



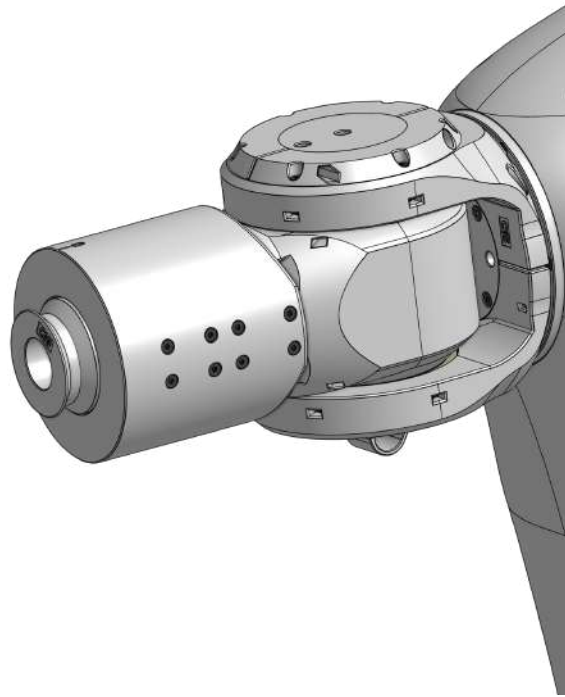
How to build your robot

www.pib.rocks/build

assembly instructions for:

Shoulder horizontal

pib#4



PRINT

BUILD

DEVELOP

YOUR OWN ROBOT

Printable and pre-assembled parts

Pib's shoulder consists of **12 printable parts** and is assembled in **13 steps**.

In order to construct the shoulder, 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

C65-Bracket_Outer_Shoulder

C66-Cap_Front_Outer_Shoulder

C67-Cap_Back_Outer_Shoulder

C68-Inner_Ring_Outer_Shoulder (2x)

C69-Inner_Part_Outer_Shoulder

C70-Shell_Outer_Shoulder

C72-Plate_Outer_Shoulder (2x)

C73-Motor_Bracket_Outer_Shoulder

C74-Wire_holder

C75-Front_Bracket_Outer_Shoulder (2x)

C08-Central_rotator_bracket

C09-Central_rotator_connector

C15-Central_rotator_motor_connector

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 **E09** DS3225 Servo

1 x **E15** DS5180SSG Servo

1 x **M17** Motor_clamp-18T

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

2 x **M04** Big sized ballbearings (60 x 78 x 10mm)

Non-printable parts

50 x **S01** M3 nuts

4 x **S02** M3 6 mm screws

5 x **S03** M3 8 mm screws

20 x **S04** M3 10 mm screws

1 x **S05** M3 12 mm screws

12 x **S06** M3 16 mm screws

12 x **S08** M3 20 mm screws

6 x **S13** M3 40mm screws

2 x **M06**-Ballbearing_Axial_70x50x3

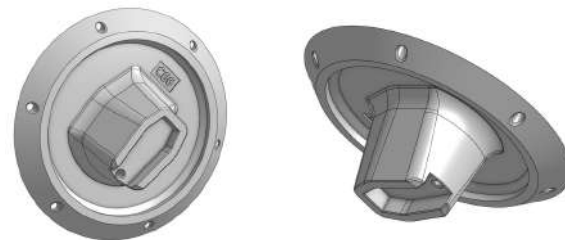
2 x **M07**-Thrust_bearing_70x50x1

Printable parts - Overview

C65-Bracket_Outer_Shoulder



C66-Cap_Front_Outer_Shoulder



C67-Cap_Back_Outer_Shoulder

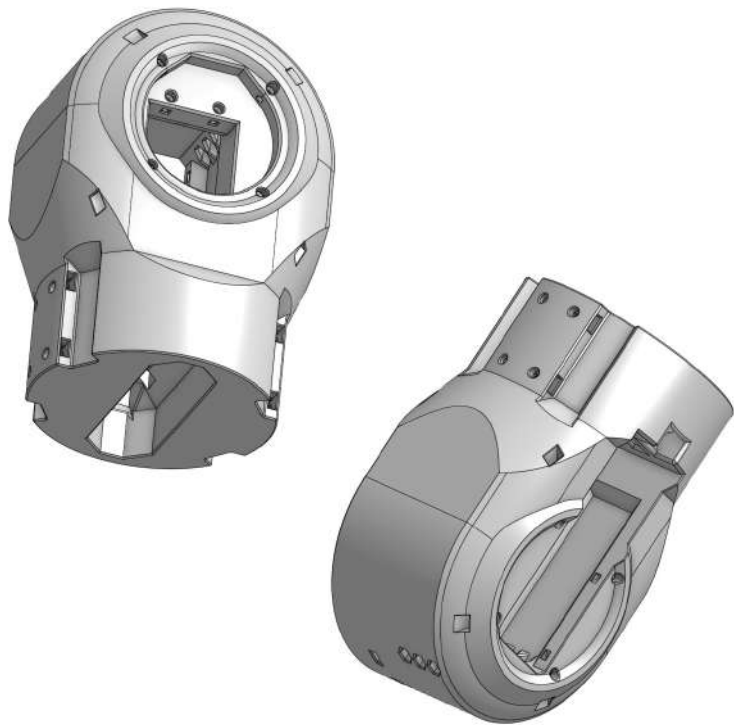


C68-Inner_Ring_Outer_Shoulder

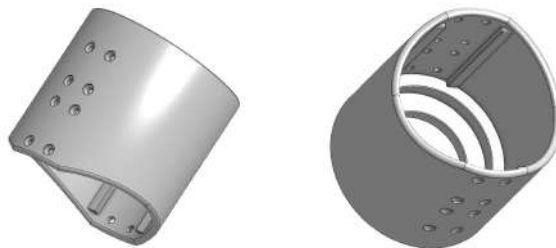


Printable parts - Overview

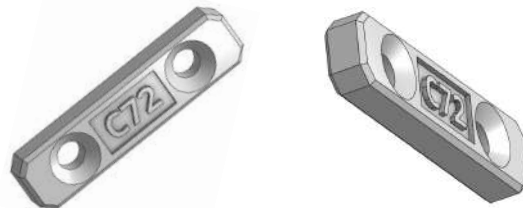
C69-Inner_Part_Outer_Shoulder



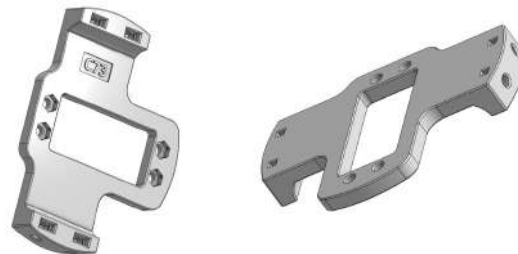
C70-Shell_Outer_Shoulder



C72-Plate_Outer_Shoulder

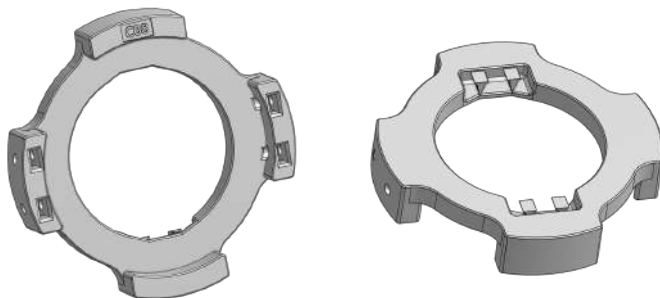


C73-Inner_Ring_Outer_Shoulder

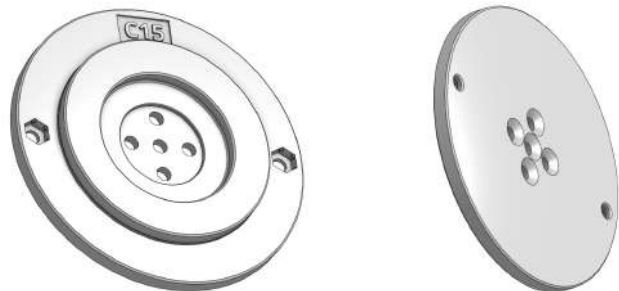


Printable parts - Overview

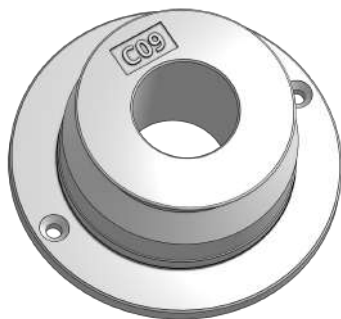
C08-Central_rotator_bracket



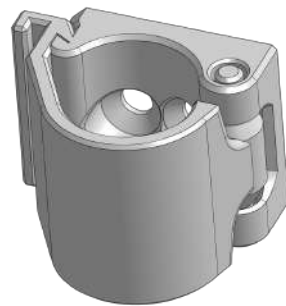
C15-Central_rotator_motor_connector



C09-Central_rotator_connector



C74-Wire_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 1

Place **14 x M3 nuts** in the shown spots in **2 x C65**.



1



14x



Step 2

Connect **2 x C65** to each other and to upper-body-assembly using **2 x M3 40mm screws**.

