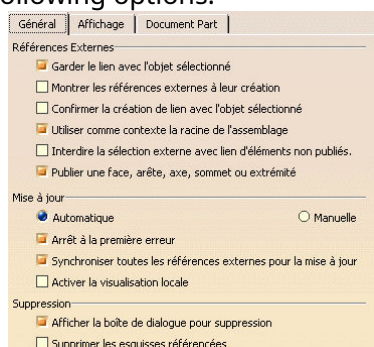


## TP3

**Support:** Extrusion blow mold **Goals:** design in an assembly

**Procedure :****Checking options:**

- Click on **Tools->Options**
- click on **Infrastructure->Infrastructure part**
- click on the tab **Général**
- check the following options:






- click on **ok**

**Creation of the assembly tree**

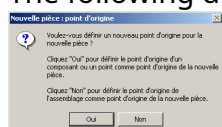
- click on or on **File->New->product**
- name the reference: **blow\_mould**
- click on **ok**


- insert a part by clicking on  Or on **Insert ->Existing component**

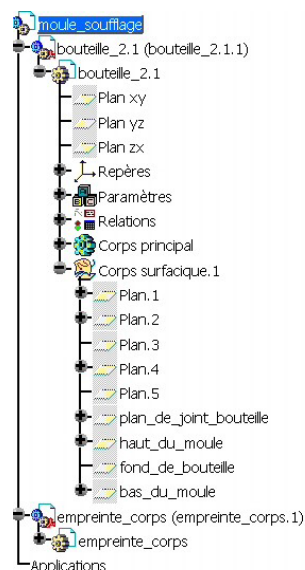
- click in the construction tree on 
- choose the file **bottle** in the directory **tp3** The tree structure is enriched with a new branch

- Insert a new part by clicking on 
- click in the construction tree on 
- name the reference: **body\_print**
- click OK

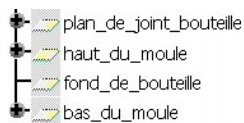
The following dialog box appears :



- click on  to take the same origin as the assembly
- expand the tree structure as shown in the following figure:



- double click on the  **bouteille\_2.1** to open the studio **PartDesign**  
branch turns blue




make the plans visible:

- right click on  **plan\_de\_joint\_bouteille** and choose 

- make the other three planes visible

body print design

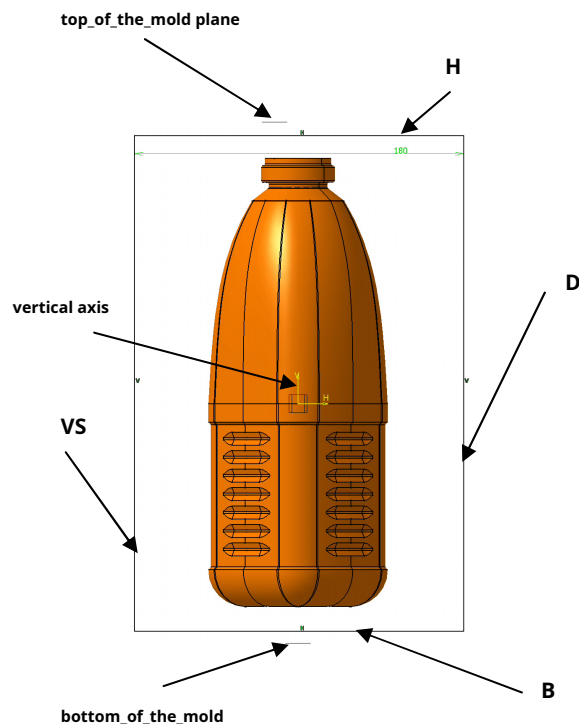
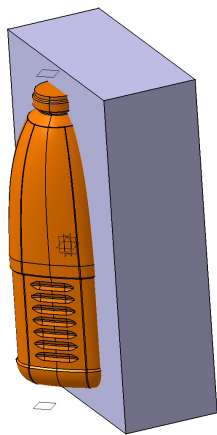
- double click on the  **empreinte\_corps**  
branch turns blue

- to select  **plan\_de\_joint\_bouteille** with a single click  
- click on  to open a sketch  
- draw a rectangle as in the figure



set the following constraints:

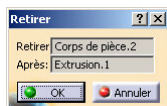
- coincidence of H with the plane haut\_du\_moule
- coincidence of B with the bas\_du\_moule plane
- symmetry of C and D with respect to the vertical axis
- the dimensional constraint of width = 180

