

Introduction

Thank you for downloading this draft project of the CAD modeling guide for Plasticity that I am currently developing.

My goal is to create a clear and practical resource that provides a systematic and efficient approach to modeling. For this reason, I would like to present the workflow I developed based on my experience with technical drawing and CAD-oriented design.

I hope this approach can help you structure your creative process once you become familiar with the UI and the basic modeling tools in Plasticity.

The model presented below is a first example of how the guide will be structured.

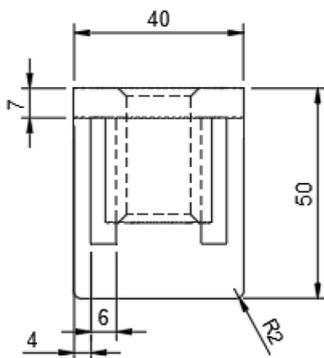
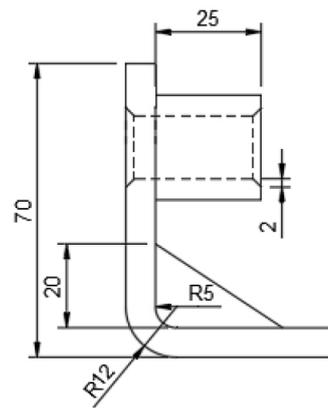
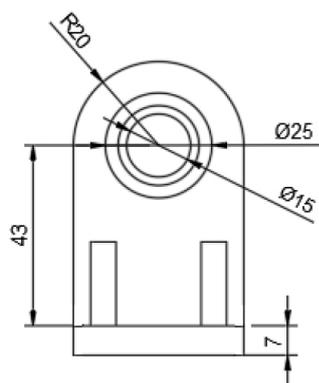
The design is a simple L-shaped bracket, refined to include several fundamental operations such as extrusion, mirroring, and filleting.

For users who already have experience with 3D modeling, this model will probably be very easy to reproduce. However, I believe it works well as a first practical exercise to understand the logic of the software.

Thank you in advance for any feedback you may share on Reddit.

Enjoy the guide and happy modeling.

Exercise 1



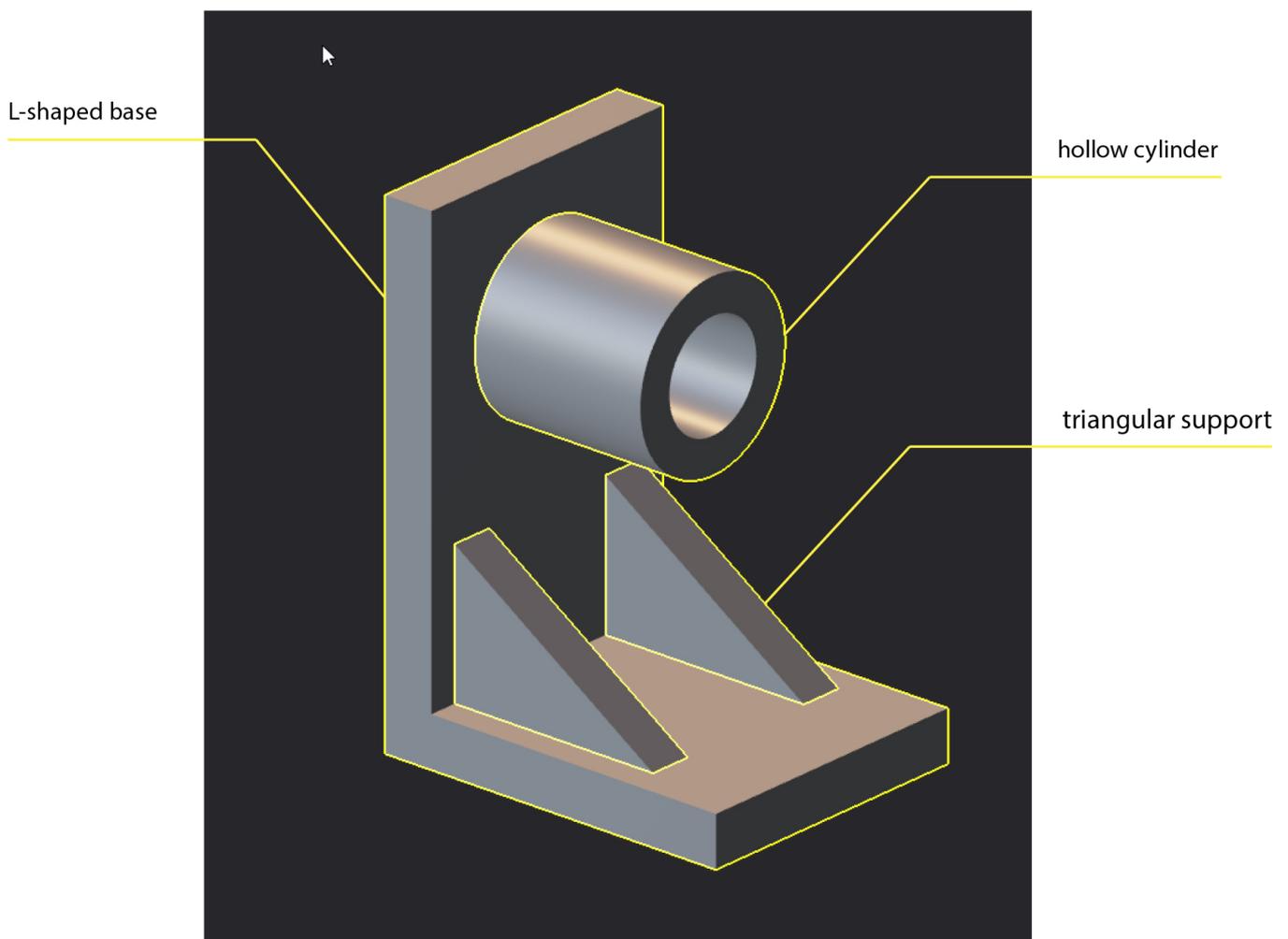
The first step is to break down the model into the simplest possible shapes
Often the difficulty in reproducing a complex model comes from the difficulty of visualizing it as a combination of simple elements. In reality, almost every object can be constructed from basic geometric forms.
In my experience, applying this kind of reverse engineering process helps to better understand:

- how the model is distributed in space
- how different parts connect to each other
- which modeling operations will be required

For this example, the model can be decomposed into three main elements:

- an L-shaped base
- a hollow cylinder
- two triangular supports

These will be the main construction elements used to build the bracket.