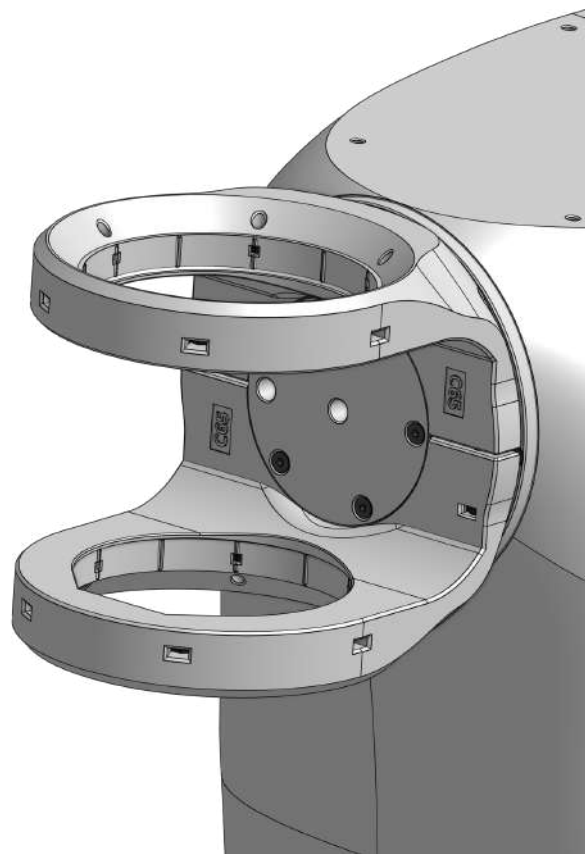
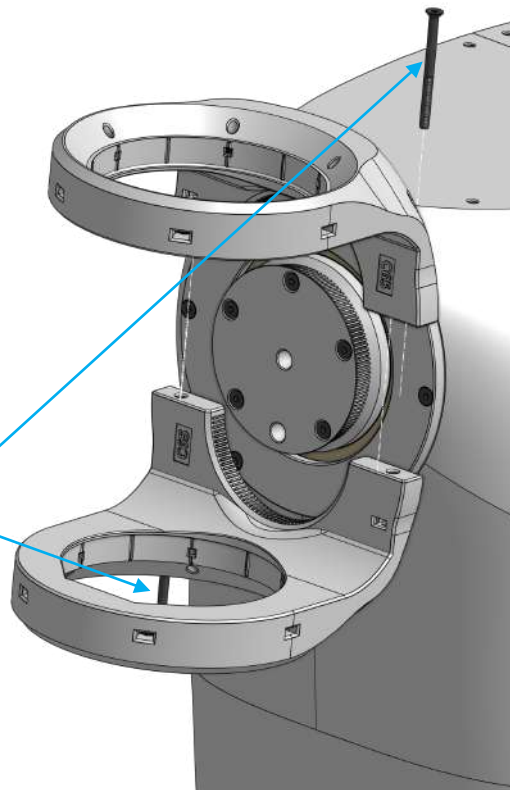
(This connection will be hidden in future slides for visibility)



1



2x



Step 3

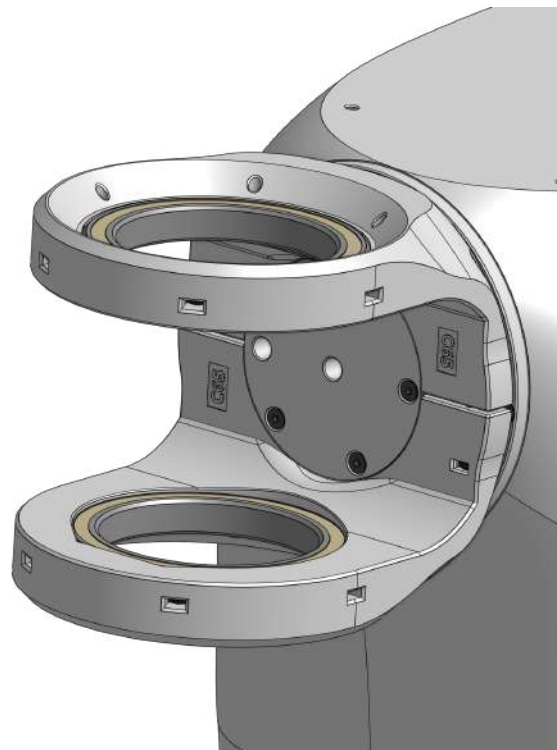
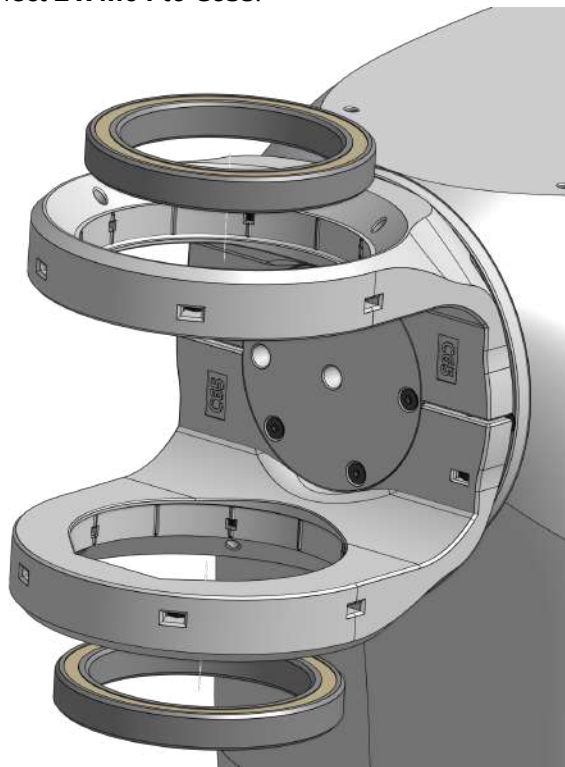
Connect **2 x M04** to **C65s**.



1

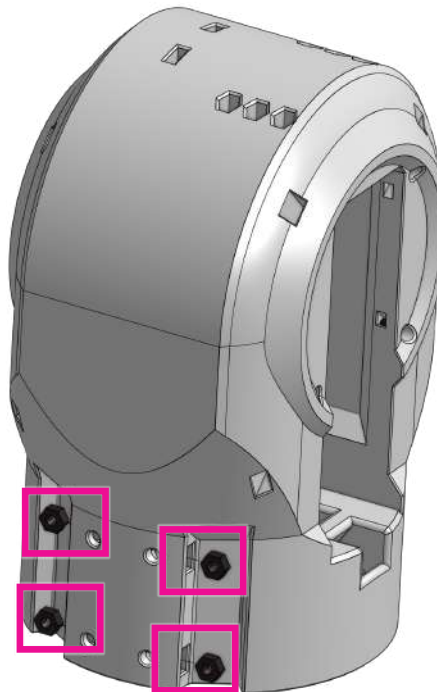
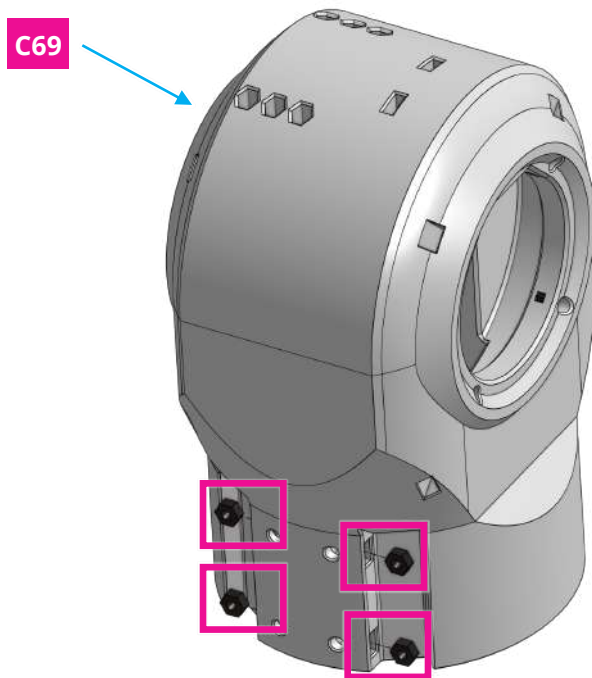


