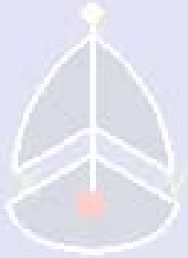


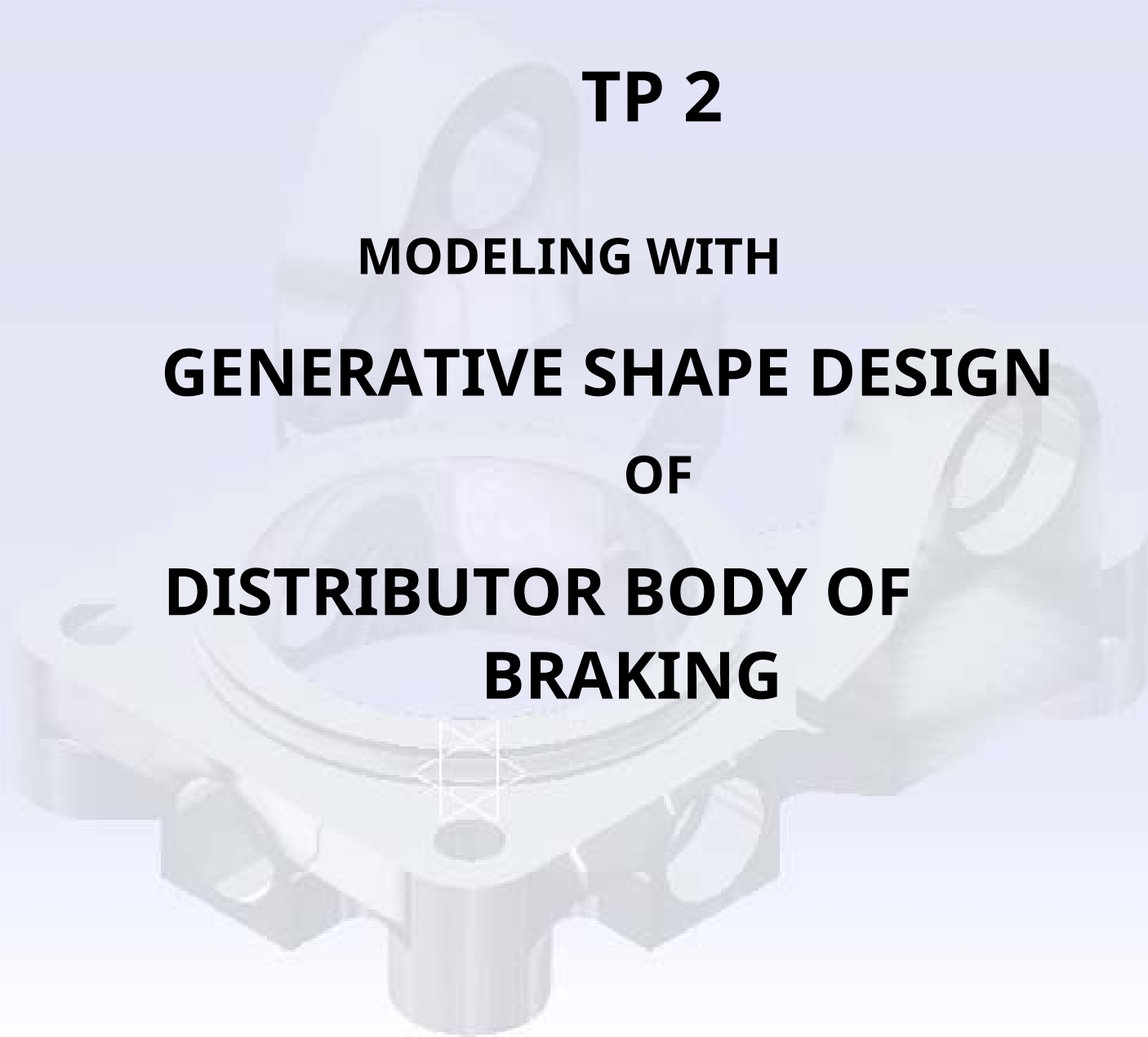
**TP 2**

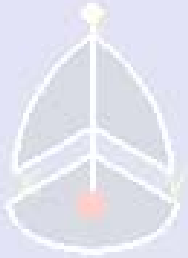
**CATIA V5**  
**SURFACE**



## **TP 2**

# **MODELING WITH GENERATIVE SHAPE DESIGN OF DISTRIBUTOR BODY OF BRAKING**





## **PURPOSE**

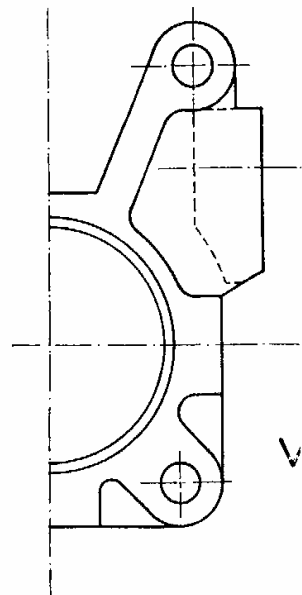
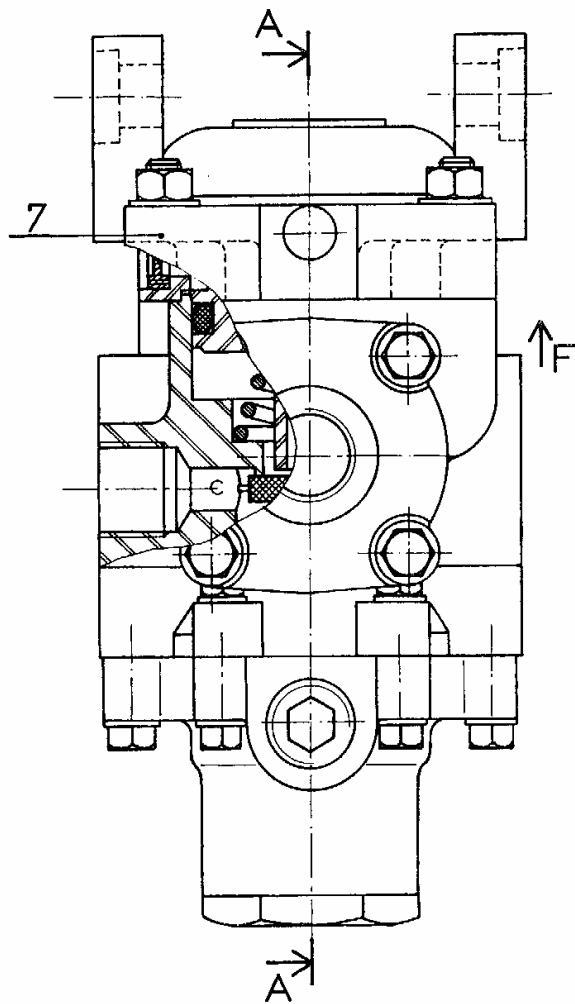
**Surface model the distributor body  
braking**

**From :**

- **2D assembly drawing**
- **definition drawing**

CC

LEVIER 1 ET PIÈCES  
ANNEXES ENLEVÉES

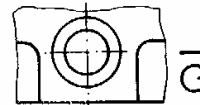


Vue suivant F  
de 7

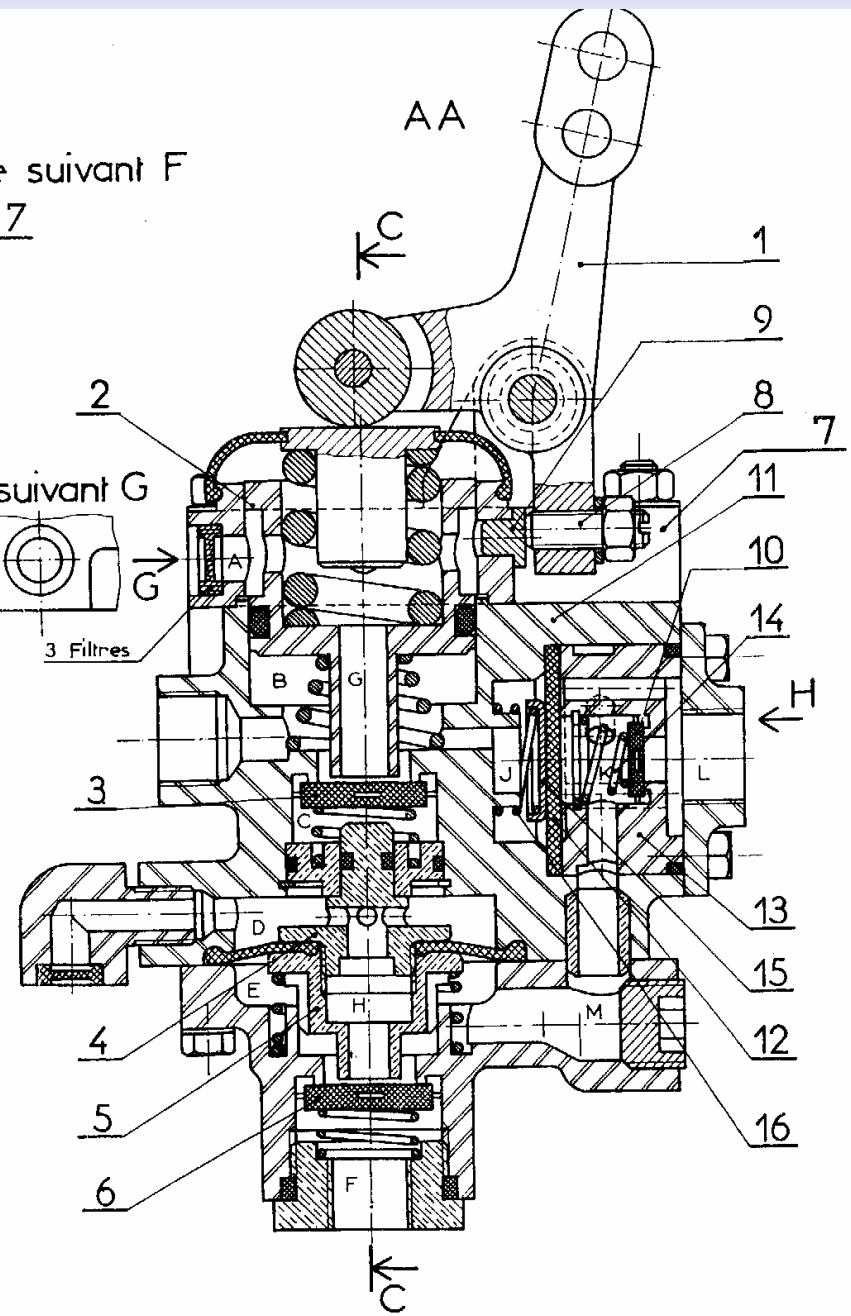


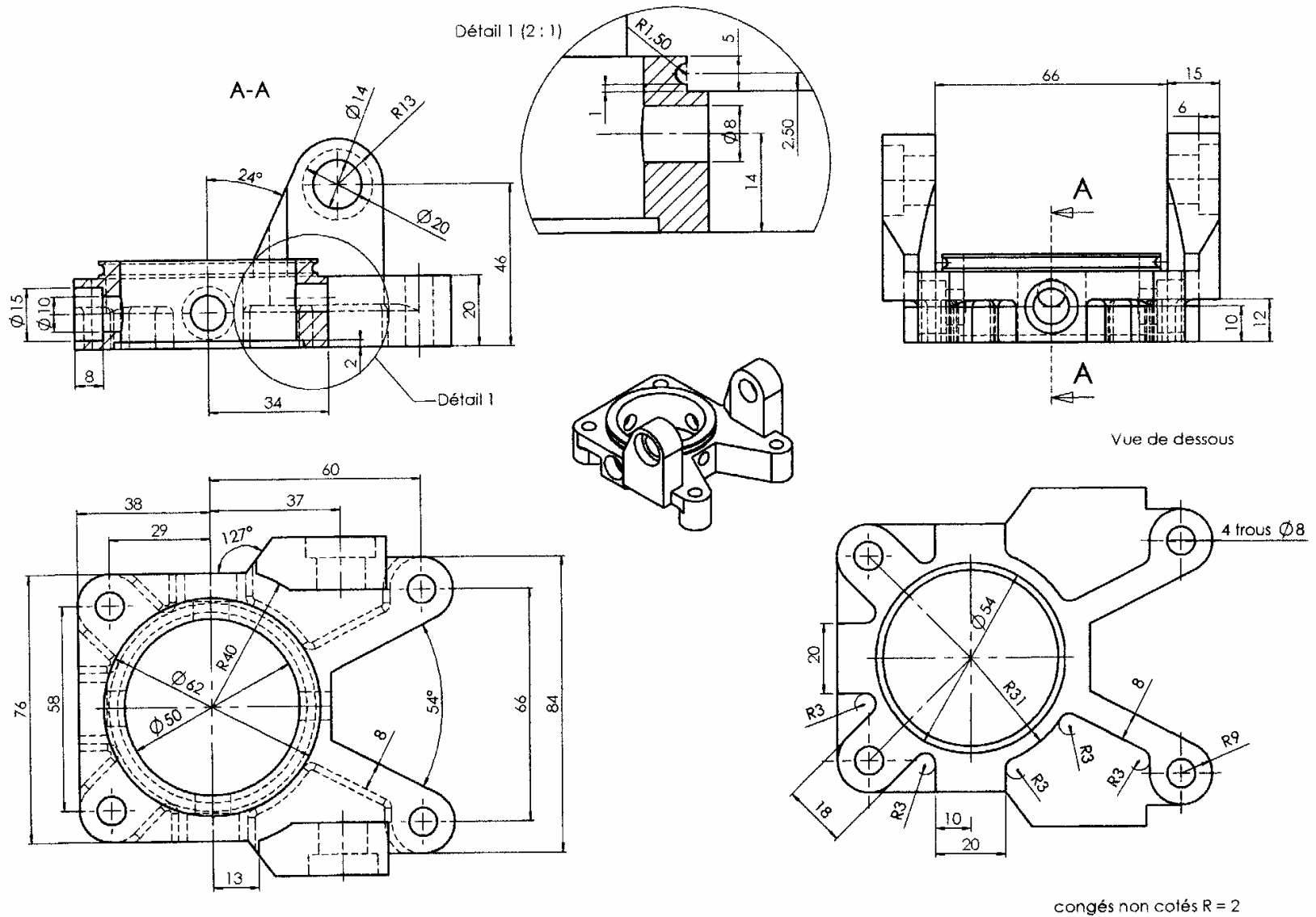
Vue suivant  
H de 13

Vue suivant G



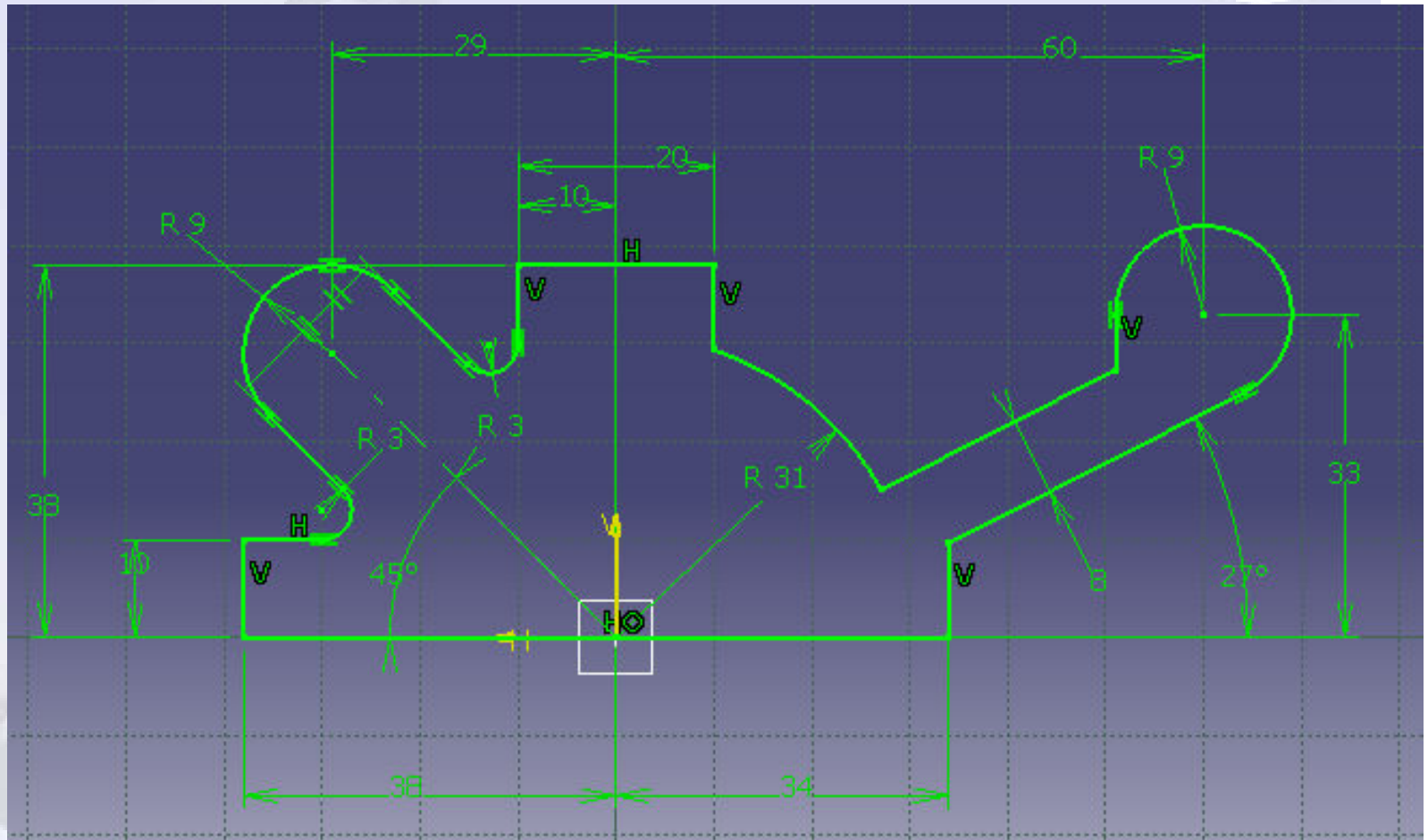
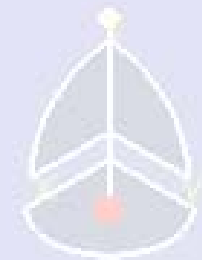
3 Filtres

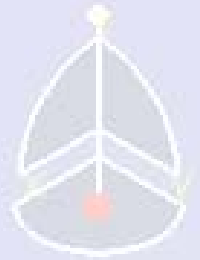




**CORPS**

We give





## 1° Step

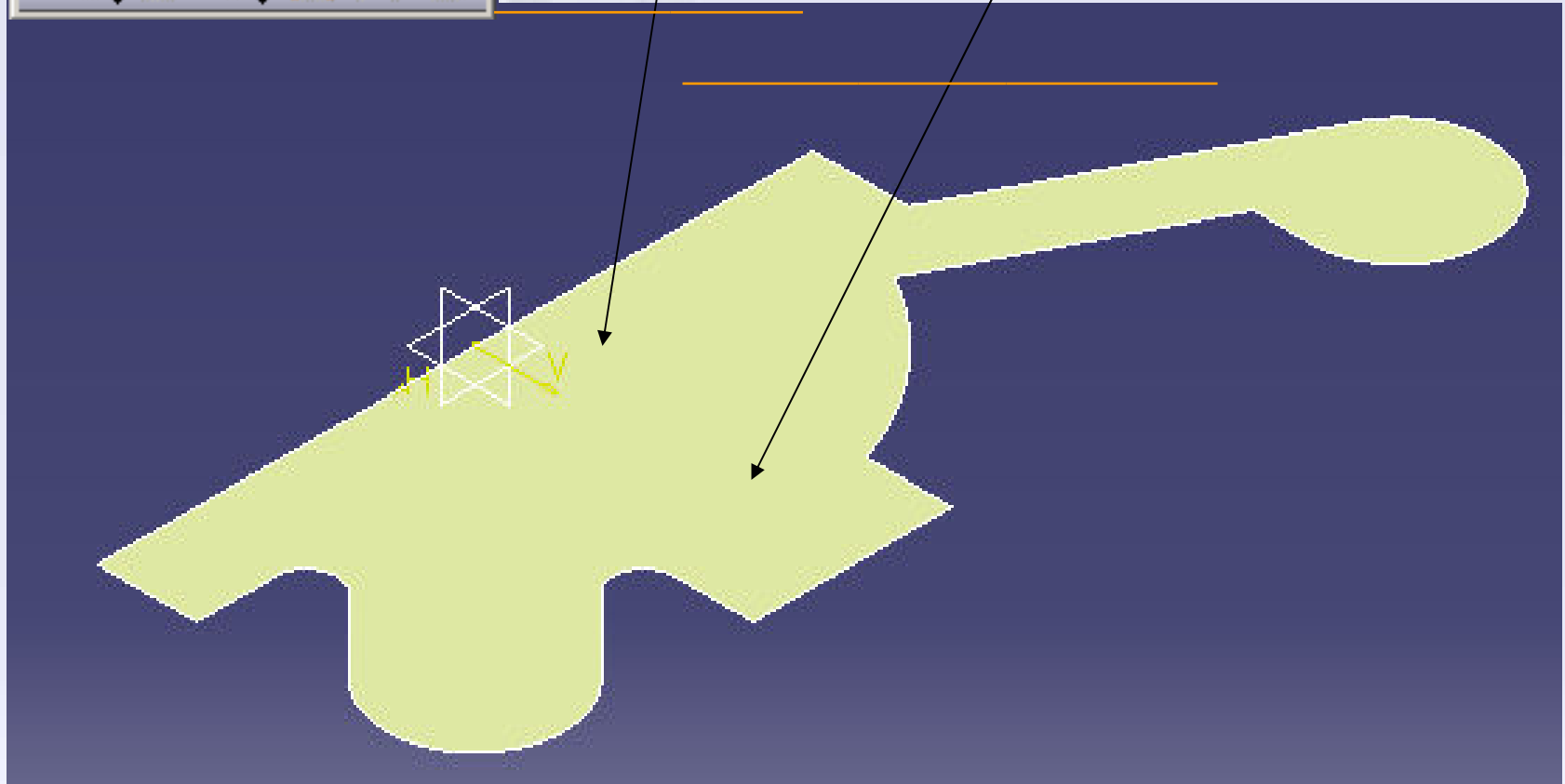
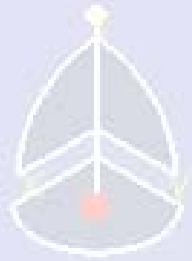
### Creation of the *lower base surface*

- Show the *lower base profile*
- Use icon *filling*



R

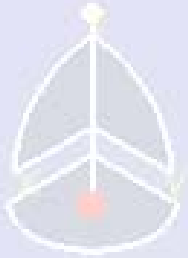
*lower base* in order to get the  
*lower base surface*



