



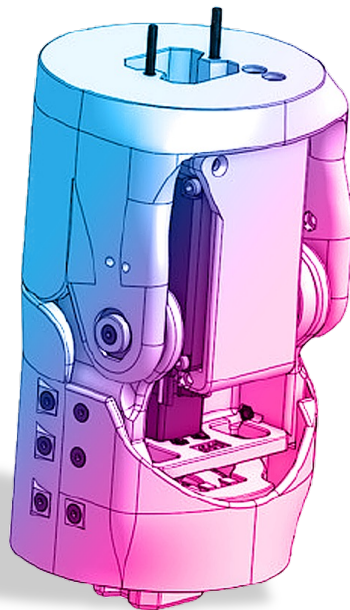
How to build your robot

www.pib.rocks/build

assembly instructions for:

ELBOW

v2024



PRINT

BUILD

DEVELOP

YOUR OWN ROBOT

Printable and pre-assembled parts

Pib's elbow consists of **12 printable parts** and is assembled in **14 steps**.

In order to construct the elbow, you will need to print the parts as seen in the table.

Please note: For better readability we use the abbreviations in the tutorial: C08 instead of C08-Central_rotator_bracket.

Printable parts

C08-Central_rotator_bracket

C09-Central_rotator_connector

C10-Elbow

C11-Elbow_servo_scaffold

C12-Elbow_motor_connector

C13-Elbow_shell_lower

C15-Central_rotator_motor_connector

2 x **C16**-Elbow_joint_connector

C21-Elbow_servo_holder

Non-printable parts

You will also need the following non-printable parts from our pib.Box Master.

If you do not have it yet, you can buy in our shop

<https://shop.pib.rocks>.

Non-printable parts

1 x **E07** MG996R Servo

1 x **E15** DS5180SSG Servo

1 x **M17** Motor_clamp-18T

4 x **M16**-Servo_screw_adapter

1 x **M18** Metal-motor-Adapter-L

2 x **M03** medium sized ballbearings (10 x 19 x 7mm)

34 x **S01** M3 nuts

4 x **S02** M3 6 mm screws

2 x **S03** M3 8 mm screws

11 x **S04** M3 10 mm screws

11 x **S05** M3 12 mm screws

3 x **S05** M3 16 mm screws

1 x **S07** M3 18mm screws

4 x **S09** M3 22mm screws

2 x **S10** M3 25mm screws

1 x **S11** M3 30mm screws

2 x **S13** M3 40mm screws

2 x **M06** Ballbearing_Axial (70x50x3)

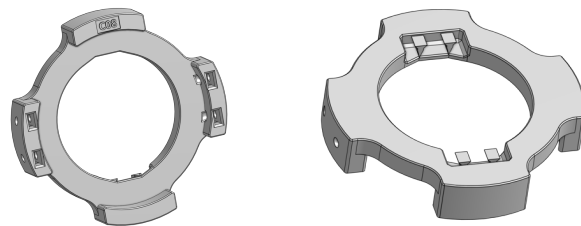
2 x **M07** Thrust_Bearing (70x50x1)

Printable parts - Overview

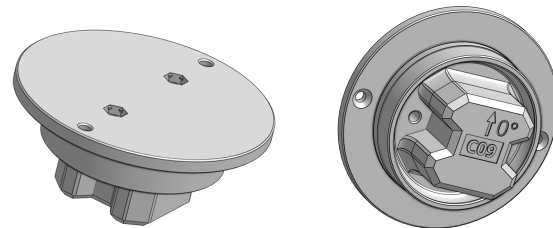
C10-Elbow



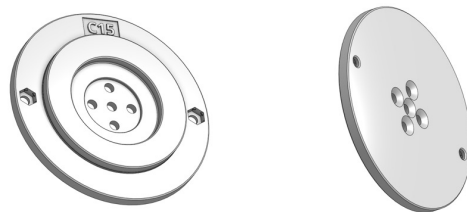
C08-Central_rotator_bracket



C09-Central_rotator_connector

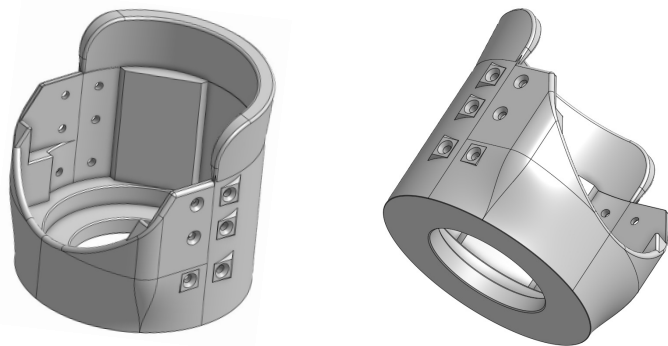


C15-Central_rotator_motor_connector

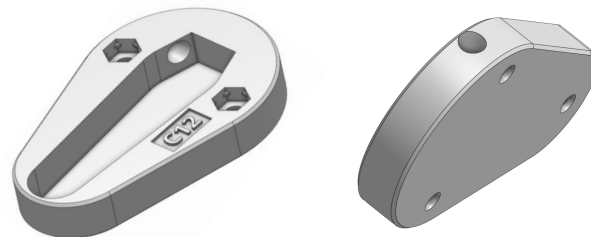


Printable parts - Overview

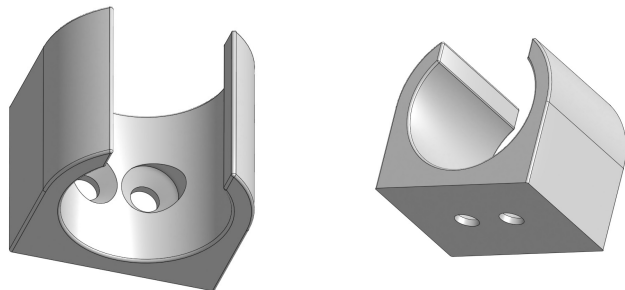
C13-Elbow_shell_lower_dorsal



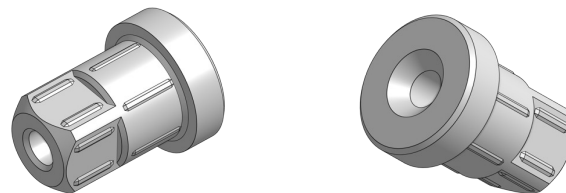
C12-Elbow_motor_connector



C74-Wire_holder

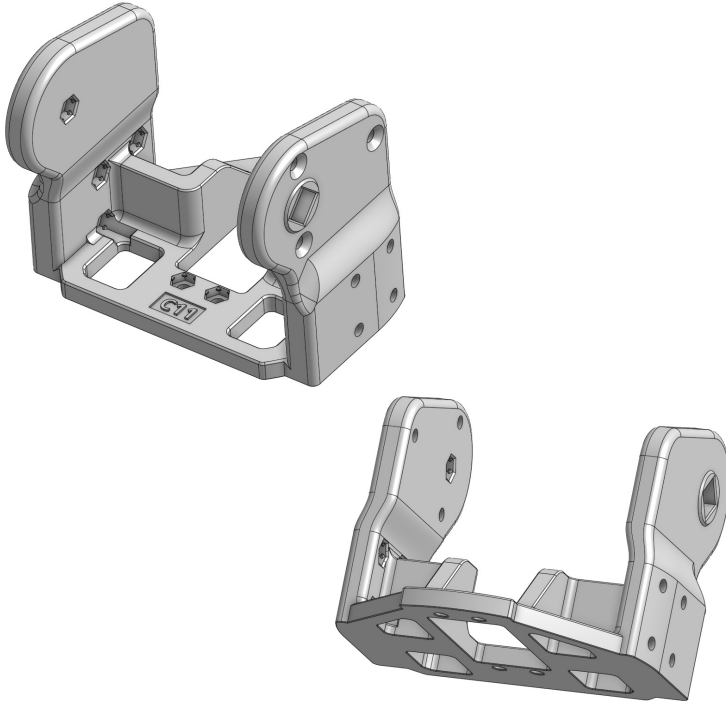


C16-Elbow_joint_connector

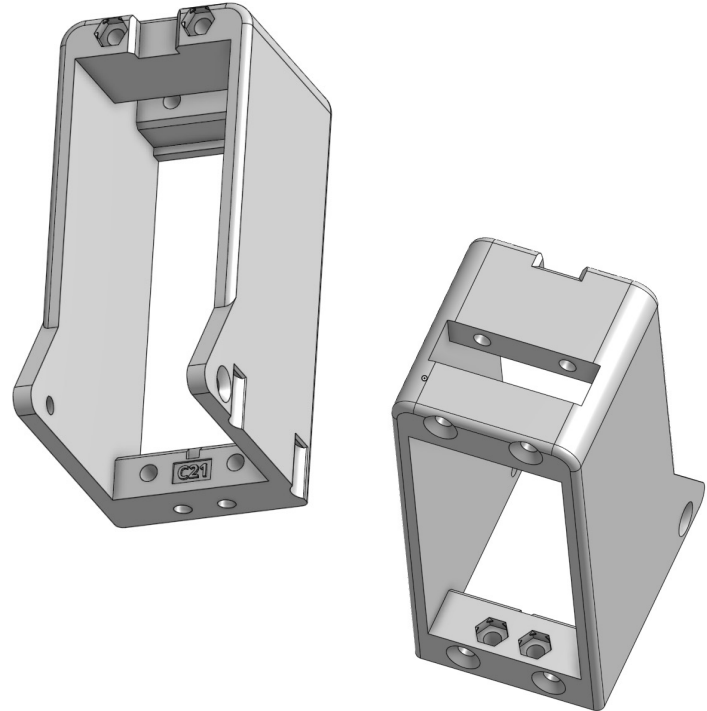


Printable parts - Overview

C11-Elbow_servo_scaffold



C21-Elbow_servo_holder



Build it better: our suggestion for assembling pib



We recommend **tools** for each step. These are a suggestion, you can of course also use other tools.