- make an extrusion over a length of 80mm



Creation of the imprint

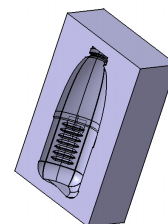
- click on  or on Insert->Boolean Operations->remove....  
- click the  **Corps principal** from the bottle




The following dialog box appears :

- click OK  
- hide the bottle with a right click on  **bouteille\_2.1 (bouteille\_2.1.1)** and choose 

The footprint appears

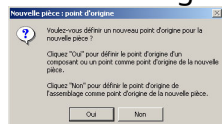


## Neck design

- double click on the  branch turns blue





- Insert a new part by clicking on 
- click in the construction tree on 
- name the reference: **Footprint\_bottleneck**
- click OK

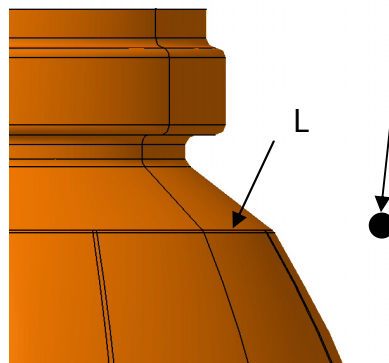
The following dialog box appears :



- click on  to take the same origin as the assembly
- show the bottle with a right click on  and choose 
- hide the body\_print with a right click on  and choose 

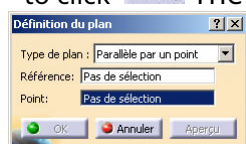
## creation of reference planes

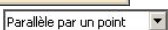
- double click on the  branch turns blue
- to select  with a single click
- click on  to open a sketch
- create a point as in the figure
- put the following coincidence constraint
  - coincidence P with L
- exit by clicking on 






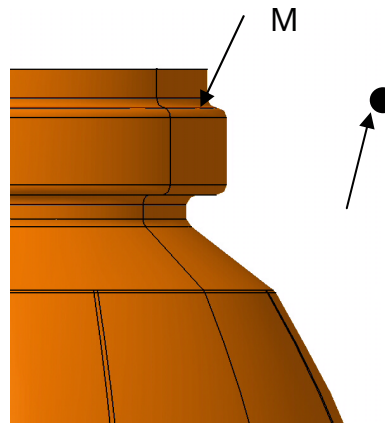
## creating a reference plane

- to click  The following dialog box appears




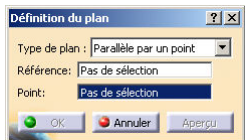
- Choose 
- for the reference click on the plan 
- click on the point you have just created
- rename the plan: **lower\_neck\_plane**


- to select  `plan_de_joint_bouteille` with a single click
- click on  to open a sketch
- create a point as in the figure
- put the following coincidence constraint
  - coincidence O with M
- exit by clicking on 



### creating a reference plane

- to click  The following dialog box appears

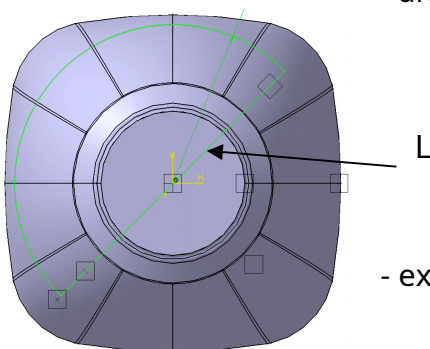



- Choose `Parallèle par un point`
- for the reference click on the plan  `Plan xy`
- click on the point you have just created
- rename the plan: ***plan\_superieur\_goulot***

### creation of the neck imprint

- open a sketch on the plan ***lower\_neck\_plane***



- draw a constrained semi-circle of radius 40 as in the figure
- constrain the line L in coincidence with the joint plane of the bottle

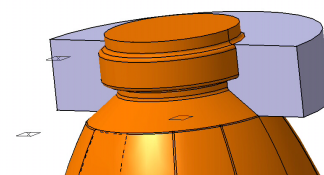


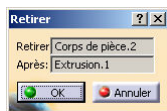
- exit not clicking 

- make an extrusion up to the plane ***plan\_superieur\_goulot***

### Creation of the imprint

- click on  or on Insert->Boolean Operations->remove....
- click the  `Corps principal` from the bottle



