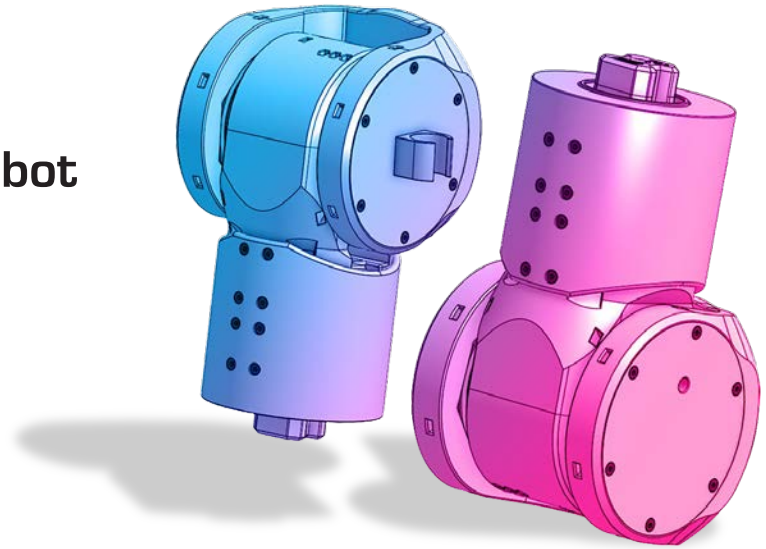
PRINT
BUILD
DEVELOP
YOUR OWN ROBOT

How to build your robot

www.pib.rocks/build



assembly instructions for:

SHOULDER

v2024

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
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.

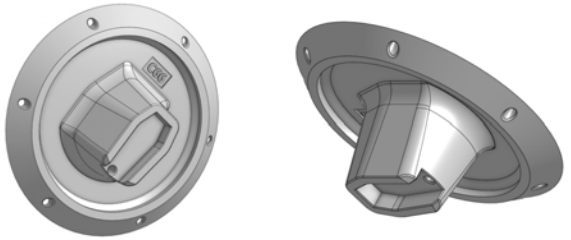
Non-printable parts
1 x **E09** DS3225 Servo
1 x **E15** DS5180SSG Servo
1 x **M17** Motor_clamp-18T
1 x **M18** Metal-motor-Adapter-L
2 x **M04** Big sized ballbearings **(**60 x 78 x 10mm)

Non-printable parts
50 x **S01** M3 nuts
4 x **S02** M3 6 mm screws
4 x **S03** M3 8 mm screws
20 x **S04** M3 10 mm screws
1 x **S05** M3 12 mm screws
12 x **S05** M3 16 mm screws
12 x **S08** M3 20 mm screws
1 x **S11** M3 30mm screws
4 x **S13** M3 40mm screws
2 x **M06**-Ballbearing_Axial_70x50x3
2 x **M07**-Thrust_bearing_70x50x1

Printable parts - Overview

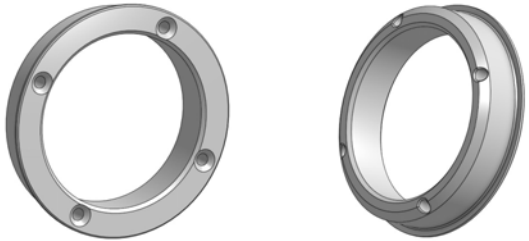
C65-Bracket_Outer_Shoulder

C66-Cap_Front_Outer_Shoulder



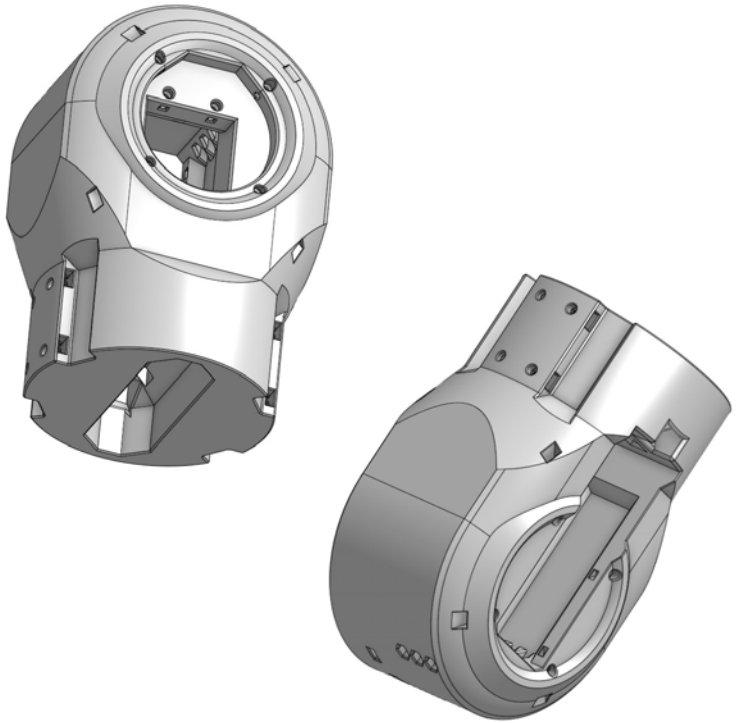
C67-Cap_Back_Outer_Shoulder

C68-Inner_Ring_Outer_Shoulder

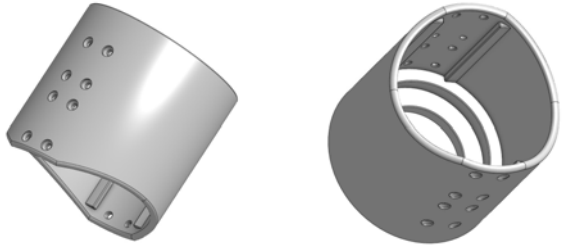


Printable parts - Overview

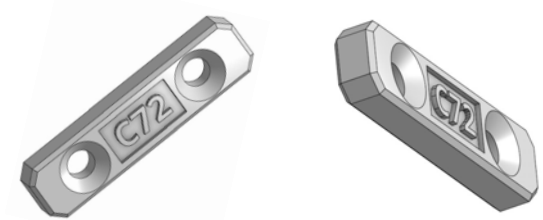
C69-Inner_Part_Outer_Shoulder



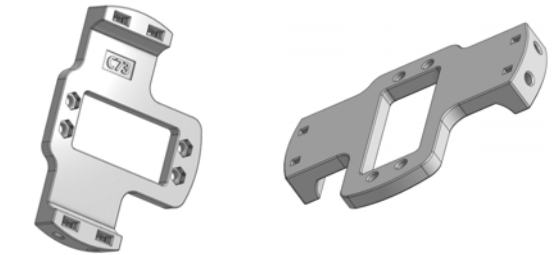
C70-Shell_Outer_Shoulder



C72-Plate_Outer_Shoulder

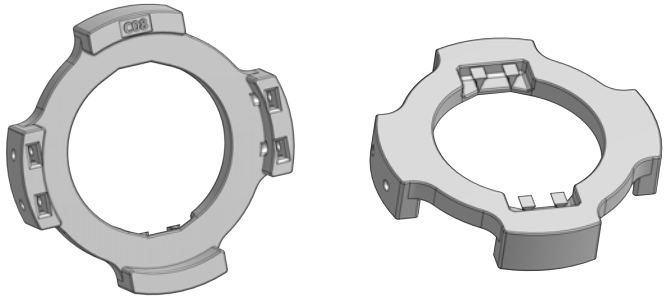


C73-Inner_Ring_Outer_Shoulder

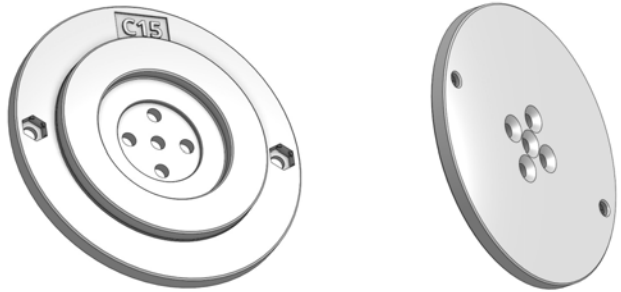


Printable parts - Overview

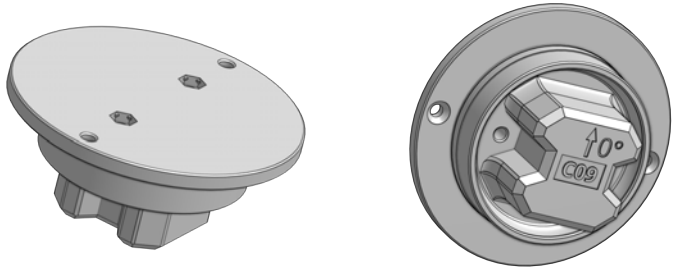
C08-Central_rotator_bracket



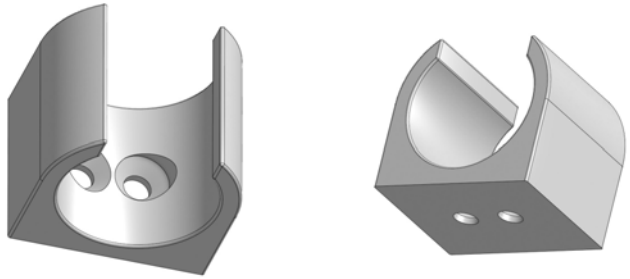
C15-Central_rotator_motor_connector



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

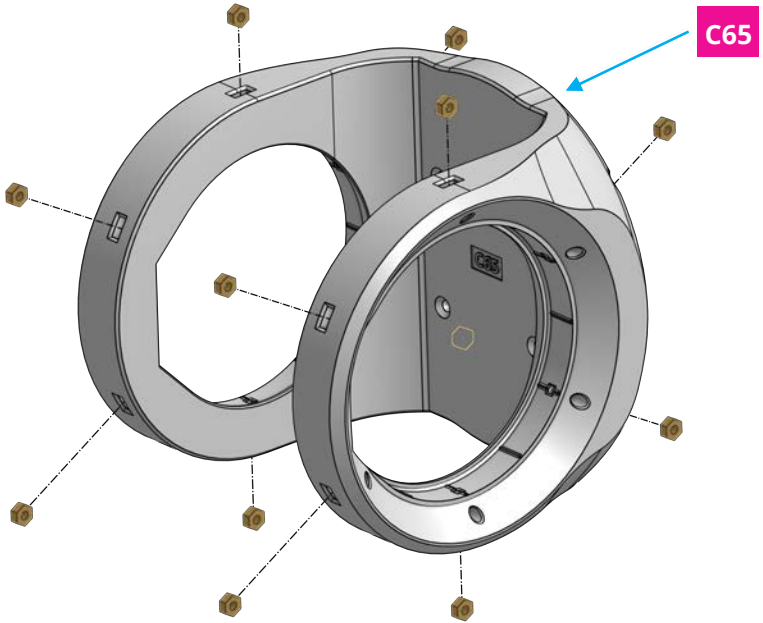
We have categorized each step according to its **difficulty** - from **1-5** (1 being the easiest, 5 the hardest)