1-5

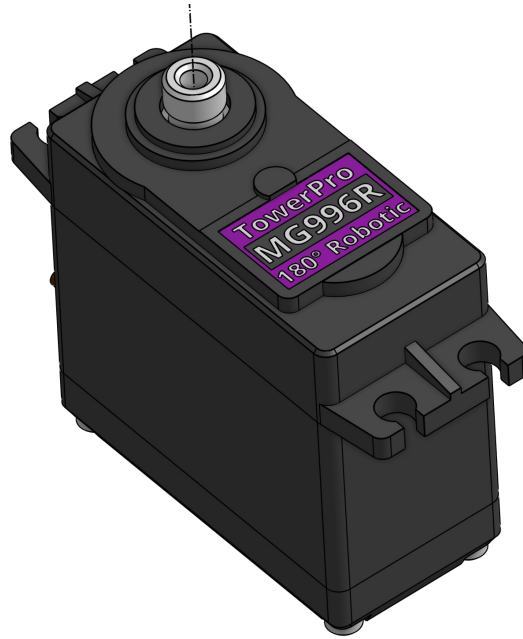
We have categorized each step according to its **difficulty** - from **1-5** (1 being the easiest, 5 the hardest)



We also show you which **non-printable parts** you need for each step

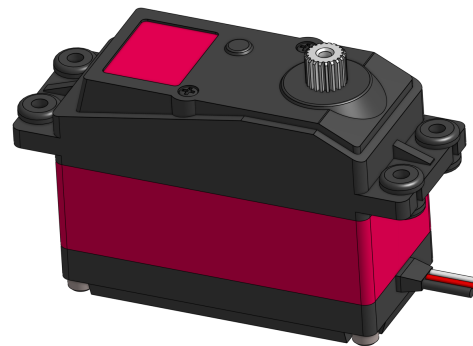
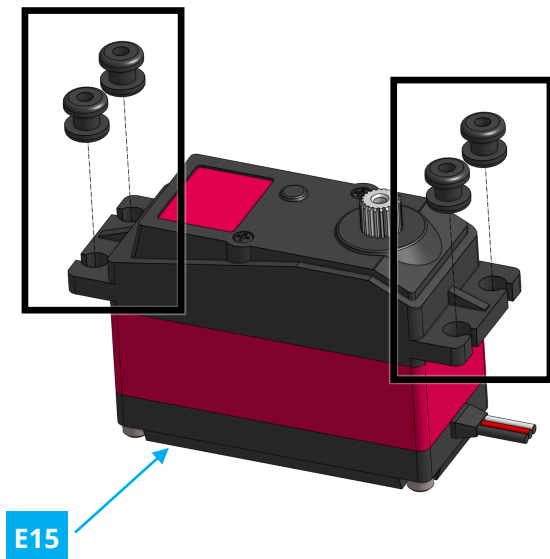
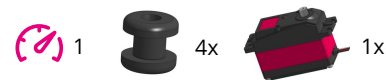
Step 0

Make sure all motors in this tutorial are calibrated according to tutorial "**step 1c motor calibration**"



Step 1a

Place **4 x M16** in the shown spots in **E15**.



Please revert to step 0 and calibrate the motor if it was not calibrated, this motor should be calibrated at 5500 and the elbow joint being stretched while assembled

Step 1b

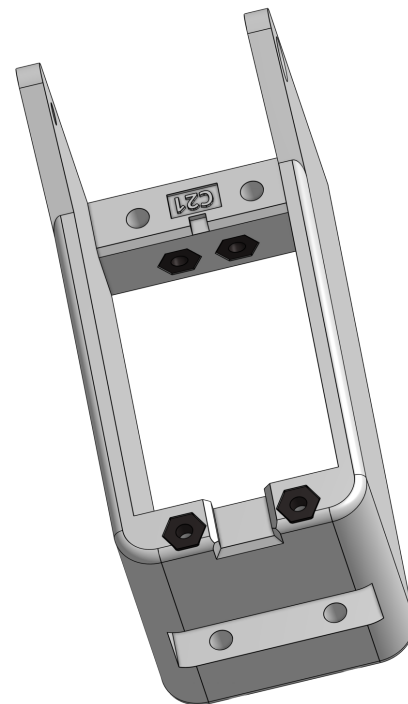
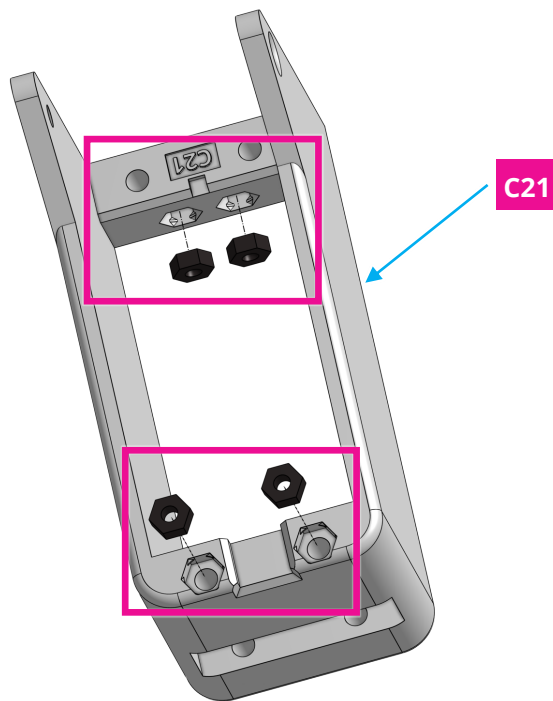
Place **4 x M3 nuts** in the shown spots in **C21**.



1



4x



Step 1c

Fix **E15** to **C21** using **2 x M3 40mm screws**, **2 x M3 22mm screws** and **2 x M3 nuts**.



3



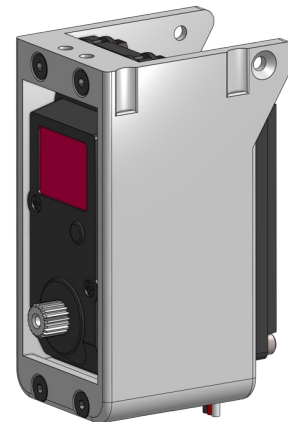
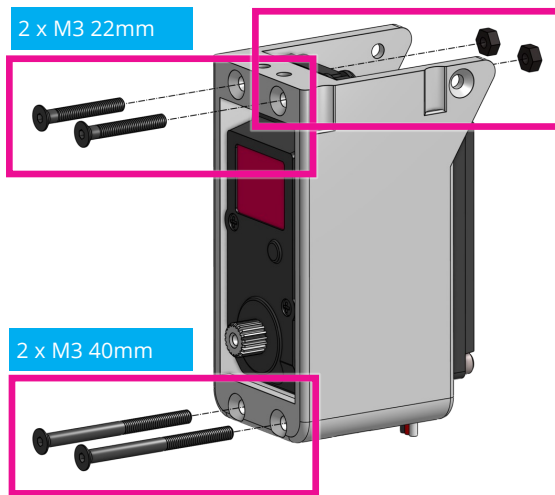
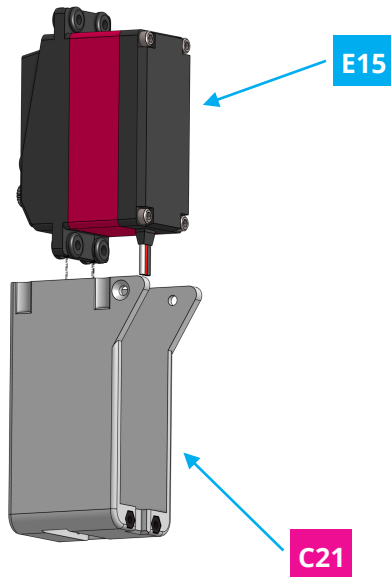
2x



2x



2x



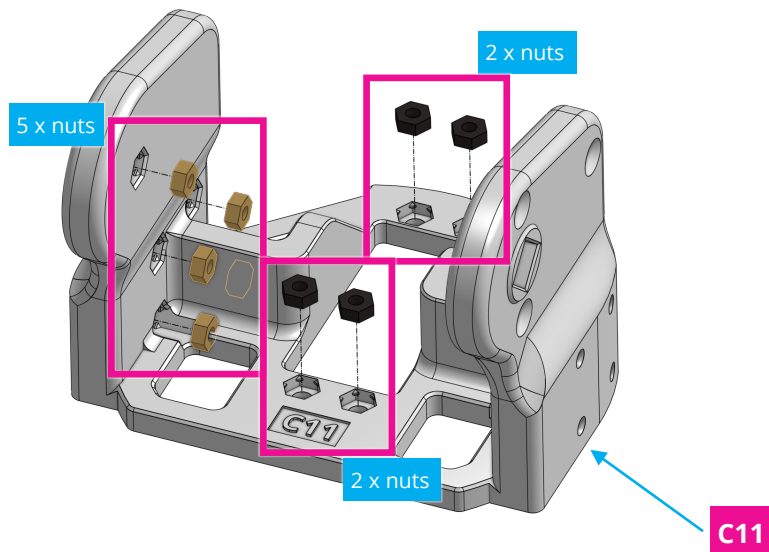
Please revert to step 0 and calibrate the motor if it was not calibrated, this motor should be calibrated at 5500 and the elbow joint being stretched while assembled

Step 2

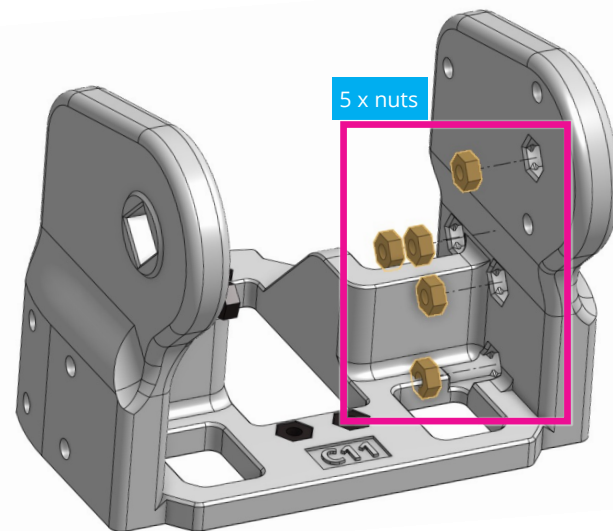
Place **14 x nuts** in the shown spots in **C11**.



14x

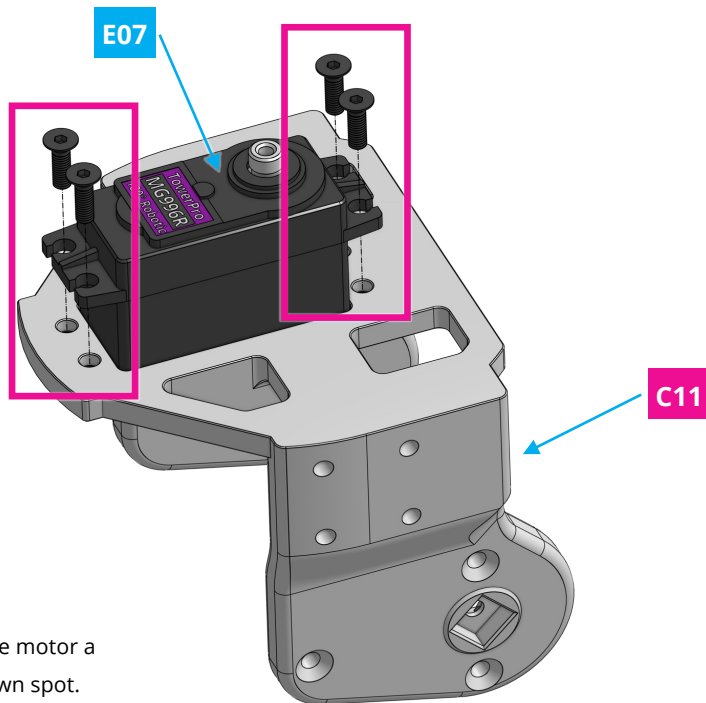


Our tip: use a small screwdriver or a precision tool to put the nuts into the holes and hit it gently with a hammer to place it correctly.

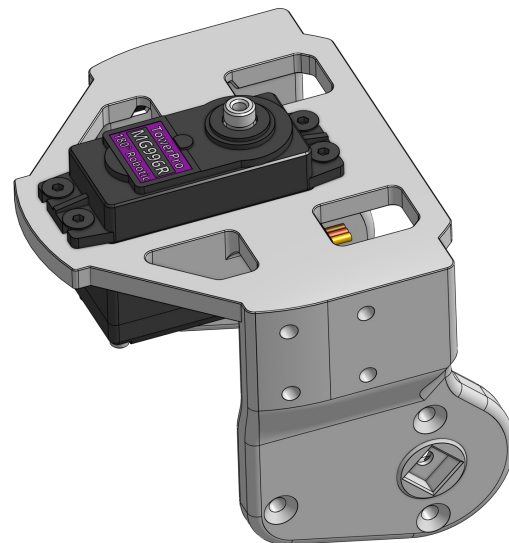


Step 3

Place **1 x E07** inside **C11** and use **4 x 10 mm** screws to hold it.



Pull the cable first, then tilt the motor a little bit to put in into the shown spot.
You may gently apply some force.



Please revert to step 0 and calibrate the motor if it was not calibrated

Step 4a

Assemble **M17**, **C12** and **C11** using **2 x M3 nuts** and **3 x M3 16mm screws**.



3



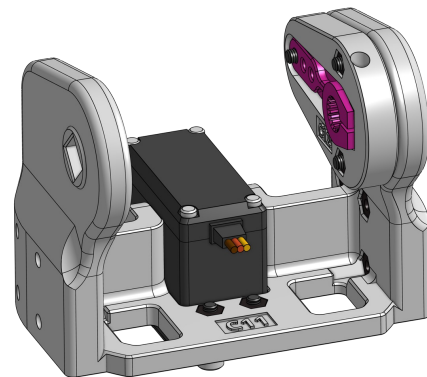
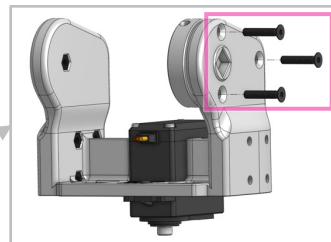
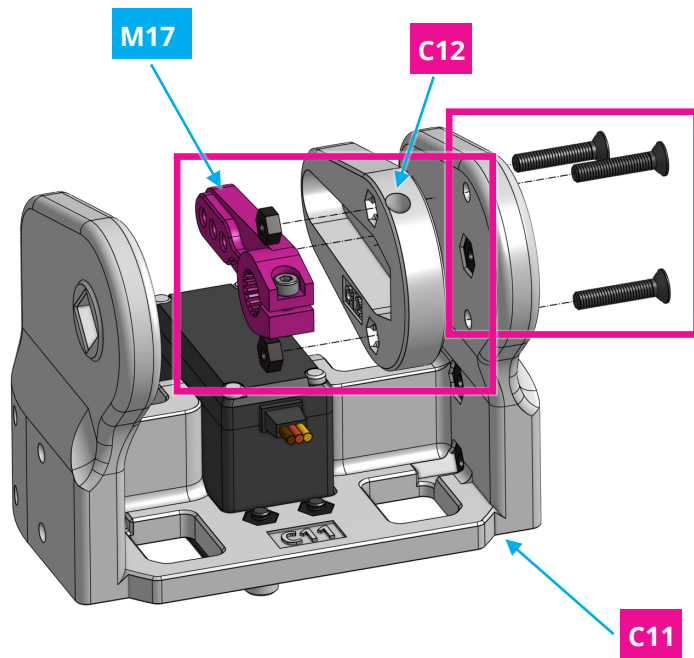
1x



3x



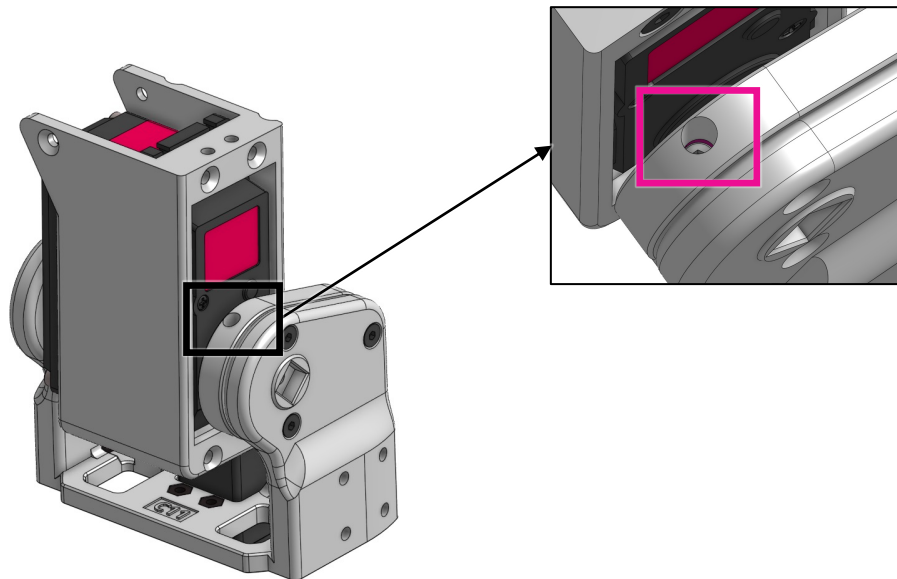
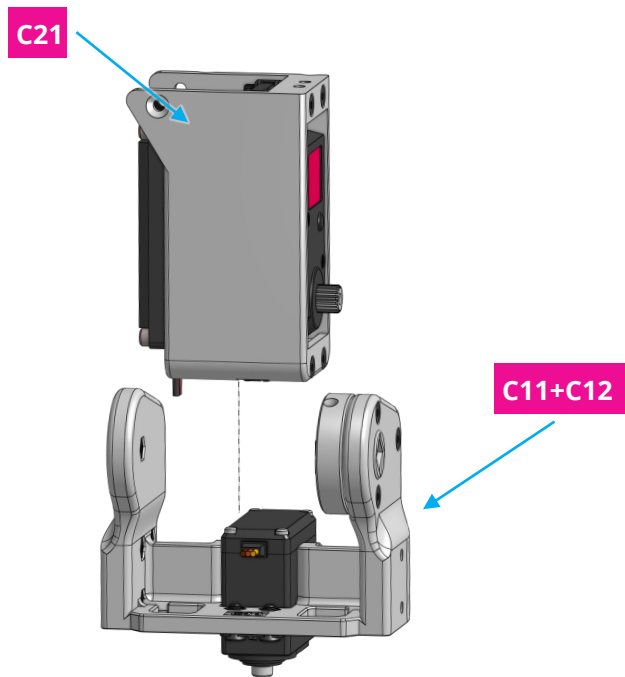
2x



Step 4b



Connect the 2 assemblies and tighten the screw in **M18** to ensure locking with motor.



Step 5a

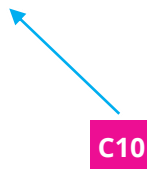
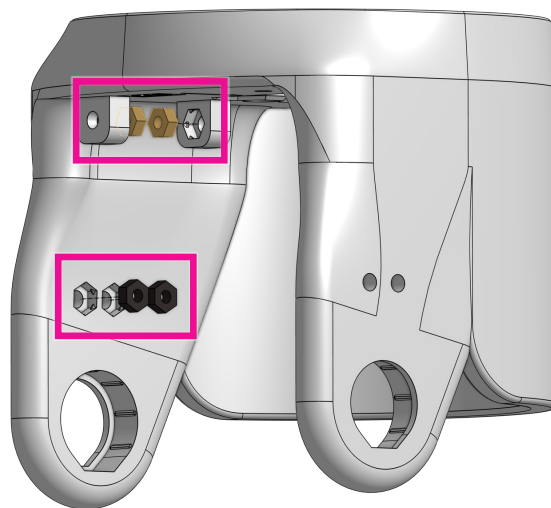


1

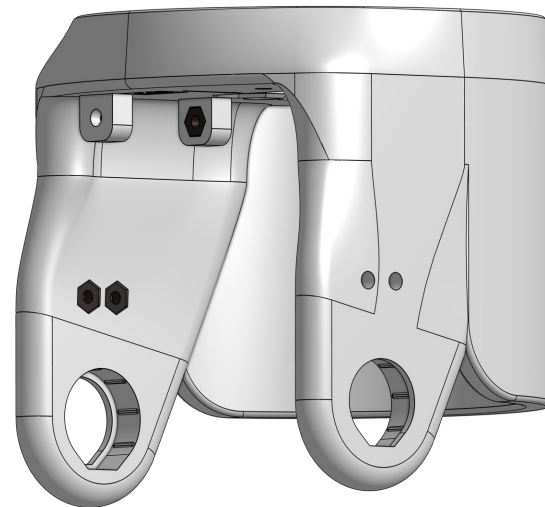


4x

Insert **4 x M3 nuts** in the shown spots in **C10**. (If you are assembling the left arm, nut placement should be reversed.)

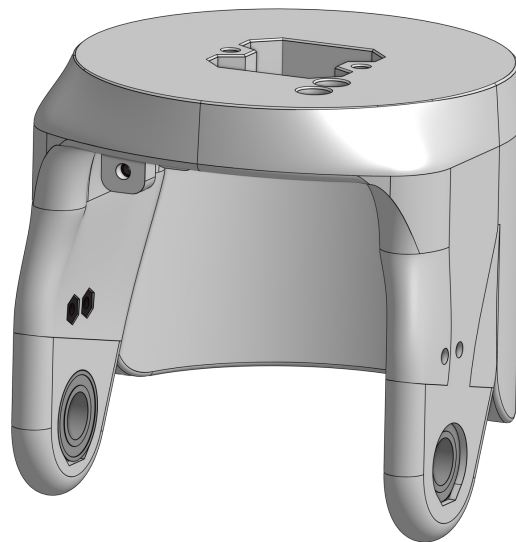
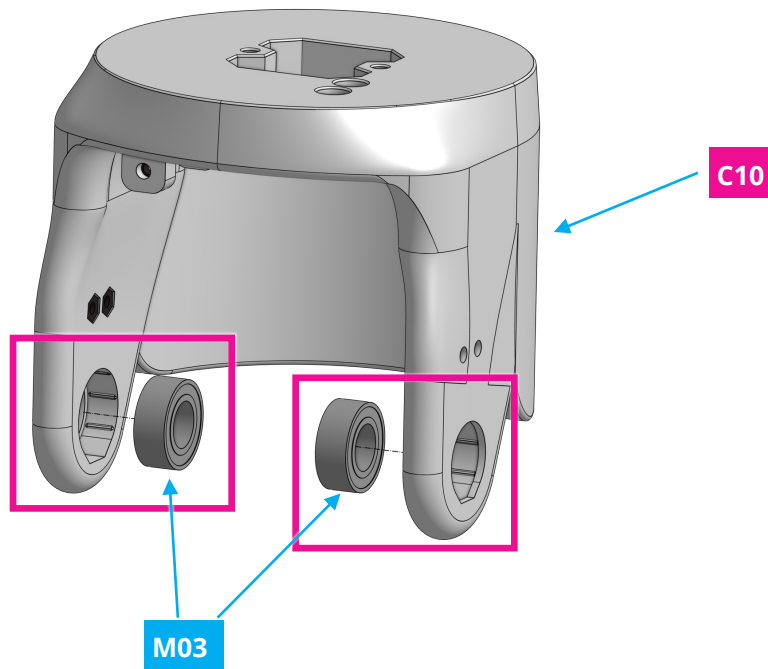


C10



Step 5b

Insert **2 x M03** in **C10**.

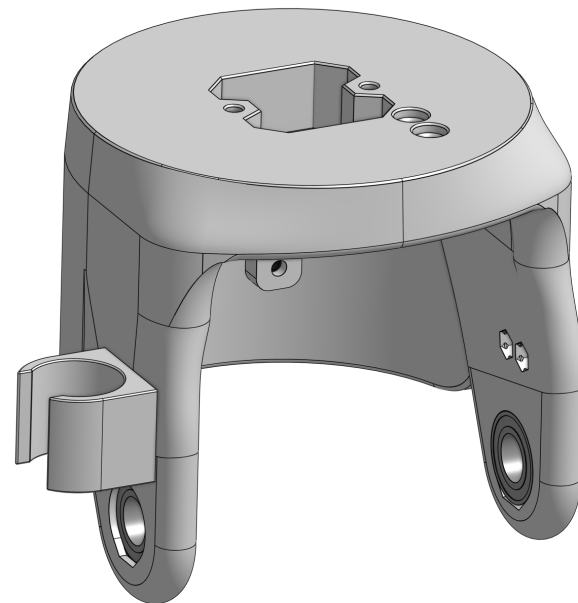
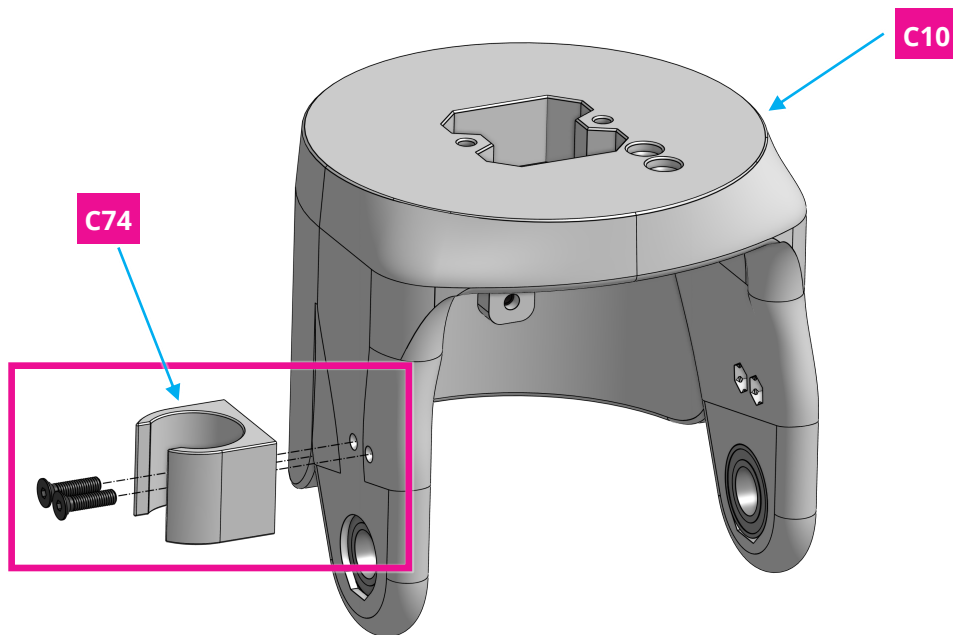


Step 5c

Connect **C74** to **C10** using **2 x M3 12mm screws**. (For the left arm, **C74** will be on the other side)



2x



Step 6a

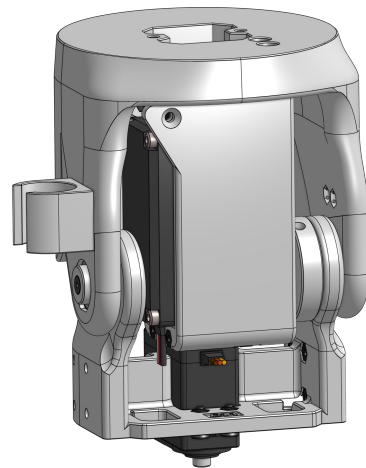
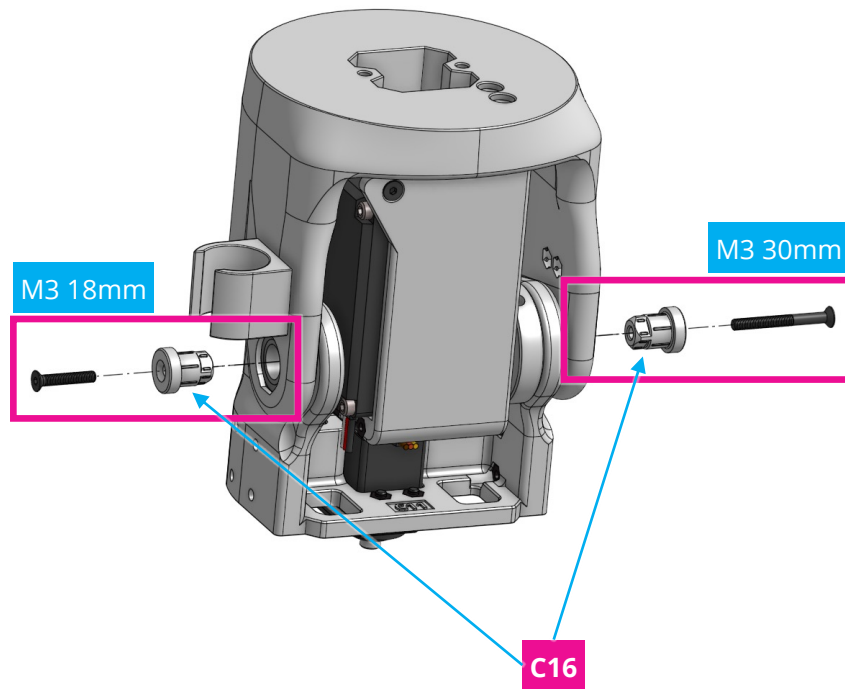
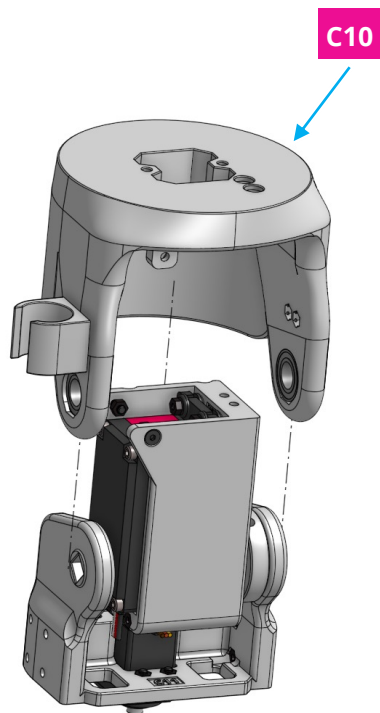
Connect **C10** to assembly from step 4 using **2 x C16**, **1 x M3 18mm screw** and **1 x M3 30mm screw**.



1x

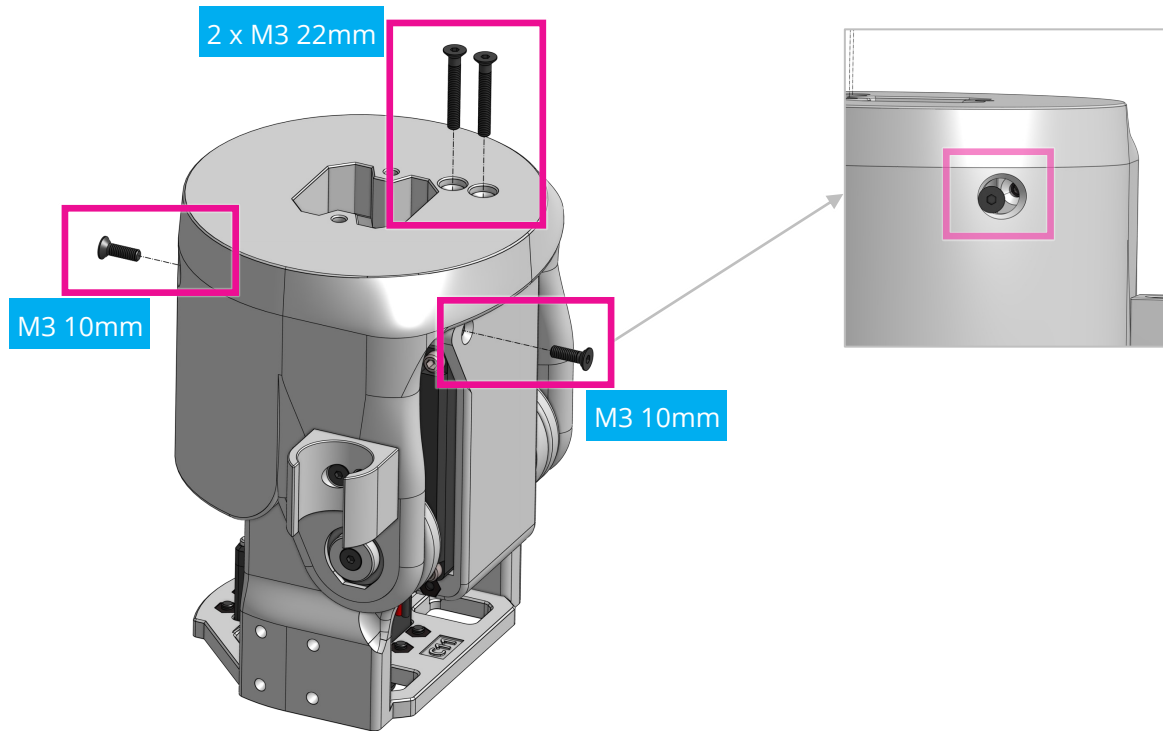


1x



Step 6b

Add 2 x M3 10mm and 2 x M3 22mm screws.



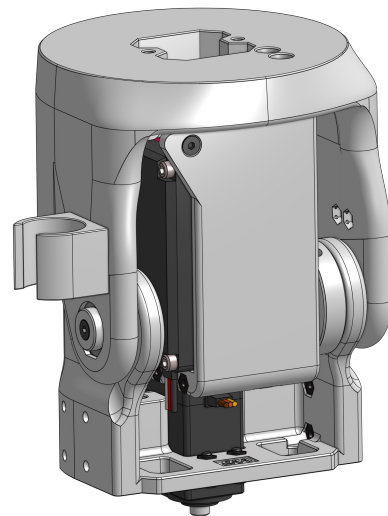
1



2x



2x



Step 7

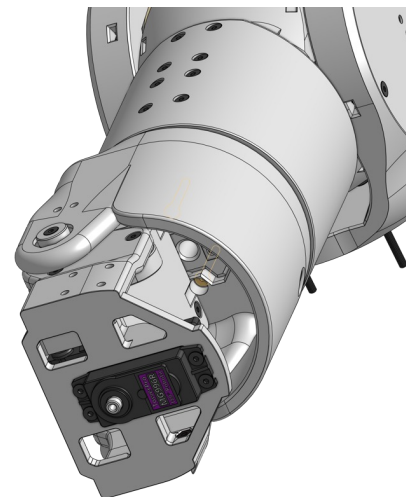
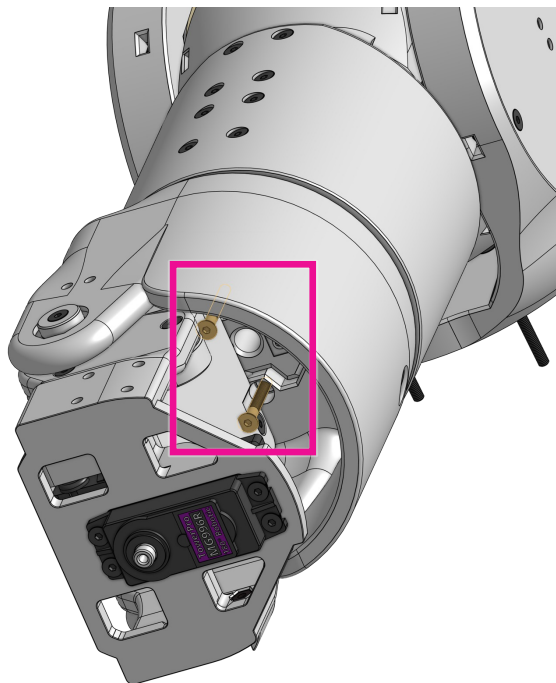
Connect Elbow assembly to shoulder assembly using **2 x M3 25mm screws**. (You can move shoulder joint by 30 degree to easily reach screws)



2



2x



Shoulder will be hidden in next steps for better views.

Step 8

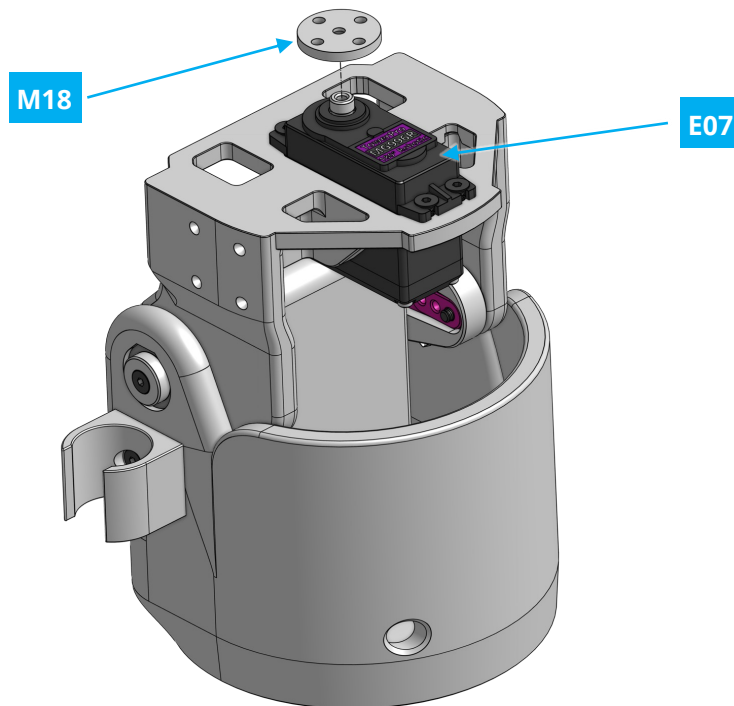
Connect **M18** to **E07**.



1



1x



Step 9a

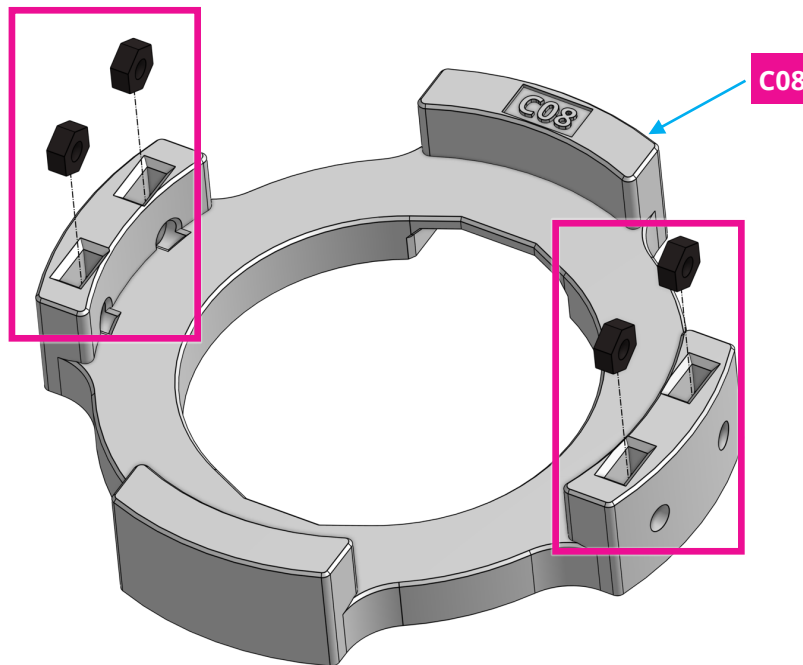
Insert **4 x nuts** in the shown spot of **C08**.



1



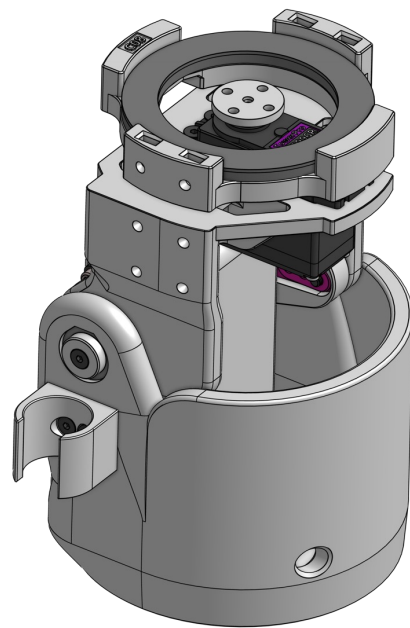
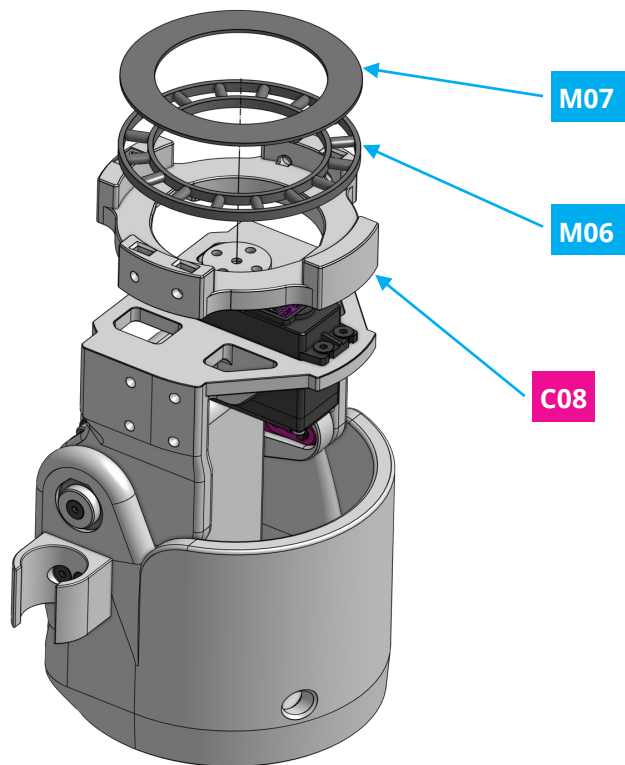
4x



Use a small screwdriver or a precision tool to put the nuts into the holes and hit them gently with a hammer to place them correctly.

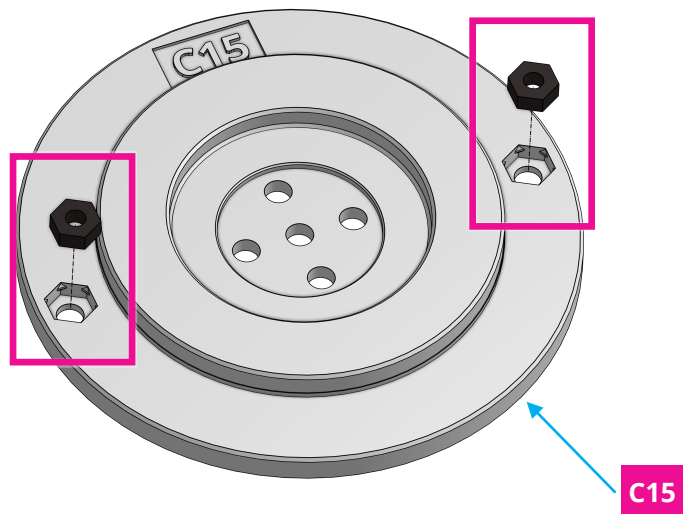
Step 9b

Place **C08**, **M06** and **M07** on top of **C11**.



Step 10a

Insert **2 x nuts** in **C15**.



Step 10b

Flip **C15** and connect it to **M18** using **1 x M3 12mm screw** and **4 x M3 6mm screws**.



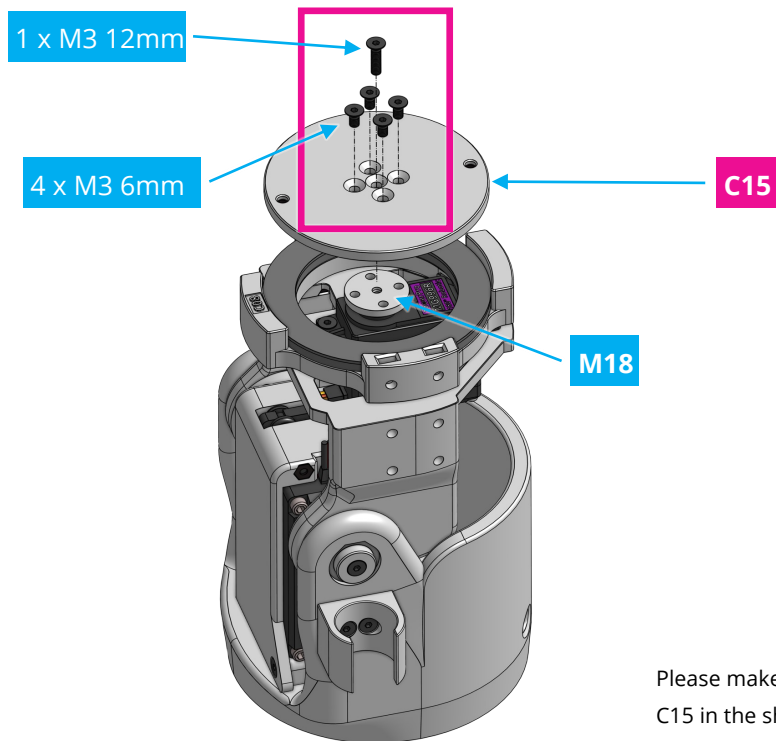
2



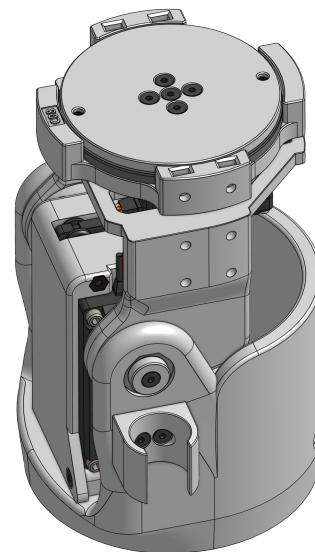
4x



1x



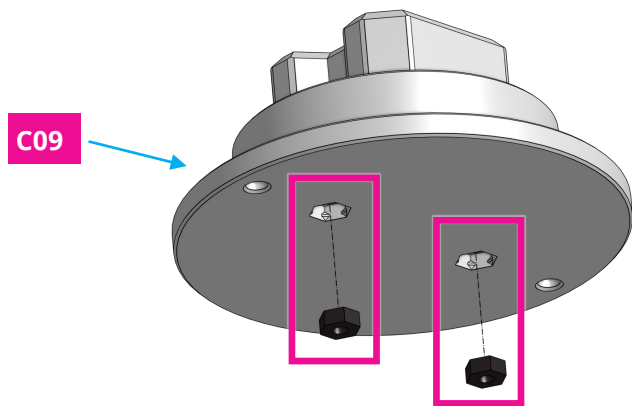
Please make sure, that you connect C15 in the shown orientation.



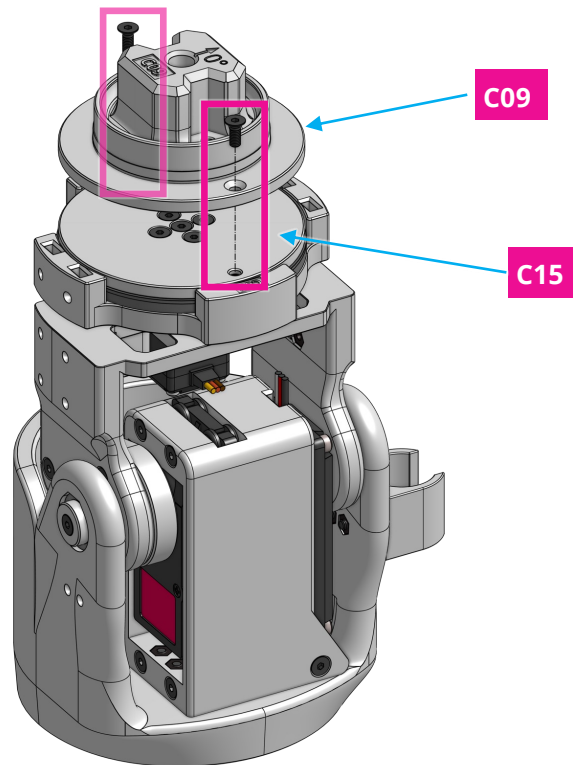
Step 10c

Insert **2 x nuts** in **C09**.

Connect **C09** to **C15** using **2 x 8 mm screws**.

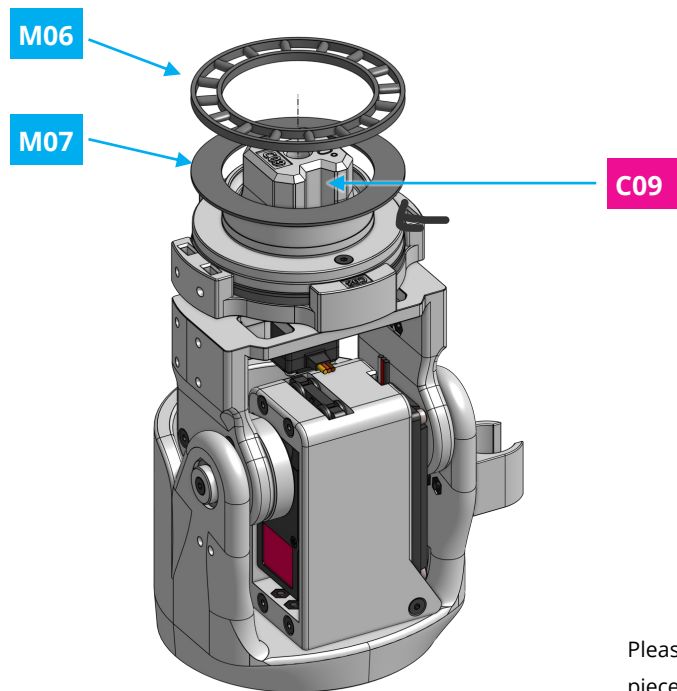


Please make sure, that you connect C09 to C15 in the shown orientation.

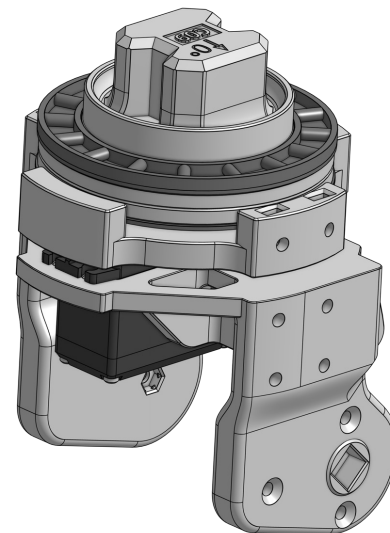


Step 11

Place **M07** and **M06** on top of **C09**.

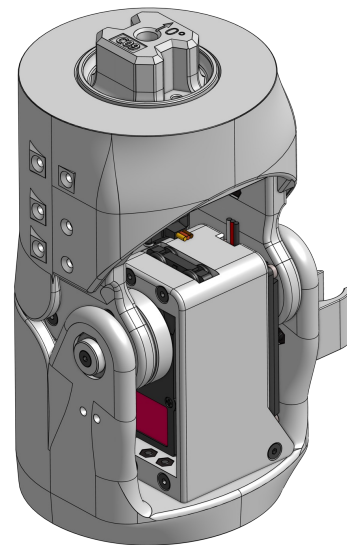
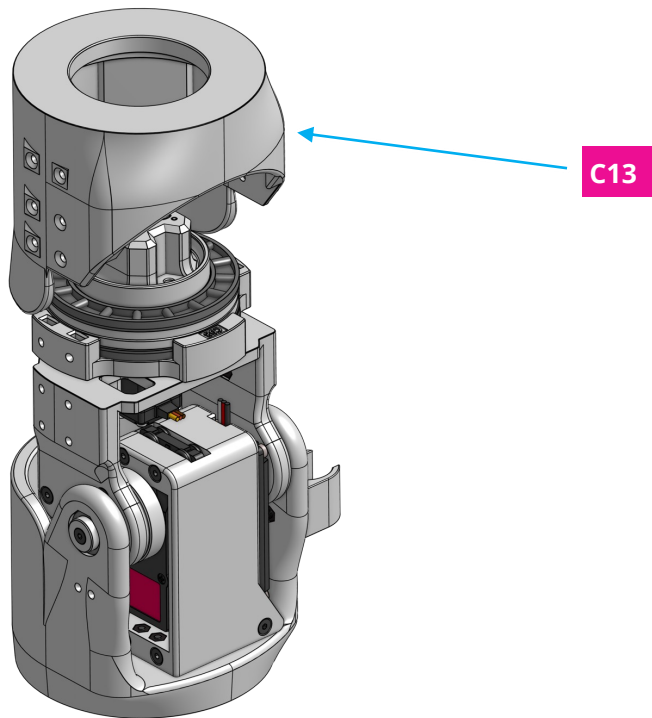


Please make sure, that the small movable pieces in M06 face towards M07.



Step 12

Place **C13** on top of the previous assembly



Step 13

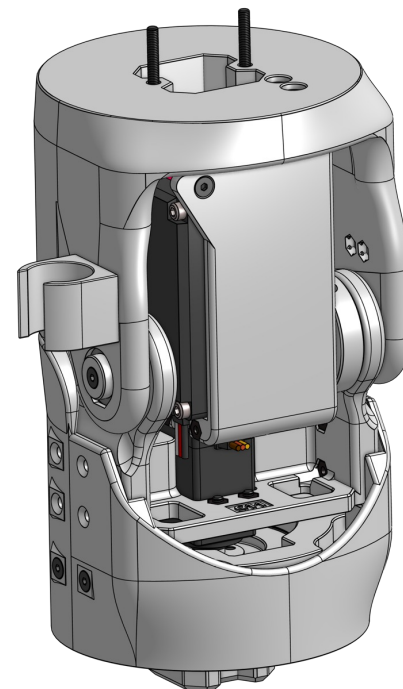
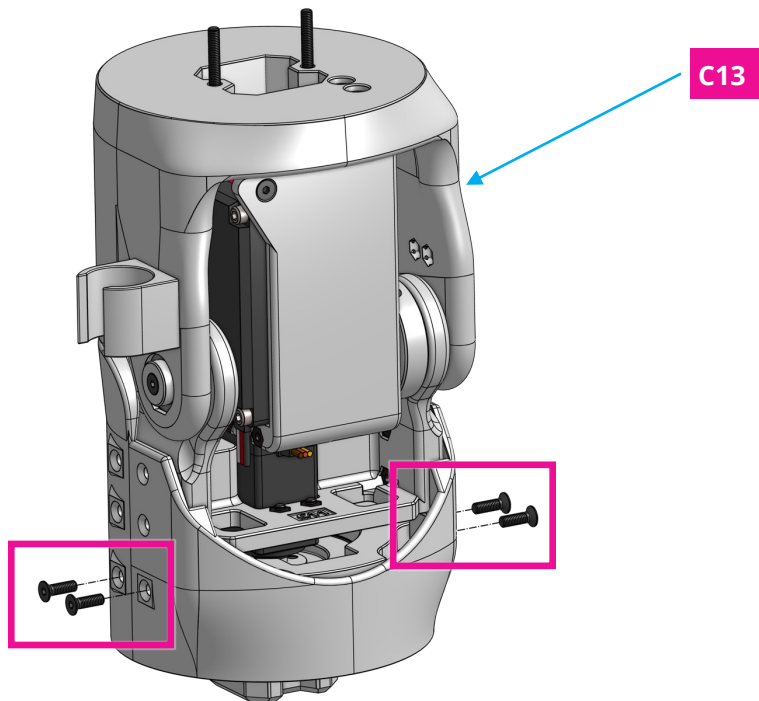
Use **4 x 10 mm screws** (for the lower 4 holes of **C13**) to connect **C13** to the assembly.



1



4x



Step 14

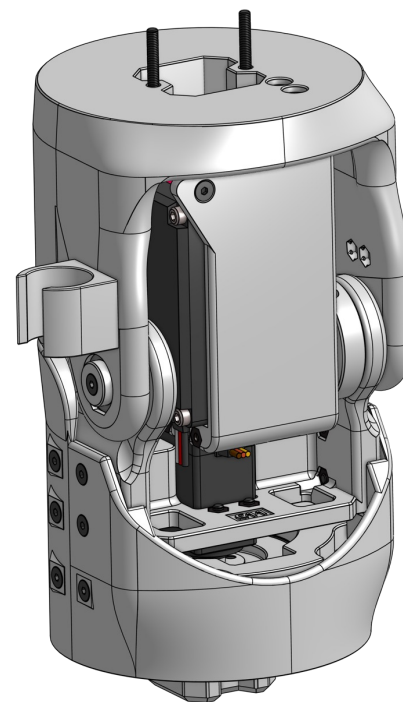
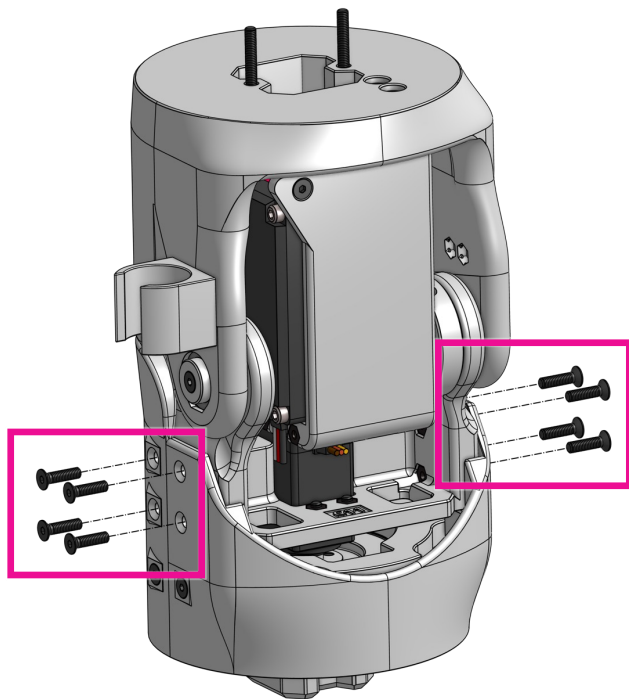
Use 8 x 12 mm screws (for the upper 8 holes of **C13**) to connect **C13** to the assembly.



1



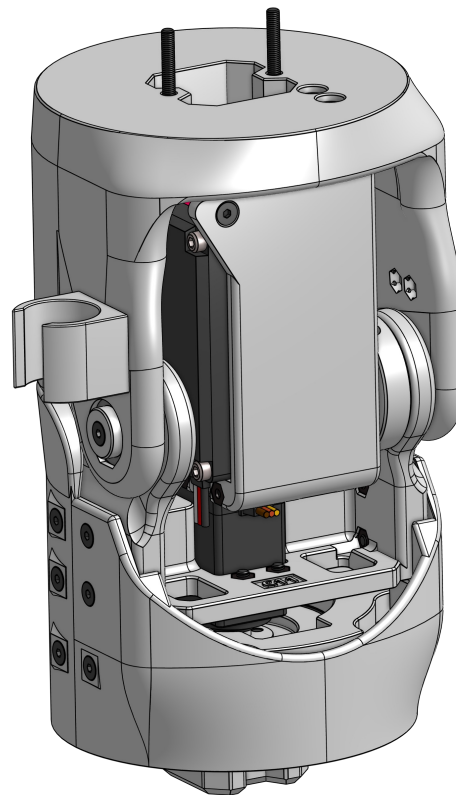
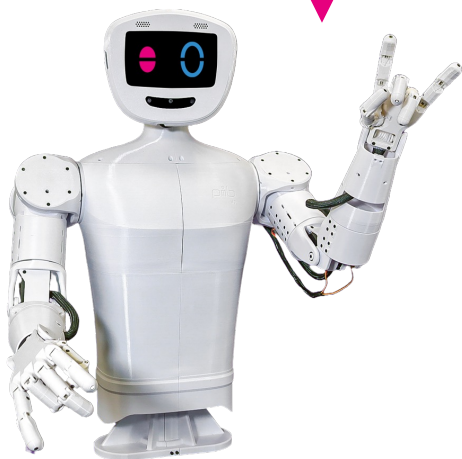
8x



Congratulations

You did a great job, pib's elbow is assembled!

Well done!



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.



discord.com/invite/GRdpyeDu7P

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Order non-printable parts for pib.