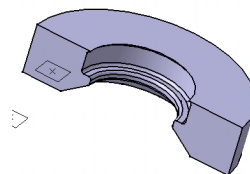


The following dialog box appears :

- click OK
- hide the bottle with a right click on

bouteille\_2.1 (bouteille\_2.1.1)

and choose Cacher/montrer



The footprint appears

Editing the body\_footprint

- double click on the empreinte\_corps branch turns blue

- click on or on Insert->Boolean Operations->remove....
- click the Corps principal of **the bottleneck footprint**

- show body\_print with right click on

empreinte\_corps (empreinte\_corps.1)

and choose Cacher/montrer

- hide the fingerprint\_bottleneck with a right click on

empreinte\_goulot (empreinte\_goulot.1)

and choose Cacher/montrer

*Bottom footprint design*

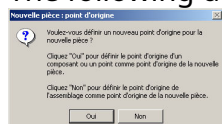
- double click on the moule\_soufflage branch turns blue

- Insert a new part by clicking on
- click in the construction tree on
- name the reference: **Bottom footprint**
- click OK

Or on **Insert ->New Part**

moule\_soufflage

The following dialog box appears :



- click on Non to take the same origin as the assembly

- show the bottle with a right click on bouteille\_2.1 (bouteille\_2.1.1) and choose Cacher/montrer

- hide the body\_print with a right click on empreinte\_corps (empreinte\_corps.1) and choose Cacher/montrer

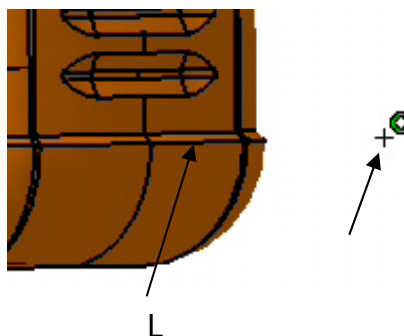
creating a reference plane

- double click on the empreinte\_fond branch turns blue

- to select plan\_de\_joint\_bouteille with a single click

- click on to open a sketch

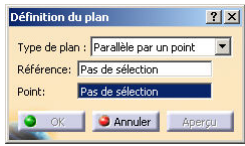
- create a point as in the figure




- put the following coincidence constraint
  - coincidence P with L

- exit by clicking on 

- click the following dialog box is displayed



- Choose  

- for the reference click on the plan  Plan xy

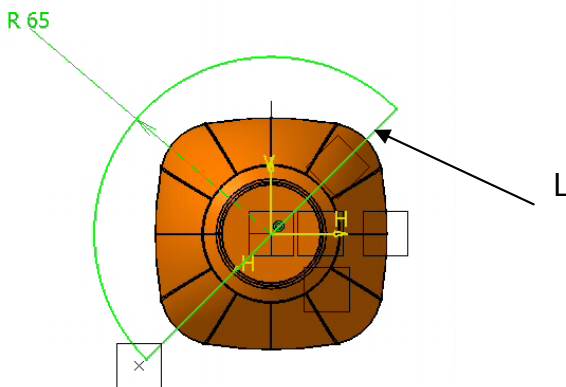
- click on the point you have just created


- rename the plan: **plan\_superior\_fond**

- open a sketch on the plan **plan\_superior\_fond**


- draw a semi-circle of radius 65 constrained as in the figure


- constrain the line L in coincidence with the joint plane of the bottle



- exit by clicking on 

- make an extrusion up to the plane **bottom\_of\_mold** (of the bottle)

- click on  or on Insert->Boolean Operations->remove....

- click the  Corps principal from the bottle




The following dialog box appears :


- click OK

- hide the bottle with a right click on  bouteille\_2.1 (bouteille\_2.1.1) and choose 

The footprint appears

Editing the body\_footprint

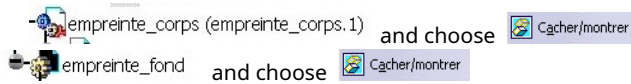
- double click on the  empreinte\_corps  
branch turns blue

- click on  or on Insert->Boolean Operations->remove....