Rename *filling.1 lower base profile*

Hide bottom base profile and bottom base surface in tree view





## 2° Stage

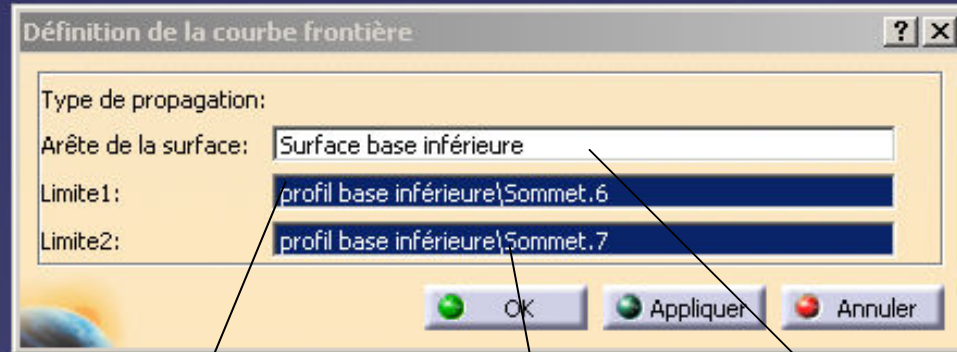
### Creation of the *lower side surface*

Obtaining the *lower side surface profile* from the *lower base surface*

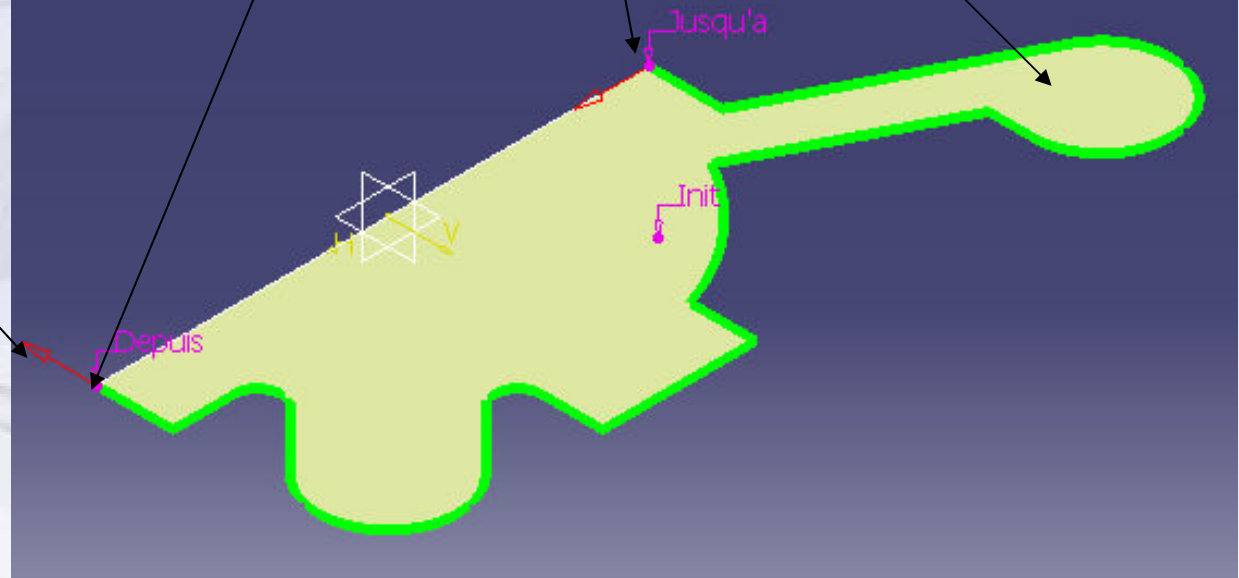
- Limit the boundary to get the *lower side surface profile*
- Use icon *extrusion* of a profile to obtain the *lower side surface*
- Use icon *extract limit* of a surface

# Ex

## and surface



Pay attention to meaning  
red arrows



Rename *border.1*

*lower side profile*

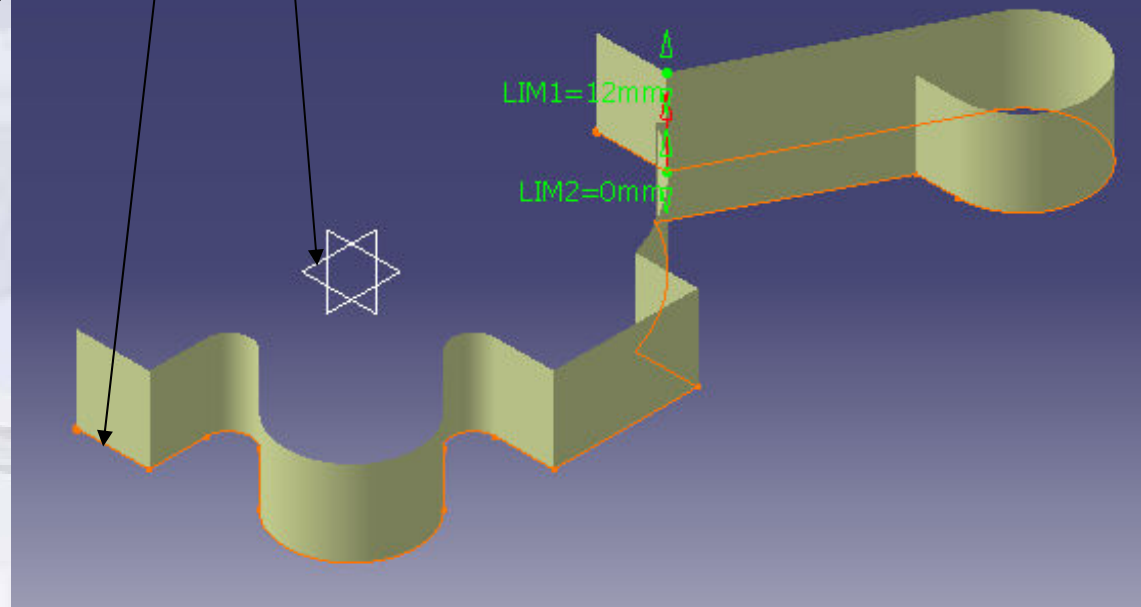
Hide the lower base profile and the lower base surface

E

S



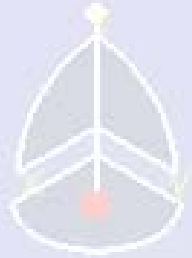
Caution reverse the direction if the extrusion is not in the desired direction.



Rename *extrude.1*

*lower side surface*

Hide bottom side surface Keep bottom base  
profile display

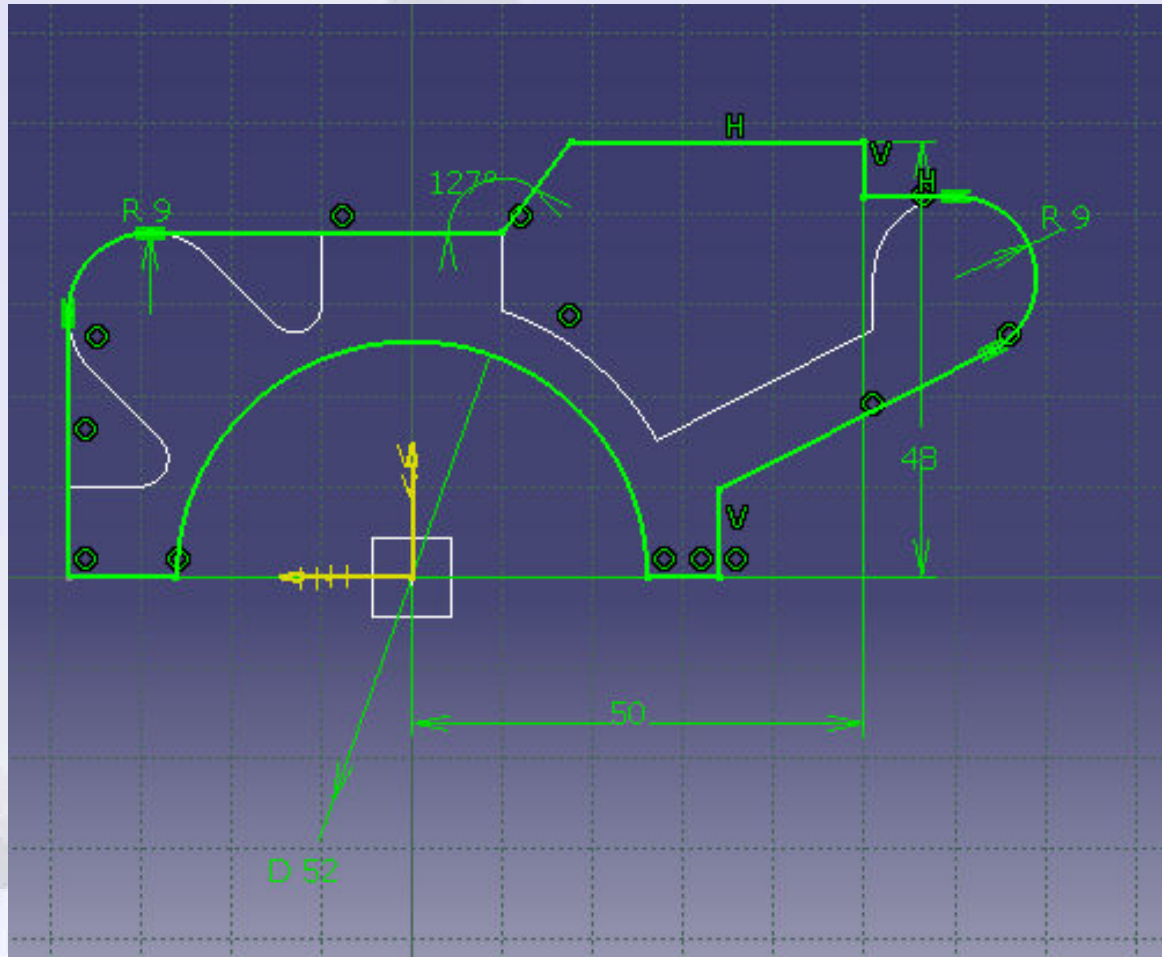
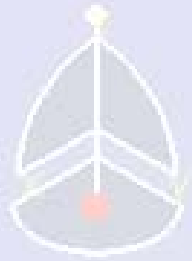


## 3° Stage

### Creation of the *upper base surface*

- Creation of *upper base profile* relying on the *lower base profile*
- Use icon *filling*

Create the sketch below in the xy plane

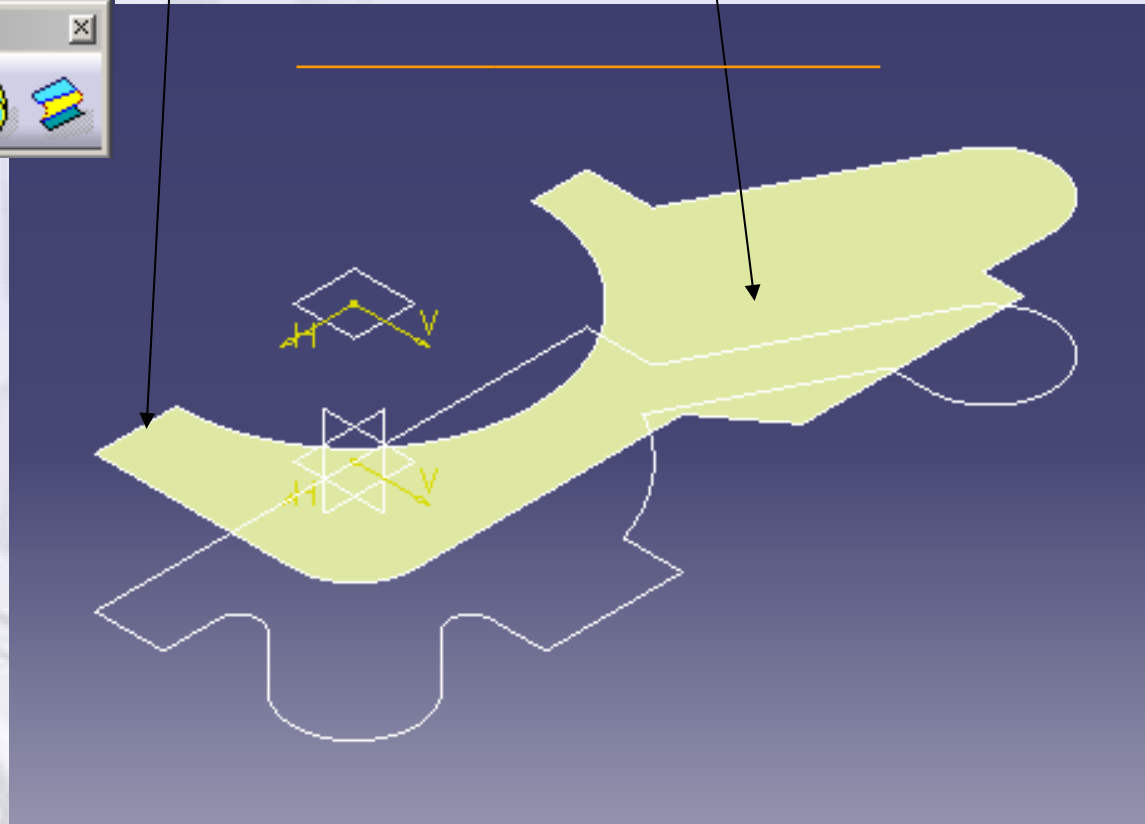
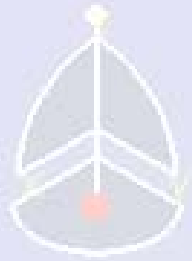


Rename *sketch.2*

*upper surface profile*

Close Sketch

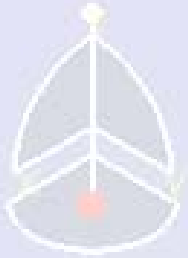
Filling the *upper base profile* in order to get the *upper base surface*



Rename *filling.2*

*upper base surface*

Hide lower base profile



## 4° Stage

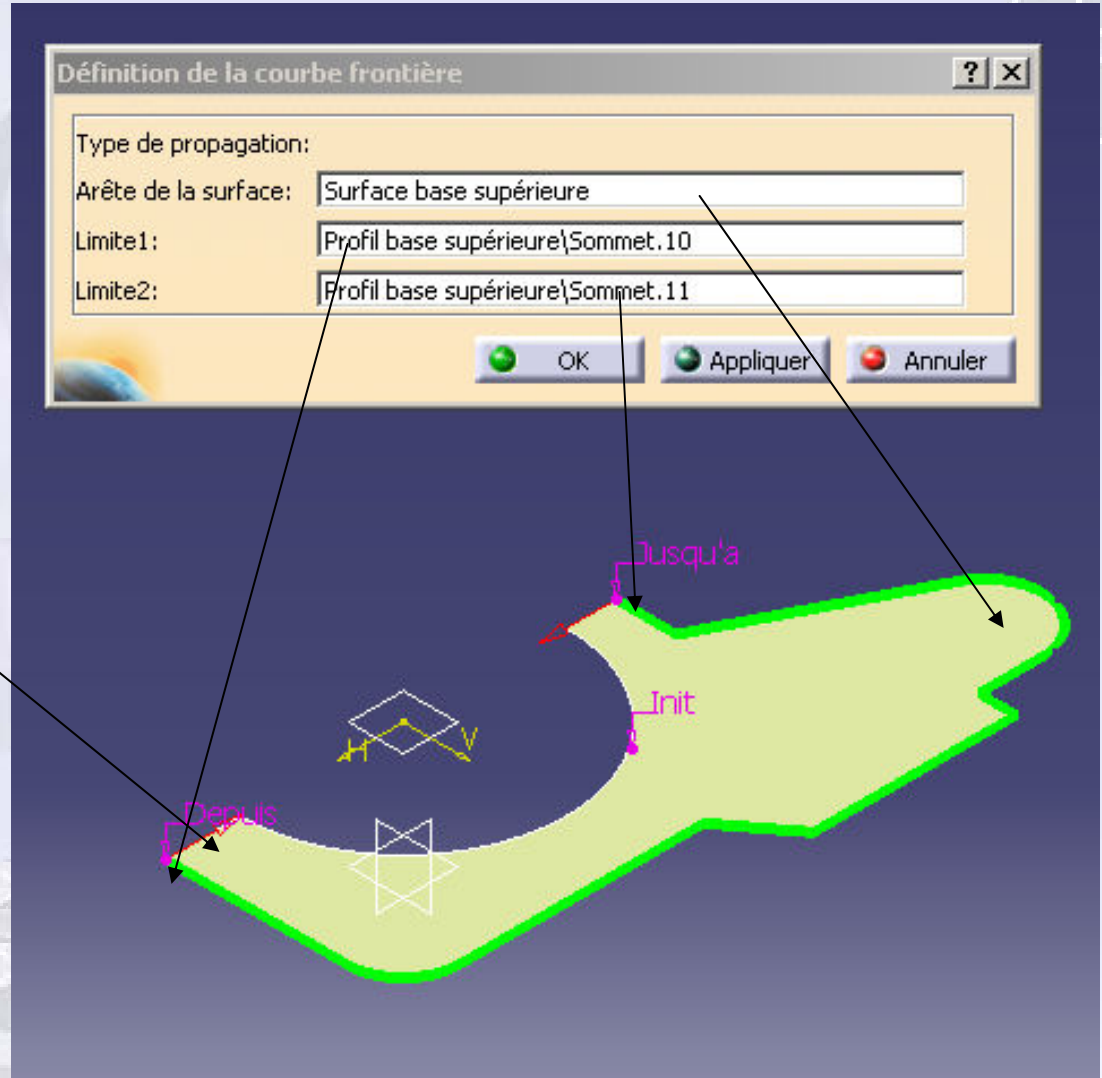
### Creation of the *upper side surface*

Obtaining the *upper side surface profile* from the *upper base surface*

- Use icon *extract limit* of a surface
- Limit the boundary to get the *upper side surface profile*
- Use icon *extrusion* of a profile to obtain the *upper side surface*

# Ex

## and surface



Pay attention to meaning  
red arrows

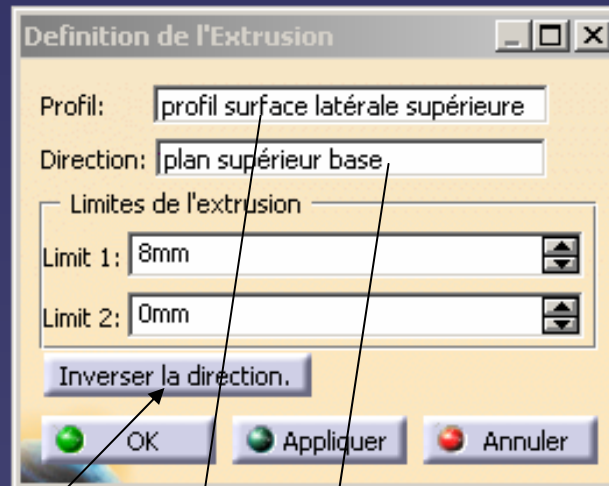
Rename *border.2*

*upper side surface profile*

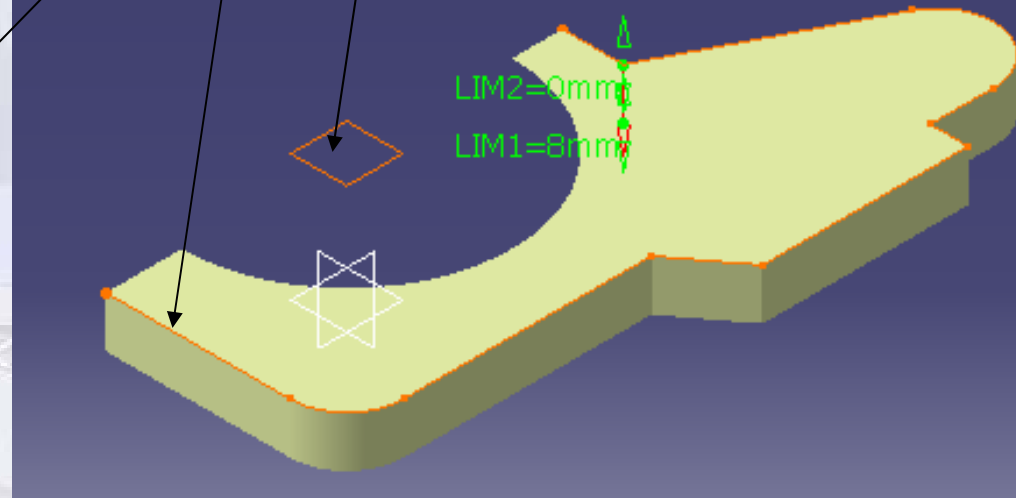


Ex

## upper side surface



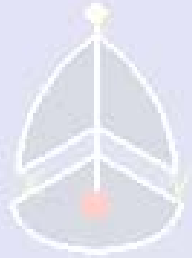
Caution reverse the direction if the extrusion is not in the desired direction.



Rename *extrude.2*

*upper side surface*

Hide the upper surface profile and the upper side surface Keep the display of the lower base profile



## 5° Step

### Creation of the *intermediate surface cut out*

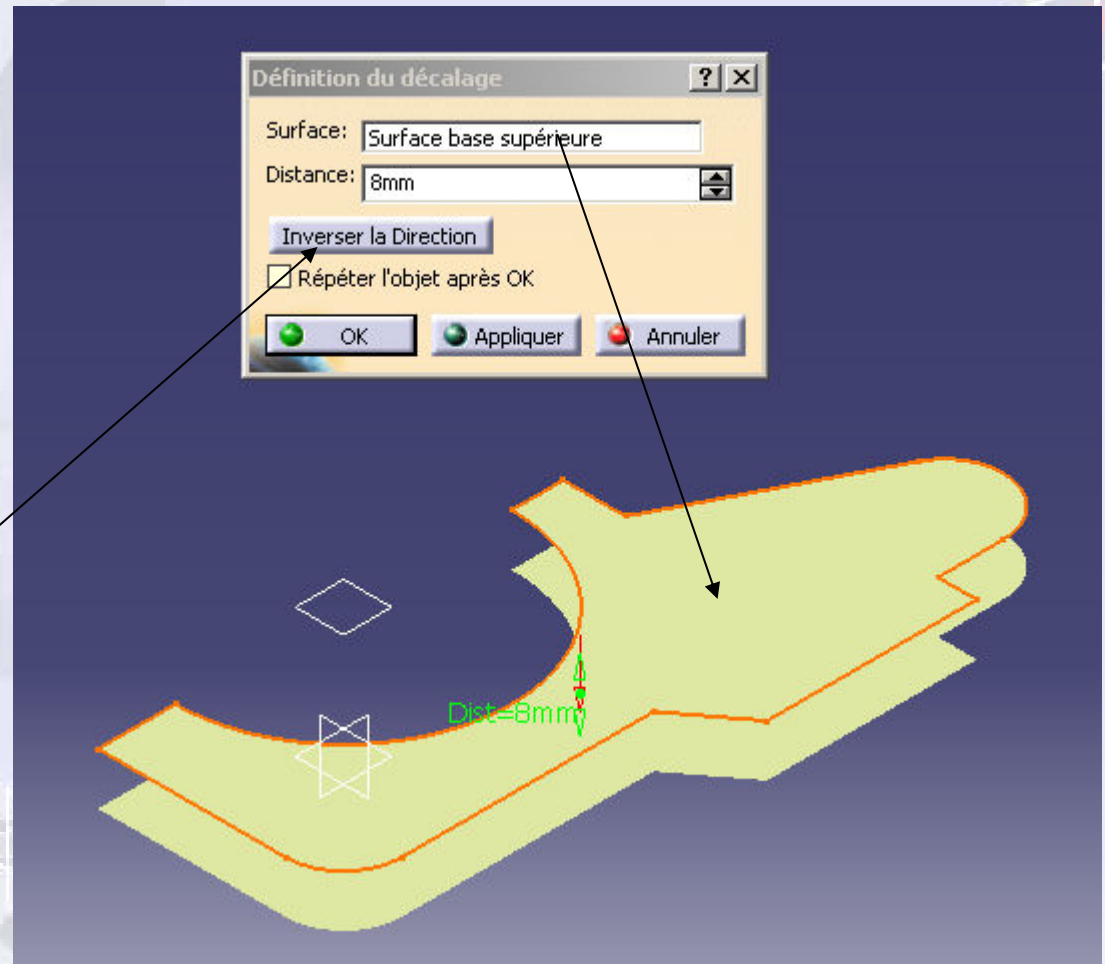
- Use icon *surface offset* to create the intermediate surface
- Use icon *cutting* to limit the *intermediate surface* over there *lower side surface* in order to get the *intermediate surface cut out*

Dec  
do

## upper base face intermediate base



Caution reverse the  
direction if the offset is not in  
the desired direction.