Step 1 | Base construction lines

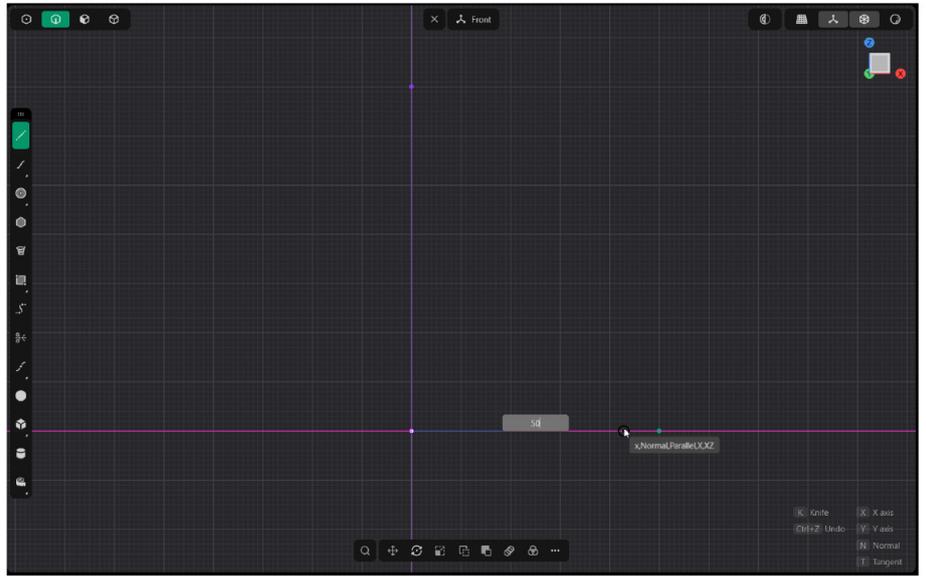
Activate Line Mode by pressing 2.

Starting from the origin of the coordinate system, create a vertical *line* along the Z axis using **Shift + A**.

Before confirming the line, press **Tab** and manually enter the length 70 mm.

Repeat the same procedure to create a horizontal line of 50 mm starting from the same origin point.

These two lines define the main proportions of the L-shaped bracket.



Step 2 | Bracket thickness

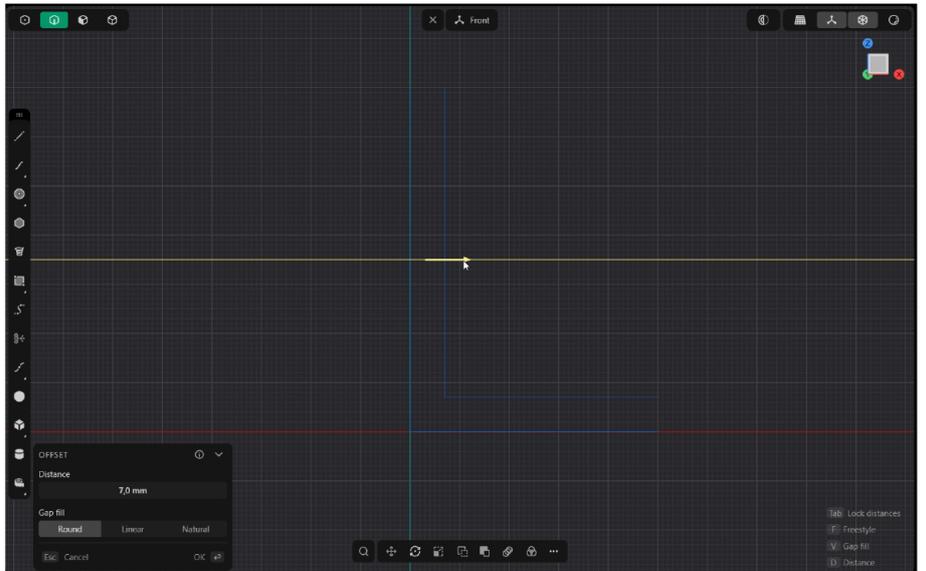
Select both lines using a box selection (hold the left mouse button and drag across the lines).

Join the lines using **J**.

With the lines still selected, activate the **Offset** tool by pressing **O**.

Drag the arrow and set the offset value to 7 mm.

This operation creates the thickness of the bracket profile.

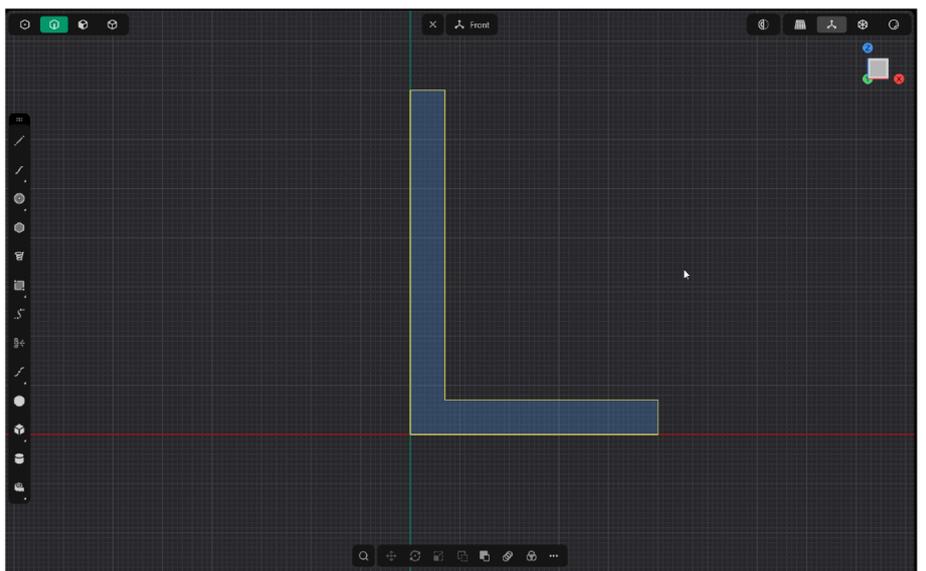


Step 3 | Close the profile

Use **Shift + A** to draw two new lines connecting the open ends of the offset geometry.

When the profile is correctly closed, the area inside the shape will appear as a light blue surface, indicating that the sketch forms a valid planar region.

