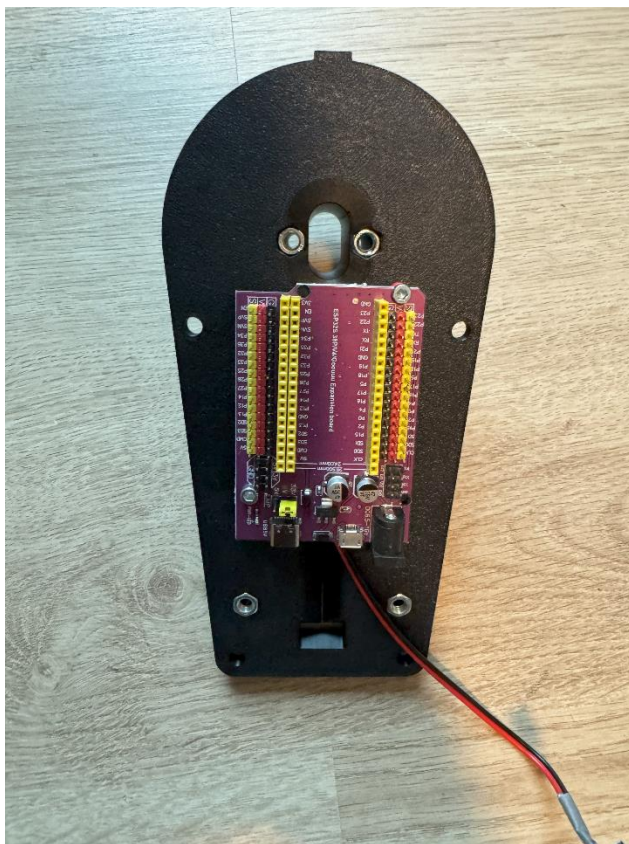
Step 21:

Items	QTY	Description
MiKo_mini_P029	2	
ELECTRONICS_029	1	ESP32 38PIN Expansion Board
ISO 4032 M3	2	Hexagon regular nut M3
DIN 912 M3x10	2	Hexagon socket Head Cap Screws M3x10



Instruction:

Mount the ESP32 expansion board to the 3d printed part using the M3 bolts, use Miko_mini_P029 as spacer between the board and the 3d printed part.

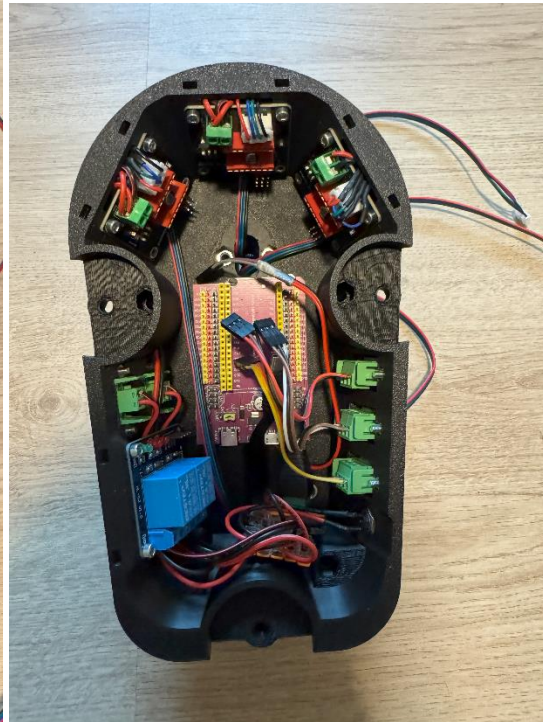
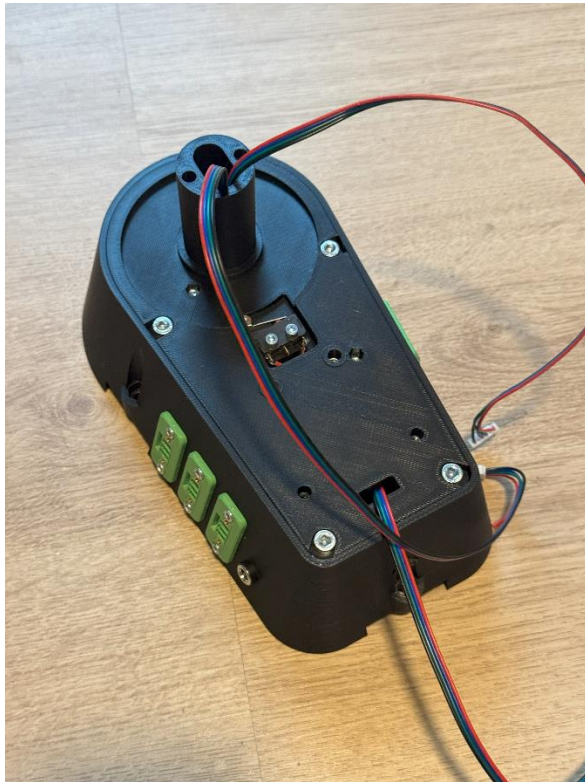


Step 22:

Items	QTY	Description
DIN 912 M5x35	4	Hexagon socket Head Cap Screws M5x35
ISO 4032 M5	4	Hexagon regular nut M5

Instruction:

Mount the assembly of the previous step to the base of the robot, using the M5x35 bolts and M5 nuts.



Step 23:

Items	QTY	Description
CABLE_07	15	Dupont female - female 10cm

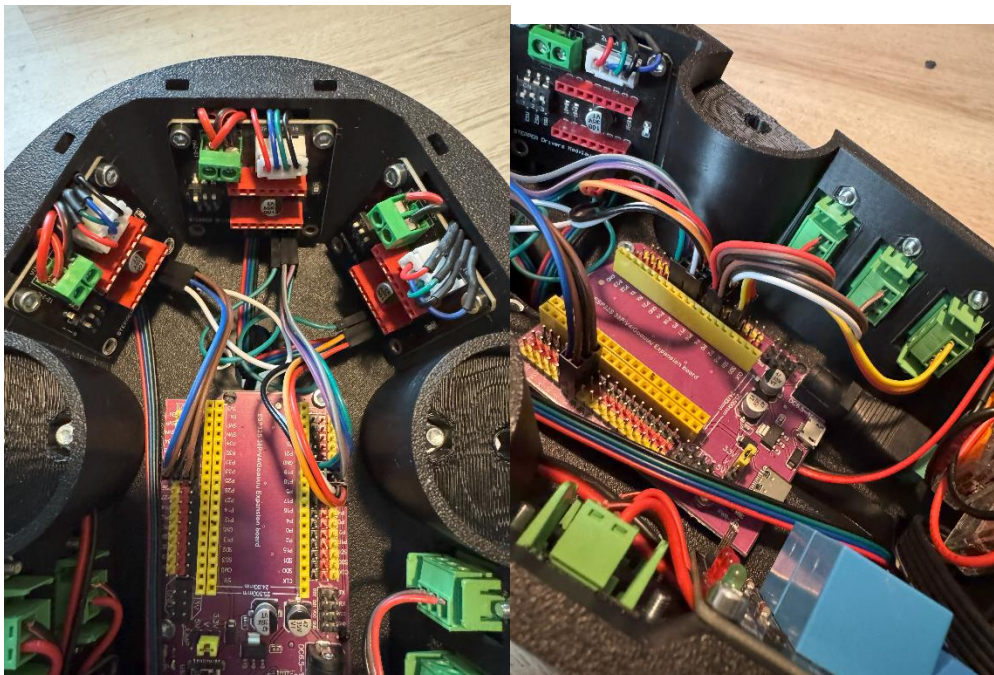
Instruction:

Remove on both side of the dupont cables the black connector, using a small screwdriver or a knife. Leave on the three cables the black connector on one side. Next use 2x3 connectors, and arrange the cables as shown in the picture below.



EN 1	STEP 2	DIR 3
	V+ 4	V+ 4
	GND 1	GND 5

STEP 2	V+ 4	GND 5
DIR 3	V+ 4	GND 5



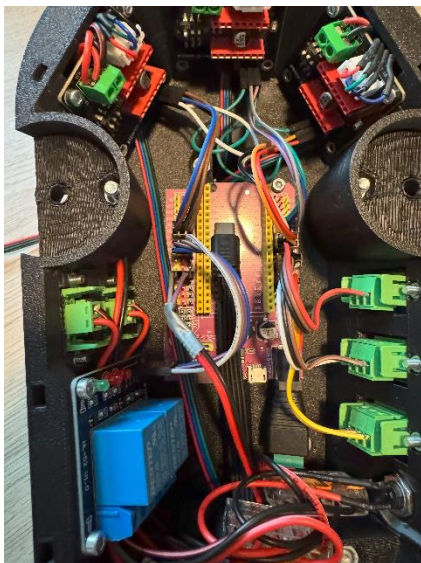
Step 24:

Items	QTY	Description
CABLE_07	4	Dupont female - female 10cm

Instruction:



GND	4
Relay 1	1
Relay 2	2
V+	3



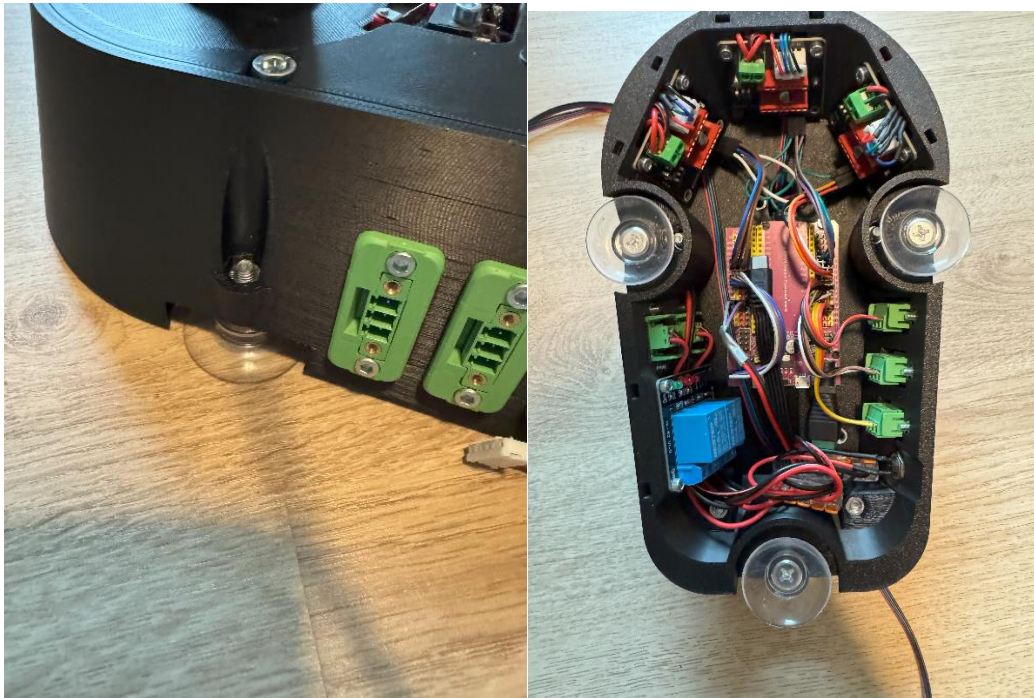
Relay 1	V+	GND
1	3	4
Relay 2	V+	GND
2		

Step 25:

Items	QTY	Description
SUCTION_CUP_01	3	Suction cup ØM5x13 Ø38mm
ISO 4032 M5	3	Hexagon regular nut M5

Instruction:

Press the M5 nuts first into the 3d part, next mount the suction cups to the 3d printed part.

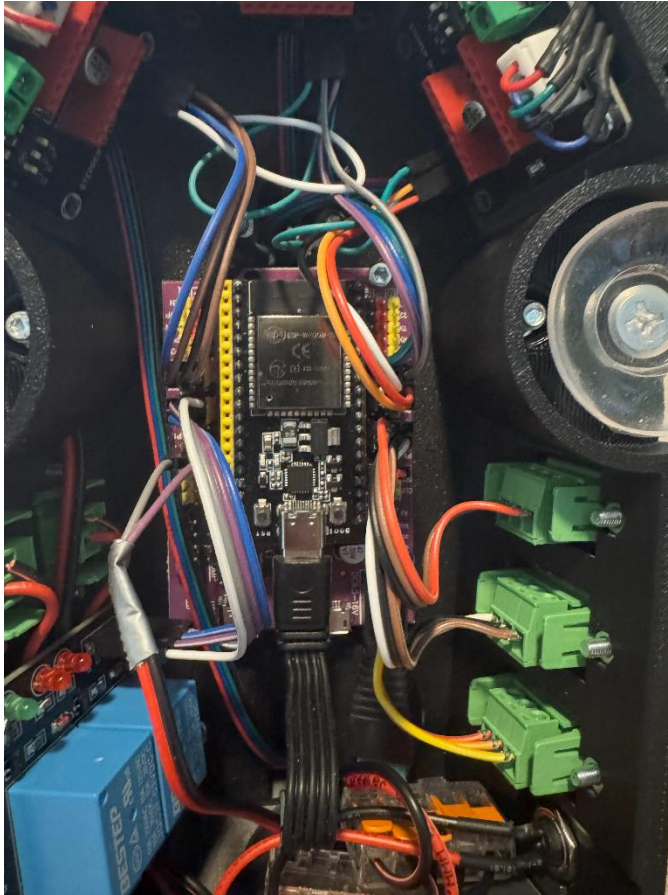


Step 26:

Items	QTY	Description
ELECTRONICS_004	1	ESP32 38 pin

Instruction:

Put the ESP32 on the expansion board, connect the usb cable to the ESP32

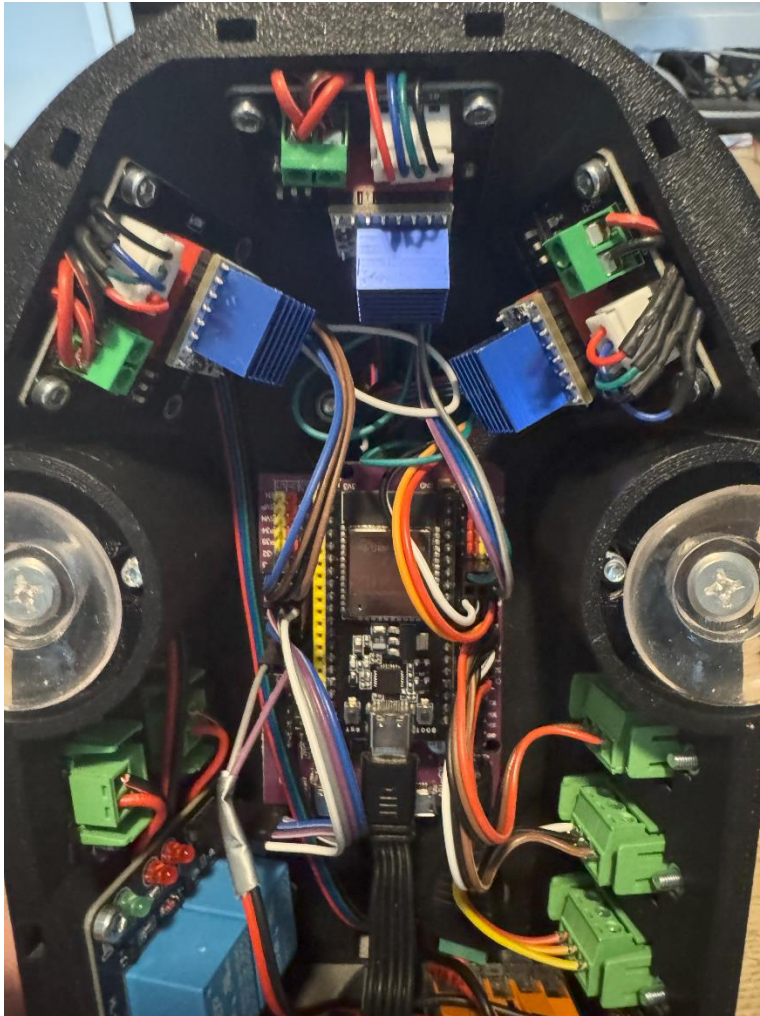


Step 27:

Items	QTY	Description
DRIVER_03	3	TMC2208 stepper driver

Instruction:

Place the driver on the driver expansion board, make sure the driver is in the right orientation.



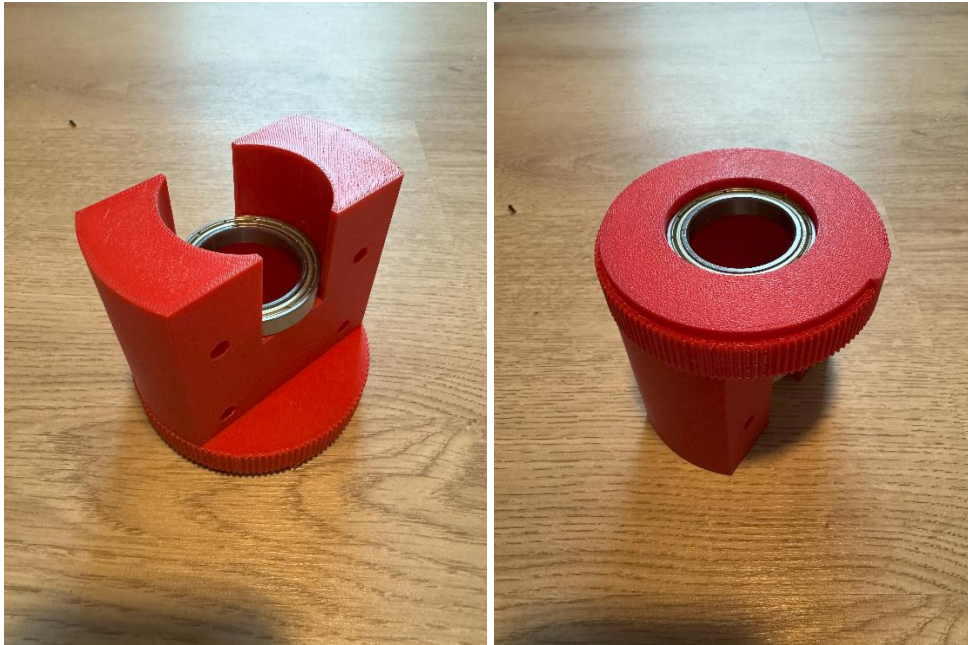
Step 28:

Items	QTY	Description
MiKo_mini_P002	1	
BEARING_07	2	Bearing 30x42x7 (6806)



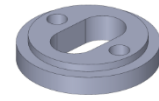
Instruction:

Press the two bearings into the 3d printed part.