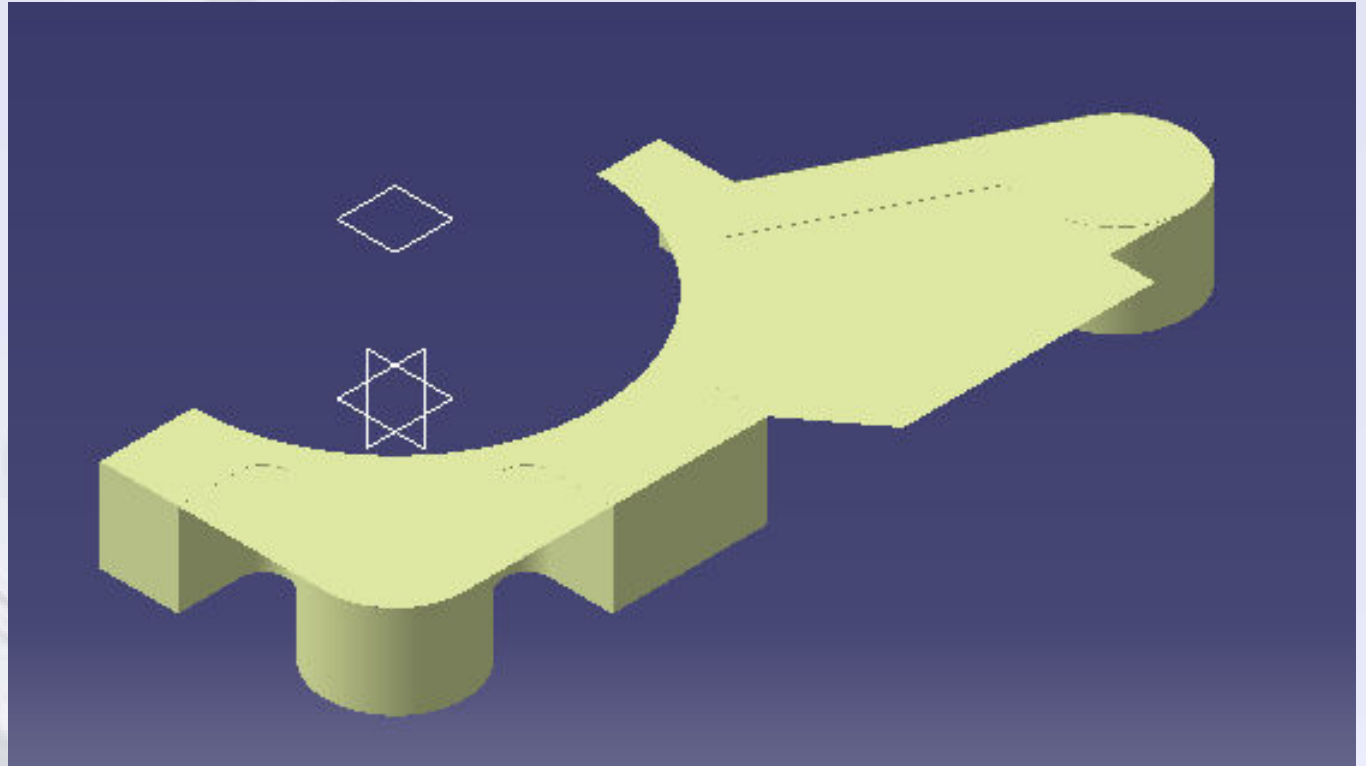
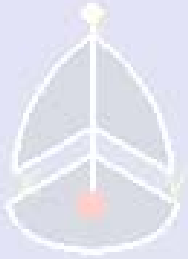


Rename *offset.1*

*intermediate base surface*

Hide top side surface Show bottom  
side surface

**Show lower side surface**



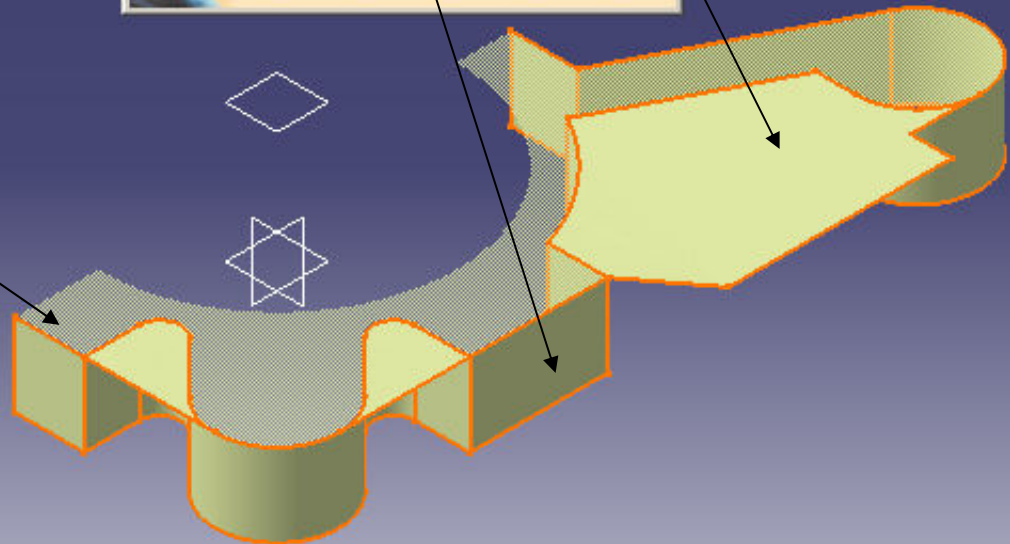
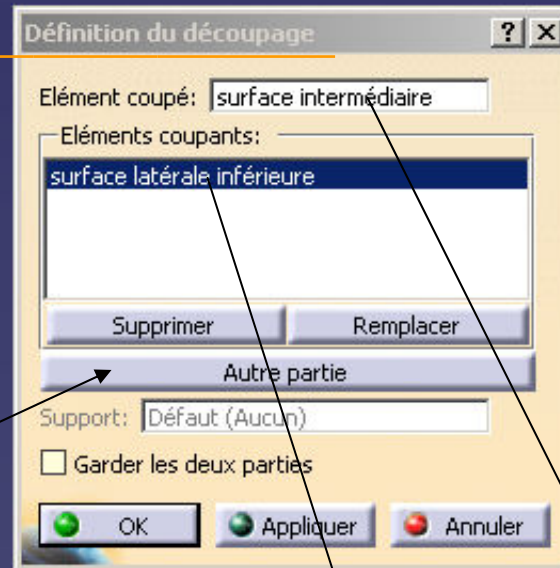
Of

*intermediate base surface* over there  
*e lower side*



To modify the retained part, click on Other part.

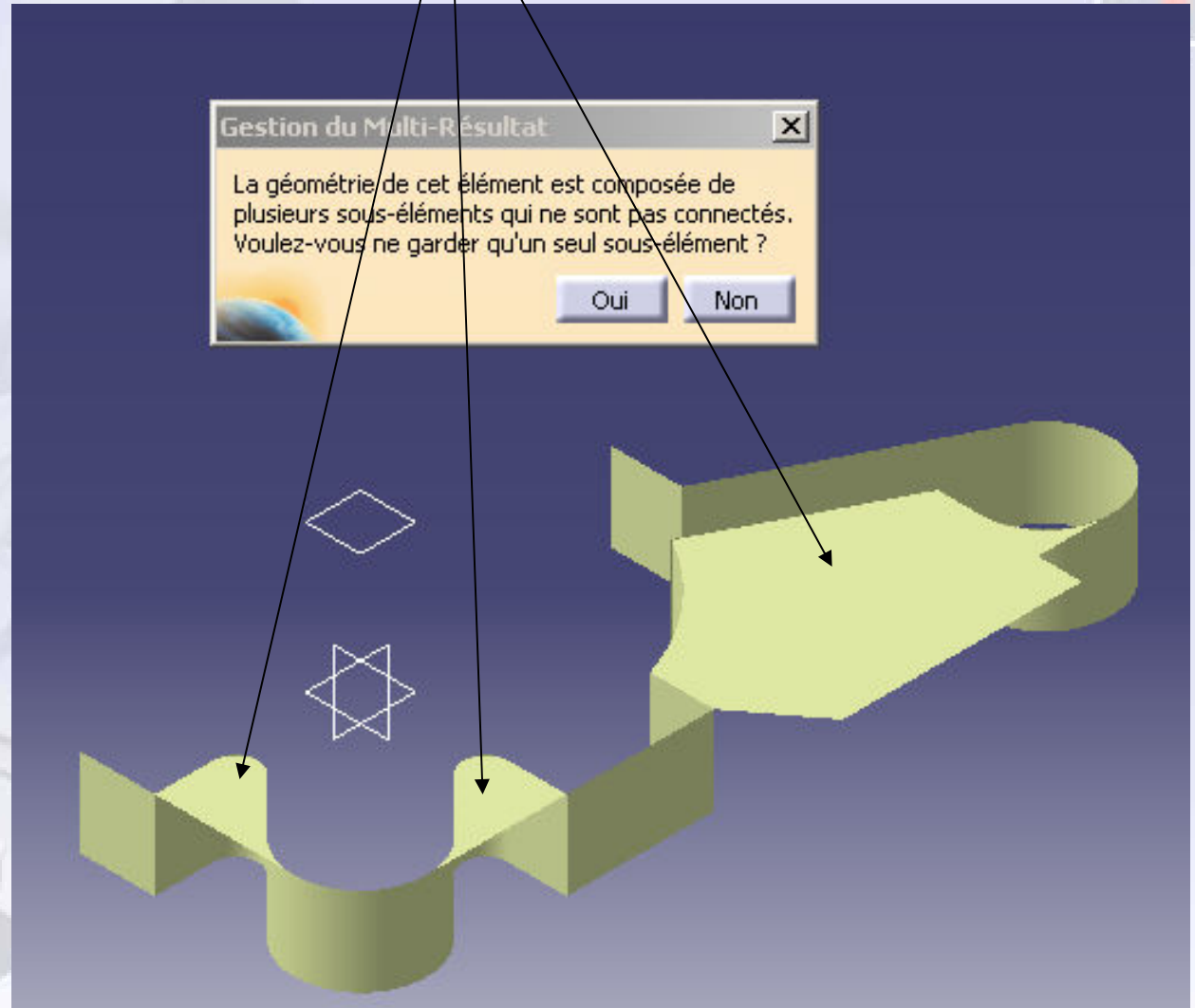
The shaded part represents the removed surface



Rename *cutout.1*

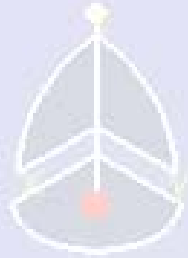
*intermediate surface*

# Picking out **No** to keep the three elements



Rename **cutout.1**

**intermediate surface**

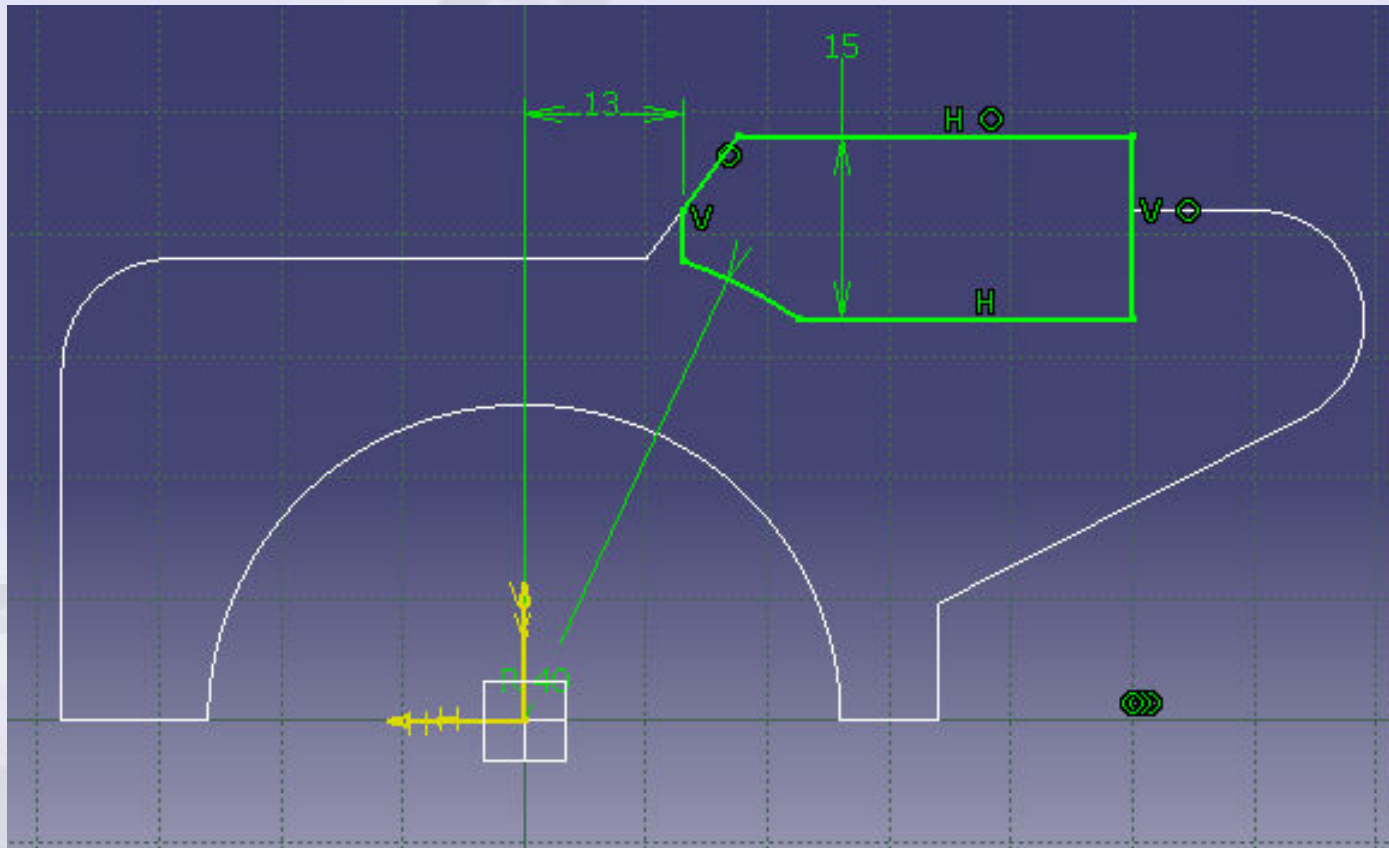
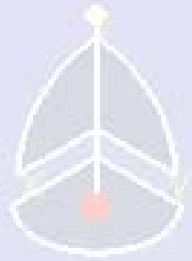


## 6° Stage

Creation of the *lug surface without facing*

- Creation of *ear base profile* relying on the *upper base profile*
- Use icon *extrusion* to get the *ear lateral surface*
- Creation of *profile upper ear*
- Use icon *extrusion* to get the *surface upper part of the ear*
- Use the cut icon of the two surfaces created to obtain the *lug surface without facing*

# Create the sketch below in the base top plane



Rename *sketch.3*

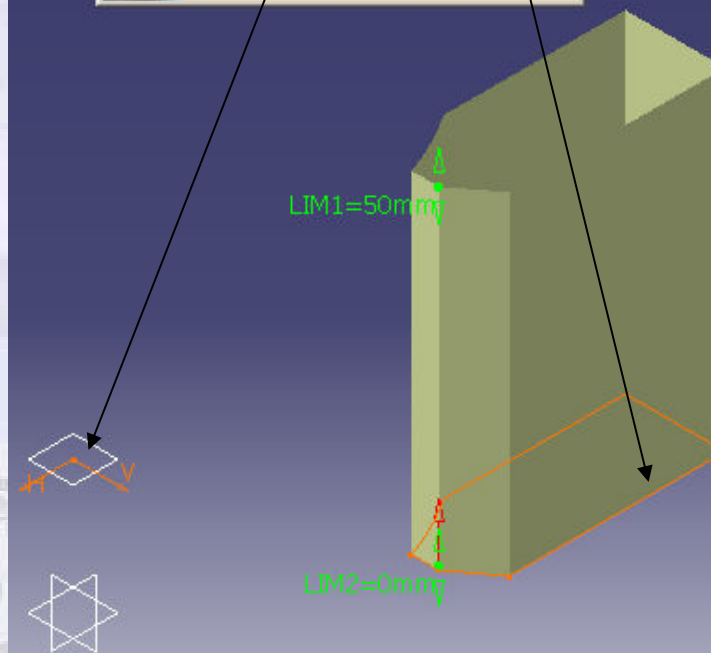
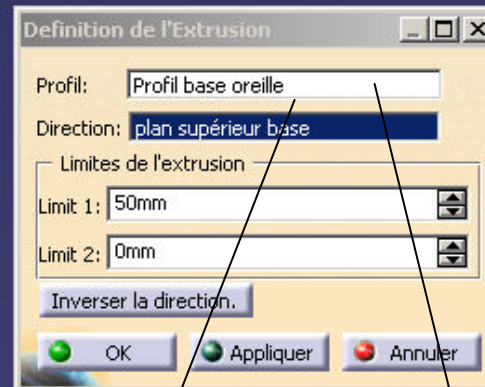
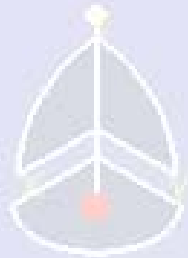
*ear base profile*

Close Sketch



# Ex

## ear base



Rename **extrude.3**

**ear lateral surface**

Show profile upper ear

# Create the sketch *profile upper ears* in the ZX-plane

Rename *sketch.4*

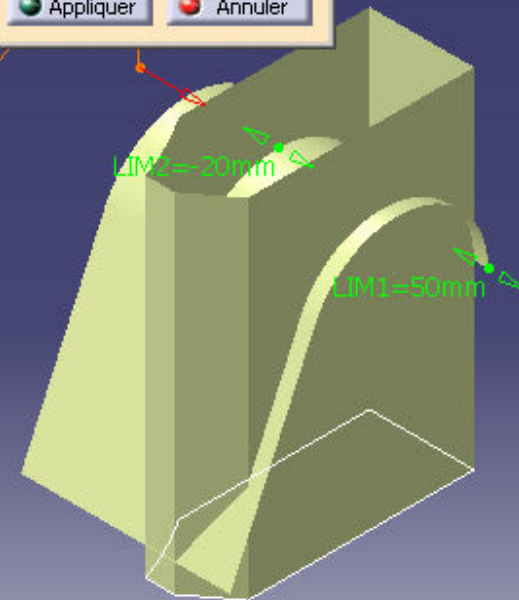
*Upper ear profile*

Ext  
*pro*



Rename *extrude.4*

*upper surface of the ear*

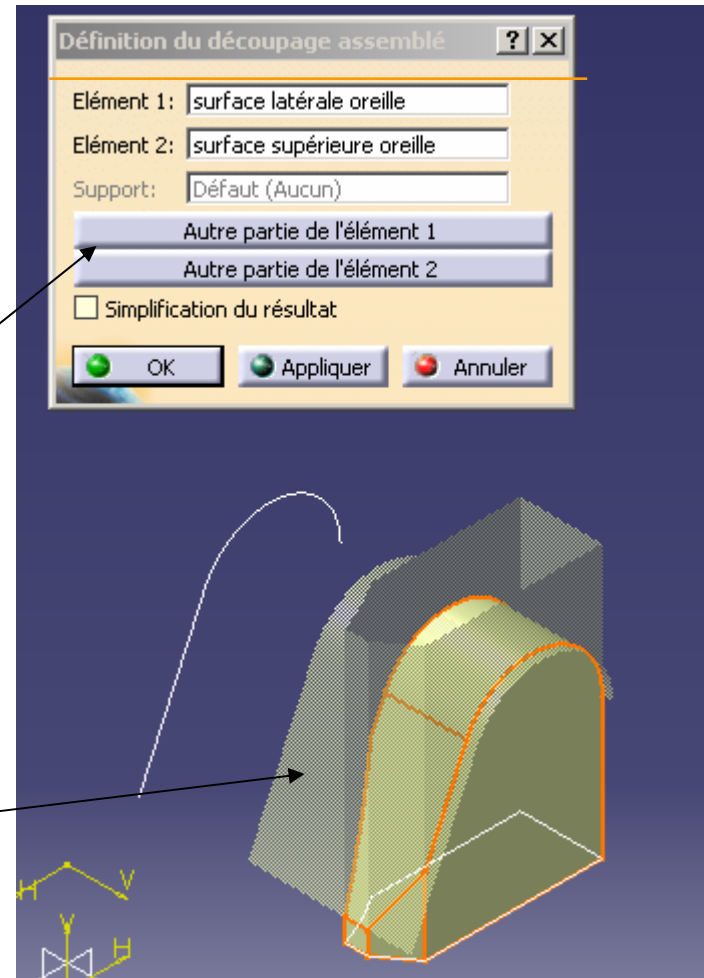


# Of wheat from the *ear lateral surface* over there *upper ear*

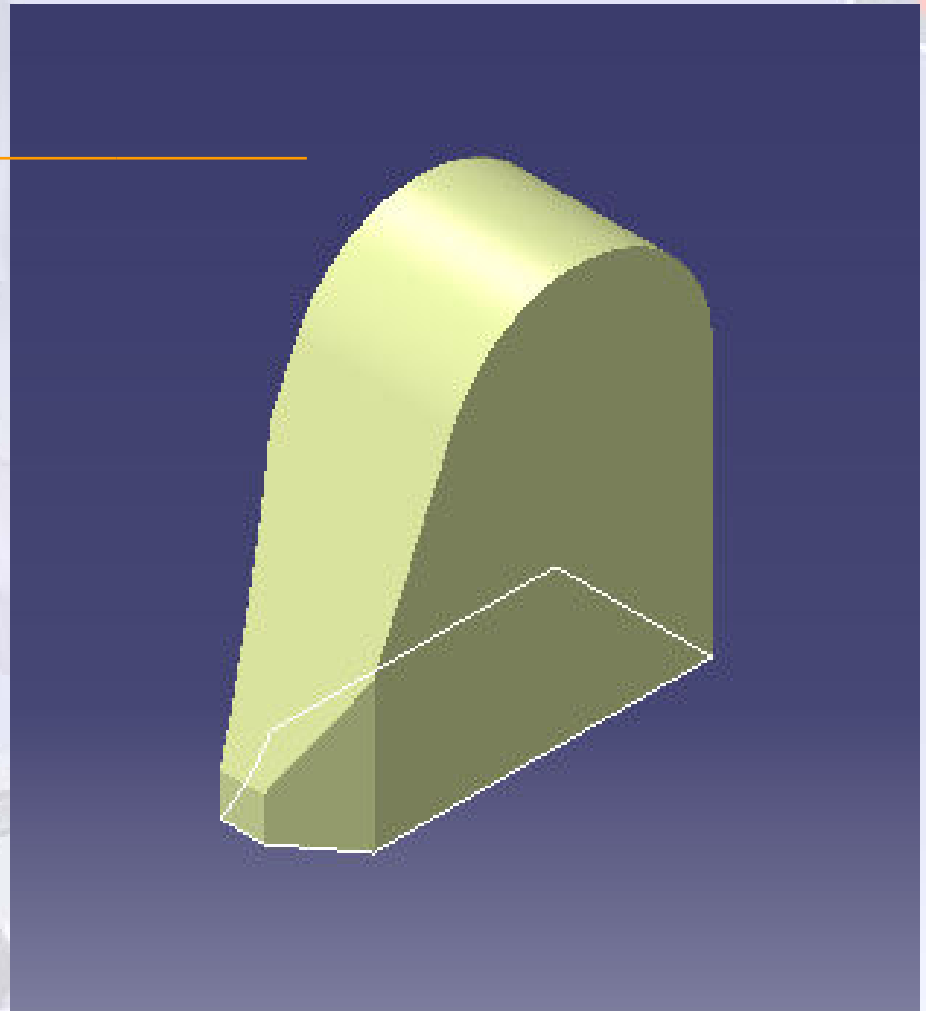


To modify the retained part, click on Other part of element.1 or Other part of element.2

