

MACHINE THEORY

Bachelor in Mechanical Engineering

INTRODUCTION TO CREO/PROENGINEER 5.0

PART 2/2

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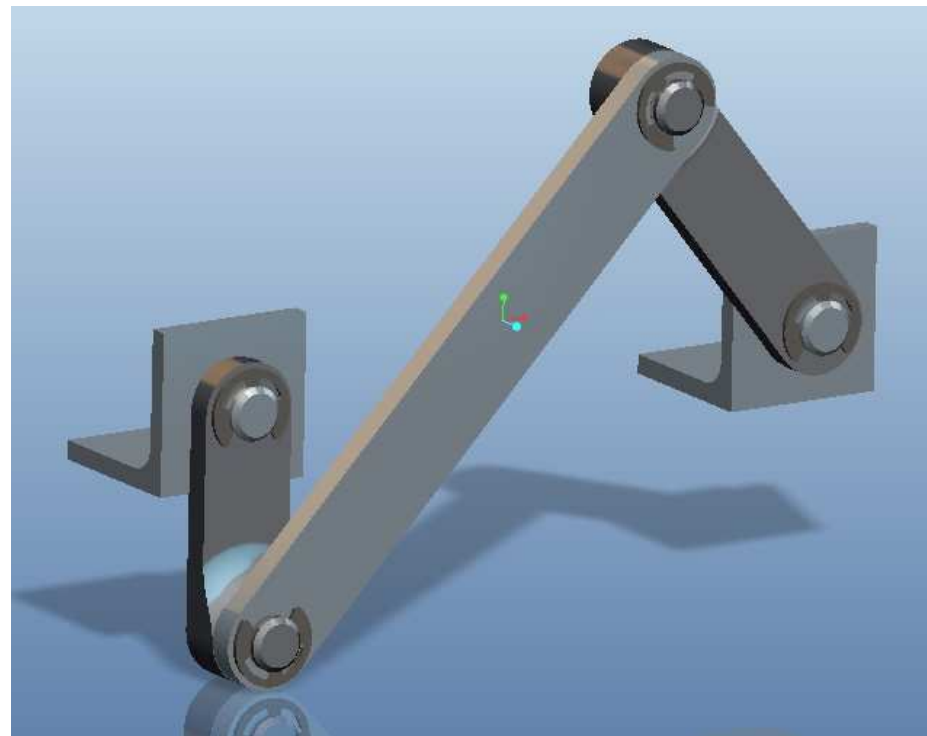
Universidad
Carlos III de Madrid





Objective

- Make the assembly of a four bar mechanism.





Before starting

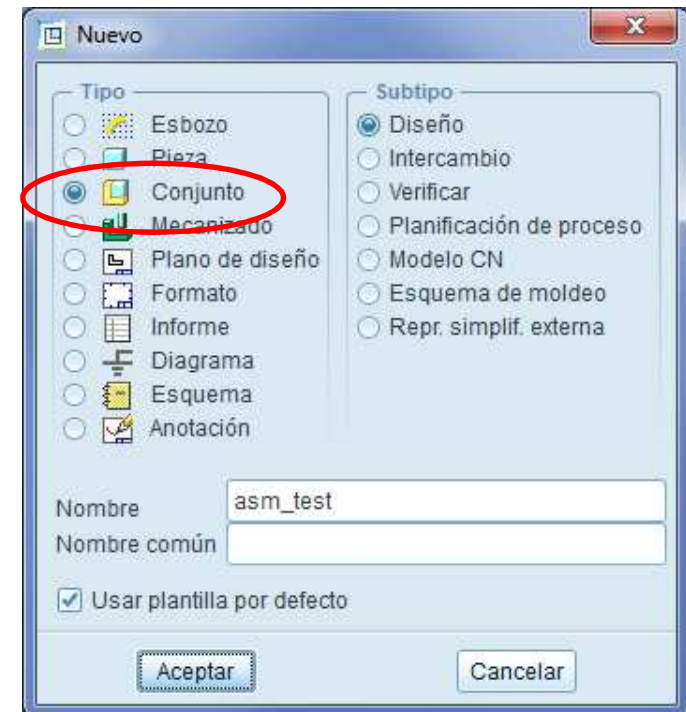
- Download the parts at “Aula global”.
- Unzip the files and put them in the same directory (this will be the working directory).
- Define the working directory.
- Notice that the buttons shown bellow show or hide the reference entities as planes, axis, points, etc.






Create a new assembly

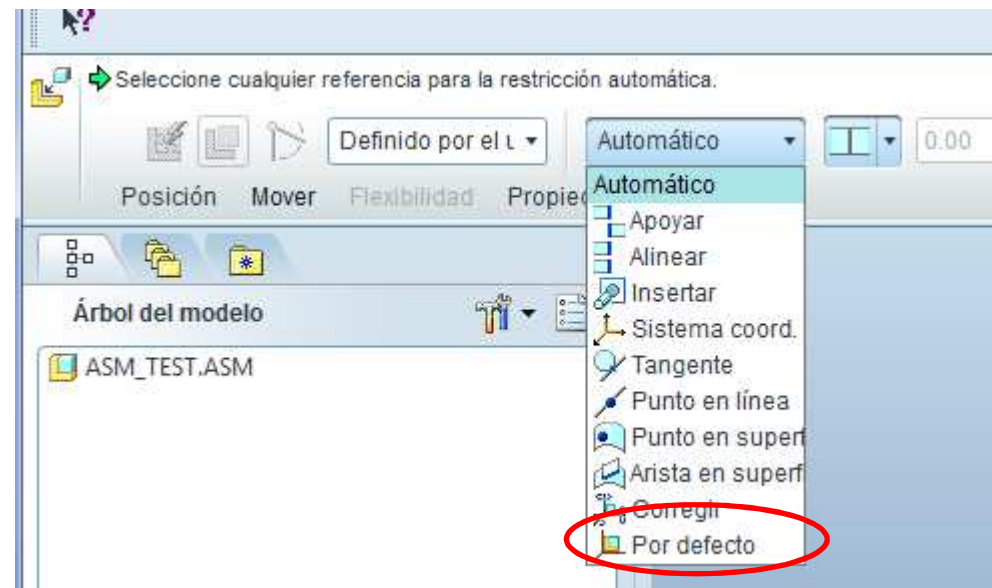
- Go to <Fichero-Nuevo...> a new dialog window will be opened.
- Select “Conjunto” as the type.
- In the “Nombre” text-box type “asm_test”
- Click on “Aceptar”






