





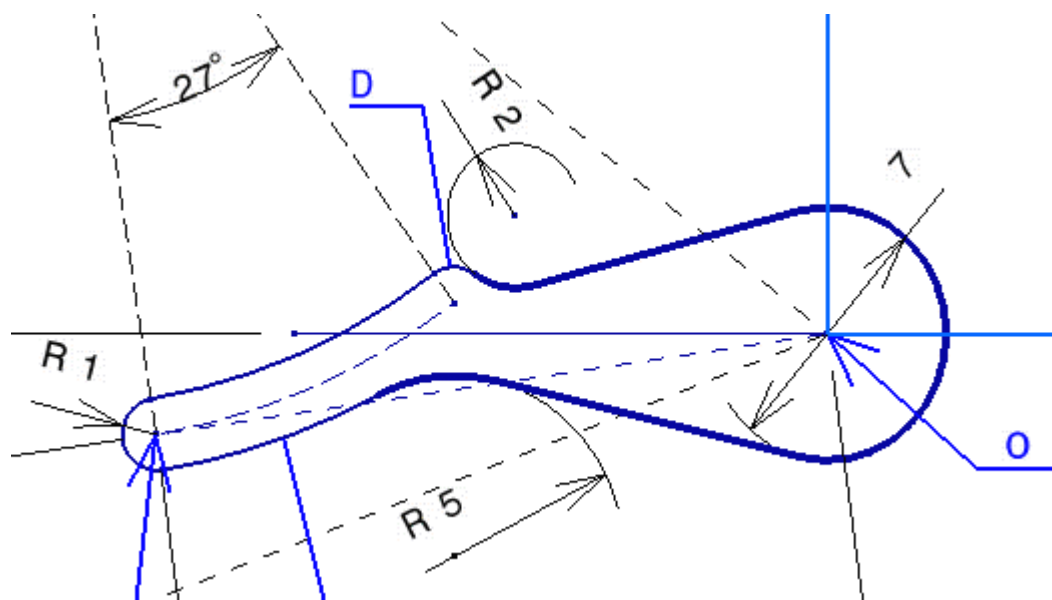
Creating a Complex Profile

 This task shows how to create a more complex profile which is another part of the final sketch. You are going to create lines and arcs of circles one after the other.

 In case you did not save the previously created sketch, you can open the [GettingStarted_profile01.CATPart](#) document.

If you are not satisfied with what you create, you can, at any time, use Undo  or Redo  icons.

Specification:



1. Click on the Profile icon  from the Profiles toolbar.



The Sketch tools toolbar now displays the following option commands and values:



Line




Tangent Arc




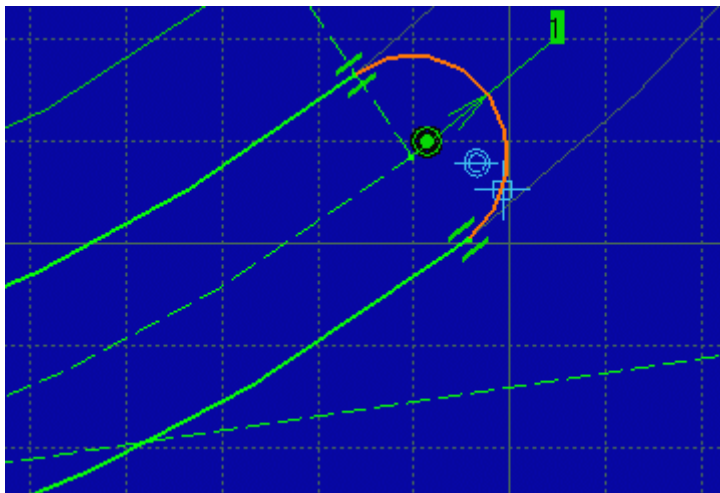
Three Point Arc

Three Point Arc

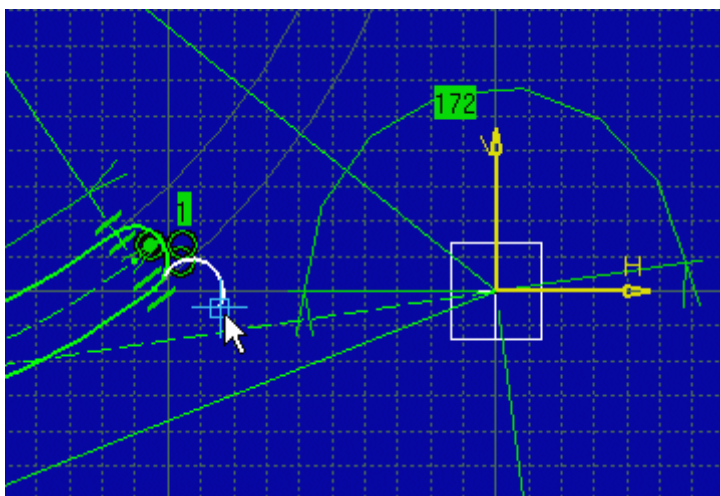
2. Select the Three Point Arc option command  from the Sketch tools toolbar.
3. Select a point on the curved oblong profile (arc D).



Coincidence () is applied between arc D on the cylindrical elongated hole and the arc start point.

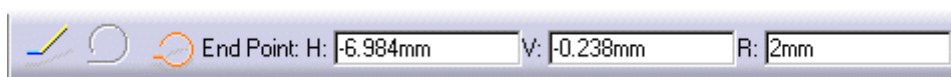


4. Click a point which the profile is going to go through (arc second point).

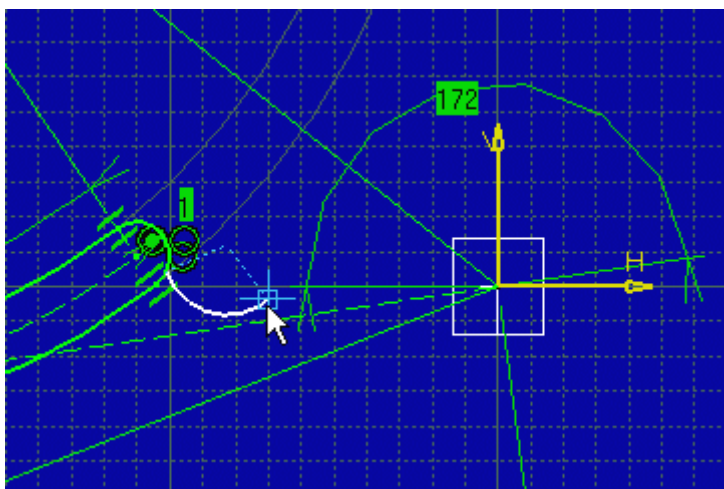


The Sketch tools toolbar displays values for defining the arc.

5. Position the cursor in R (arc radius) field of the Sketch tools toolbar and key in 2.

6. Press Enter.

You define the three point arc radius to which you impose the above values. In other words, at this very moment, whatever the new location you may give to the cursor, the three point arc will definitely go through the two points previously clicked and will definitely be assigned a 2 mm radius.

7. Drag the cursor and click a point in the free space to define the arc end point.

Tangent Line

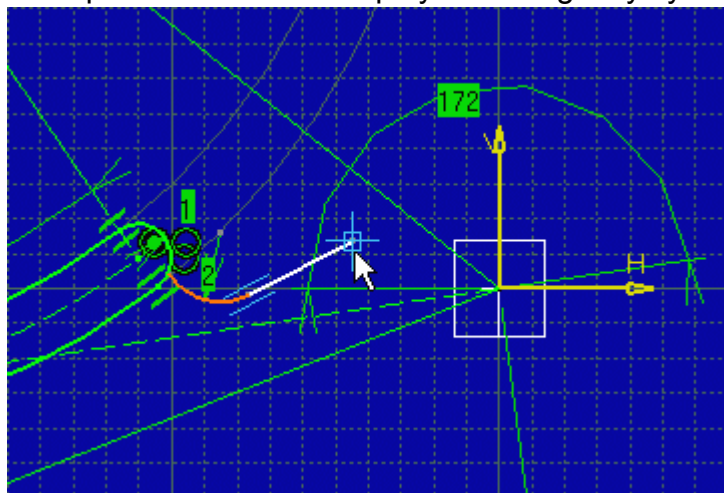


Make sure the Line option command  (Sketch tools toolbar) is now active.

8. Start dragging the line in order to make it tangent to the arc you just created.


To make this line tangent to the arc you just created, SmartPick automatically helps fixing the cursor position so that tangency may

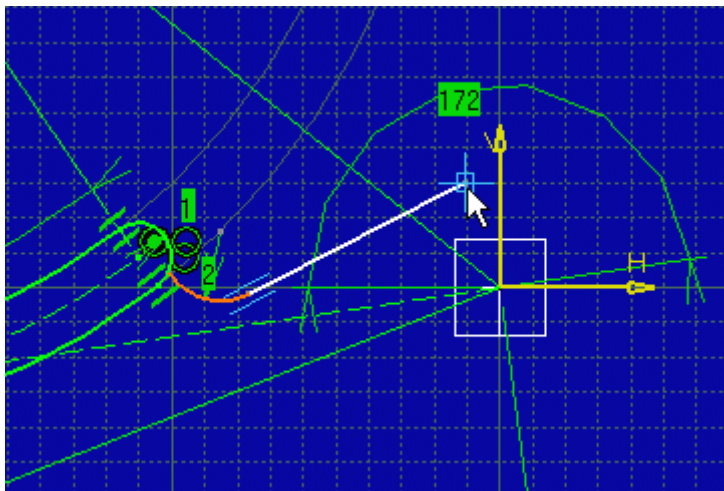
be kept. Autodetection displays the tangency symbol



9. Press the **Ctrl** key to keep detected the tangency constraint, whatever the position of the cursor. In other words, you lock tangency whatever the position of the cursor.

10. Drag the line end point up to the desired position.


 Before pressing the Ctrl button, make sure you are detecting one and only one constraint on the current element. Otherwise, this constraint will not be locked, and not even created.

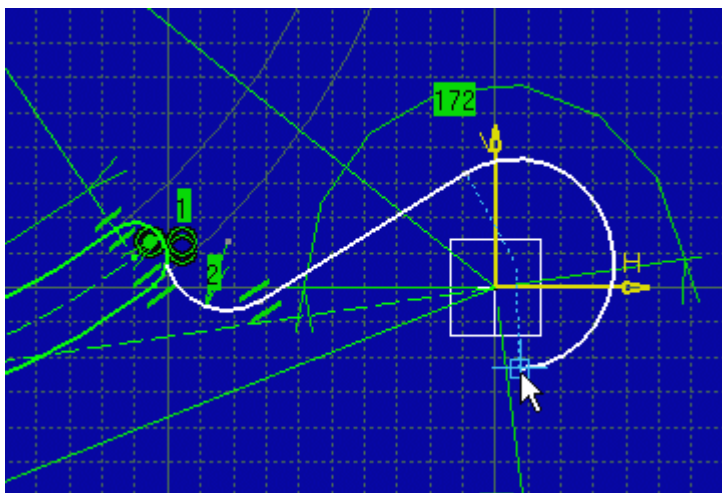


Tangent Arc

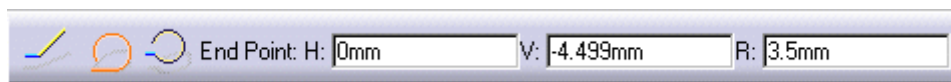
11. Press, hold down and drag the left mouse button to the arc end point. In other words, you are dragging the cursor so that you automatically activate the Tangent Arc mode. **No sooner do you stop pressing the left mouse button that the arc appears on your sketch.**



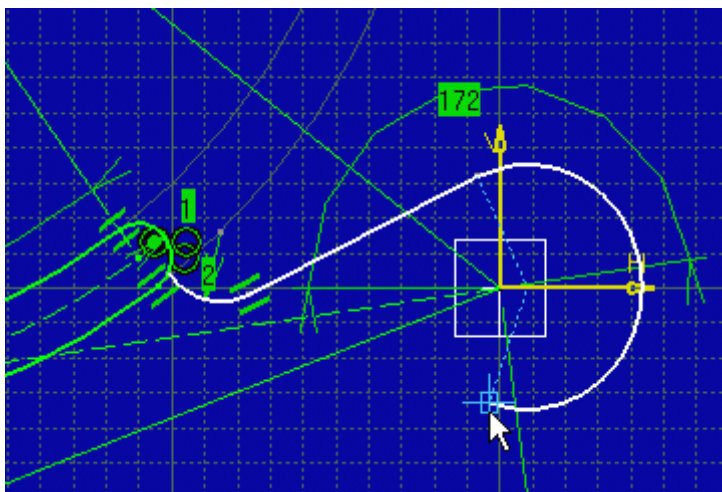
If you cannot manage creating the tangent arc using the left mouse button, what you can do is select the Tangent Arc option command  in the Sketch tools toolbar.



12. Position the cursor in R field (radius) of the Sketch tools toolbar and key in 3.5.

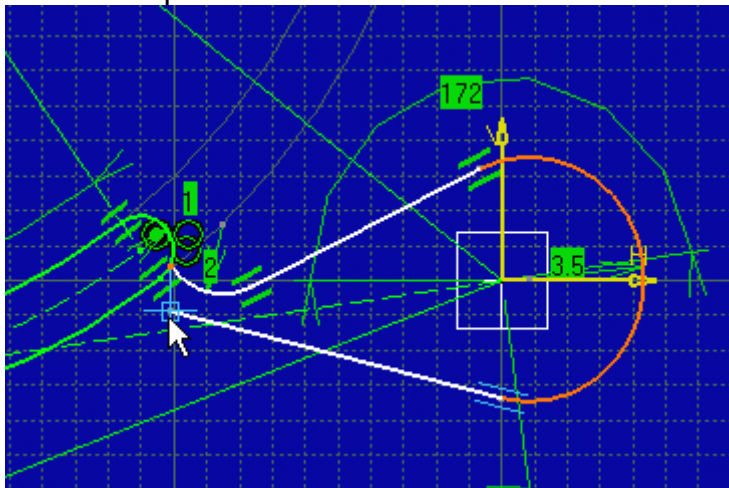


13. Click the arc end point.



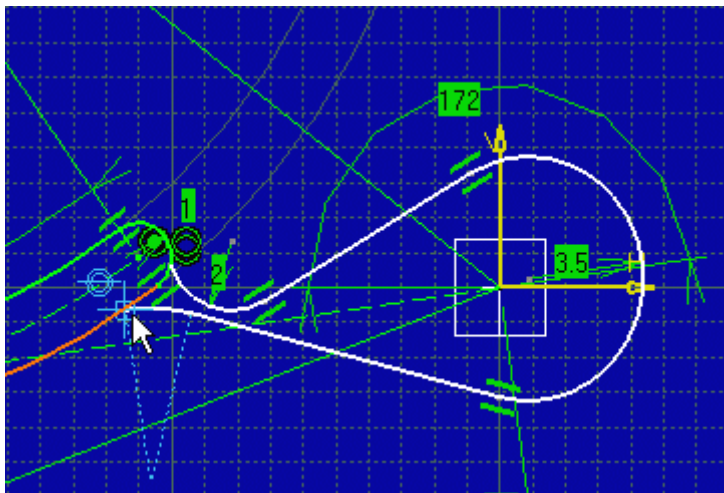
Tangent Line

14. Start dragging the line and press the Ctrl key to lock tangency detection.
15. Click a point on the sketch above OC construction line to create the line end point.



Ending Tangent Arc

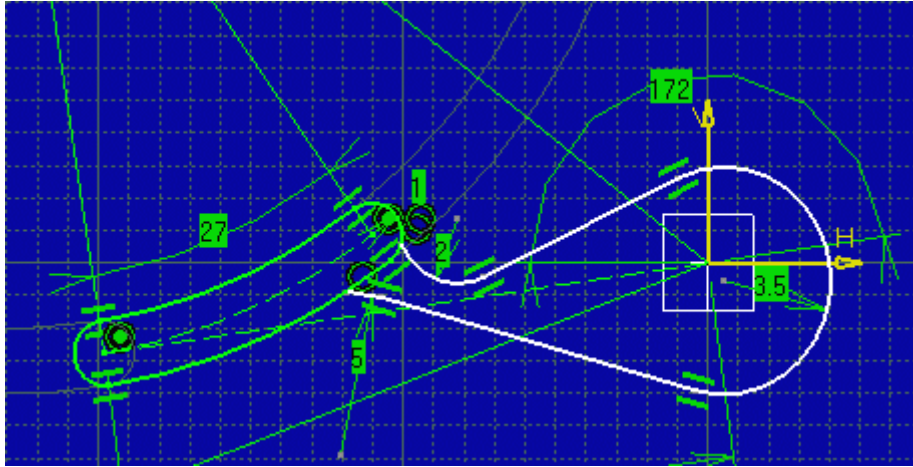
16. Press the left mouse button and drag the cursor down on the sketch to create another tangent arc.




17. Key in 5 as tangent arc radius in the Sketch tools toolbar.

As you can see above, in accordance with the specifications, to end the complex profile creation, you need to create a 5mm arc which cuts the cylindrical elongated hole at arc E. If the arc segment extremity results too far from arc E, it means that both these conditions are not fulfilled. As a result the arc will not cut the cylindrical elongated hole. In this case, press the Undo command.

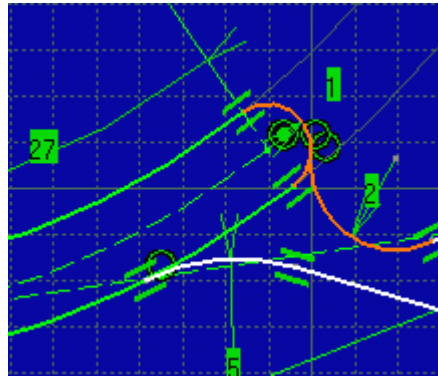
18. Double-click the point at which you want the complex profile to coincide with the curved oblong profile (see  symbol).



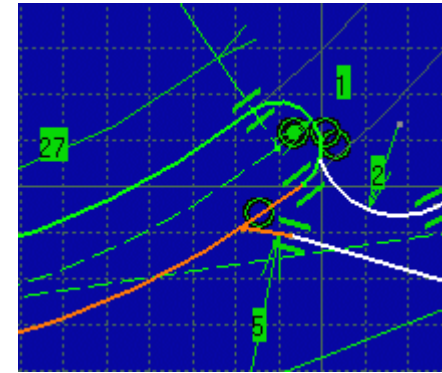
Constraints (Tangency)

19. Multi-select the elements requested for creating **tangency** constraints  .

Multi-selected elements



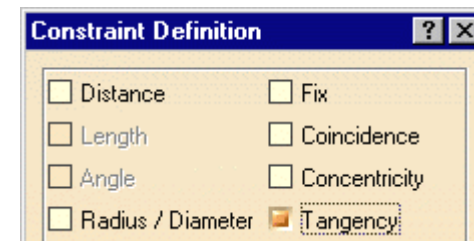
(Case 1)



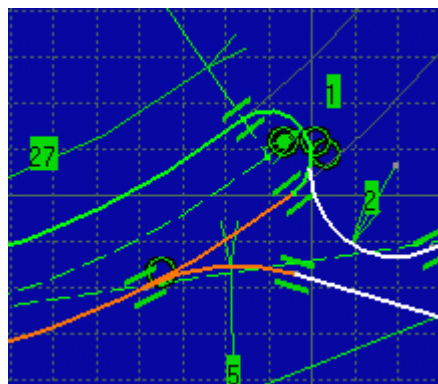
(Case 2)

20. Click the Constraints Defined in Dialog Box icon .

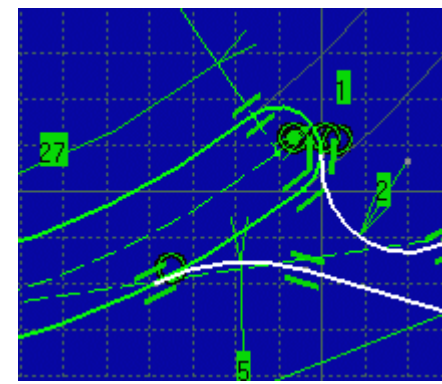
21. Check the desired options in the Constraint Definition dialog box.



