



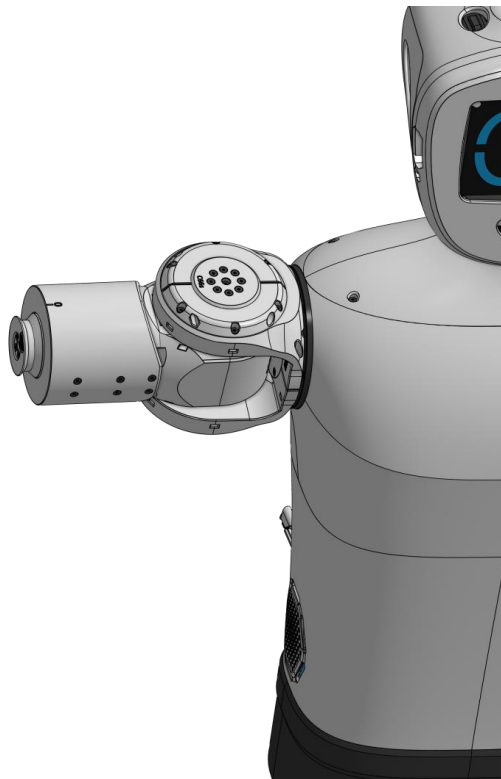
How to build your robot

www.pib.rocks/build

assembly instructions for:

Shoulder horizontal

pib#4 research



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

C66s-Cap_Front_Outer_Shoulder

C67-Cap_Back_Outer_Shoulder

C68-Inner_Ring_Outer_Shoulder (2x)

C69s-Inner_Part_Outer_Shoulder

C70s-Shell_Outer_Shoulder

C72-Plate_Outer_Shoulder (2x)

C74-Wire_holder

C75-Front_Bracket_Outer_Shoulder (2x)

C08s-Central_rotator_bracket

C09s-Central_rotator_connector

C15s-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 **E27 STS3215** Servo

1 x **E18 STS3095** Servo

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

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

Non-printable parts

42 x **S01** M3 nuts

4 x **S02** M3 6 mm screws

2 x **S03** M3 8 mm screws

12 x **S04** M3 10 mm screws

12 x **S06** M3 16 mm screws

8 x **S08** M3 20 mm screws

22 x **S13** M3 40mm screws

2 x **M06**-Ballbearing_Axial_70x50x3

4 x **M07**-Thrust_bearing_70x50x1

Printable parts - Overview

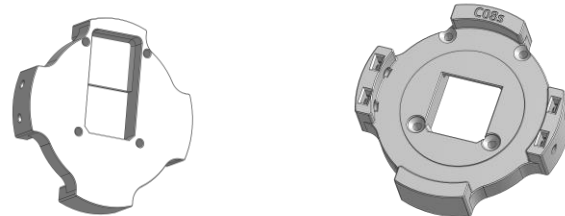
C65-Bracket_Outer_Shoulder



C67-Cap_Back_Outer_Shoulder



C08s-Central_Rotator_Bracket-S

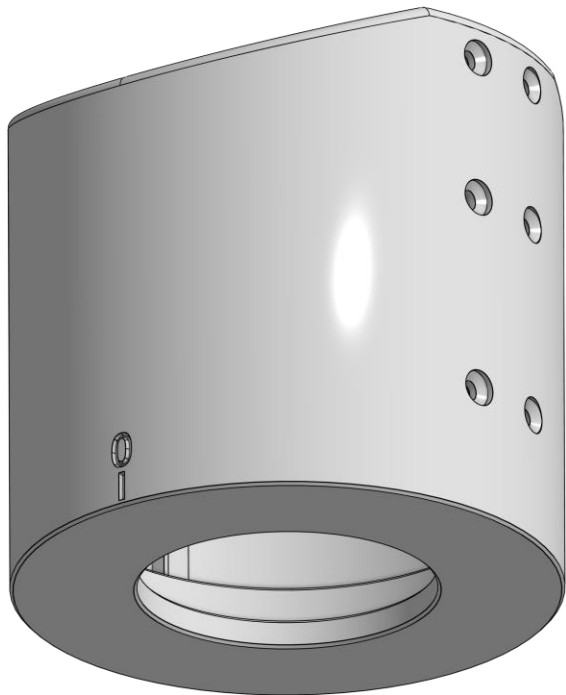


C68-Inner_Ring_Outer_Shoulder



Printable parts - Overview

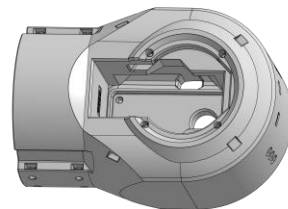
C70s-Shell_Outer_Shoulder_S



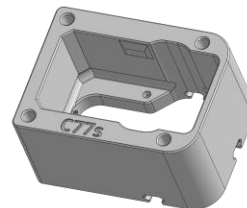
C75-Front_Bracket_Outer_Shoulder_



C69s-Inner_Part_Outer_Shoulder_S



C77s-Motor_Housing_Central_Rotator_S



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**.



Step 2

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

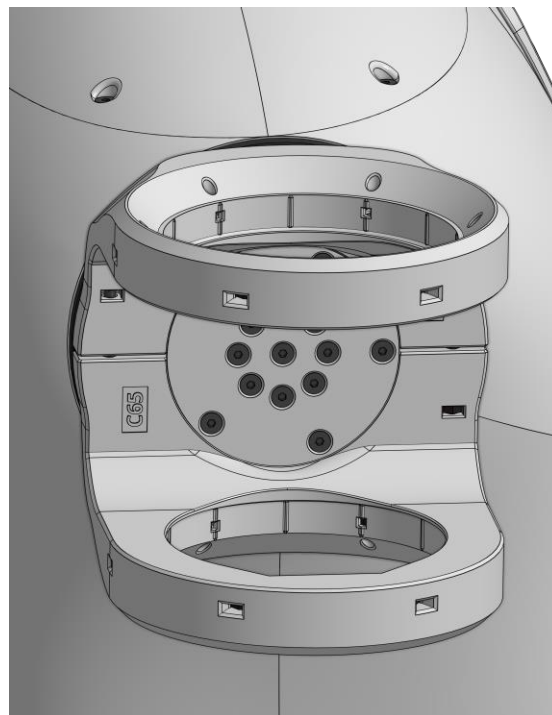
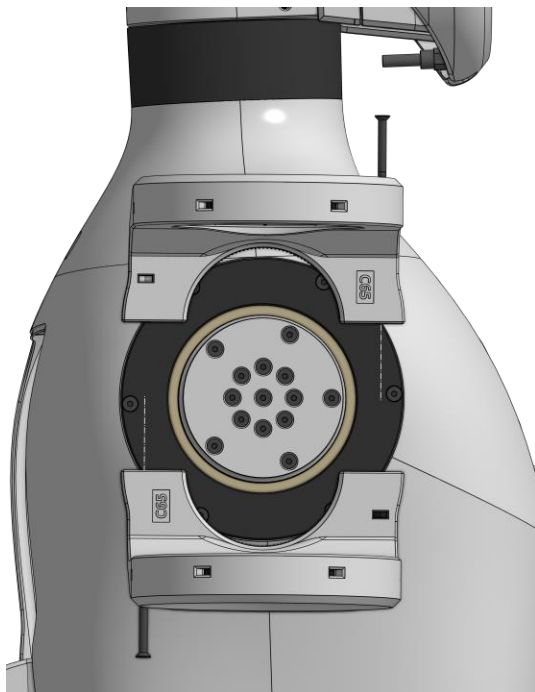
(This connection will be hidden in future slides for visibility)