- click the  Corps principal of the **background\_footprint**



- show body\_print with right click on
- hide the fingerprint\_background with a right click on



### Strike ring design

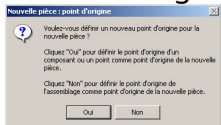
- double click on the branch turns blue

- Insert a new part by clicking on
- click in the construction tree on
- name the reference: **striking\_ring**
- click OK

Or on **Insert -> New Part**



The following dialog box appears :



- click on to take the same origin as the assembly

- show the bottle with a right click on and choose

- hide the body\_print with a right click on and choose

- show the footprint\_bottleneck with a right click on and choose

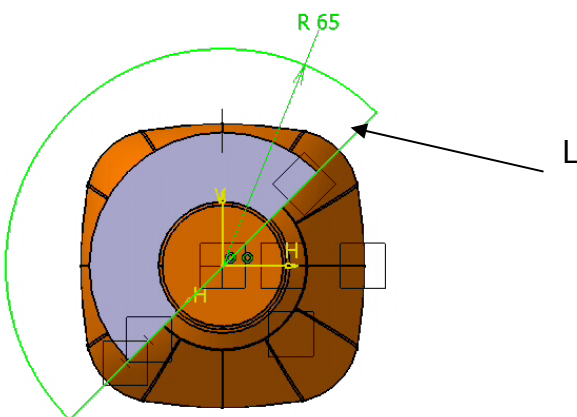
- double click on the branch turns blue

- to select in the room the plan **footprint\_neck** with a single click

- click on to open a sketch


- draw a semi-circle of radius 65 constrained as in the figure

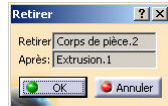
- constrain the line L in coincidence with the joint plane of the bottle



- exit by clicking on
- make an extrusion up to the plane **top\_of\_the\_mold** (of the bottle)

- click on or on Insert->Boolean Operations->remove....



- click the  from the bottle



The following dialog box appears :

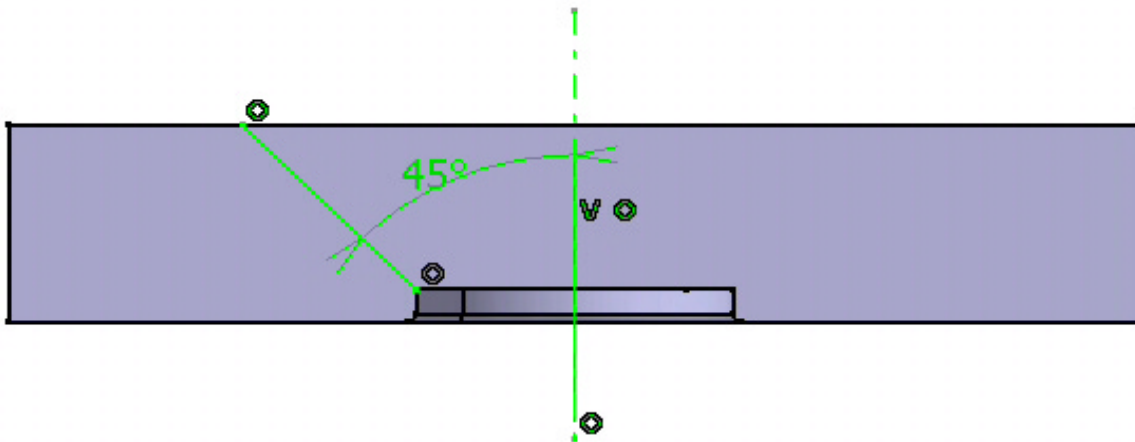
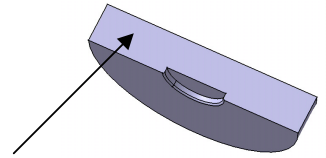
- click OK
- hide the bottle with a right click on  and choose 


The footprint appears

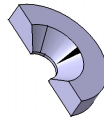
- hide the fingerprint\_bottleneck with a right click on  and choose 


striking ring finish



- open a sketch on the face marked with an arrow
- draw a segment with constrained ends as in the figure






- exit by clicking on 
- make a groove Modification of the imprint\_body




- double click on the  branch turns blue

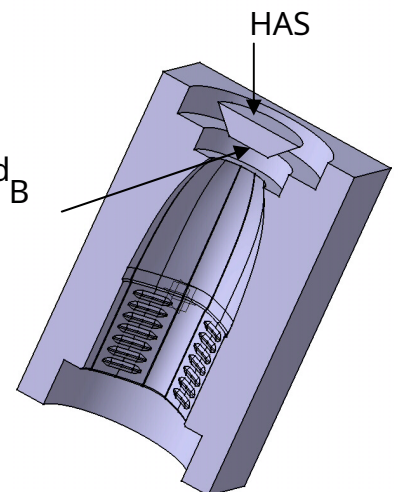
- click on  or on Insert->Boolean Operations->remove....
- click the  of **the\_strike\_ring**