Insert a new component

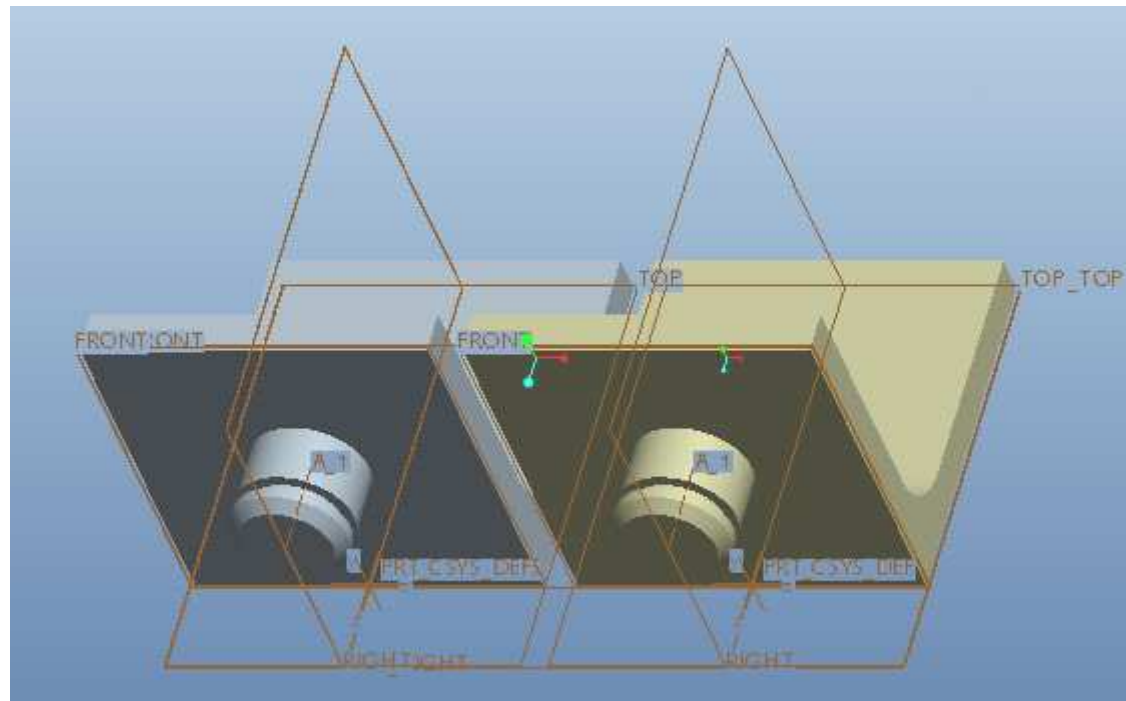
- To insert a new component in the assembly click on , and select “base.prt”.
- To define the position of the part click on “Por defecto”.





Insert another base part

- Click again on  and once more click on “base.prt”
- The next step is to apply constraints to the new part.

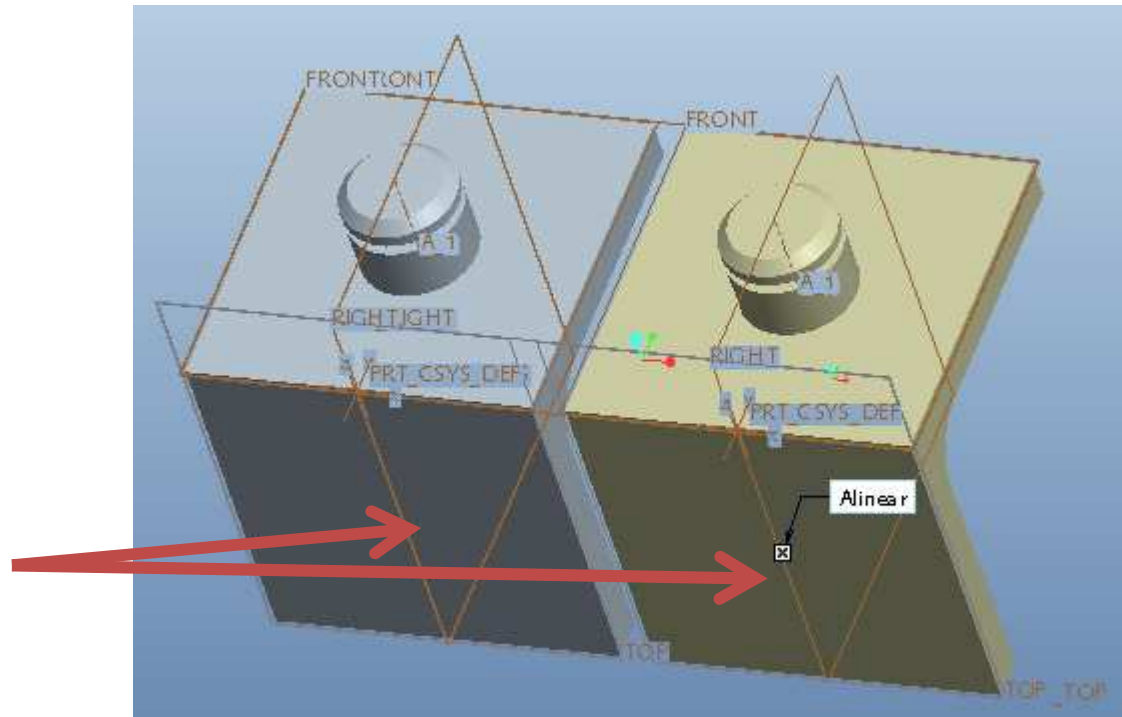




Apply the first restriction

- Click on the bottom surfaces of the base to align them.

Click on each of the bottom surfaces to align them.

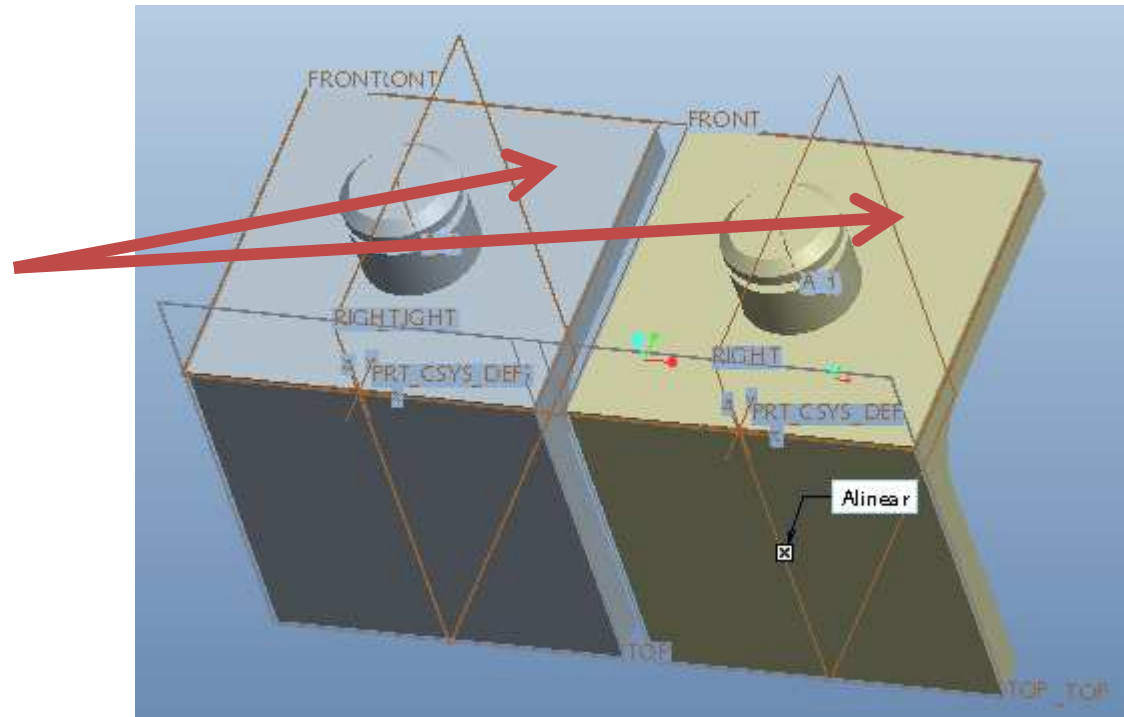




Apply the second restriction

- Click on the front surfaces of the base to align them.

