



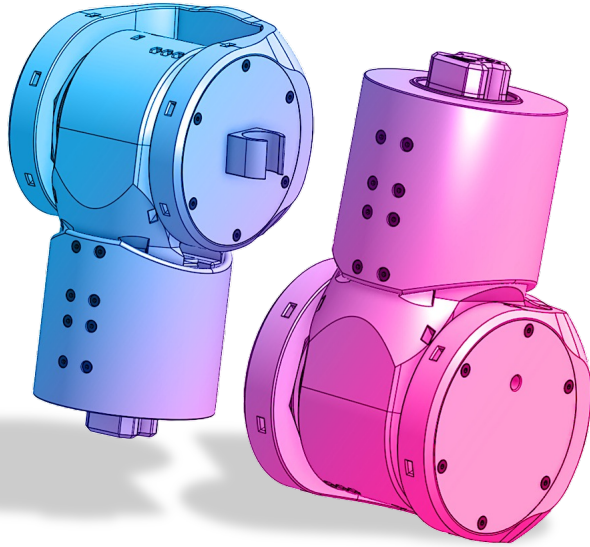
## How to build your robot

[www.pib.rocks/build](http://www.pib.rocks/build)

assembly instructions for:

## SHOULDER

v2024



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

**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

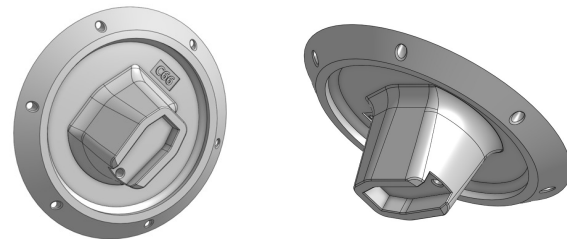
2 x **M07**-Thrust\_bearing\_70x50x1

## Printable parts - Overview

C65-Bracket\_Outer\_Shoulder



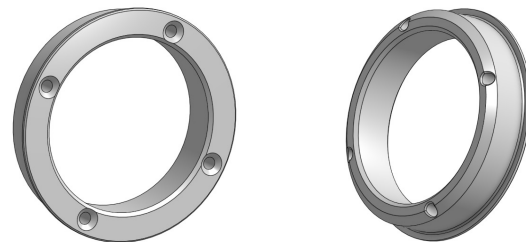
C66-Cap\_Front\_Outer\_Shoulder



C67-Cap\_Back\_Outer\_Shoulder

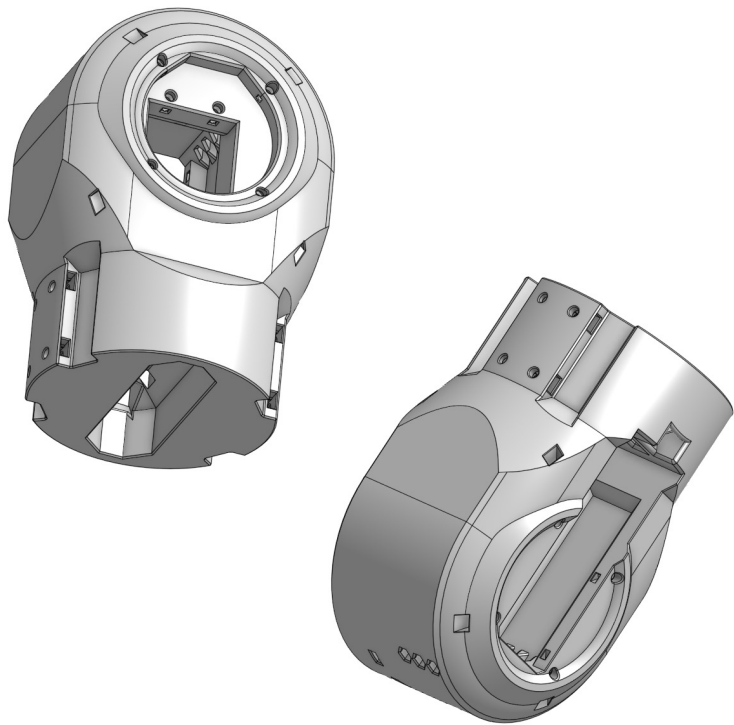


C68-Inner\_Ring\_Outer\_Shoulder

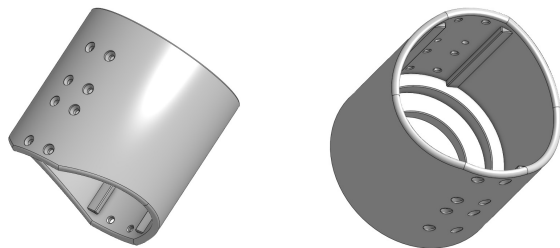


## Printable parts - Overview

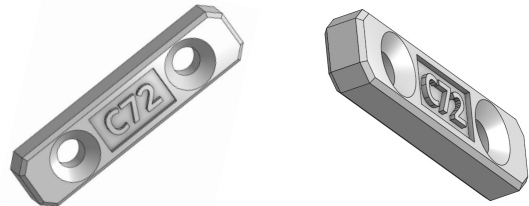
C69-Inner\_Part\_Outer\_Shoulder



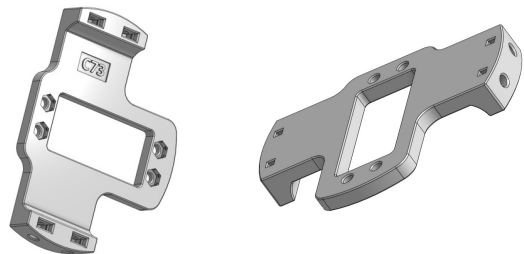
C70-Shell\_Outer\_Shoulder



C72-Plate\_Outer\_Shoulder

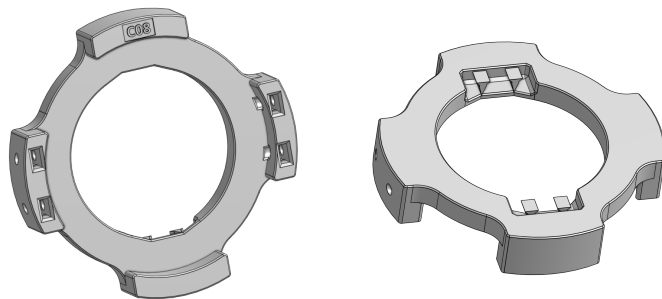


C73-Inner\_Ring\_Outer\_Shoulder

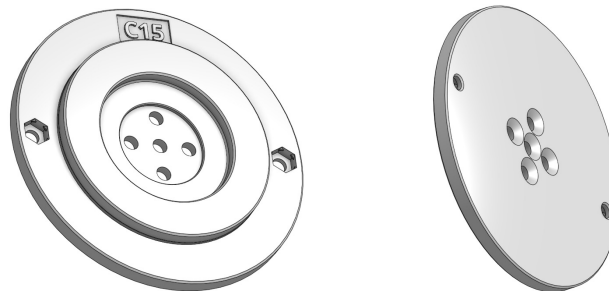


## Printable parts - Overview

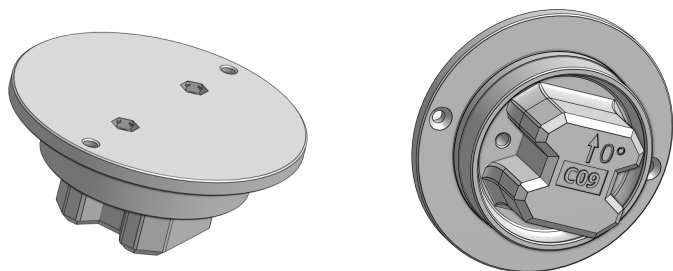
C08-Central\_rotator\_bracket



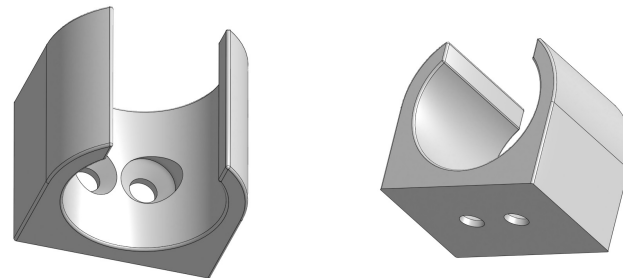
C15-Central\_rotator\_motor\_connector



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

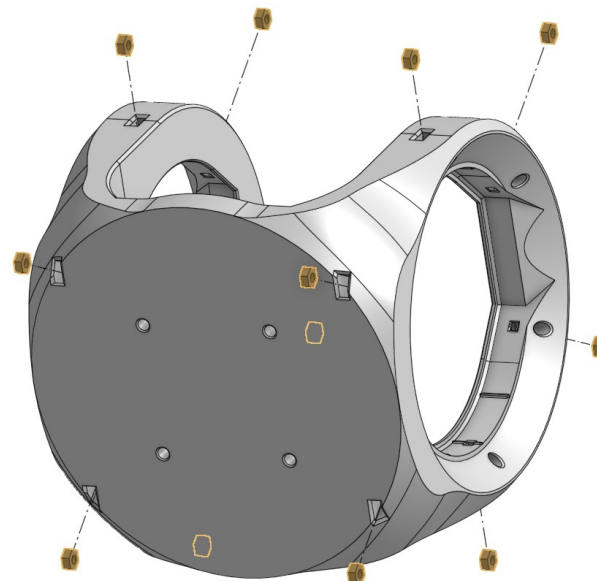
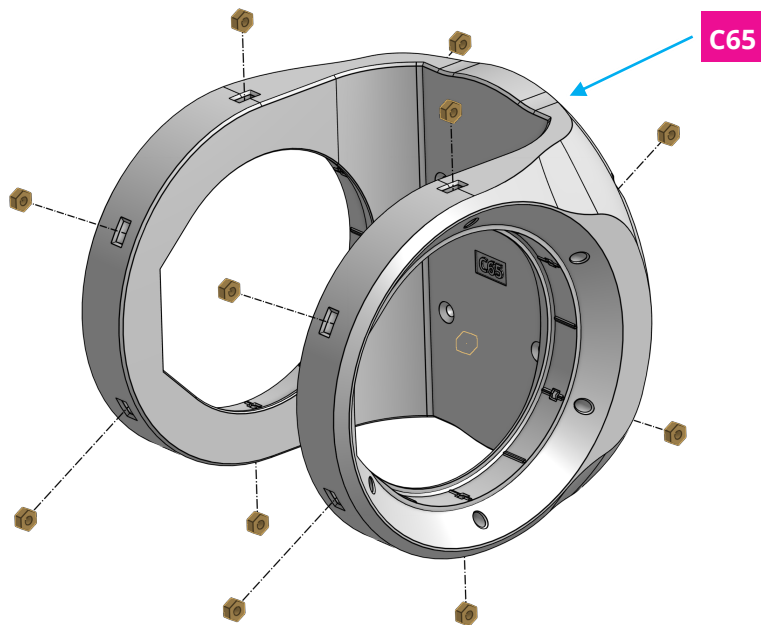
We have categorized each step according to its **difficulty** - from **1-5** (1 being the easiest, 5 the hardest)



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

## Step 1

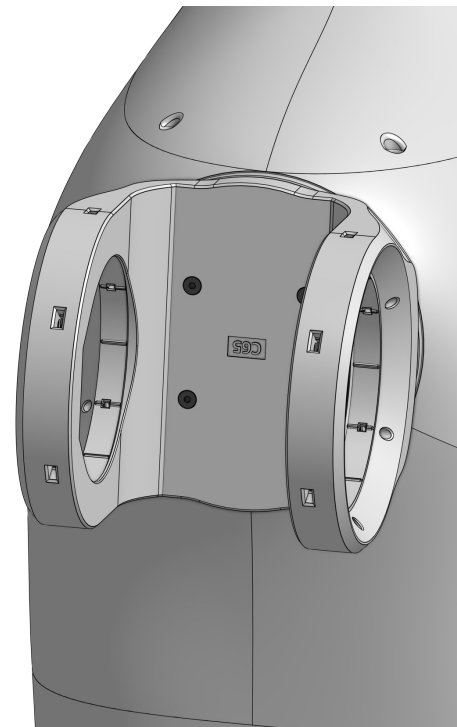
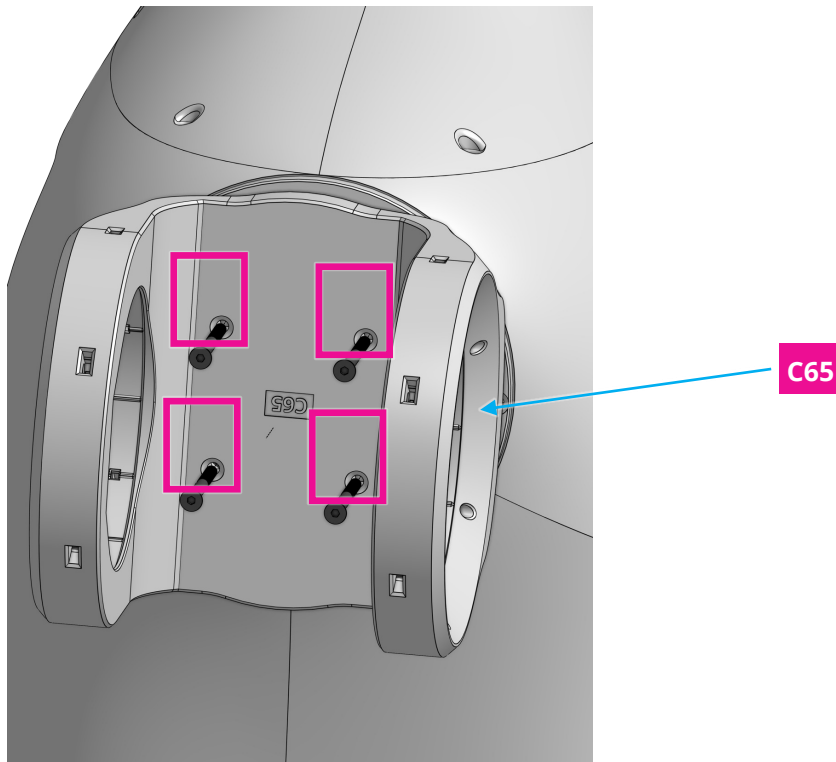
Place **12 x M3 nuts** in the shown spots in **C65**.





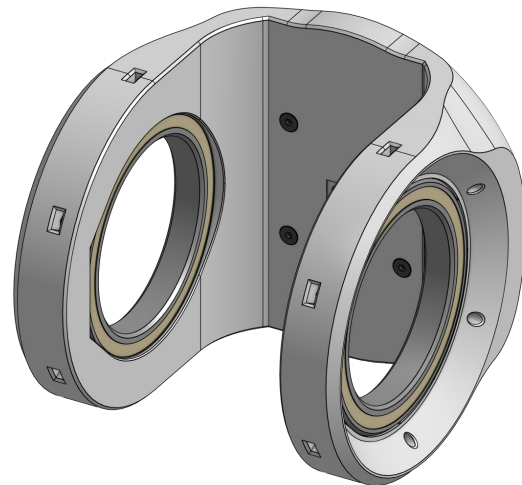
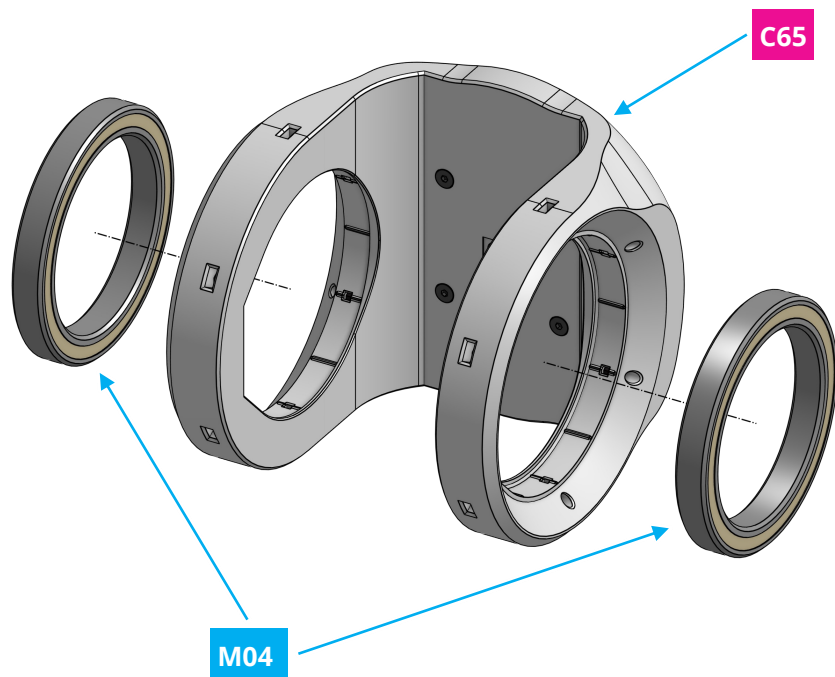
## Step 2

Connect **C65** to upper-body-assembly using **4 x M3 40mm screws**.  
(This connection will be hidden in future slides for visibility)



### Step 3

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

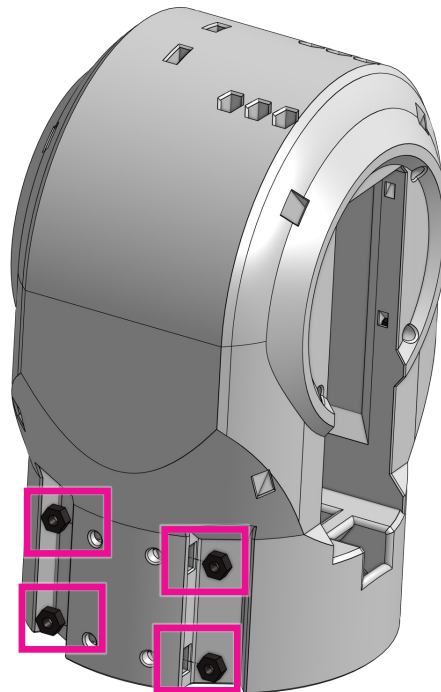
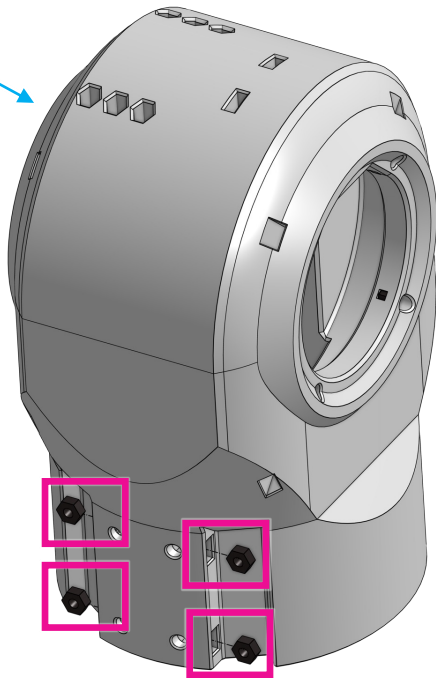


Step 4a

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



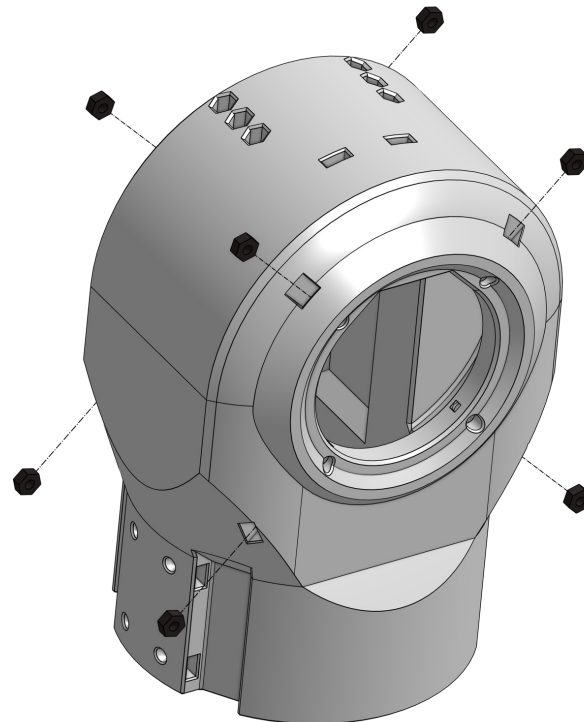
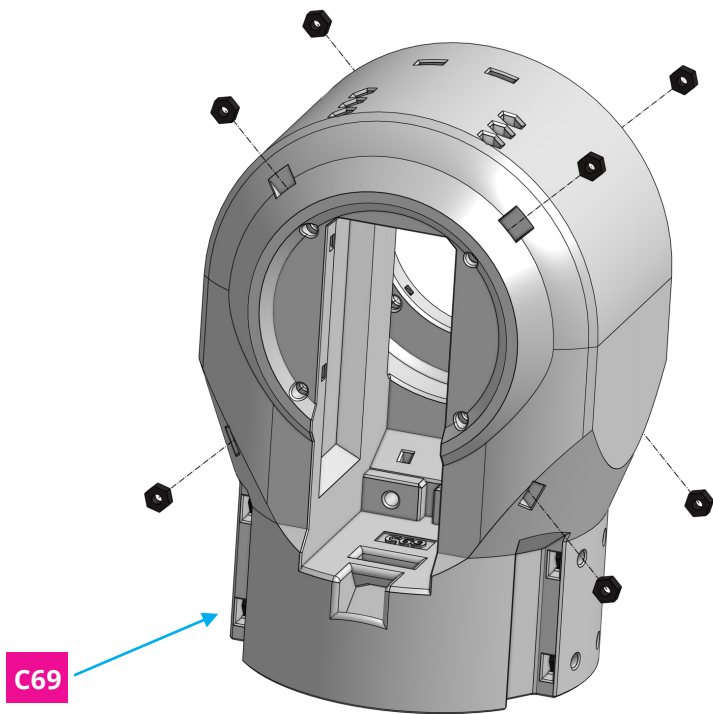
C69



Step 4b



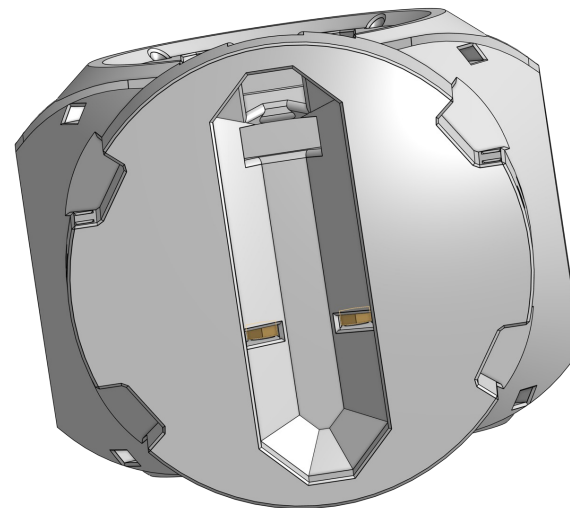
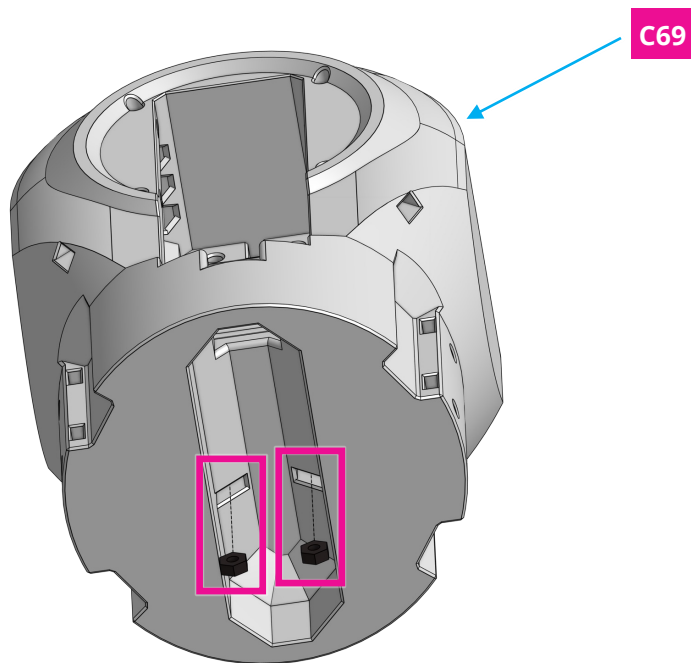
Insert **8 x M3 nuts** in **C69** (4 on each side). Make sure they are inserted all the way through.



Step 4c



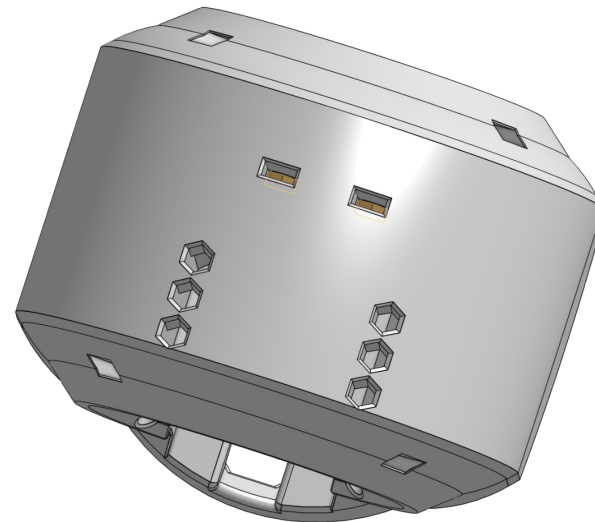
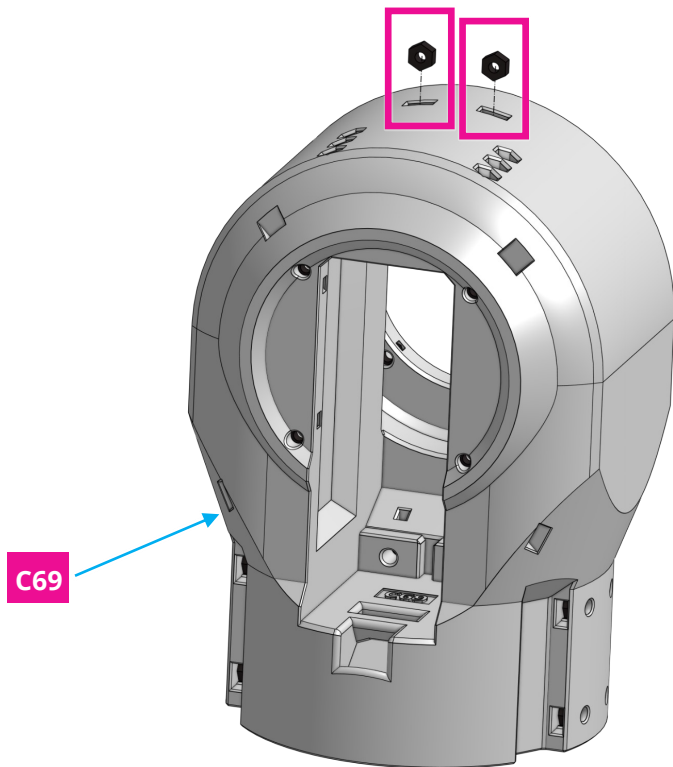
Insert **2 x M3 nuts** each side in the shown spots in **C69**. Make sure they are inserted all the way through.