1



2x



Step 3

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



1



2x



Step 4a

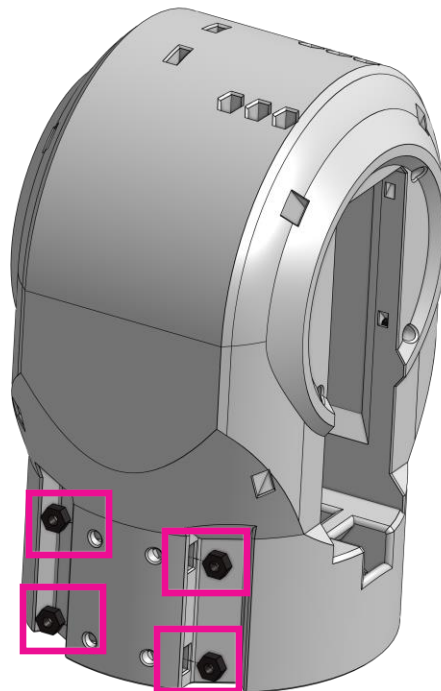
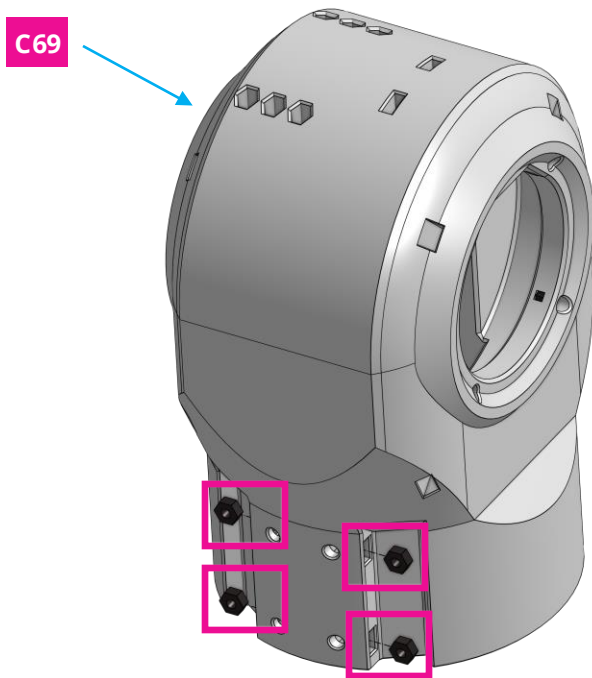
Insert **8 x M3 nuts** in **C69** (4 on each side).



1

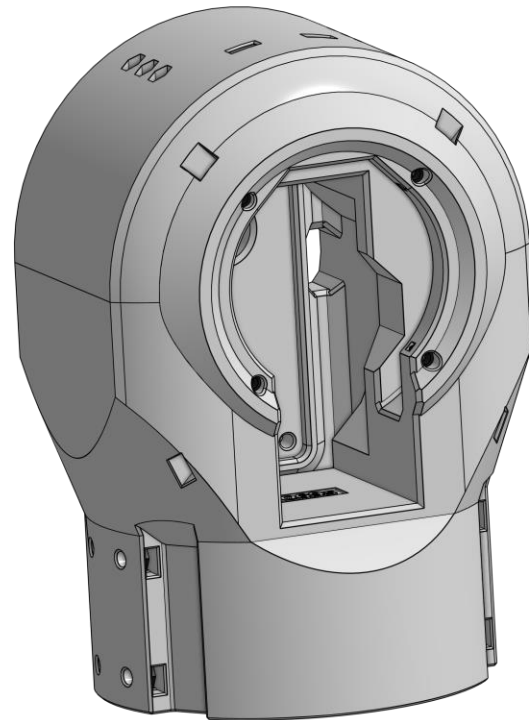
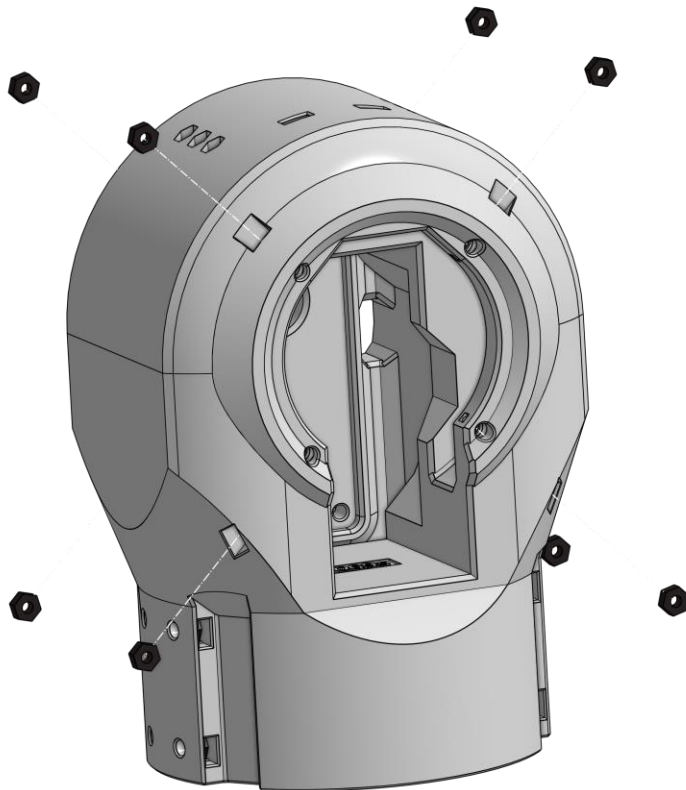


8x



Step 4b

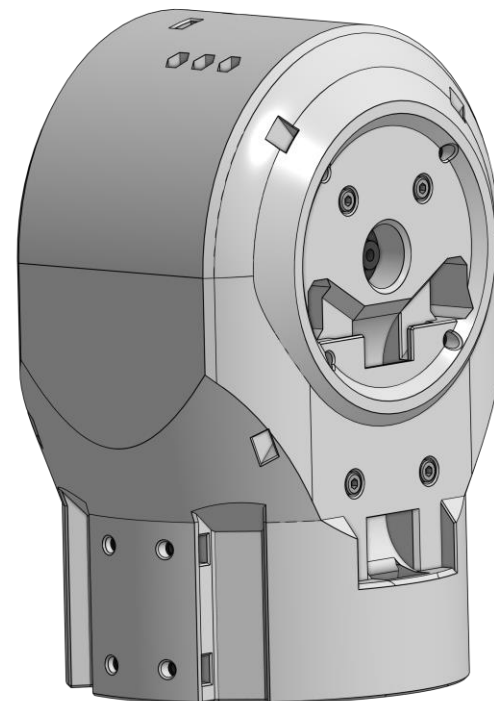
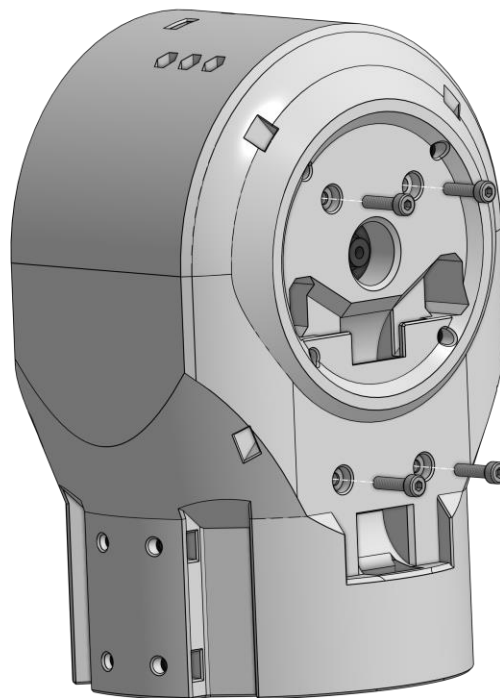
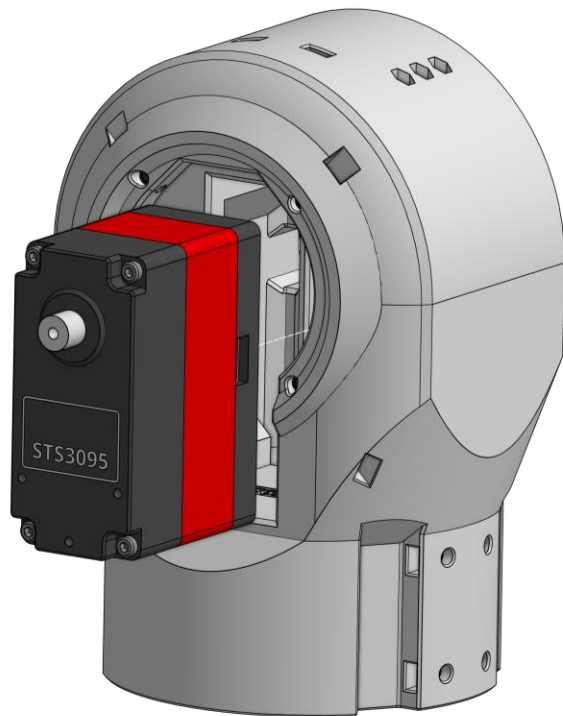
Insert **8 x M3 nuts** in **C69s** (4 on each side). Make sure they are inserted all the way through.