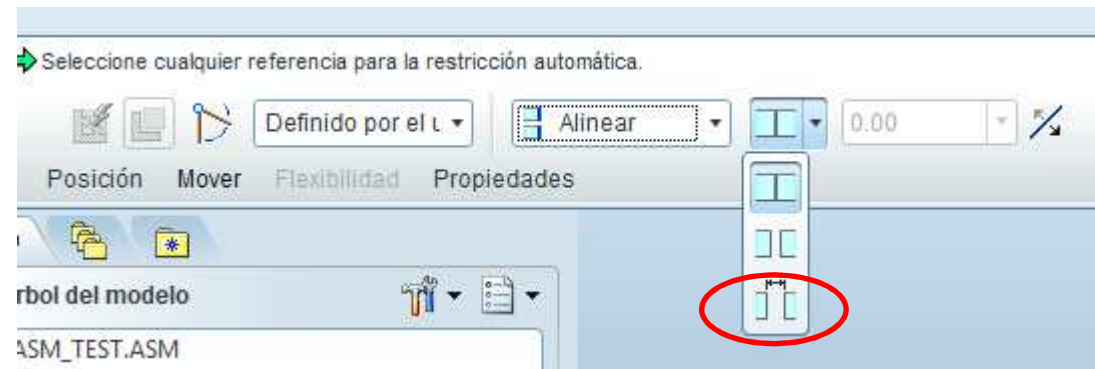
Click on each of the front surfaces to align them





Add the third restriction

- Change align option by clicking on 

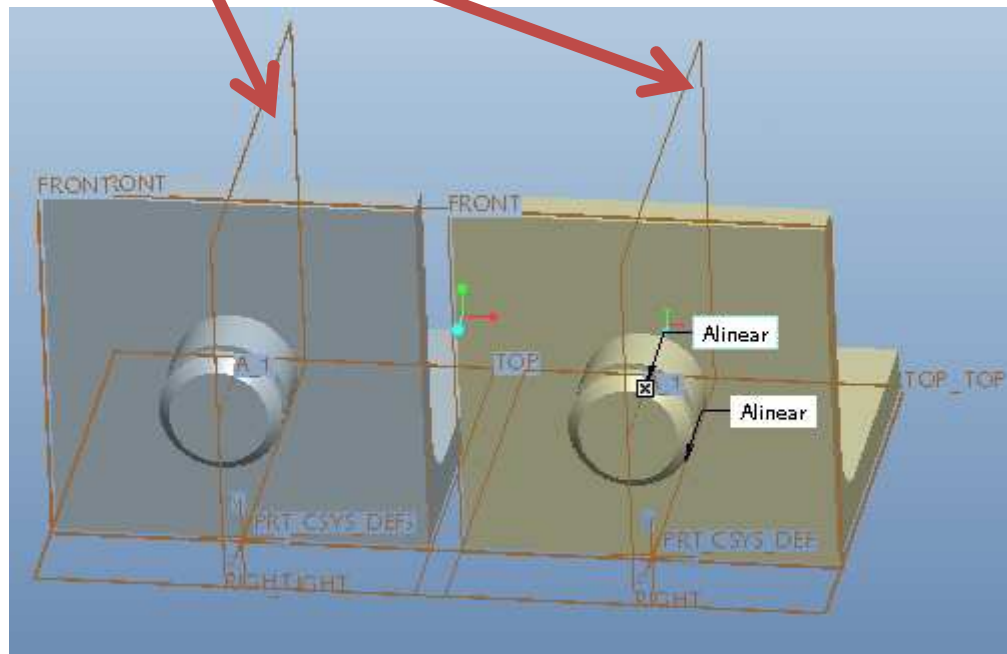




Add the third restriction


- And select the planes marked as right in each piece.

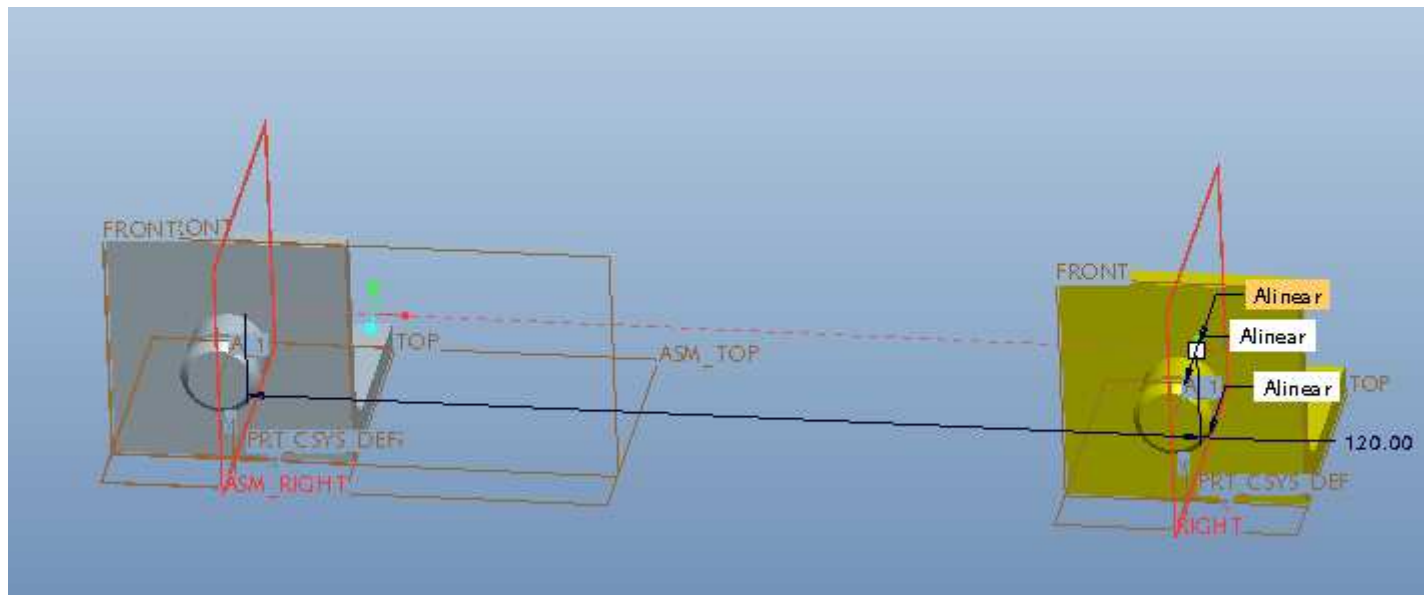
Click on each of the bottom surfaces to align them.






Add the third restriction and finish

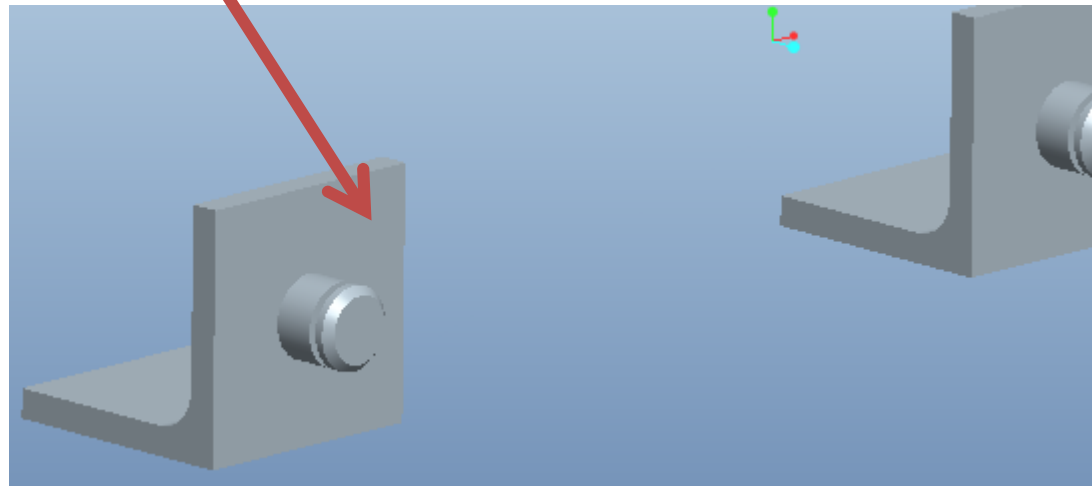
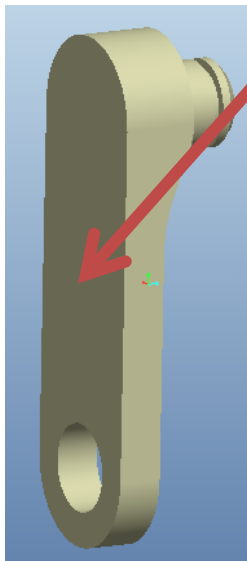
- Insert 120 to define the separation of between the bases.
- Finally click  to finish