2x



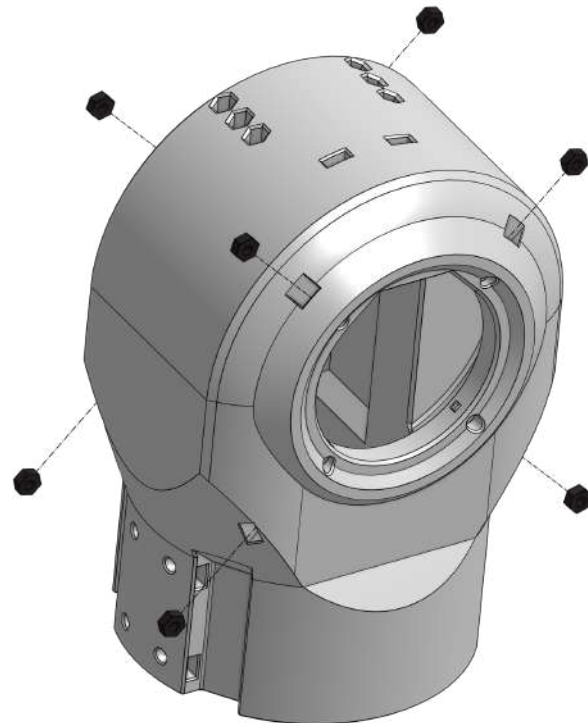
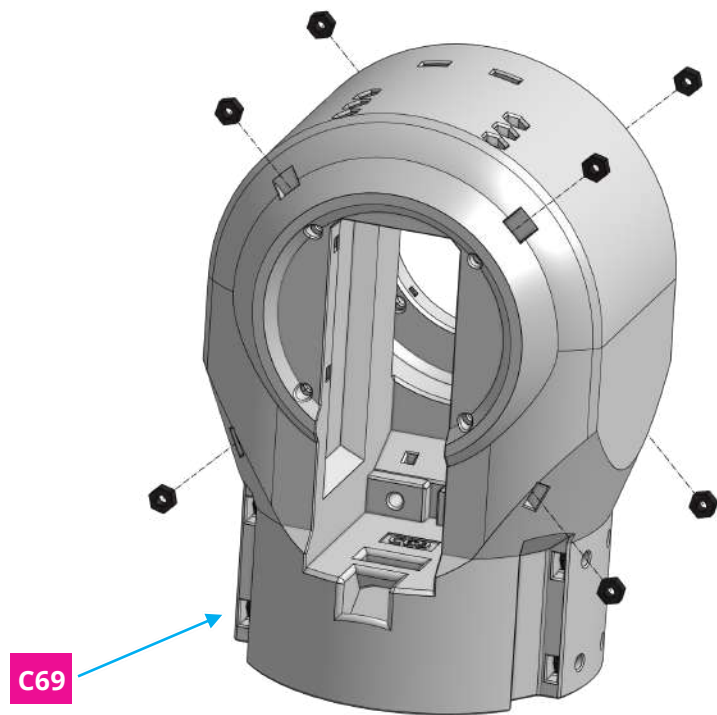
Step 4a

Insert **8 x M3 nuts** in **C69** (4 on each side).

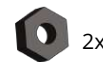


Step 4b

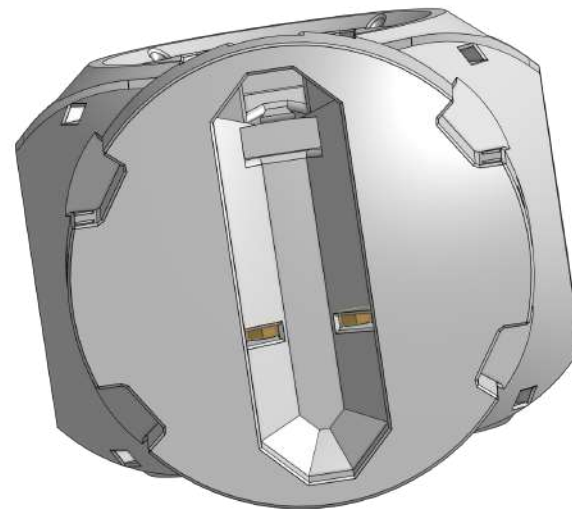
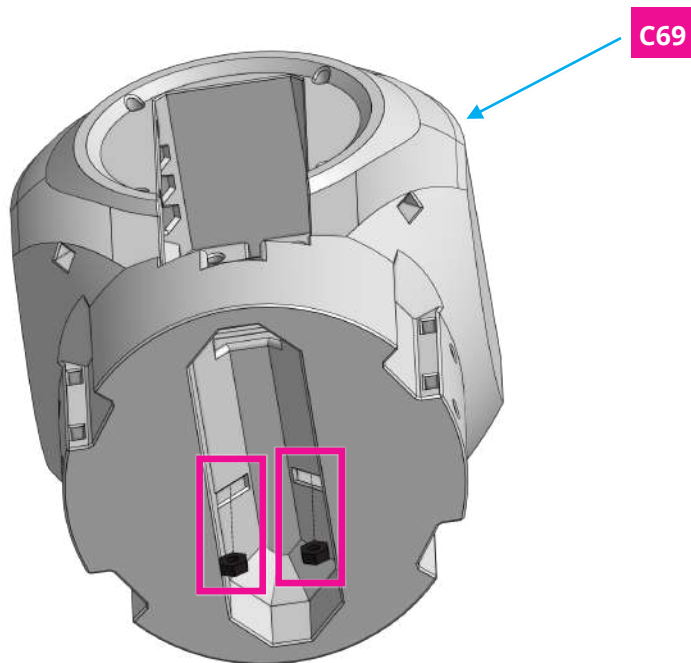
Insert **8 x M3 nuts** in **C69** (4 on each side). Make sure they are inserted all the way through.



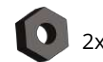
Step 4c



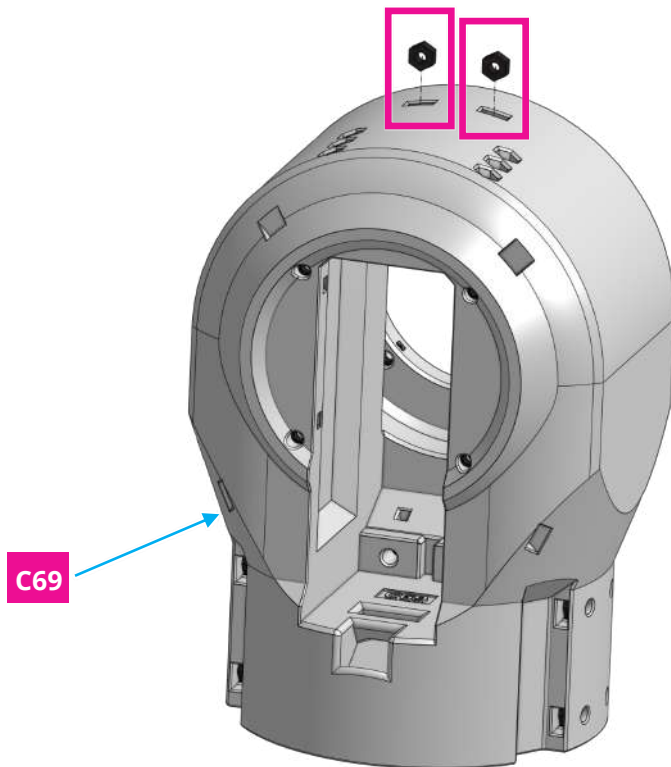
Insert **2 x M3 nuts** each side in the shown spots in **C69**. Make sure they are inserted all the way through.



Step 4d



Insert **2 x M3 nuts** each side in the shown spots in **C69**. Make sure they are inserted all the way through.



Step 5

Connect **M17** to **E15**, then tighten the screw on the side to lock the connection.



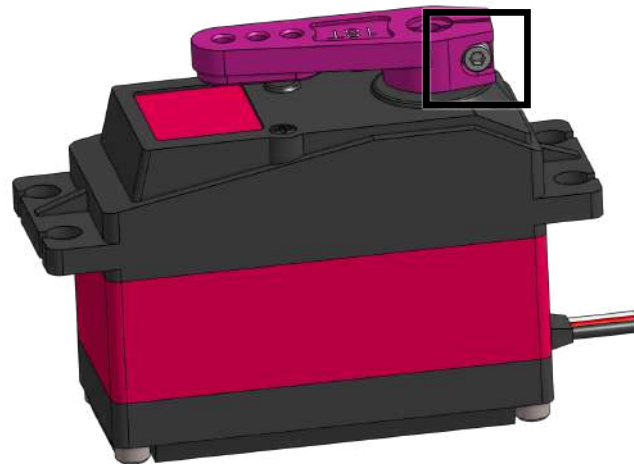
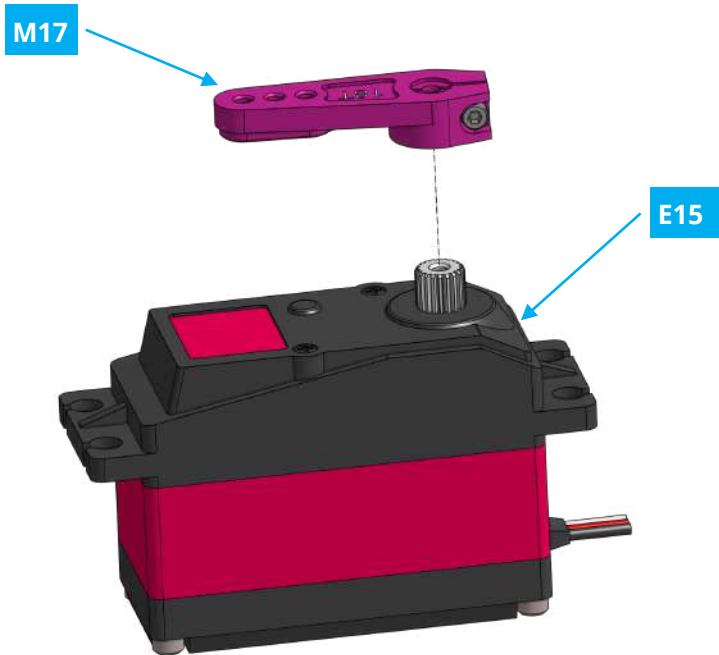
1