The shaded part represents the removed surface

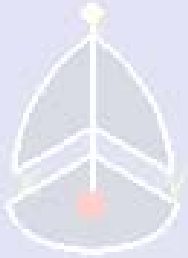


We get the *lug surface without facing* below



Rename *cutout assembled.1*

*lug surface without facing*

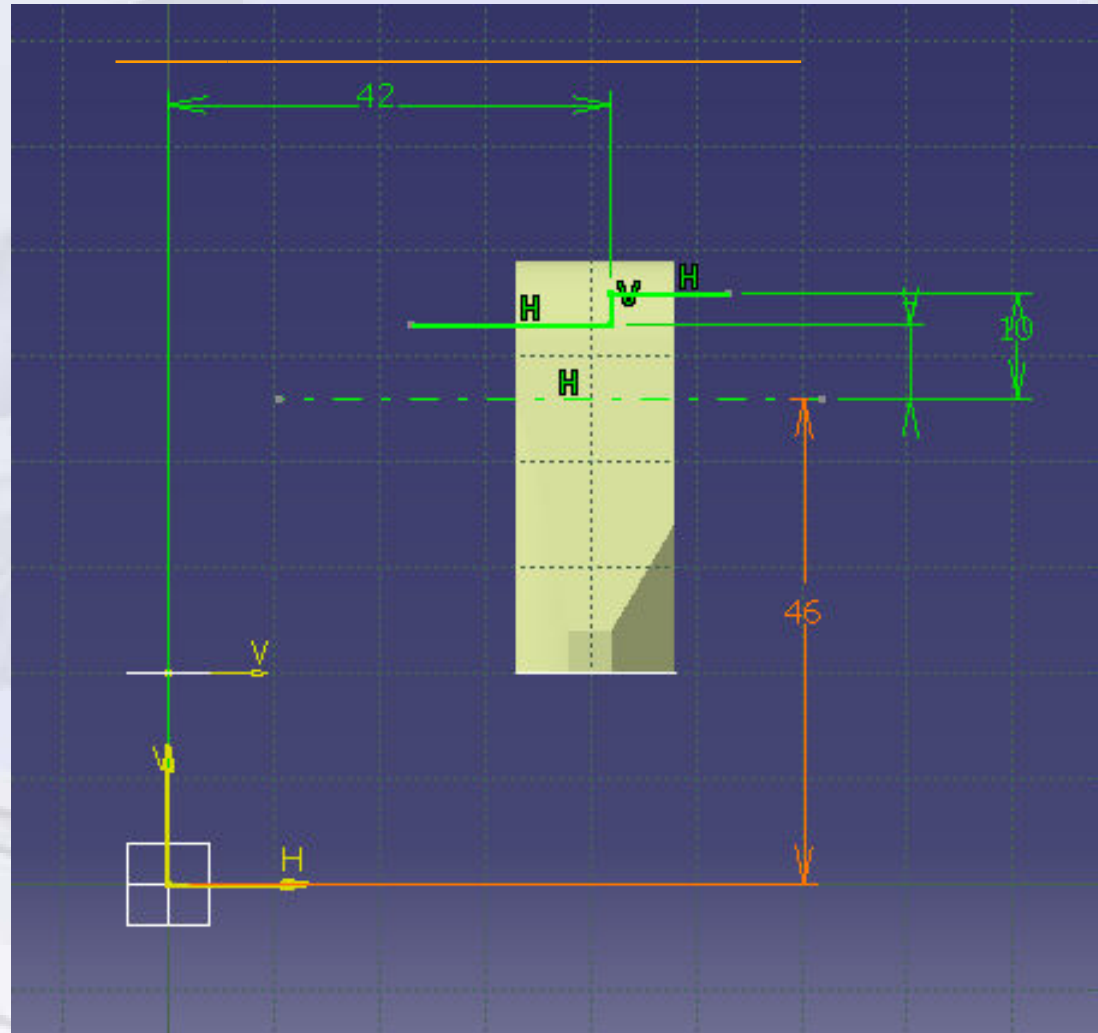
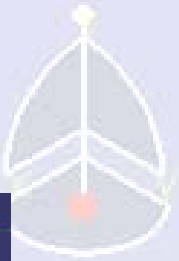


## 7° Stage

Creation of the *ear with counterbore*

- Creation of *ear counterbore profile*
  - Use icon *spin* to get the *ear counterbore surface*
  - Use icon *cutting surfaces* *lug surface without facing* with *ear counterbore surface*
- to get the ear with counterbore

Create the sketch of the *ear counterbore profile* in a plane offset by 37 mm from the yz plane

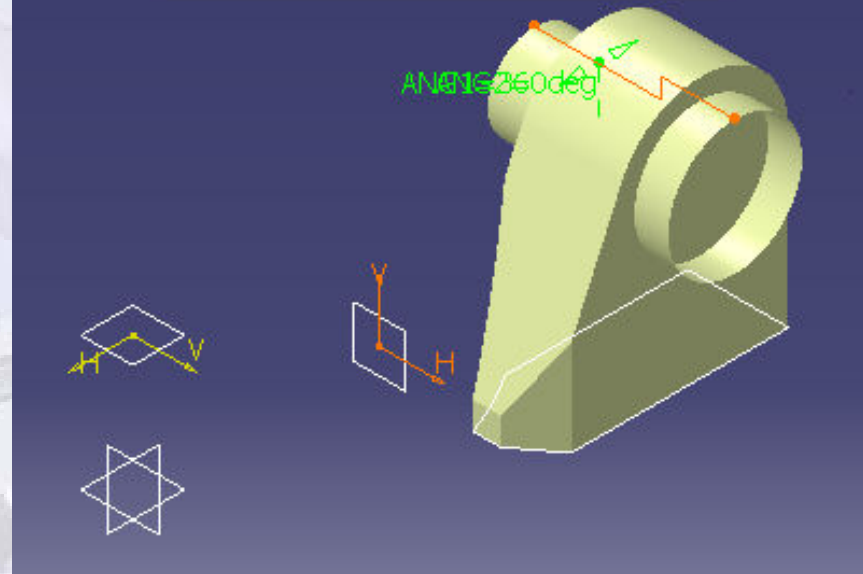
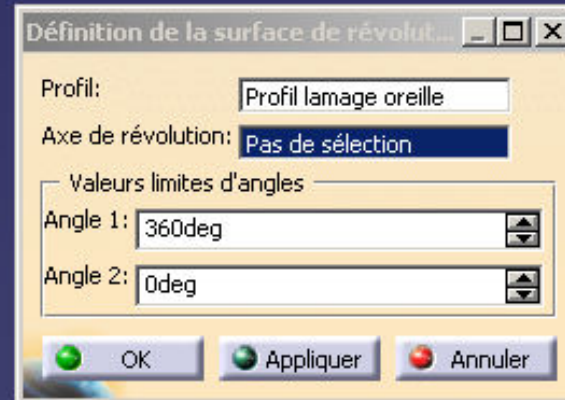
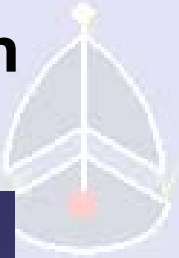


Rename *sketch.5*

*ear counterbore profile*

Rev  
thes

ear counterbore of 360° to obtain  
ear

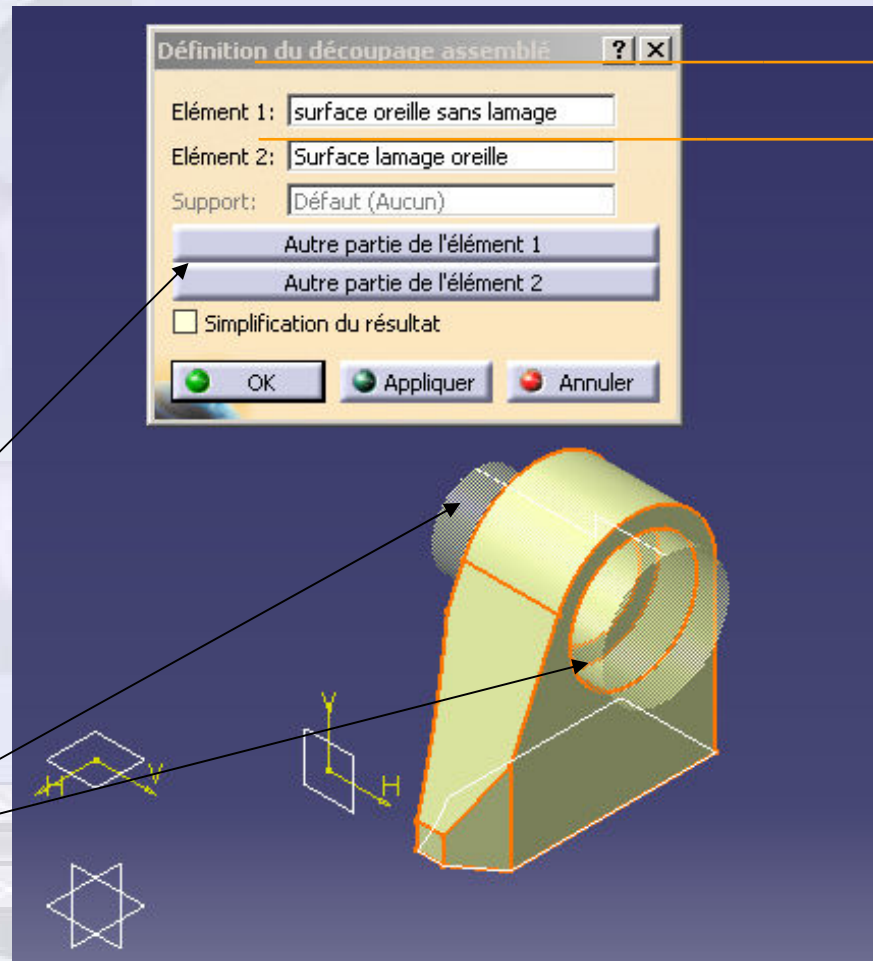


Rename *revolution.1*

*ear counterbore surface*

Of  
not

wheat from the *lug surface without facing*  
*ear counterbore surface*



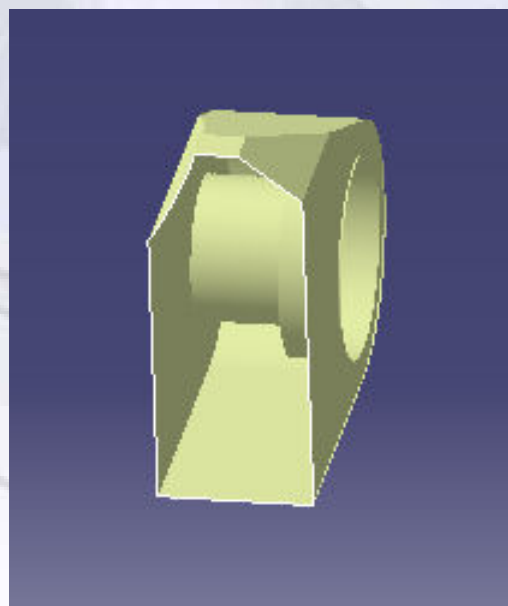
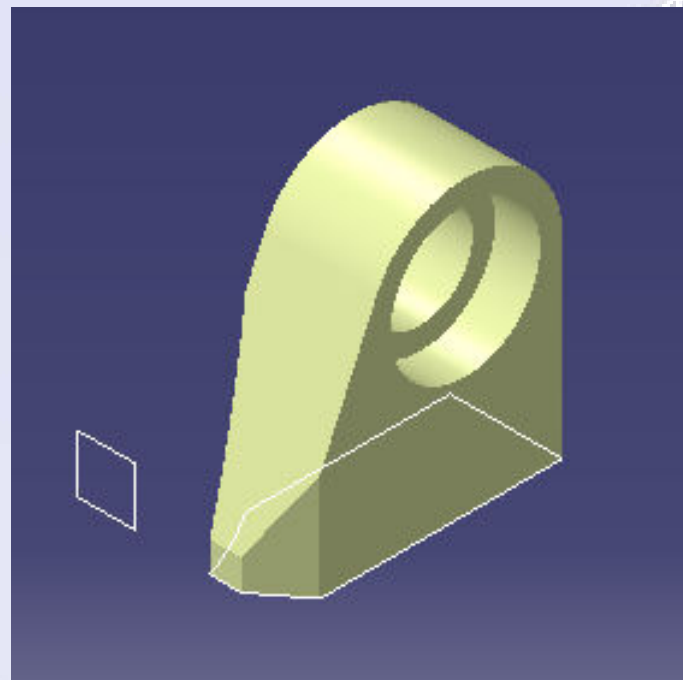
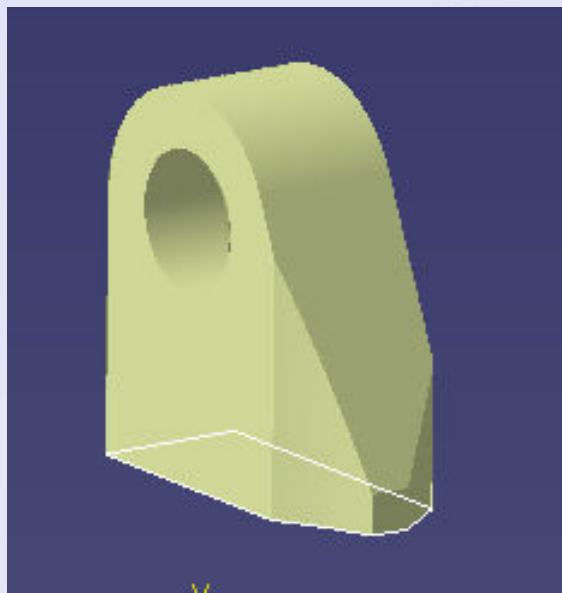
To modify the retained part,  
click on Other part of  
element.1 or Other part of  
element.2

The shaded part represents the  
removed surface

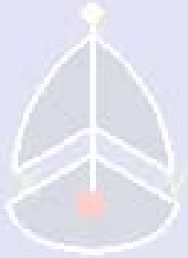
Rename *cutout assembled.2*

*ear*





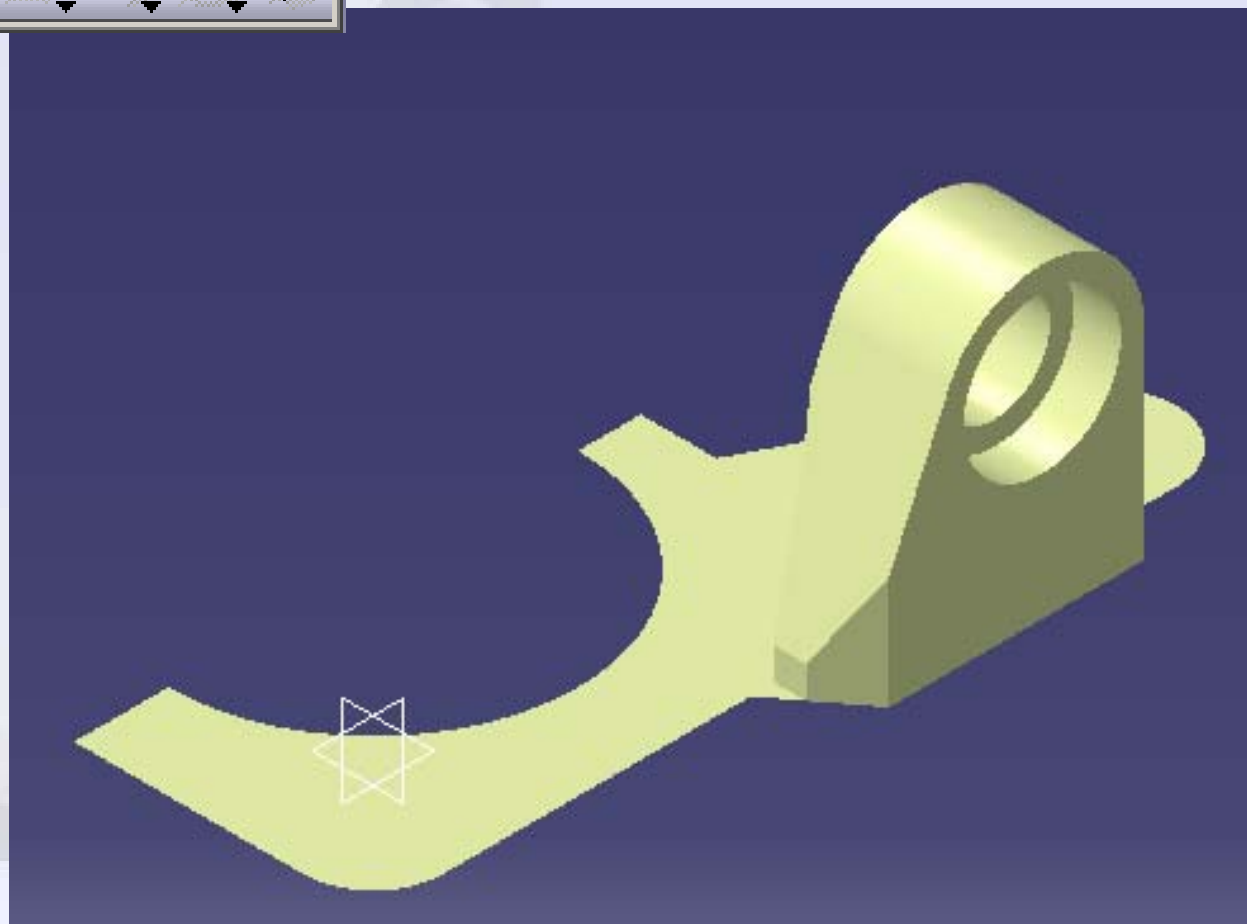
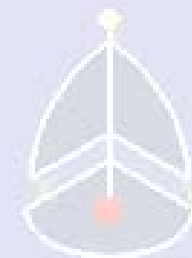
**Completed ear**



## 8° Stage

### Cutting of the base upper surface by the ear

- Creation of *ear counterbore profile*
  - Use icon *spin* to get the *ear counterbore surface*
  - Use icon *cutting* surfaces *lug surface without facing* with *ear counterbore surface*
- to get the ear with counterbore



Définition du découpage ? X

Elément coupé: Surface base supérieure

Eléments coupants:

oreille

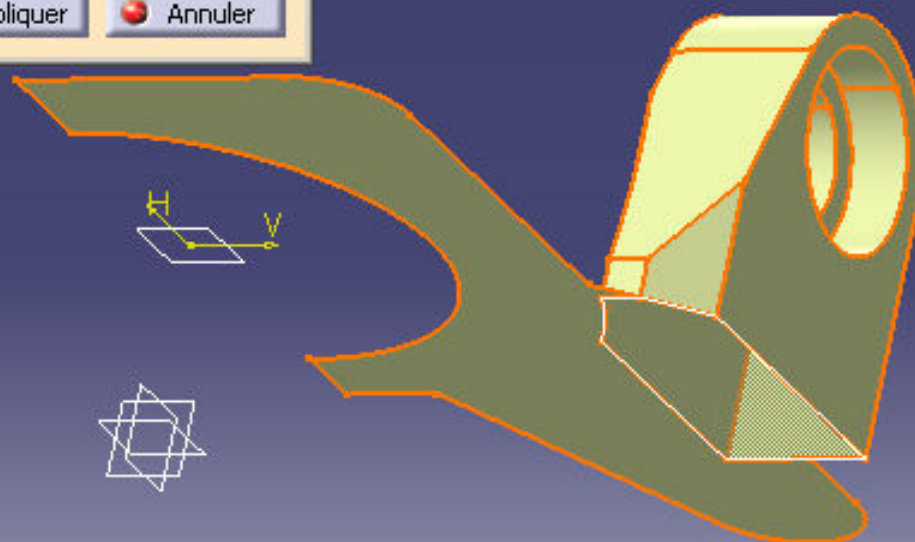
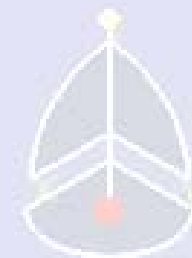
Supprimer Remplacer