Add the crank

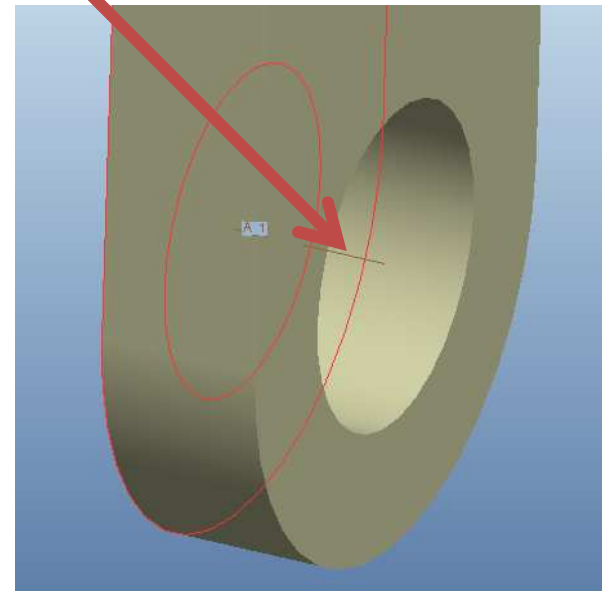
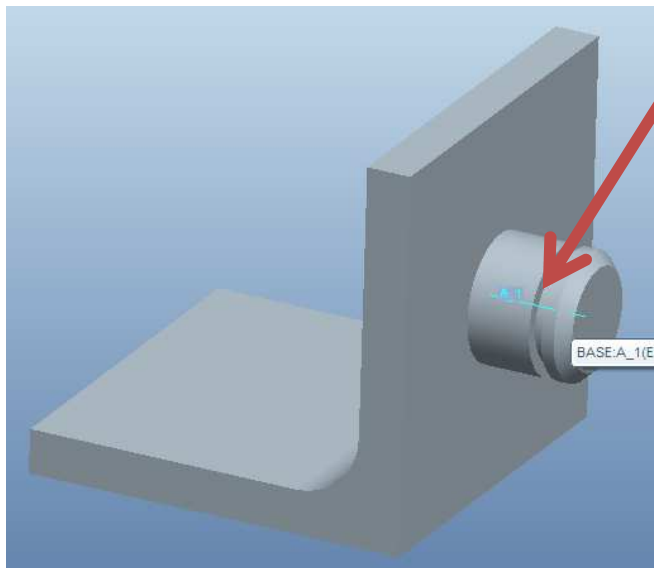
- Click on  and click on “crank.prt”.
- Click on these surfaces to align them





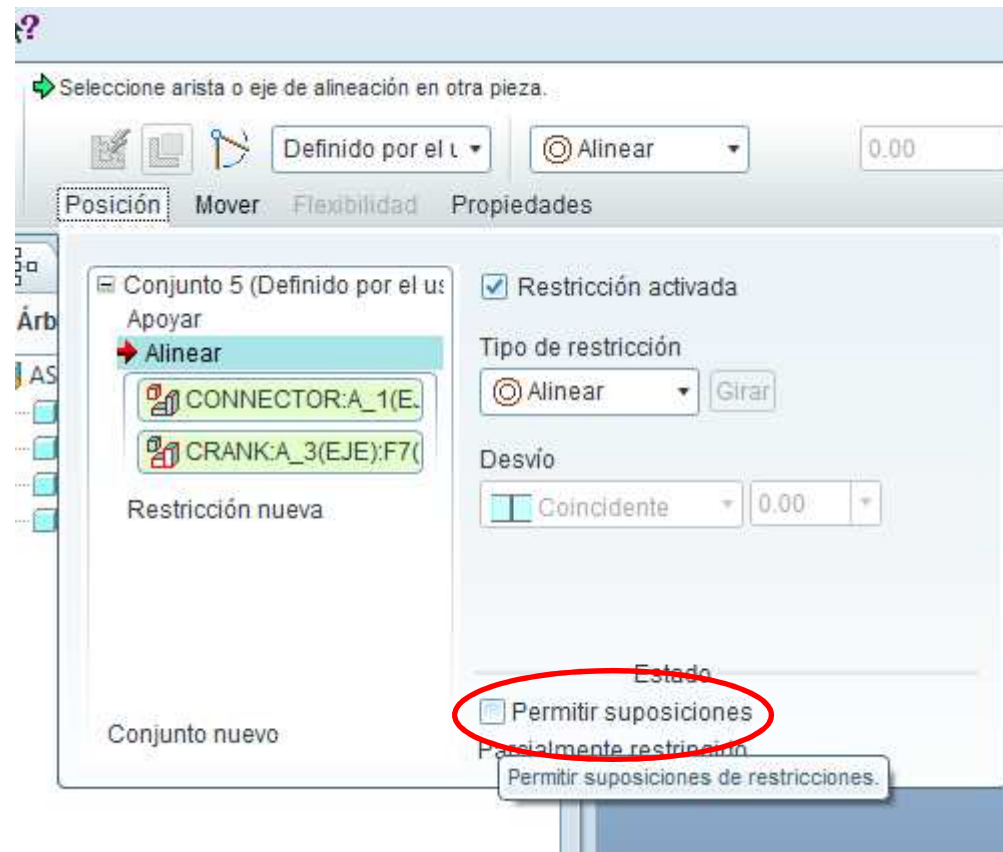
Add the crank

- Click on the axis to align them, and  to finish



Add the crank

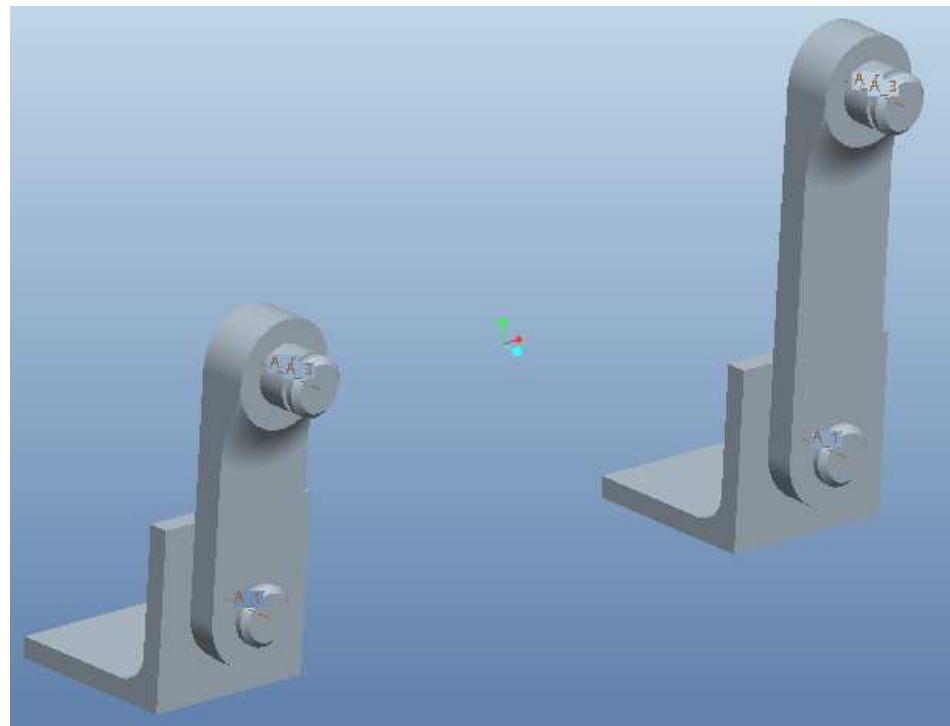
- Go to “Posición” and untick “Permitir suposiciones” box.





Add the rocker

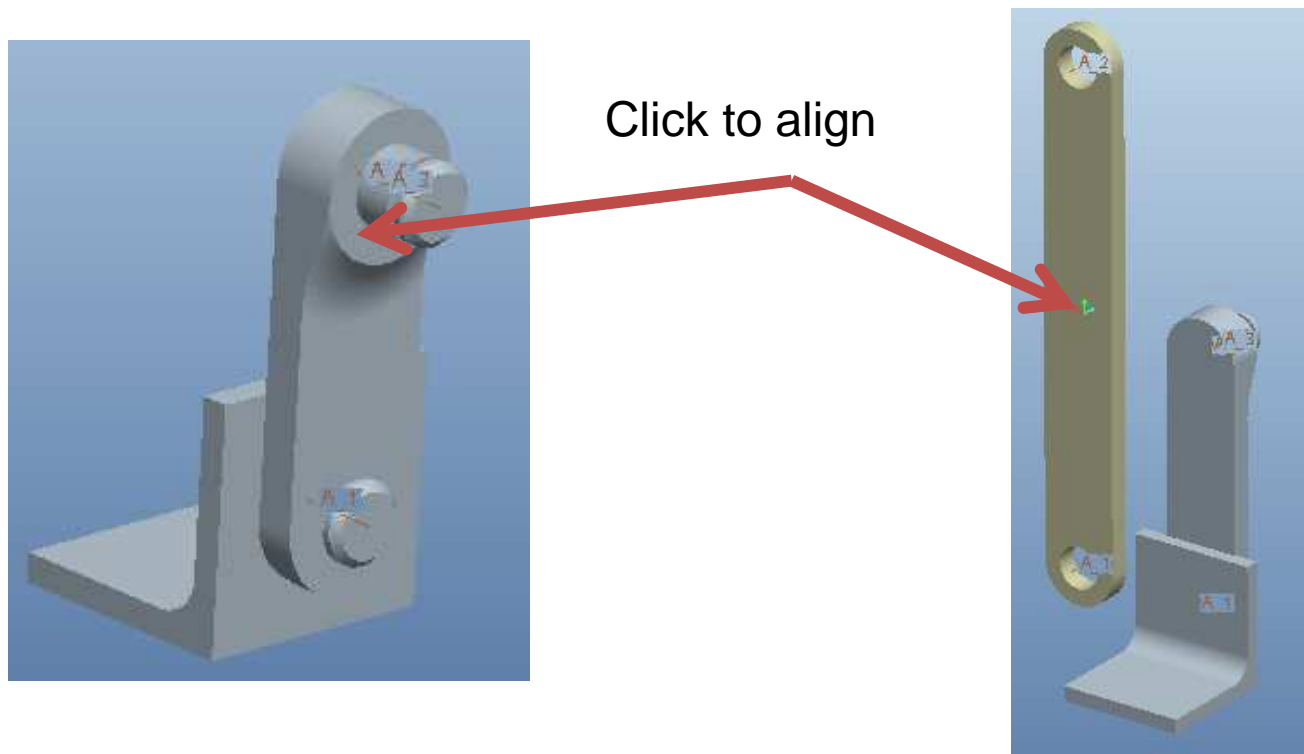
- Follow the previous steps to add “rocker.prt” to the assembly.





Add the connecting rod

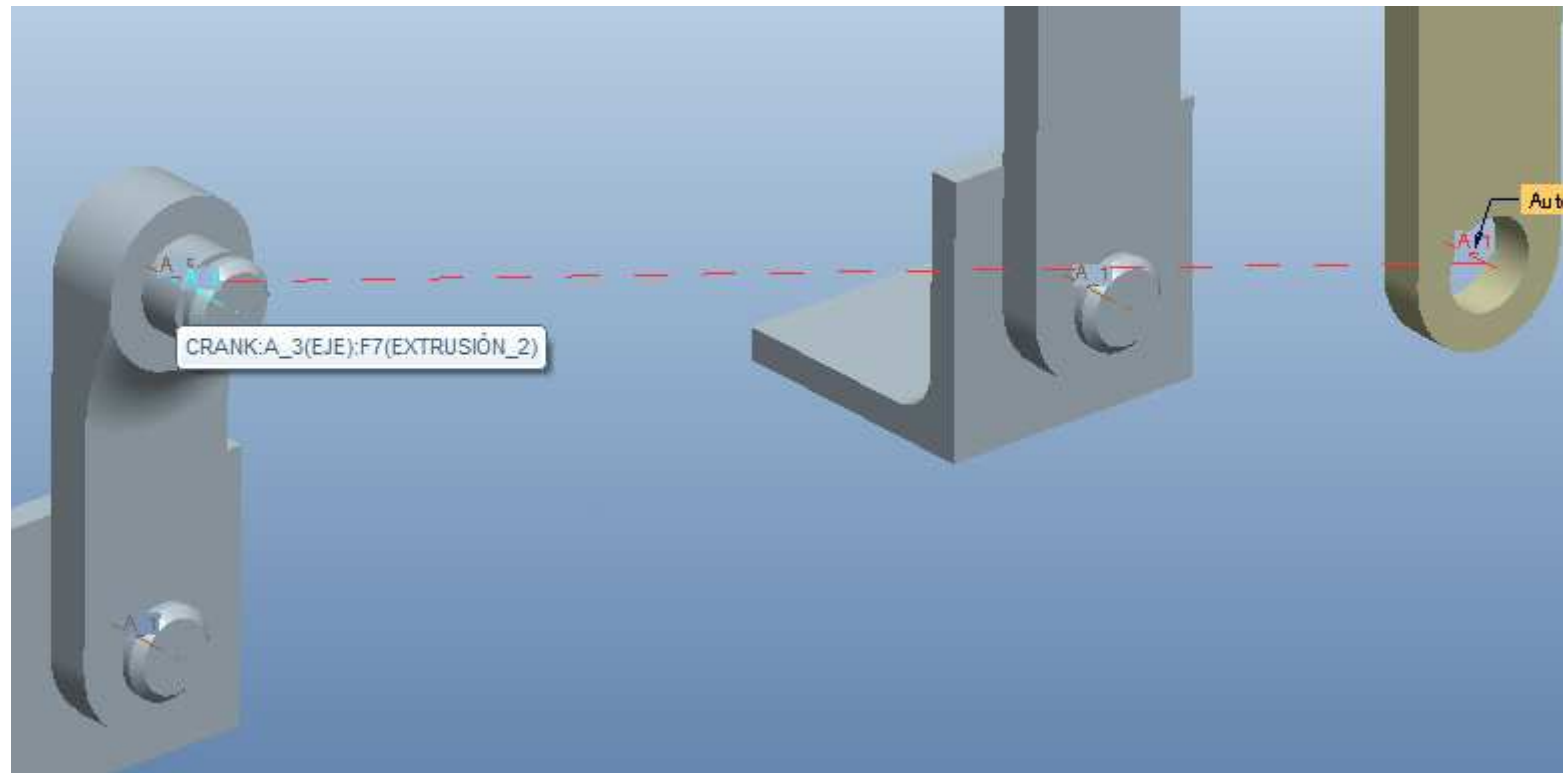
- Click on  and click on “connector.prt”.
- Align the surfaces by clicking over them.





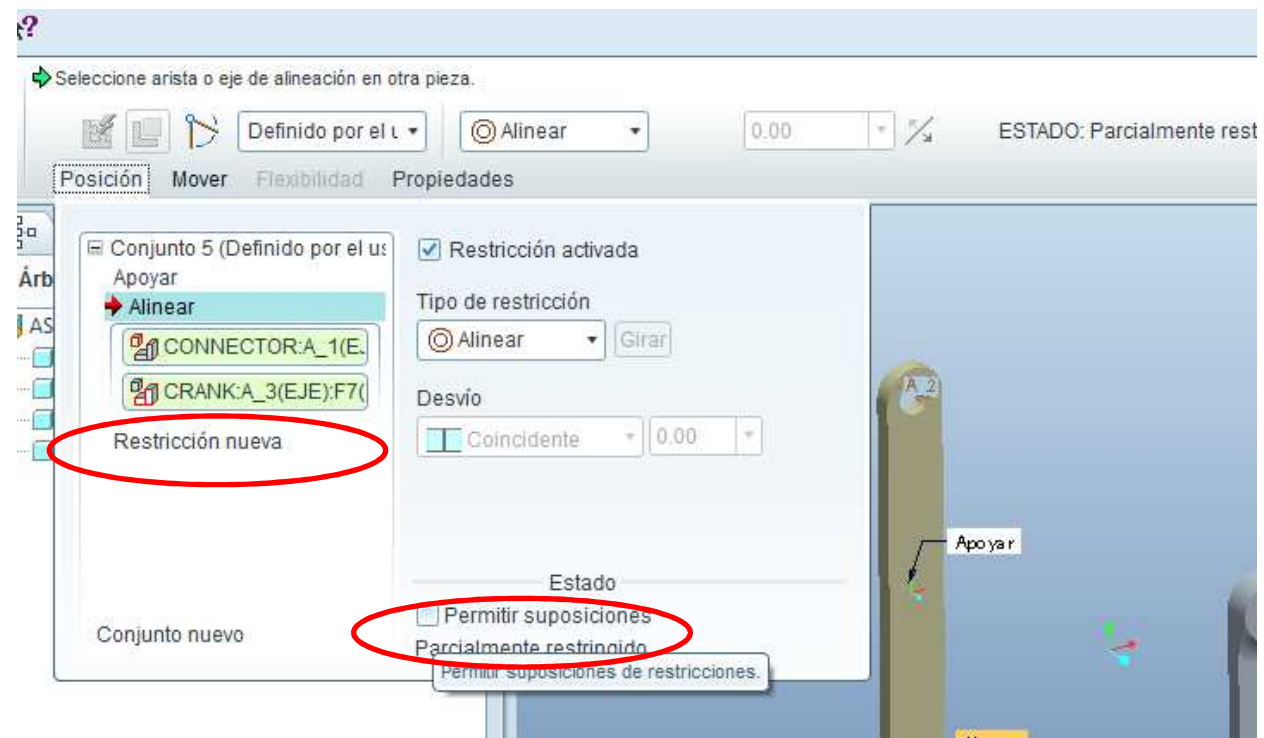
Add the connecting rod

- Align the axis of both parts



Add the crank

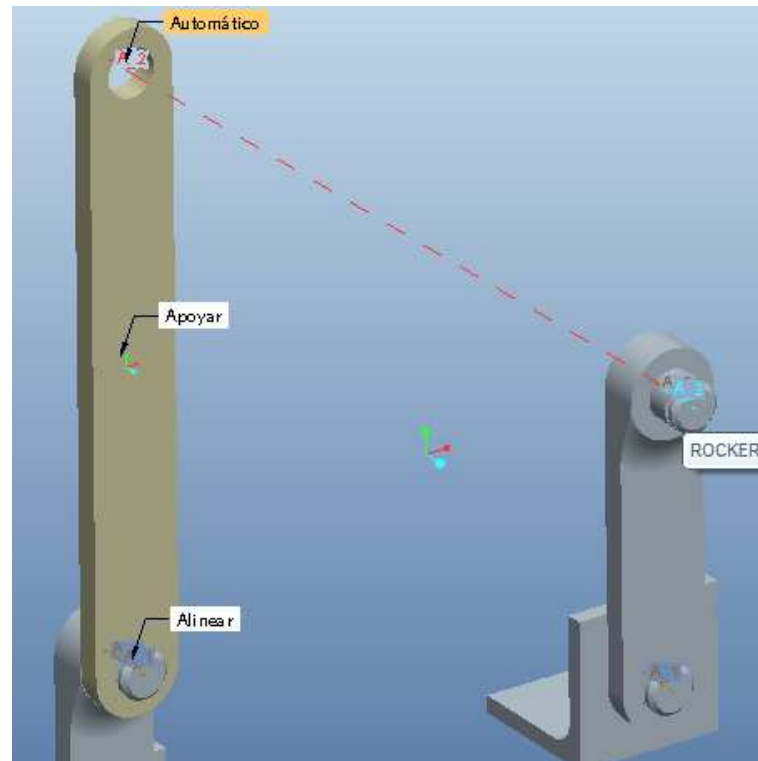
- Go to “Posición” and untick “Permitir suposiciones” box and click over “Restricción nueva”.






Add the connecting rod

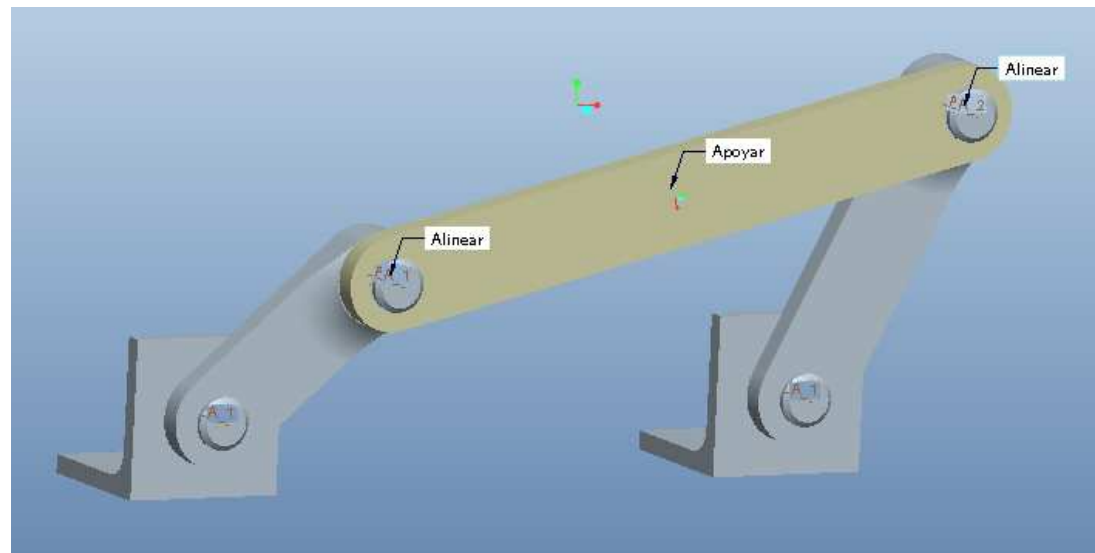
- Click and align the axis as shown, and click on  to finish.





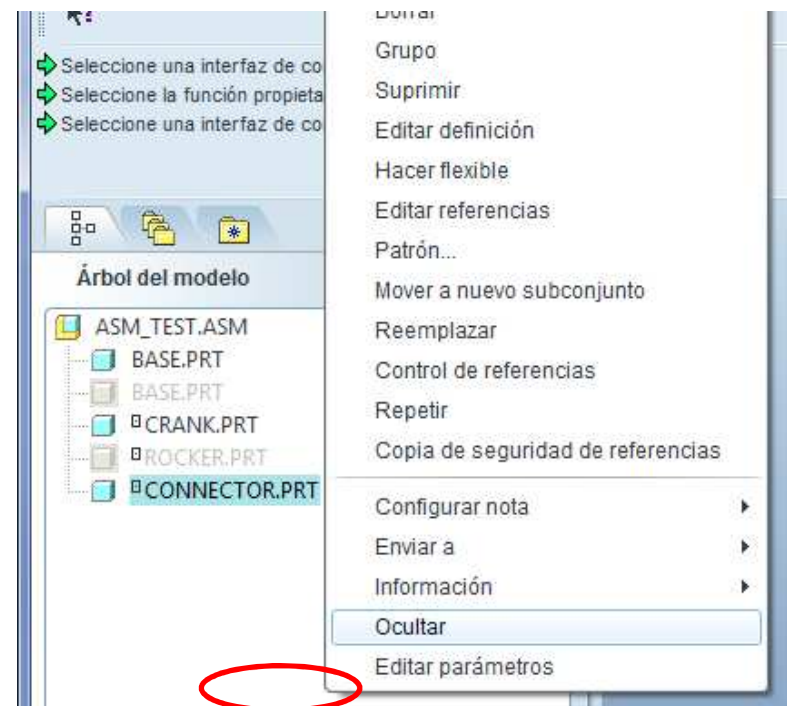
The result

- Use  to move the mechanism by clicking on the crank and then moving the mouse.





- Hide all the elements except the one named “CRANK.PRT” by right clicking over them and selecting “Ocultar”.





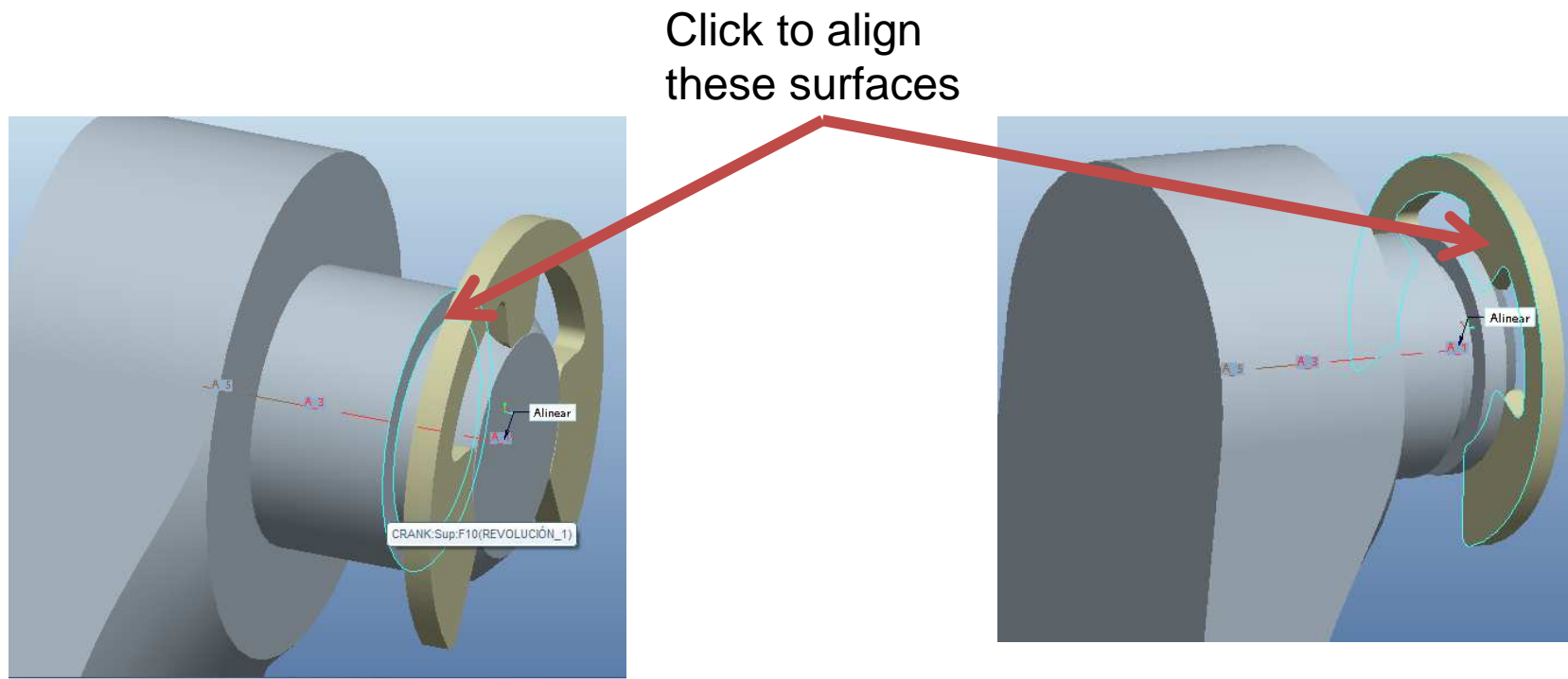
Add the e-circlip

- Click on  and click on “e-circlip.prt”.
- First align the axis.