1x



1x



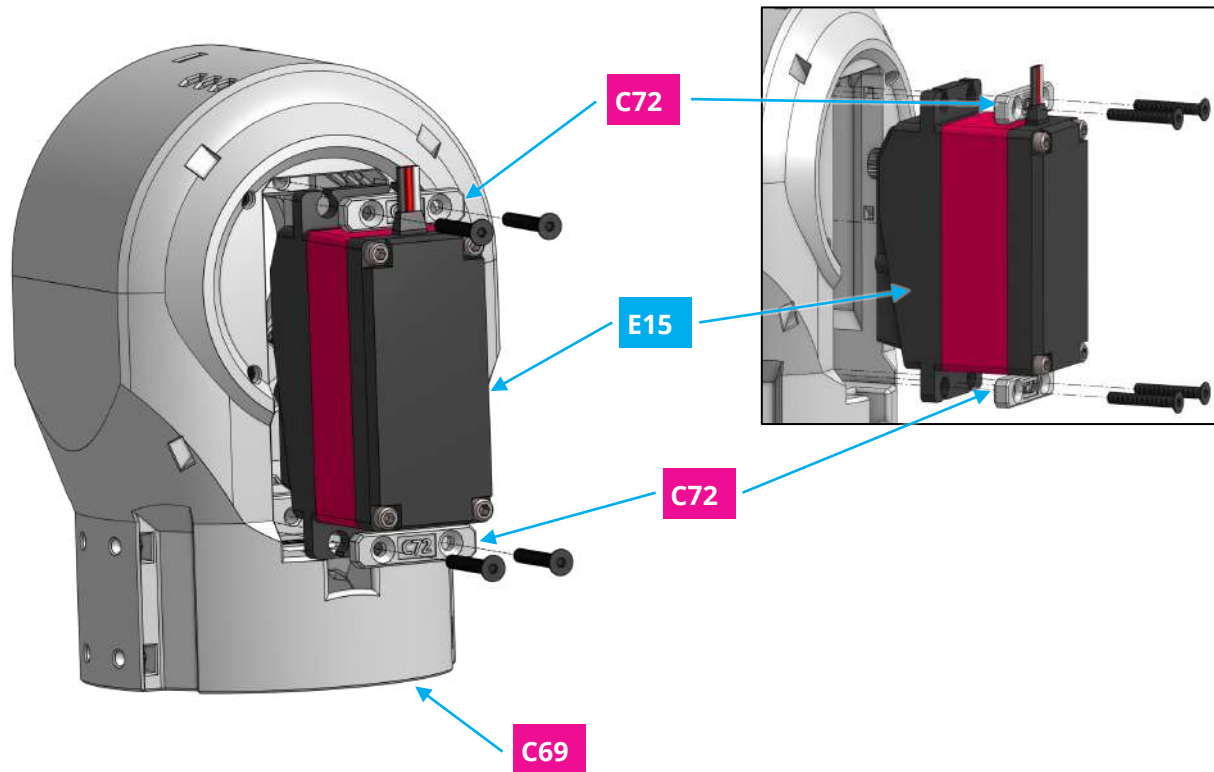
Please revert to step 0 and calibrate the motor if it was not calibrated

Step 6

Connect **E15** motor to **C69** using **2 x C72** and **4 x M3 20mm screws**.



4x

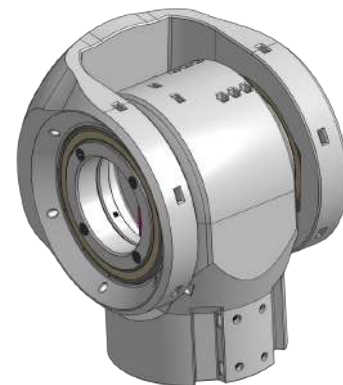
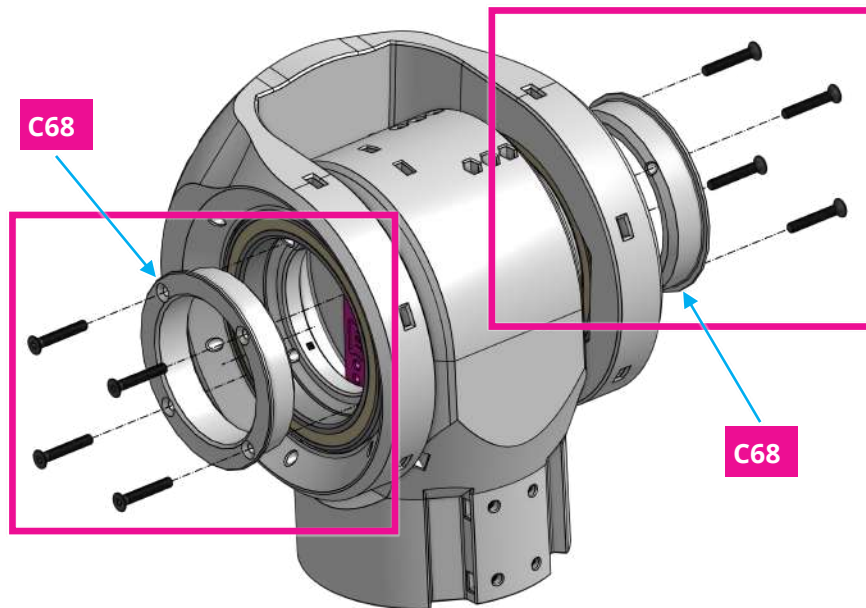
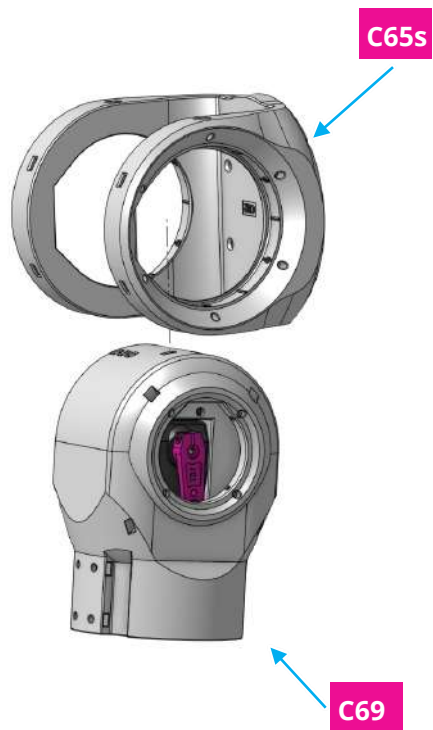


Step 7

Connect **C65** to **C69** using **2 x C68** and **8 x M3 20mm screws**.



8x



Step 8a

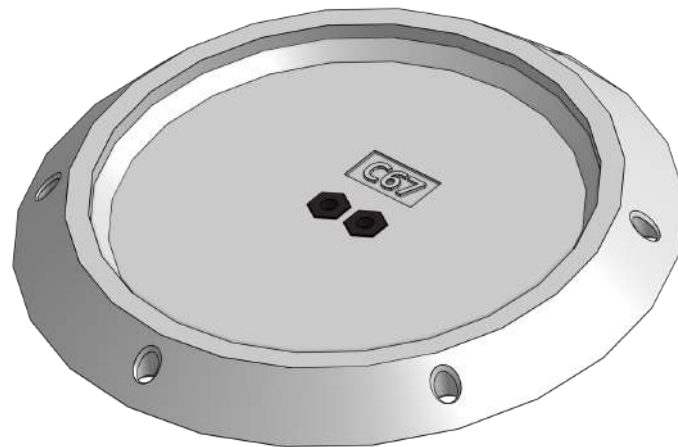
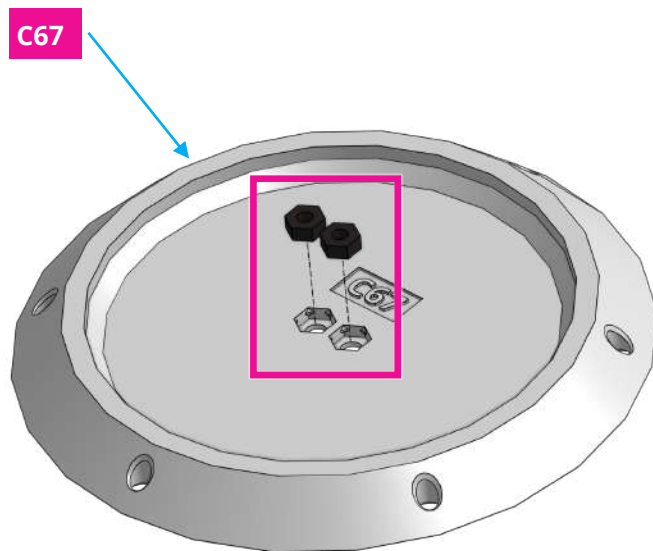
Place **2 x M3** nuts in the shown spots of **C67**.



1



2x



Step 8b

Connect **C66** (using **2 x C75s**, **2 x M3 40mm** screws and **2 M3 nuts**) and **C67** to the assembly using **12 x M3 16mm** screws and **2 x M3 40mm** screw to secure connection to **M17**.