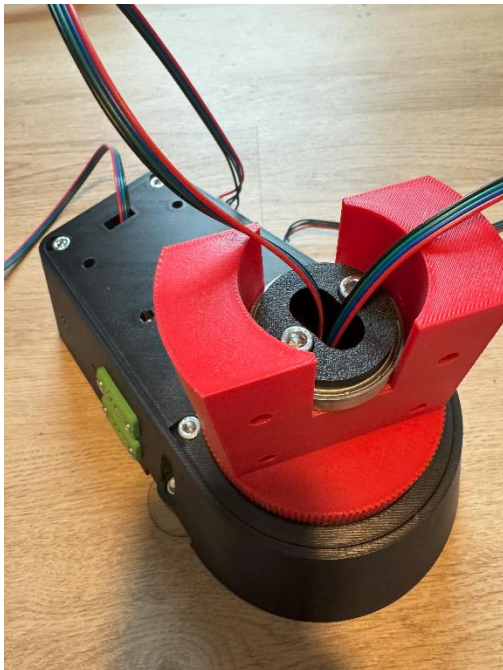
Step 29:

Items	QTY	Description
MiKo_mini_P018	1	
DIN 912 M5x60	2	Hexagon socket Head Cap Screws M5x60



Instruction:

Mount the assembly of the previous part, on the base of the robot arm. Use part MiKo_mini_P018 with the M5 bolts to fix the assembly to the base of the robot.



Step 30:

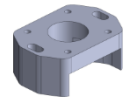
Items	QTY	Description
BEARING_01	4	Bearing 5x14x5 (605)
DIN 912 M5x20	2	Hexagon socket Head Cap Screws M5x20

Instruction:



Step 31:

Items	QTY	Description
MiKo_mini_P032	1	
MOTOR_01	1	Stepper motor Nema 17 L38
PULLEY_08	1	Pulley GT2 16T B5 W10
DIN 912 M3x10	4	Hexagon socket Head Cap Screws M3x10



Instruction:

Put the pulley on the motor axis make sure there is about 2-3 mm clearance between the motor and the pulley. Next mount the motor to the 3d printed part.

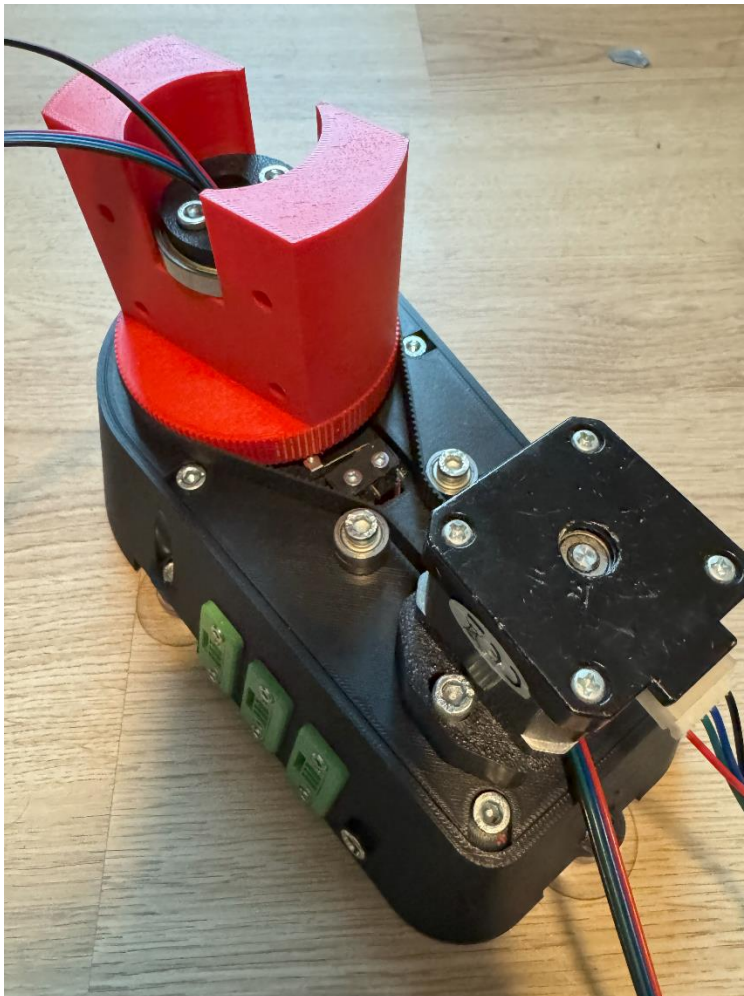


Step 32:

Items	QTY	Description
DIN 912 M5x35	2	Hexagon socket Head Cap Screws M5x35
BELT_10	1	Timing belt GT2 L390 W10

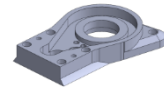
Instruction:

Mount the motor assembly and the belt to the base part of the robot arm, tension the belt by moving the motor assembly backwards. Connect the motor cable to the motor.



Step 33:

Items	QTY	Description
MiKo_mini_P013	1	
BEARING_07	1	Bearing 30x42x7 (6806)
ISO 4032 M5	3	Hexagon regular nut M5
ISO 4032 M3	2	Hexagon regular nut M3



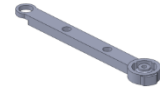
Instruction:

Insert the bearing and the nuts in the 3d printed part



Step 34:

Items	QTY	Description
MiKo_mini_P003	1	
BEARING_01	1	Bearing 5x14x5 (605)
ISO 4032 M5	1	Hexagon regular nut M5



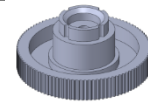
Instruction:

Insert the bearing and the nuts in the 3d printed part



Step 35:

Items	QTY	Description
MiKo_mini_P015	1	
BEARING_09	1	Axial bearing Ø52x35x4 (AXK3552 2AS)
DIN 912 M5x35	1	Hexagon socket Head Cap Screws M5x35



Instruction:



Step 36:

Items	QTY	Description
BEARING_01	2	Bearing 5x14x5 (605)
DIN 912 M5x20	1	Hexagon socket Head Cap Screws M5x20

Instruction:



Step 37:

Items	QTY	Description
Limit switch	1	
DIN 912 M3x10	2	Hexagon socket Head Cap Screws M3x10

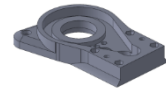
Instruction:

Mount the limit switch to the 3d printed part, make sure the limit switch is pressed and unpressed when turning the joint.



Step 38:

Items	QTY	Description
MiKo_mini_P012	1	
BEARING_07	1	Bearing 30x42x7 (6806)
ISO 4032 M5	7	Hexagon regular nut M5
ISO 4032 M3	2	Hexagon regular nut M3



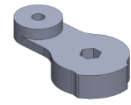
Instruction:

Insert the nuts and bearing in the 3d printed part.