Step 6

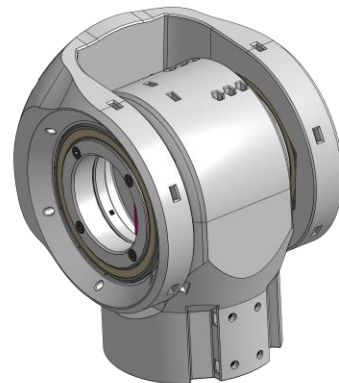
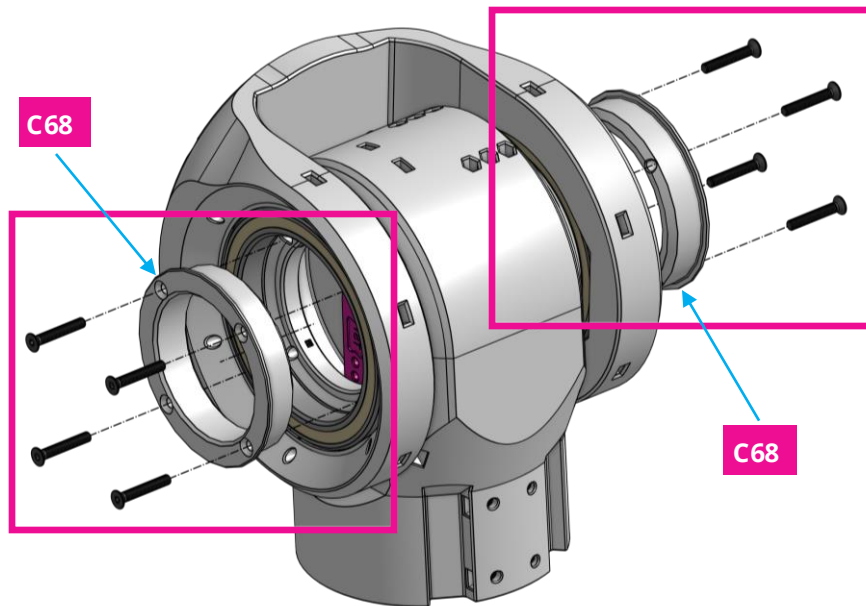
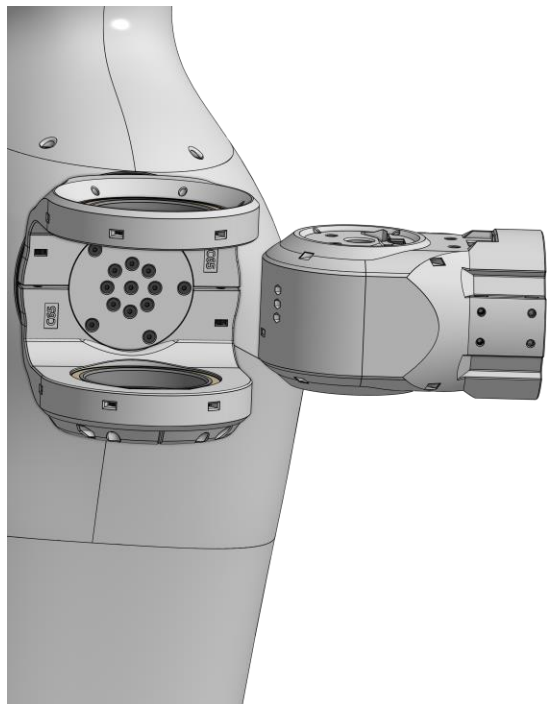


Connect **E18** motor to **C69s** using **4 x M2.5 10mm screws**. Then connect this motor to upper arm rotation motor in next steps



Step 7

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



Step 8a

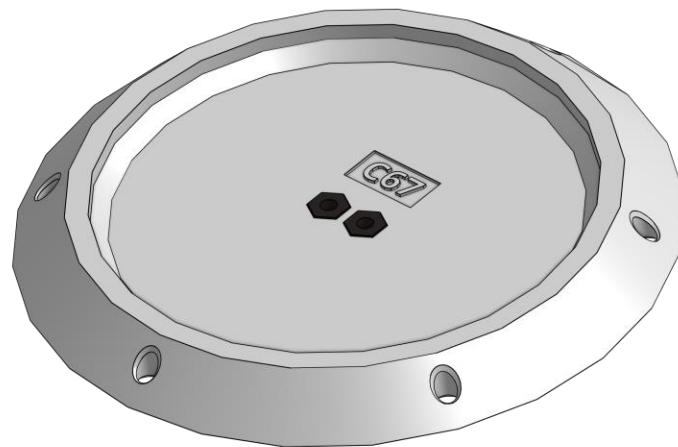
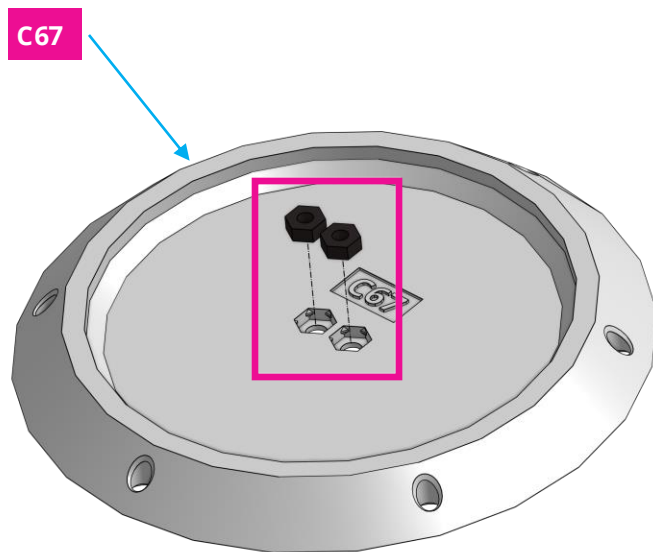
Place **2 x M3** nuts in the shown spots of **C67**.