4



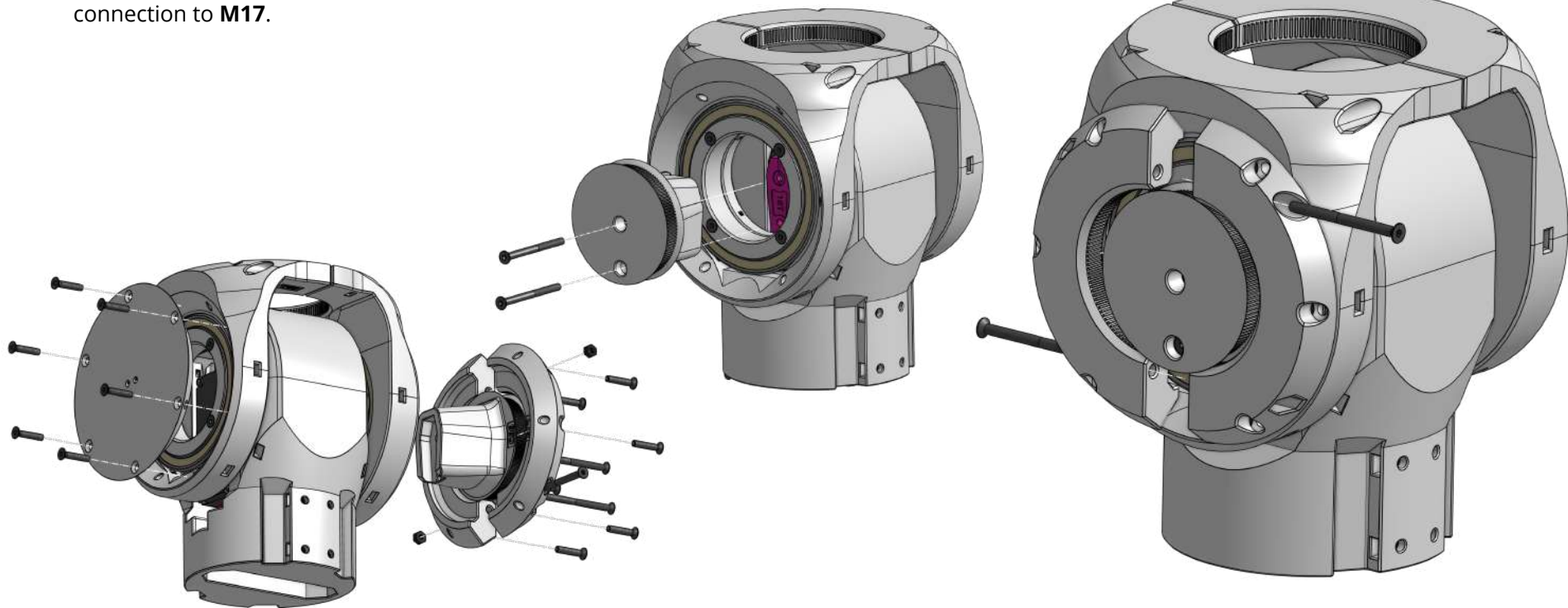
12x



4x



2x



Step 8c

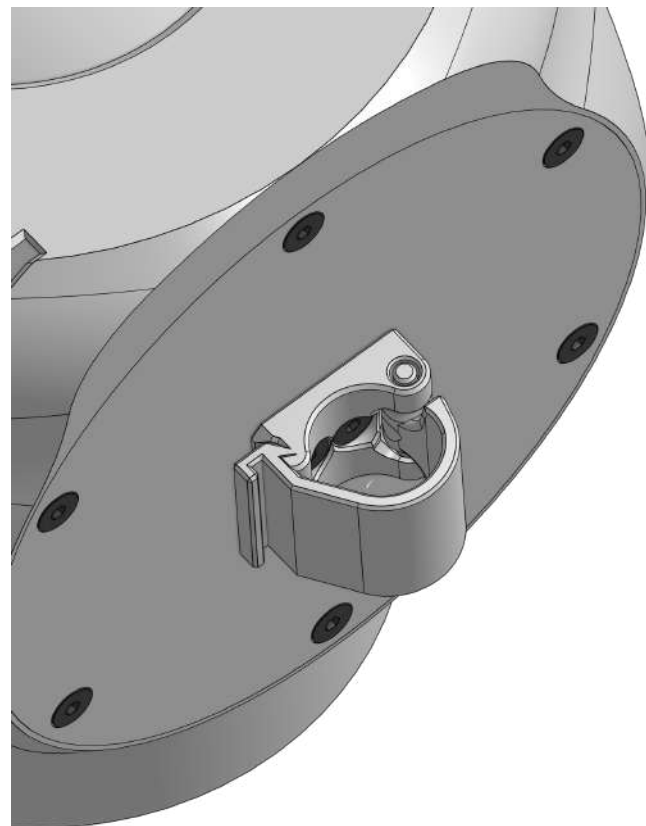
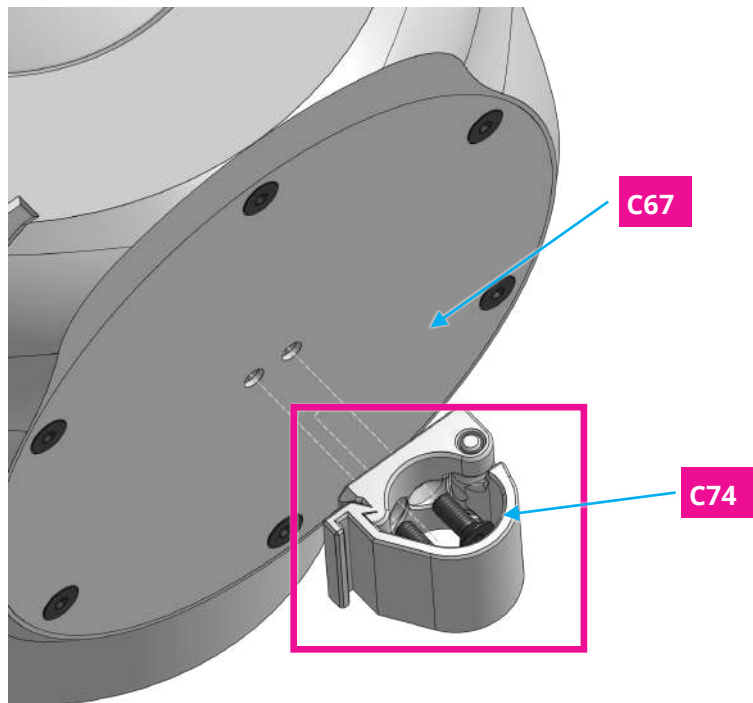
Connect **C74** to **C67** using **2 x M3 8mm** screws.



1



2x

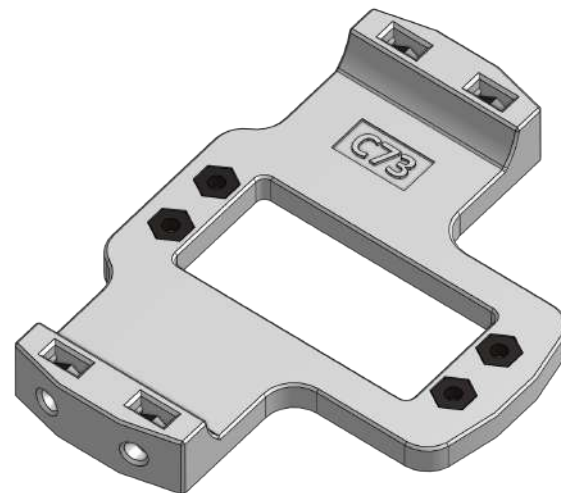
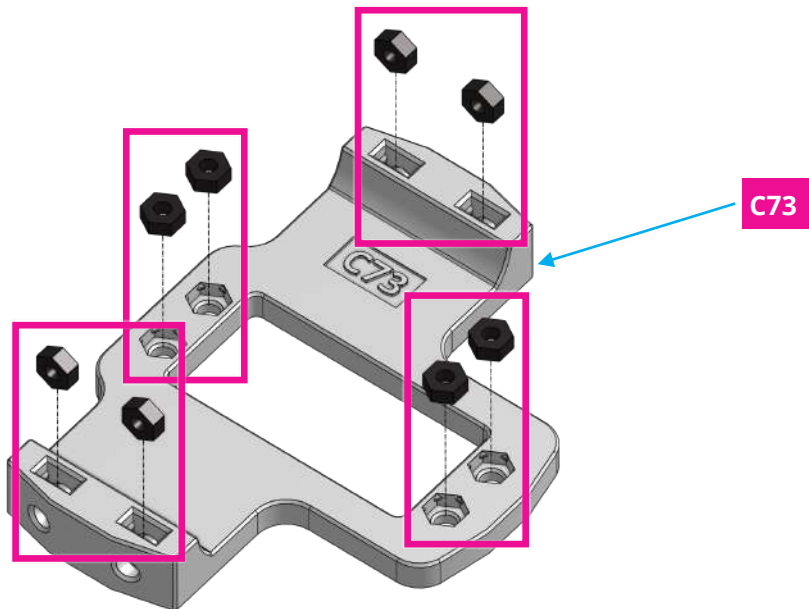


Step 9a

Insert **8 x nuts** in the shown spot of **C73**.



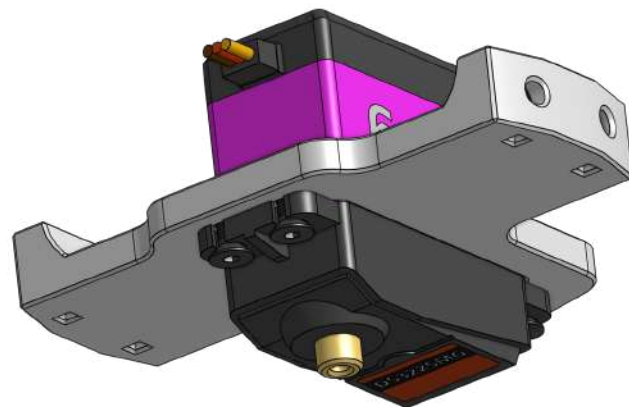
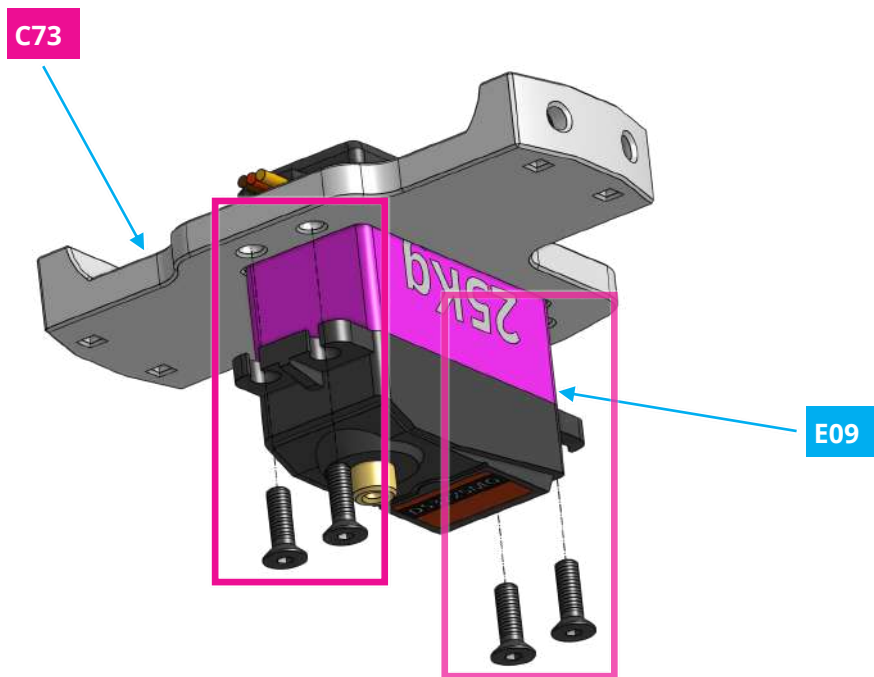
8x



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

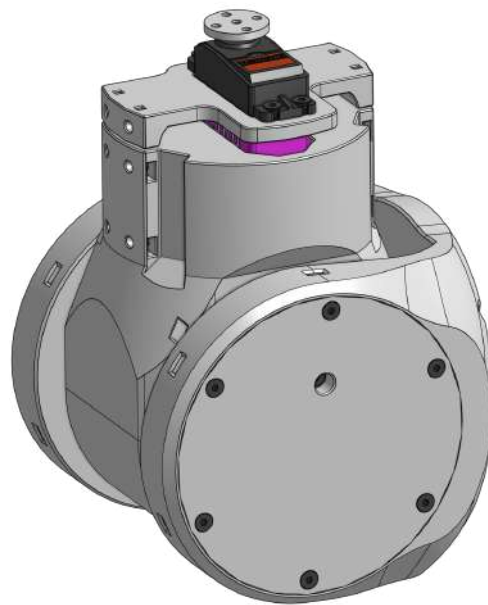
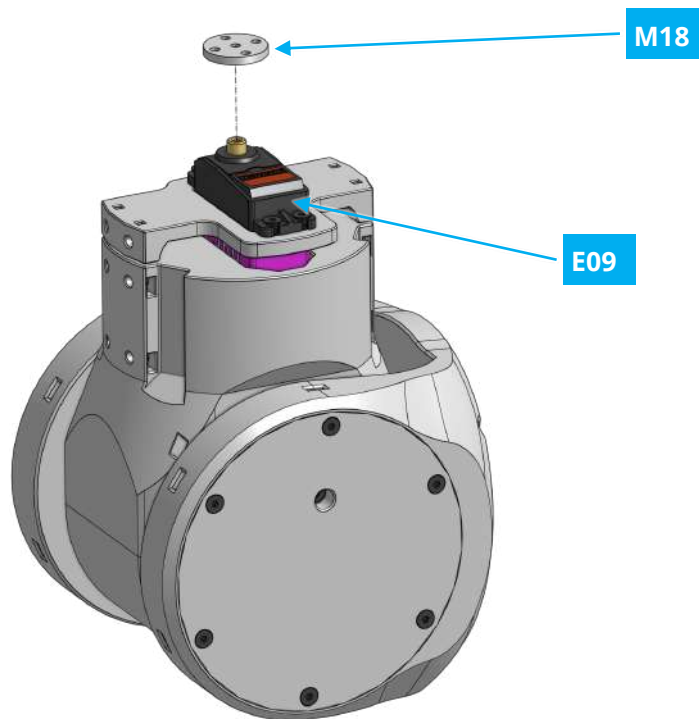
Connect **E09** to **C73** using **4 x M3 10mm screws**.



Step 9c

Place **M18** on **E09**

 1  1x



Step 10a

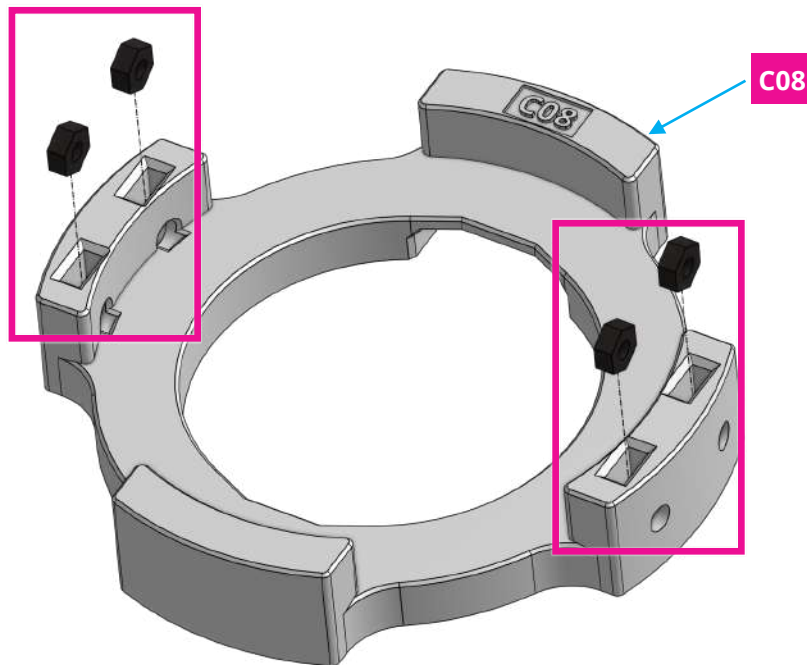
Insert **4 x nuts** in the shown spot of **C08**.



1



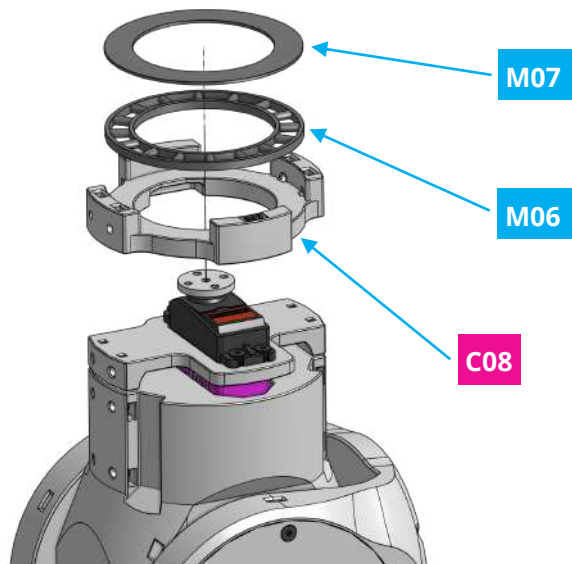
4x



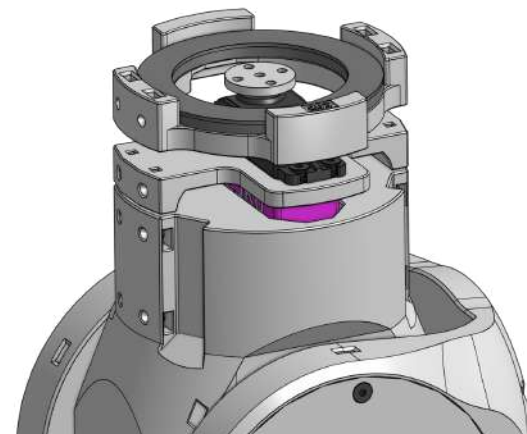
Use a small screwdriver or a precision tool to put the nuts into the holes and hit them gently with a hammer to place them correctly.

Step 10b

Place **C08**, **M06** and **M07** on top of **C73**.