Step 4d

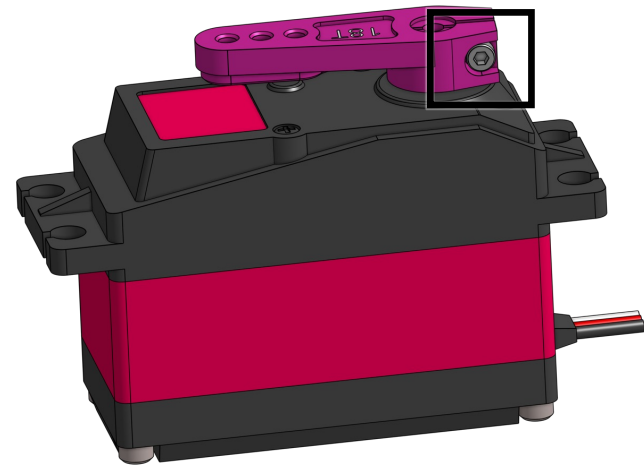
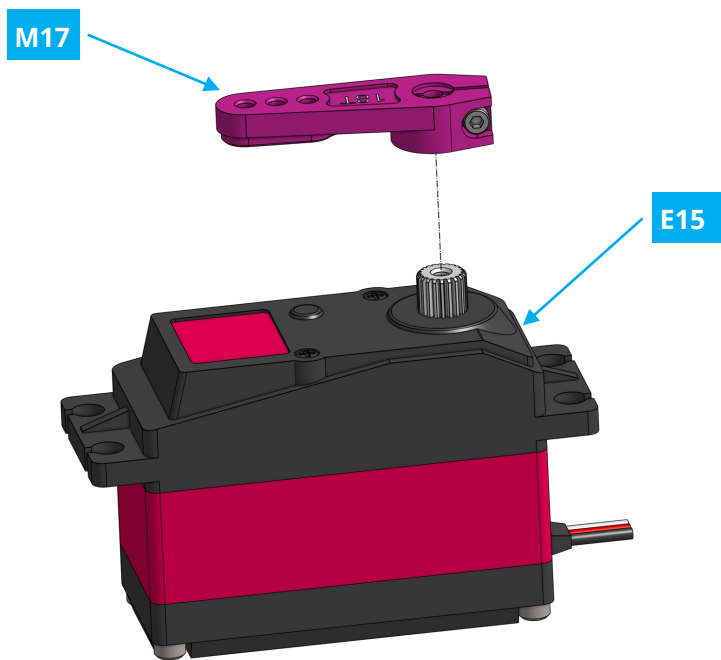


Insert **2 x M3 nuts** each side in the shown spots in **C69**. Make sure they are inserted all the way through.



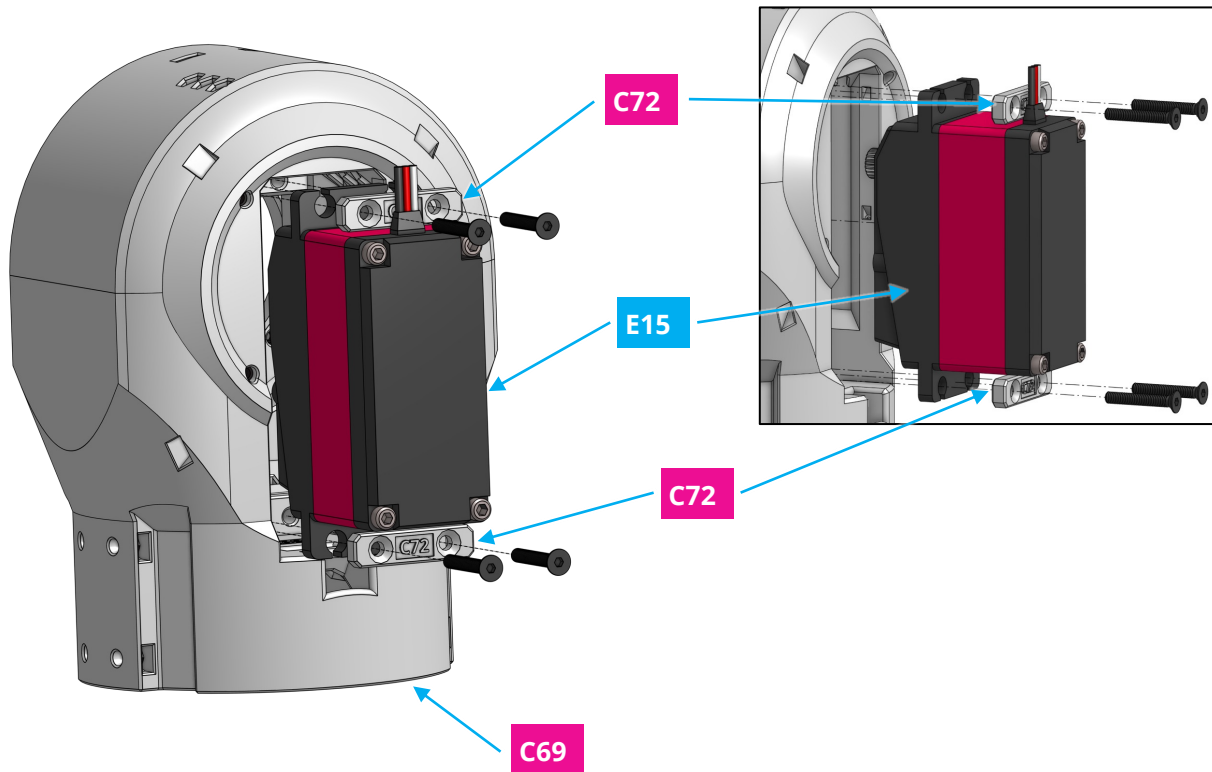
Step 5

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



Step 6

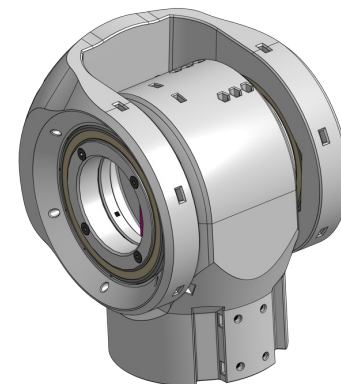
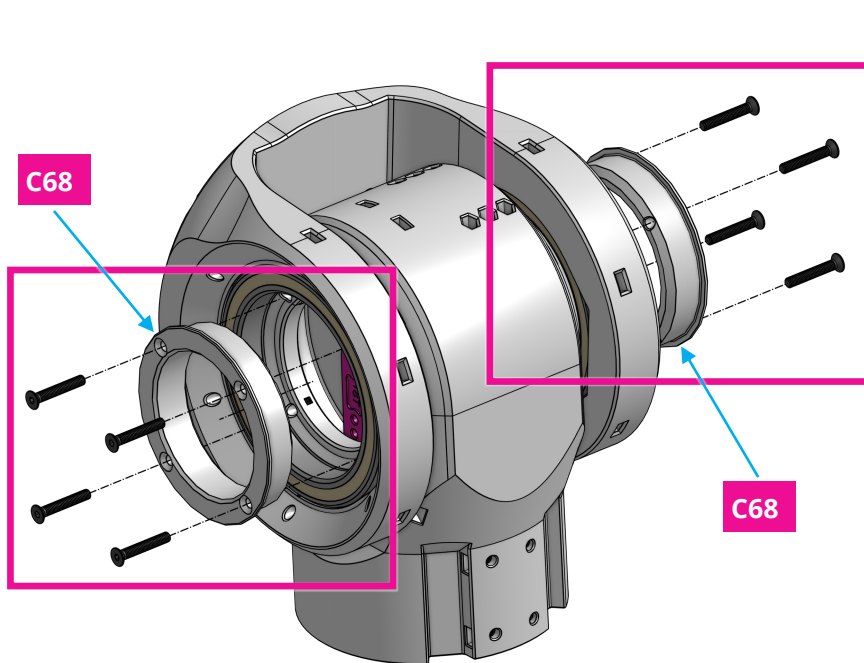
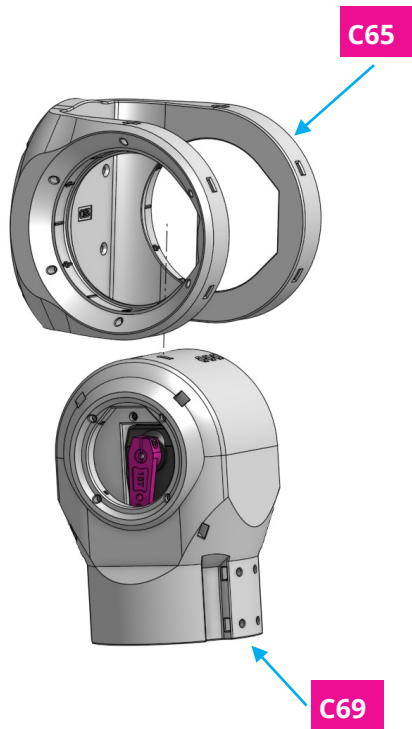
Connect **E15** motor to **C69** using **2 x C72** and **4 x M3 20mm** screws.





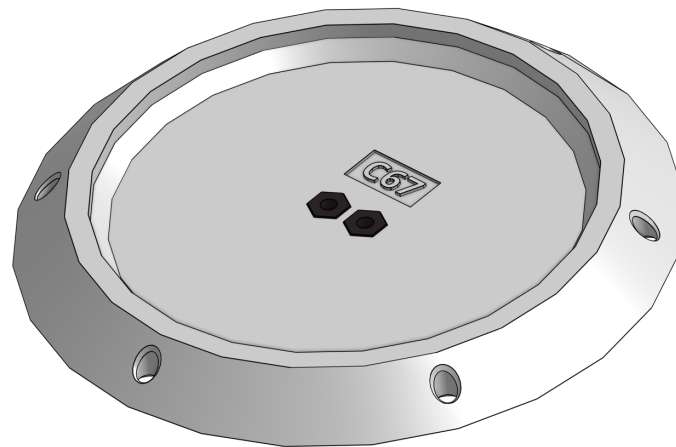
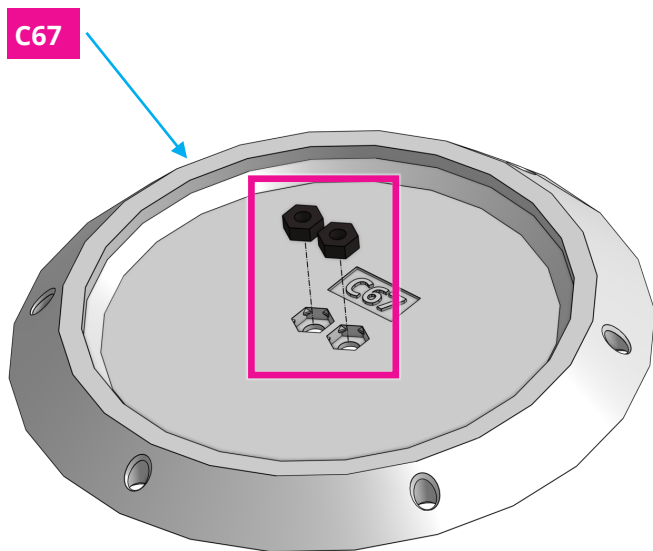
Step 7

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**.



## Step 8b

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



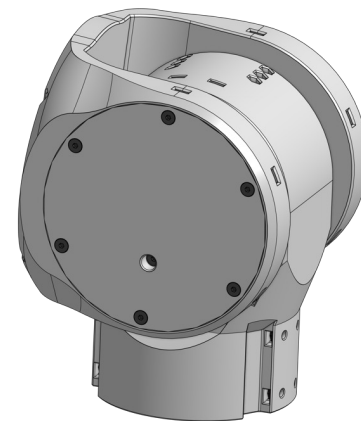
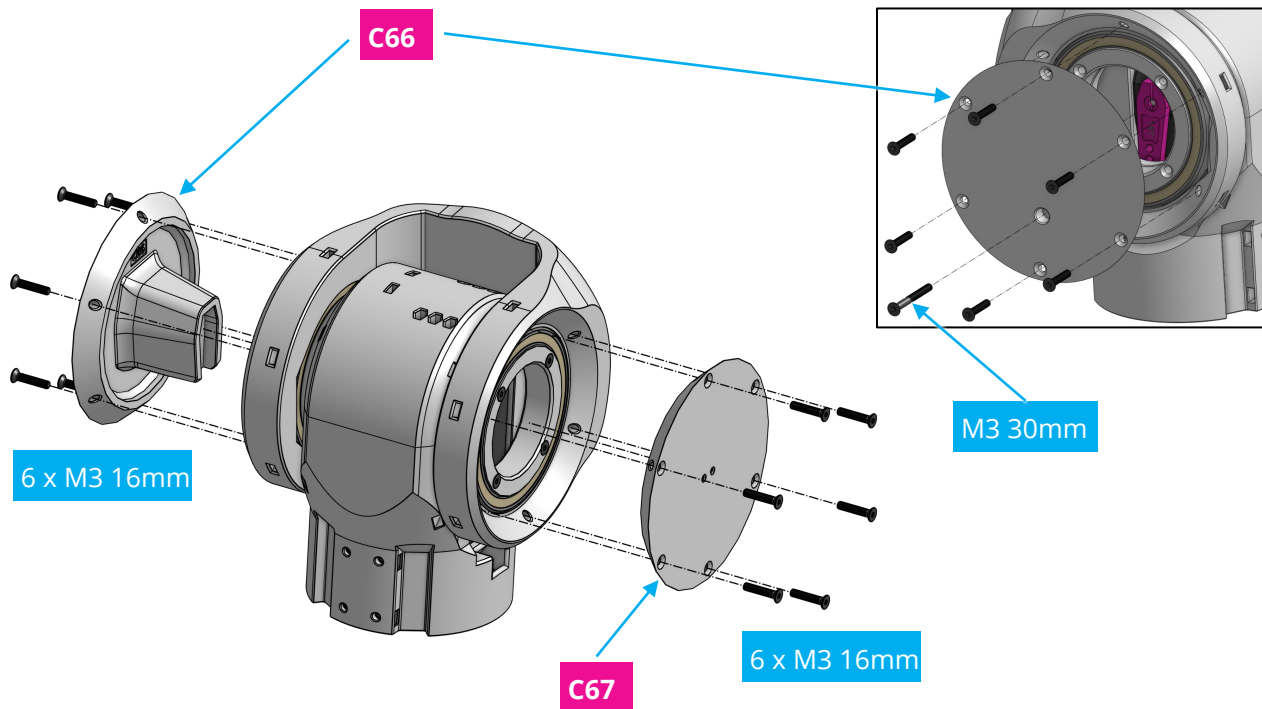
4



12x

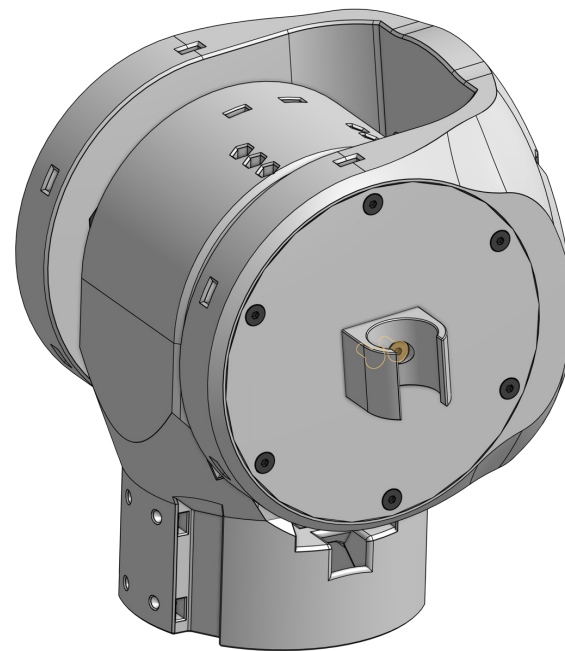
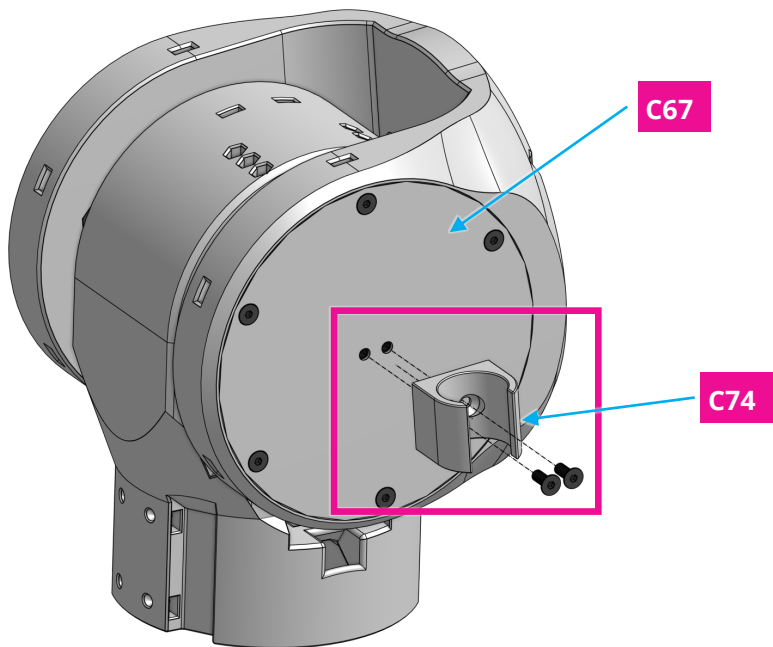


1x



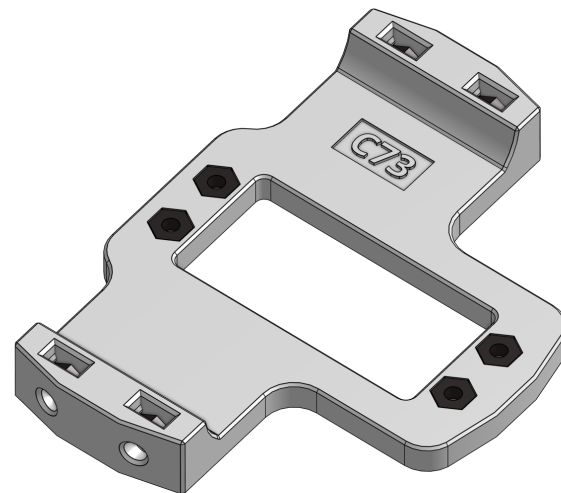
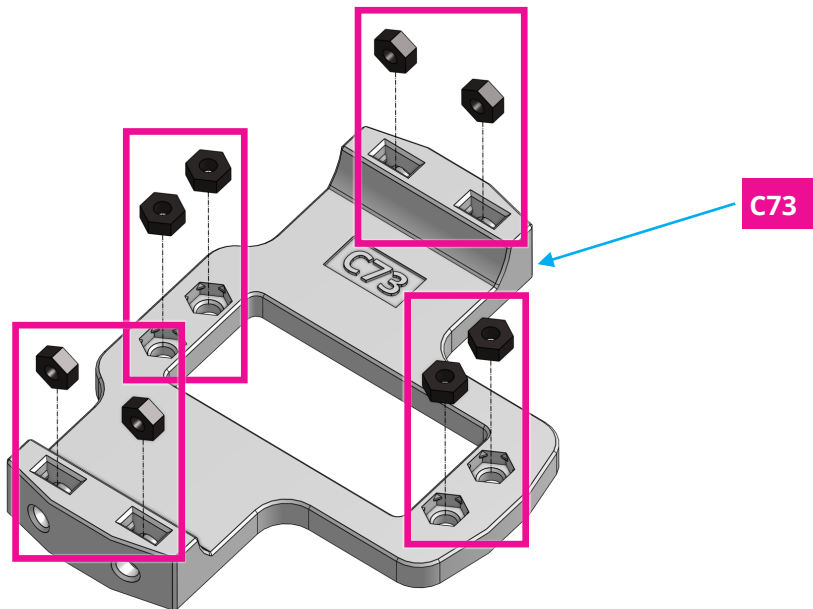
## Step 8c