Finally, select all the lines and press **J** to merge them into a single element.

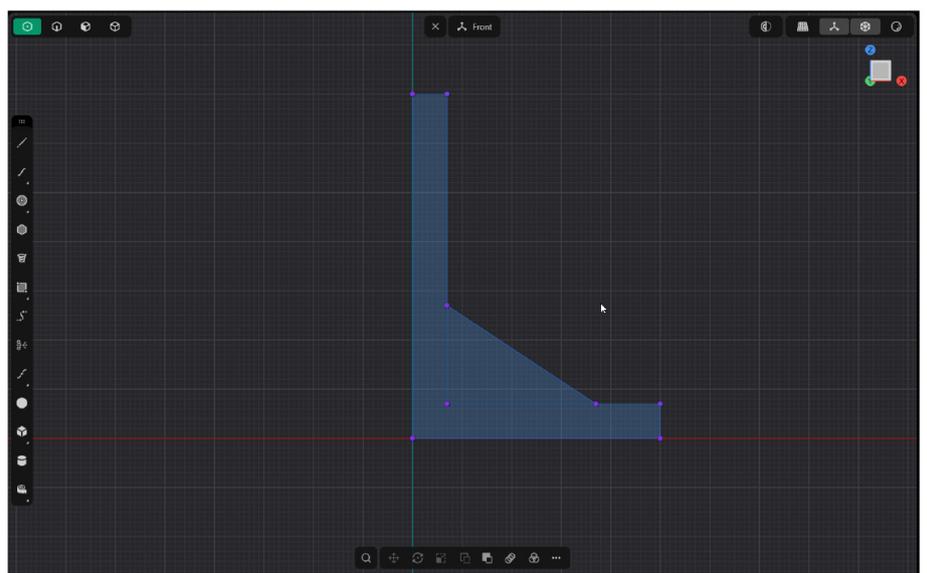
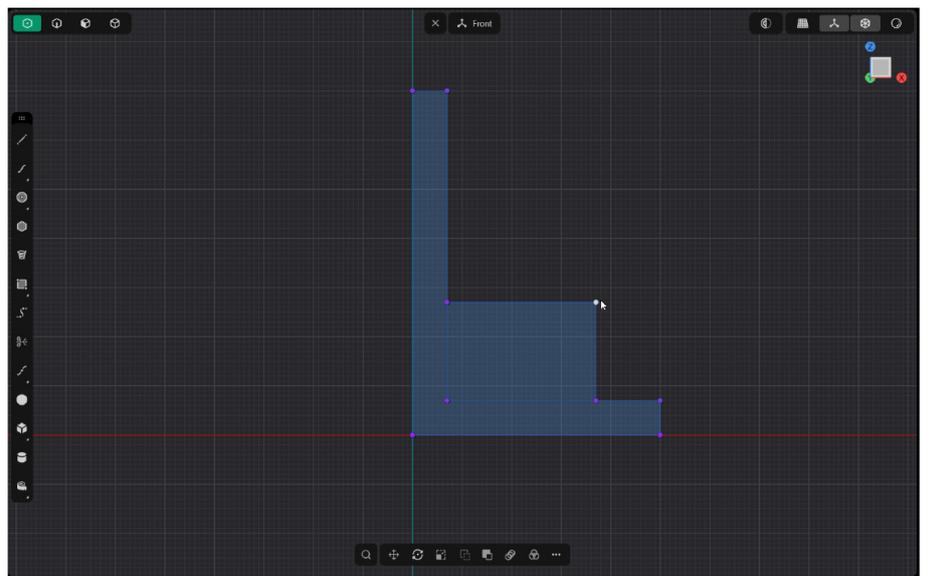
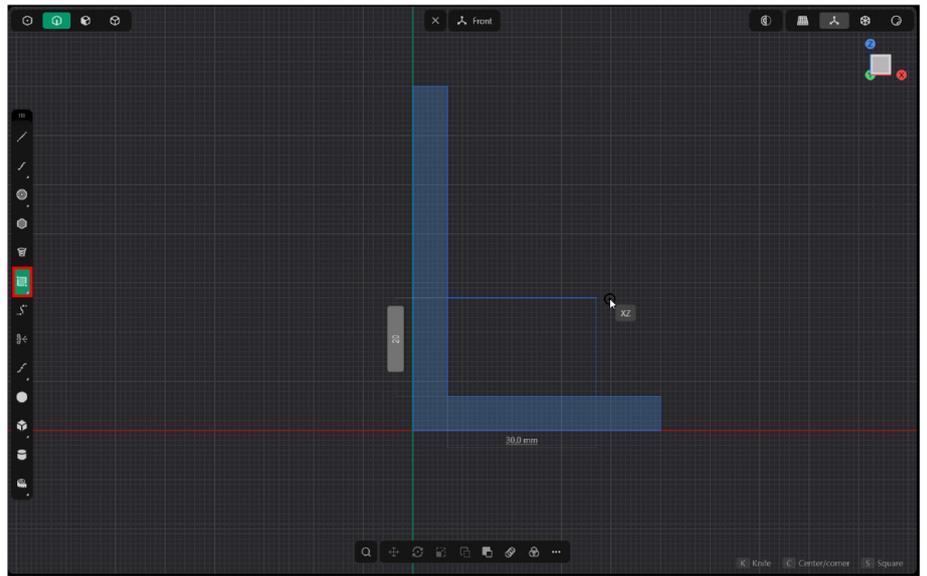


Step 4 | Create the triangular supports

To create the triangular supports, activate the **Corner rectangle** tool.

Starting from the inner corner of the L-shape, draw a rectangle with the appropriate height and length.