Add the e-circlip

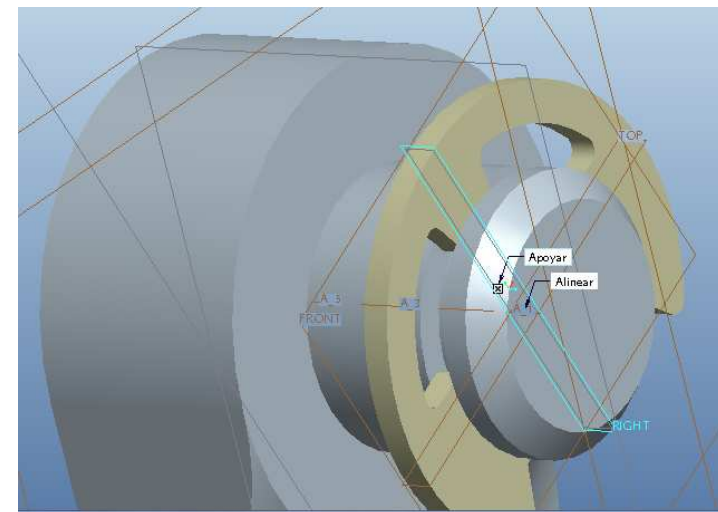
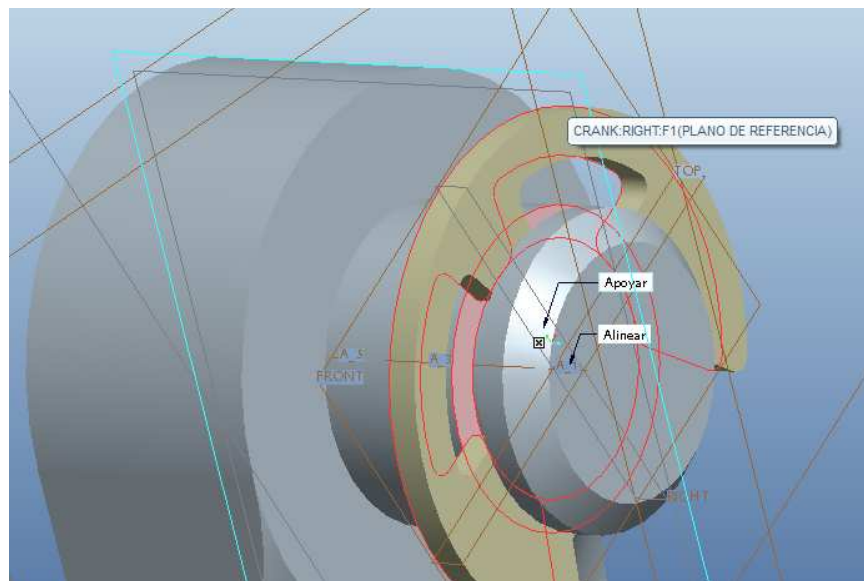
- Now align the e-circlip in the groove of the crank





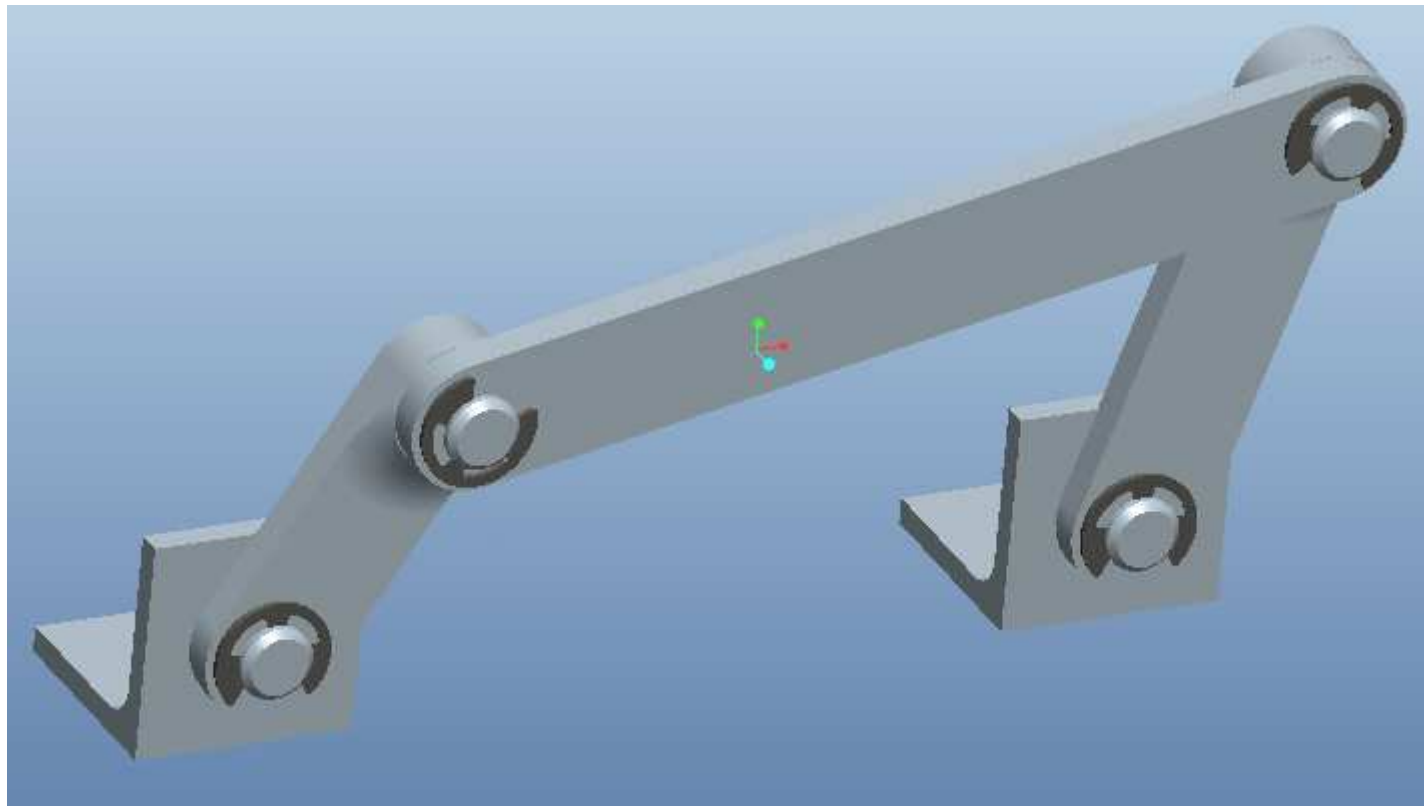
Add the e-circlip

- Align the right plane of the crank with the right plane of the e-circlip. After that click on  to finish.





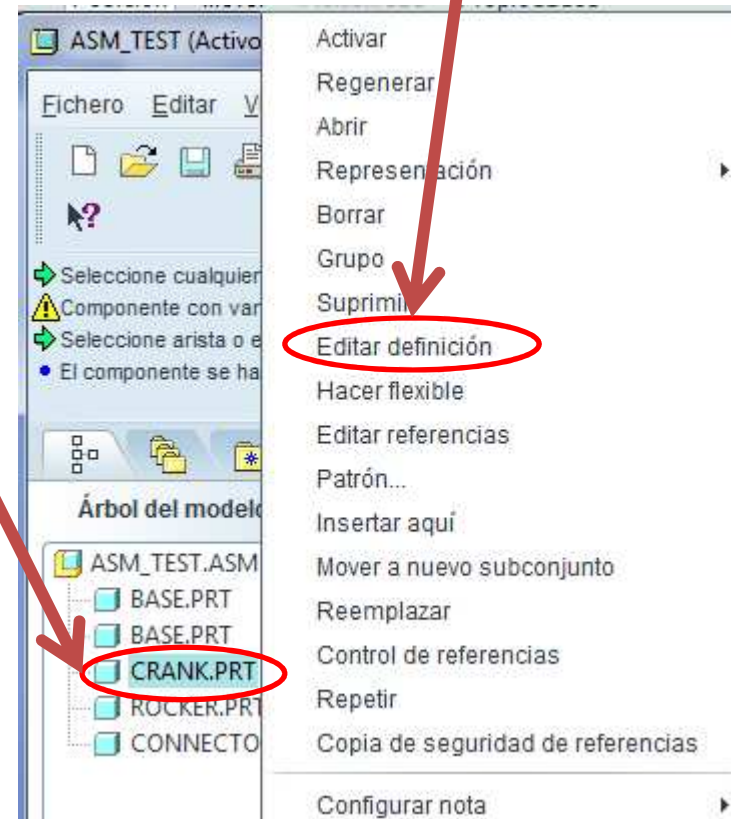
The final assembly





Edit the mechanism

- Right click on “CRANK.PRT” and select “Editar definición”





Edit the mechanism

- Go to “Posición” and untick “Permitir suposiciones” box.

