



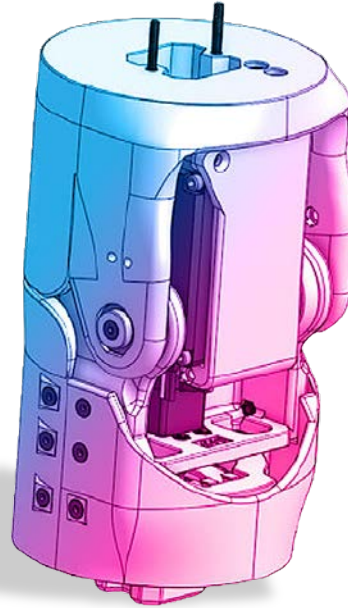
## How to build your robot

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

### Non-printable parts

34 x **S01** M3 nuts

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)

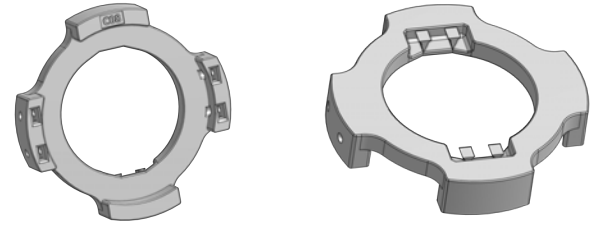
2 x **M07** Thrust\_Bearing (70x50x1)

## Printable parts - Overview

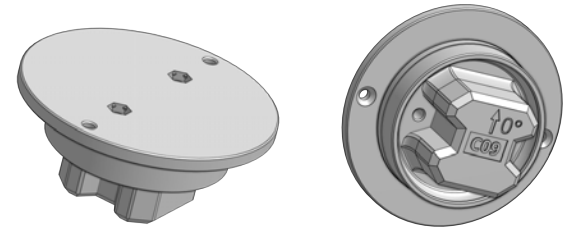
**C10-Elbow**



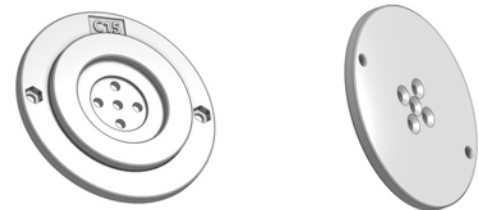
**C08-Central\_rotator\_bracket**



**C09-Central\_rotator\_connector**

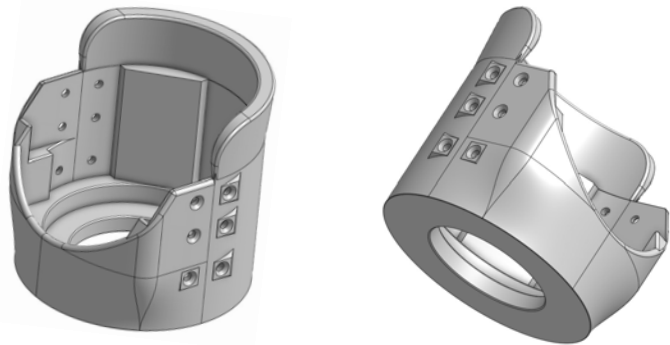


**C15-Central\_rotator\_motor\_connector**

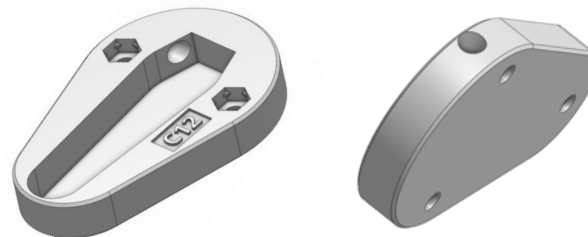


## Printable parts - Overview

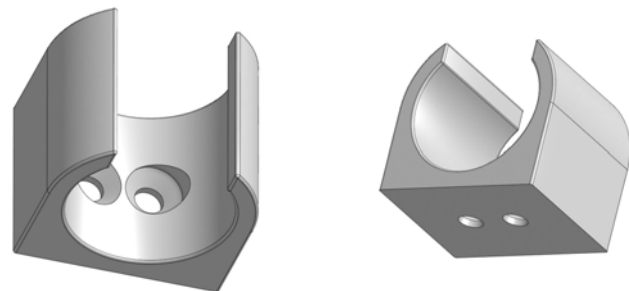
C13-Elbow\_shell\_lower\_dorsal



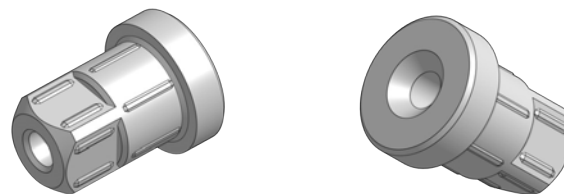
C12-Elbow\_motor\_connector



C74-Wire\_holder

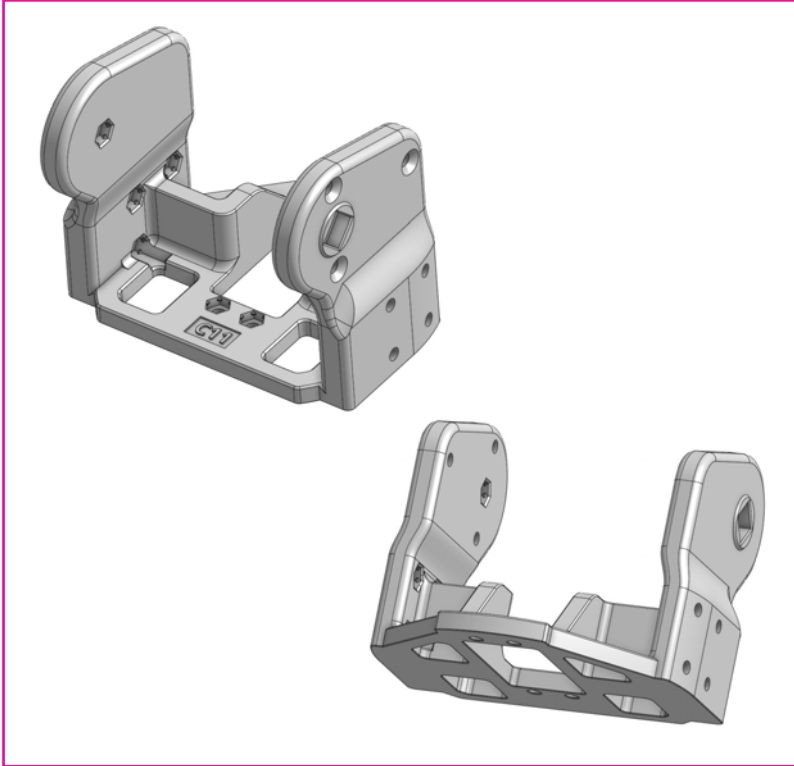


C16-Elbow\_joint\_connector

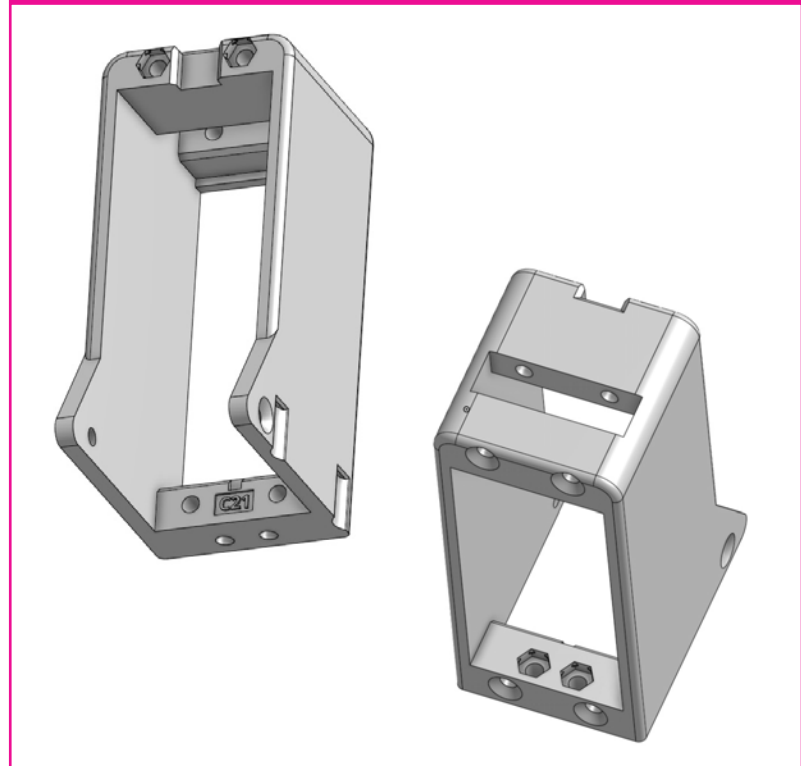


## Printable parts - Overview

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

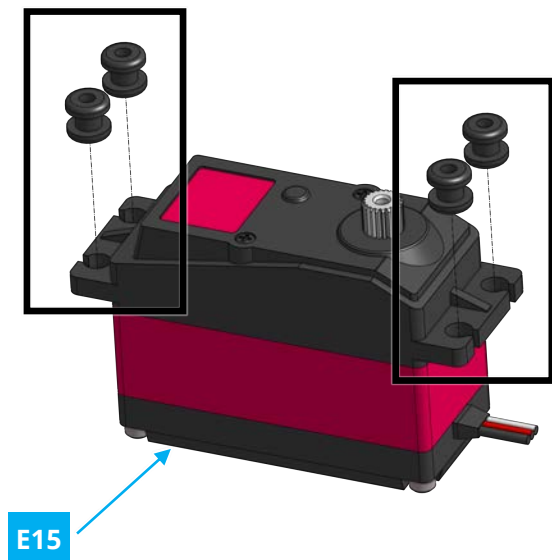
We have categorized each step according to its **difficulty** - from **1-5** (1 being the easiest, 5 the hardest)



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

## Step 1a

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





## Step 1b

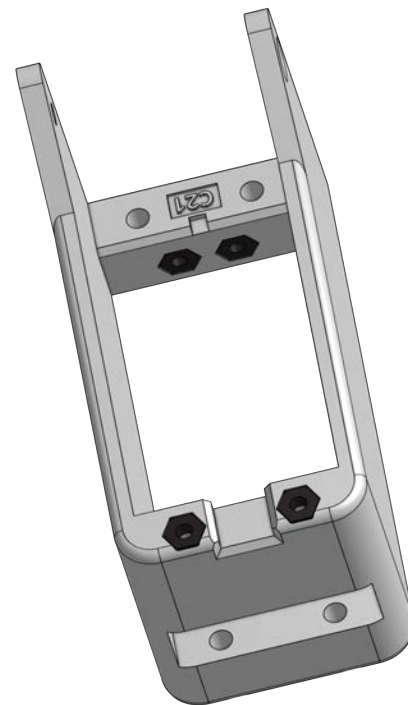
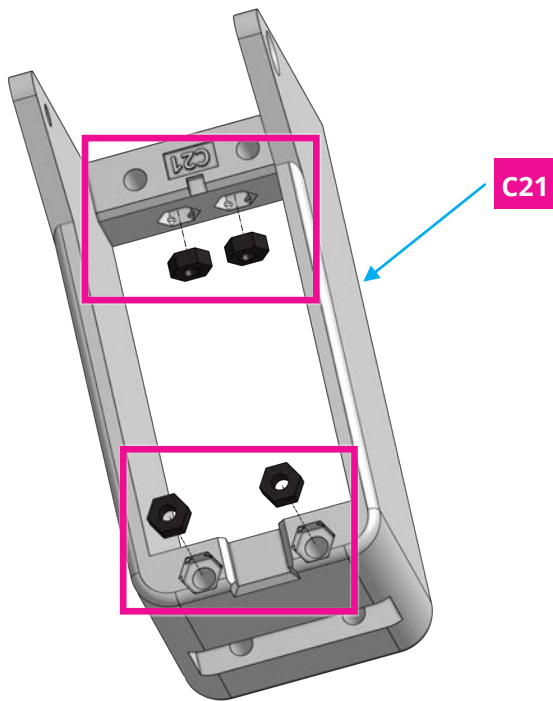
Place **4 x M3 nuts** in the shown spots in **C21**.



1

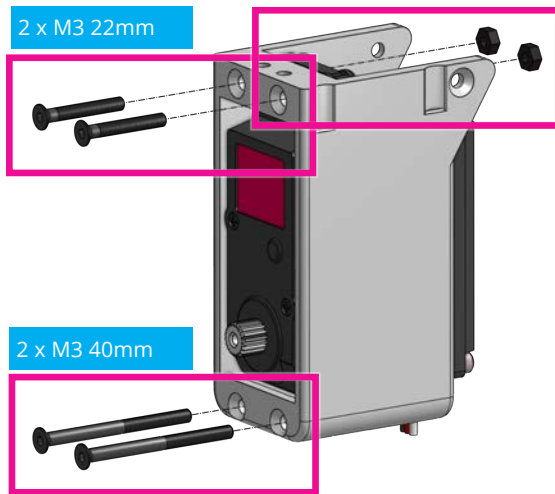
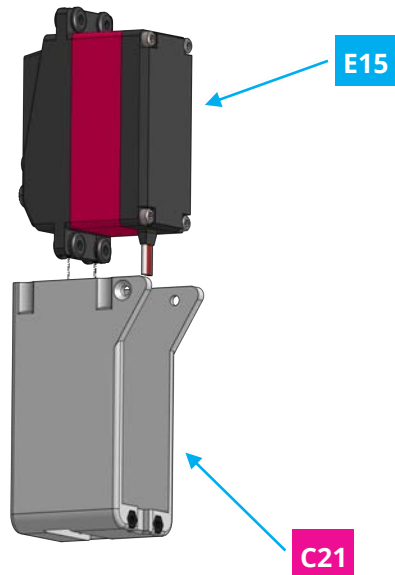


4x



## Step 1c

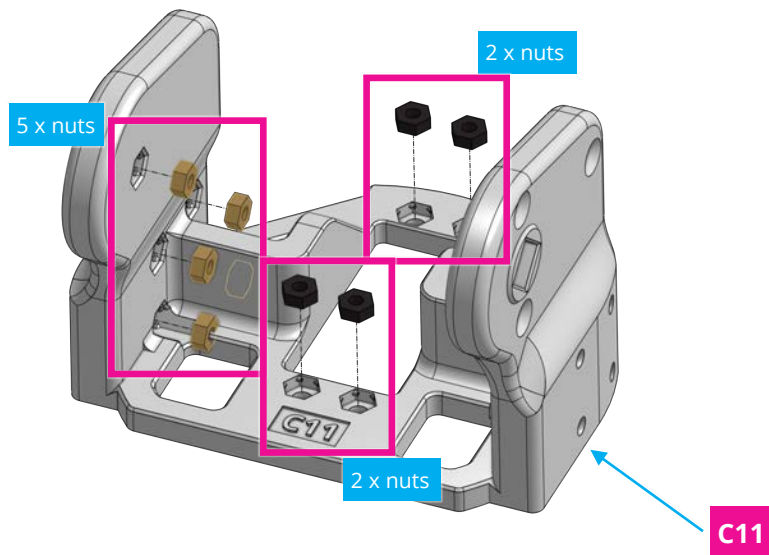
Fix **E15** to **C21** using **2 x M3 40mm screws**, **2 x M3 22mm screws** and **2 x M3 nuts**.



