

Assembly guide:

3 finger gripper



Version 1.1

Date: 17-10-2024



Revision:

REV	Date	Description
1	26-7-2024	First release
1.1	14-10-2024	<ul style="list-style-type: none">• Updated the assembly instructions• Created new parts:<ul style="list-style-type: none">○ FLEX_GRIPPER_15○ FLEX_GRIPPER_18○ FLEX_GRIPPER_19○ FLEX_GRIPPER_20○ FLEX_GRIPPER_21• Updated parts:<ul style="list-style-type: none">○ FLEX_GRIPPER_03○ FLEX_GRIPPER_04○ FLEX_GRIPPER_07○ FLEX_GRIPPER_12



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1: Introduction

This document will describe how to assemble the 3-finger gripper for the robot arm Miko-1. Because this is the first version of Miko-1, there might be some imperfections. We will try to resolve these as soon as possible. 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 robot 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 3 finger gripper. We recommend using PETG filament because it has a higher glass transition temperature than PLA and is still easy to print.

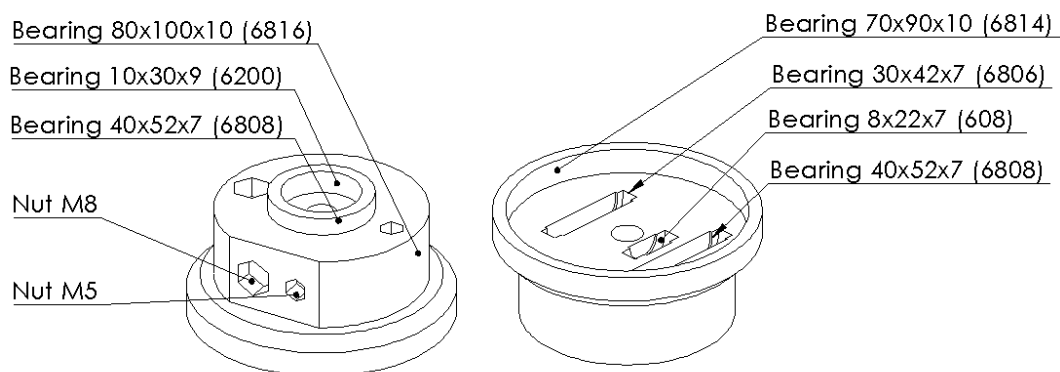
The general print settings that we have used for the parts are:

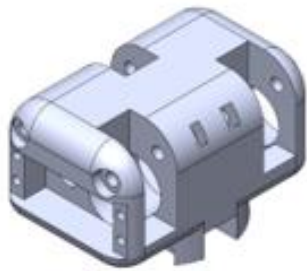
- Layer height: 0.2mm
- Walls: 3
- Infill: 20%

The tolerances used are as tight possible to achieve the best results. This means that sometimes you may need to use a little bit of force to assemble some parts. The given tolerance for certain parts, such as bearings, depends on the layer direction of the part. We have created a test part to check if your printer can print the parts with the given tolerances. If you encounter problems with the tolerance of any part, please let us know.

We will also release parts with larger tolerances if needed, as we want to ensure that almost every printer can print this robot arm.

If you want access to the 3D files you will have to buy the digital files, or a kit.





Art. name: FLEX_GRIPPER_01

Revision: 001

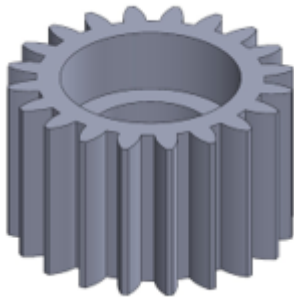
Quantity: 1

Infill: 20%

Walls:

Comments:

Print FLEX_GRIPPER_18 if you are using vision



Art. name: FLEX_GRIPPER_02

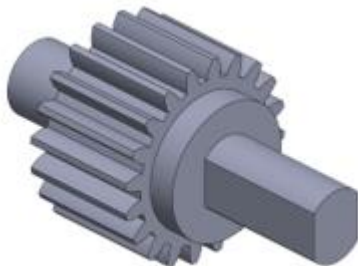
Revision: 000

Quantity: 1

Infill: 20%

Walls:

Comments:



Art. name: FLEX_GRIPPER_03

Revision: 001

Quantity: 1

Infill: 20%

Walls:

Comments:



Art. name: FLEX_GRIPPER_04

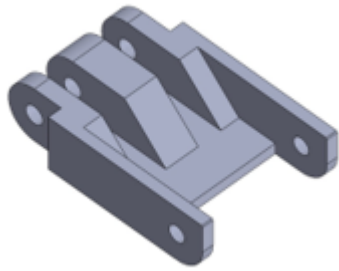
Revision: 001

Quantity: 3

Infill: 20%

Walls:

Comments:



Art. name: FLEX_GRIPPER_05

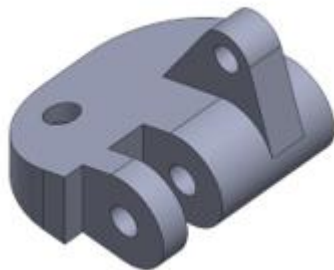
Revision: 000

Quantity: 3

Infill: 20%

Walls:

Comments:



Art. name: FLEX_GRIPPER_06

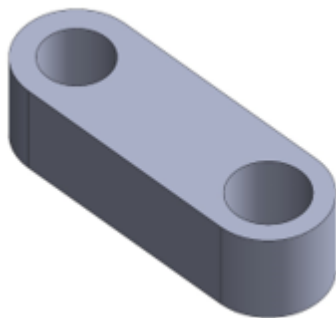
Revision: 000

Quantity: 1

Infill:

Walls:

Comments:



Art. name: FLEX_GRIPPER_07

Revision: 001

Quantity: 3

Infill: 20%

Walls:

Comments:



Art. name: FLEX_GRIPPER_08

Revision: 000

Quantity: 6

Infill: 20%

Walls:

Comments:



Art. name: FLEX_GRIPPER_09

Revision: 000

Quantity: 3

Infill: 20%

Walls:

Comments:



Art. name: FLEX_GRIPPER_10

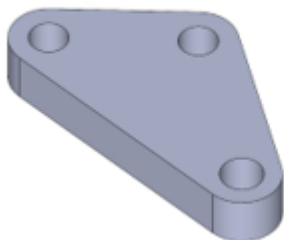
Revision: 000

Quantity: 6

Infill: 20%

Walls:

Comments:



Art. name: FLEX_GRIPPER_11

Revision: 000

Quantity: 3

Infill: 20%

Walls:

Comments:



Art. name: FLEX_GRIPPER_12

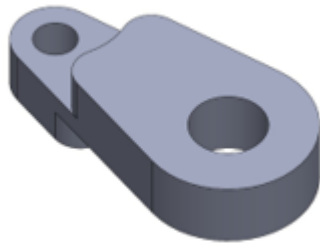
Revision: 001

Quantity: 3

Infill: 20%

Walls:

Comments:



Art. name: FLEX_GRIPPER_13

Revision: 000

Quantity: 1

Infill: 20%

Walls:

Comments:



Art. name: FLEX_GRIPPER_14

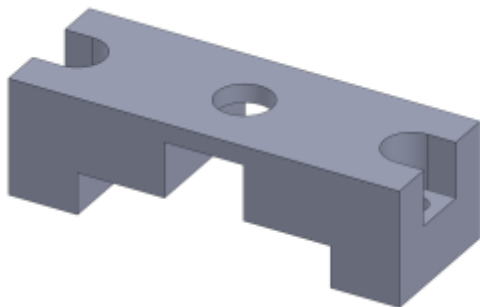
Revision: 000

Quantity: 1

Infill: 20%

Walls:

Comments:



Art. name: FLEX_GRIPPER_15

Revision: 000

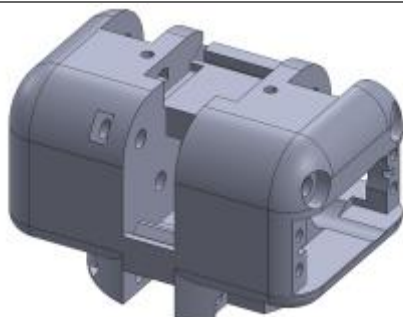
Quantity: 1

Infill: 20%

Walls:

Comments:

Needed for vision



Art. name: FLEX_GRIPPER_18

Revision: 000

Quantity: 1

Infill: 20%

Walls:

Comments:

Needed for vision



Art. name: FLEX_GRIPPER_19

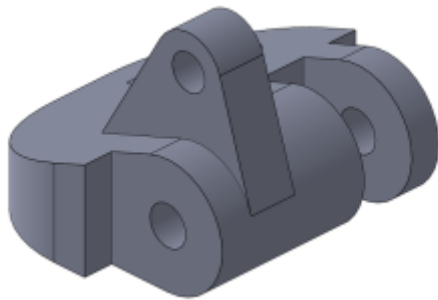
Revision: 000

Quantity: 1

Infill: 20%

Walls:

Comments:



Art. name: FLEX_GRIPPER_20

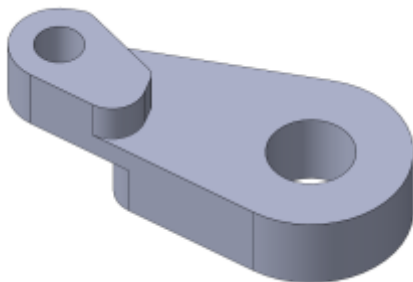
Revision: 000

Quantity: 2

Infill: 20%

Walls:

Comments:



Art. name: FLEX_GRIPPER_21

Revision: 000

Quantity: 2

Infill: 20%

Walls:

Comments:



3: BOM

In this chapter, you will find all the parts that you need to buy for the 3-finger gripper. 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	2	Bearing 5x14x5 (605)	Link
BEARING_03	2	Bearing 8x22x7 (608)	Link

Electronics

Name	QTY.	Description	shop
ELECTRONICS_006	1	Servo 20kg 180deg	Link

Fasteners

Name	QTY.	Description	shop
DIN 912 M3x10	40	Hexagon socket Head Cap Screws M3x10	
DIN 912 M3x25	7	Hexagon socket Head Cap Screws M3x25	
DIN 912 M5x35	4	Hexagon socket Head Cap Screws M5x35	
DIN 912 M5x60	1	Hexagon socket Head Cap Screws M5x60	
DIN 125 M3	12	Washer M3	
ISO 4032 M3	16	Hexagon regular nut M3	
ISO 4032 M5	5	Hexagon regular nut M5	

Springs

Name	QTY.	Description	shop
SPRING_01	3	Tension spring $\varnothing 7$ L=50 DW=0.7	Link
SPRING_02	3	Tension spring $\varnothing 7$ L=38 DW=0.7	Link

Important note



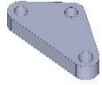

- It is your own responsibility to ensure that the components meet the safety requirements in your country.
- For extra grip you could glue a piece of rubber or timing belt on the fingers



4: Assembly instructions

The instructions are written with care to include every step of the assembly process. This chapter is not completely finished yet, and we will try to make some steps clearer for easier assembling.

Step 1:

Items	QTY	Description
FLEX_GRIPPER_08	1	
FLEX_GRIPPER_10	1	
FLEX_GRIPPER_11	1	
FLEX_GRIPPER_12	1	
DIN 912 M3 x 10	3	Hexagon socket Head Cap Screws M3x10

Instruction:








Step 2:

Items	QTY	Description
SPRING_01	1	Tension spring $\varnothing 7$ L=50 DW=0.7
DIN 912 M3 x 10	2	Hexagon socket Head Cap Screws M3x10
Washer DIN 125 M3	2	Washer M3
ISO - 4032 - M3	2	Hexagon regular nut M3

Instruction:



Step 3:

Items	QTY	Description
FLEX_GRIPPER_07	1	
FLEX_GRIPPER_08	1	
FLEX_GRIPPER_09	1	
FLEX_GRIPPER_10	1	
FLEX_GRIPPER_13	1	
DIN 912 M3 x 10	4	Hexagon socket Head Cap Screws M3x10

Instruction:

Part FLEX_GRIPPER_07 has two sizes of holes, use the smaller hole to mount it to part FLEX_GRIPPER_08



Step 4:

Items	QTY	Description
SPRING_01	1	Tension spring $\varnothing 7$ L=50 DW=0.7
DIN 912 M3 x 10	1	Hexagon socket Head Cap Screws M3x10
Washer DIN 125 M3	1	Washer M3
ISO - 4032 - M3	1	Hexagon regular nut M3

Instruction:

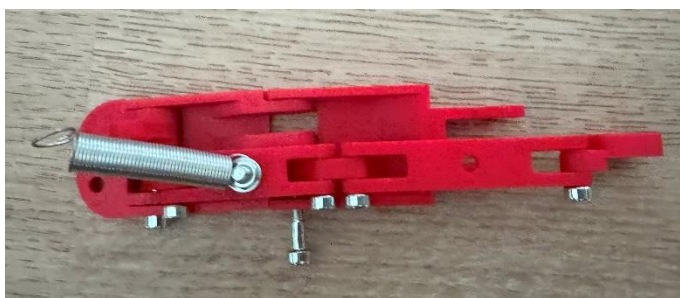


Step 5:

Items	QTY	Description
FLEX_GRIPPER_04	1	
FLEX_GRIPPER_05	1	
FLEX_GRIPPER_06	1	
DIN 912 M3 x 25	2	Hexagon socket Head Cap Screws M3x25



Instruction:



Step 6:

Items	QTY	Description
DIN 912 M3 x 10	1	Hexagon socket Head Cap Screws M3x10
DIN 125 M3	1	Washer M3
ISO - 4032 - M3	1	Hexagon regular nut M3

Instruction:







Step 7:

Items	QTY	Description
DIN 912 M3 x 10	1	Hexagon socket Head Cap Screws M3x10

Instruction:



Step 8:

Items	QTY	Description
FLEX_GRIPPER_08	2	
FLEX_GRIPPER_10	2	
FLEX_GRIPPER_11	2	
FLEX_GRIPPER_12	2	
DIN 912 M3 x 10	6	Hexagon socket Head Cap Screws M3x10

Instruction:

Make this 2x



Step 9:

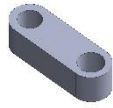



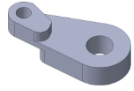
Items	QTY	Description
SPRING_01	2	Tension spring $\varnothing 7$ L=50 DW=0.7
DIN 912 M3 x 10	4	Hexagon socket Head Cap Screws M3x10
Washer DIN 125 M3	4	Washer M3
ISO – 4032 - M3	4	Hexagon regular nut M3

Instruction:

Make this 2x



Step 10:

Items	QTY	Description
FLEX_GRIPPER_07	2	
FLEX_GRIPPER_08	2	
FLEX_GRIPPER_09	2	
FLEX_GRIPPER_10	2	
FLEX_GRIPPER_21	2	
DIN 912 M3 x 10	8	Hexagon socket Head Cap Screws M3x10

Instruction:

Part FLEX_GRIPPER_07 has two sizes of holes, use the smaller hole to mount it to part

FLEX_GRIPPER_08

Make this 2x



Step 11:

Items	QTY	Description
SPRING_01	2	Tension spring $\varnothing 7$ L=50 DW=0.7
DIN 912 M3 x 10	2	Hexagon socket Head Cap Screws M3x10
Washer DIN 125 M3	2	Washer M3
ISO - 4032 - M3	2	Hexagon regular nut M3

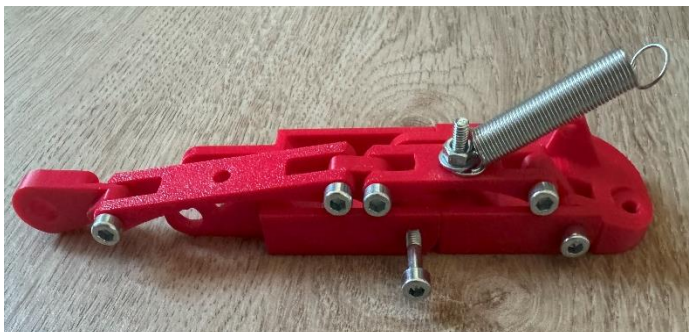
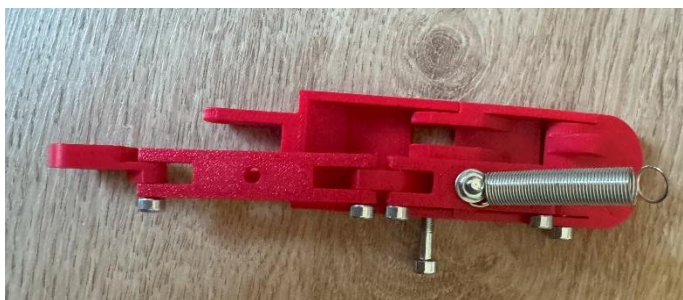
Instruction:



Step 12:

Items	QTY	Description
FLEX_GRIPPER_04	2	
FLEX_GRIPPER_05	2	
FLEX_GRIPPER_20	2	
DIN 912 M3 x 25	4	Hexagon socket Head Cap Screws M3x25

Instruction:



Step 13:

Items	QTY	Description
DIN 912 M3 x 10	2	Hexagon socket Head Cap Screws M3x10
DIN 125 M3	2	Washer M3
ISO - 4032 - M3	2	Hexagon regular nut M3

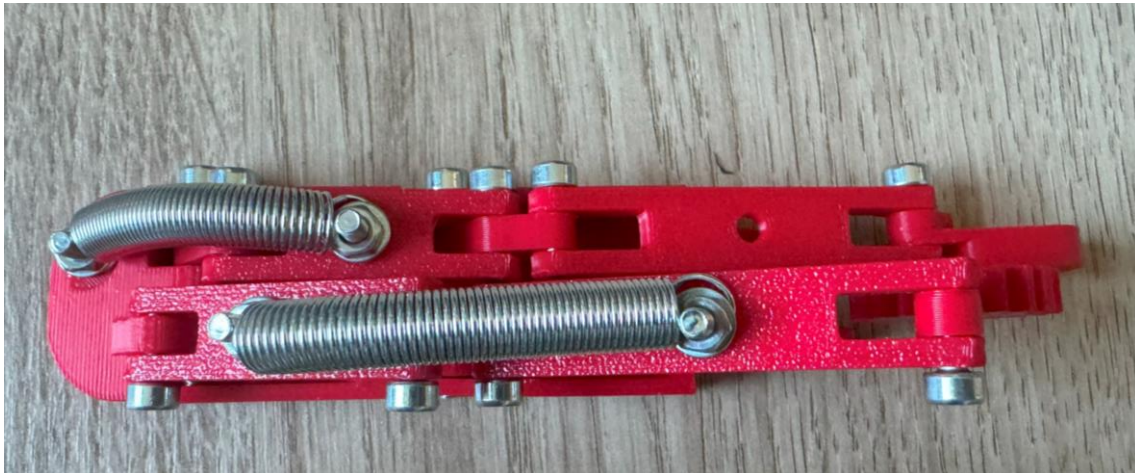
Instruction:





Step 14:

Items	QTY	Description
DIN 912 M3 x 10	2	Hexagon socket Head Cap Screws M3x10

Instruction:

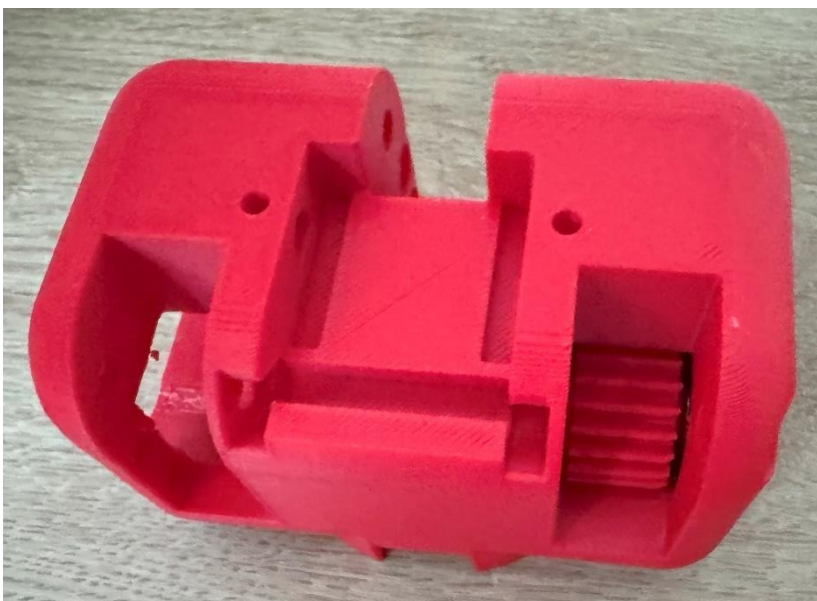


Step 15:


Items	QTY	Description
FLEX_GRIPPER_01	1	
FLEX_GRIPPER_03	1	
BEARING_03	2	Bearing 8x22x7 (608)

Instruction:

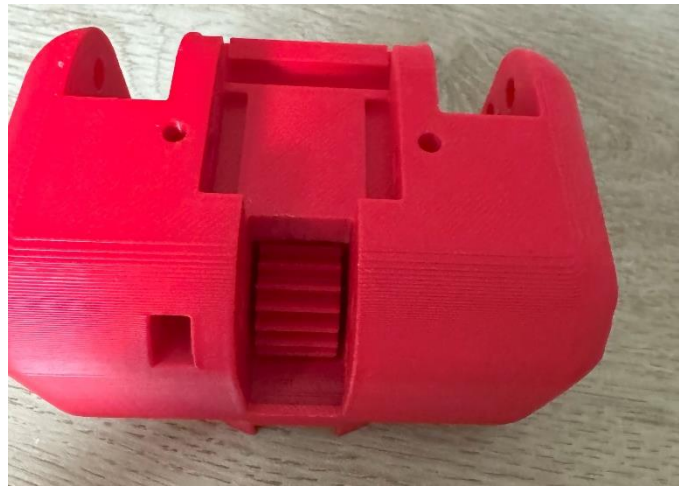
Do this 3x



Step 16:

Items	QTY	Description
FLEX_GRIPPER_02	1	
BEARING_01	2	Bearing 5x14x5 (605)
DIN 912 M5 x 60	1	Hexagon socket Head Cap Screws M5x60

Instruction:



Step 17:

Items	QTY	Description
FLEX_GRIPPER_14	1	
FLEX_GRIPPER_19	1	
ELECTRONICS_006	1	Servo 20kg 180deg
DIN 912 M3 x 25	1	Hexagon socket Head Cap Screws M3x25



Instruction:

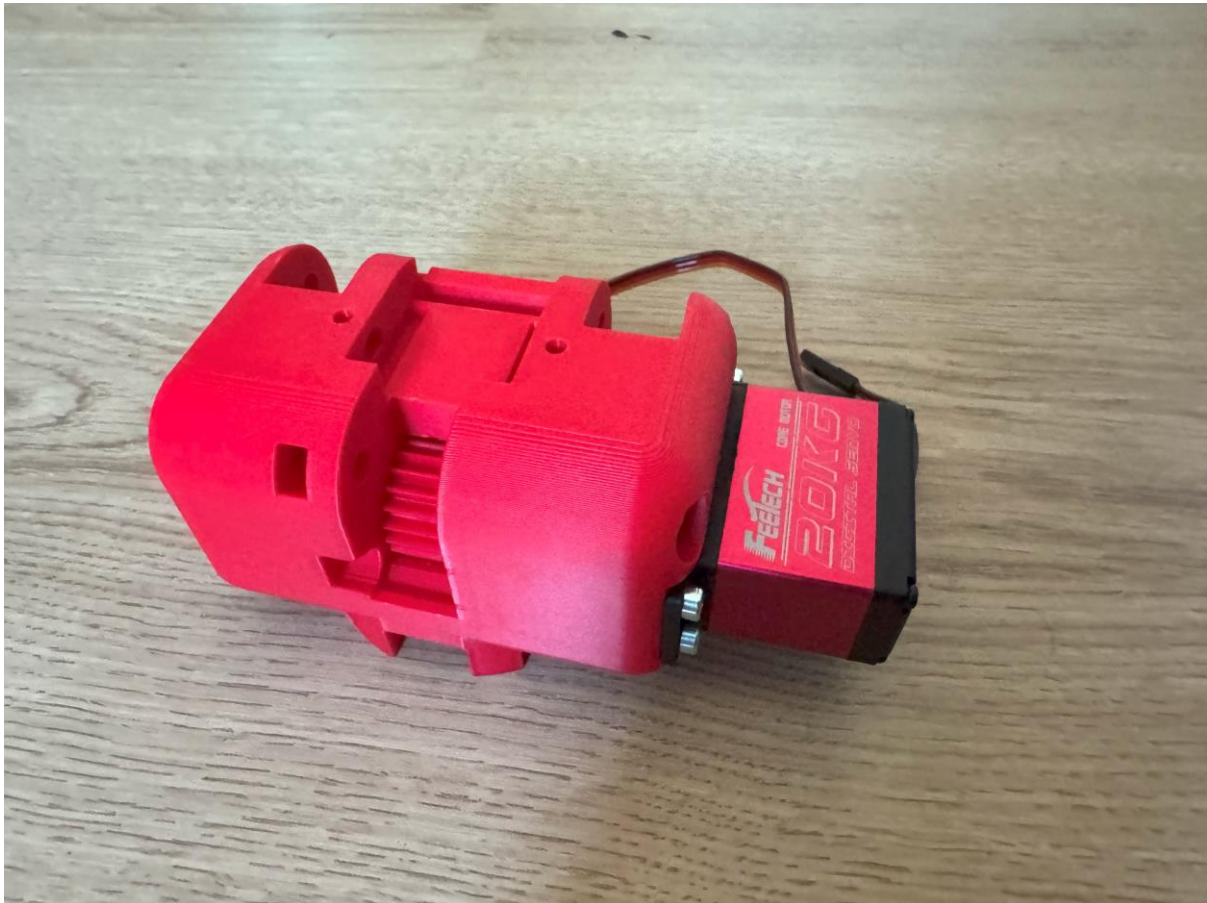
There are two types of gears FLEX_GRIPPER_14 and FLEX_GRIPPER_19, with FLEX_GRIPPER_14 you will mount the mount the gear directly to the gear of the servo. With FLEX_GRIPPER_19 you will first have to modify the part that is shown in the top left corner. So its fit in the gear FLEX_GRIPPER_19, this method is stronger the gear not slip over the gear of the servo. If you are using FLEX_GRIPPER_14 you may need to use some glue, between the parts and the gear of the servo.



Step 18:

Items	QTY	Description
ISO 4032 M3	4	Hexagon regular nut M3
DIN 912 M3 x 10	4	Hexagon socket Head Cap Screws M3x10

Instruction:



Step 19:

Items	QTY	Description
DIN 912 M5 x 60	1	Hexagon socket Head Cap Screws M5x60
ISO 4032 M5	1	Hexagon regular nut M5

Instruction:

Use the finger of step 14



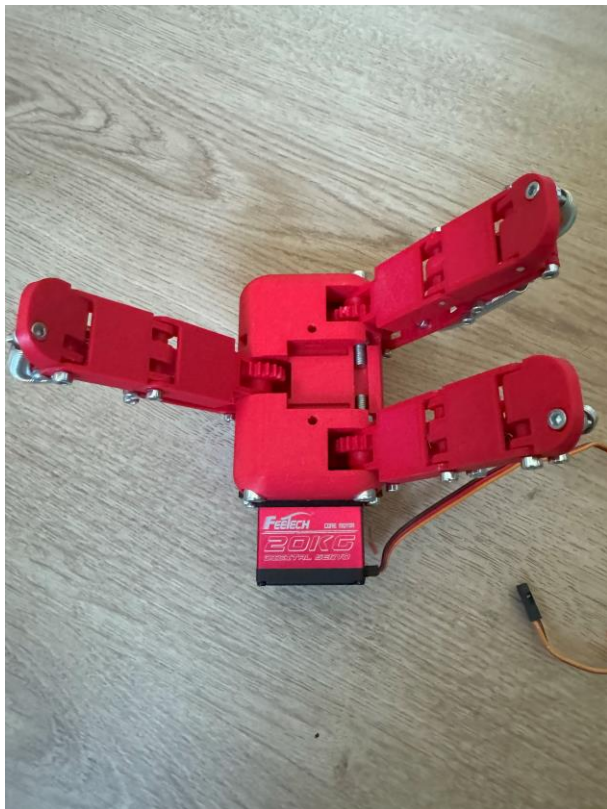
Step 20:

Items	QTY	Description
DIN 912 M5 x 35	2	Hexagon socket Head Cap Screws M5x35
ISO 4032 M5	2	Hexagon regular nut M5

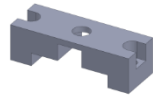
Instruction:

Mount the finger of step 7 closed to the servo motor, mount the other finger of step 14 to last place.

Make sure all the fingers stand in the same position



Step 21:

Items	QTY	Description
FLEX_GRIPPER_15	1	

Instruction:

