

2026

Preliminary measurements and references for AURIS

REPORT ON MEASUREMENTS AND
SPECIFICATIONS OF EACH OF THE MODELED
PARTS



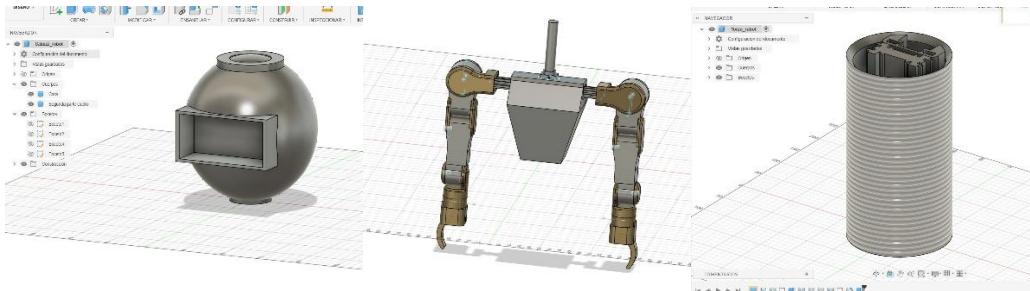
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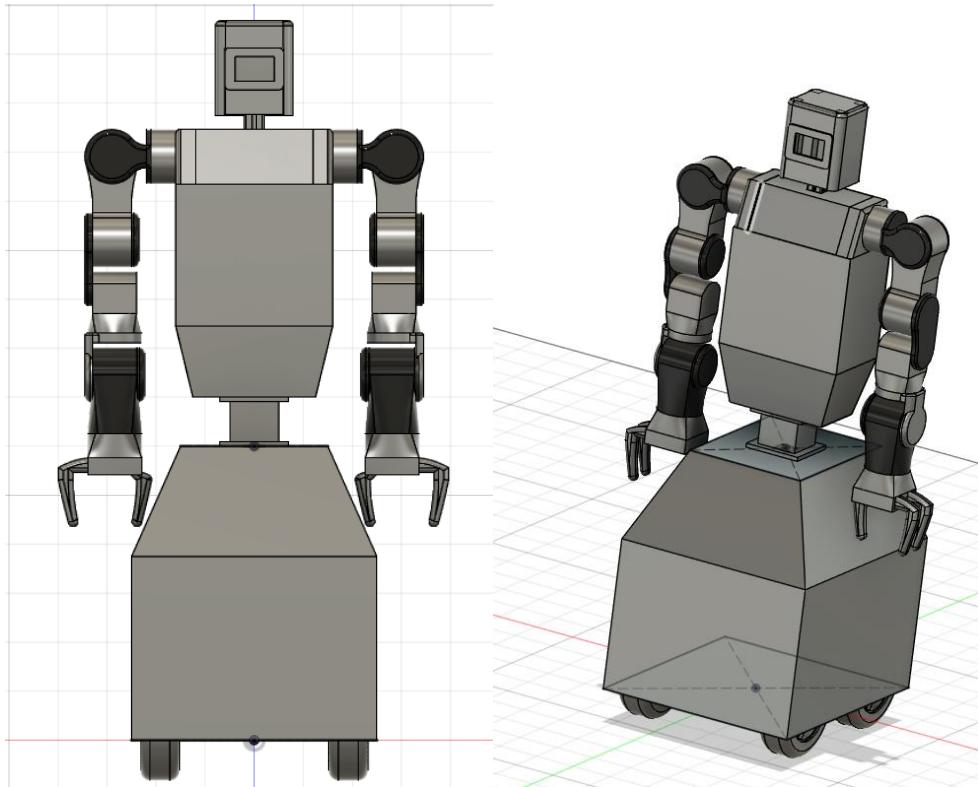


Idea

The idea for the creation of the new model stems from the structural calculation made subsequently based on the initial model.



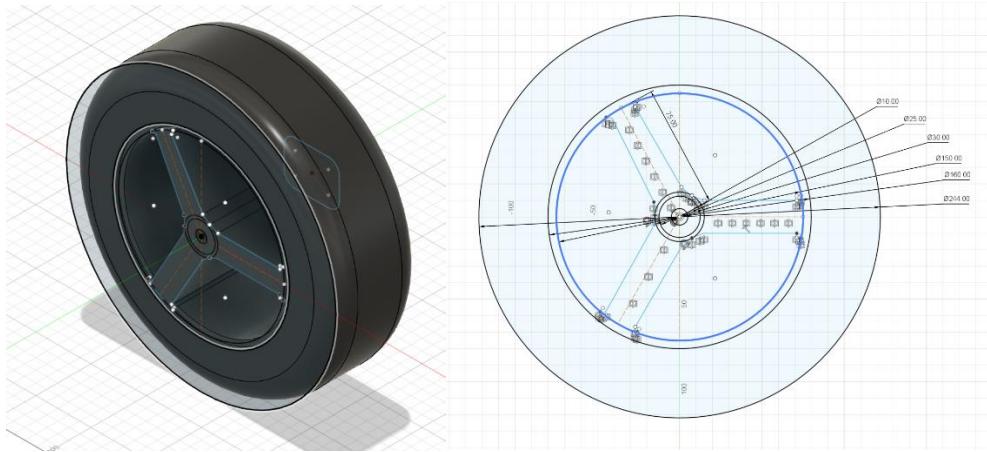
Based on these models, references were taken from the resulting model.





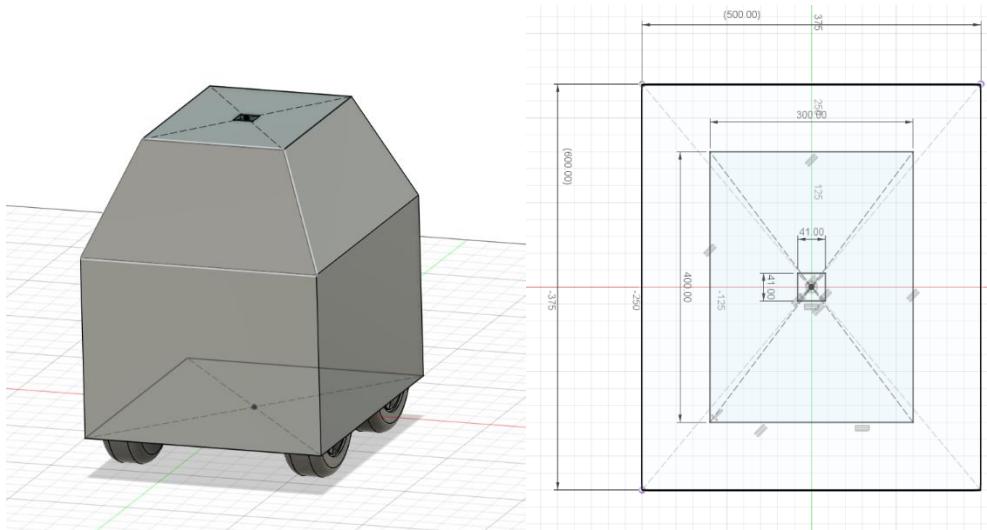
Base and wheels

The base and wheels were modelled using measurements specified in the wheels, these ones will be purchased in a future, and they were also modelled from scratch based on the measurements provided.



They are a DIY 500W 24V 10-INCH DUAL-DRIVE WHEEL MODEL

For the base of the robot, we sought to create a trapezoidal box that would house various elements necessary for the proper functioning of AURIS, which is why its measurements varied continuously after revisions by those in charge.

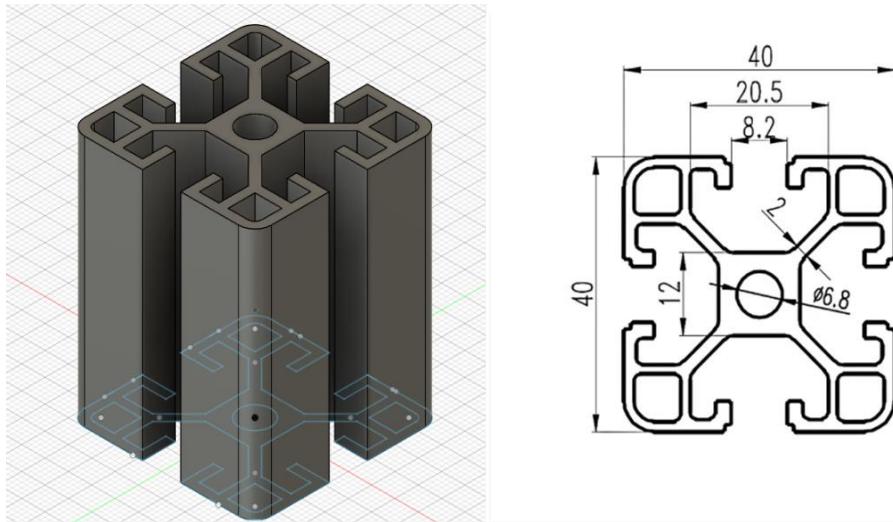




100mm. The hollow is approximately 10mm thick, although this may vary in the future.

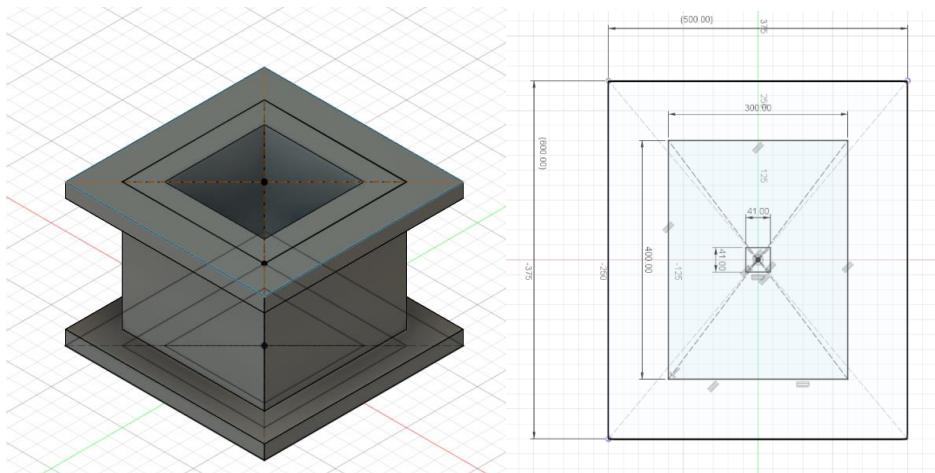
Profile and column

A 40x40 t-slot profile will be used for the profile, which was preliminarily modelled to adjust and check measurements.



This profile will initially be used for the entire wingspan of the AURIS

The column is a pillar that connects the torso to the base of the robot. It is designed to have internal connections that will be directed towards the upper part of the AURIS



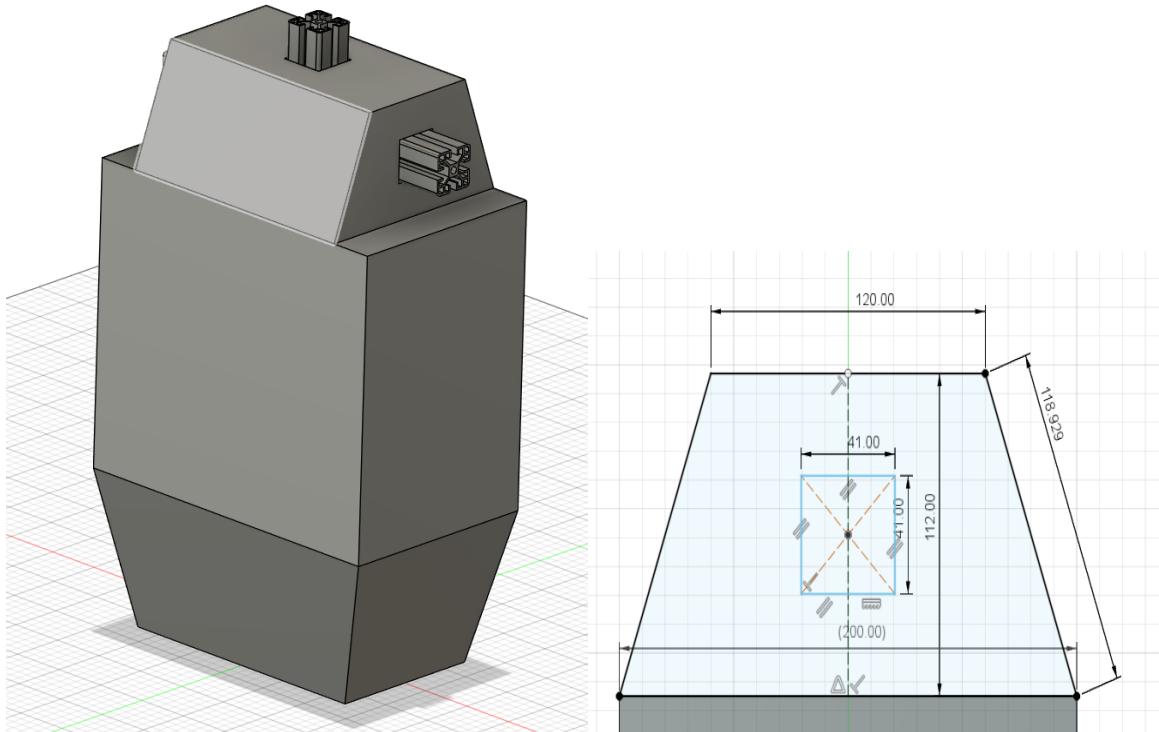
The column measures 140x140x10 at the base with an interior space of 70x70. It has a total height of 100mm and two bases of the same size at each end. It has enough space for the wiring that will pass through this body. There were no



calculated measurements, and it was designed according to the specifications discussed with those in charge.

Torso

The torso was initially design based on a preliminary design, which was then recalled and resized.



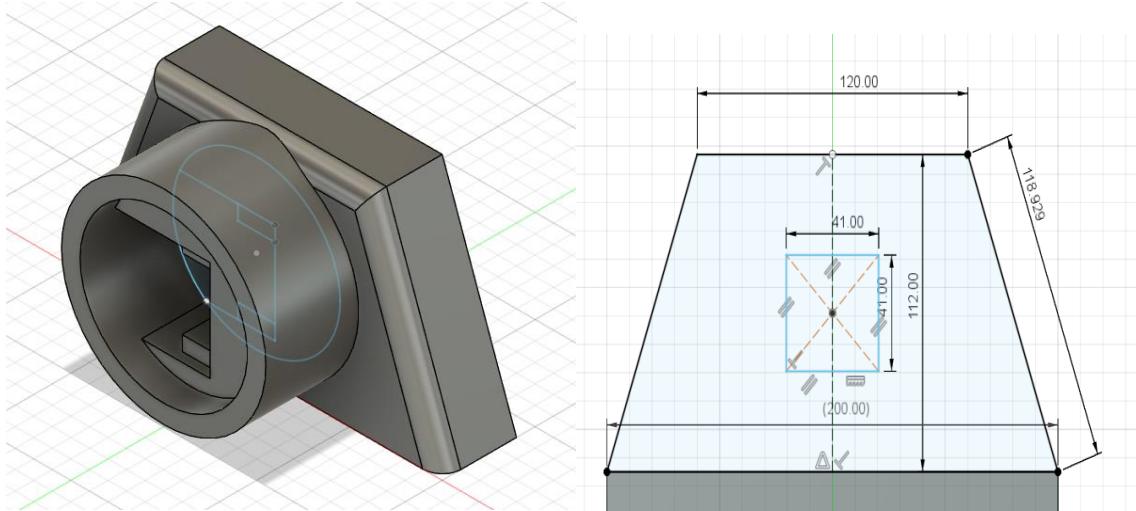
This new torso has a much more robust design compared to the previous one and has new measurements. It has a total height of 547 mm, and its structure consists of three parts: an inverted trapezoid measuring 150 x 200 for the lower rectangle and a 145 mm elevation where the second rectangle measuring 200 x 320 is located.

This figure has a 41x41 hole in its centre through which a profile will pass. The middle box measures 200x300x290 and contains the 41x41 hole for the profile. The last part of the torso is formed by a cut-out trapezoid with a front measurement of 200x112. This rectangle is cut out to a measurement of 120 mm from the centre to create the trapezoid shape. It also has a 41x41 hole through which the profile will pass. The torso may be subject to modifications, the definition of its thickness, the integration of internal bases to support elements, channels or conduits for wiring, a gate, and an emergency button to turn it off.



Shoulders

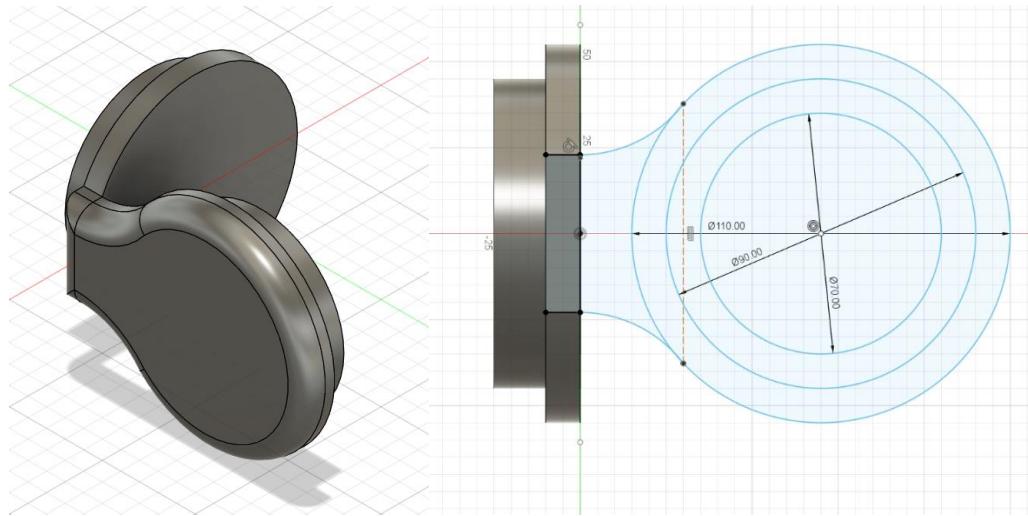
For the design of the shoulders, we sought to create a more comfortable connection between the torso and what will become the arm. This was achieved by creating a space in the torso where it will connect to the shoulder, thus also generating a greater point of mass to support the entire arm.



To model this piece, the measurements of the torso were used, and the aim was to fill in the missing space. This piece is 40 mm long towards the torso and the diameter in which the coupling will fit will be 50 mm long towards the outside.

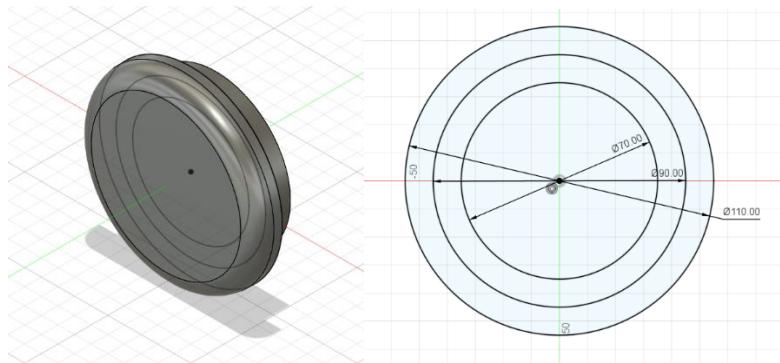
Shoulder coupling and covers

The design of the shoulder coupling presented many complications due to problems with the boat's load capacity and tolerance. This part may be redesigned in the future to prevent future incidents and to ensure that it can support the load of the arm without complications.



The diameter measurements are designed to ensure the correct functioning of the motors that will be integrated into the couplings, with 110 mm for the thickest and outer diameter, 90 mm for the inner diameter, which is aligned with the diameter of the arm, and 70 mm for the smallest diameter, which serves as a support for the connection.

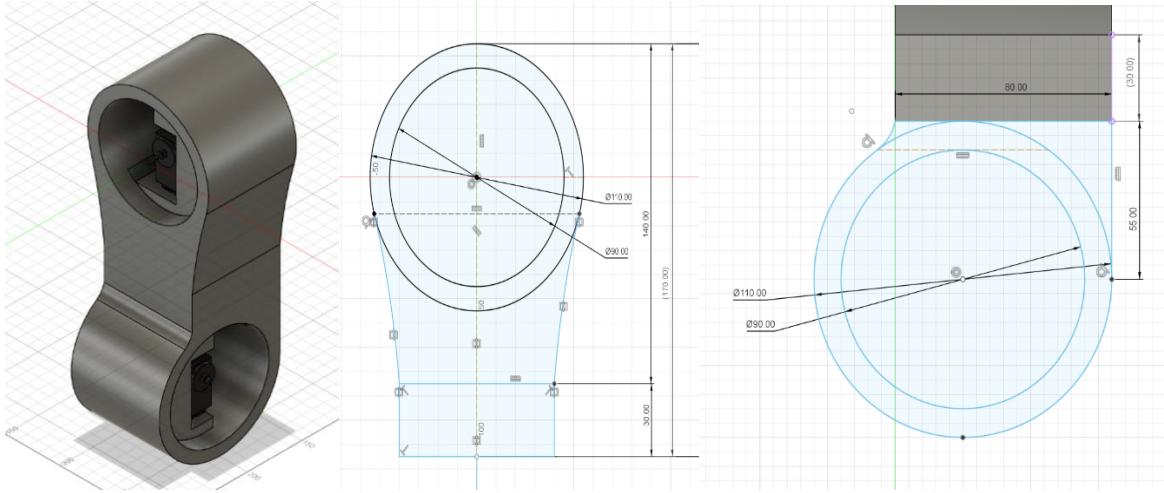
For the covers, the aim was to make small, convenient pieces that will be used to connect the motors internally.



The diameter measurements are designed to fit these into the unprotected parts of the connection.

Arms

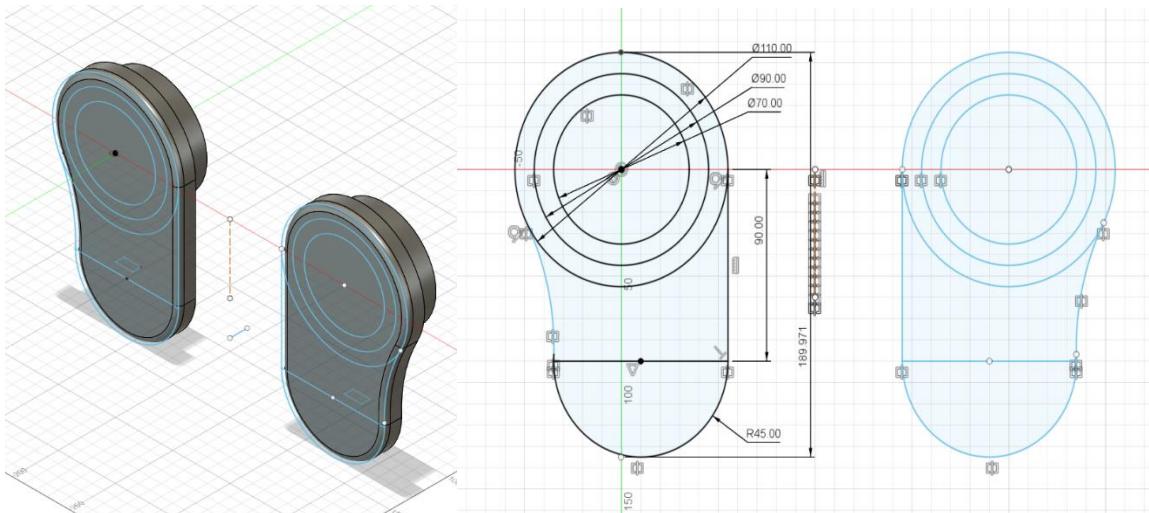
For the arm, we sought to replicate the design proposed as inspiration, and to achieve this, we emerged it with the arm from the preliminary model.



The arm measures 280 mm in total, and its straight parts are 80 x 80. Both connection diameters have the same measurements, which are 110 mm for the outer diameter and 90 mm for the inner diameter. One of the diameters was offset from the centre to create more user-friendly shapes and thus generate better connection points. These diameters will house the motors responsible for generating the rotation to move the arms.

Elbows

For the elbows, we sought to replicate the shape of the arm and maintain the initial centre of the arm.



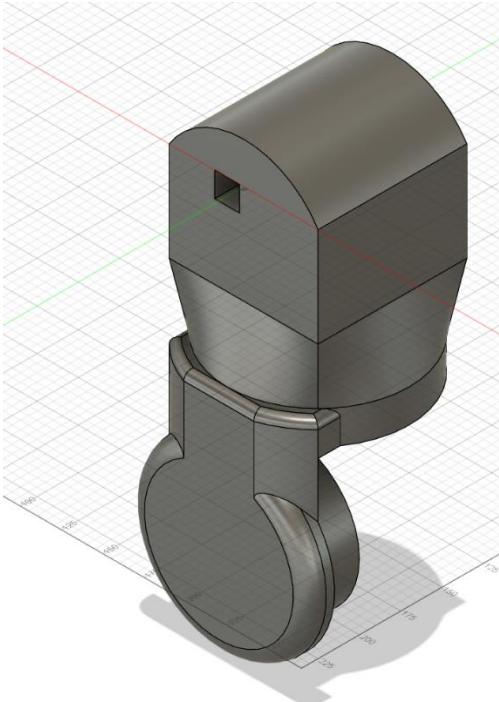
Both elbows have the same measurements, so a single sketch was used. They are 190 mm long and their fitting diameters are 110 mm for the thickest and outer diameter, 90 mm for the inner diameter, which is aligned with the diameter of the



arm, and 70 mm for the smaller diameter, which serves as a support for the connection.

Forearm

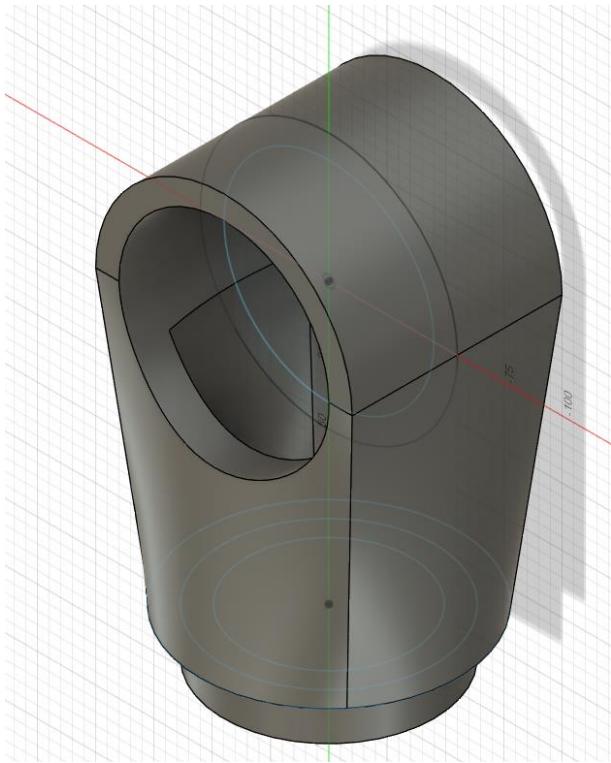
the forearm has several designs, but in the end. The one fit the wrist was adopted by decision of the people in charge



Several shapes were used on the forearm to obtain the final object, which is 265 mm long and 90 x 90 thick, with a diameter of 110 mm for the thickest and outer diameter, 90 mm for the inside, which is aligned with the diameter of the arm, and 70 mm for the smaller diameter, which serves as a support for the connection. This piece will be connected to the wrist and elbow and may internally contain the heart sensor.

Wrist

For the wrists, we wanted to make a piece without rigid edges, which is designed to connect the forearm to the hand.

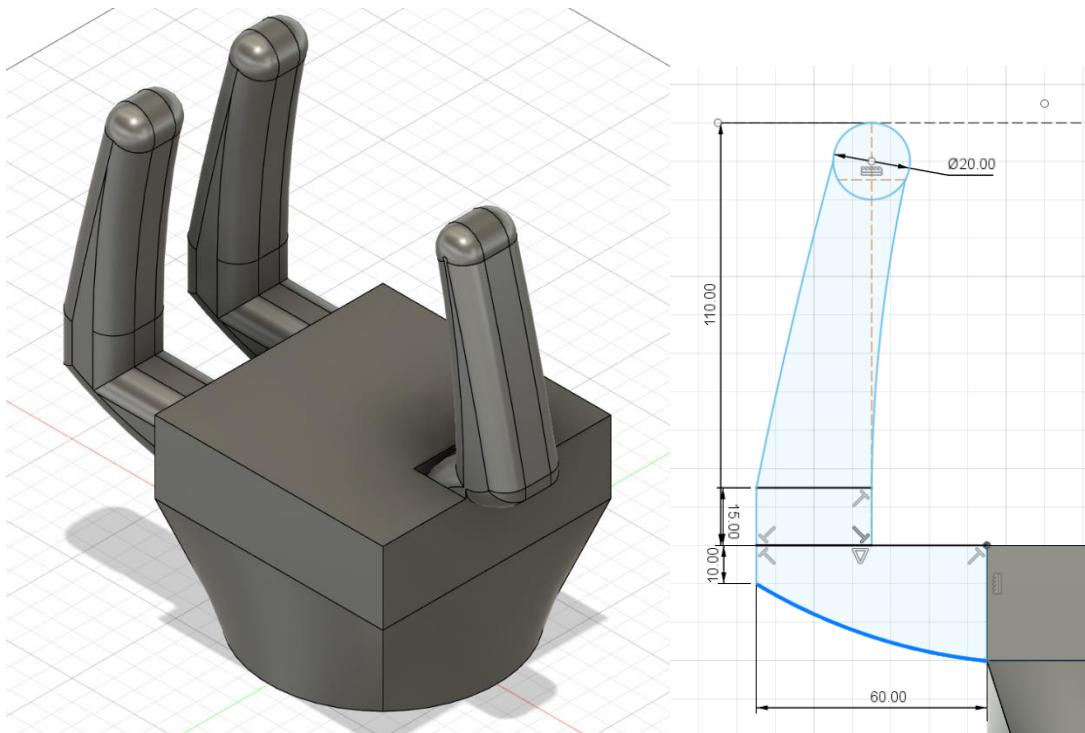


This piece is 175 mm long, and the diameter that will be counted with the forearm is 110 mm for the larger diameter and 90 mm for the smaller diameter. For the part that connects to the hand, the diameters are 110 mm for the thickest and outer diameter, 90 mm for the inner diameter, which is aligned with the diameter of the arm, and 70 mm for the smaller diameter, which serves as a support for the connection.



Hand

For the hand, we considered that there would be two independent fingers with movement and one in front of them that would be fixed. The design is inspirated by a kind of claw.



The length from the base of the hand, to what would be the palm is 85mm, and from the base to the fingertips is 190mm. The fingers measure 110mm from the base of the palm to the tip, and at the fingertips they have a diameter of 20mm and a 60mm support, which will be a retractable part that generates movement