Resulting tangency constraints




(Case 1)

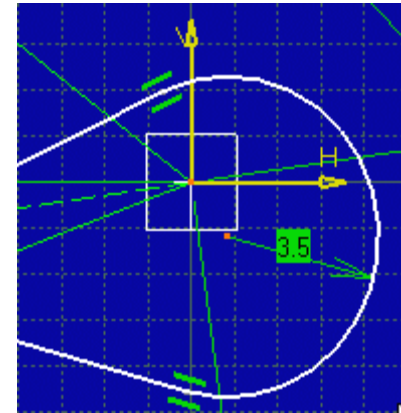


(Case 2)

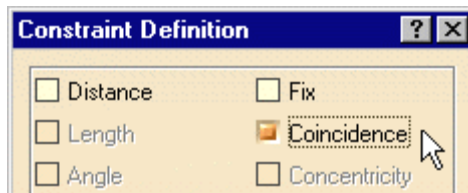
Constraints (Coincidence)

22. Multi-select the arc center point and the axis origin point for creating a **coincidence** constraint .

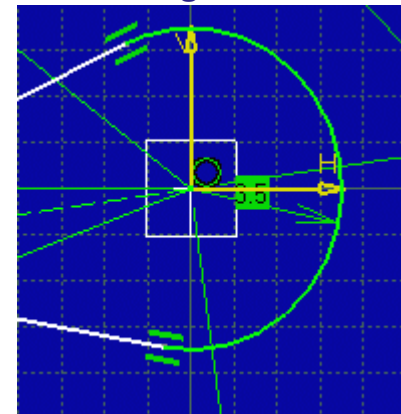
Multi-selected elements



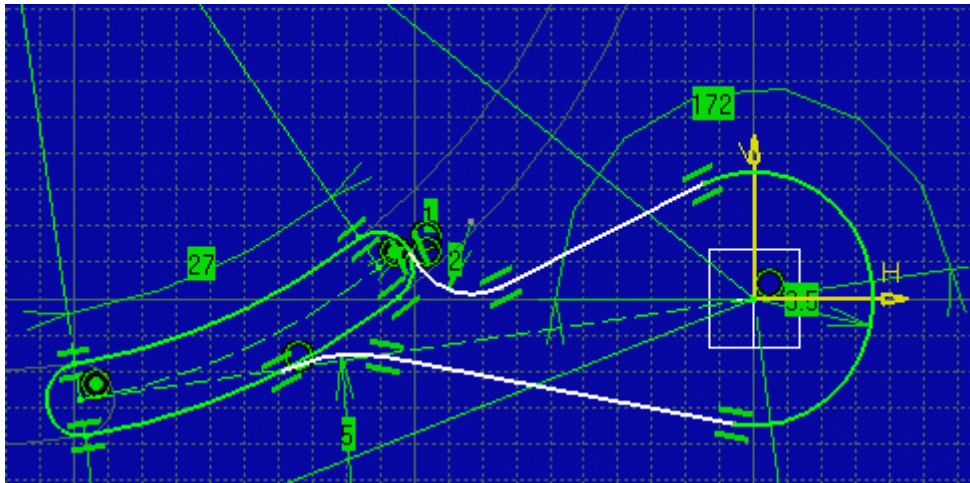
23. Click the Constraints Defined in Dialog Box icon  and check the desired options in the Constraint Definition dialog box.



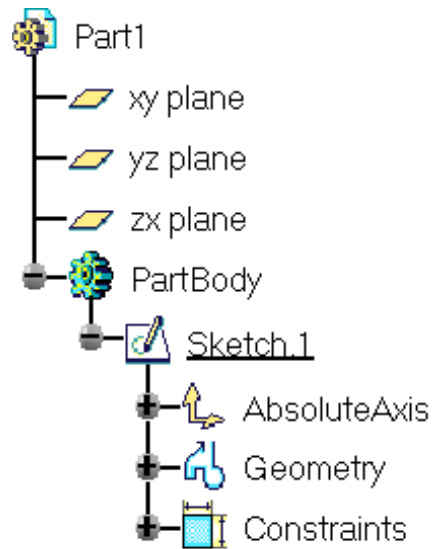
Resulting constraint



Final Complex Profile:



Final Specification Tree:



The specification tree is grouped in accordance with the elements. It can be ungrouped as shown here:

