

## TP5

Support: Quick-clamping vice base

Objectives: generate an iso NC program from a complex 3D part

procedure :

Make a copy, in your working directory, of the following parts located in the TP5 directory:

- raw base.CATPart -  
raw.CATPart

Remove the read-only attribute from your files

Creating the assembly

Open a new assembly by clicking on **start>Mechanical design>Assembly design**

Before starting the simulation, you must create an assembly comprising the raw base (raw base.CATPart) and the raw part (raw.CATPart).



hide the raw part and save the assembly.


Open the CAM workbench by clicking **Start>NC Manufacturing>3-Axis Surface Machining**

double click  Phase d'usinage.1 in the tree:

### declaration of the geometries used for the simulation

geometry of the machined

part click on  the dialog box disappears

on double click outside to  embase brute (embase brute.1)  
validate the selection

geometry of the raw part

click on the  dialog box appears click in the tree

on double click outside to  validate the selection



## choice of machine

click on the icon

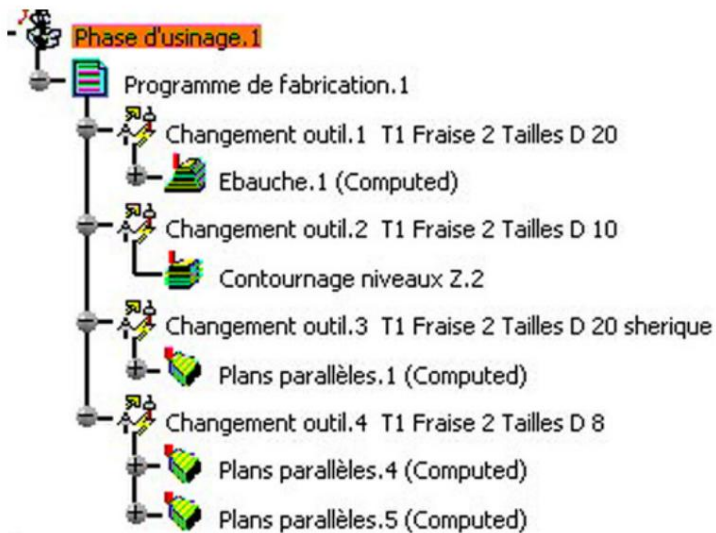
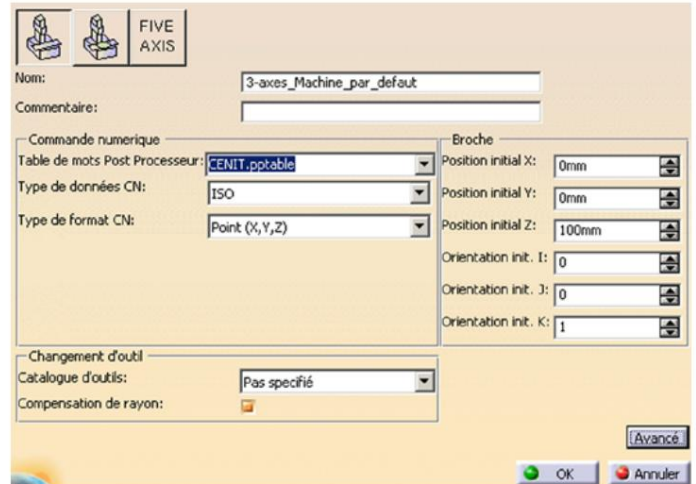


adjust the parameters corresponding to the menu below against

validate by clicking on **OK**

click on **OK** to close the machining phase window make a save under the name of: **3D range**

selected operating mode



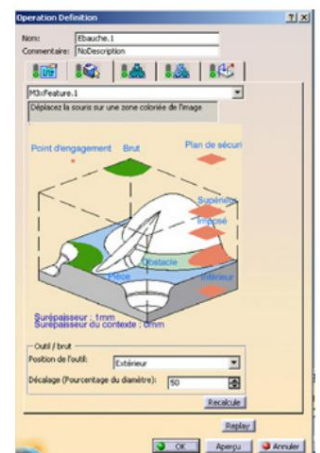
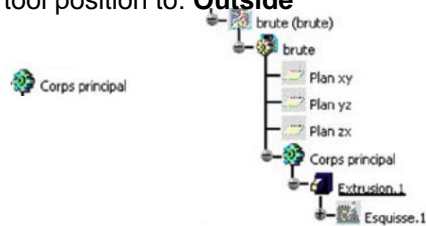
setting parameter:

## for draft 1

click on the **draft** icon



click, with the right button, on the word **part**, select **Part(s)** the window disappears click on the blank base and double-click outside to validate the selection click on the blank word , the window disappears choose from the tree the raw part by clicking set allowances to: **1 mm** set tool position to: **Outside**





name the tool T1 2T milling cutter D20

set nose radius = **0** and diameter to **20 mm**



set

machining strategy

sweep mode to: **spiral**

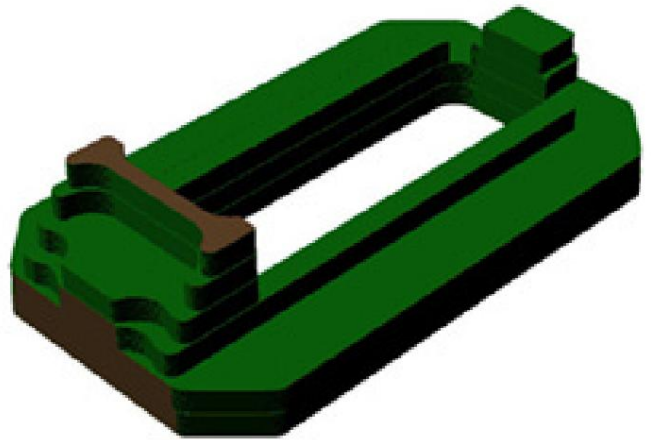
machining tolerances to: **0.1**

**mm** machining mode: **outside and**

**pockets** machining direction:

**downhill infeed** maximum depth of

cut to: **10 mm** overlap to: **15%**



adjust

approach mode over: dive


approach distance over **10**

**mm** safety distance over: **2 mm**

simulation

Click on **replay** to simulate the operation.

The animation dialog box appears.

Click on the button  to place the tool at the start point of the operation.

Click on the button  to start the animation



Click on photo  or on video  to see the part after machining

Click **OK** to exit Animation mode.

Click on **OK** to validate the operation

**for draft 2**

Click on the **Z level contour** icon



click on the word **piece**

the window disappears

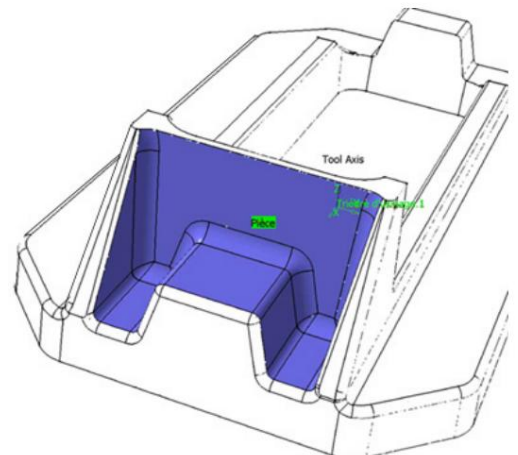
click on the dark surfaces and double-click outside to validate

the selection set the oversizes to: **1 mm**



name the tool T2 2T milling cutter D10

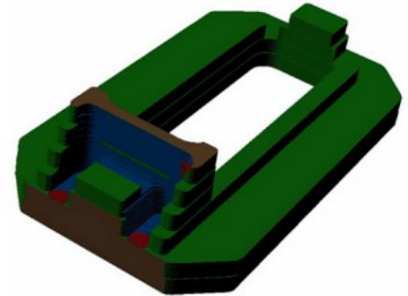
set nose radius = **0** and diameter to **10 mm**





adjust

machining strategy

machining tolerances on: **0.1****mm** machining mode: **Exterior and pockets** machining direction:**downhill** pass check the box **peak height** maximum pass on: **2 mm**minimum pass on: **1 mm** pass heightridge about: **0.25 mm**

adjust

inter-pass chaining on: **along tool axis**approach distance on: **50 mm**

simulation

Click on **replay** to simulate the operation.Click photo Click  or on video  to see the part after machining**OK** to exit Animation mode.Click on **OK** to validate the operation**for the half finish**click on the **parallel planes** icon

click, with the right button, on the word **part**, select **Part(s)** the window disappears click on the raw base and double-click outside to validate the selection set the allowances to: **0.5 mm**



name the tool T3 Cutter 2T D20 spherical

set the diameter to **20 mm** check the box **spherical end tool**

adjust

machining strategy

machining tolerances on: **0.1****mm** machining mode: **zig-zag**pass taking check the box **crest height** maximum pass on: **1****mm** minimum pass on: **0.5 mm**crest height on: **0.25 mm**

area

check the box **all**



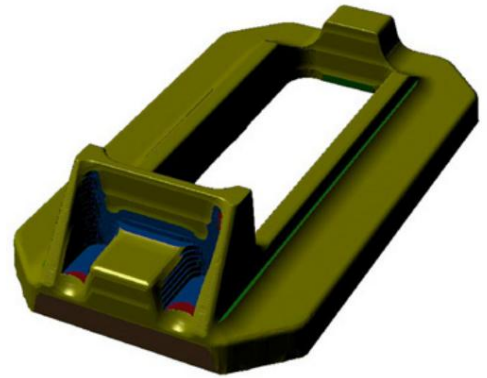
adjust

approach

approach mode on: **along tool axis** length



on: **50 mm** withdrawal withdrawal mode

on: **along tool axis** length on: **50 mm**



simulation

Click on **replay** to simulate the operation.

Click photo Click  or on video  to see the part after machining

**OK** to exit Animation mode.

Click on **OK** to validate the operation

**for finish 1**

click on the **parallel planes** icon



click on **contour limiting** the window disappears click on the edge marked by the arrow

click on  to select the outline then **OK**

right-click on the word **piece**, select

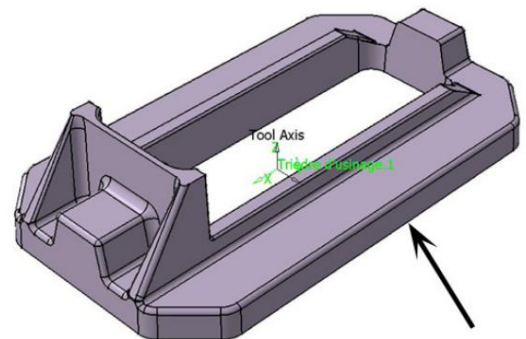
**Part(s)**

the window

disappears click on the raw base and double-click outside to validate

the selection set the allowances to: **0 mm** set the stop mode to: **contact**

**point** and the overflow to: **10 mm**



name the tool T4 2T milling cutter D8

set diameter to **8mm** and nose radius Rc to: **1mm** check ball

**end tool**



set

machining strategy

machining tolerances to: **0.1 mm**

machining mode: **zig-zag infeed**

check the **ridge height** box



maximum pass over: **0.5 mm**

minimum pass over: **0.2 mm**

ridge height over: **0.1 mm**

area

check the box **all**



adjust

approach

approach mode on: **along tool axis** length

on: **30 mm** retraction retraction mode on:

**along tool axis** length on: **30 mm**

simulation

Click on **replay** to simulate the operation.

Click photo Click  or on video  to see the part after machining

**OK** to exit Animation mode.

Click on **OK** to validate the operation

**for finish 2**

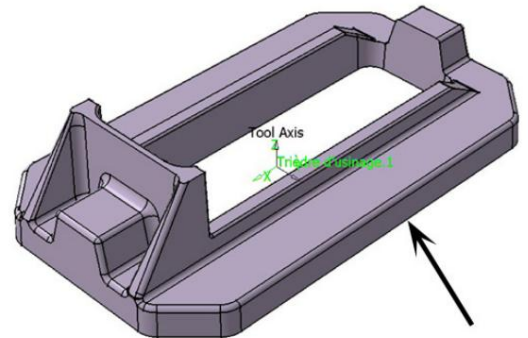
click on the **parallel planes** icon



click on **contour limiting** the window disappears click on the edge marked by the arrow

click on  to select the outline then **OK**

right-click on the word **part**, select **Part(s)** the window disappears click on the raw base and double-click outside to validate the selection set the stock allowances to: **0 mm** set the stop mode to : **point of contact** and overflow on: **10 mm**



take the same tool as finish 1



set

machining strategy

machining tolerances to: **0.1 mm**

machining mode: **zig-zag**

pass hold check  
 the box maximum pass **crest height**  
 on: **0.5 mm** minimum pass on: **0.2**  
**mm** crest height on: **0.1 mm**

area  
 check the box **all**

click on the horizontal arrow



the following menu appears



set X to 1, Y to **0** and Z to **0** click **OK**  
 to confirm




adjust

approach  
 approach mode on: **along tool axis** length  
 on: **30 mm** retraction retraction mode on:  
**along tool axis** length on: **30 mm**

simulation

Click on **replay** to simulate the operation.

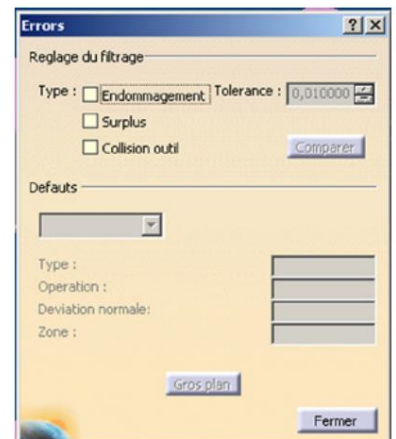
Click on photo  to see the part after machining

click on photo analysis  the following menu appears

check the **surplus** box set  
 the tolerance to **0.25 mm** click on  
**compare**

the blue colors correspond to the excess material. the green  
 color corresponds to the machining within the tolerance

check the **Damage** box set the  
 tolerance to **0.25 mm** click **compare**



the yellow colors correspond to the damage of the part. the green color  
 corresponds to the machining within the tolerance

Click **OK** to exit Animation mode.  
 Click on **OK** to validate the operation