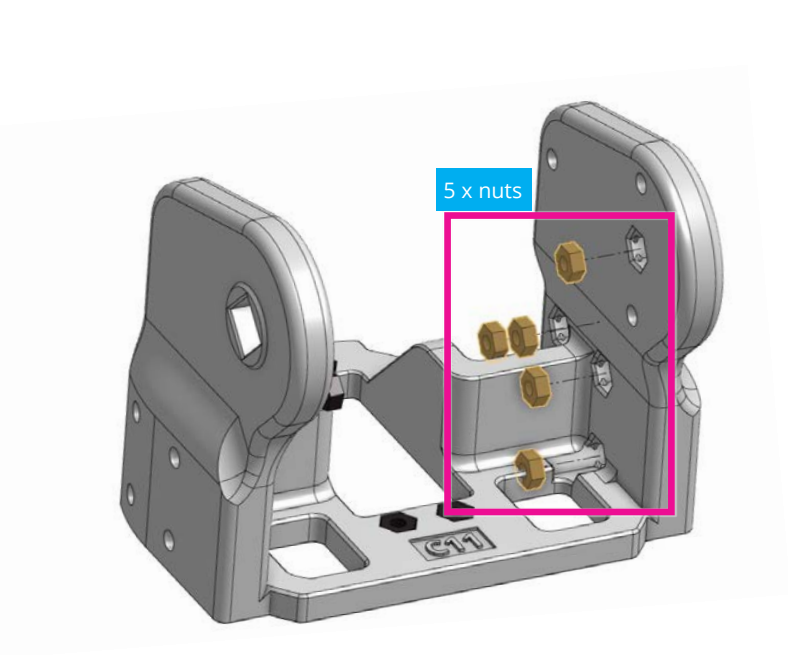
## Step 2



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

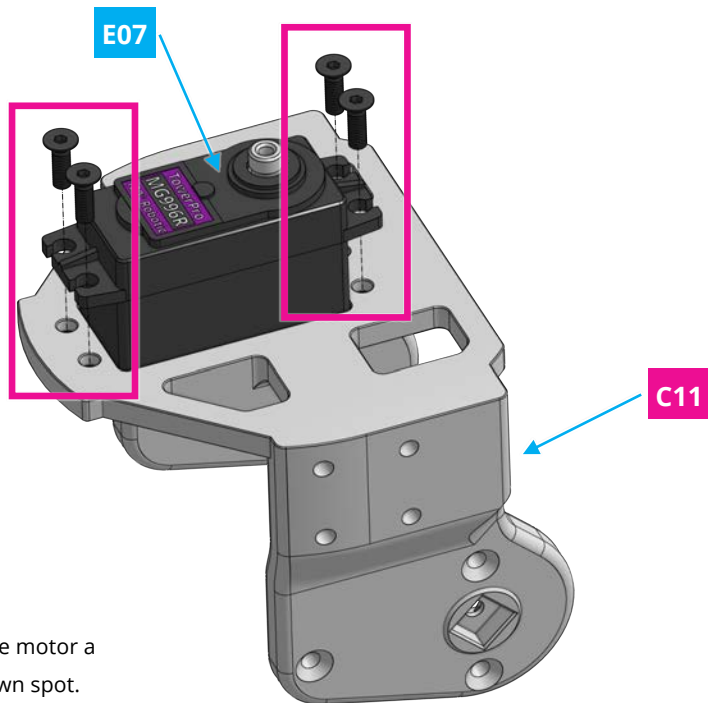


Our tip: use a small screwdriver or a precision tool to put the nuts into the holes and hit it gently with a hammer to place it correctly.

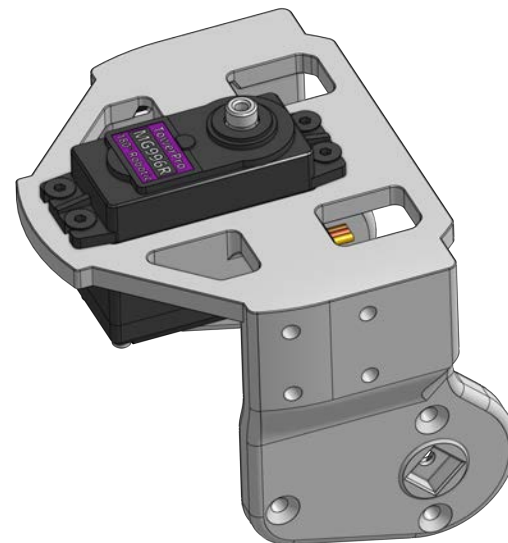


### Step 3

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.



## Step 4a

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



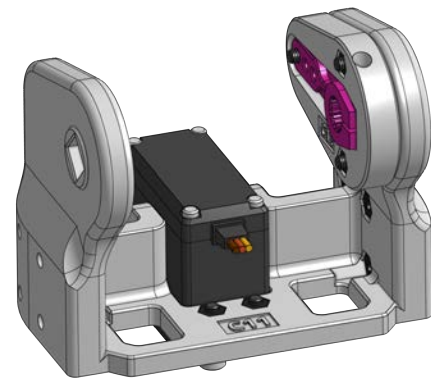
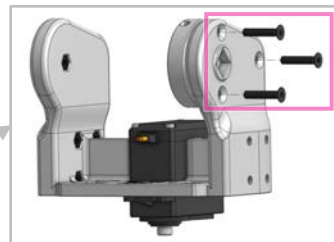
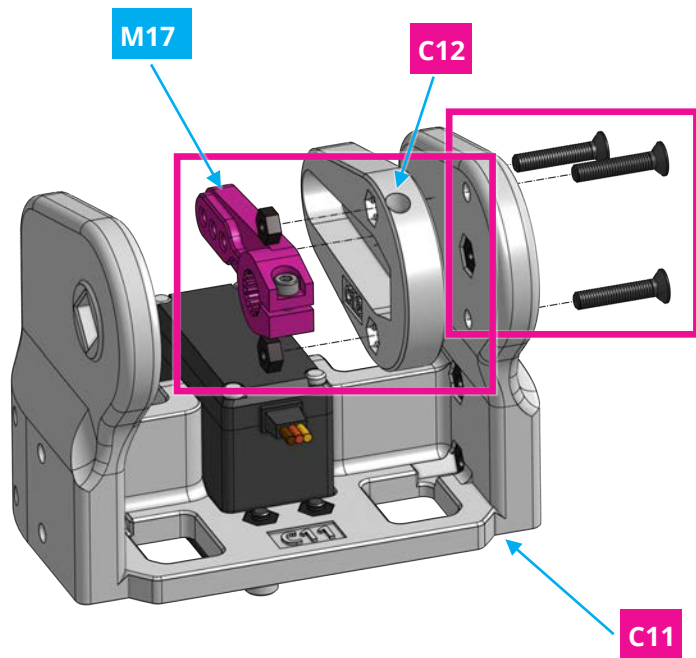
1x



3x



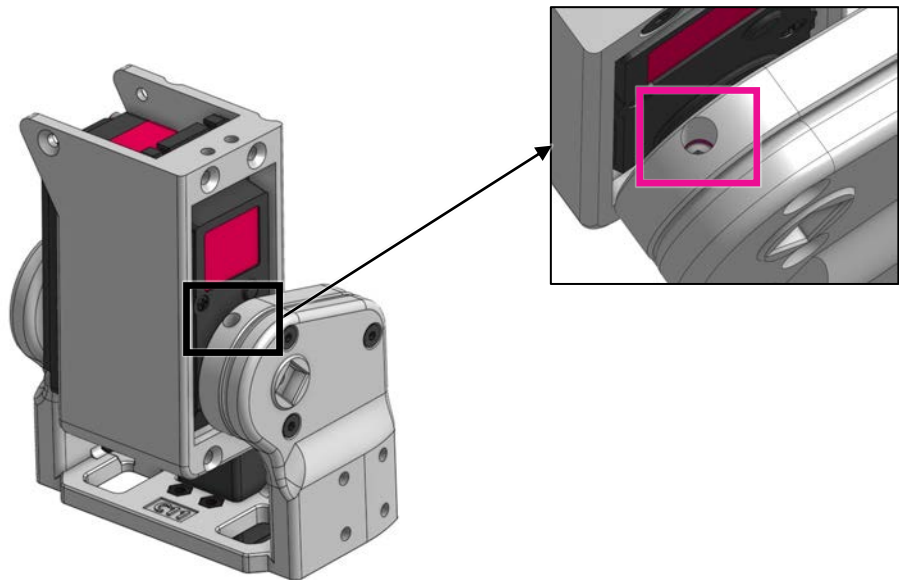
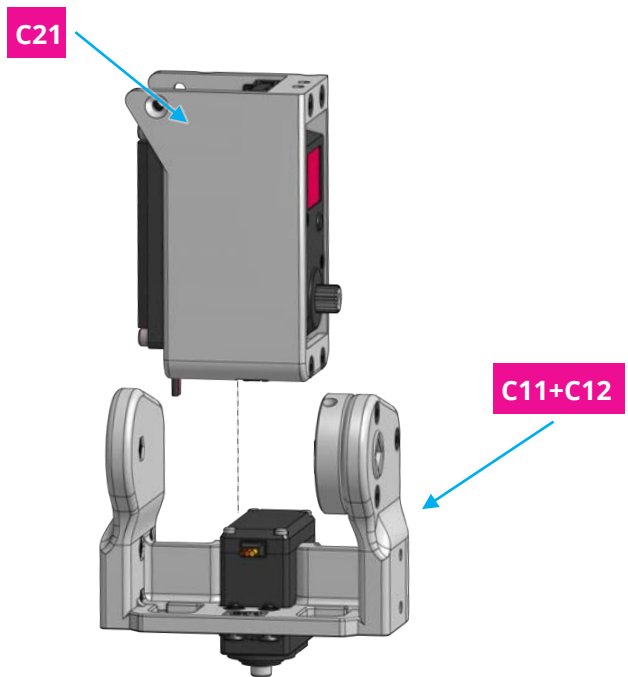
2x



## Step 4b



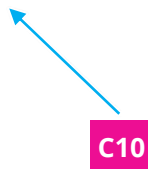
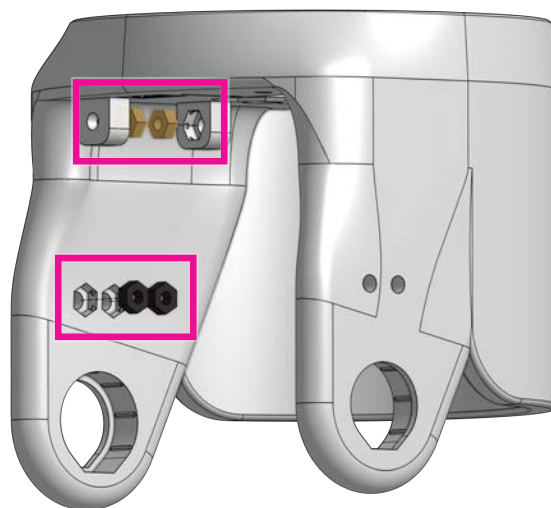
Connect the 2 assemblies and tighten the screw in **M18** to ensure locking with motor.



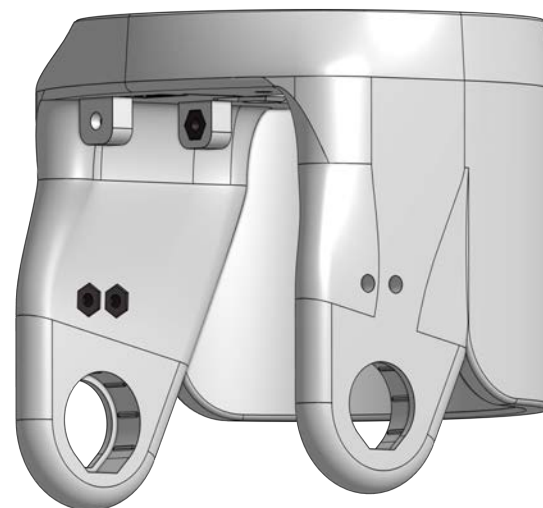
## Step 5a



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

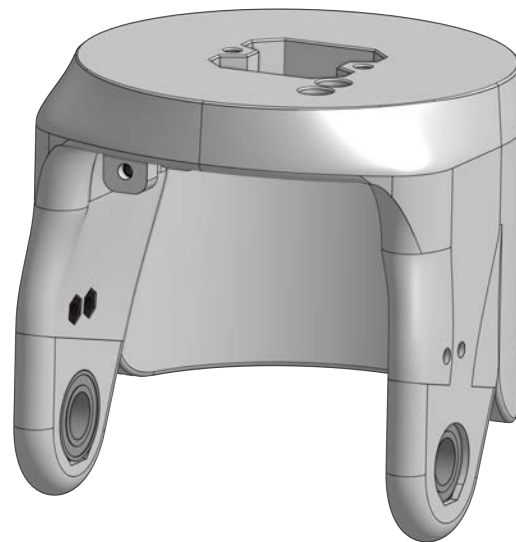
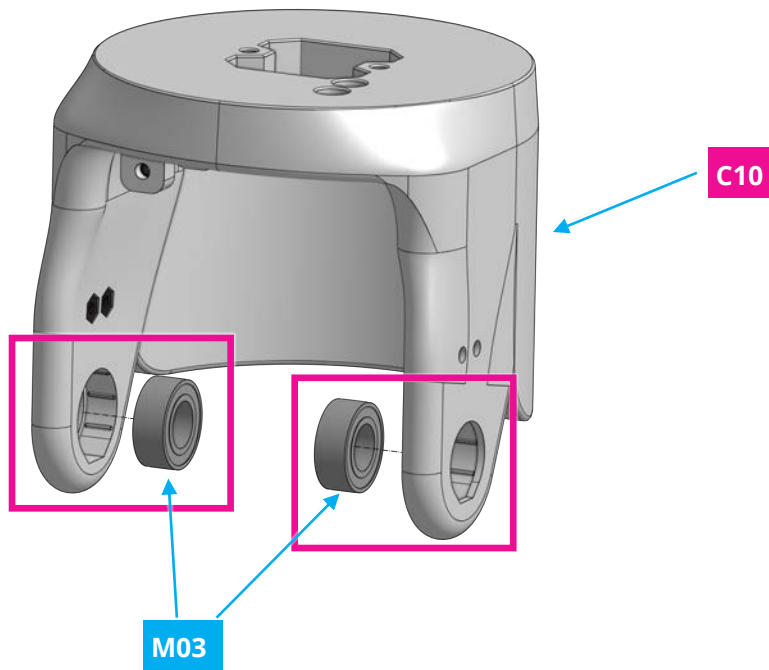


C10



## Step 5b

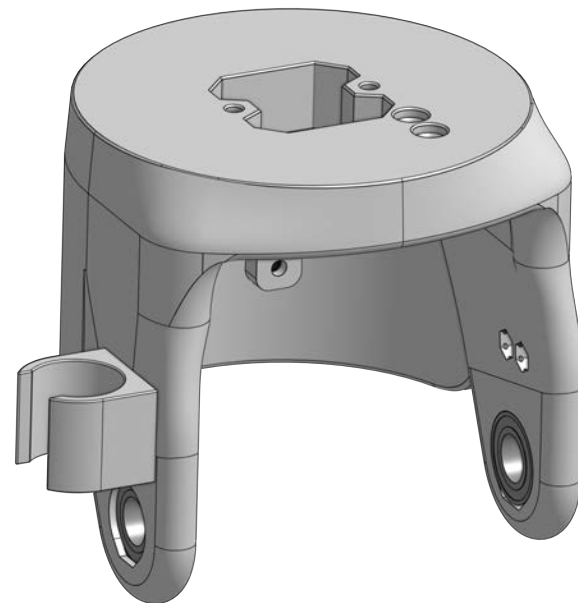
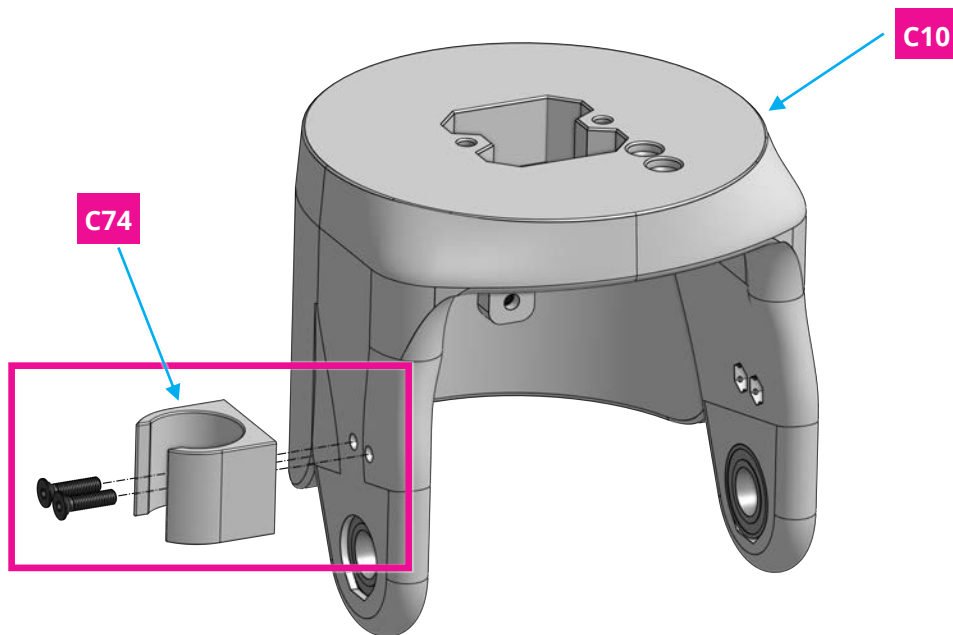
Insert **2 x M03** in **C10**.





## Step 5c

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



## Step 6a

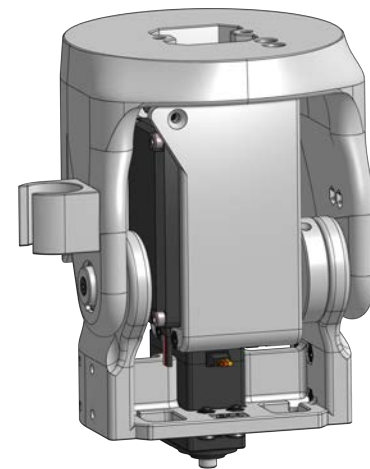
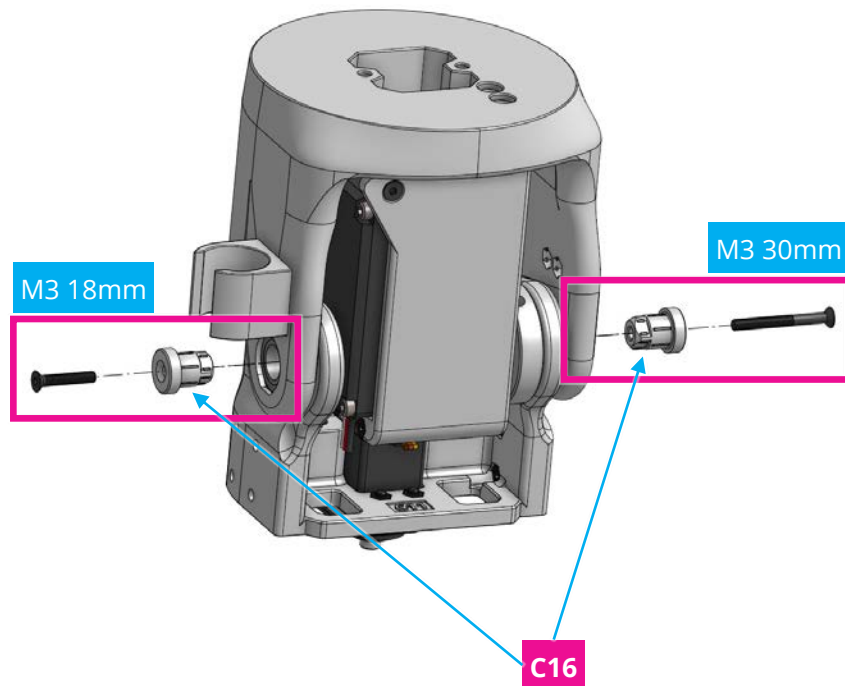
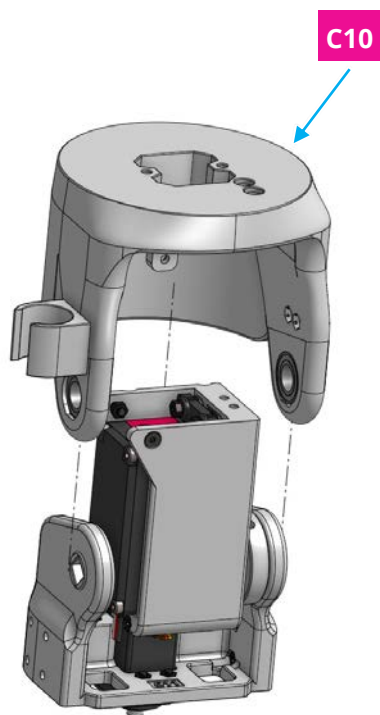
Connect **C10** to assembly from step 4 using **2 x C16**, **1 x M3 18mm screw** and **1 x M3 30mm screw**.



1x

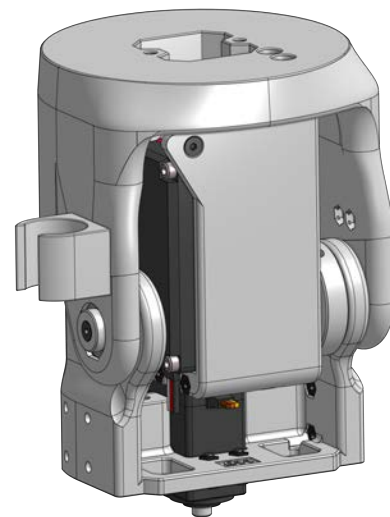
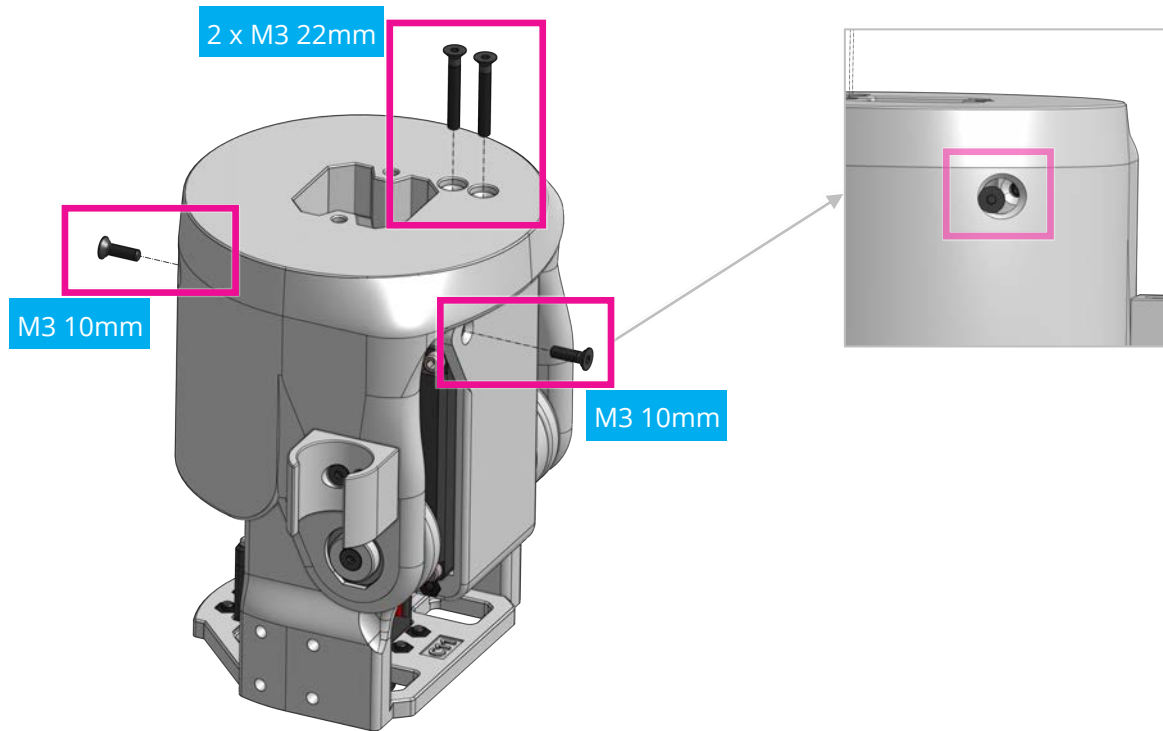


1x



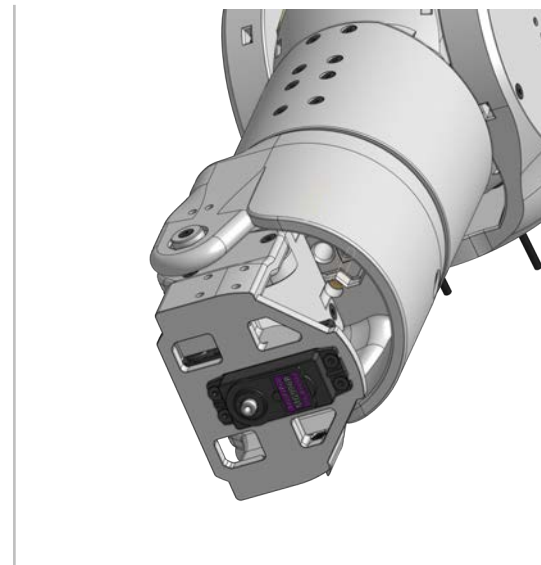
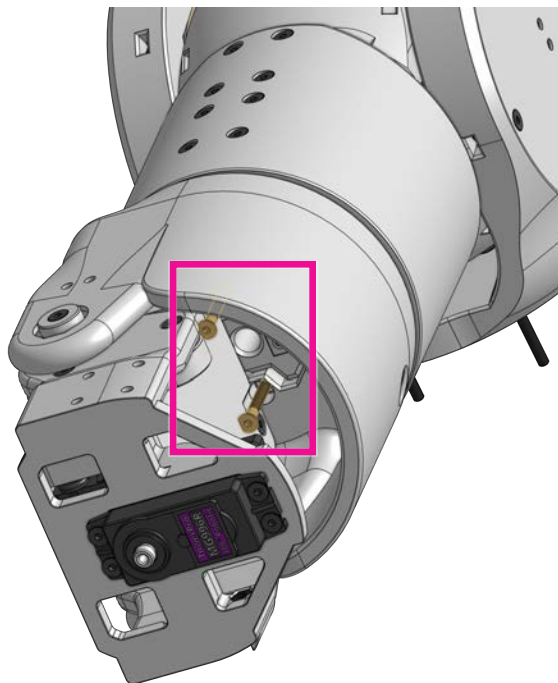
## Step 6b

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



## Step 7

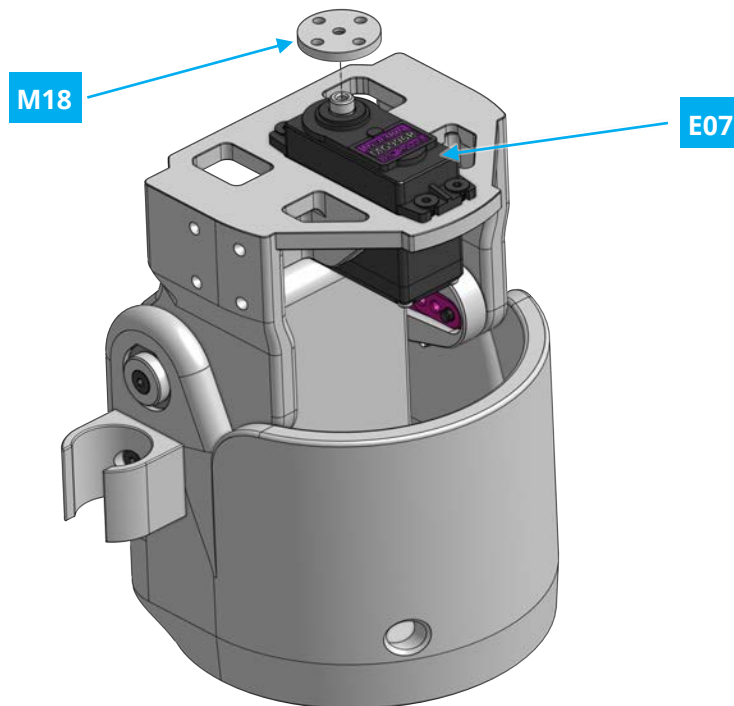
Connect Elbow assembly to shoulder assembly using **2 x M3 25mm screws**. (You can move shoulder joint by 30 degree to easily reach screws)



*Shoulder will be hidden in next steps for better views.*

## Step 8

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

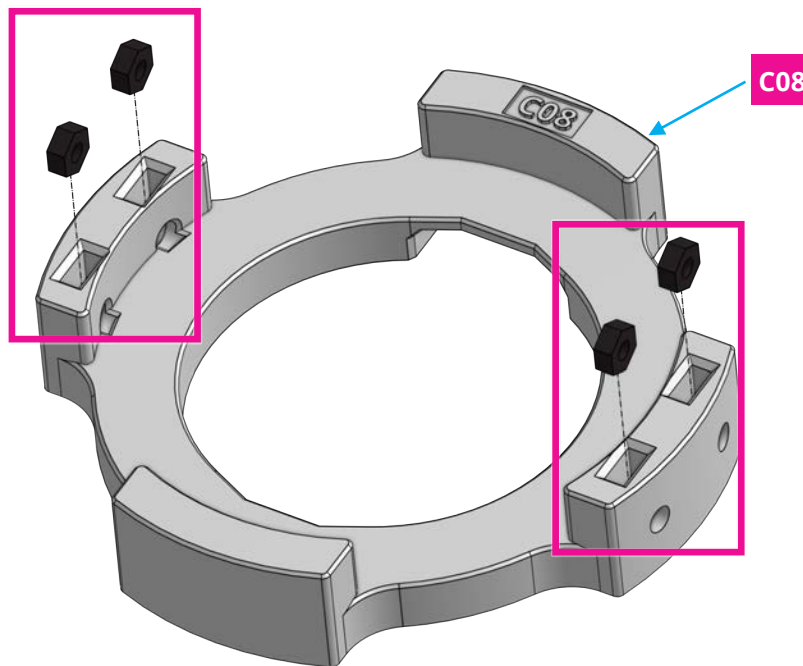


## Step 9a

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



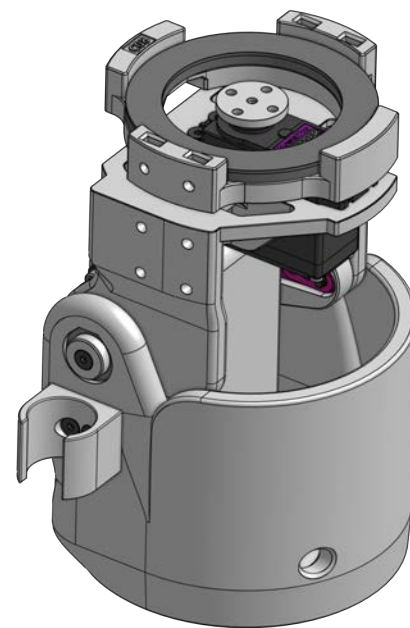
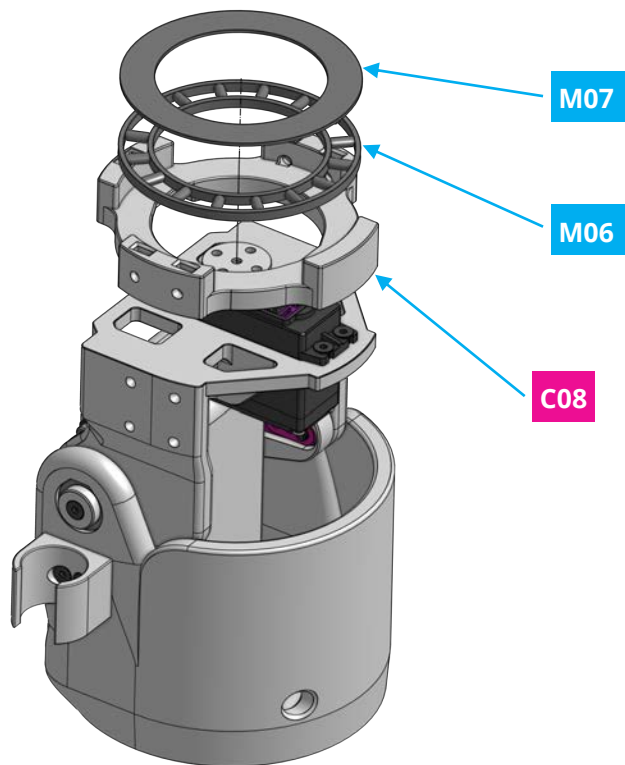
4x



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.

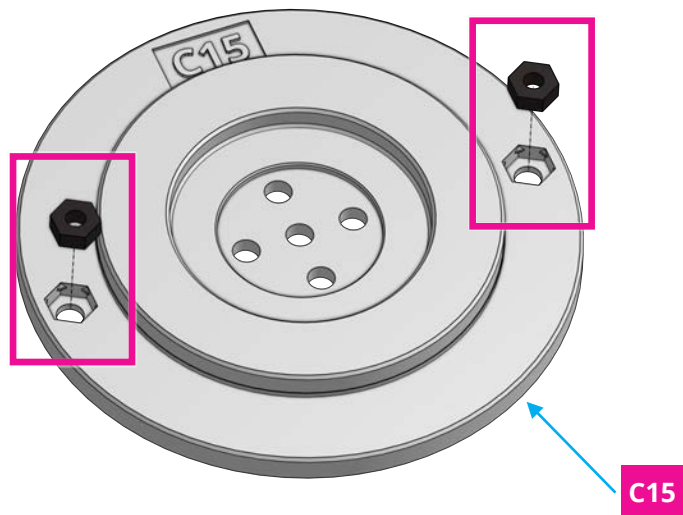
Step 9b

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



Step 10a

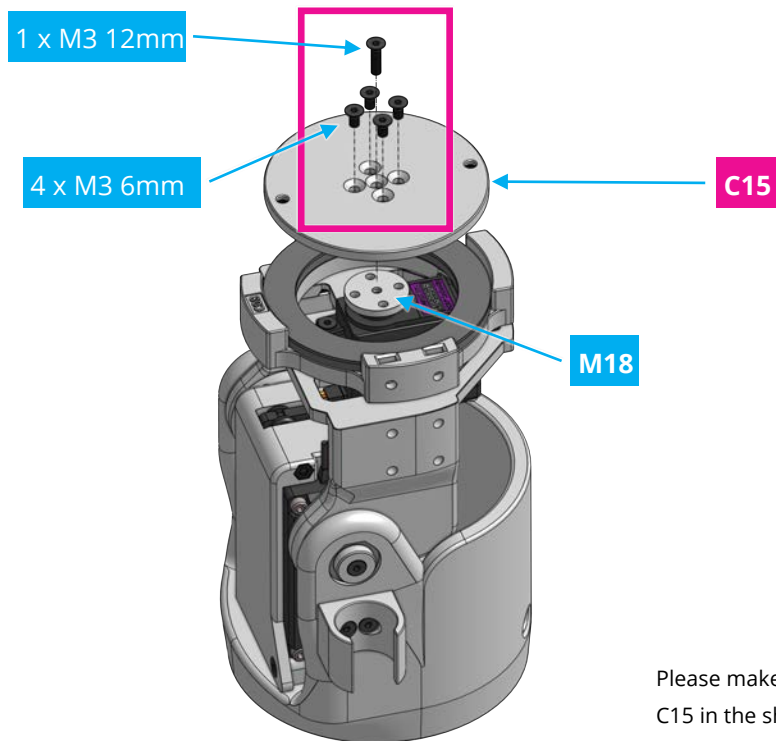
Insert **2 x nuts** in **C15**.



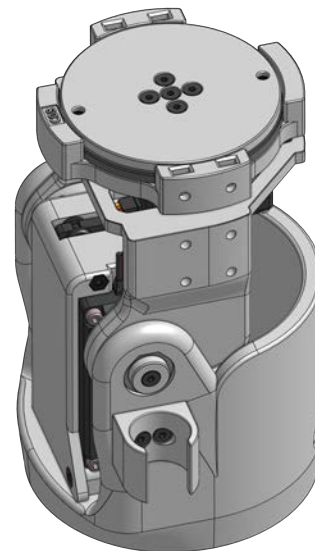


## Step 10b

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



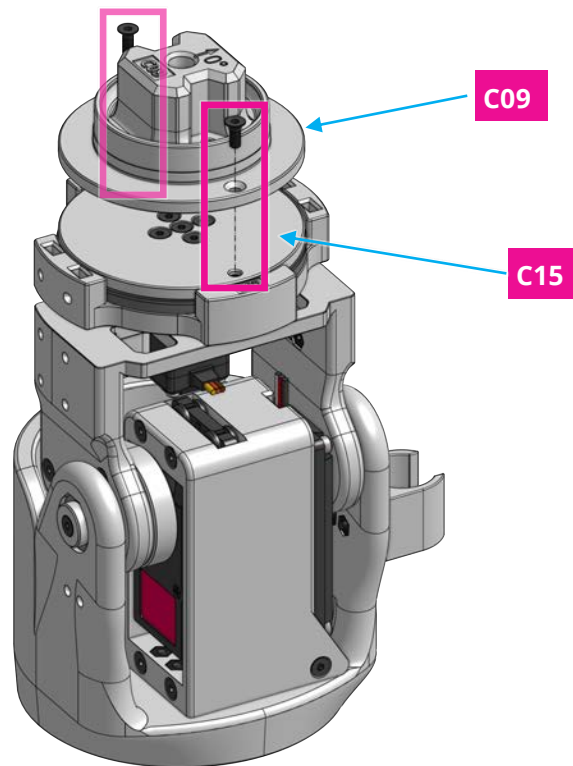
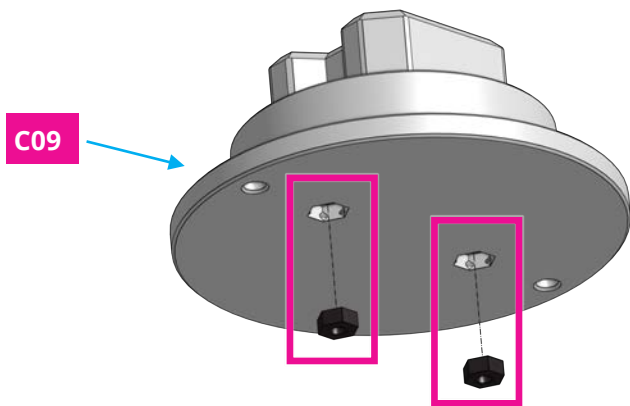
Please make sure, that you connect C15 in the shown orientation.



## Step 10c

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

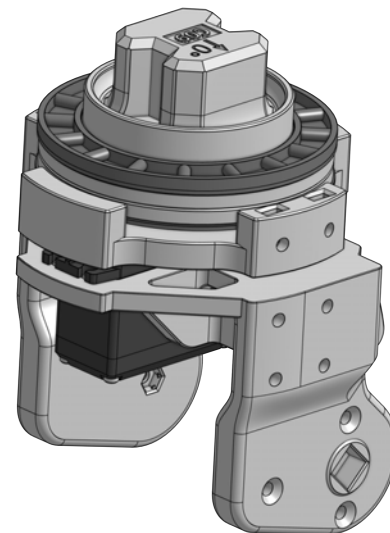
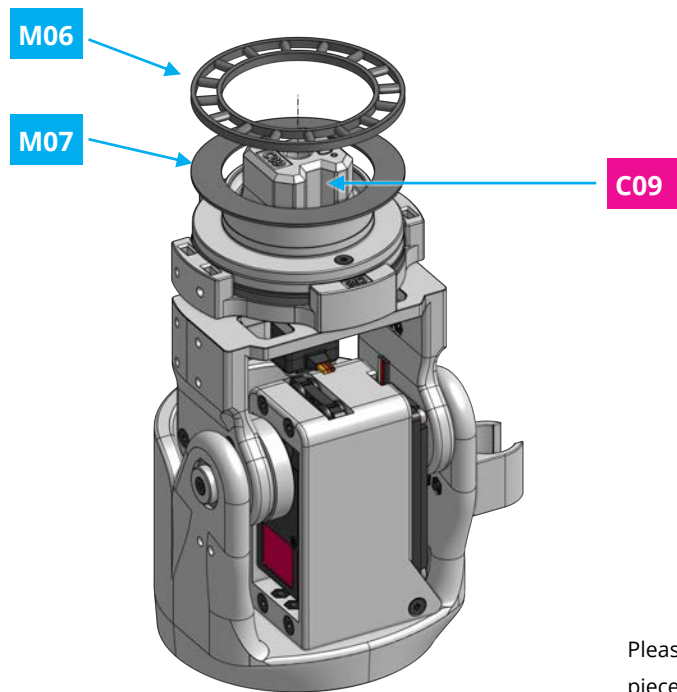
Connect **C09** to **C15** using **2 x 8 mm screws**.



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

## Step 11

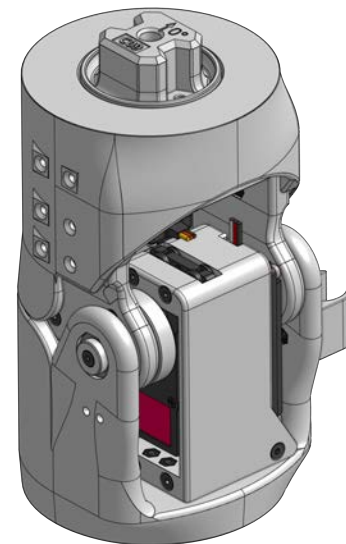
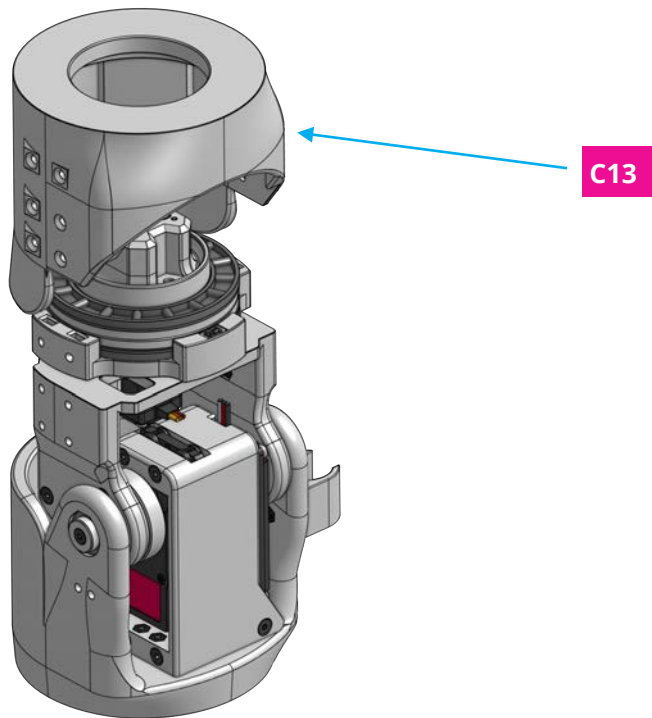
Place **M07** and **M06** on top of **C09**.



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

## Step 12

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

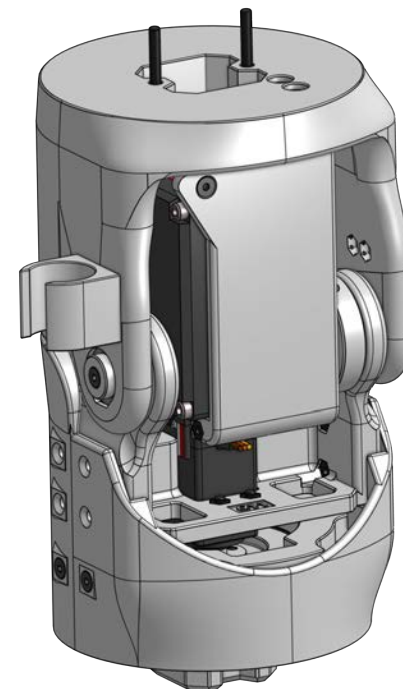
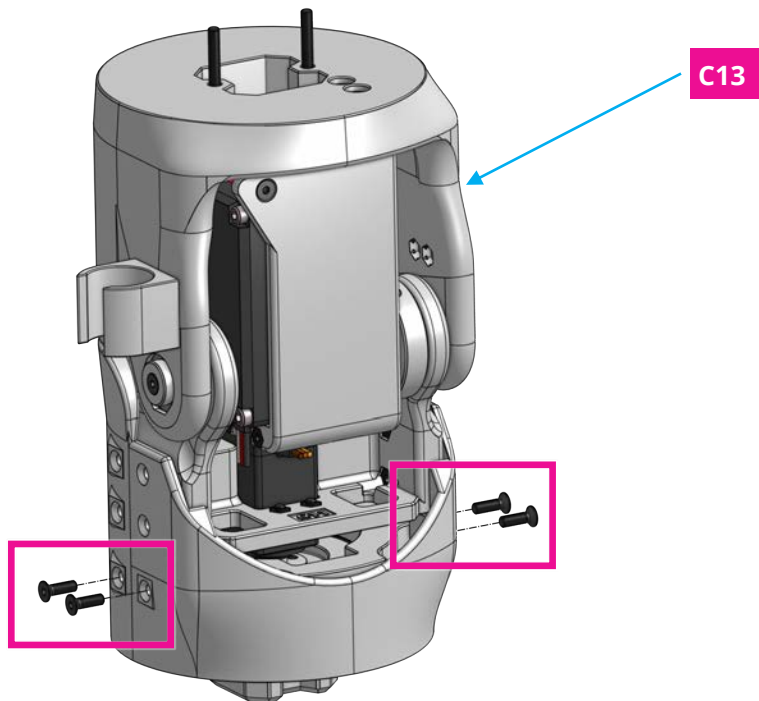


## Step 13

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



4x

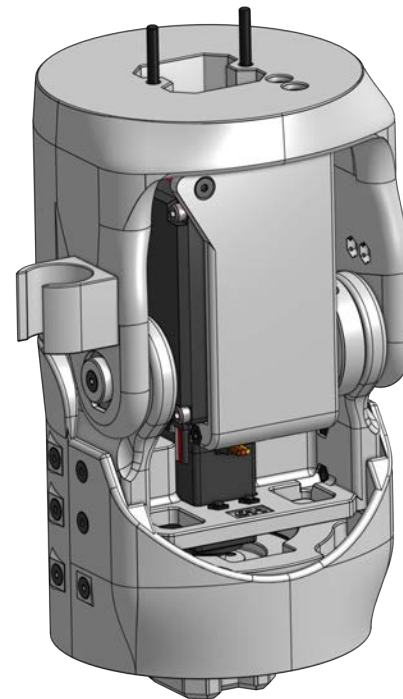
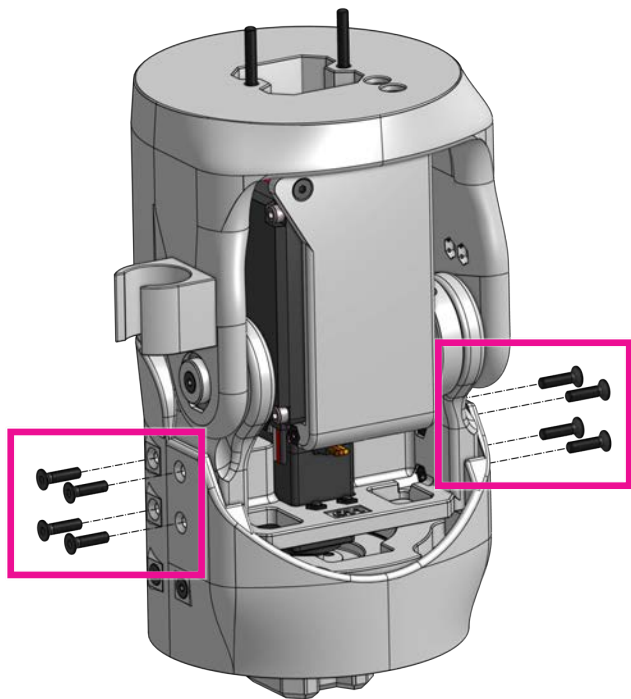


## Step 14

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



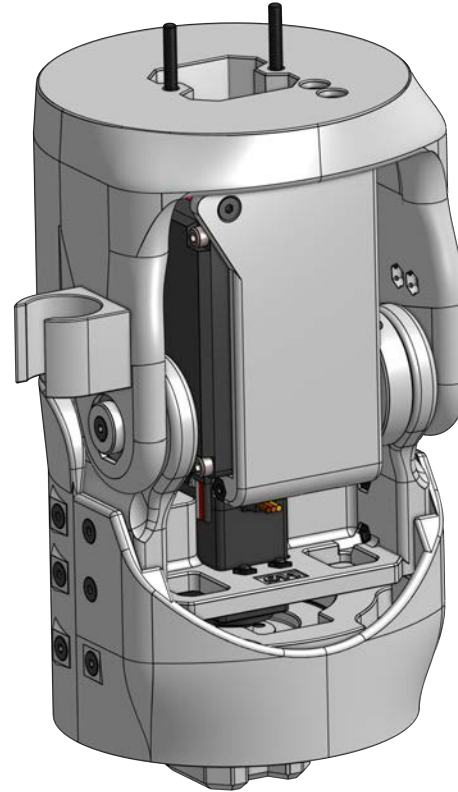
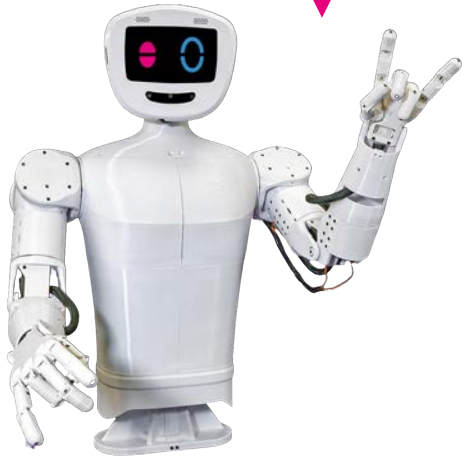
8x



## 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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