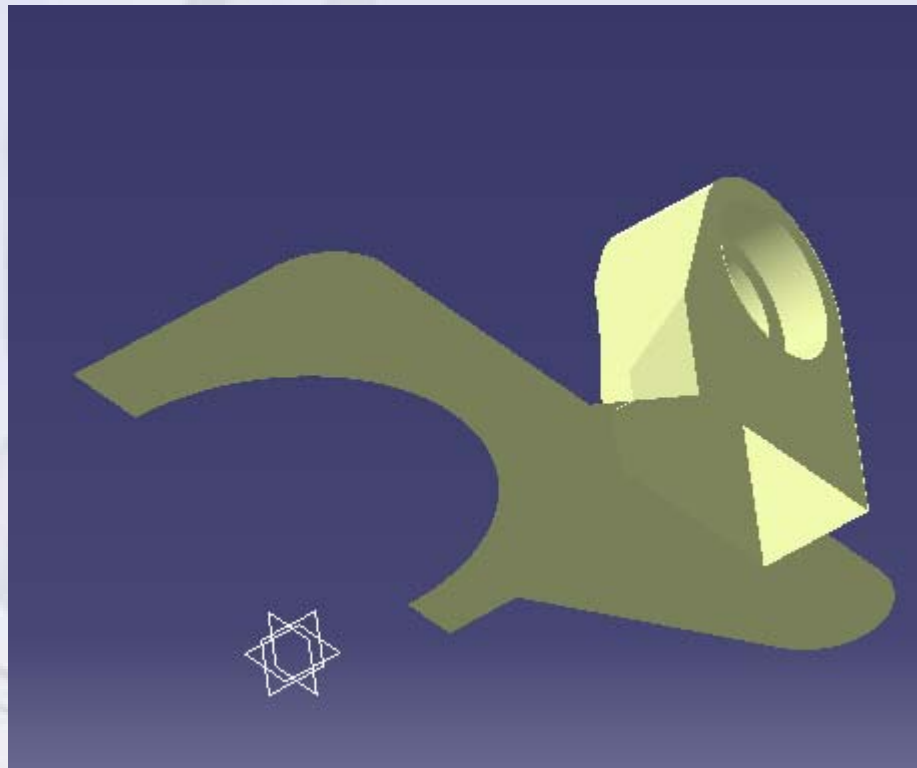
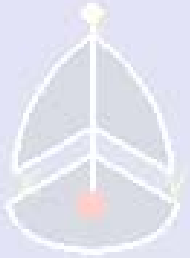
Autre partie

Support: Défaut (Aucun)

☐ Garder les deux parties

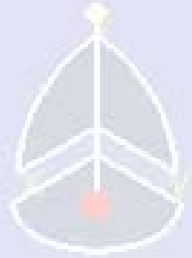
OK Appliquer Annuler





Rename *cutout.2*

*upper surface cut out ear*



## 9° Step

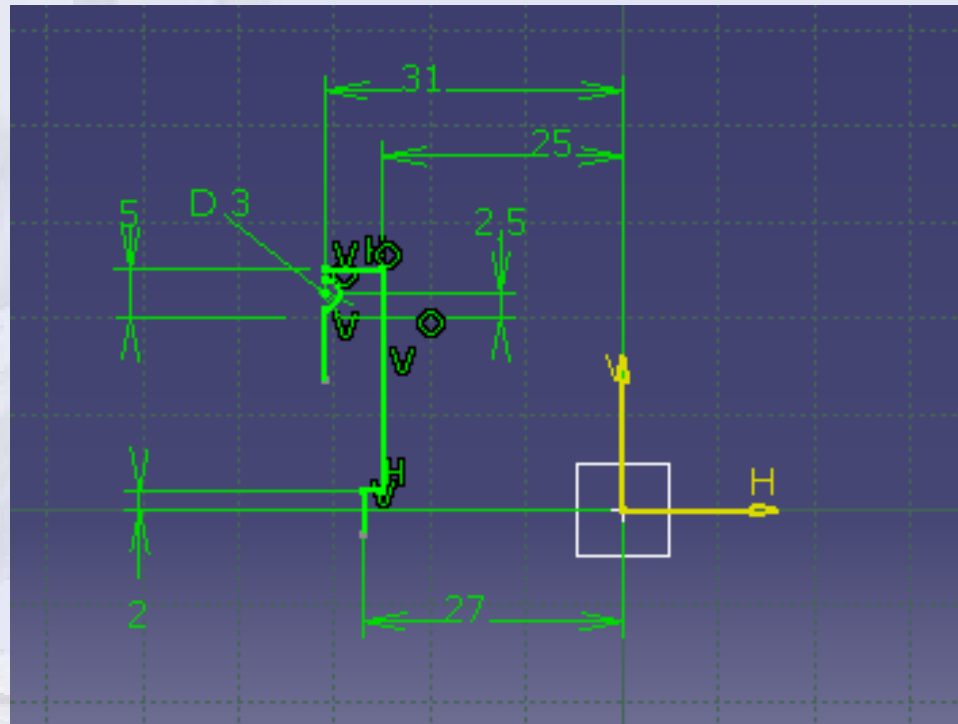
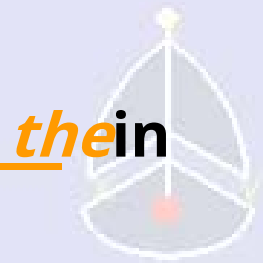
Creates the initial cylindrical surface

- Creation of *profile central cylindrical part*
- Use icon *spin* to get the *central cylindrical surface*

- Use icon *assembled cutout surfaces*  
*central cylindrical surface* with *upper surface cut out ear*

- Use icon *assembled cutout surfaces*  
*upper surface cut out ear* with *lower base surface*

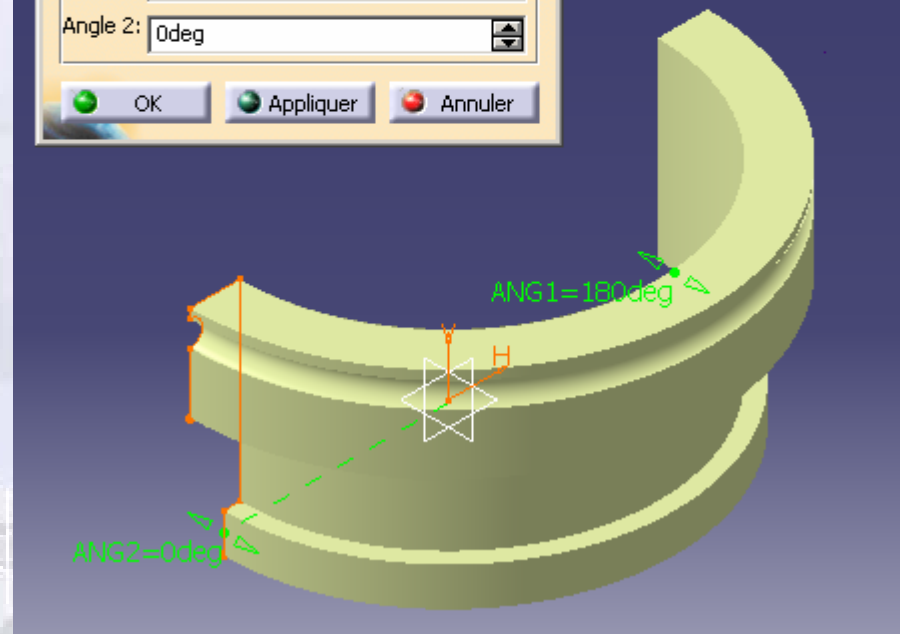
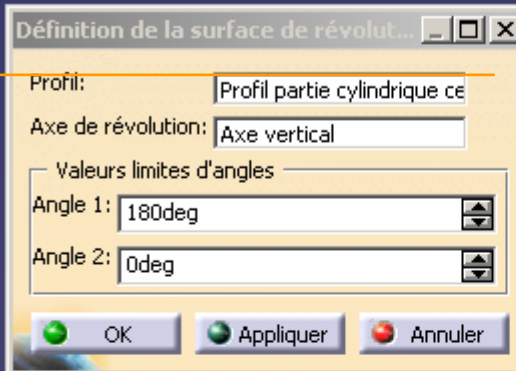
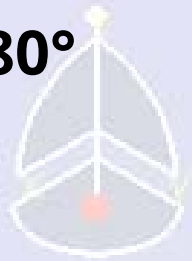
Create the sketch of the  
the xz plane



Rename *sketch.6*

*profile central cylindrical part*

Revolution of *profile central cylindrical part ear* of  $180^\circ$  to obtain the *central cylindrical surface*

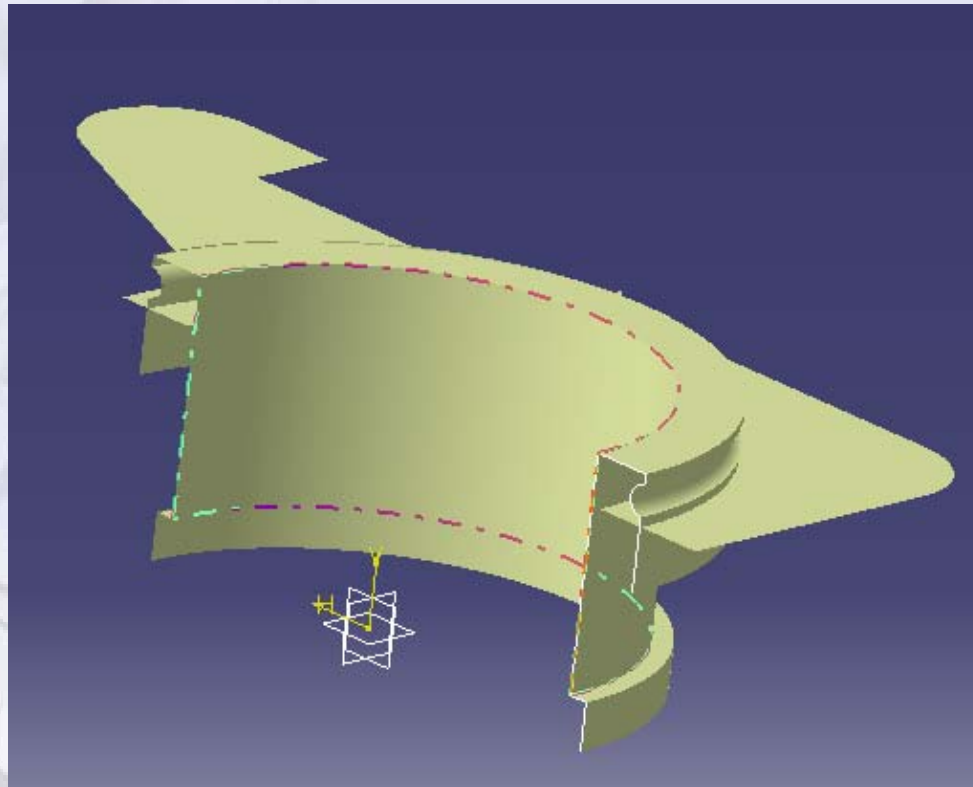
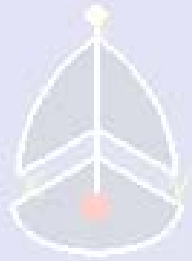


Rename *revolution.2*

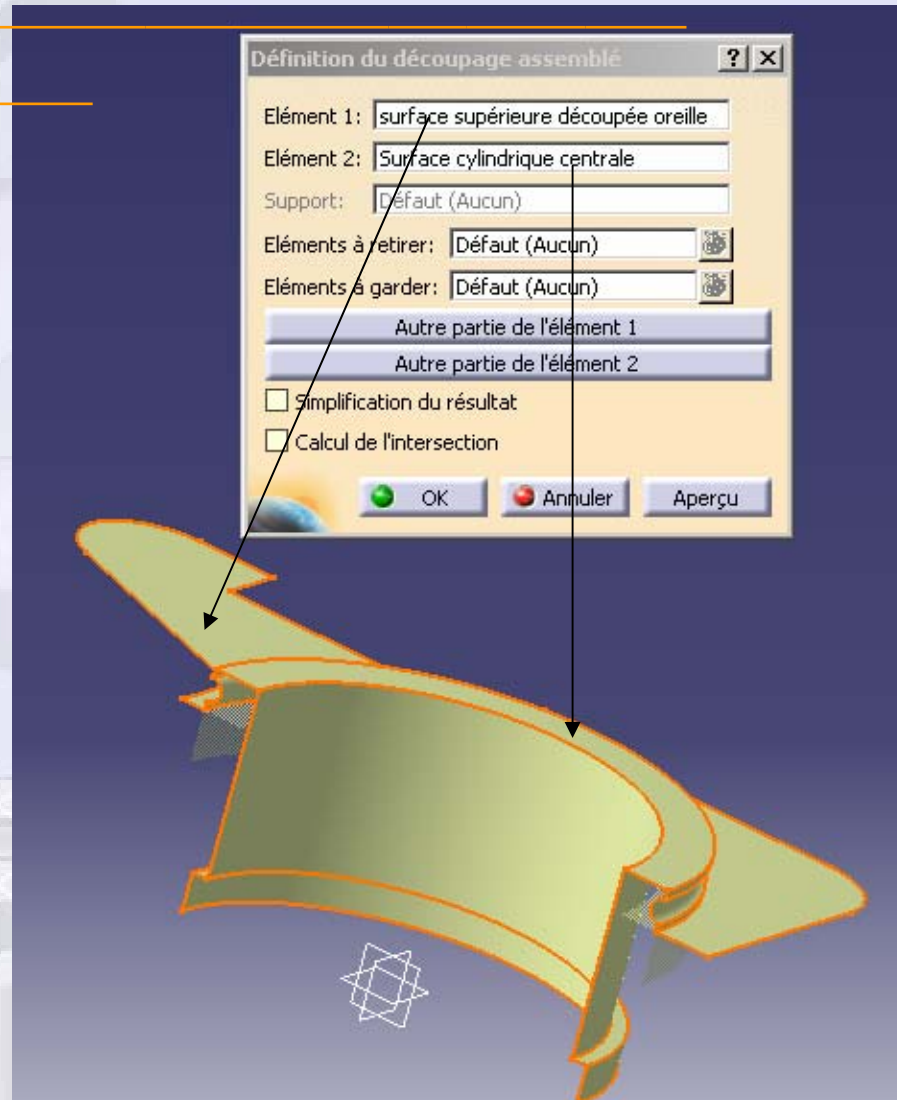
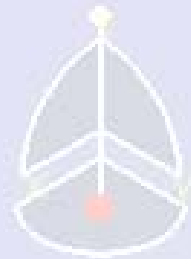
*central cylindrical surface*

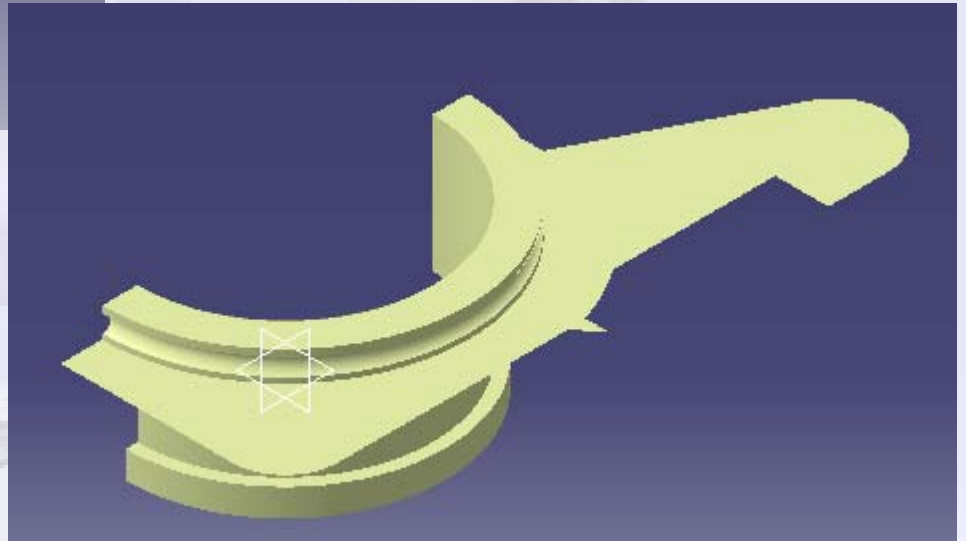
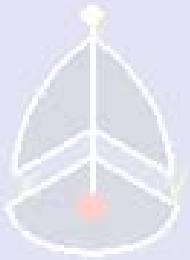
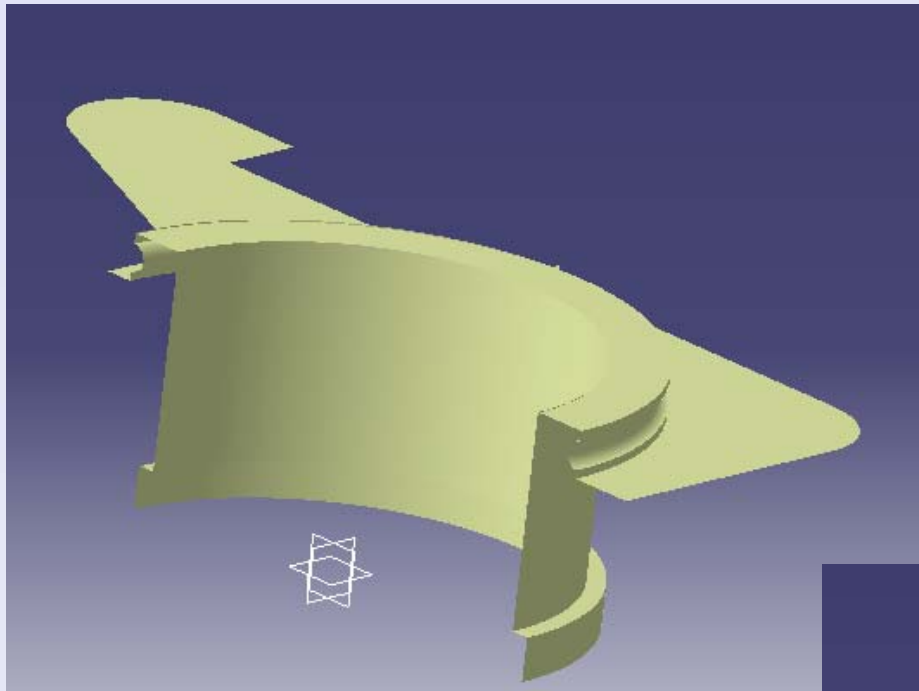


Show the *upper surface cut out ear*



# Assembled cutting of *upper surface of the ear* with *central cylindrical surface*

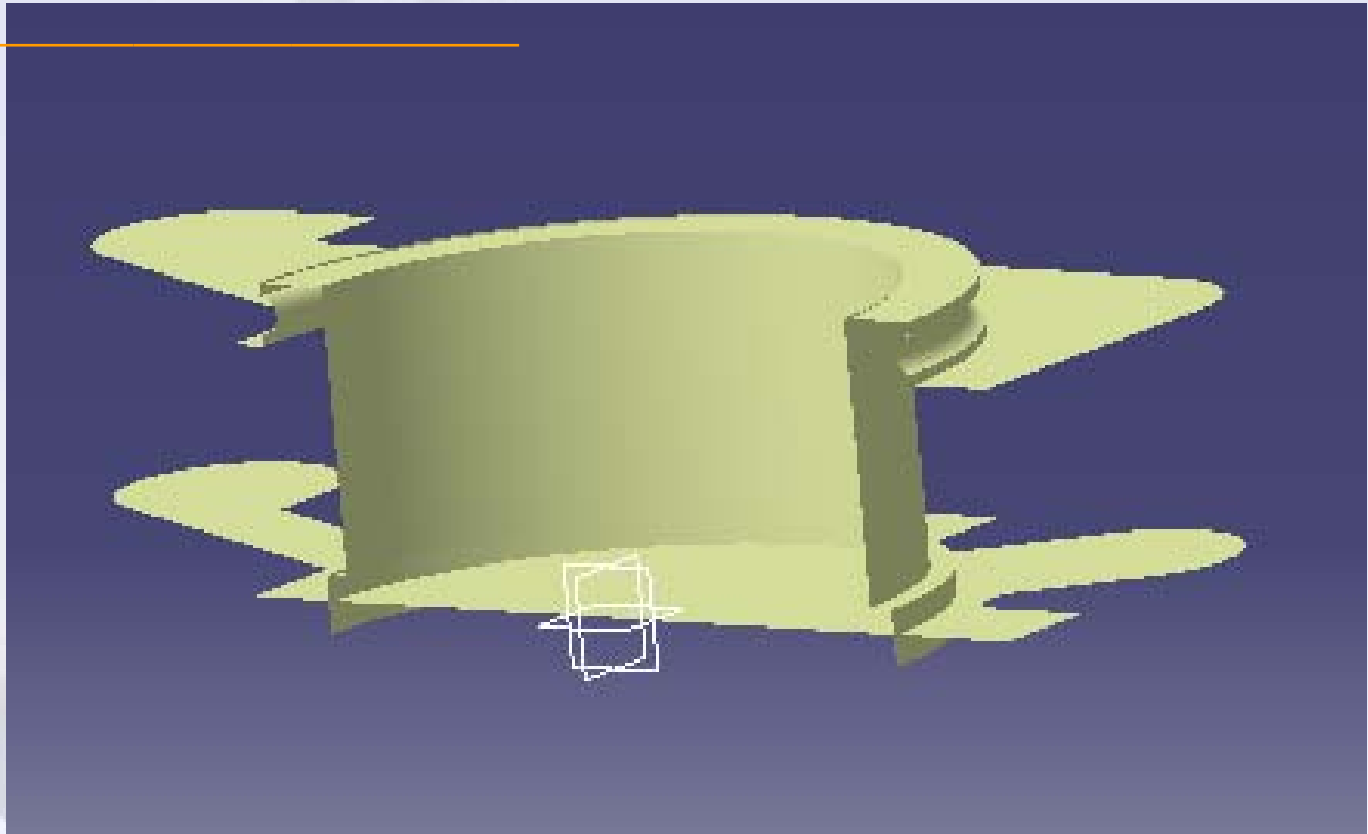
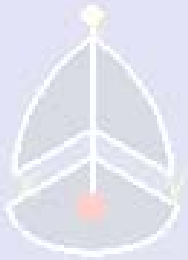




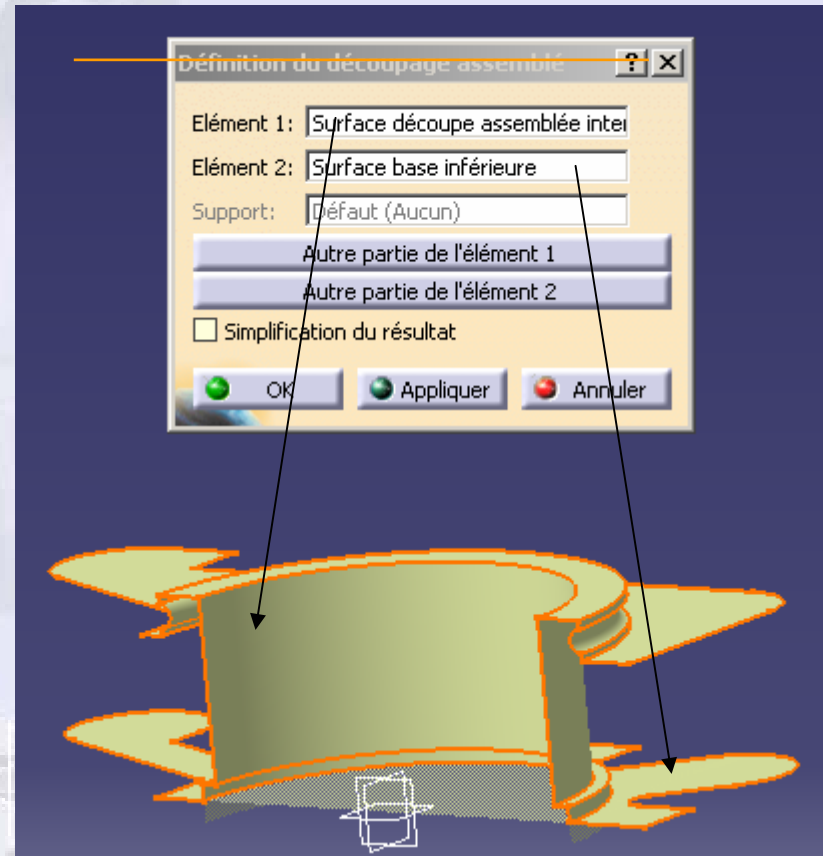
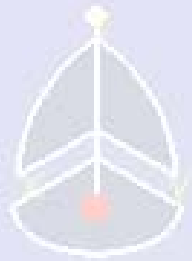
Rename ***assembled cutout.3***