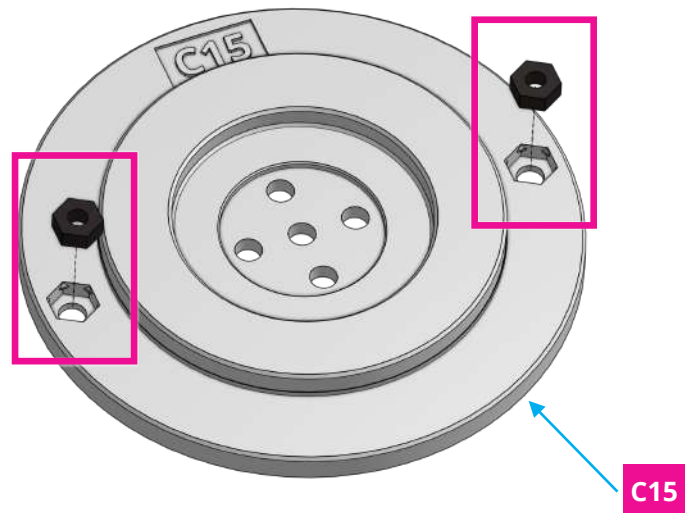
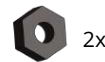


Please make sure, that the small movable pieces in **M06** face towards **M07**.



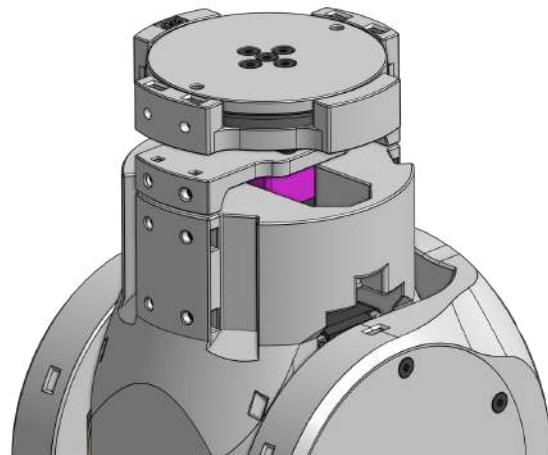
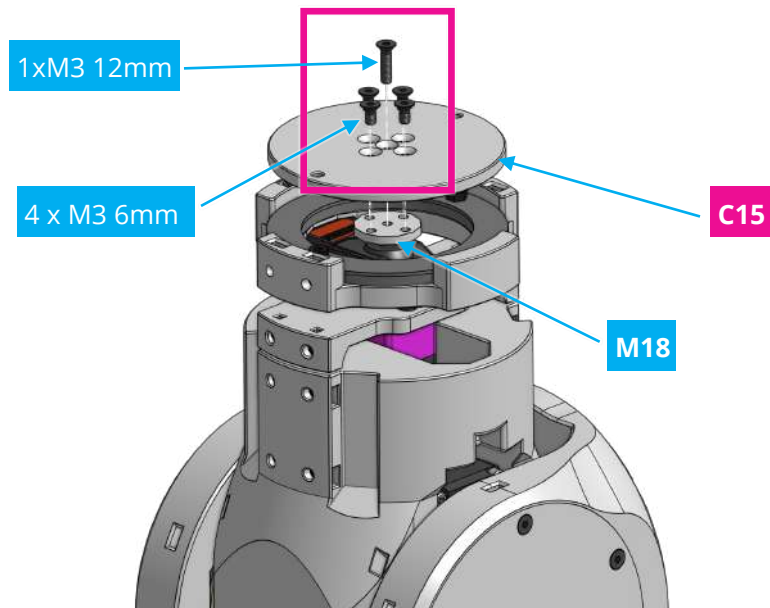
Step 10c

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



Step 10d

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



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

Step 10e

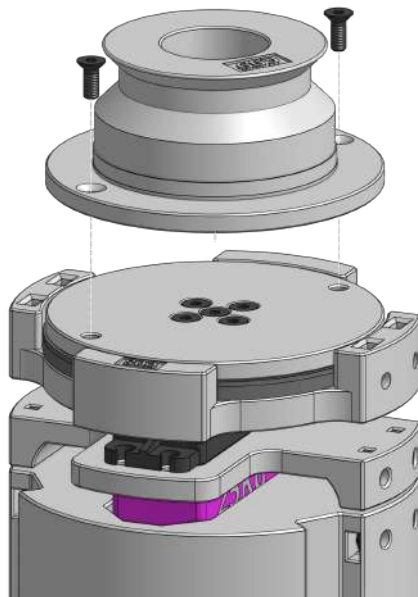
Connect **C09** to **C15** using **2 x 8 mm screws**.



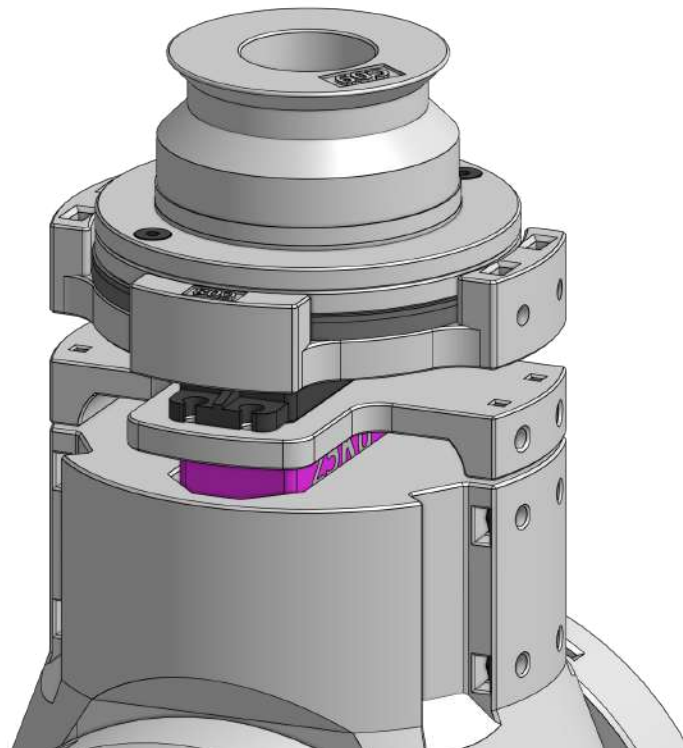
1



2x

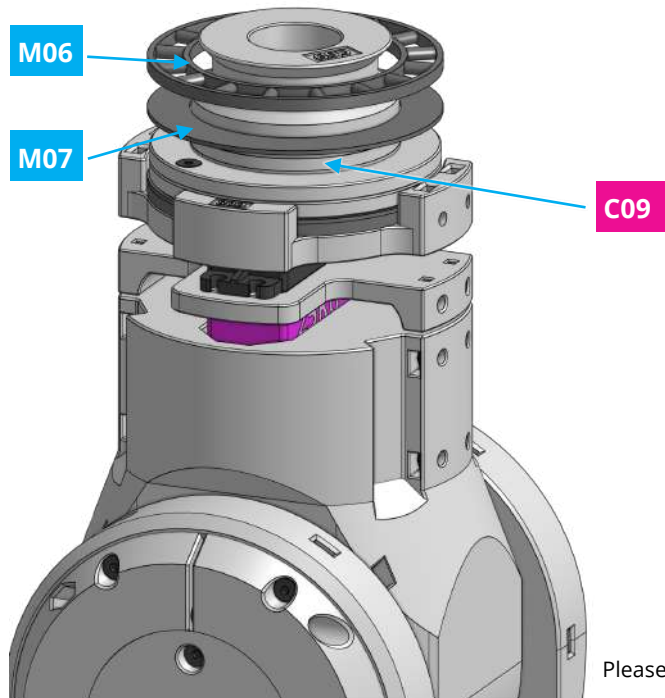


Please make sure, that you connect **C09** to **C15**
in the shown orientation.