1



2x



Step 8b

Connect **C66s** (using **2 x C75s**, **2 x M3 40mm** screws, **2 M3 nuts** and 9 x **M3 40mm** screws) and **C67s** to the assembly using **12 x M3 16mm** screws.



4



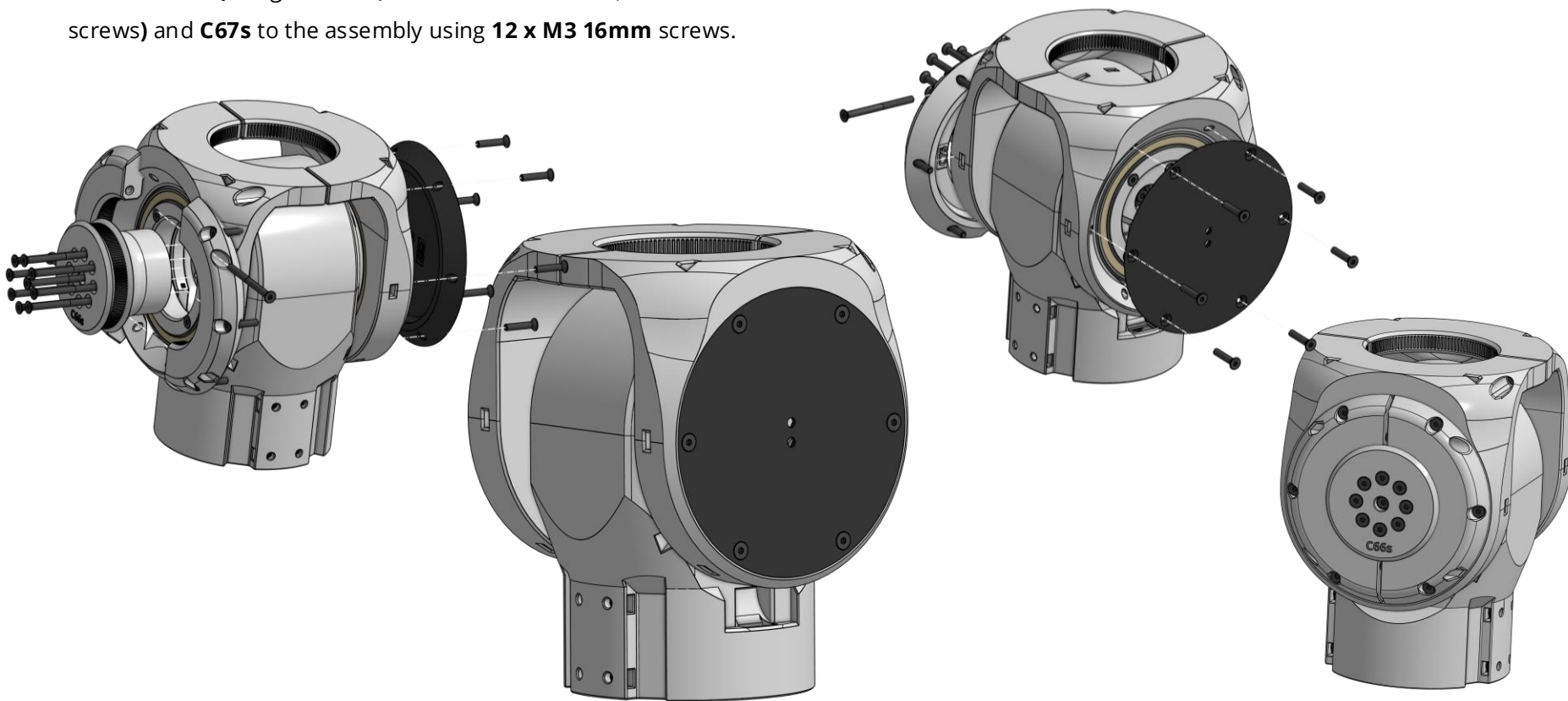
12x



11x



2x



Step 8c

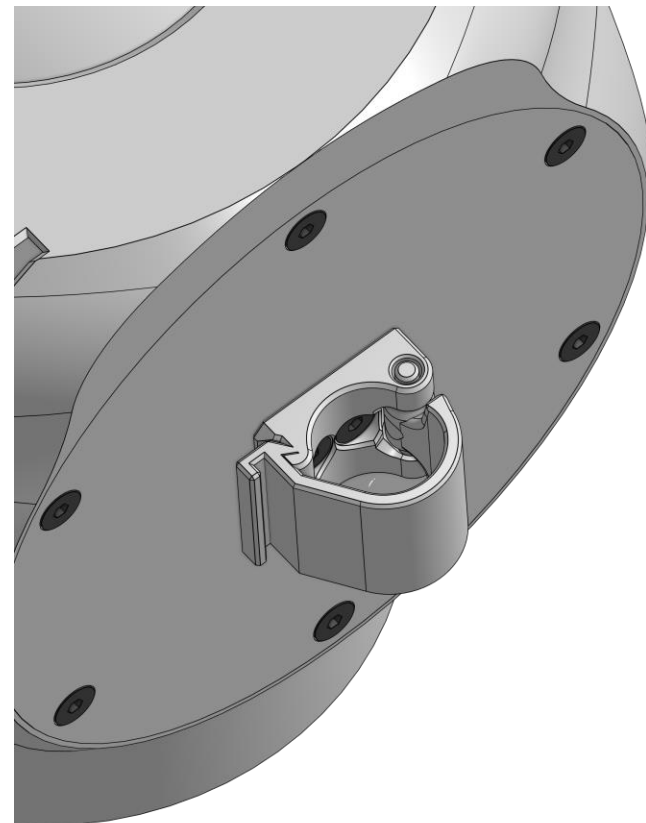
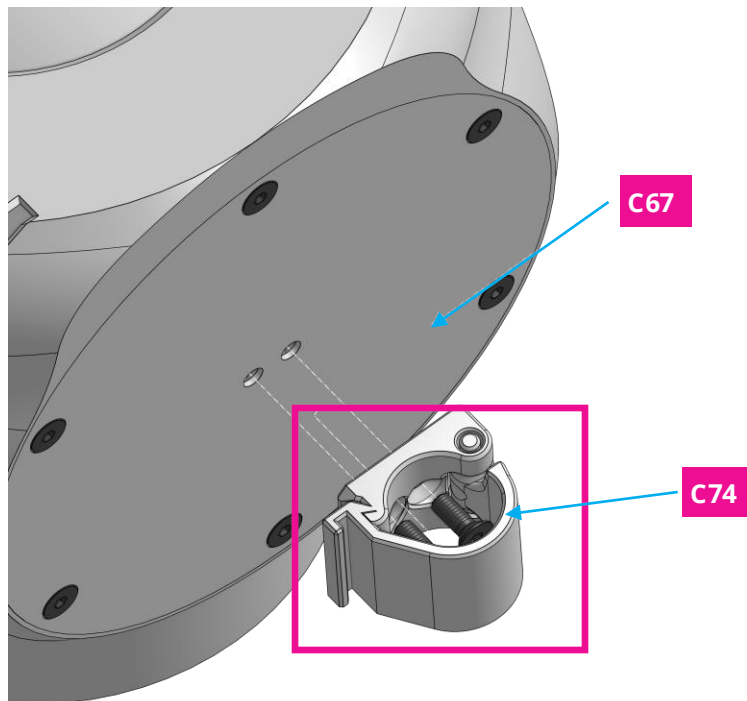
Connect **C74** to **C67** using **2 x M3 8mm screws**.