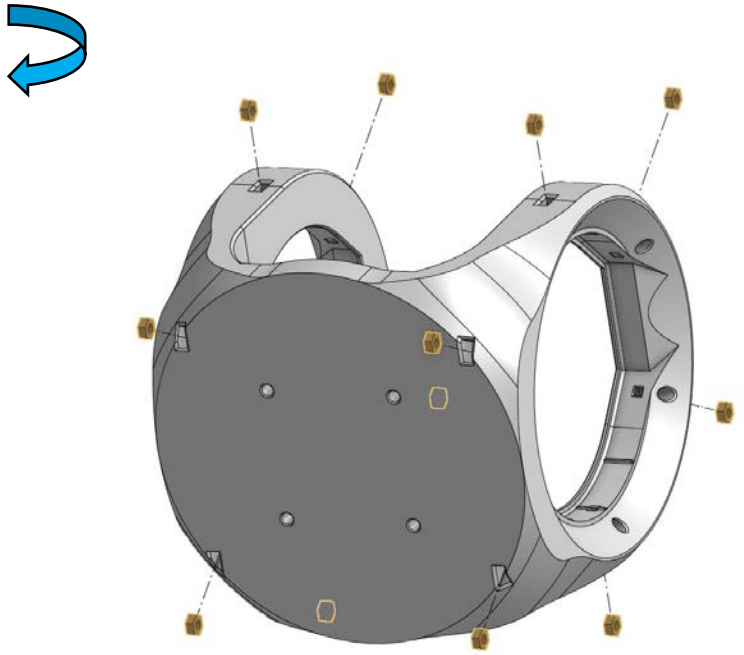
We also show you which **non-printable parts** you need for each step

Step 1

1 12x

Place **12 x M3 nuts** in the shown spots in **C65**.



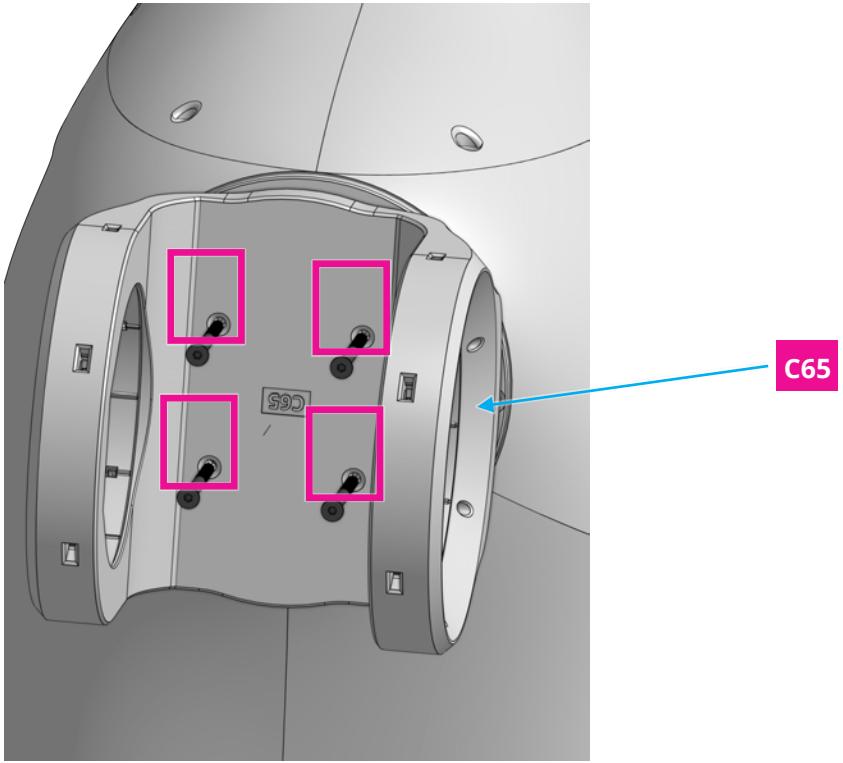


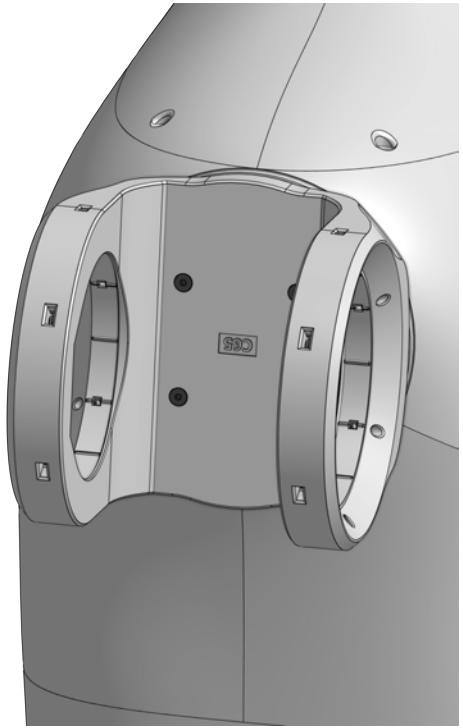
Step 2

1 4x

Connect **C65** to upper-body-assembly using **4 x M3 30mm screws**.

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

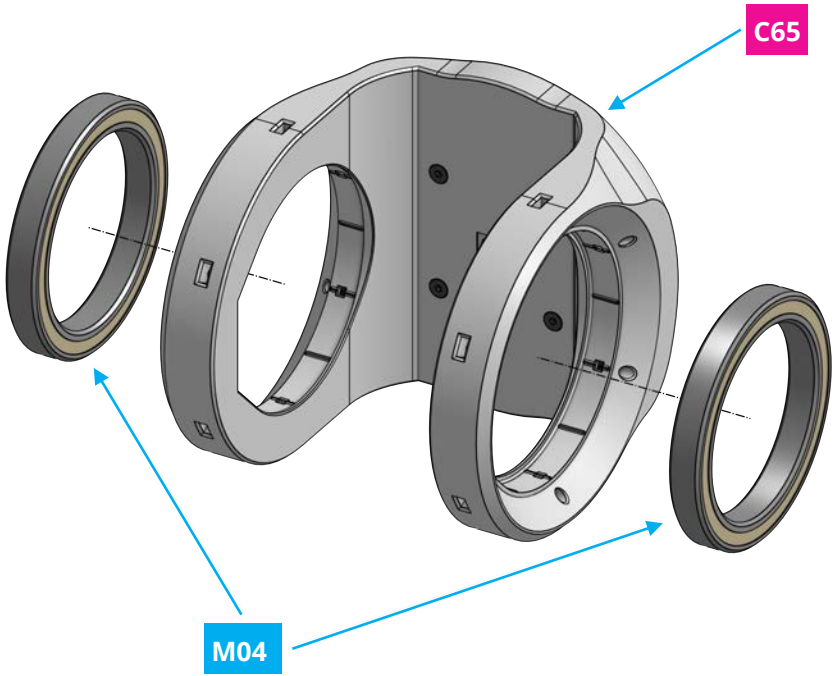


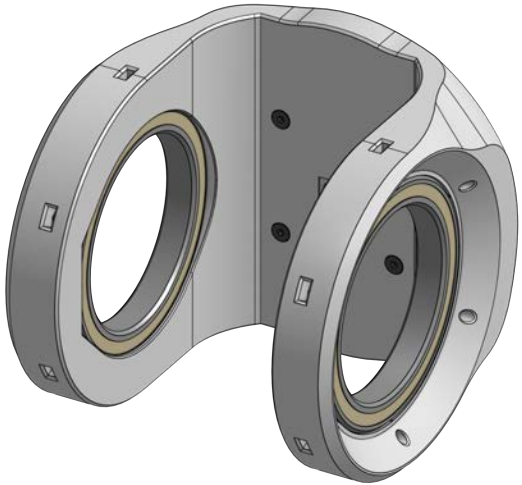


Step 3

1 2x

Connect **2 x M04** to **C65**.

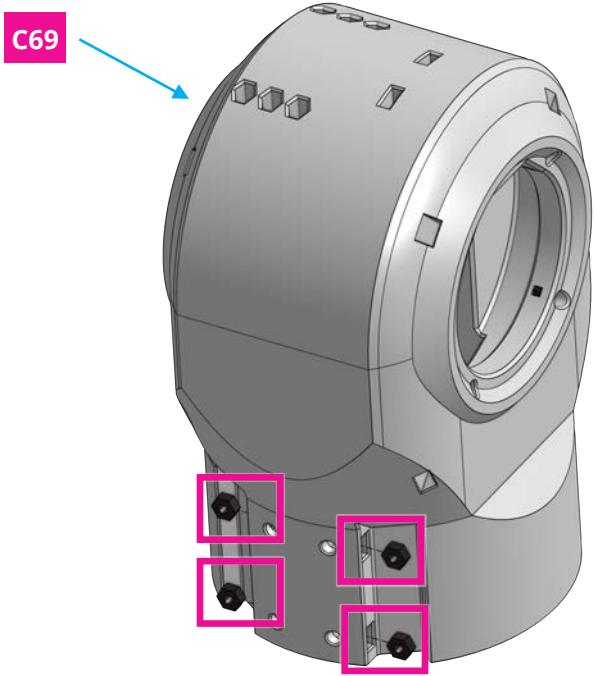


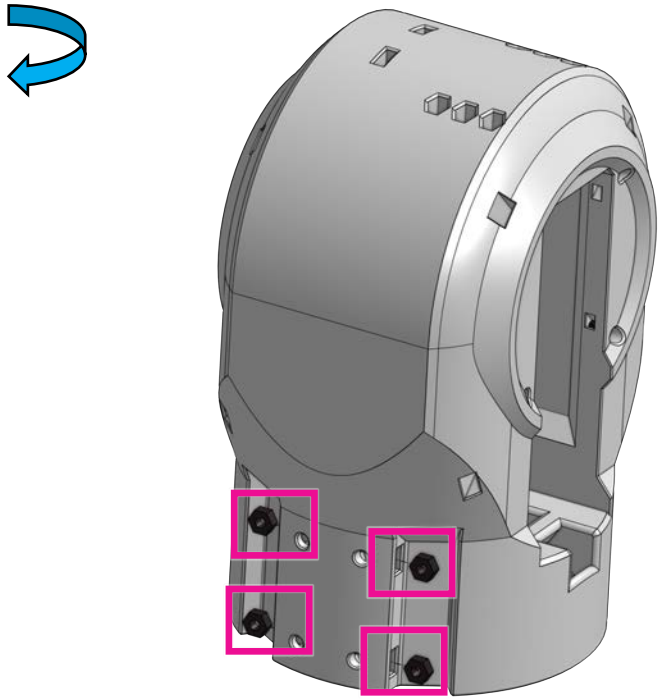


Step 4a

1 8x

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

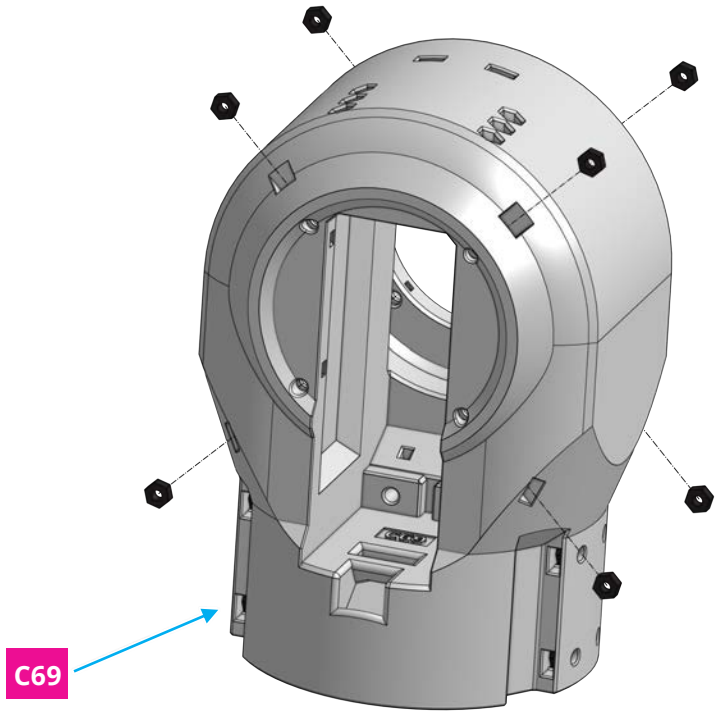


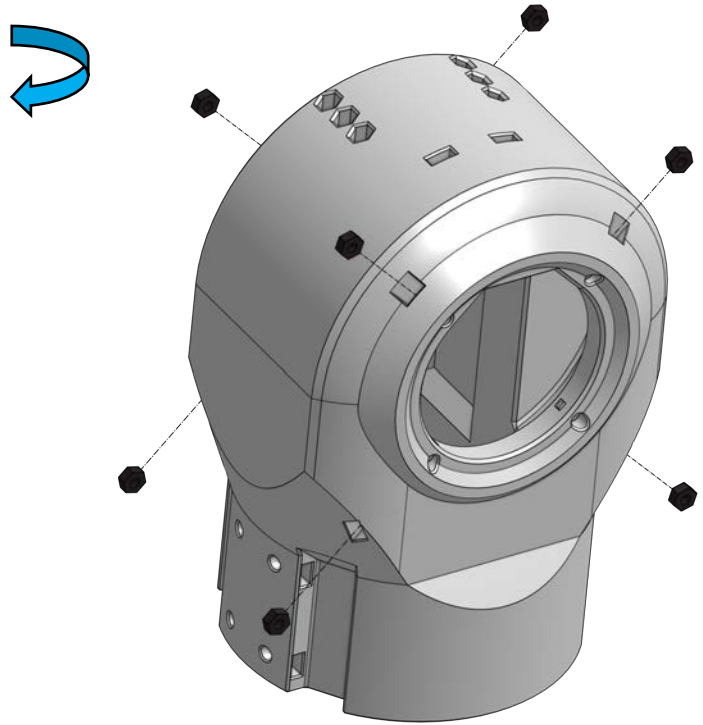


Step 4b

2 8x

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

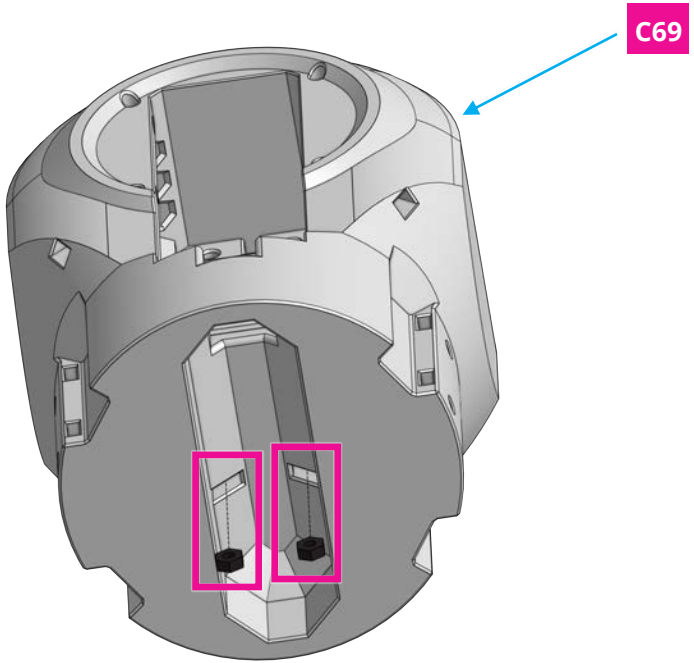


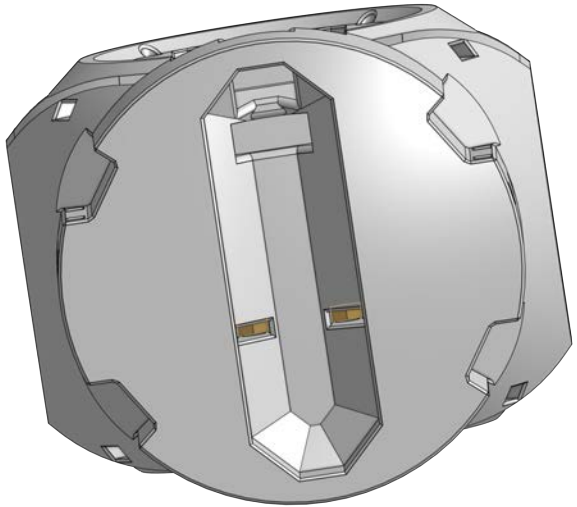


Step 4c

1 2x

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

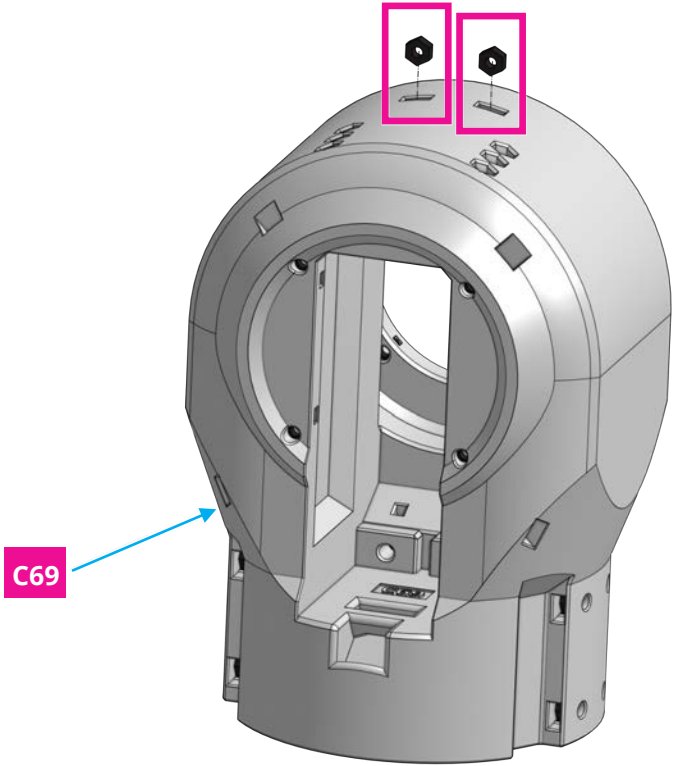




Step 4d

1 2x

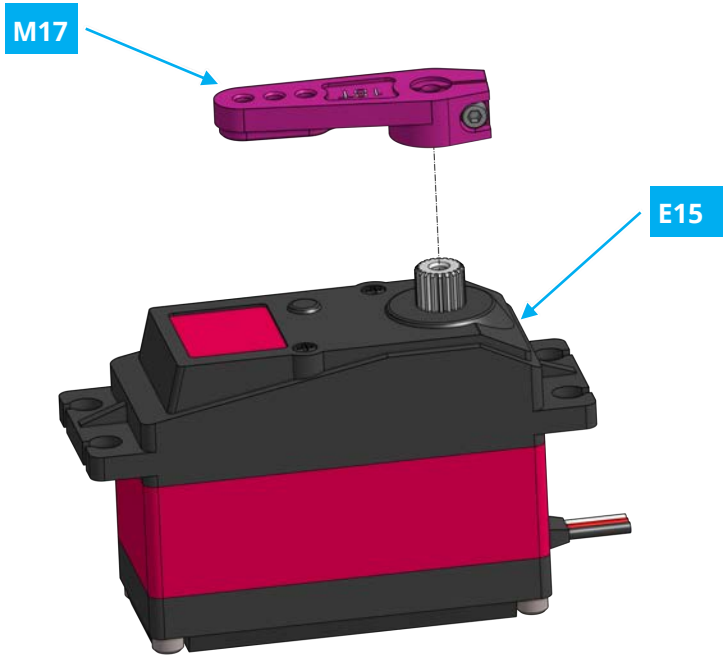
Insert **2 x M3 nuts** each side in the shown spots in **C69**. Make sure they are inserted all the way through.

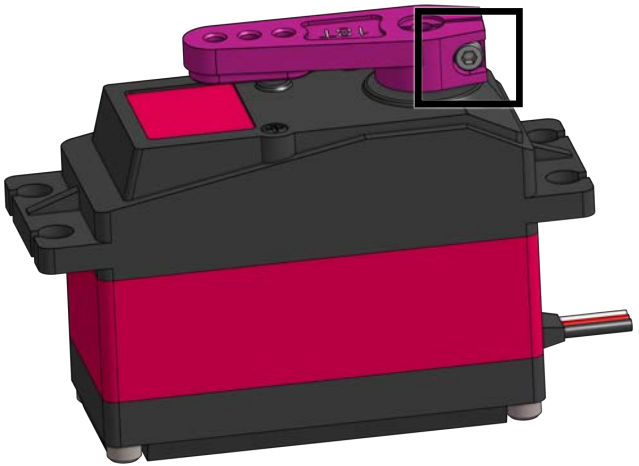


Step 5

1 1x 1x

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

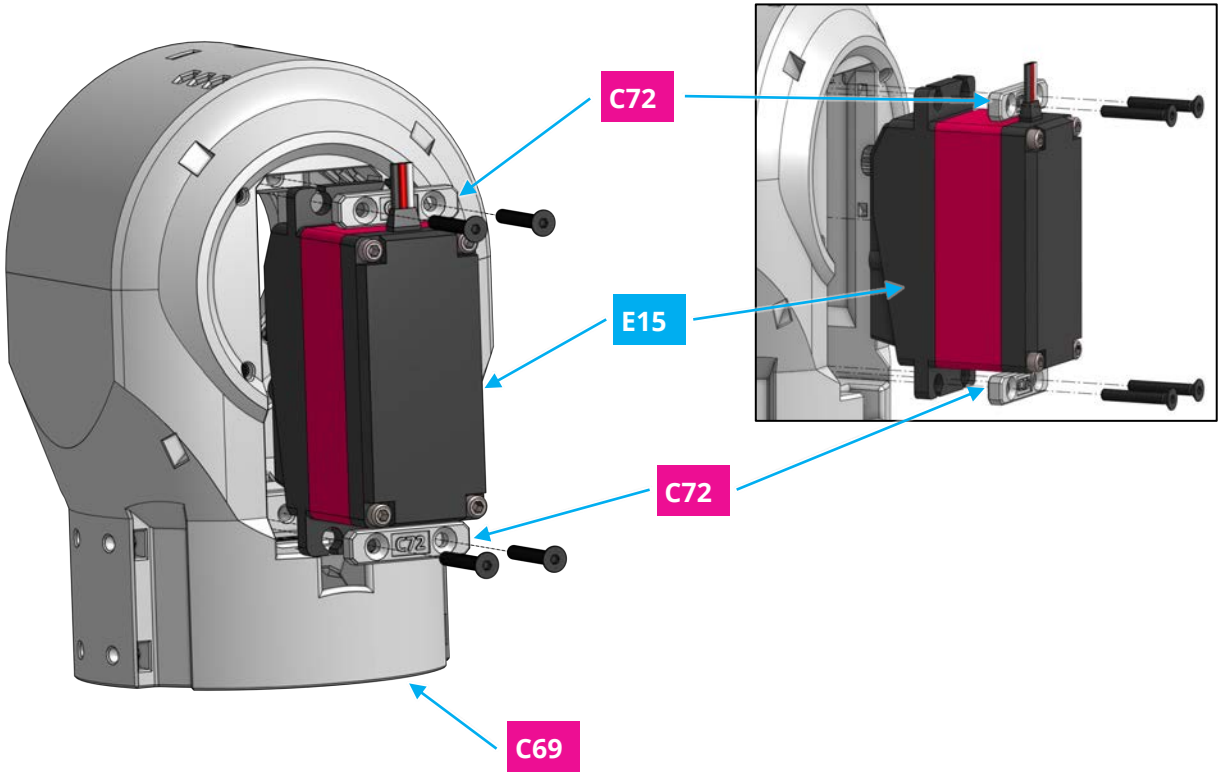




Step 6

3 4x

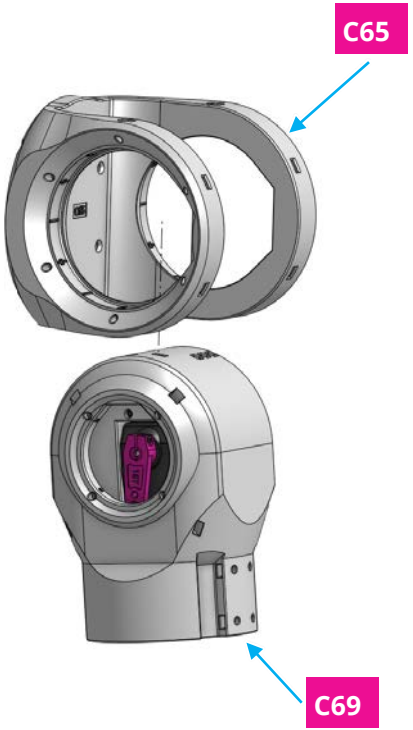
Connect **E15** motor to **C69** using **2 x C72** and **4 x M3 20mm screws**.

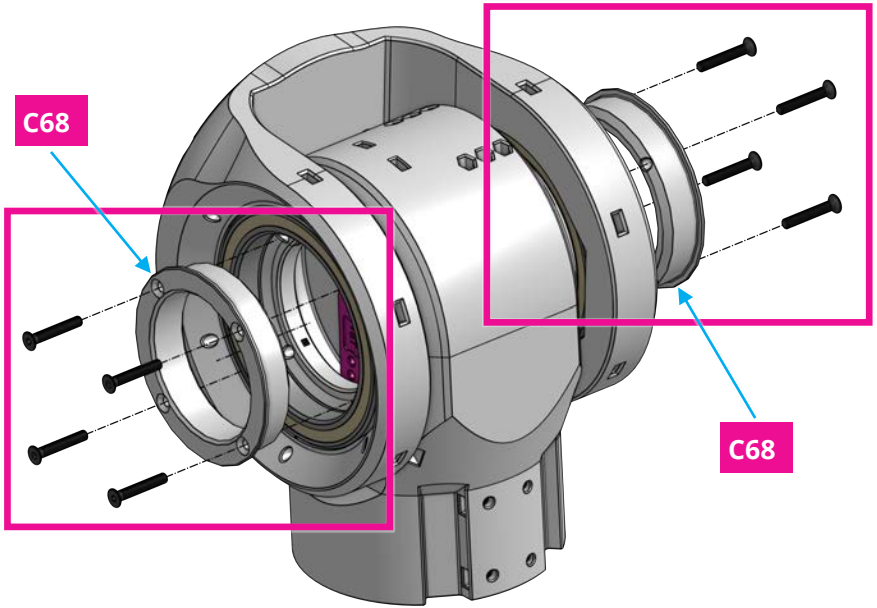


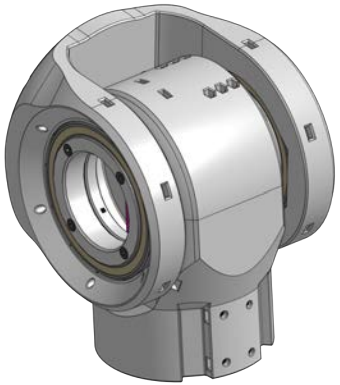
Step 7

3 8x

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



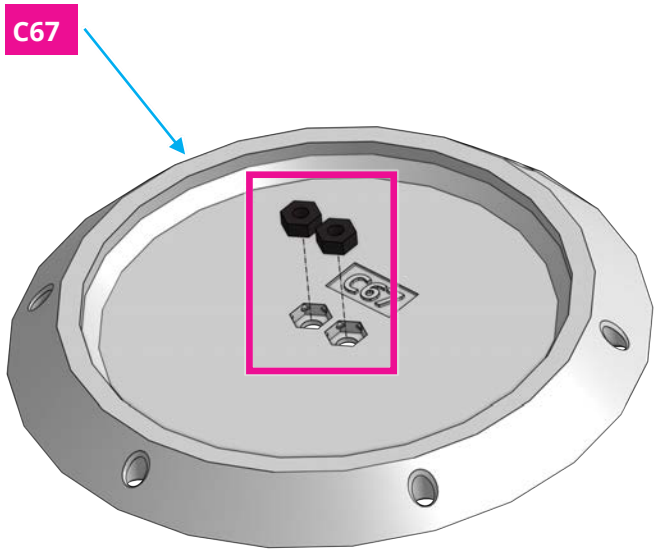


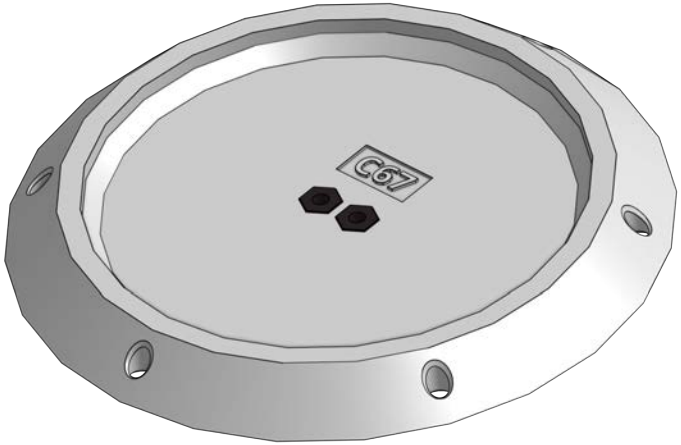


Step 8a

1 2x

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

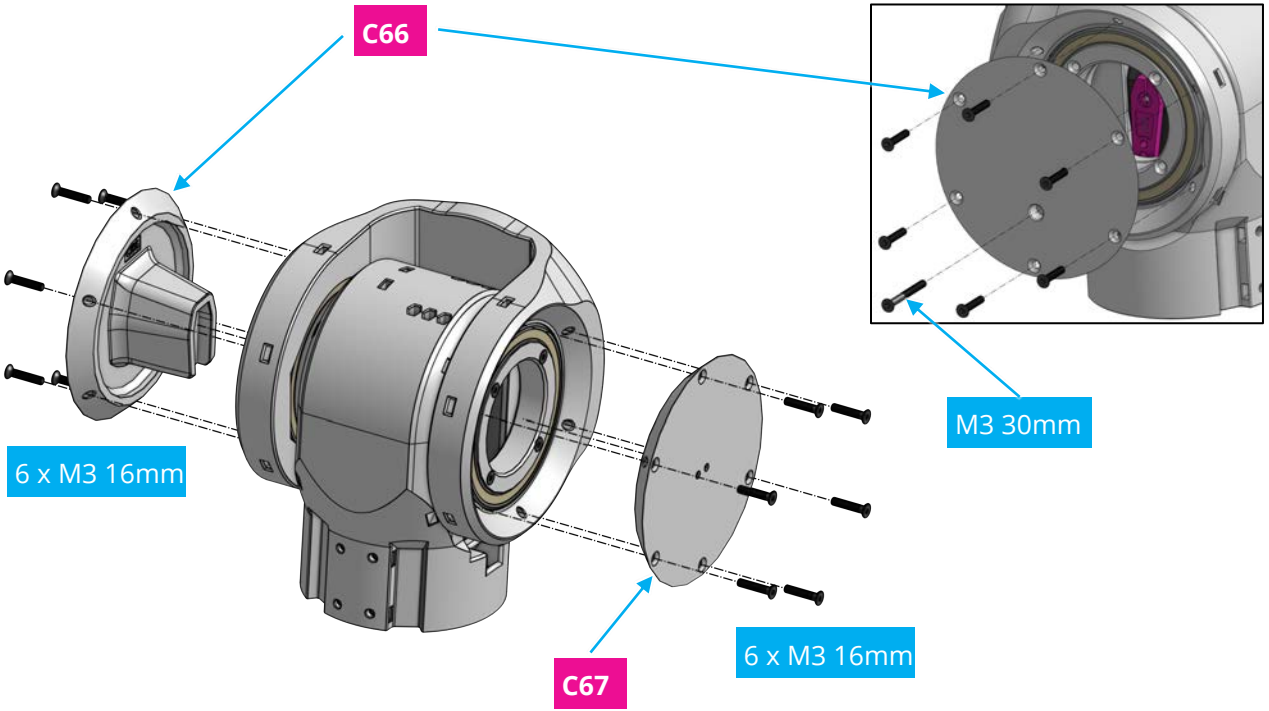


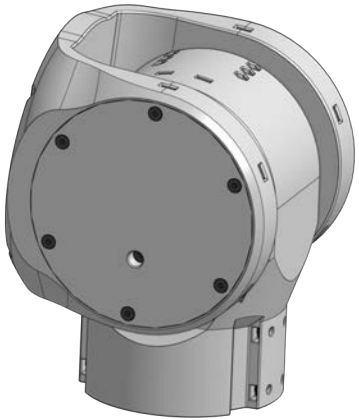


Step 8b

4 12x 1x

Connect **C66** and **C67** to the assembly using **12 x M3 16mm** screws and **1 x M3 30mm** screw to secure connection to **M17**.

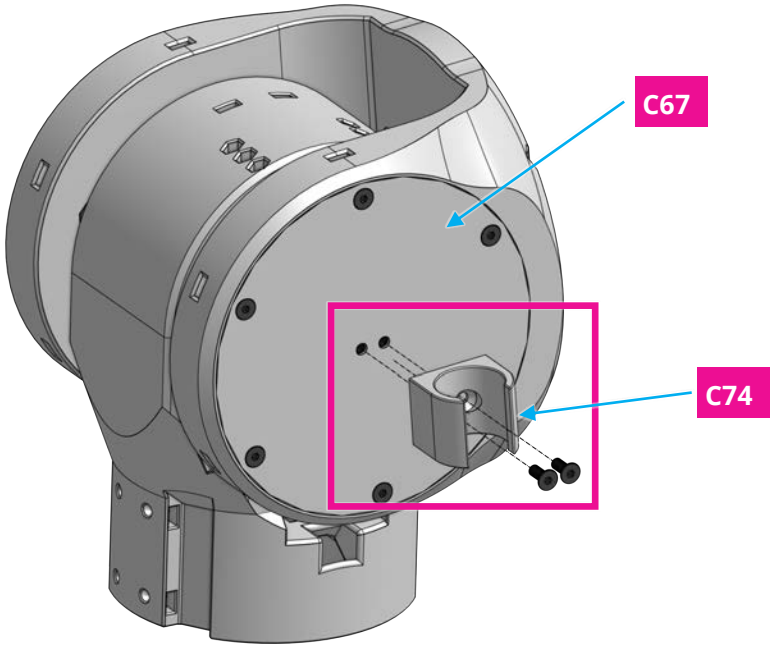


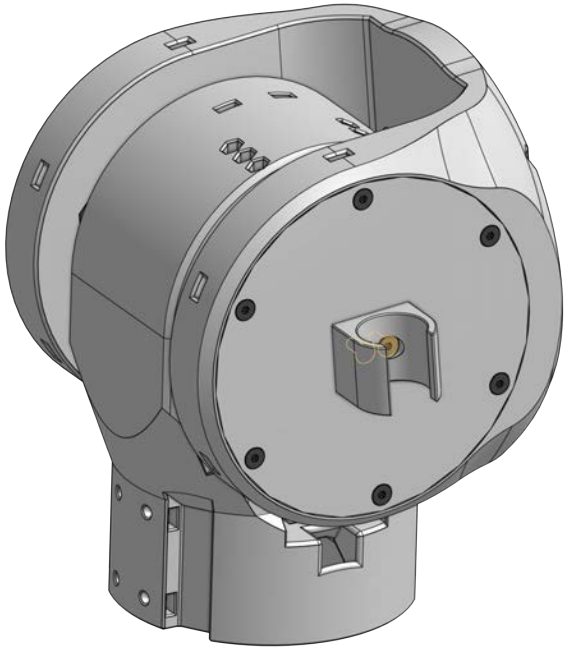


Step 8c

1 2x

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

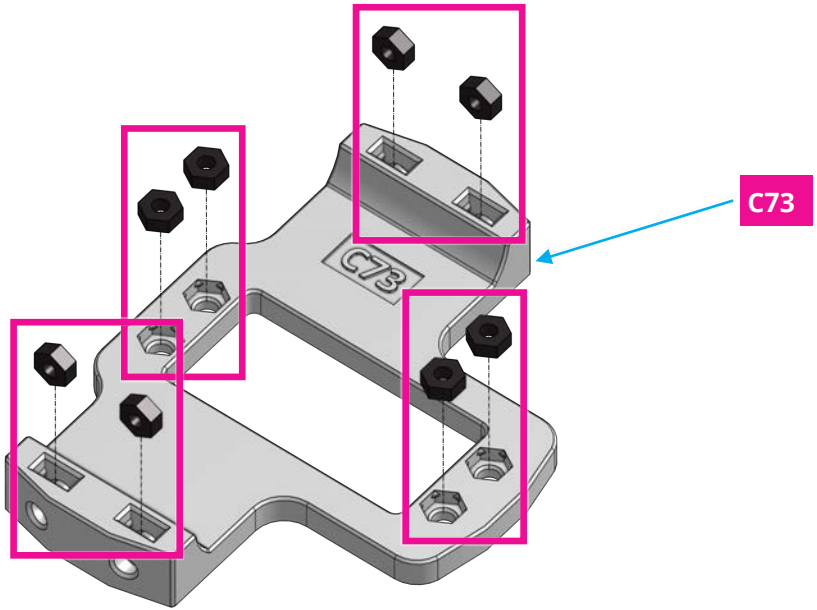


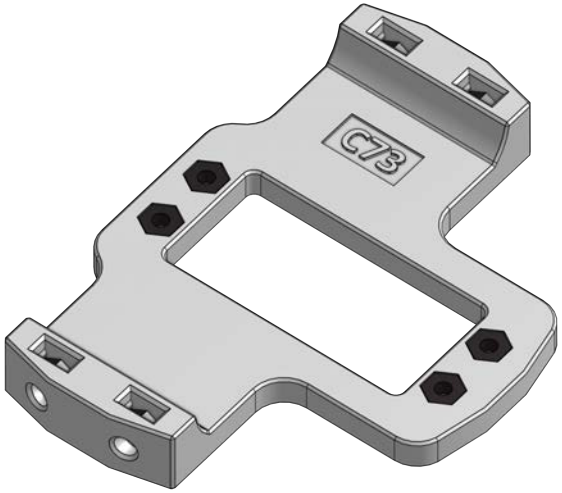


Step 9a

2 8x

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



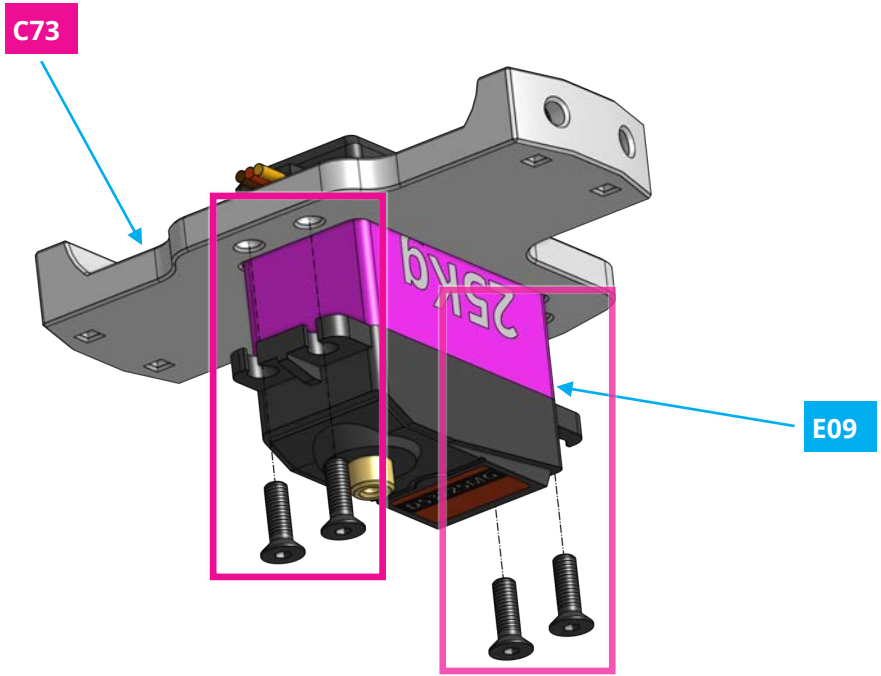


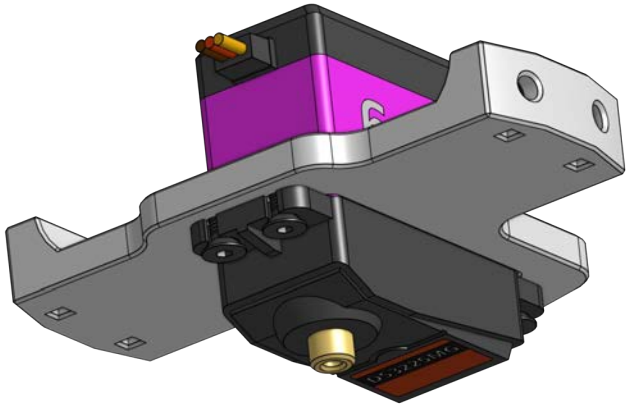
Use a small screwdriver or a precision tool to put the nuts into the holes and hit them gently with a hammer to place them correctly.