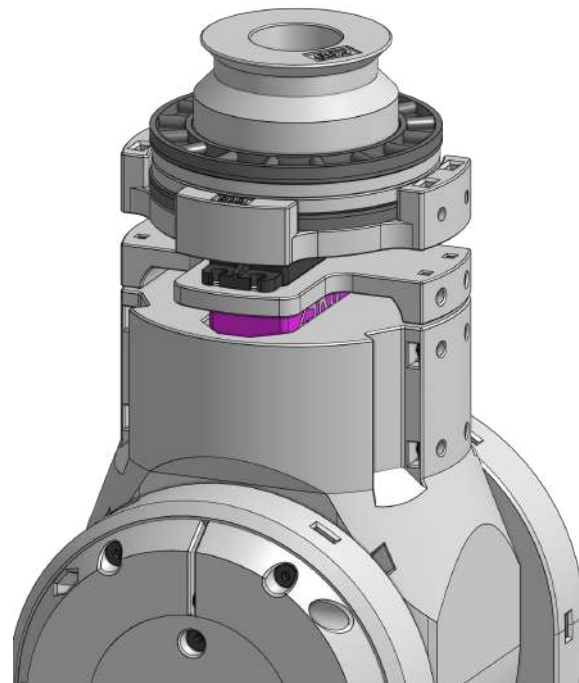


Step 11

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

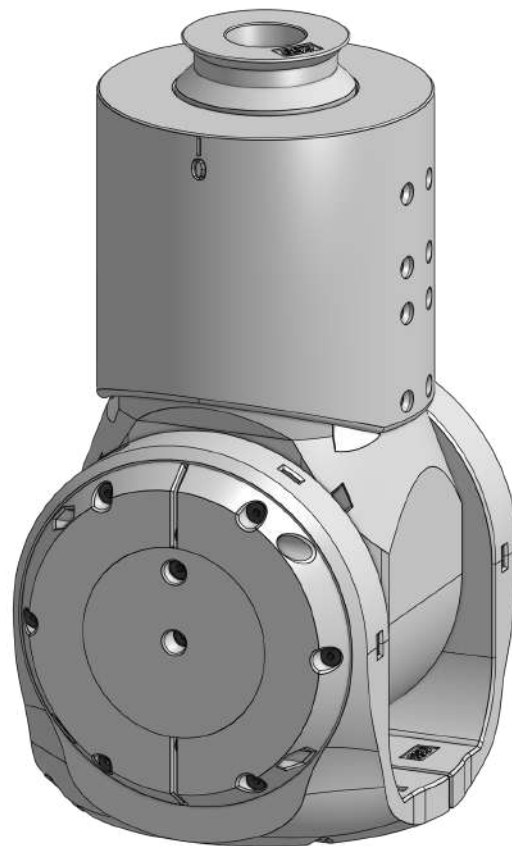
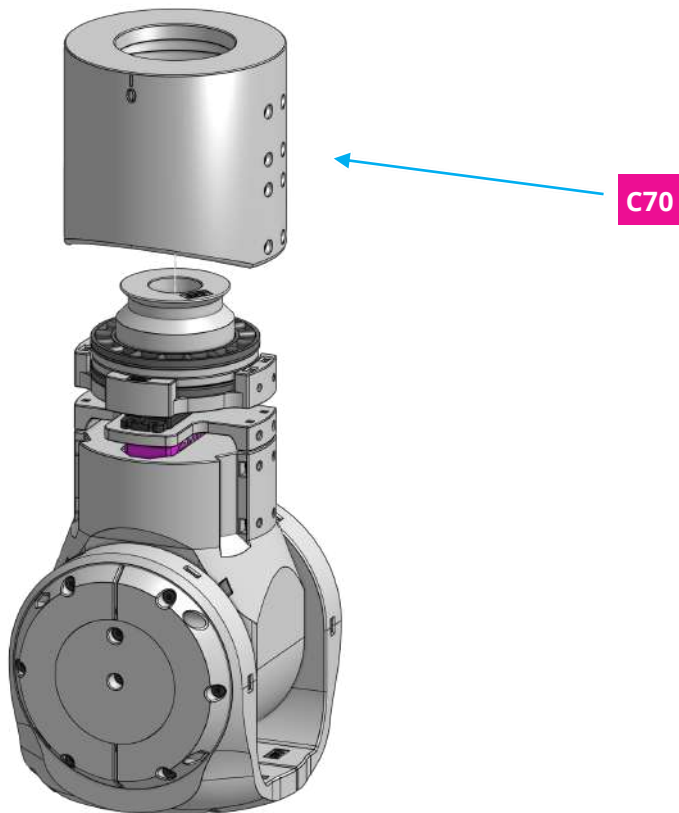


Please make sure, that the small movable pieces in **M06** face towards **M07**.



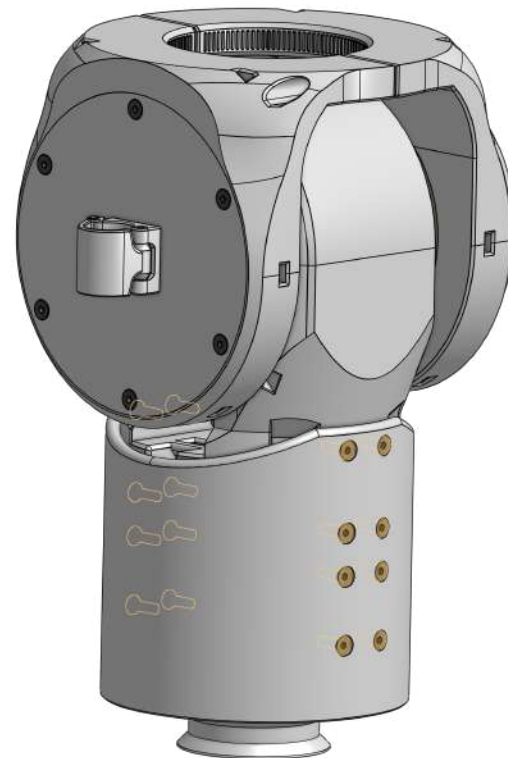
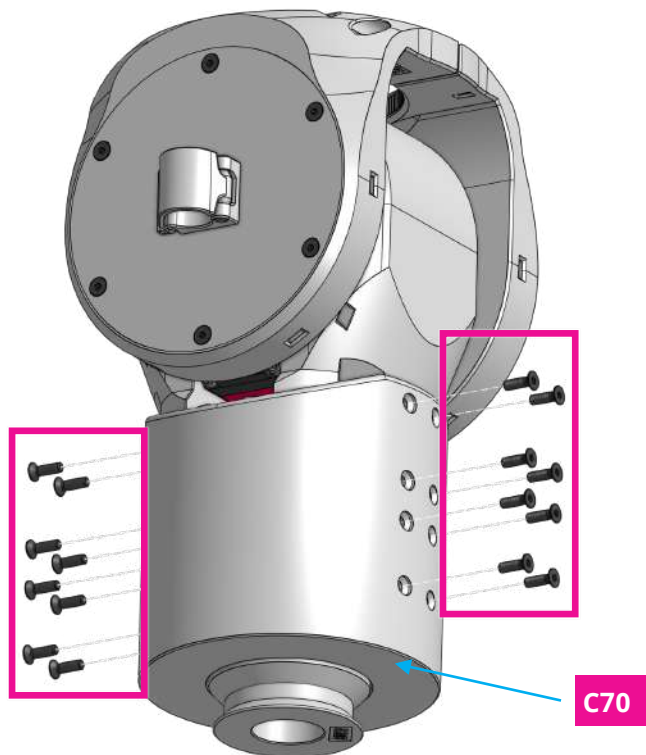
Step 12

Place **C70** on top of the previous assembly.



Step 13

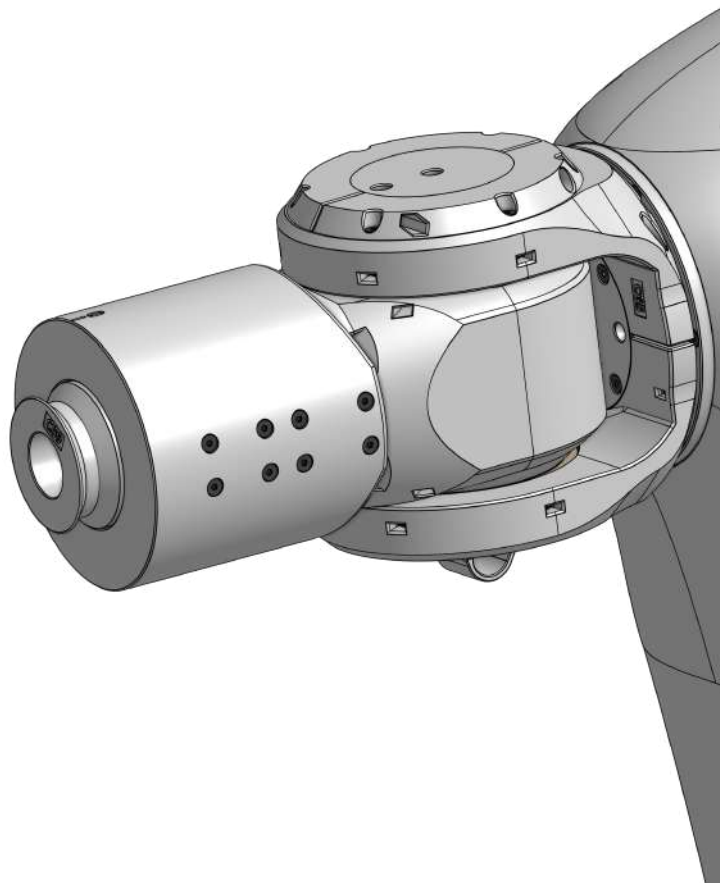
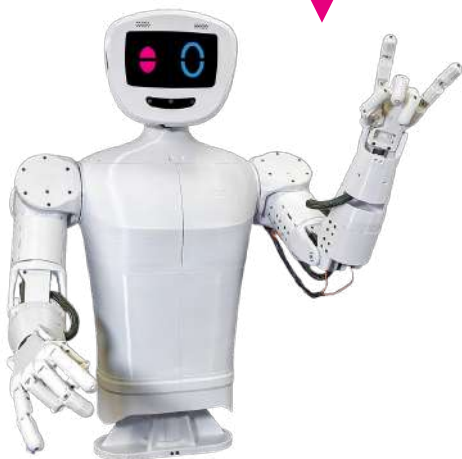
Use **16 x 10 mm screws** to connect **C70** to the assembly.



Congratulations

You did a great job, pib's shoulder 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

Join us on Discord.



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Order non-printable parts for pib.