1



2x

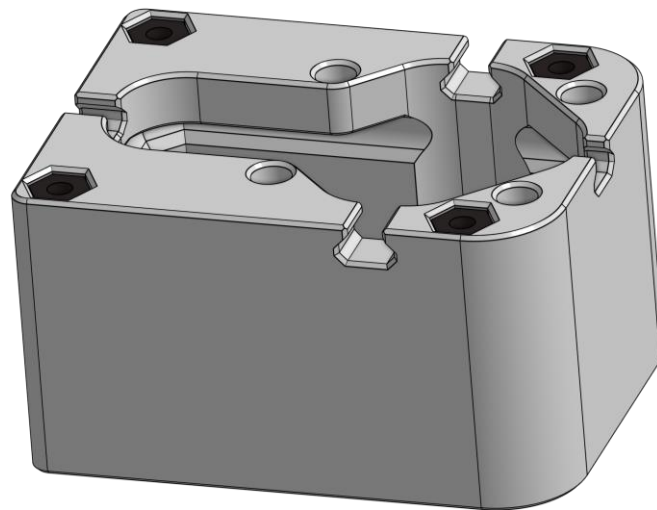
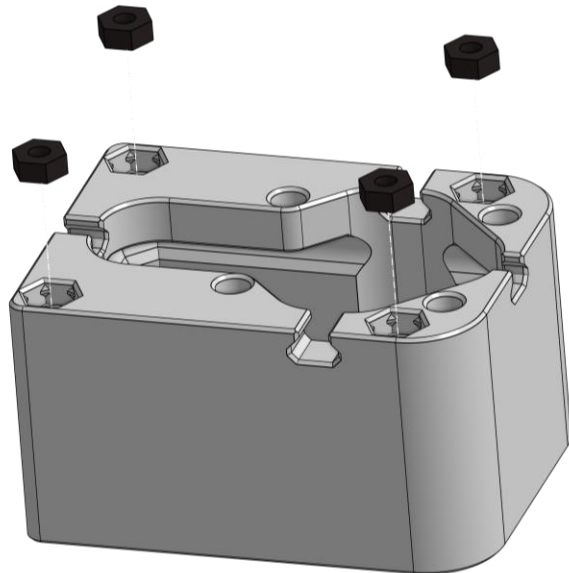


Step 9a

Insert **4 x nuts** in the shown spot of **C77s**.



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

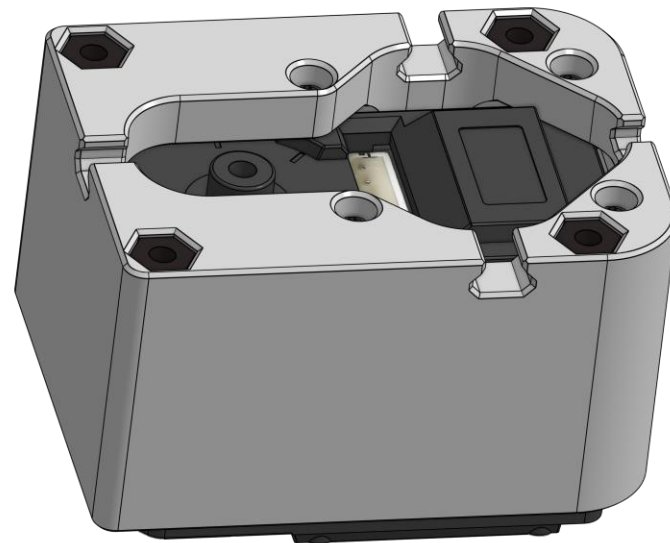
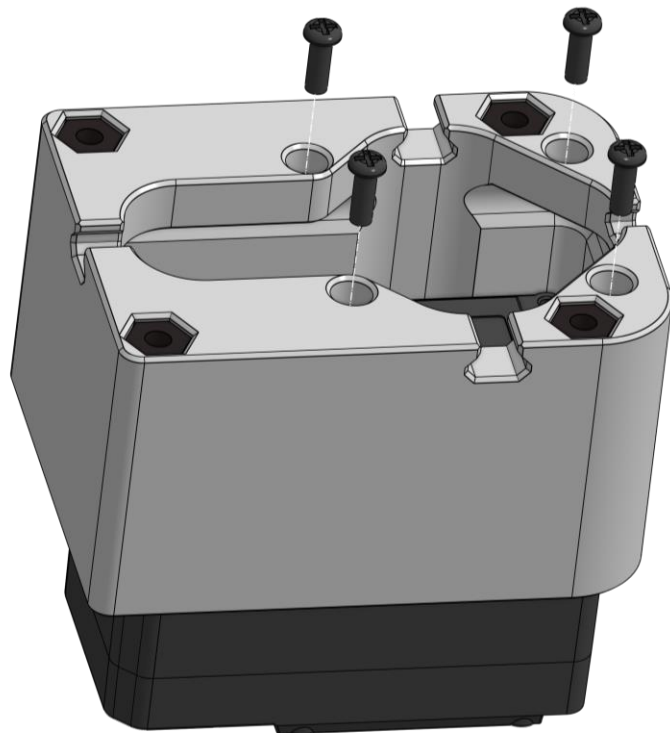
Connect **E27** to **C77s** using **4 x M2 6mm screws**.



2

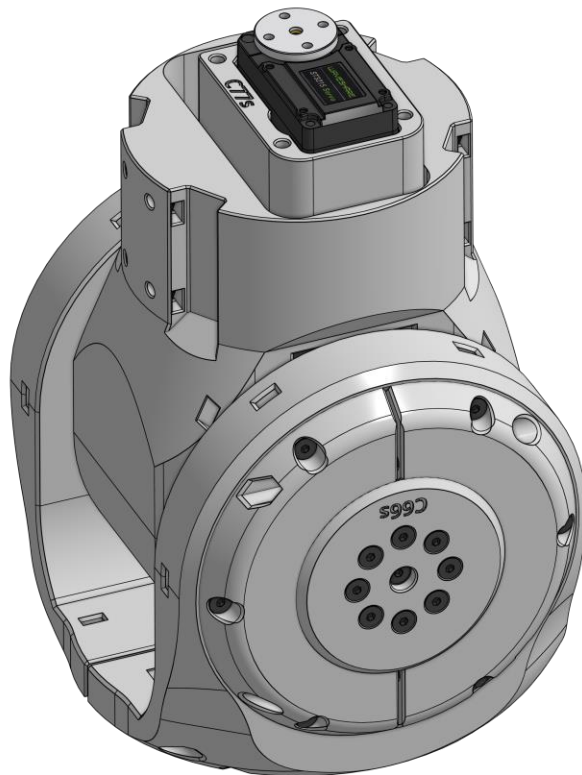
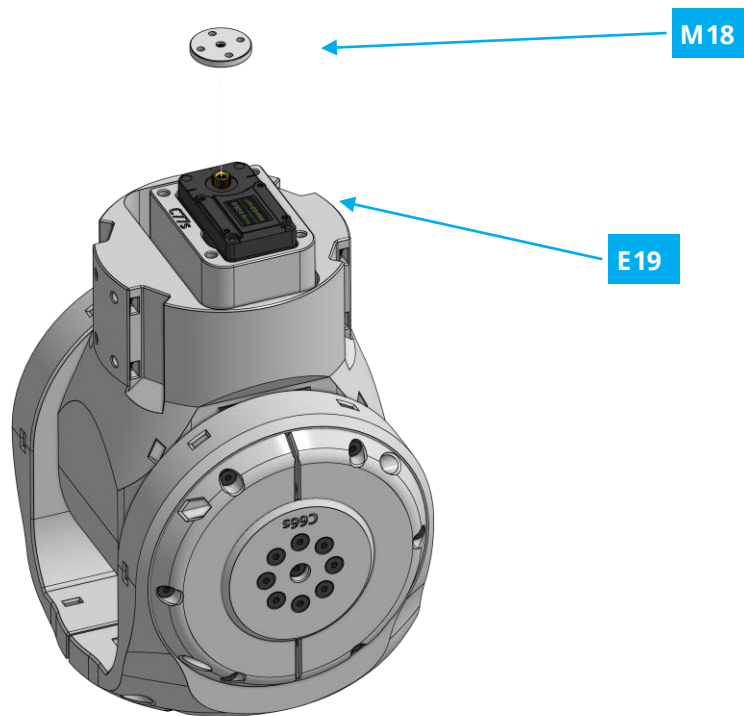