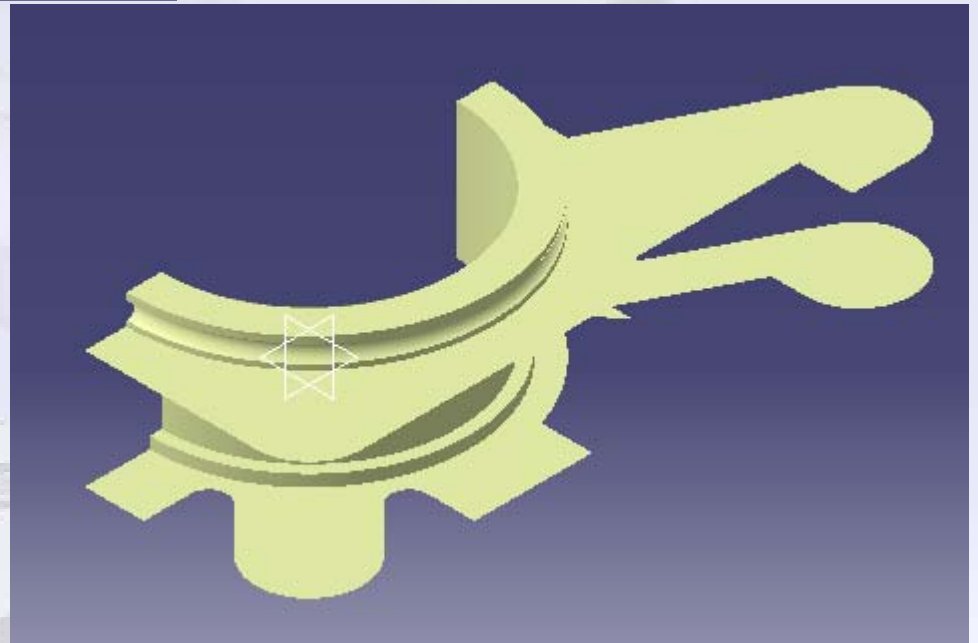
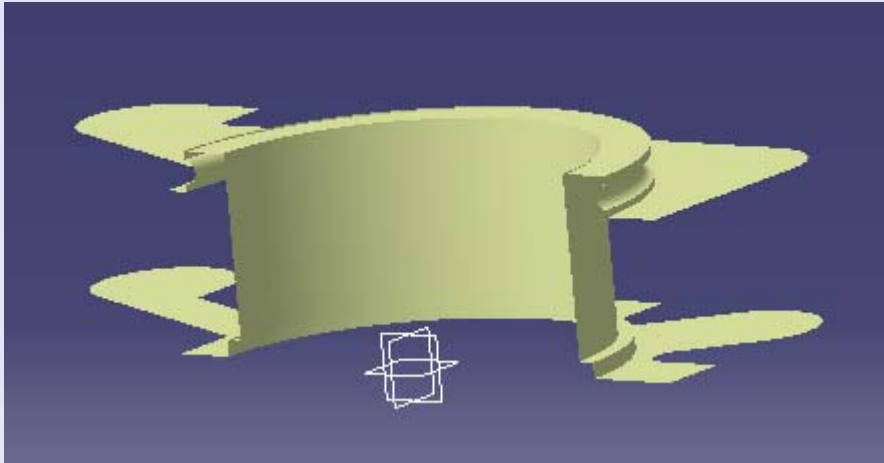
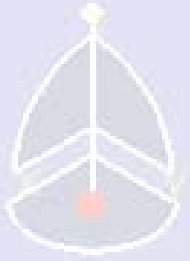
***intermediate assembled cut-out surface***

Show the *lower base surface*



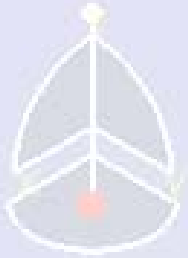
# Assembled cutting of *intermediate assembled surface* with *lower base surface*





Rename ***assembled cutout.4***

***cylindrical upper lower surface***



## 10° Stage

Create the surface *half body without holes*

- Show surfaces

*cylindrical lower upper surface*

*ear*

---

*upper side surface Lower*

---

*side surface Intermediate*

---

*surface*

- 
- Use icon *Join* surfaces to get the surface *half body without holes*
-

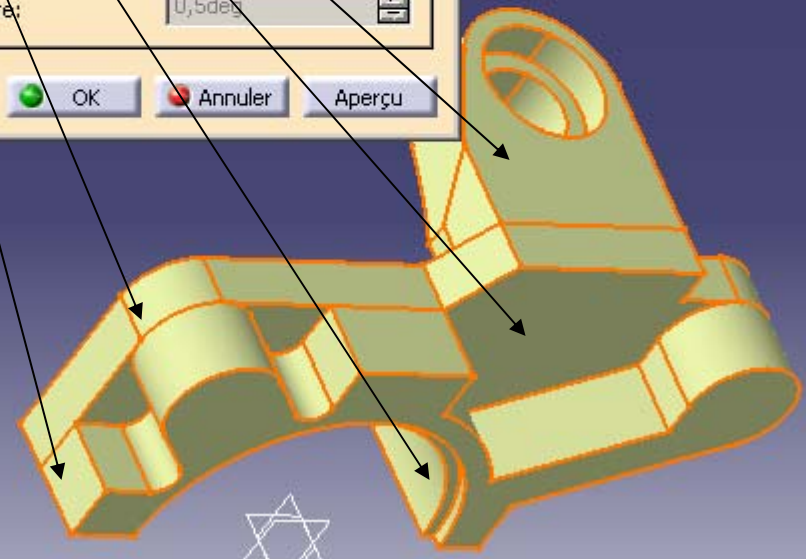
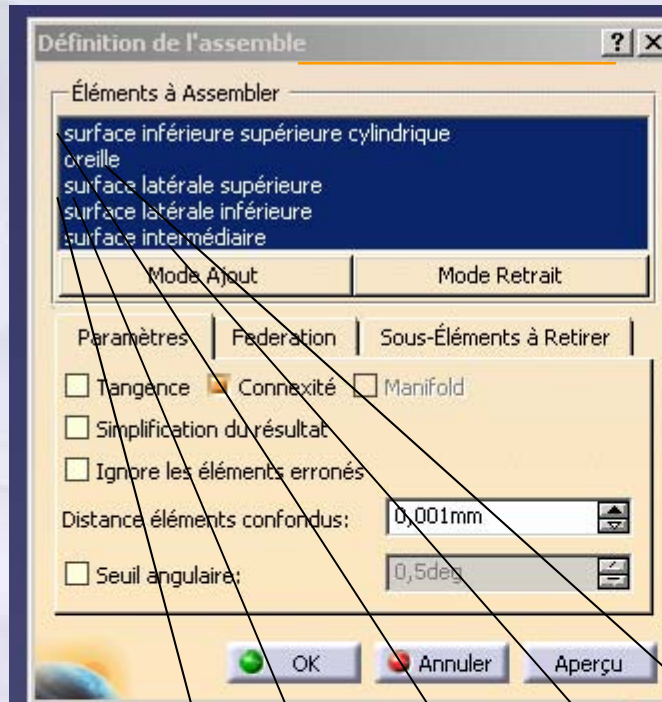
# Join surfaces to get a single surface *half body* *without holes*



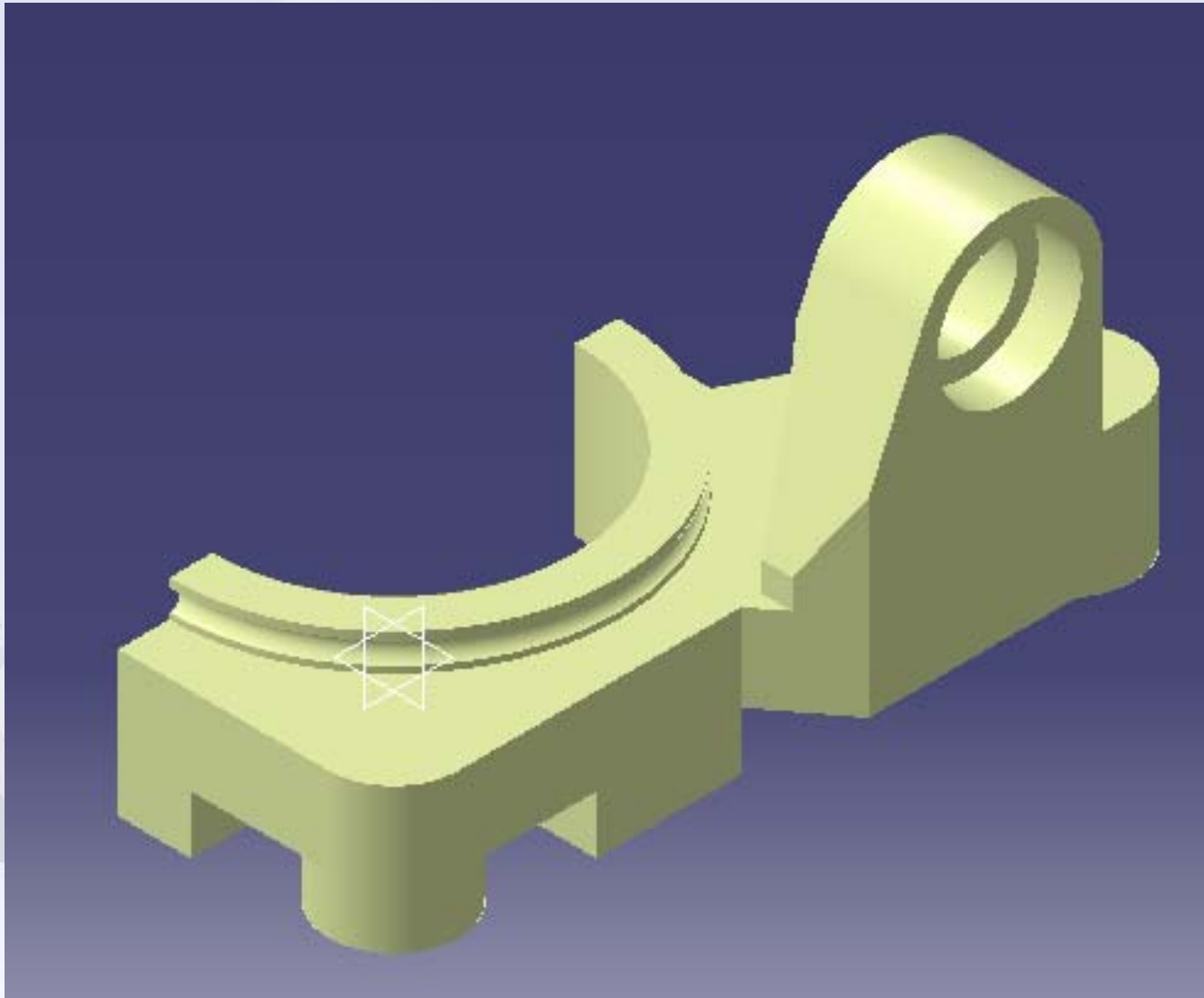
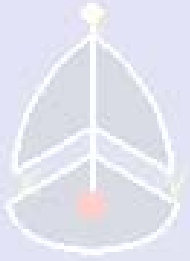
Show surfaces:

Cylindrical upper lower surface Ear

Upper side surface Lower  
side surface Intermediate  
surface

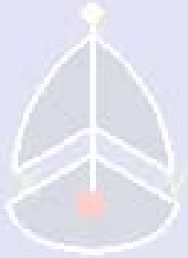






Rename *attach.1*

*half body without holes*

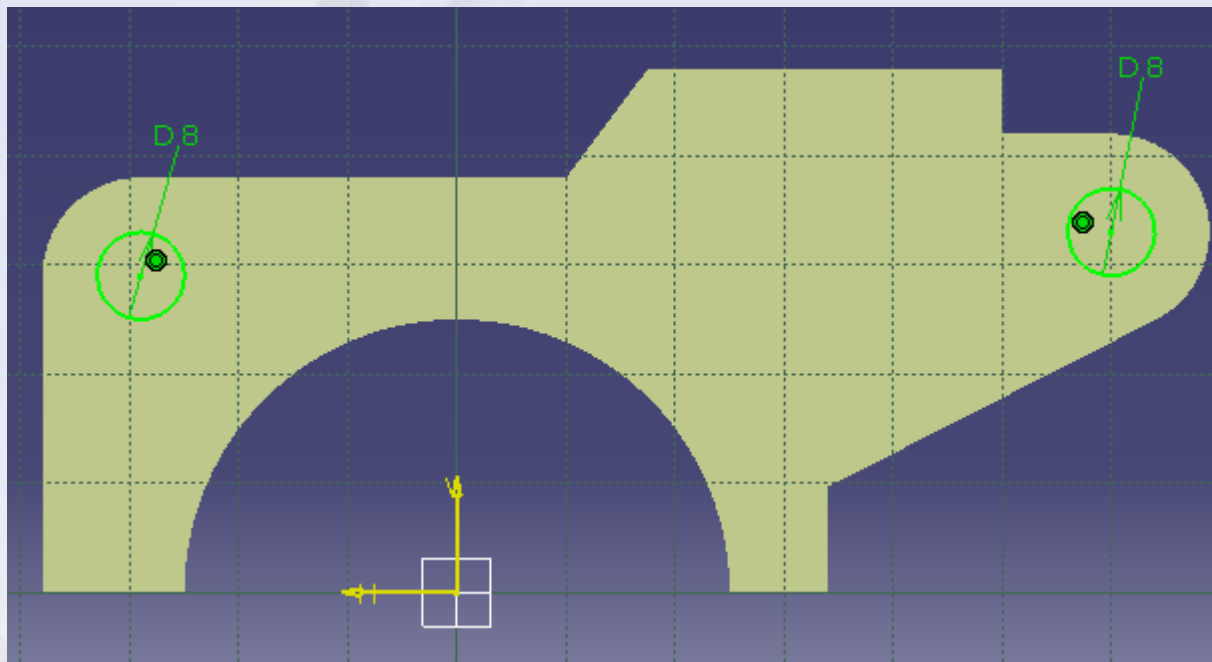
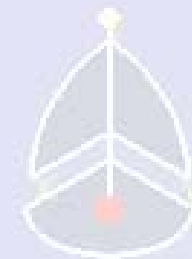


**11° Stage**

**Create holes and counterbores**



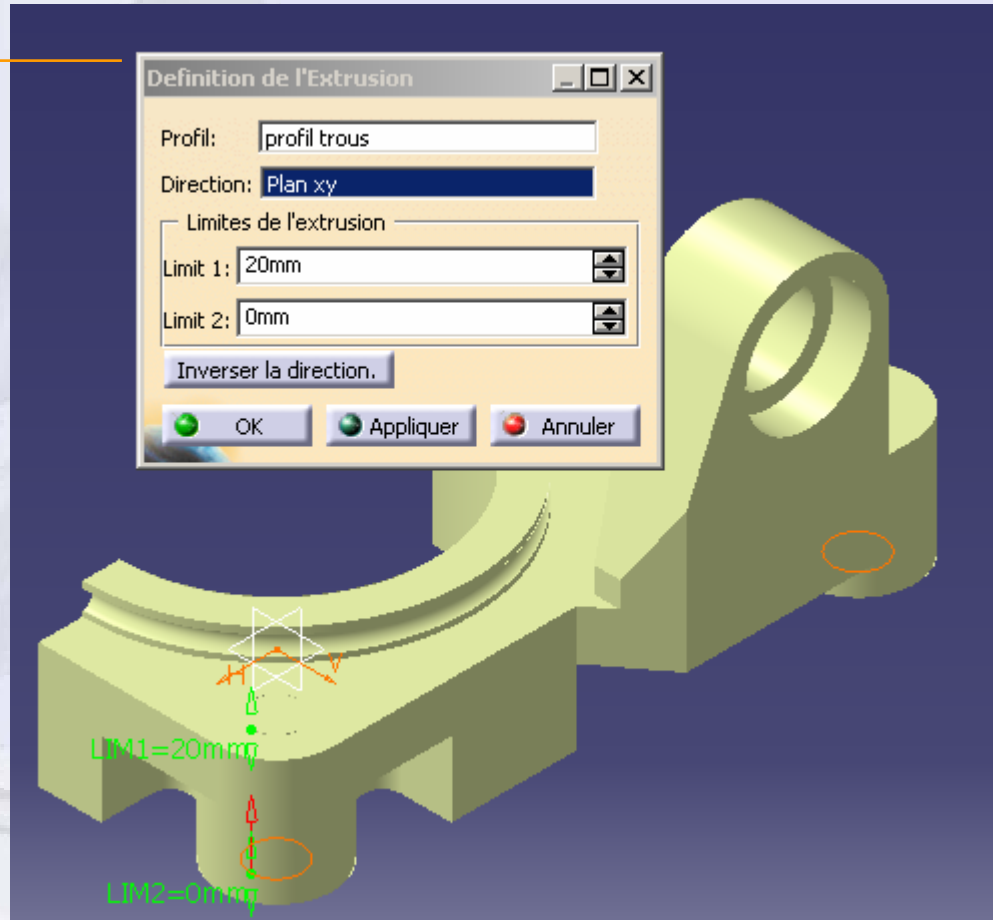
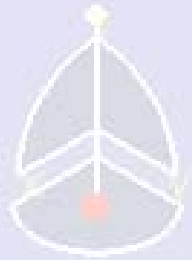
Create the sketch below in the xy plane

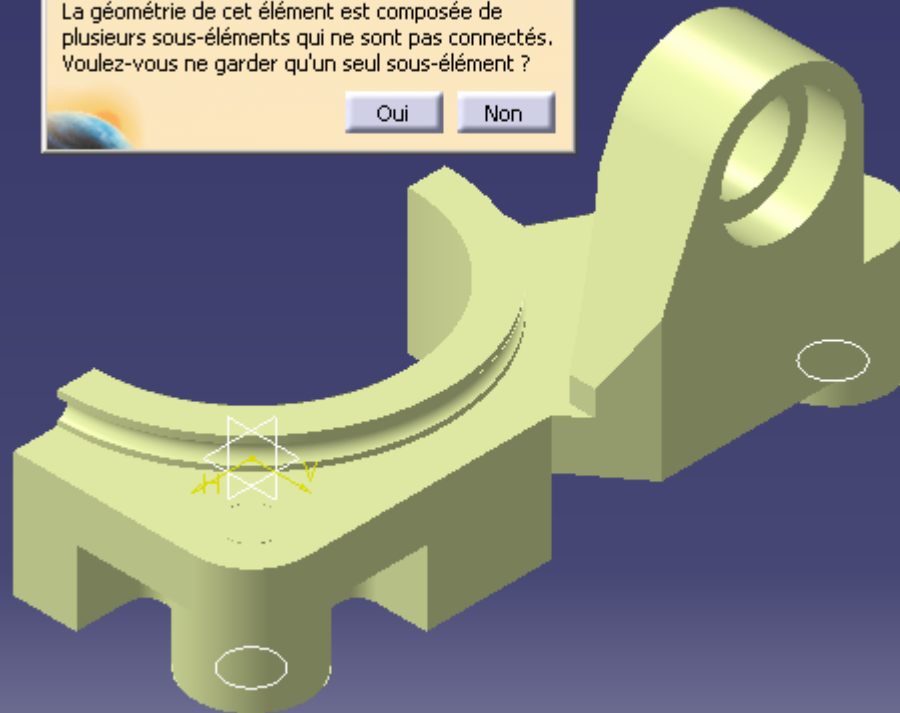
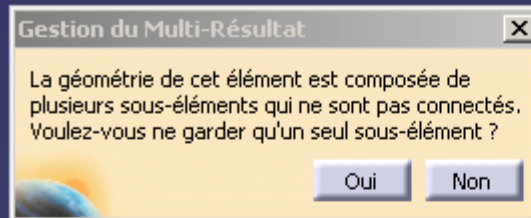
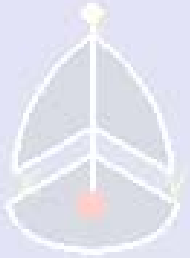


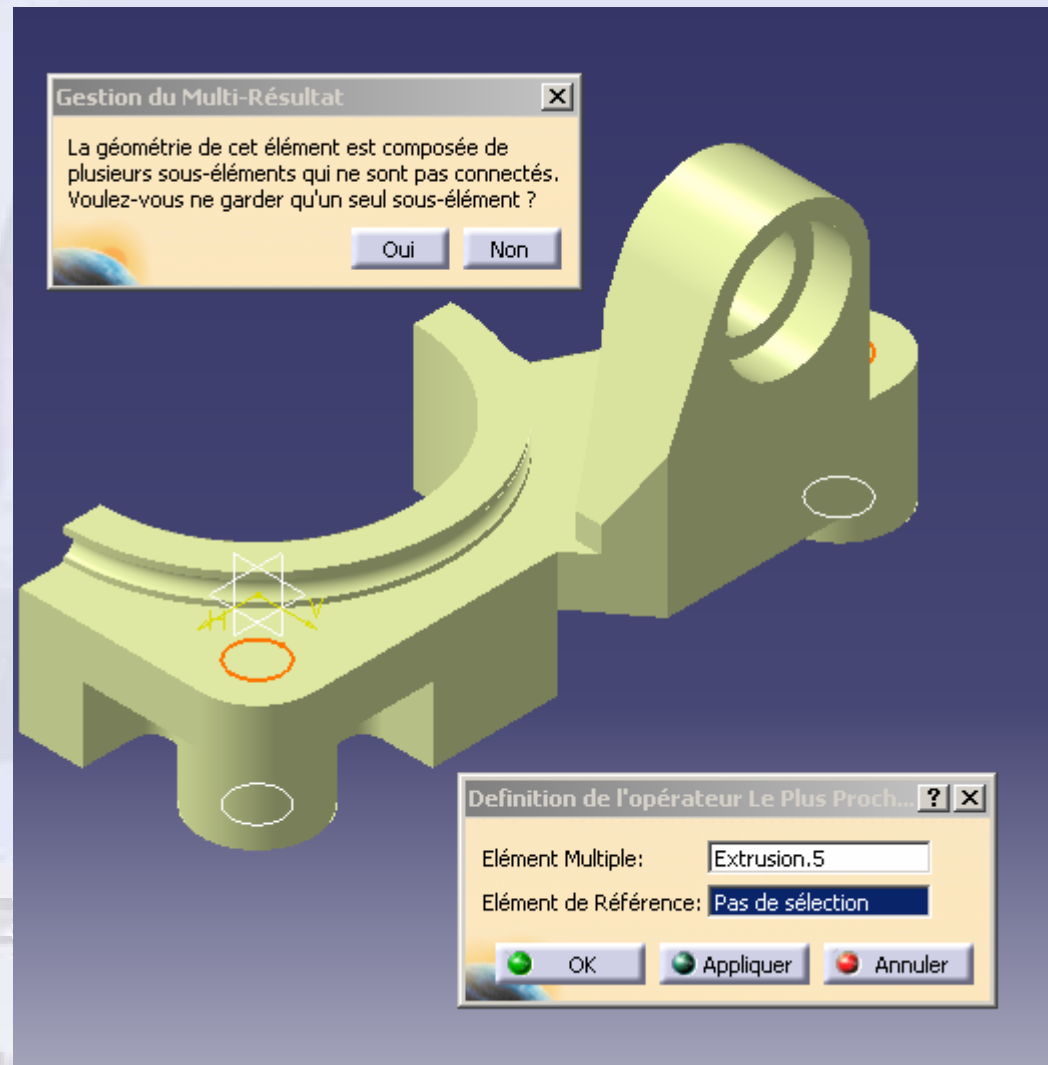
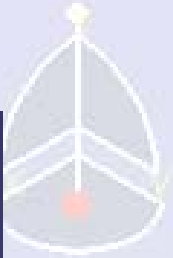
Rename *sketch.7*