Step 9b

2 4x 1x

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

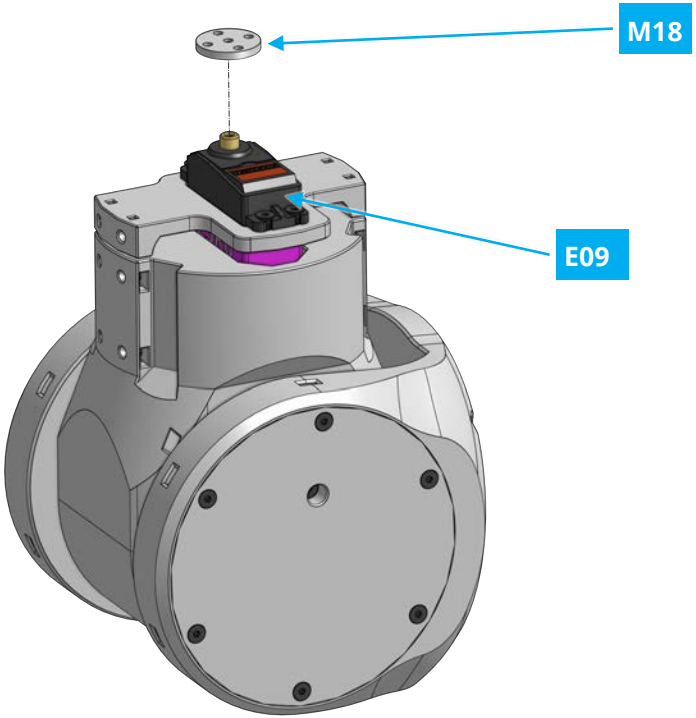


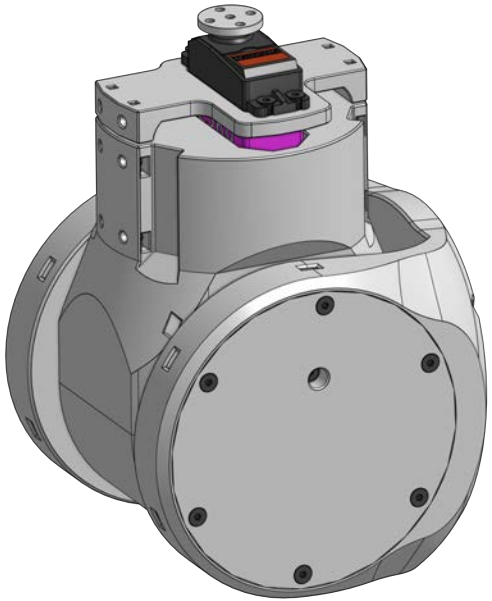


Step 9c

1 1x

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

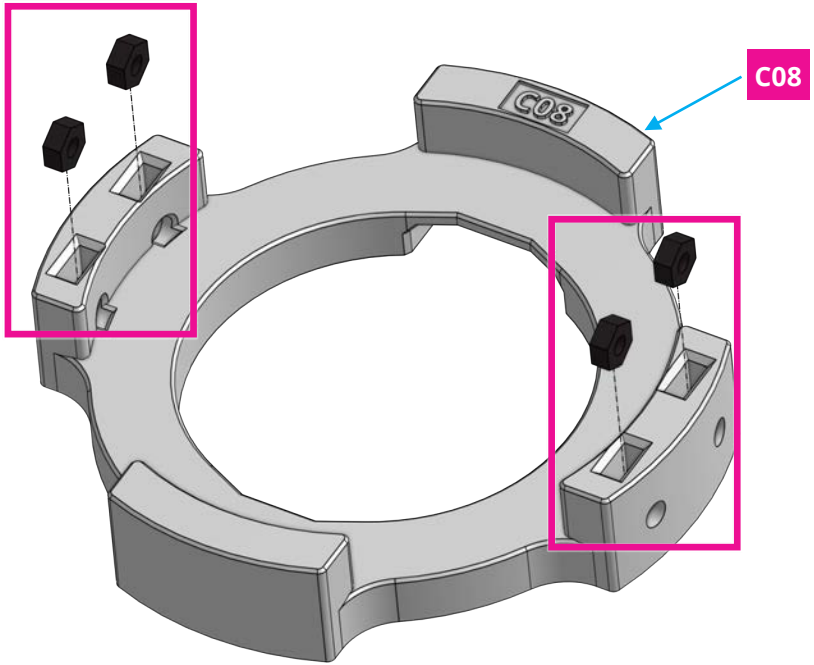




Step 10a

1 4x

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

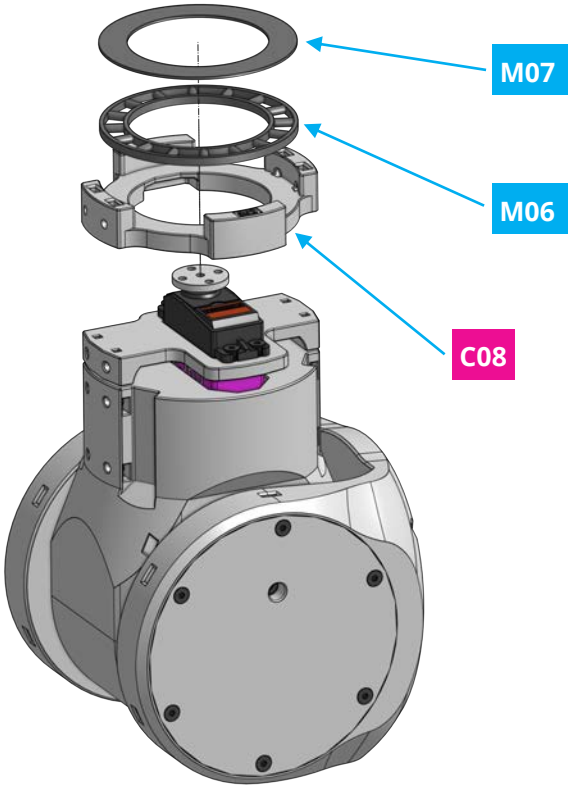


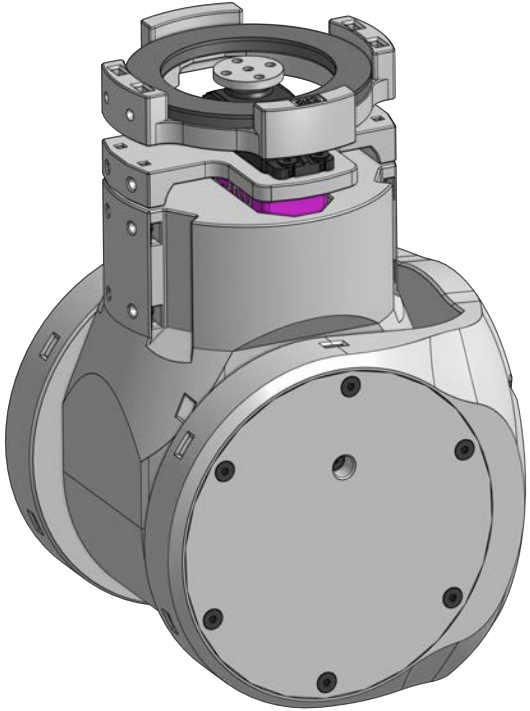
Use a small screwdriver or a precision tool to put the nuts into the holes and hit them gently with a hammer to place them correctly.

Step 10b

1 1x 1x

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

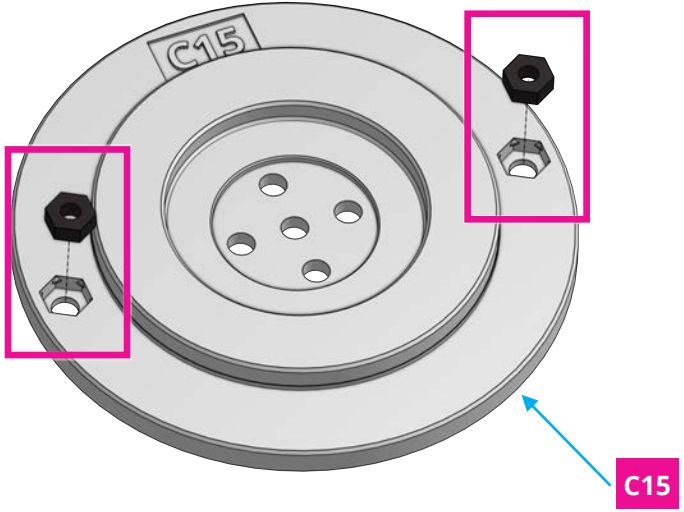




Step 10c

1 2x

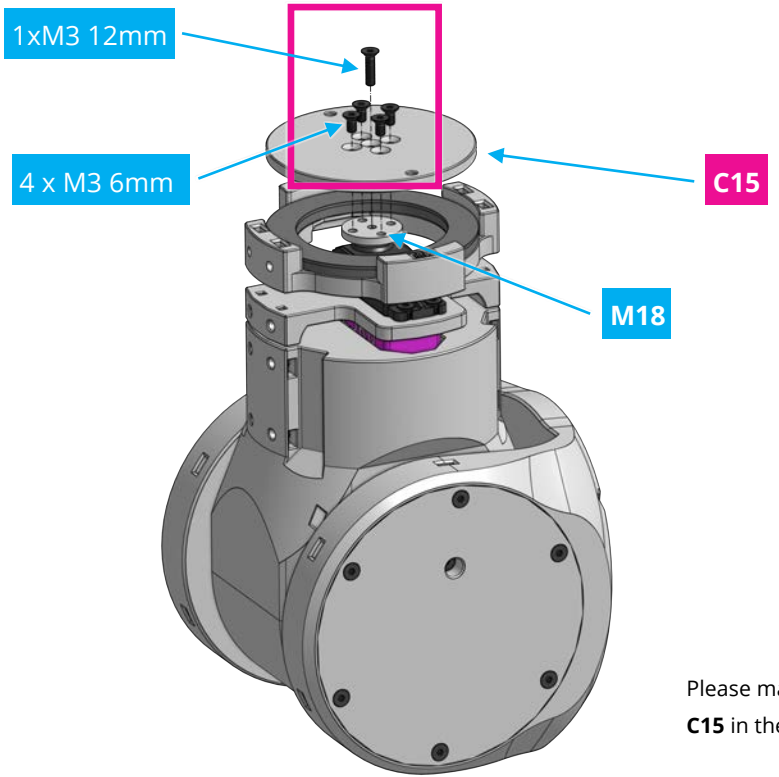
Insert **2 x nuts** in **C15.**



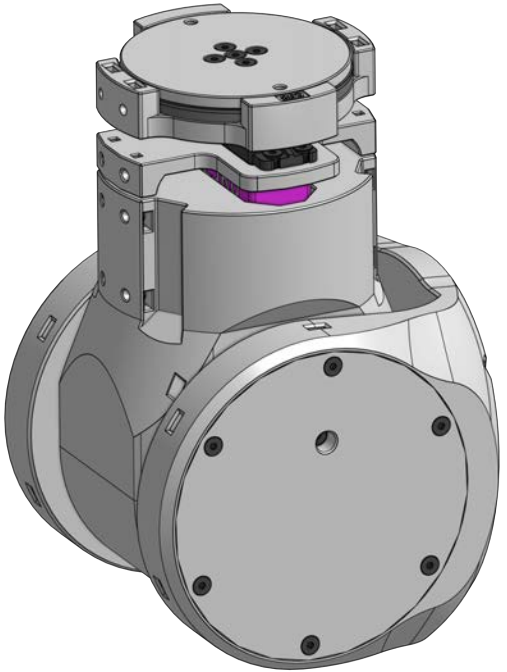
Step 10d

2 4x 1x

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.

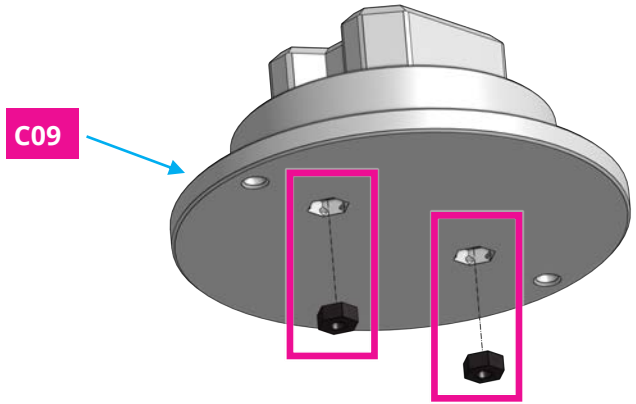


Step 10e

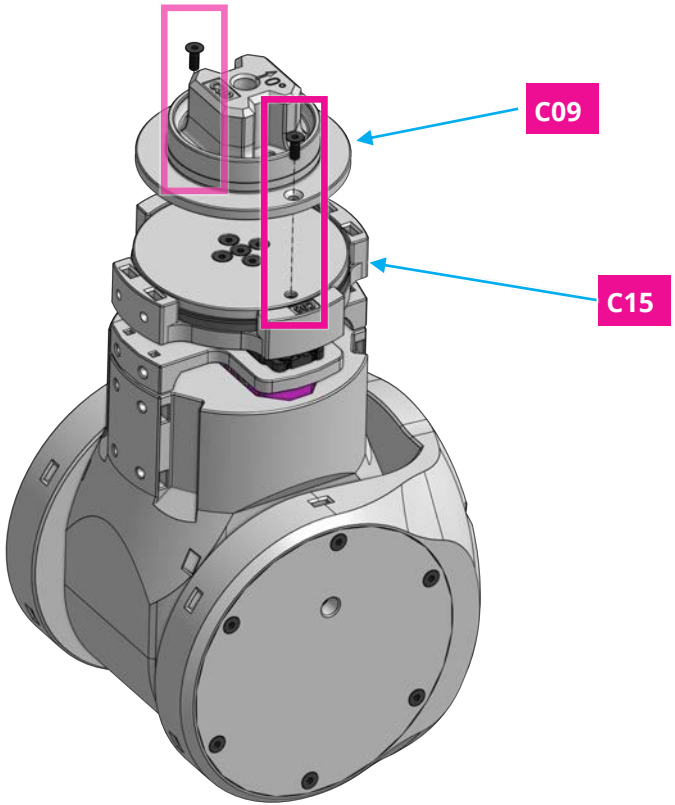
2 2x 2x

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

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



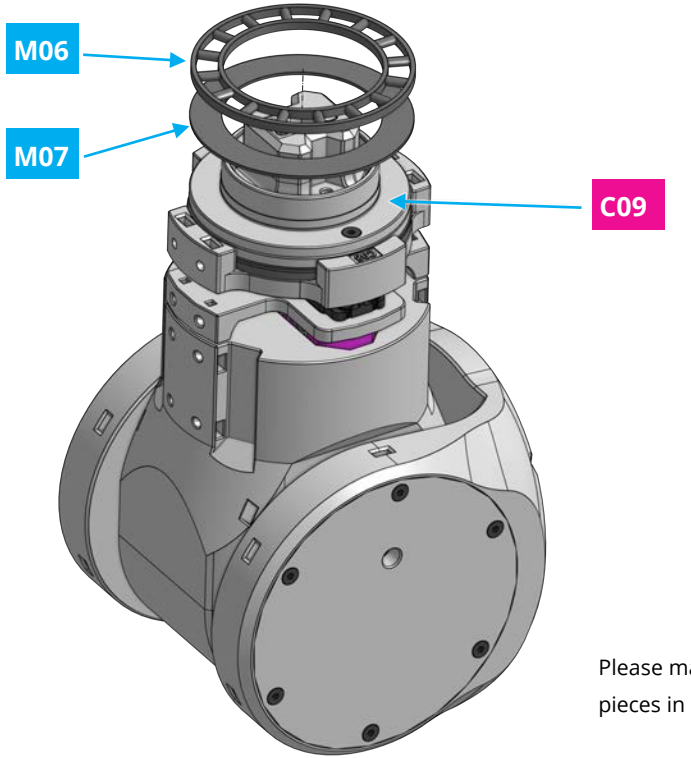
Please make sure, that you connect **C09** to **C15** in the shown orientation.



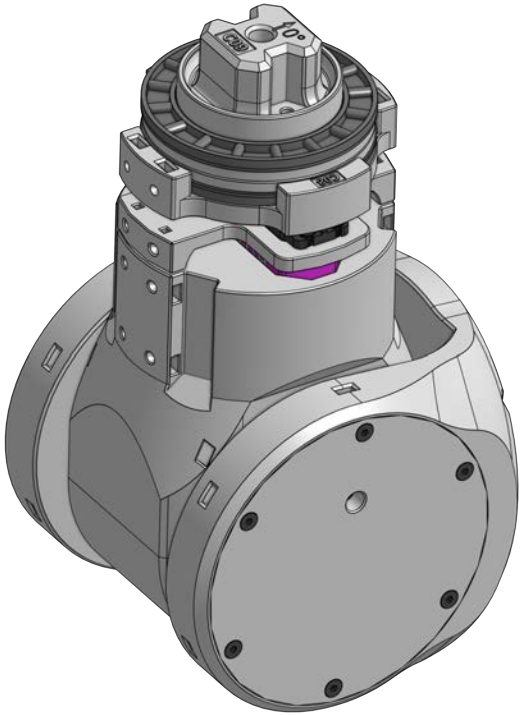
Step 11

1 1x 1x

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



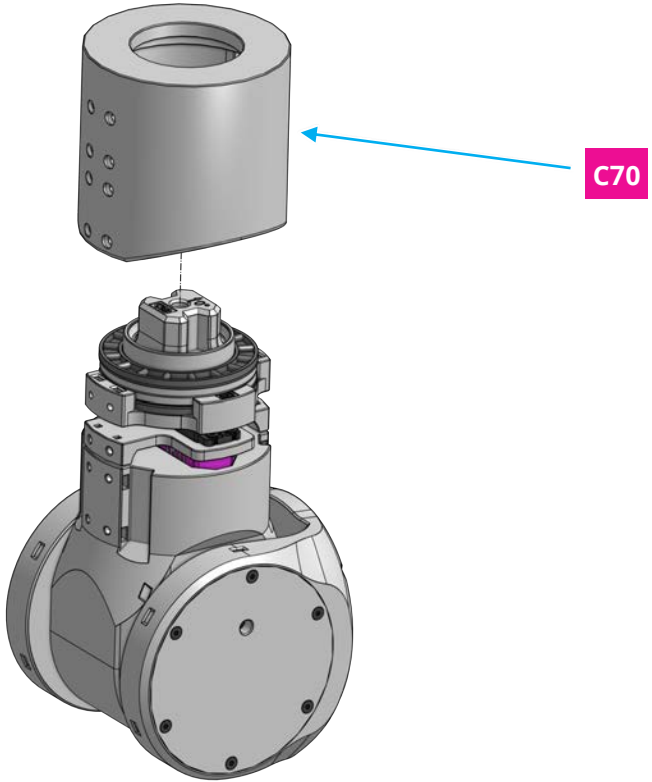
Please make sure, that the small movable pieces in **M06** face towards **M07**.

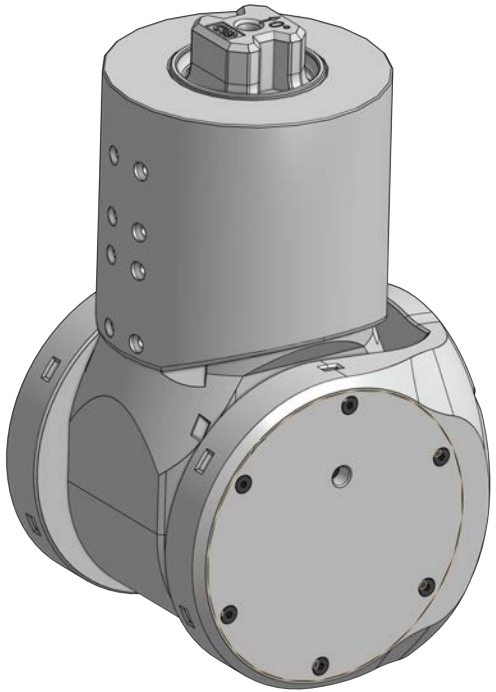


Step 12

1

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

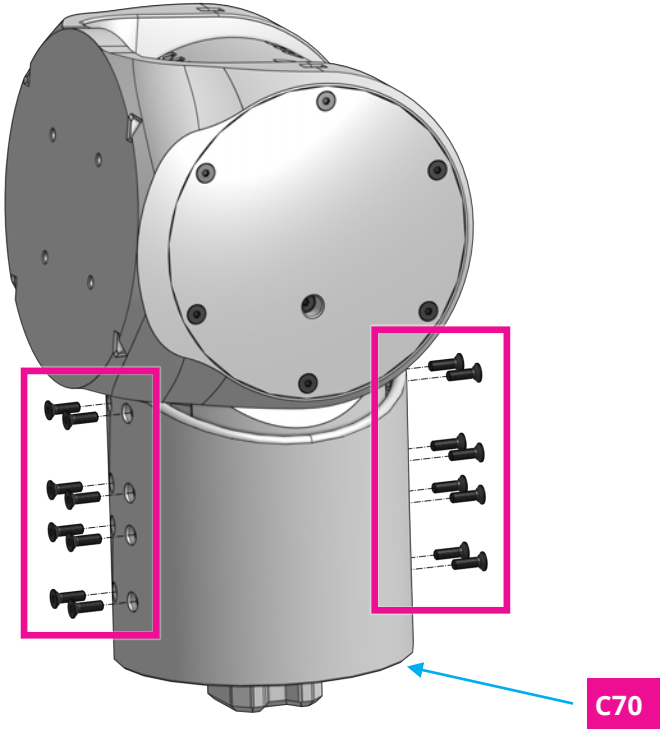


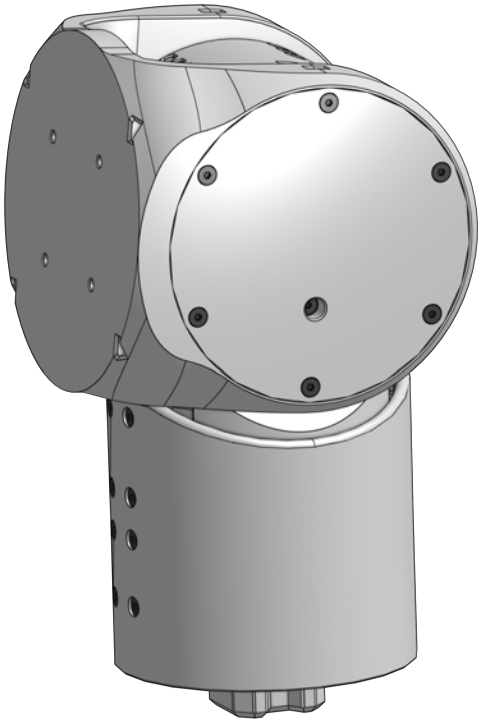


Step 13

1 16x

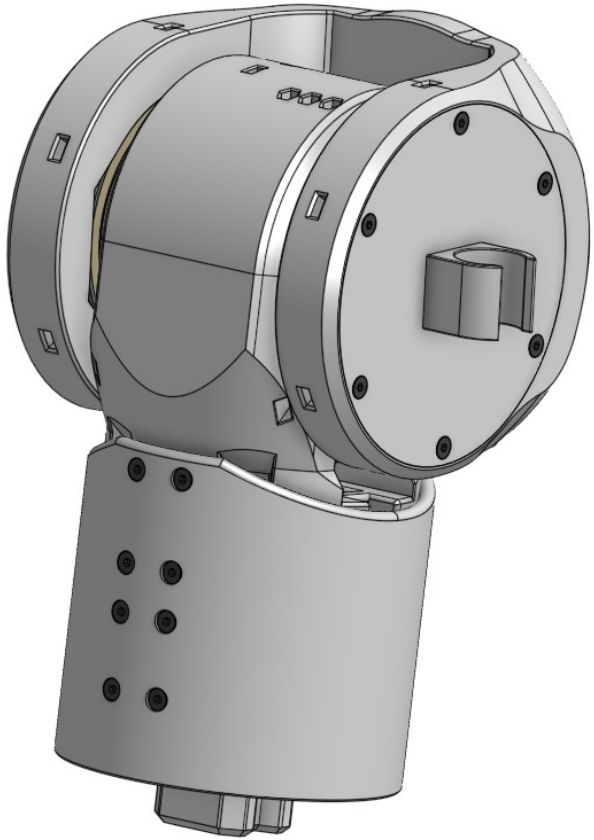
Use **16 x 10 mm screws** to connect **C70** to the assembly.





Congratulations

You did a great job, pib´s shoulder is assembled!



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