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



## Step 9a

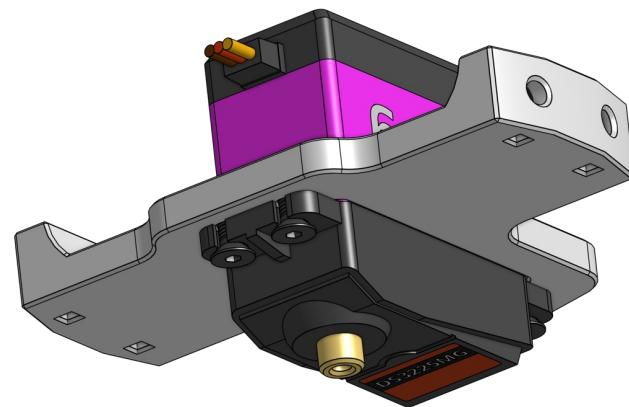
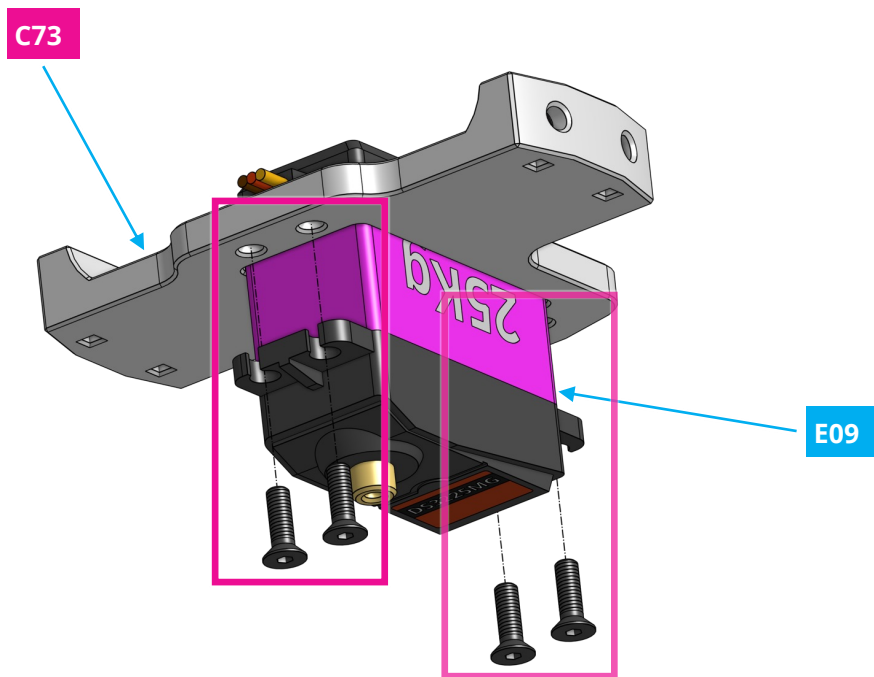
Insert **8 x nuts** in the shown spot of **C73**.



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.

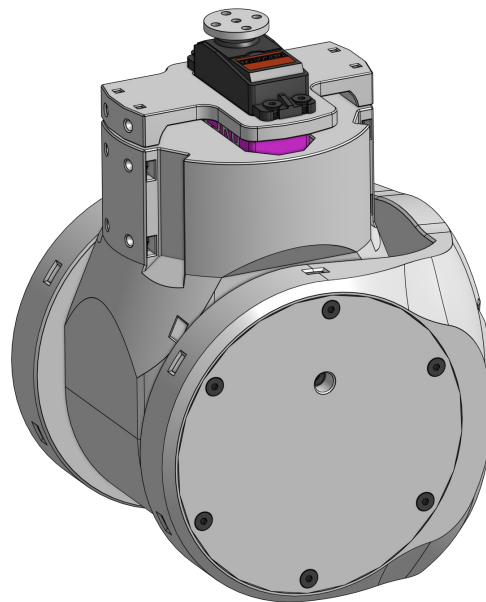
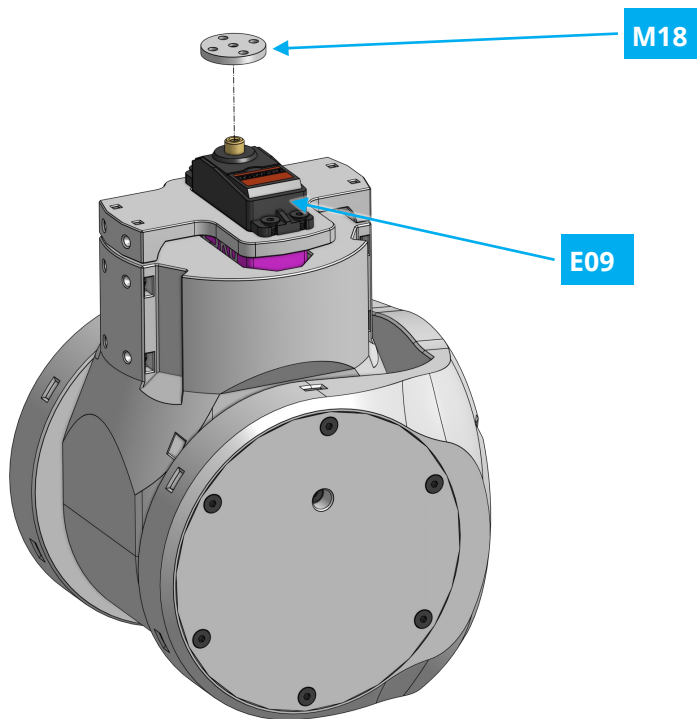
## Step 9b

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



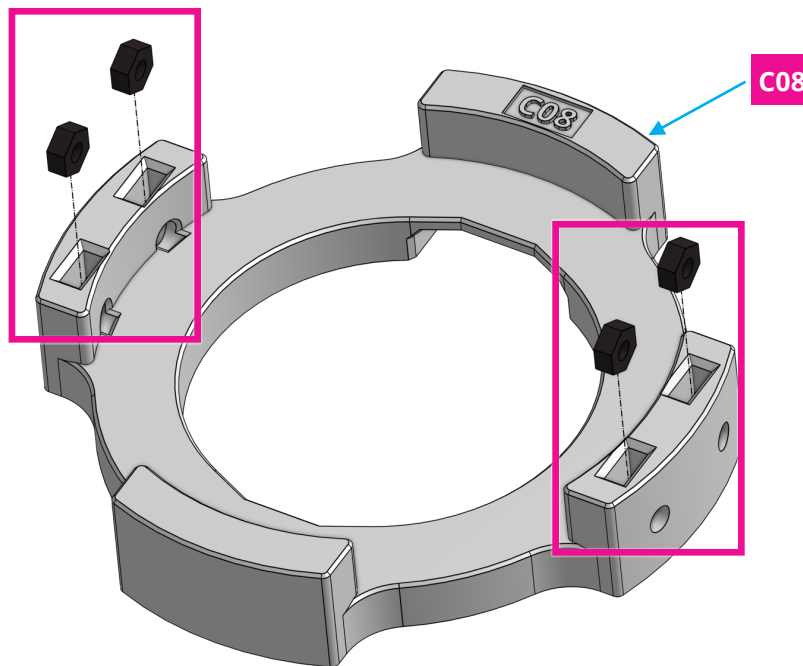
## Step 9c

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



## Step 10a

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

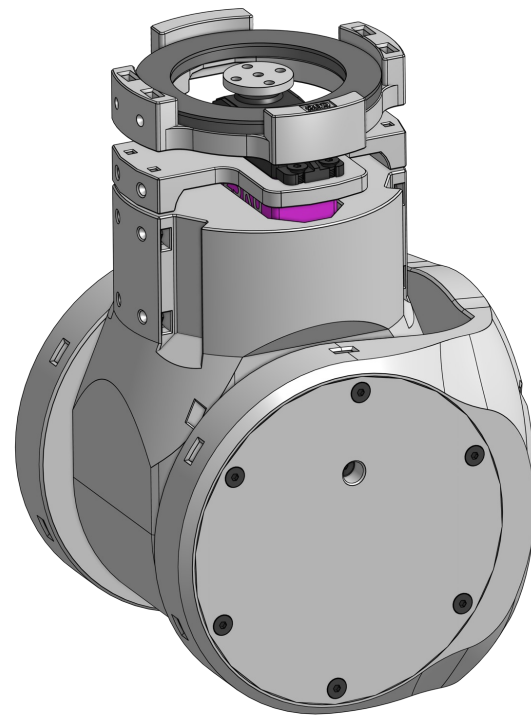
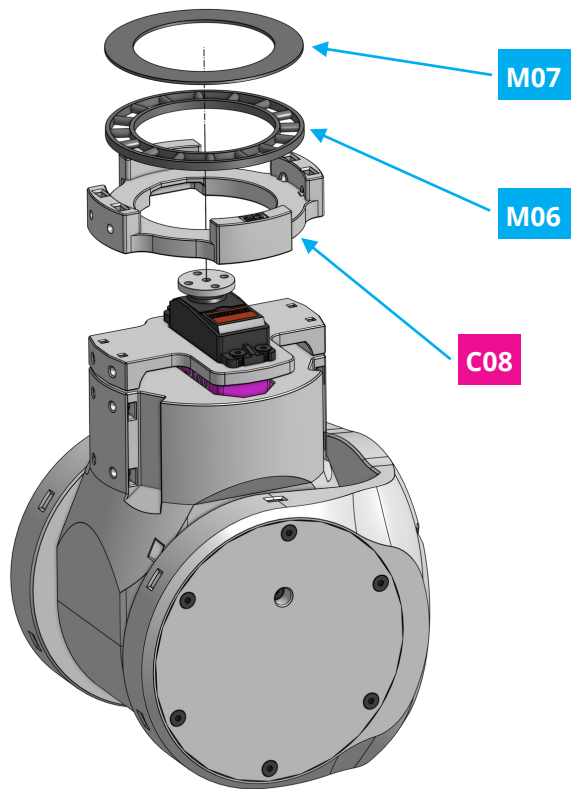


Use a small screwdriver or a precision tool to put the nuts into the holes and hit them gently with a hammer to place them correctly.



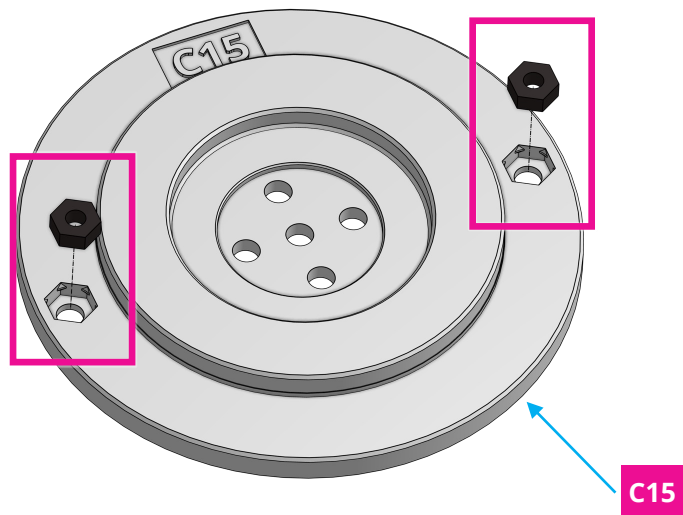
Step 10b

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



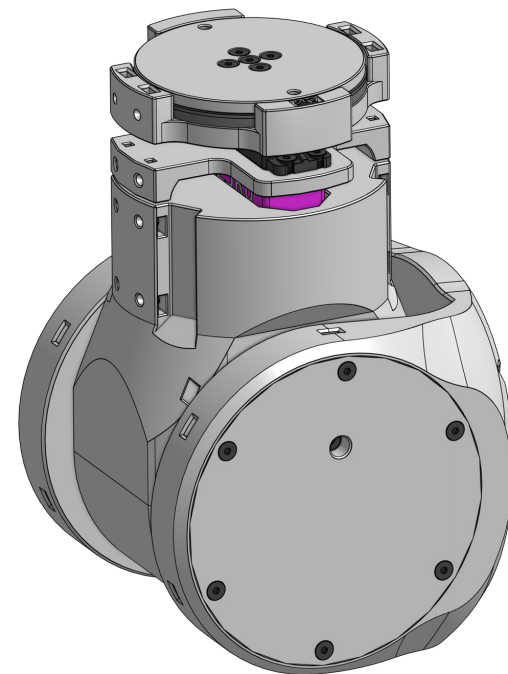
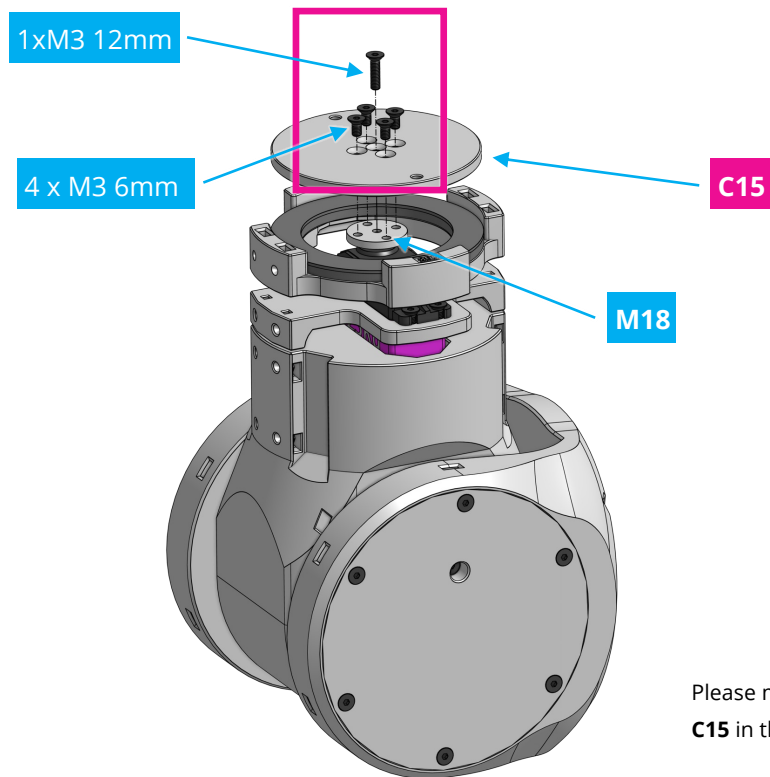
Step 10c

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**.

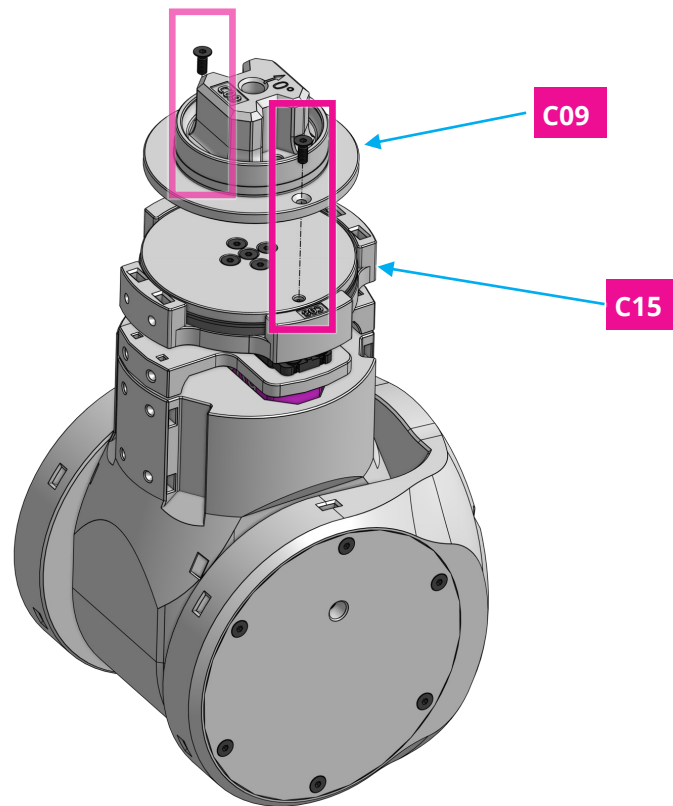
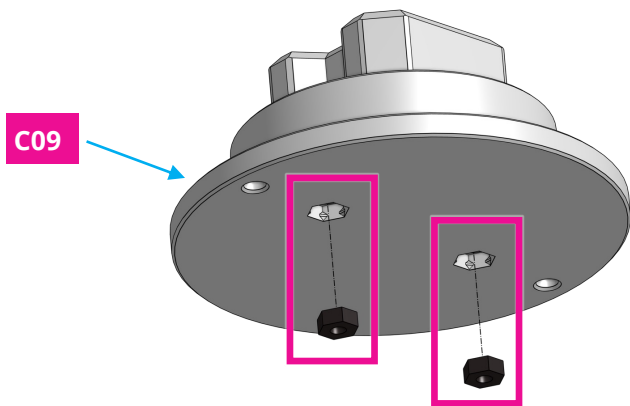


Please make sure, that you connect **C15** in the shown orientation.

## Step 10e

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

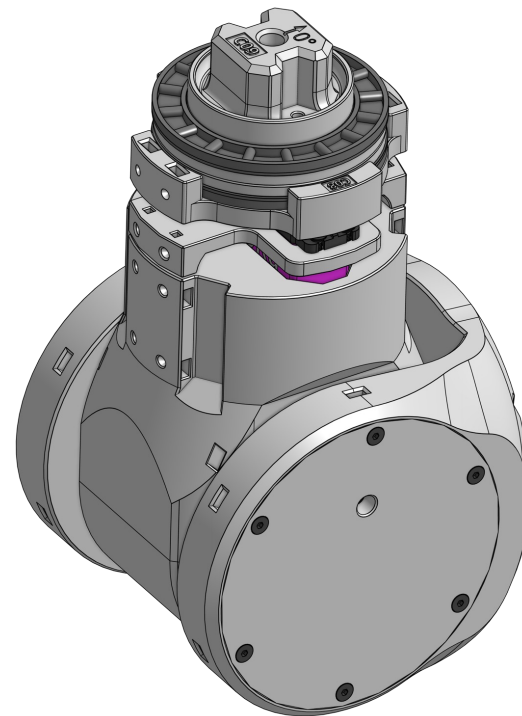
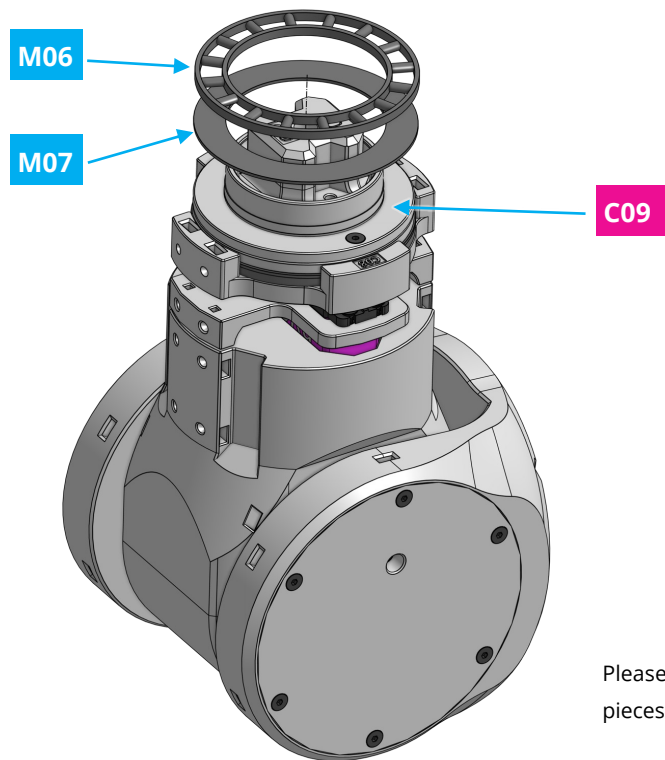
Connect **C09** to **C15** using **2 x 8 mm screws**.



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

## Step 11

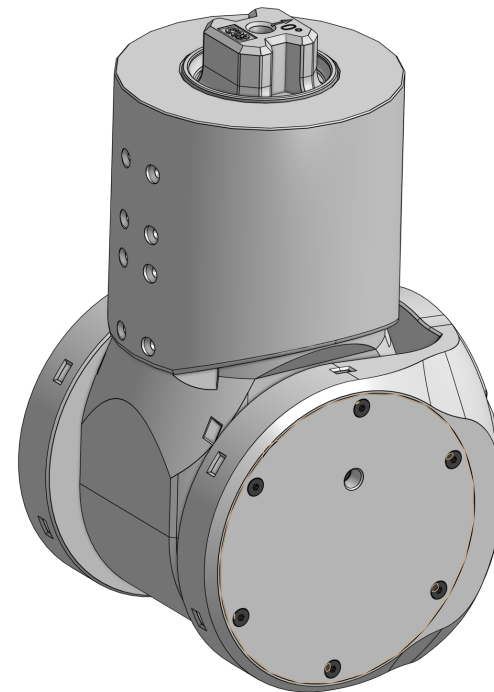
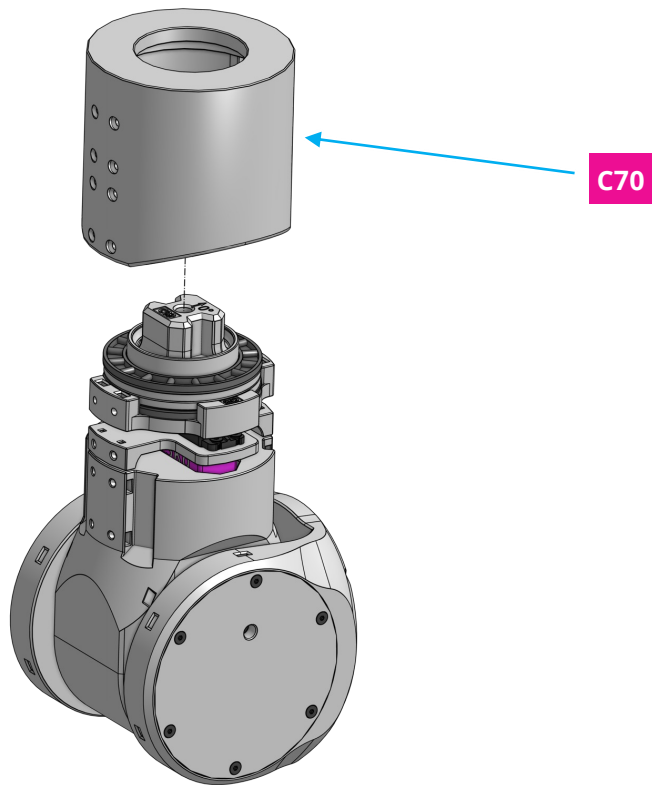
Place **M07** and **M06** on top of **C09**.



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

## Step 12

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

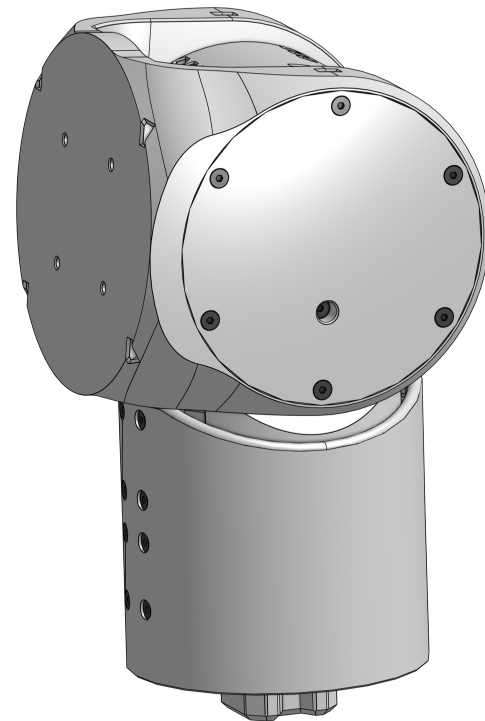
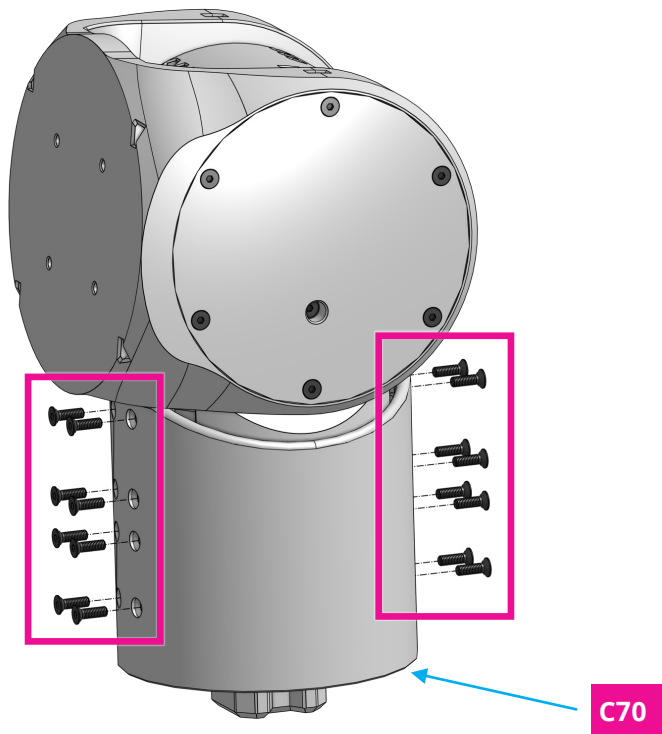


## Step 13

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



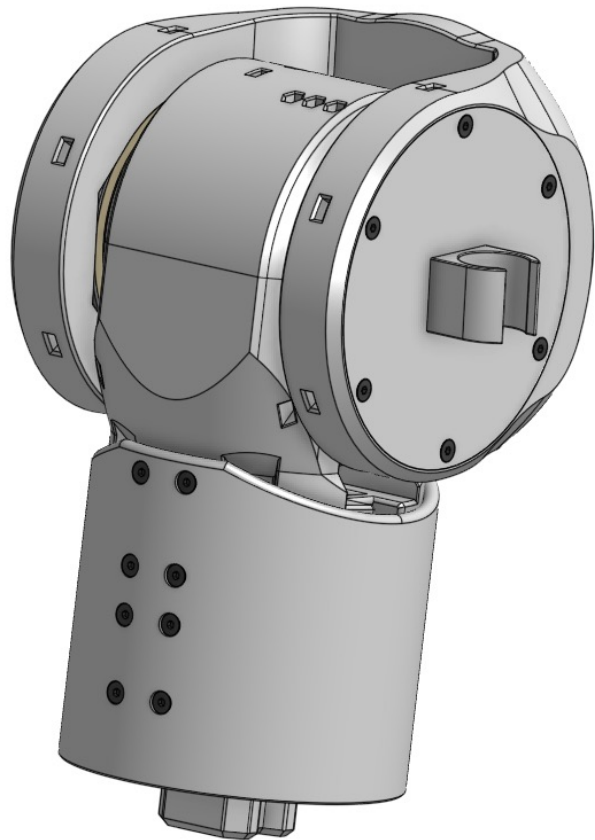
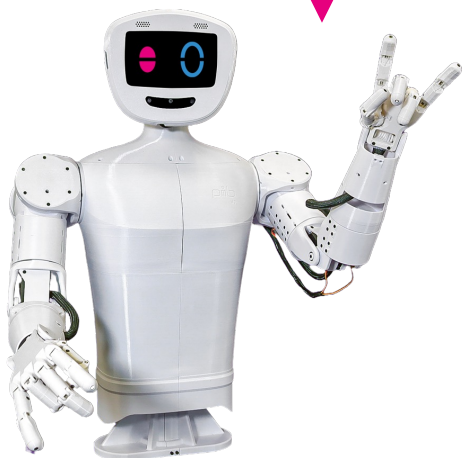
16x



## 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**

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Order non-printable parts for pib.