*profile holes*

# Extruding the *profile holes*



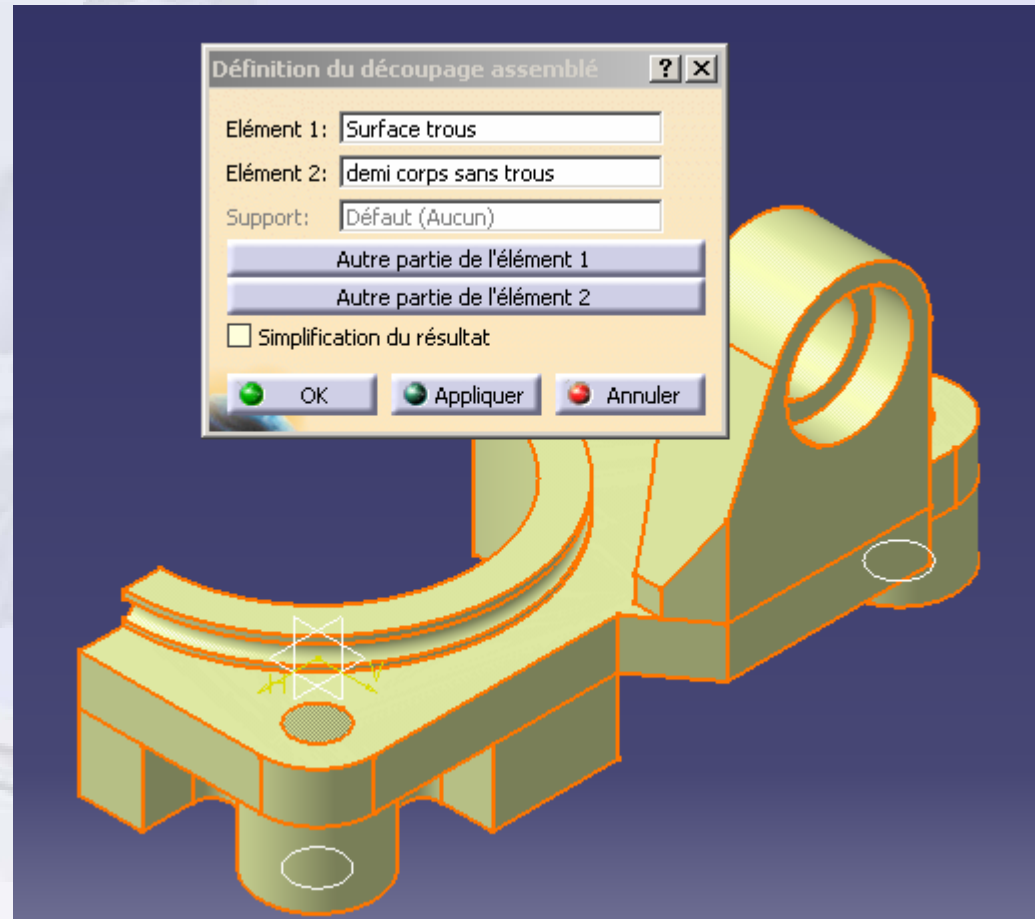
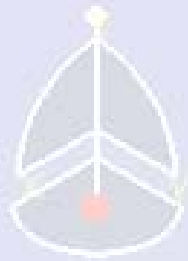




Rename *extrusion.5*

*surface holes*

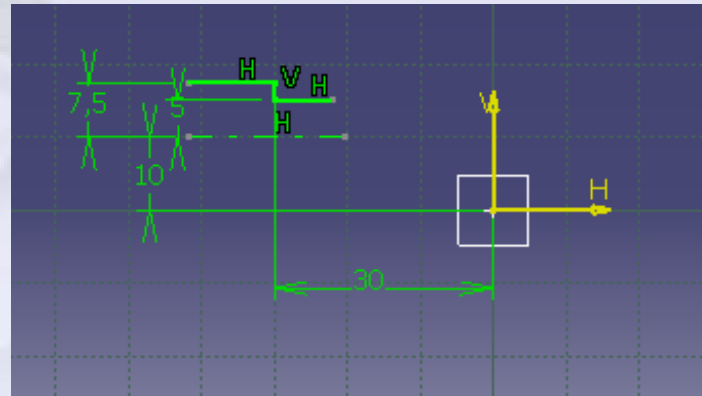
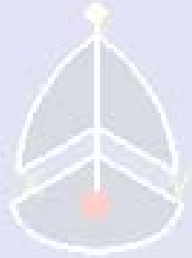
# Assembled cutting of *surface holes* with *half body without holes*



Rename *assembled cutout.5*

*half body with holes*

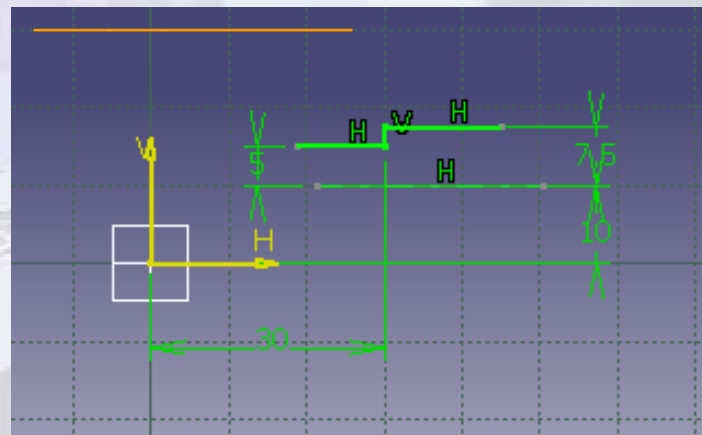
# Create the sketch below in the xz plane



Rename *sketch.8*

*front counterbore profile*

# Create the sketch below in the zy plane

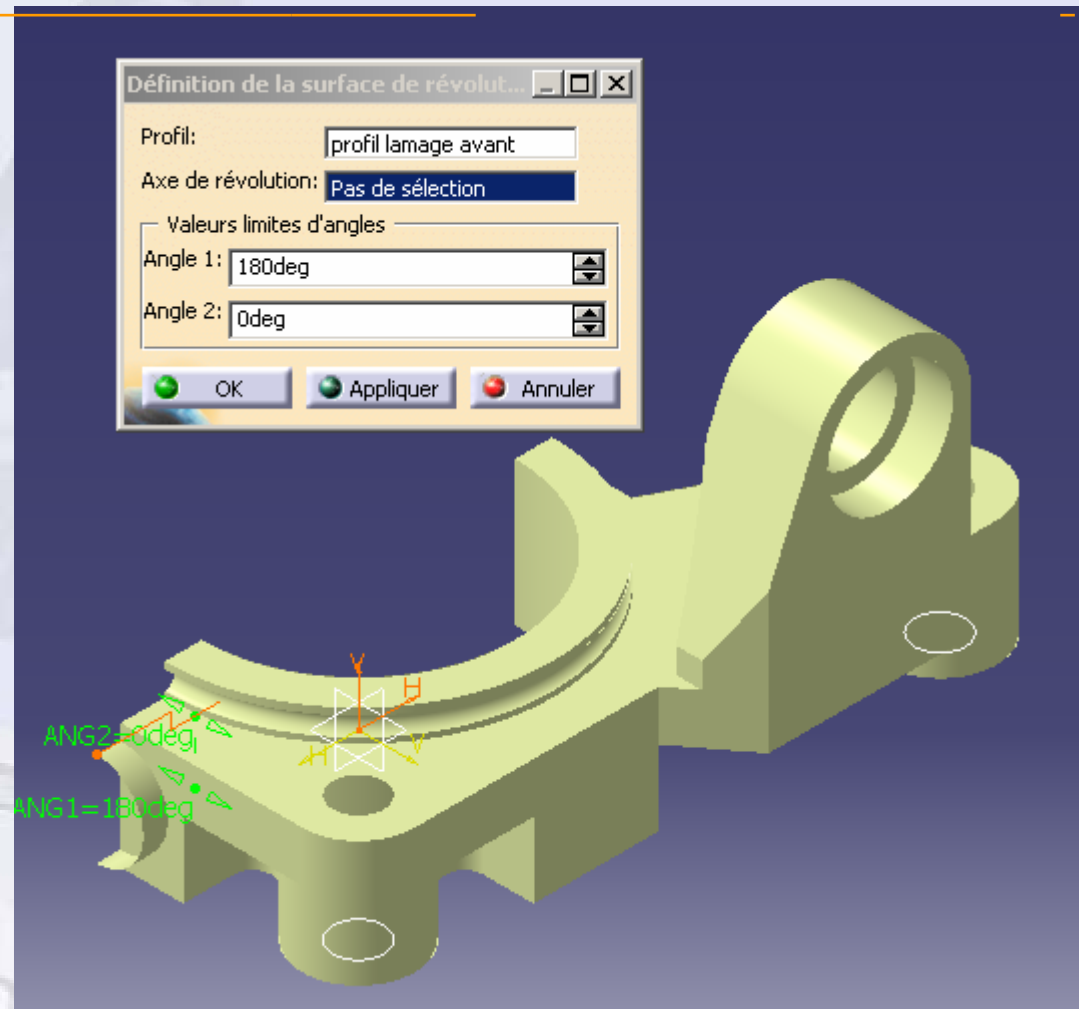
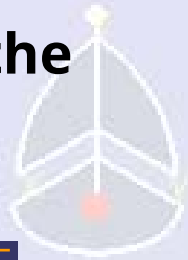


Rename *sketch.9*

*side counterbore profile*



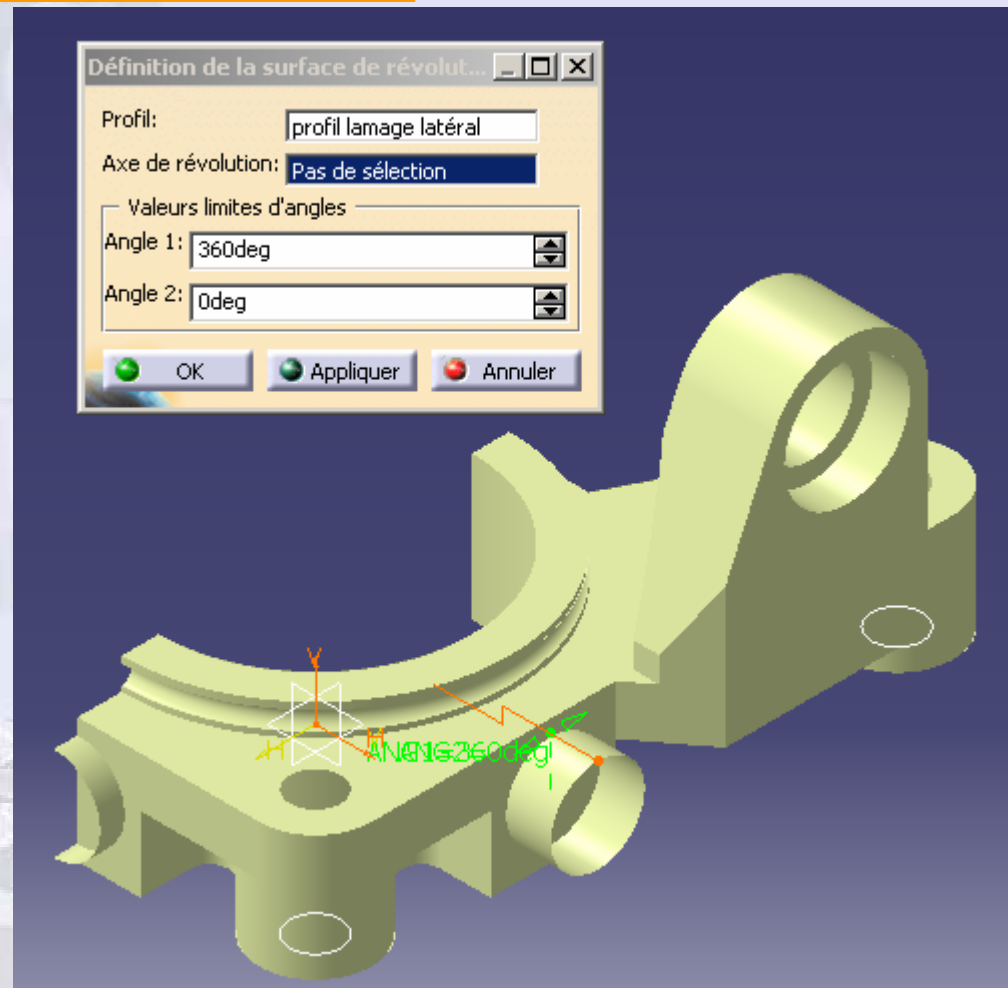
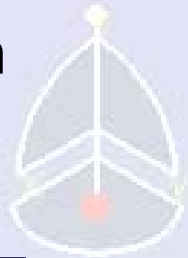
# Revolution of *front counterbore profile* of 180° to obtain the *front facing*



Rename *revolution.3*

*front facing*

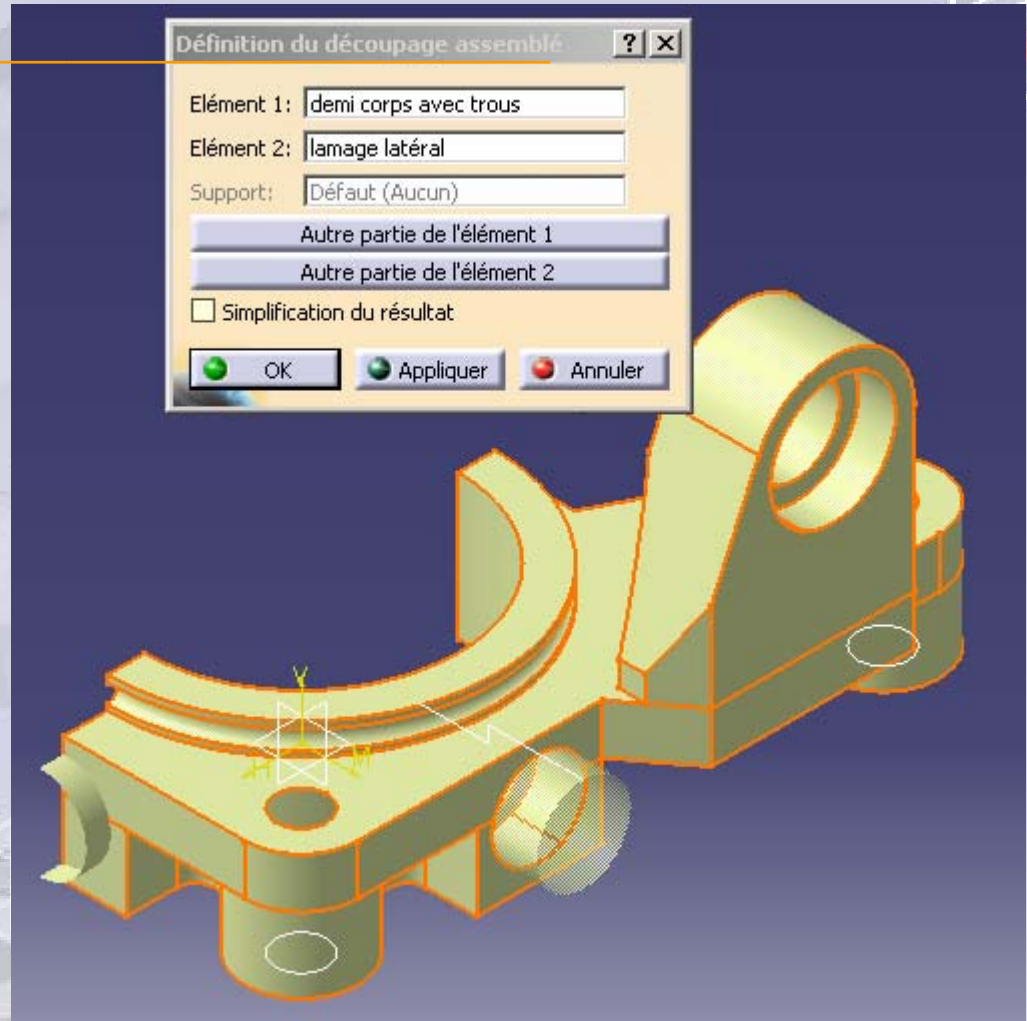
Revolution of *side counterbore profile* of 360° to obtain the *side facing*



Rename *revolution.4*

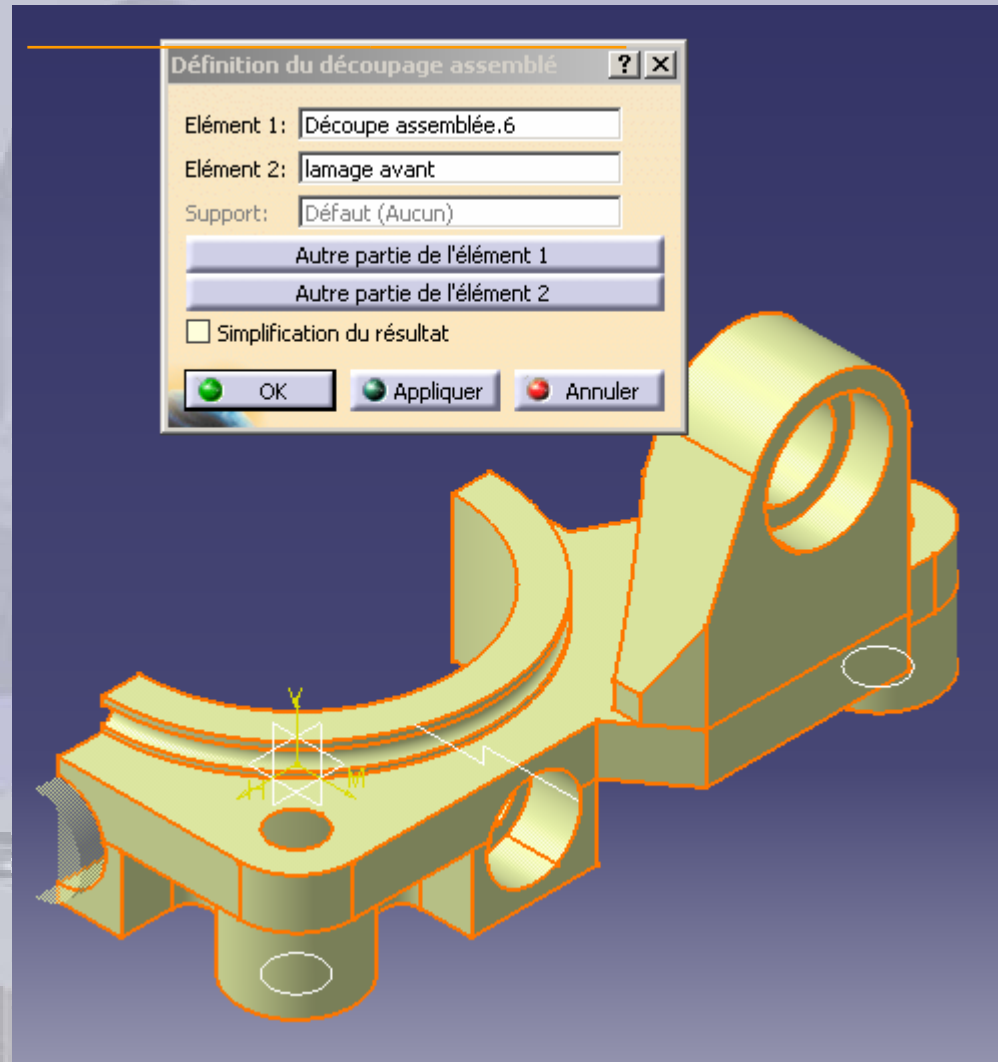
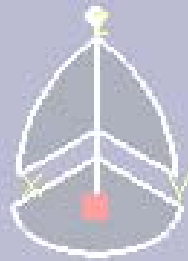
*side facing*

# Assembled cutting of *half body with holes* with **side facing**



We get the *assembled cutout.6*

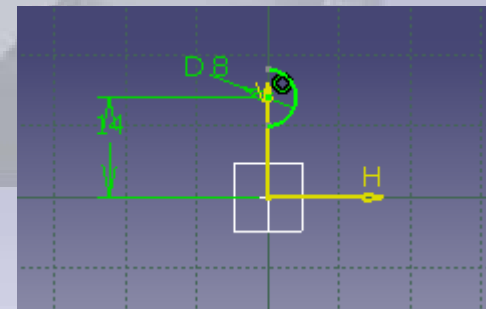
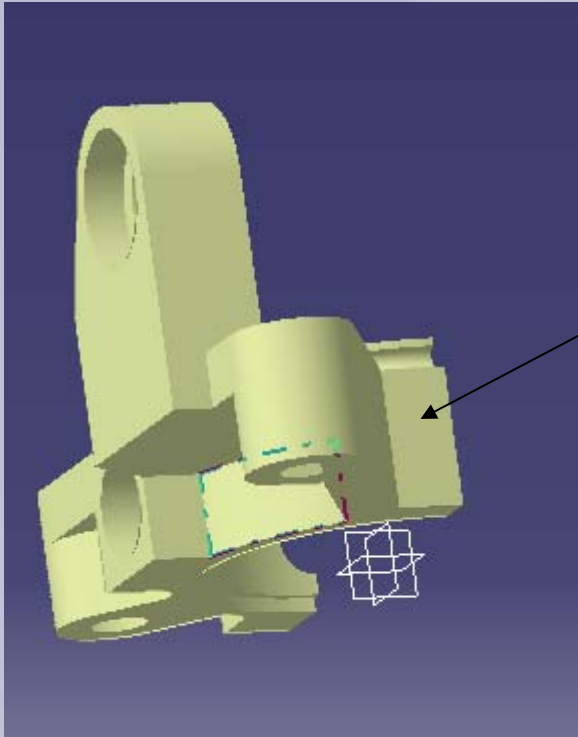
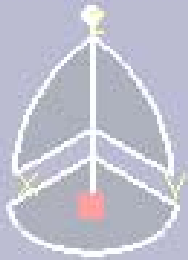
# Assembled cutting of *assembled cutout.6* with front facing



Rename *assembled cutout.7*

*half body with countersinks*

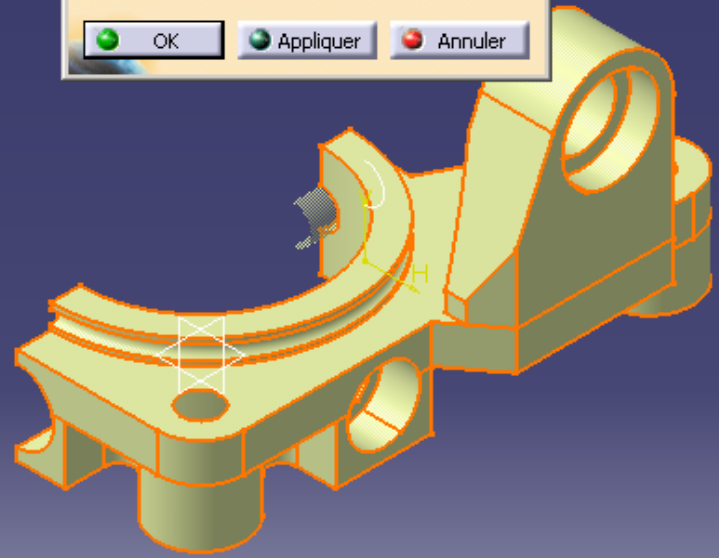
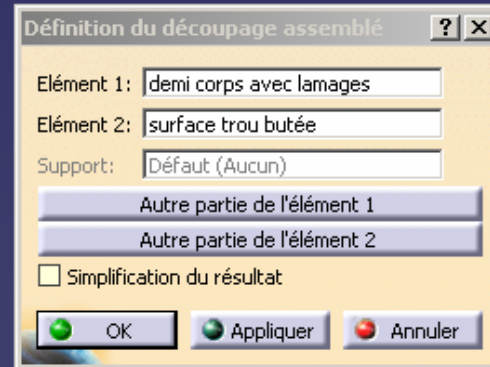
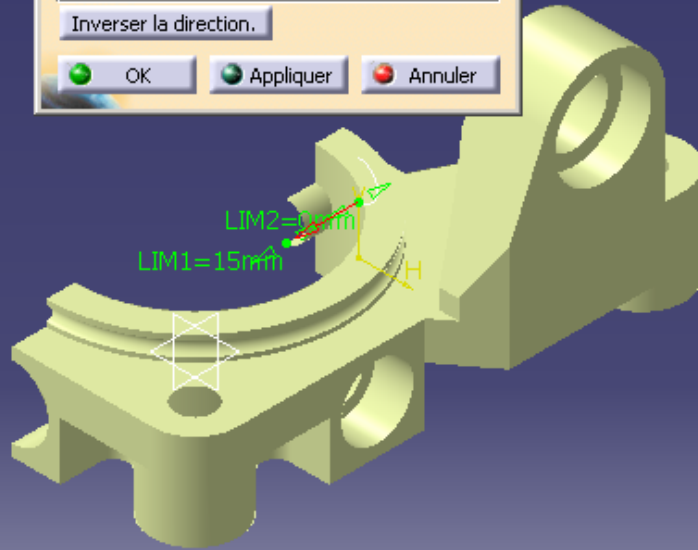
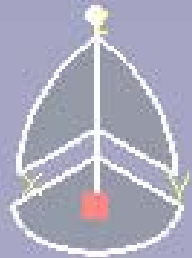
# Create the sketch below in the backplane



Rename *sketch.10*

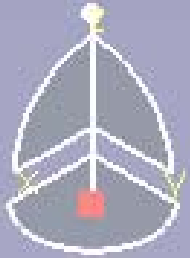
*thrust hole profile*

# Extrusion and assembled cutting



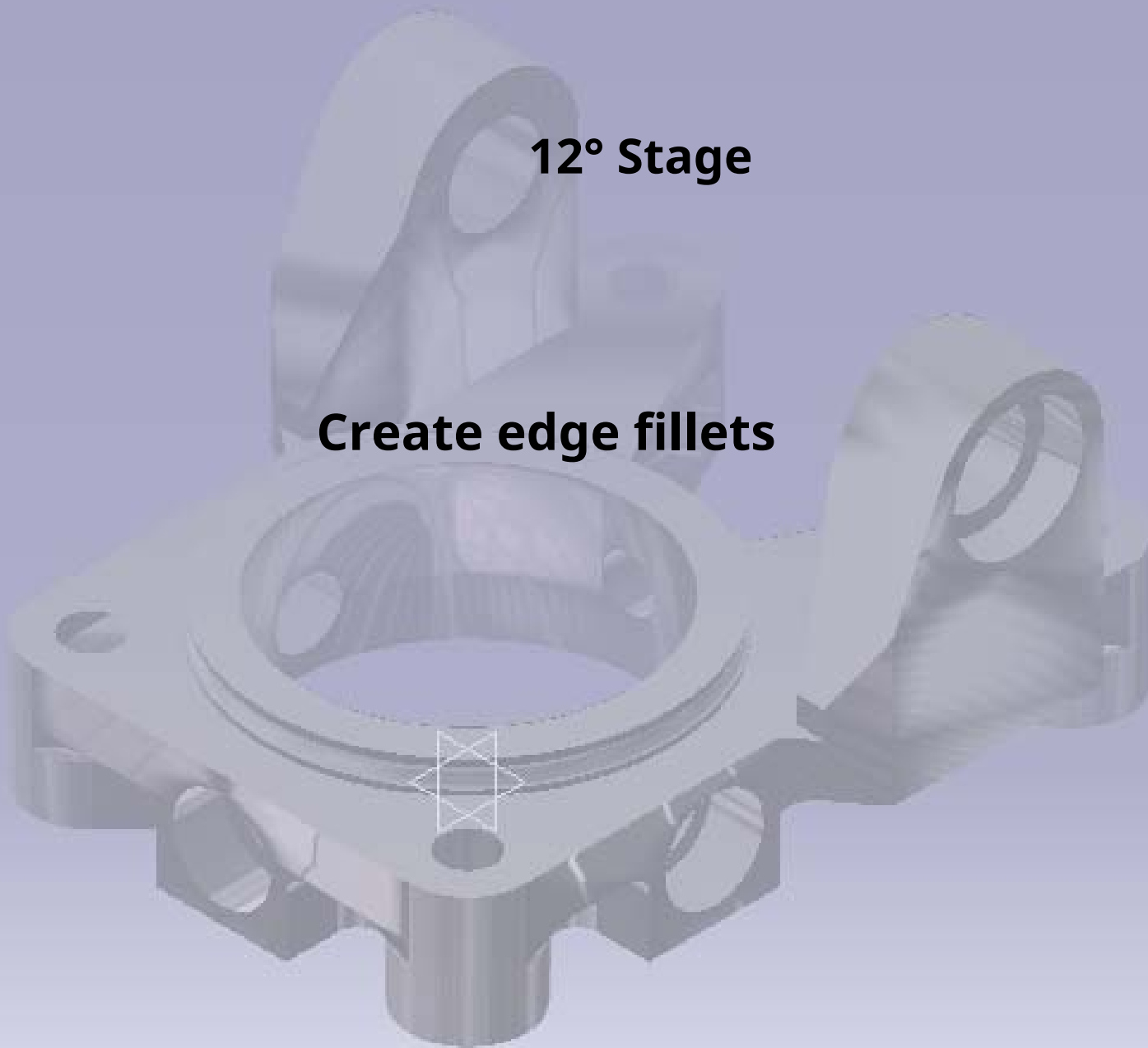
Rename *assembled cutout.8*

*fully perforated body*

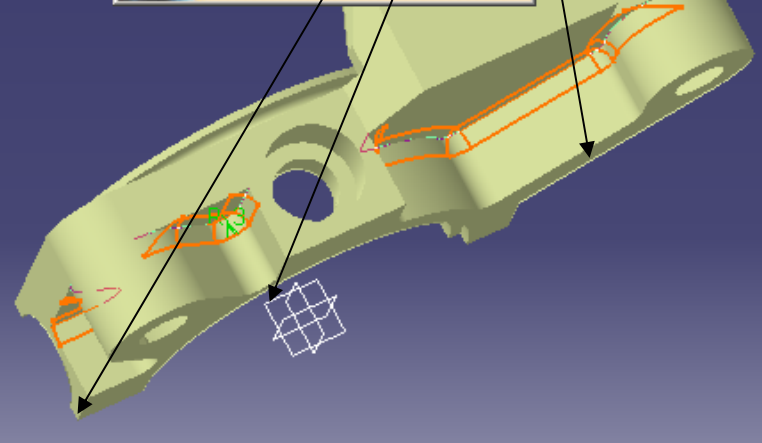
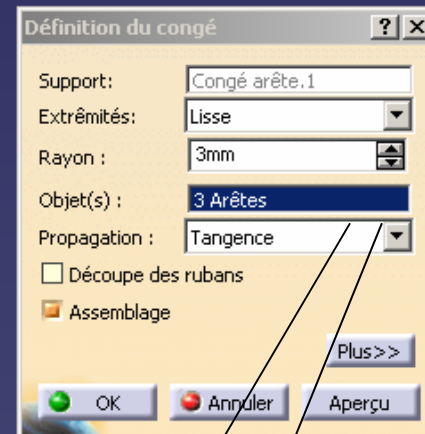
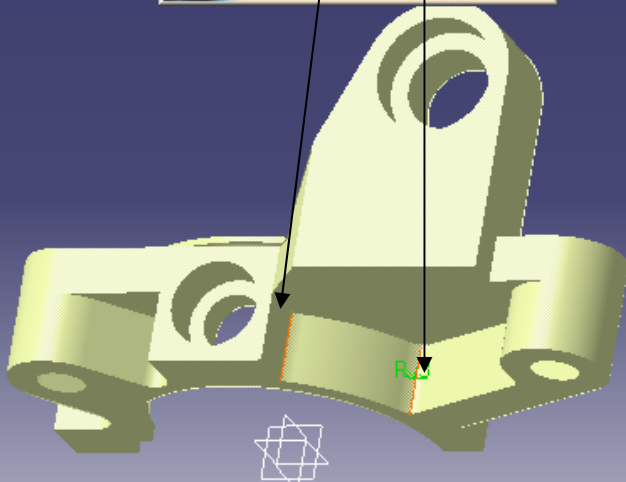
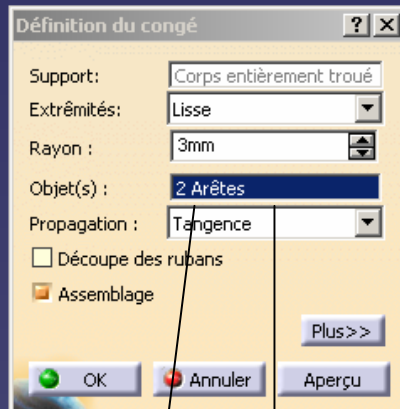
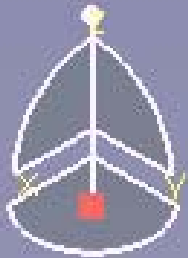


**12° Stage**

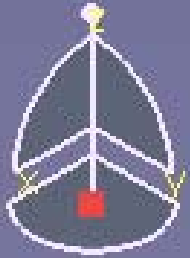
**Create edge fillets**



# Create edge fillets







*Edge fillets.4*

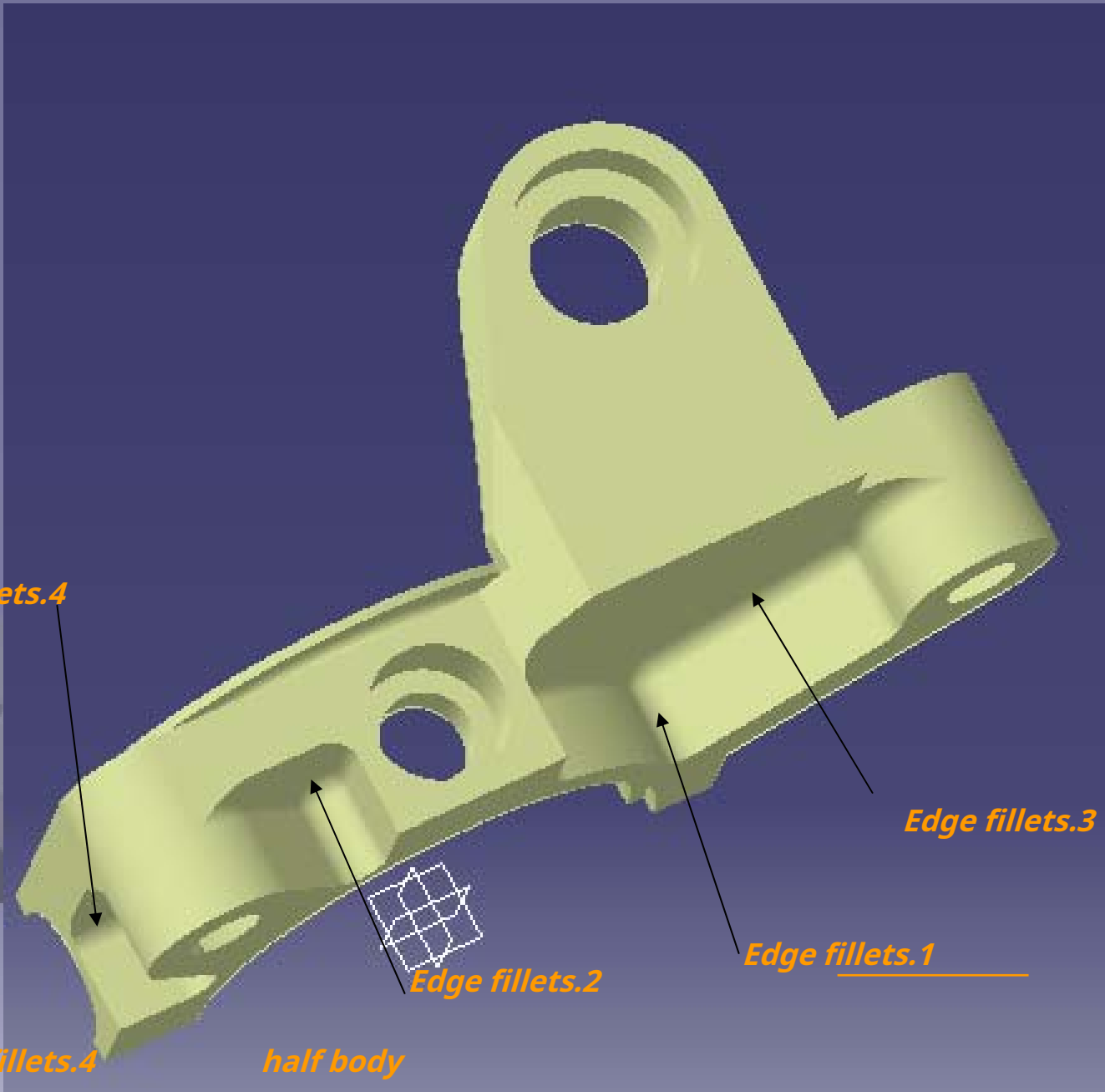
*Edge fillets.3*

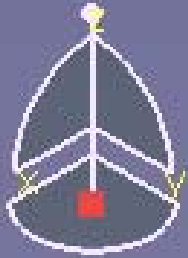
*Edge fillets.1*

*Edge fillets.2*

Rename *edge fillets.4*

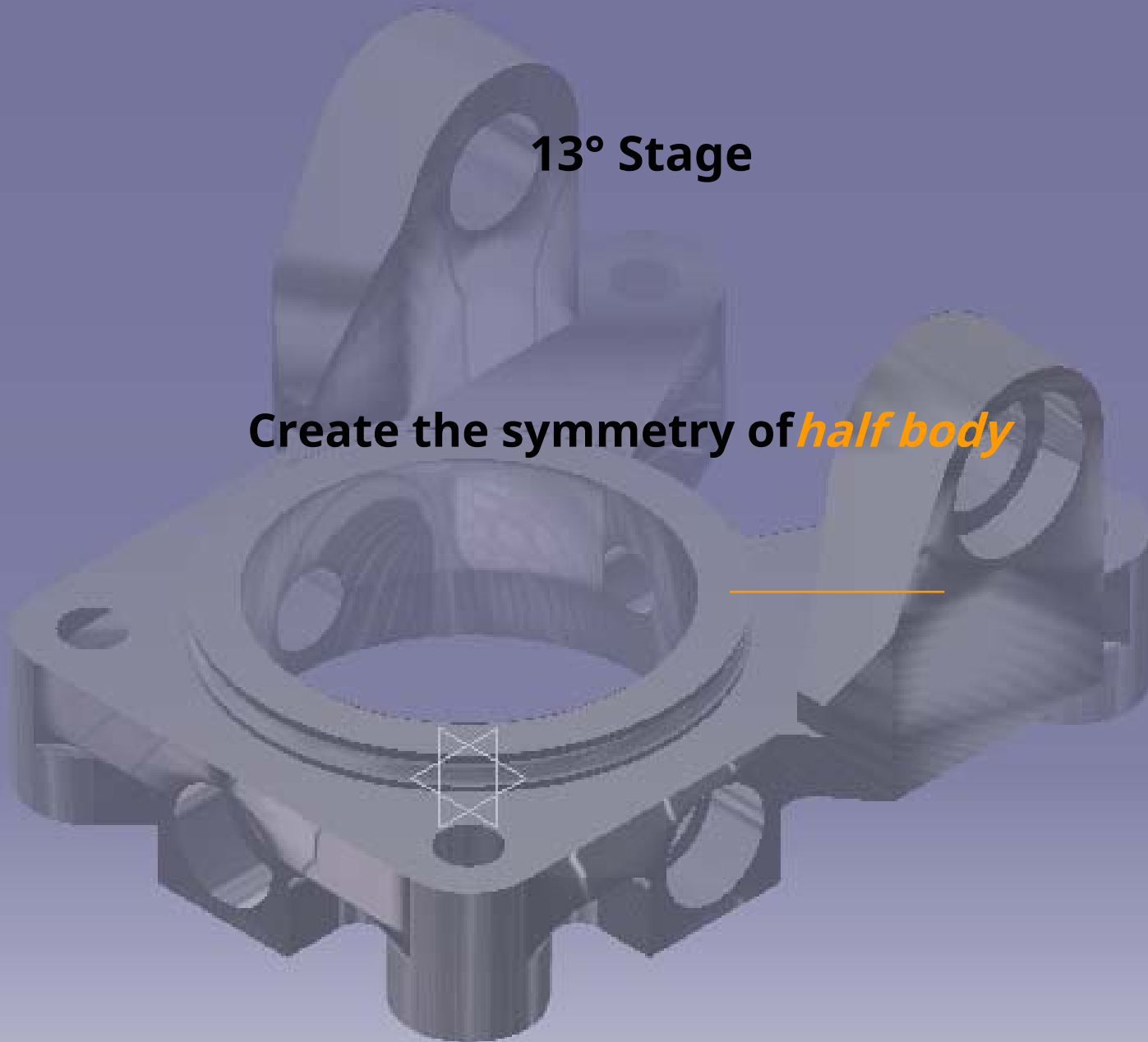
*half body*



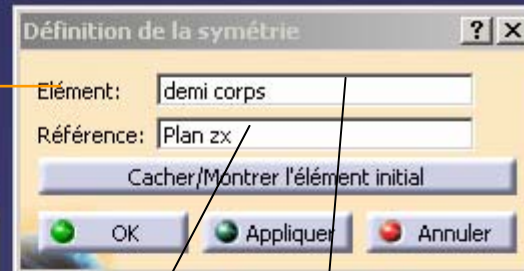
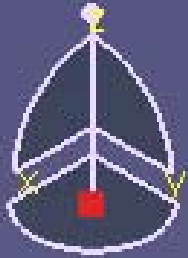


13° Stage

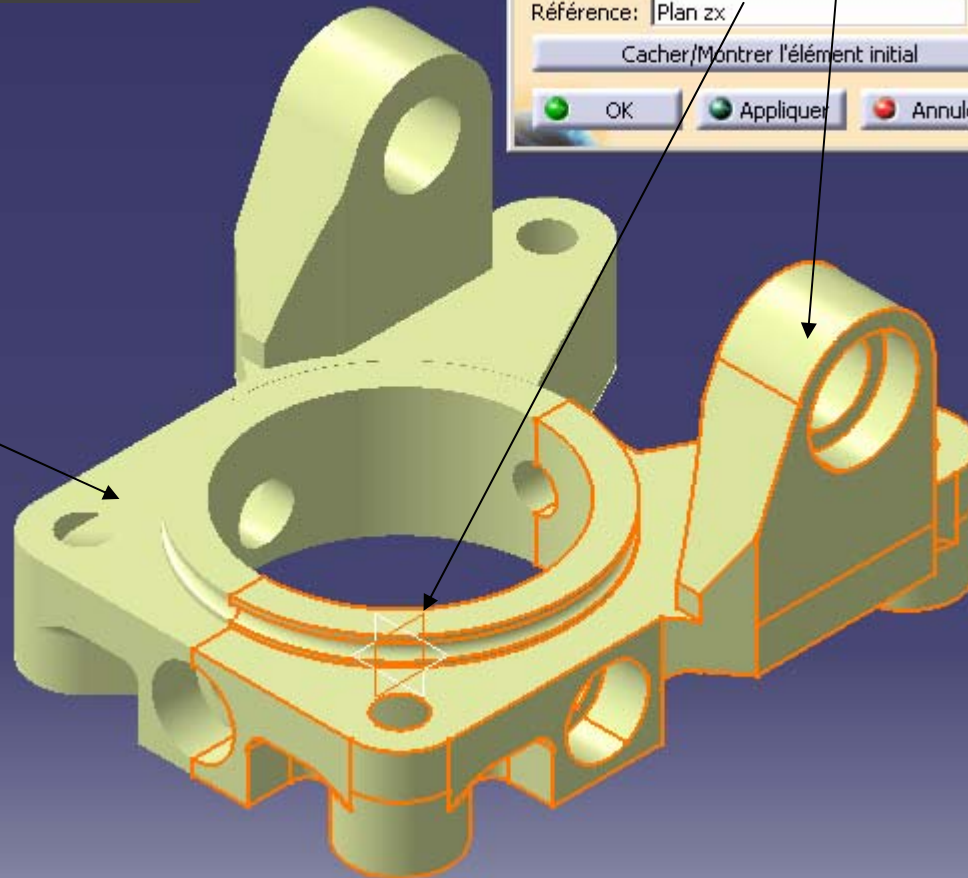
Create the symmetry of *half body*



# Create the symmetry of *half body*



Symmetry.1



Join *half body* and *symmetry.1* to get the *body* ended