4x



Step 9c

Place **M18** on **E19**



Step 10a

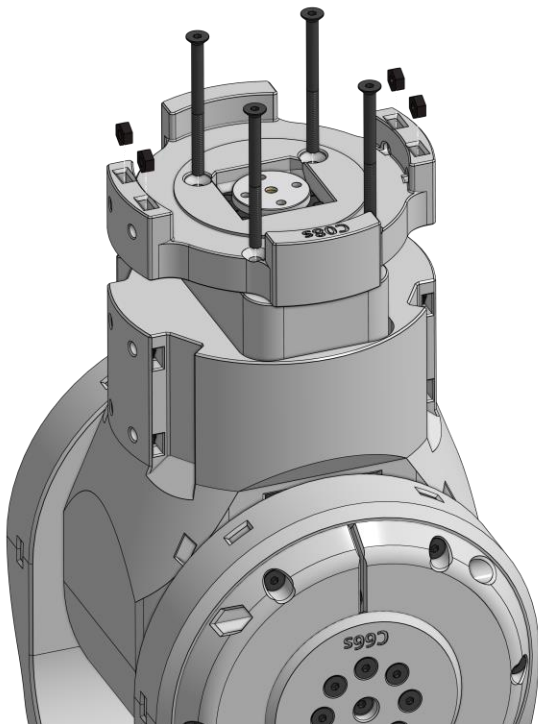


1

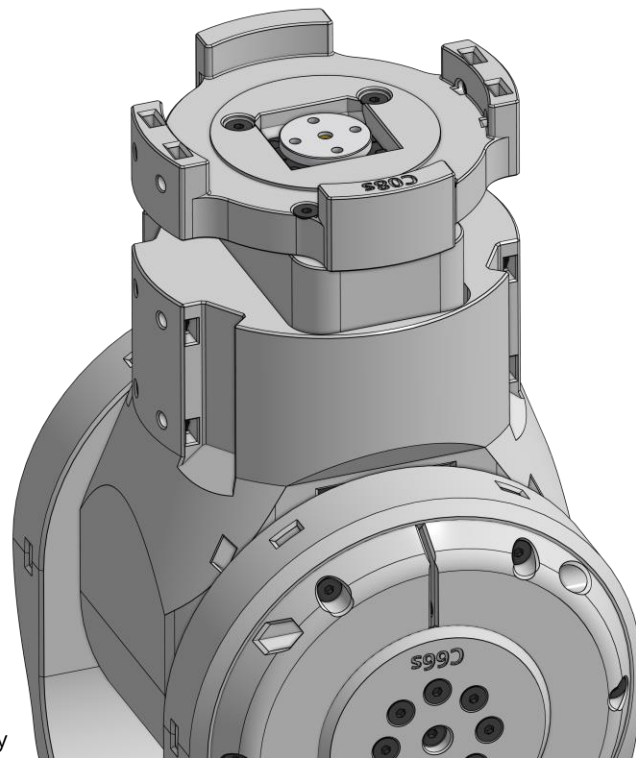


4x

Insert **4 x nuts** in the shown spot of **C08s** and connect it to assembly using 4 M3 x 40mm screws.

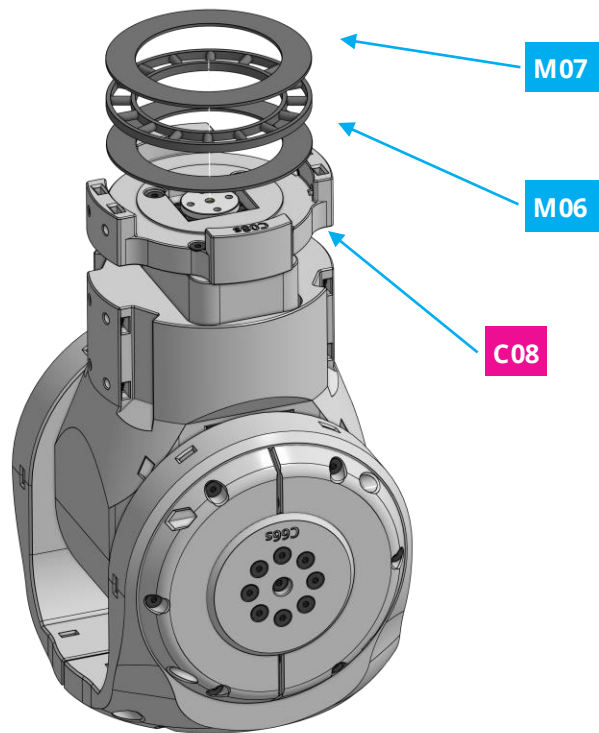


Use a small screwdriver or a precision tool to put the nuts into the holes and hit them gently with a hammer to place them correctly.

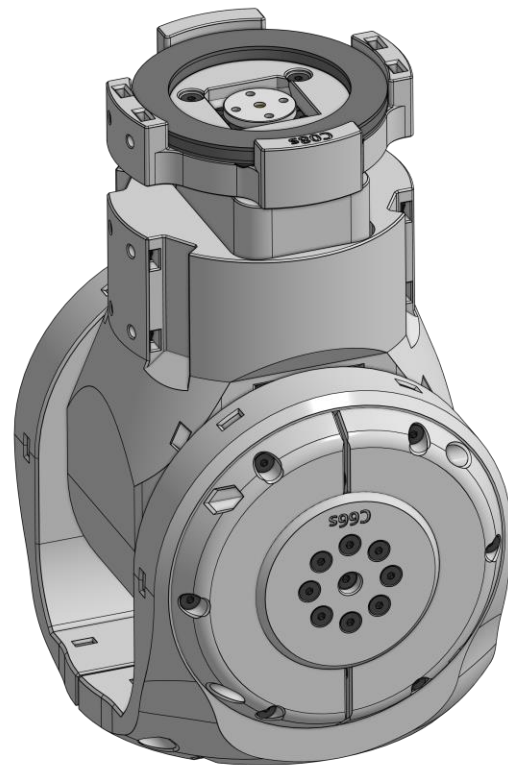


Step 10b

Place **C08**, **M06** and **2 M07** on top of **C73**.



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



Step 10c

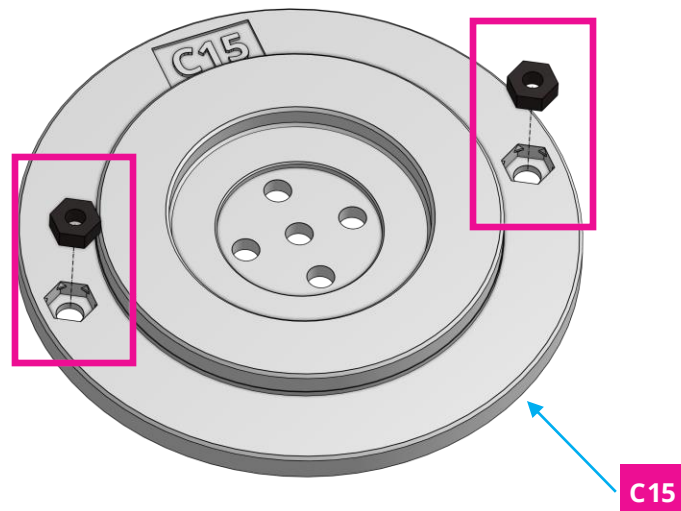
Insert **2 x nuts** in **C15**.



1



2x



Step 10d

Flip **C15s** and connect it to **M18**, then add **C09s** and fix it using **5 x M3 40mm** screws and **2 x M3 8mm** screws



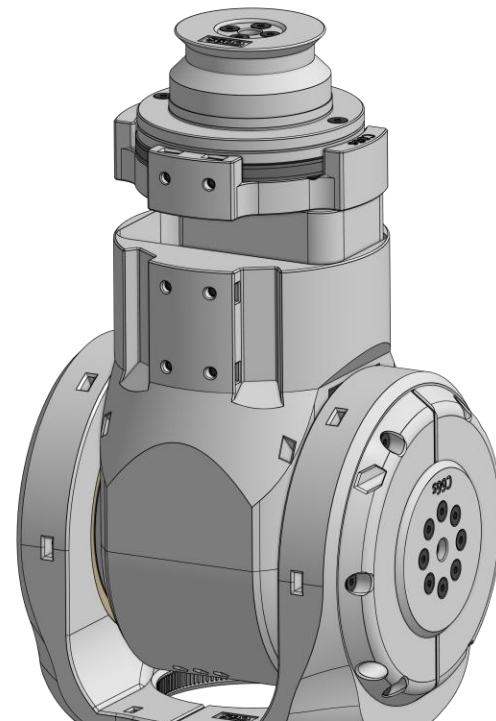
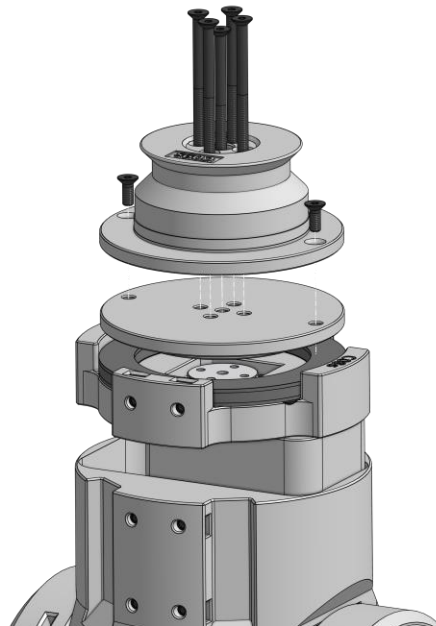
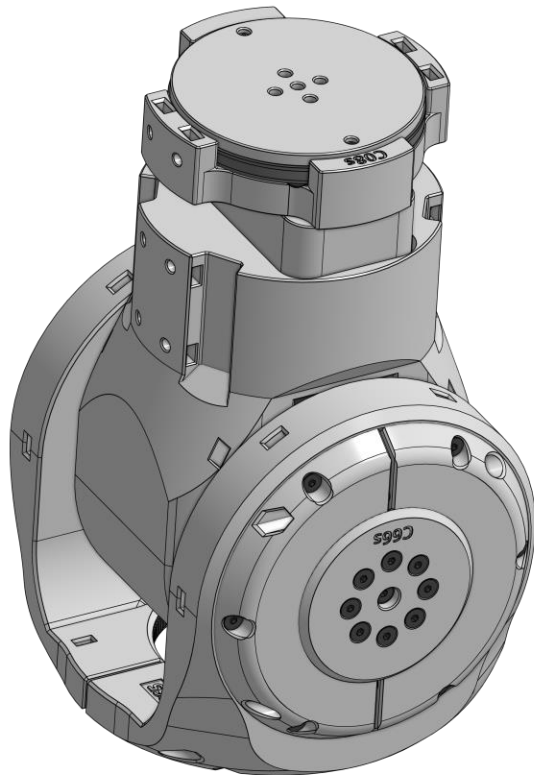
2



4x



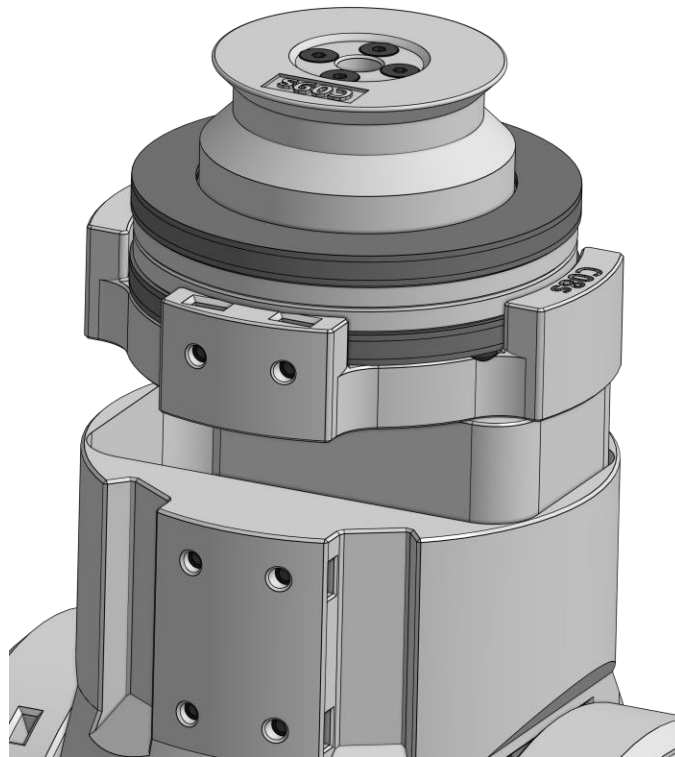
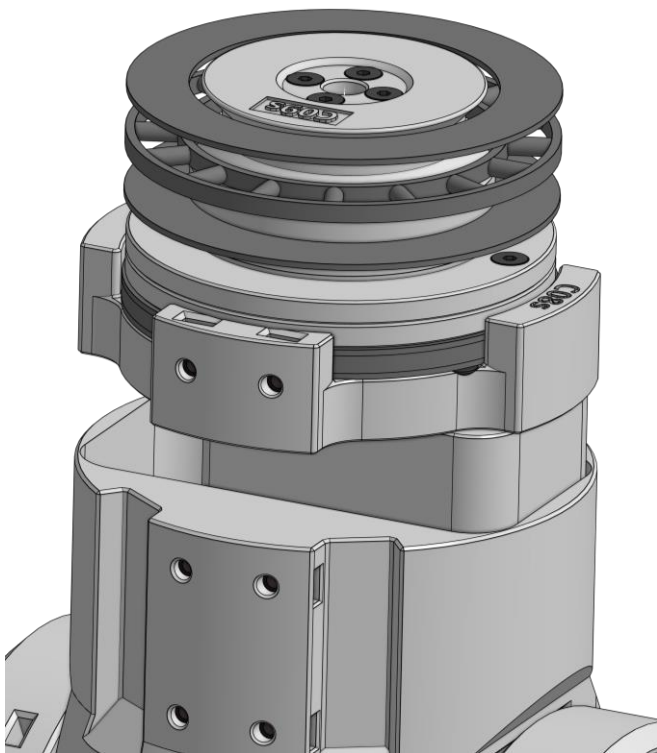
1x



Please make sure, that you connect **C15s** in the shown orientation.