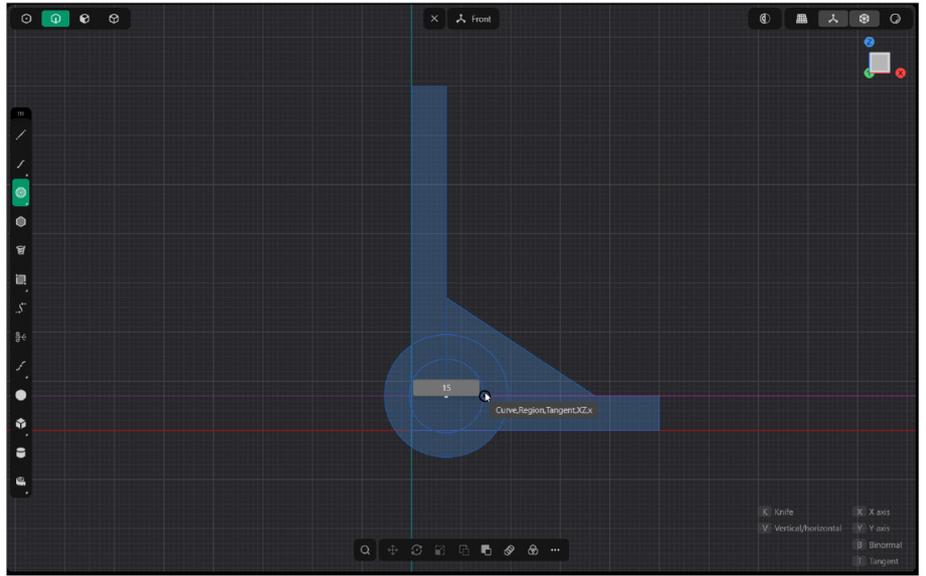
Switch to **Point mode** by pressing **1**, select the unnecessary vertex, and **delete** it using **X**. This operation transforms the rectangle into a triangle.



Step 5 | Cylindrical feature

From the same inner corner of the bracket, draw two circles representing the outer and inner diameters of the cylinder.

Set the diameters to 25 mm and 15 mm

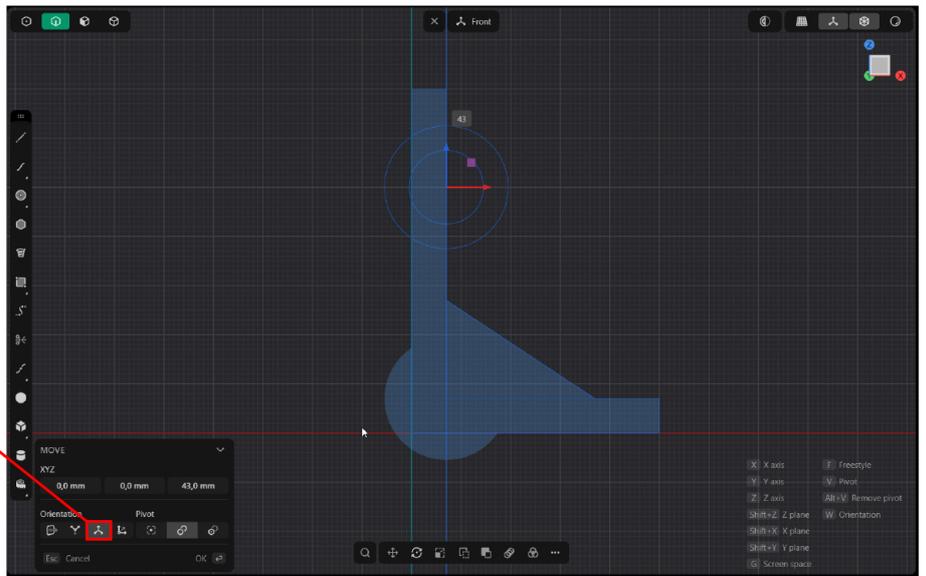


Step 6 | Position the cylinder

Select both circles and activate the **Move** tool by pressing **G**.

Using the input box, move the circles 43 mm along the Z axis.

If the gizmo appears to be oriented incorrectly, make sure that **construction plane** is selected as the *orientation* mode

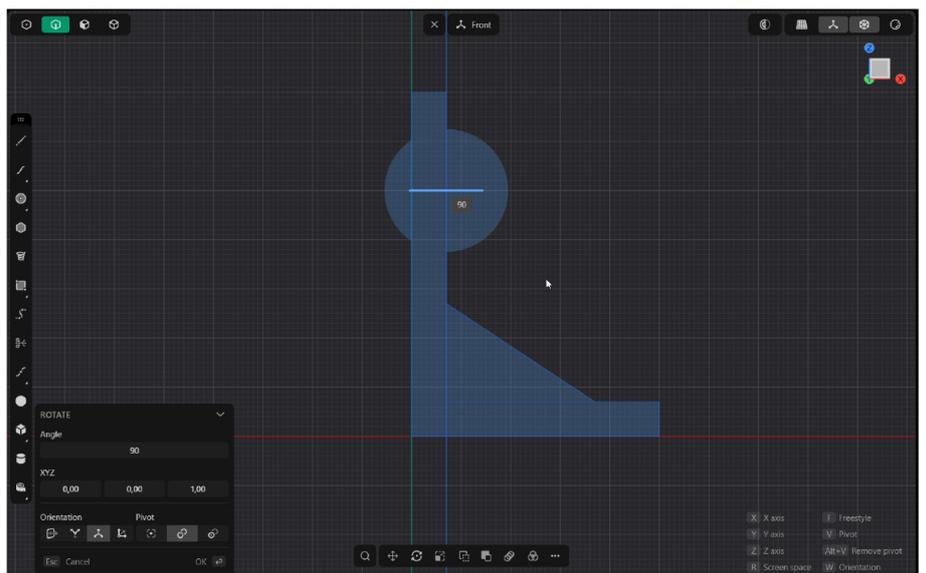


Step 7 | Rotate the circles

With the circles still selected, activate the **Rotate** tool using **R**.

Rotate the circles 90° around the axis parallel to the X plane.

This aligns the circular profile with the bracket body and places them in the correct position.