Step 39:

Items	QTY	Description
MiKo_mini_P009	1	
ISO 4032 M5	2	Hexagon regular nut M5



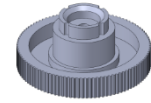
Instruction:

Insert the nuts in the 3d printed part.



Step 40:

Items	QTY	Description
MiKo_mini_P009	1	
DIN 912 M5x35	1	Hexagon socket Head Cap Screws M5x35
BEARING_09	1	Axial bearing Ø52x35x4 (AXK3552 2AS)



Instruction:



Step 41:

Items	QTY	Description
BEARING_01	2	Bearing 5x14x5 (605)
DIN 912 M5x20	1	Hexagon socket Head Cap Screws M5x20

Instruction:



Step 42:

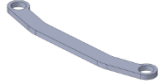
Items	QTY	Description
Limit switch	1	
DIN 912 M3x10	2	Hexagon socket Head Cap Screws M3x10

Instruction:

Mount the limit switch to the 3d printed part, make sure the limit switch is pressed and unpressed when turning the joint.



Step 43:

Items	QTY	Description
MiKo_mini_P010	1	
BEARING_01	2	Bearing 5x14x5 (605)
DIN 912 M5x20	1	Hexagon socket Head Cap Screws M5x20
DIN 125 M5	1	Washer M5

Instruction:

Insert the two bearings in the link. Next mount the link use a



Step 44:

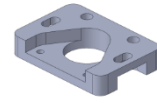
Items	QTY	Description
DIN 912 M5x60	4	Hexagon socket Head Cap Screws M5x60

Instruction:



Step 45:

Items	QTY	Description
MiKo_mini_P016	2	
MOTOR_01	2	Stepper motor Nema 17 L38
PULLEY_08	2	Pulley GT2 16T B5 W10
DIN 912 M3x10	8	Hexagon socket Head Cap Screws M3x10



Instruction:

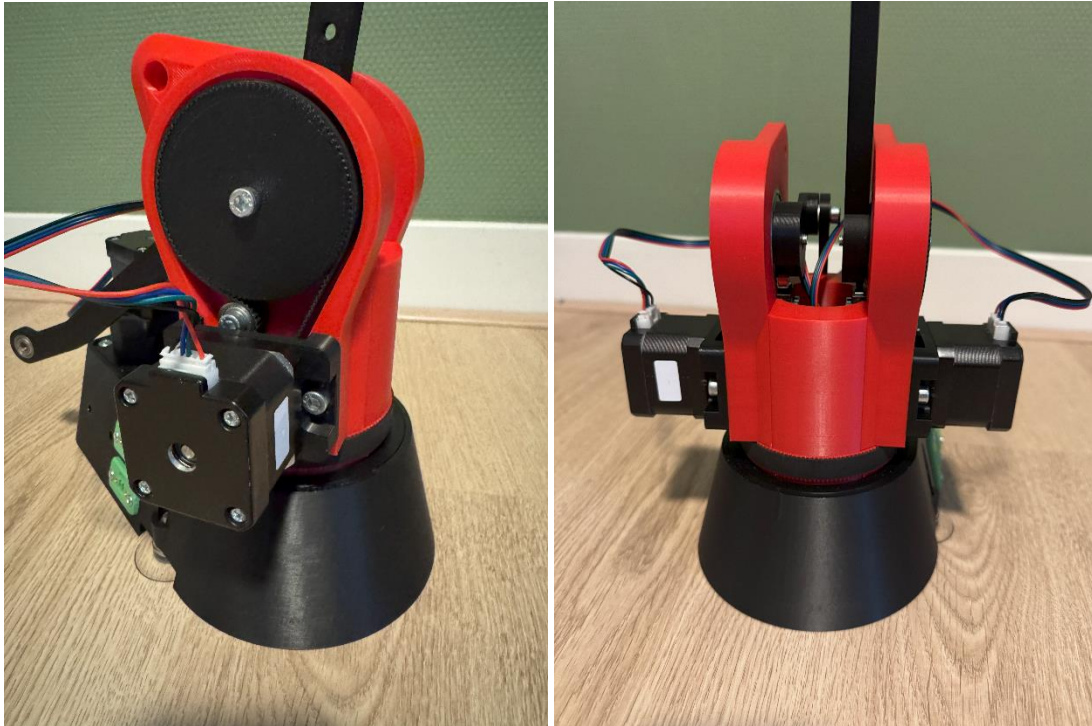
Mount the pulley on the axis of the motor, leave about 3-4 mm space between the motor and the pulley.



Step 46:

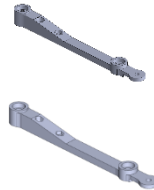
Items	QTY	Description
BELT_11	2	Timing belt GT2 L264 W10
DIN 912 M5x35	4	Hexagon socket Head Cap Screws M5x35

Instruction:



Step 47:

Items	QTY	Description
MiKo_mini_P007	1	
MiKo_mini_P011	1	
BEARING_01	4	Bearing 5x14x5 (605)
ISO 4032 M5	2	Hexagon regular nut M5
DIN 912 M5x20	2	Hexagon socket Head Cap Screws M5x20

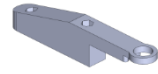


Instruction:



Step 48:

Items	QTY	Description
MiKo_mini_P006	1	
BEARING_01	1	Bearing 5x14x5 (605)
ISO 4032 M5	2	Hexagon regular nut M5

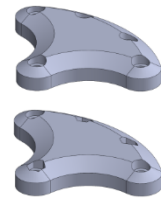


Instruction:



Step 49:

Items	QTY	Description
MiKo_mini_P004	1	
MiKo_mini_P022	1	
ISO 4032 M5	3	Hexagon regular nut M5
DIN 912 M5x60	1	Hexagon socket Head Cap Screws M5x60
Washer M5	4	DIN 125 M5



Instruction:

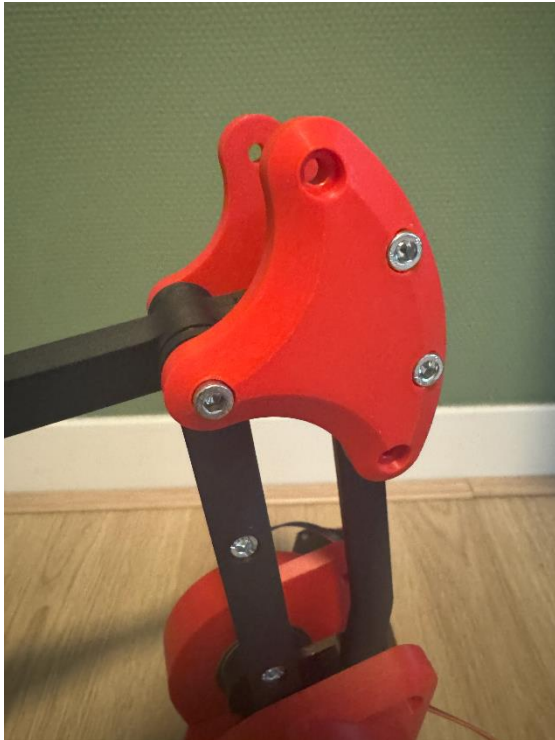


Step 50:

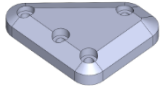
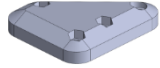
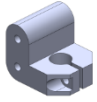
Items	QTY	Description
MiKo_mini_P014	1	
DIN 912 M5x60	1	Hexagon socket Head Cap Screws M5x60



Instruction:



Step 51:

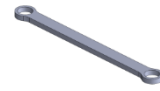
Items	QTY	Description	
MiKo_mini_P008	1		
MiKo_mini_P023	1		
MiKo_mini_P027	1		
DIN 125 M5	2	Washer M5	
ISO 4032 M5	3	Hexagon regular nut M5	
DIN 912 M5x60	3	Hexagon socket Head Cap Screws M5x60	

Instruction:



Step 52:

Items	QTY	Description
MiKo_mini_P005	4	
BEARING_01	8	Bearing 5x14x5 (605)



Instruction:

Insert the bearings in the 3d printed parts



Step 53:

Items	QTY	Description
DIN 912 M5x20	8	Hexagon socket Head Cap Screws M5x20
DIN 125 M5	8	Washer M5
ISO 4032 M5	8	Hexagon regular nut M5

Instruction:



Step 54:

Items	QTY	Description
DIN 912 M5x20	1	Hexagon socket Head Cap Screws M5x20
ISO 4032 M5	1	Hexagon regular nut M5

Instruction:





6: Tools

The robot arm has two different tools:

- Magnetic tool
- Vacuum tool

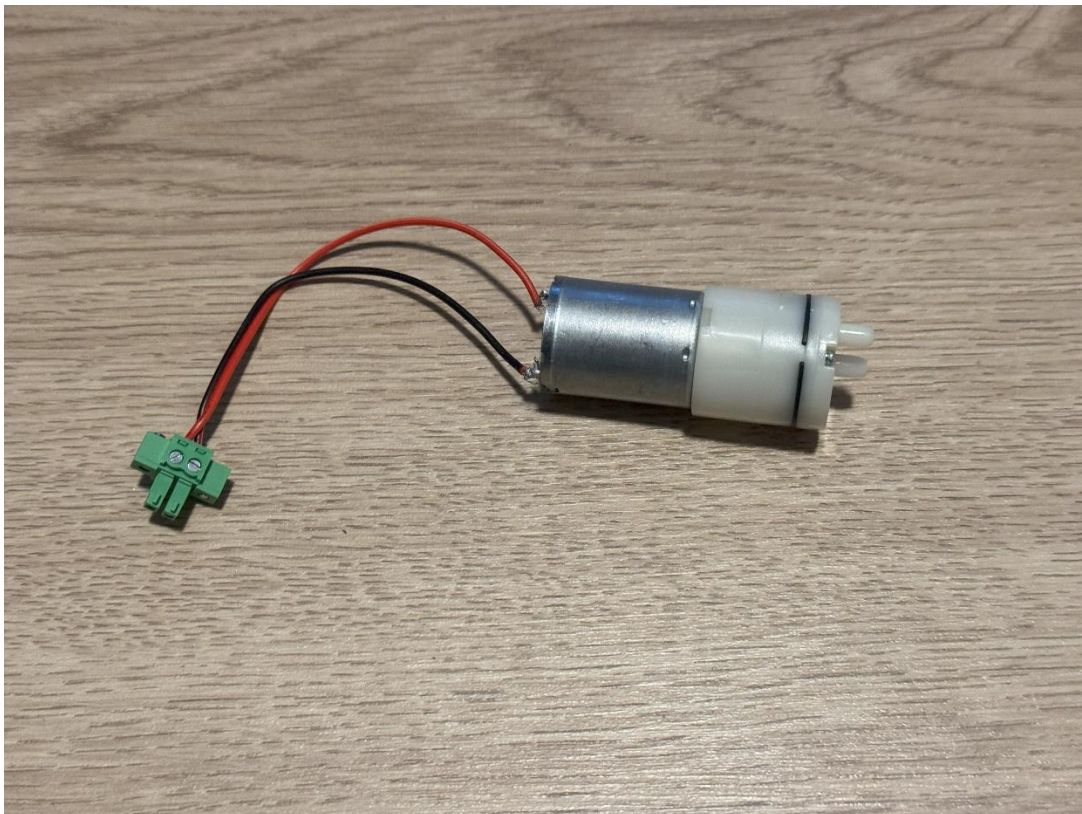
See the following pages how to install the tools

Step 1 vacuum tool:

Items	QTY	Description
VACUUM_04	1	Mini Air Pump DC 12V
CABLE_01	1	Cable 2 wire, 22 AWG/ 0.34 mm ²
ELECTRONICS_028	1	3.81mm Terminal Block 2p

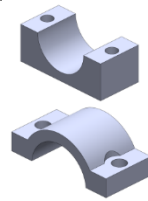
Instruction:

Solder the cable to the motor, connect the other end of the cable to the terminal 2P male.