- show body\_print with right click on choose  and 


- hide the \_striking\_ring with a right click on and choose 

- open a sketch on the side marked with the letter A
- select side A

- click on  to make the 3D projection





- exit by clicking on 

- make a pocket up to the surface marked with the letter B

- show the `_ring_of_strike` with a right click on

- show the `footprint_bottleneck` with a right click on

- show the `background_footprint` with a right click on



- change the color of the pieces

## creation of positioning pins

- double click on the branch turns blue

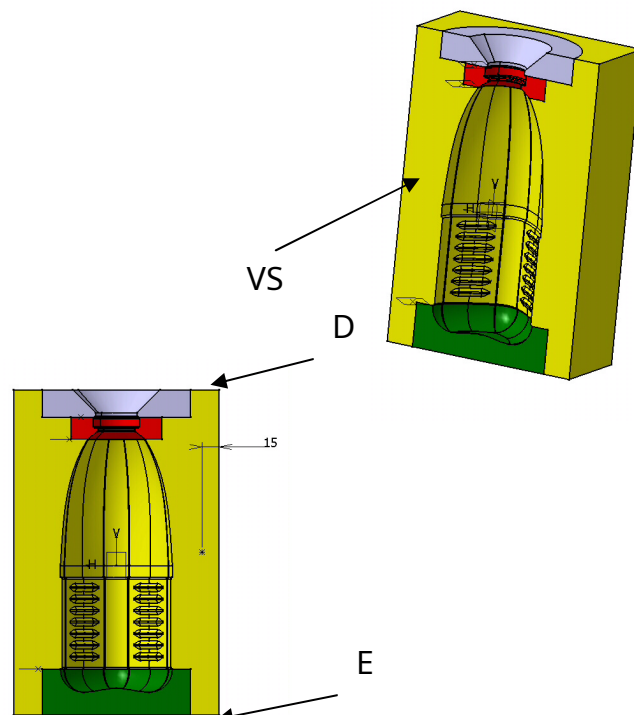


- make a hole of  $\phi 10$  depth 20 on the side marked C

- constrain the point equidistant from lines D and E

- put the odds of 15

- make a rectangular repetition following a direction between centers 150



## creation of a positioning pin

- double click on the branch turns blue



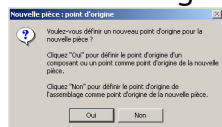
- Insert a new part by clicking on

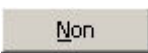
- click in the construction tree on

- name the reference: **pawn**

- click OK

The following dialog box appears :



- click on  to take the same origin as the assembly

- double click on the branch turns blue




- open a sketch on the side marked with the letter A

- select edge F



- click on to make the 3D projection



- exit by clicking on 

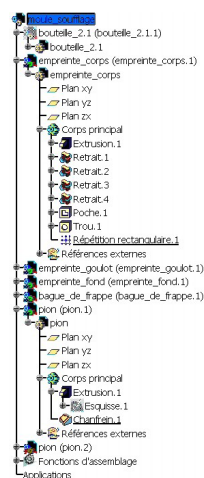
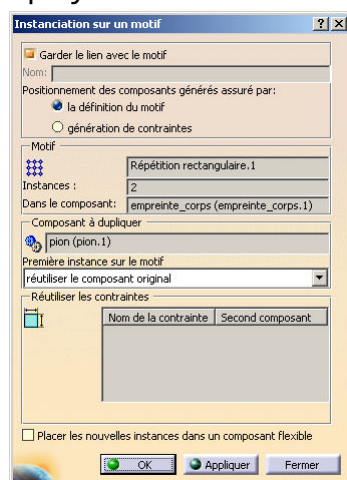


- make an extrusion in two directions over a length of 20mm on the imprint side and 15mm on the other.
- make a chamfer of 3 mm per 75°



Pawn duplication per repetition

- double click on the  moule\_soufflage branch turns blue
- select the pawn in the construction tree
- click on the  box displayed



- click on  Répétition rectangulaire.1
- click OK

the pawn is duplicated