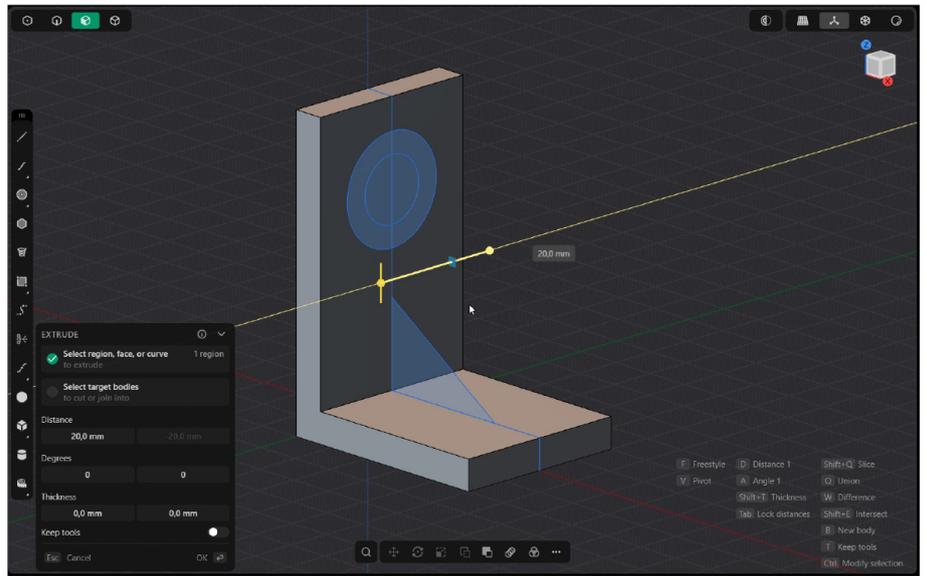
Step 8 | Extrude the L-shaped base

Switch to **Face mode** by pressing **3** and select the surface of the L-shaped profile.

Drag the yellow gizmo point to extrude the surface.

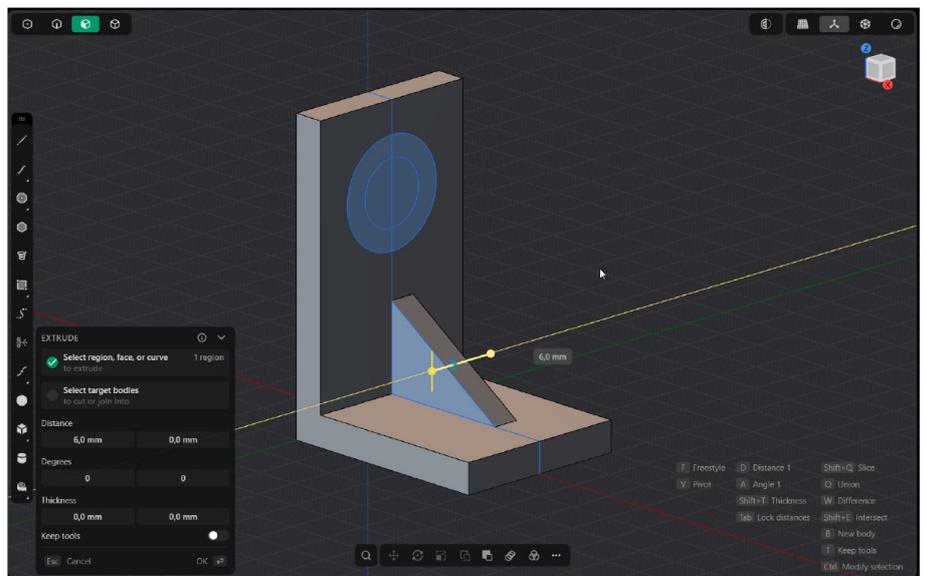
Press **Tab** to enable **symmetric extrusion**, so that the surface is extruded in both directions.

In the input box, enter a value of 40 mm and confirm the operation.

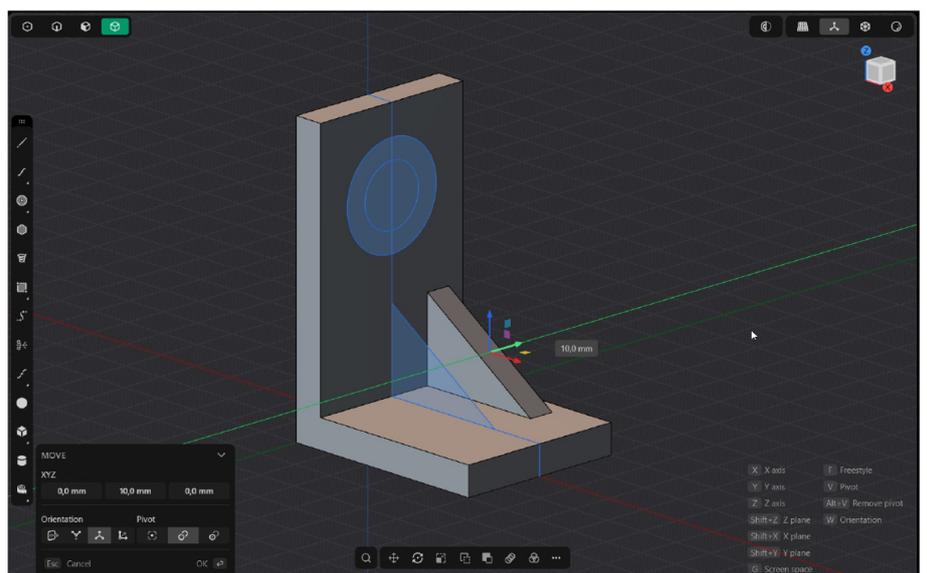


Step 9 | Extrude the triangular support

Select the triangular surface and repeat the extrusion with a value of 6 mm.



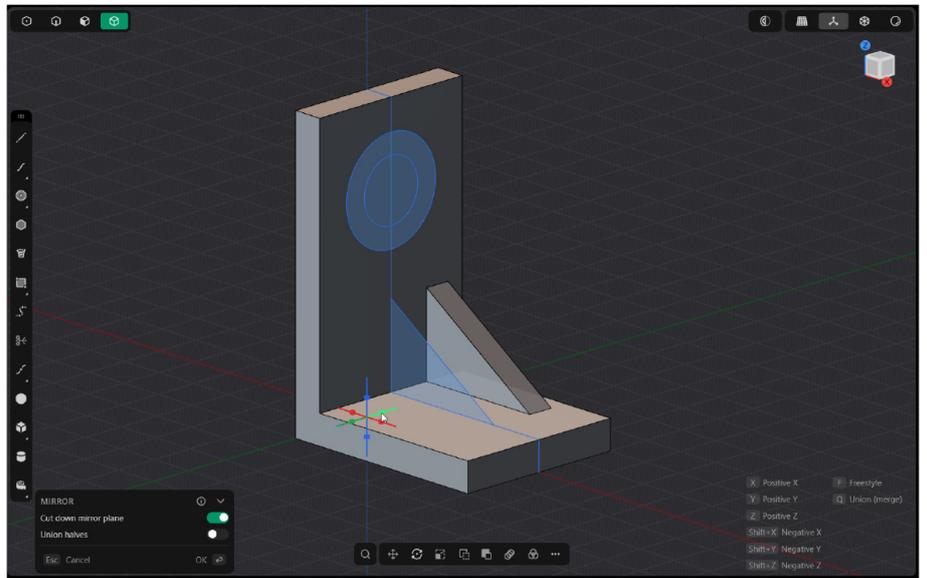
Switch to **Sheet & solid mode** using **4**. Select the support and move it with **G** 10 mm along the Y axis to position it correctly.



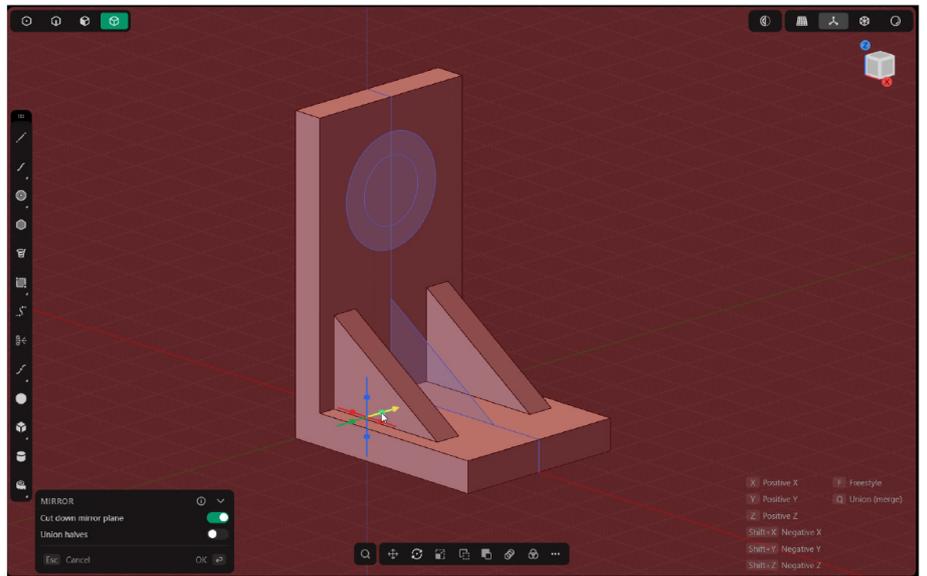
Step 10 | Mirror the support

With the support still selected, activate the **Mirror** tool using **Alt + X**.

Using the gizmo, select the Y axis as the mirror axis and confirm the operation.



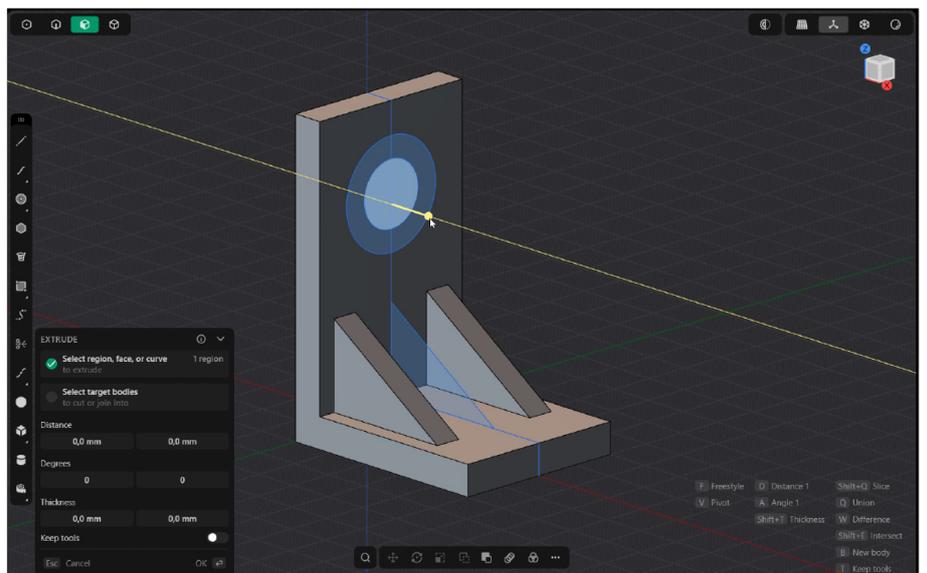
This will create a second mirrored support.



Step 11 | Create the hole

To generate the hole passing through both the cylinder and the bracket, select the circular face of the inner circle and extrude it toward the bracke.

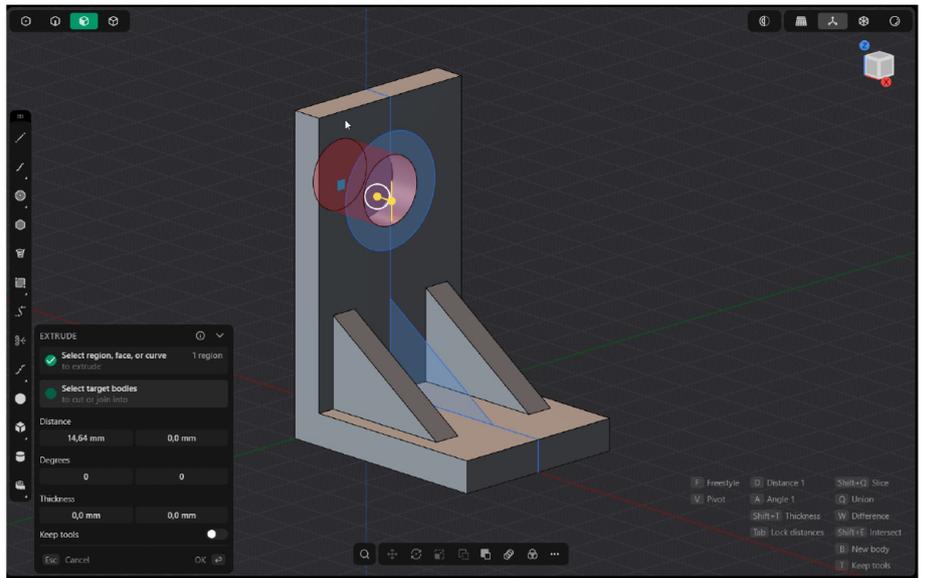
Confirm with Right Click to create the hole.



Then activate the **Difference boolean** operation by pressing **W**.

Following the instructions in the left panel, select the bracket as the target object. The cylinder should now appear red, indicating the subtraction operation.

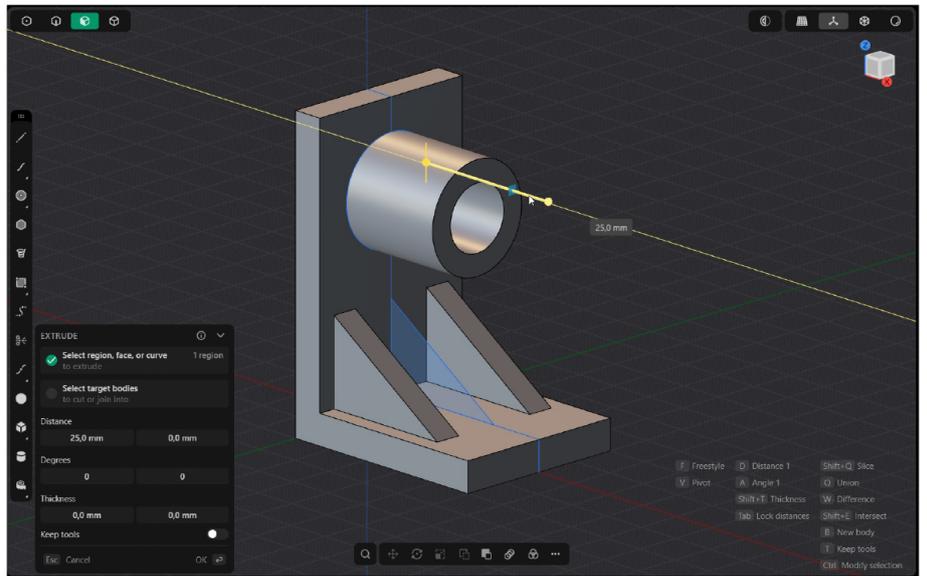
Confirm to create the hole.



Step 12 | Hollow cylindrical section

Select the area between the two circles (25 mm and 15 mm).

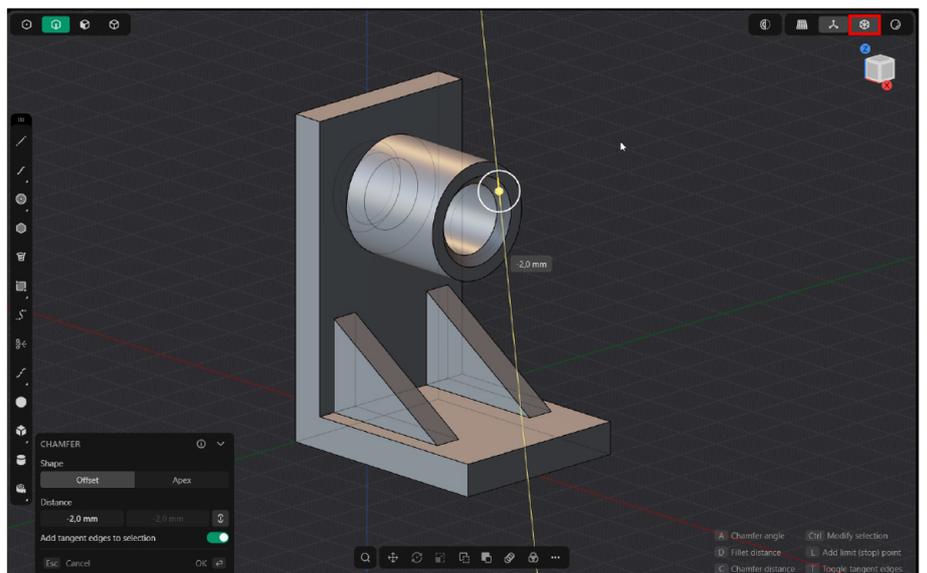
Extrude the region 25 mm outward to generate the hollow cylindrical feature.



Step 13 | Chamfer

Select the two inner edges of the cylinder. If the edges are not visible, toggle **solid transparency** using **Alt + Z**.

The **Fillet tool** will appear automatically. Enter **-2 mm** in the **distance** field to create a chamfer.



Step 14 | Fillets

Create the following fillets using the same procedure:

- Bottom edges: 5 mm
- Inner corner: 5 mm
- Outer corner: 12 mm

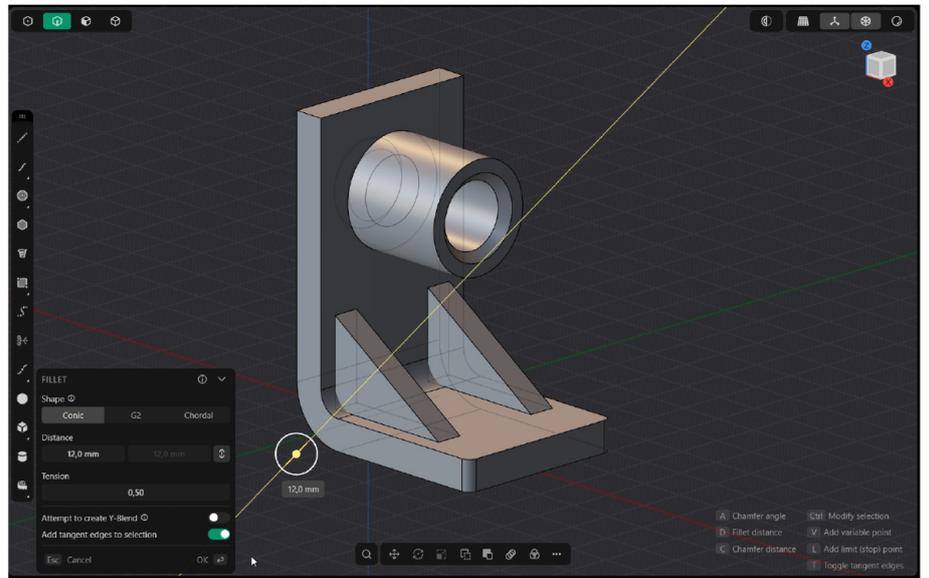
This proportion creates a balanced transition between the internal and external radii.