Step 2 vacuum tool:


Items	QTY	Description
MiKo_mini_P024	1	
MiKo_mini_P025	1	
DIN 912 M5x35	2	Hexagon socket Head Cap Screws M5x35



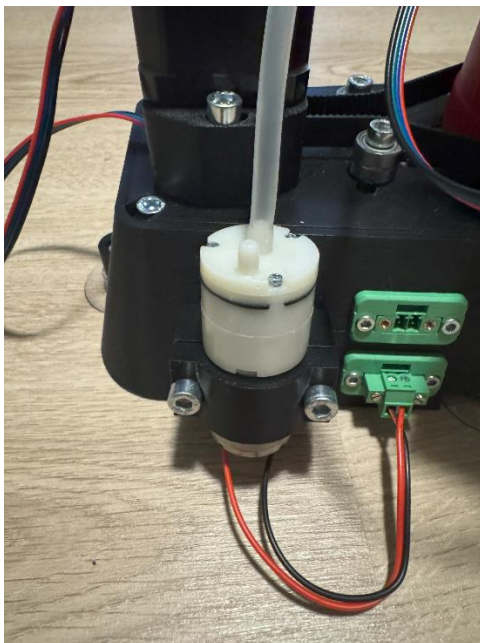
Instruction:



Step 3 vacuum tool:

Items	QTY	Description
MiKo_mini_P024	1	
VACUUM_03	0.8	Hose Ø6x4
VACUUM_01	1	Suction cup Ø25 DP

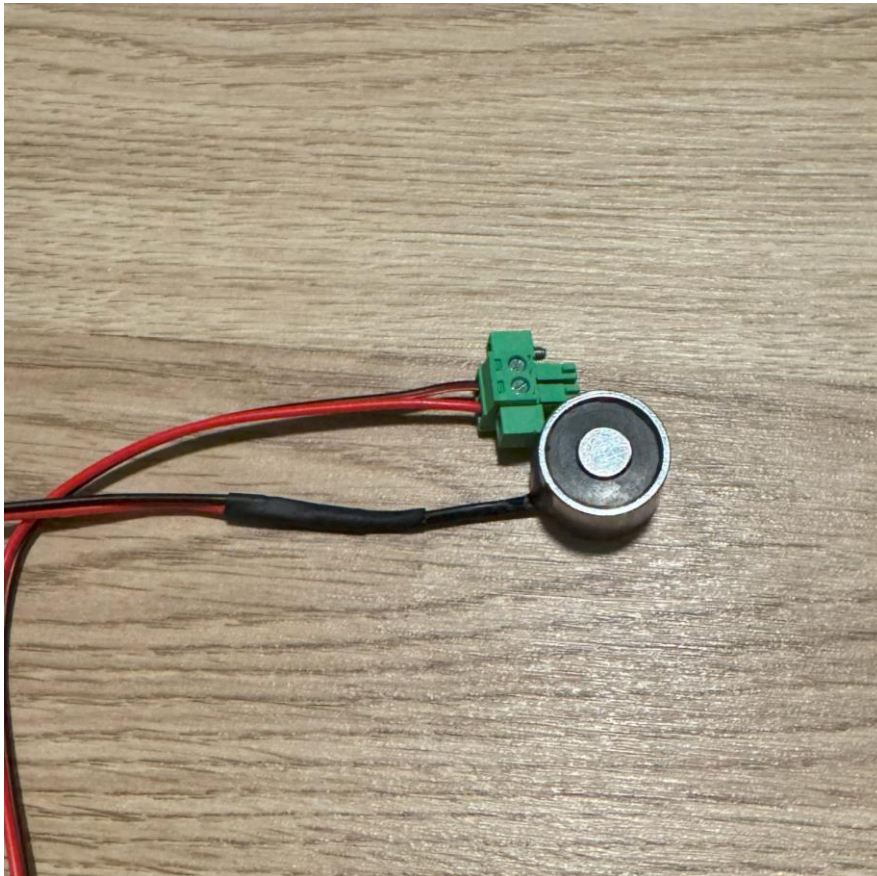
Instruction:



Step 1 magnet tool:

Items	QTY	Description
MiKo_mini_P024	1	Magnet 12V MH-P20/15
ELECTRONICS_028	1	3.81mm Terminal Block 2p
CABLE_01	0.8	Cable 2 wire, 22 AWG/ 0.34 mm ²

Instruction:



Step 2 magnet tool:

Items	QTY	Description
MiKo_mini_P026	1	
DIN 912 M3x10	1	Hexagon socket Head Cap Screws M3x10



Instruction:





7: Firmware installation

For the installation of the firmware please visit the following page,

<https://mikobots.com/mikobots-studio/help/installation/installation-firmware-esp32/>.



8: Software setup

For Information on how to setup MiKo-mini in MiKoBots Studio please visit the following page, <https://mikobots.com/mikobots-studio/help/robot/>.

You can download the setup of the robot from the following link:

<https://mikobots.com/mikobots-studio/robots/>

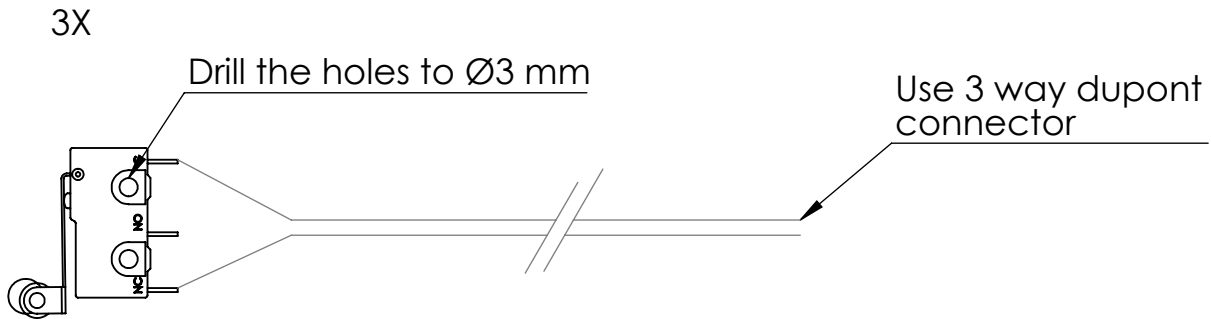


9: Appendix

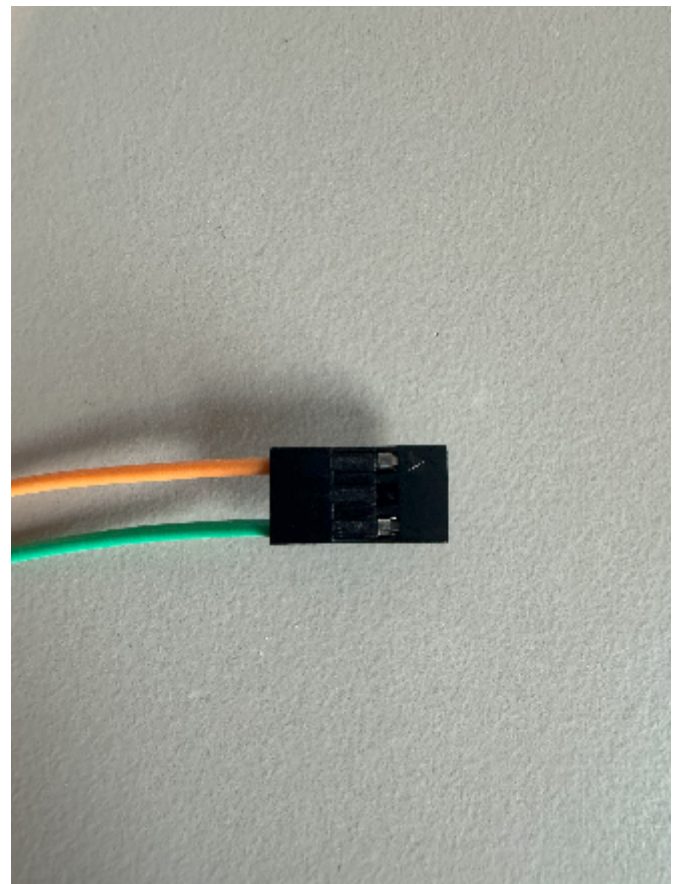
In the appendix you can find the following documents.

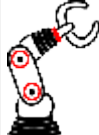
- Schematic of MiKo-mini
- Limit switch with cables

- 3x: ELECTRONICS_001 (Micro Limit Switch (Roller Lever))
- 6x: CABLE_08 (Dupont female - female 30cm)



Remove on both side of the dupont cable the black connector, using a small screwdriver or a knife. On one side use a 3 way dupont connector see picture. Solder the other side of the dupont cable to the limit switch



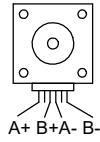
 MiKoBots www.mikobots.com	TOLERANCE :	GENERAL TOLERANCE ACCORDING TO:	ISO 2768 T1: m
			ISO 2768 T2: m
	DISCRIPTION:	Micro Limit Switch (Roller Lever)	
SCALE: 1:1	UNIT OF MEASURE : MM	Sheet 1 of 3	
MASS (g) : 1.31	MATERIAL : Material <not specified>	FORMAT :	DRAWING NR. :
GET. :	DATE :	A4	ELECTRONICS_001
			001

0 MM

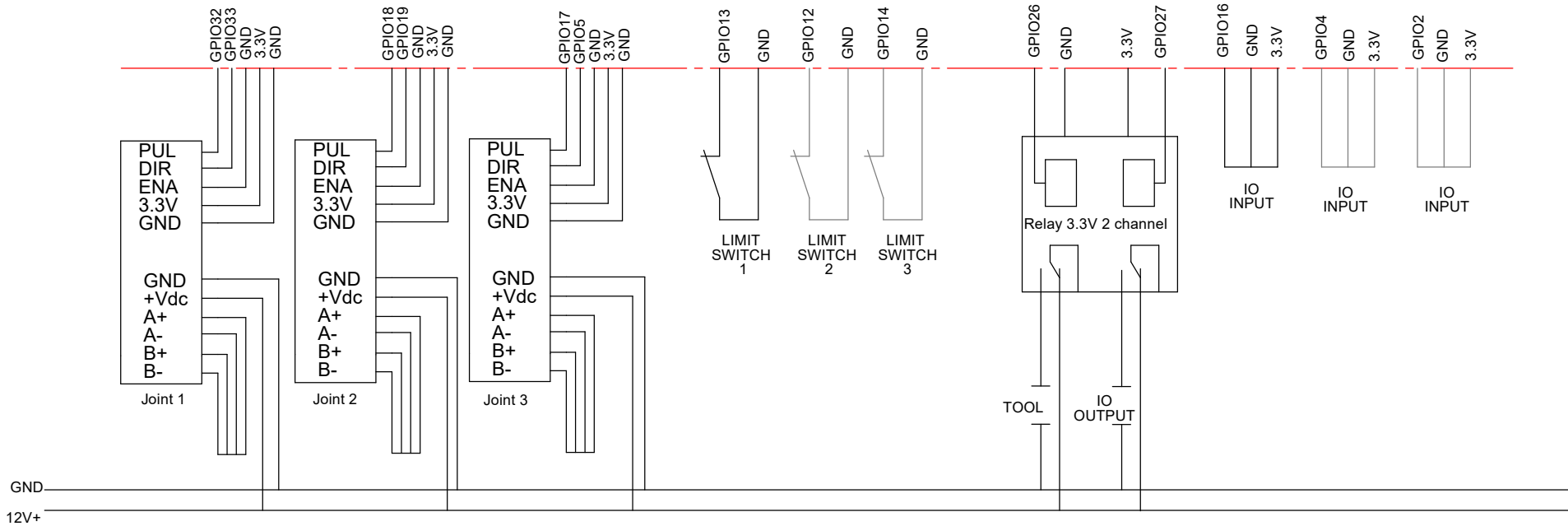
100 MM


GPIO	Comment	Robot
GPIO1		
GPIO2		IO 4
GPIO3		
GPIO4		IO 3
GPIO5		DIR 3
GPIO6		
GPIO7		
GPIO8		
GPIO9		
GPIO10		
GPIO11		
GPIO12		SWITCH 2
GPIO13		SWITCH 1
GPIO14		SWITCH 3
GPIO15		
GPIO16		IO 2
GPIO17		PUL 3
GPIO18		PUL 2
GPIO19		DIR 2
GPIO20		
GPIO21		
GPIO22		
GPIO23		
GPIO24		
GPIO25		
GPIO26		TOOL 1
GPIO27		IO 1
GPIO28		
GPIO29		
GPIO30		
GPIO31		
GPIO32		PUL 1
GPIO33		DIR 1
GPIO34		
GPIO35		
GPIO36		
GPIO37		
GPIO38		

Color code motors				
Motor	A+	A-	B+	B-
Nema 17	Black	Blue	Green	Red



ESP 32





MiKoBots
www.mikobots.com

TOLERANCE :	Algemene toleranties volgens ISO 2768-2	TOL. CLASS : m
DISCRPTION :	Vormtoleranties volgens ISO 2768-1	TOL. CLASS : m
DESCRIPTION: Schematic miko-mini		
SCALE: 1:2	UNIT OF MEASURE: MM	Sheet 1 of 2
FORMAT: A2	DRAWING NR.: Schematic Miko-mini	REV: 000
GET.: MK	DATE:	