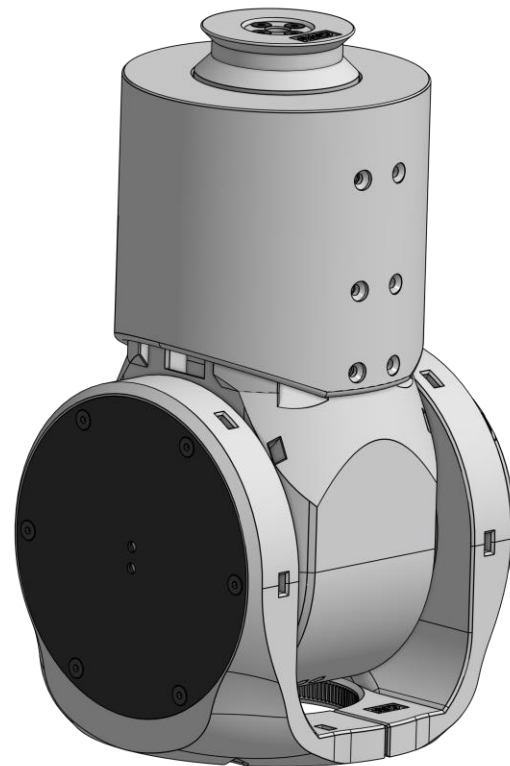
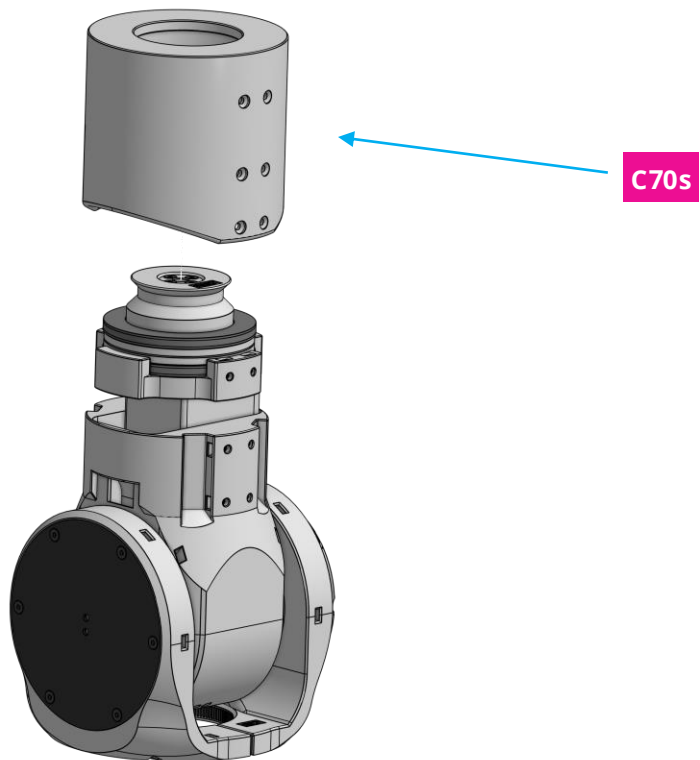
Step 11

Place 2 **M07** and **M06** with the shown arrangement on top of **C09s**.



Step 12

Place **C70s** on top of the previous assembly.



Step 13

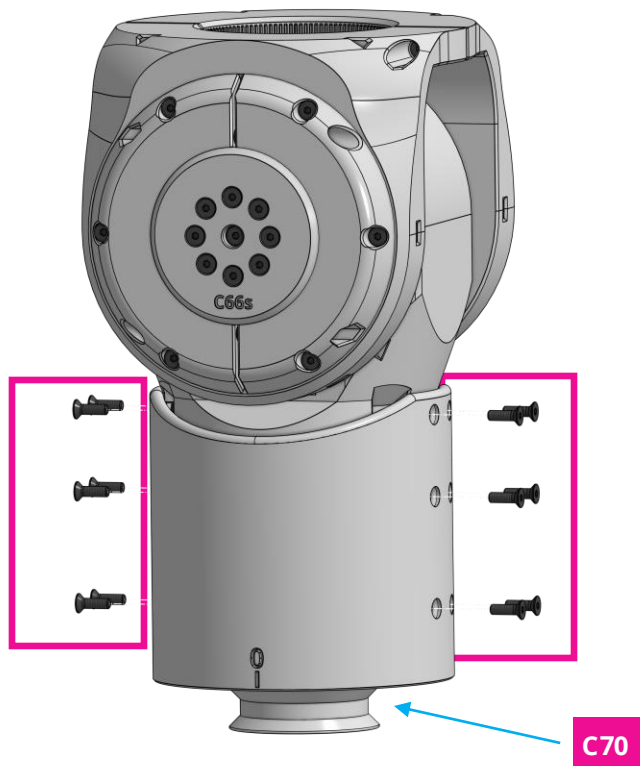
Use **16 x 10 mm screws** to connect **C70** to the assembly.



1

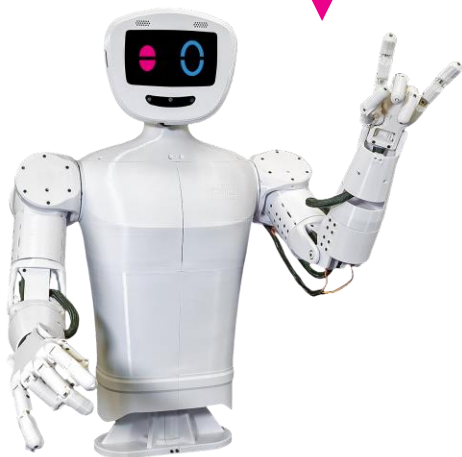


16x

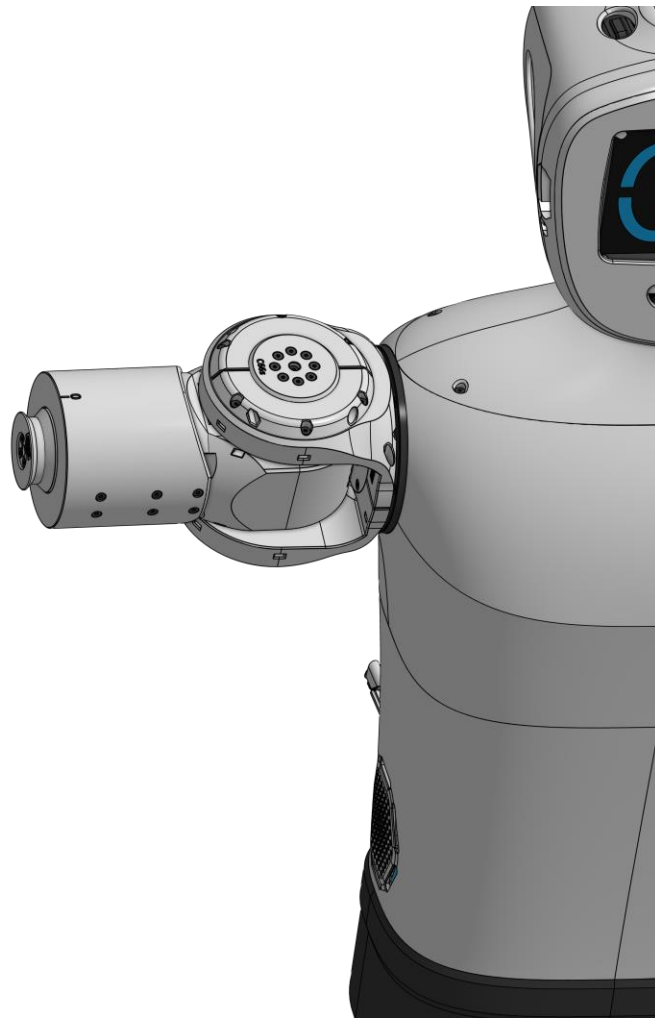


Congratulations

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.



shop.pib.rocks

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