As a rule of thumb, the *outer fillet radius* can be calculated as:

inner radius + distance between edges

In this case:

$$5 \text{ mm} + 7 \text{ mm} = 12 \text{ mm}$$

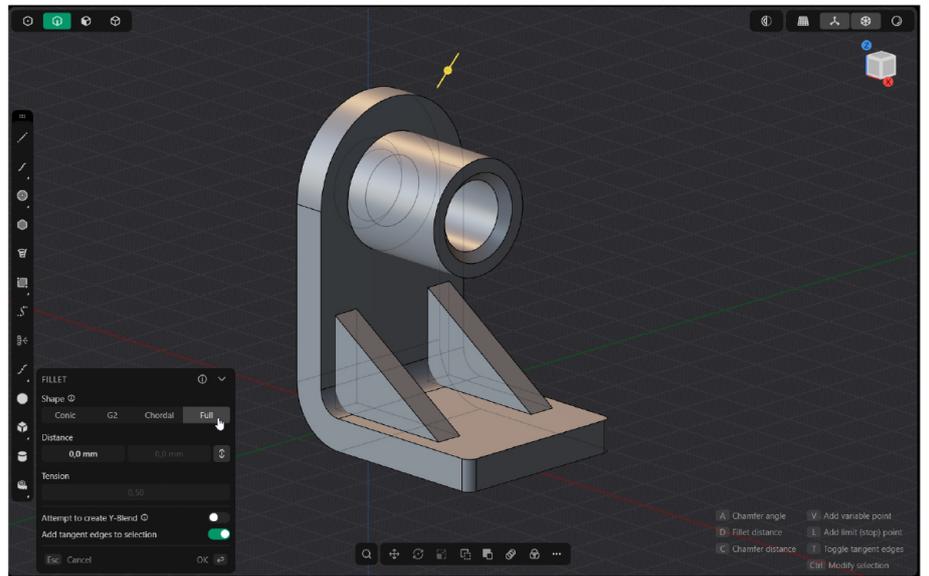


Step 15 | Top rounding

To create the rounding on the top of the bracket, select the two upper edges and apply the fillet tool again.

In the tool panel, select the *full* option.

For this exercise, this corresponds to a 20 mm fillet, as shown in the technical drawing.

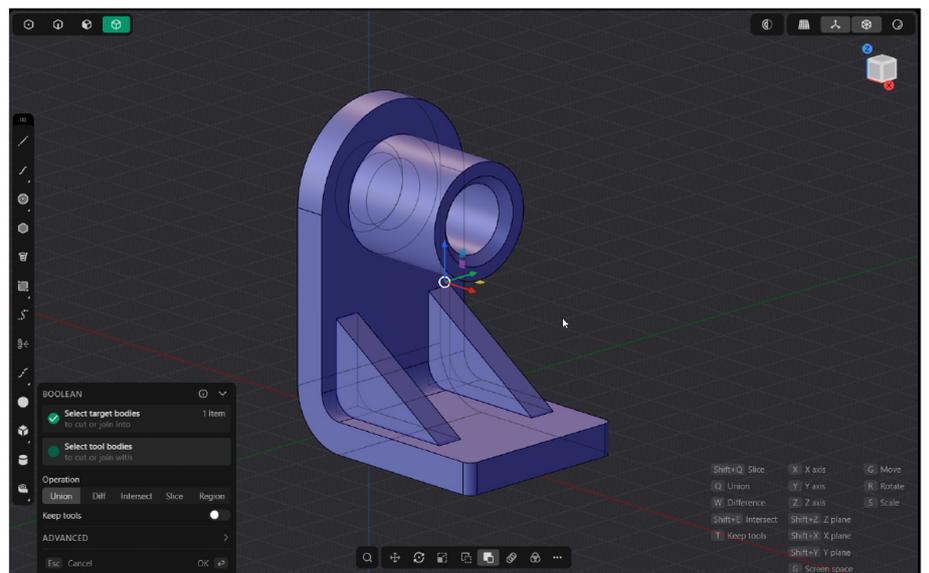


Step 16 | Join the solids

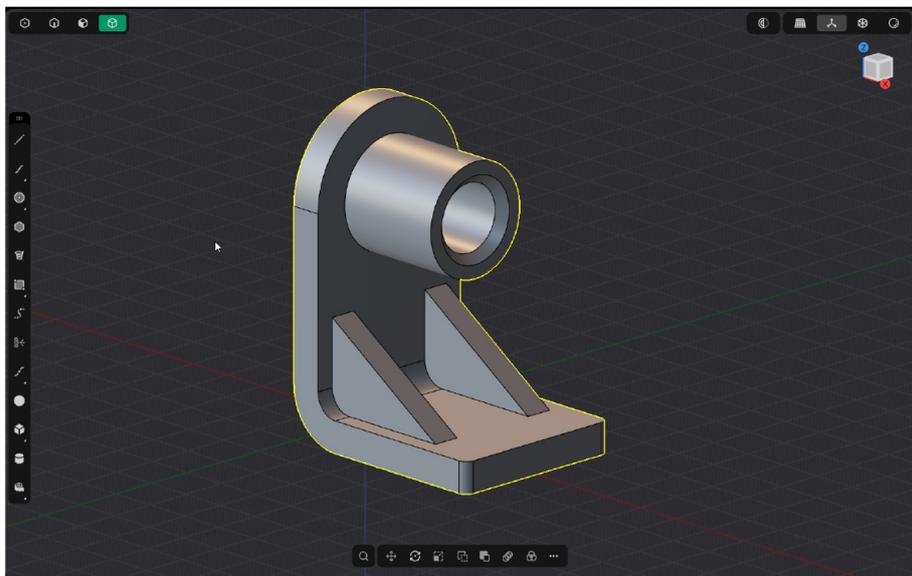
Finally, select all solids while holding **Shift**.

Activate the *Boolean* tool with **Q**, then press **Q** again to perform the Union operation.

All solids should appear blue, indicating that they will be merged.



Confirm the operation to obtain the final model.



Rendered result



Thank you for taking the time to look through this draft of the manual. I hope it can be useful as a starting point for learning CAD-style modeling in Plasticity.

Please keep in mind that this is still an early draft, so I'm mainly looking for feedback on how the guide could be improved.

In particular, I would really appreciate some opinions about the layout and use of images:

Are the images clear enough to follow the steps?

Is their placement within the text effective?

Do you feel there are too many images, too few, or about the right amount?

I would also be interested in hearing how you would rate the difficulty of this exercise. My goal is to establish a good baseline for the guide, since it is intended primarily for beginners.

Finally, at the end of the document I included a few example objects that could potentially be used in later exercises. Do you think their level of difficulty would be appropriate for a beginner-oriented learning path, or should the progression be adjusted?

