6000 CNC CONTROL
GENERATING PROGRAMS USING CAM

ANILAM

STEP BY STEP CREATION OF A PROGRAM USING THE SHAPE EDITOR

The following presentation shows a step by step procedure of how to create a part program using the Anilam 5000 Control.
This procedure details the use of the interactive CAM that creates the part profile through simple entry of geometrical elements (points, lines and circles) without having to calculate intersections, tangency points etc. These elements are then connected or “chained” to complete the shape.

Creating the Part Program File in the PROGRAM page.

(1) From the MANUAL mode press: **Program**

NOTE: There are 2 methods of creating a program file, both are shown below.

Method No.1 Creating a new program file.

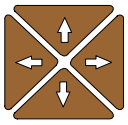
(2) Press: **Create** At the prompt 

type in the program name

and press 

NOTE: Program names can be up to 8 characters in length, but may not include spaces or periods.

Method No.2 Copying and using an existing program.
If a similar program to that required already exists, it may be copied and given a new name. This allows similarly formatted programs to be used without having to re-type the information.

(2a) Using the  keys hi-lite the existing program to be copied 

Press: **Utility** this brings up a menu, 

with Copy hi-lited

press  This will display a second menu 

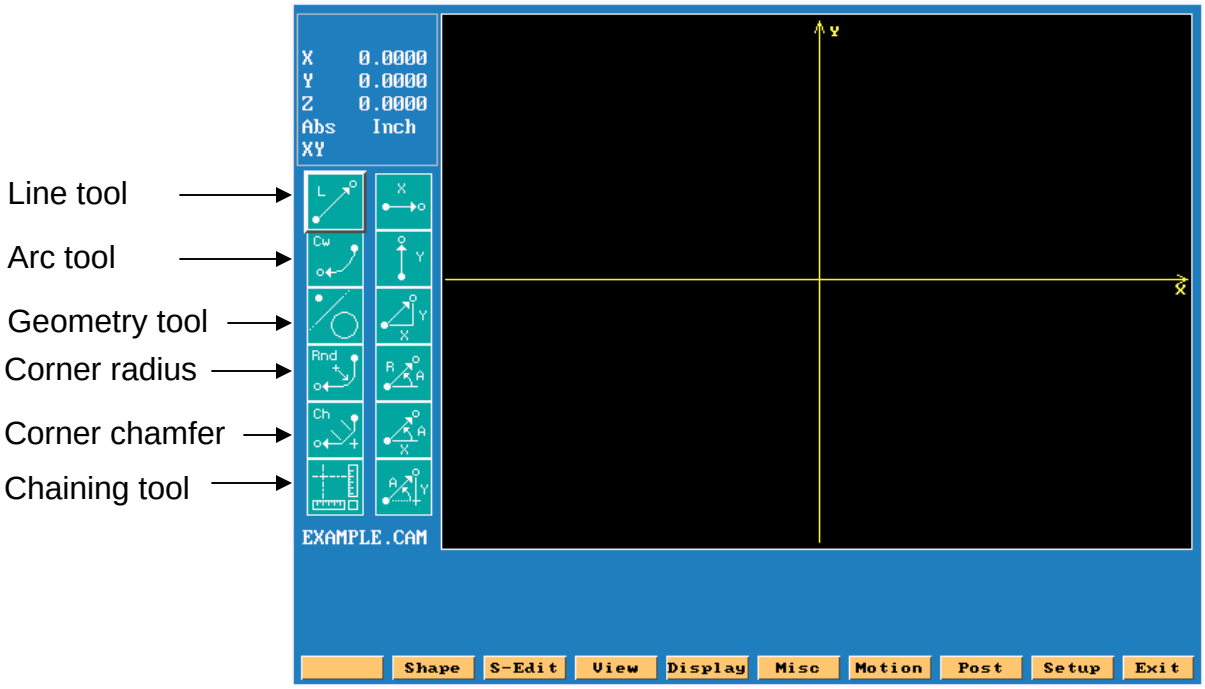
Hi-lite Other and press 

This will bring up a third menu 

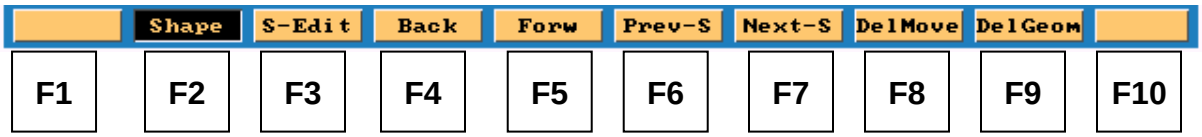
type in the new program name

“EXAMPLE” and press  this will create a new program named EXAMPLE and also leave the original program “SAMPLE1.G” intact. This copied program can now be edited to suit the new part.
It is not necessary to type the file extension (.G) as this is completed automatically.

- High light the name the needs the program for, press **CAM**
- The machine program can be coompletely produced in CAM.



When **Shape** is press, soft keys will change as shown below.



F4- Back Moves curser backwards on a shape.
F5- Forw Moves curser forward on a shape.
F6- Prev-S Moves curser to previous shape.
F7- Next-S Moves curser to next shape.
F8- DelMove Deletes last move in shape.
F9- DelGeom Deletes geometry, an element number is required.

Press **Shape** again to turn OFF and return previous funtion keys

Pressing **S-Edit** the following pop-up menu will appear

Create	Create a start point for a shape**.**
Copy	Copy a shape to another location.
Move	Move a shape to anew location.
Delete	Delete a shape.
Rev Arc	Reverses direction of an arc in a shape.
Project	Replaces a radius and joins lines.
Join	Connects lines together.
Import	Imports shape from another CAM file.

Pressing **View** the following pop-up menu will appear

XY plane
XZ plane
YZ plane
Isometric

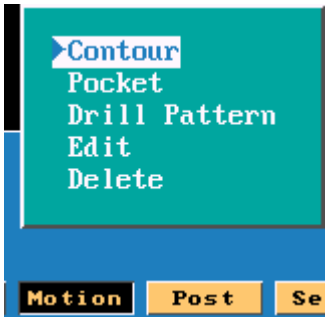
Pressing **Display** the following pop-up menu will appear

Fit to screen.
Zoom in on windowed area.
Redraw screen
Half size of screen.
Double size of screen.
Scale screen.
Pan move part around on screen.
Erase screen.

Pressing **Misc** the following pop-up menu will appear

List shapes by number.
Lists all geometry. Showing coordinates.
Recover a deleted shape.
Recover a deleted tool path.

Pressing **Motion** the following pop-up menu will appear

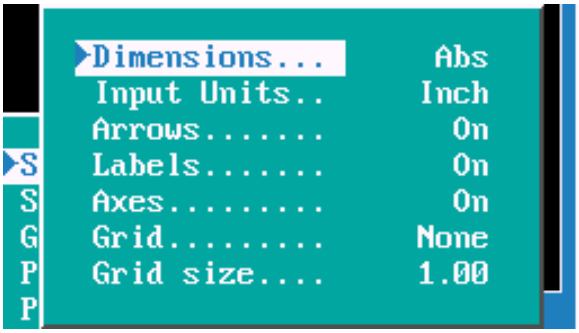


Generate a tool path around a shape.
Generate tool path for pocketing a part.
Drilling cycles and paths.
Edit any of the above paths.
Delete a tool path.

Pressing **Setup** the following pop-up menu will appear

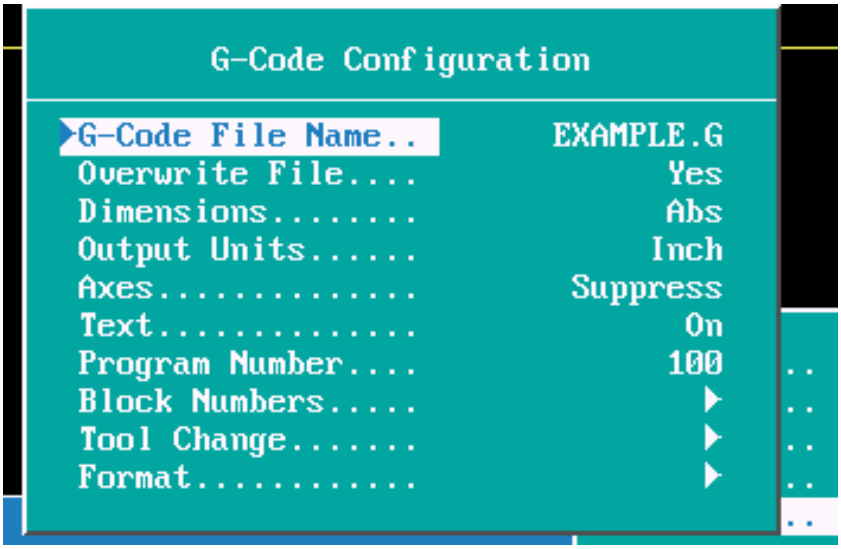
Parameters for CAM.
Turn shapes ON/OFF.
Turn geometry ON /OFF.
Turn tool paths ON/OFF.
Parameters for post.

When high light is on setting press  the pop-up menu will appear.



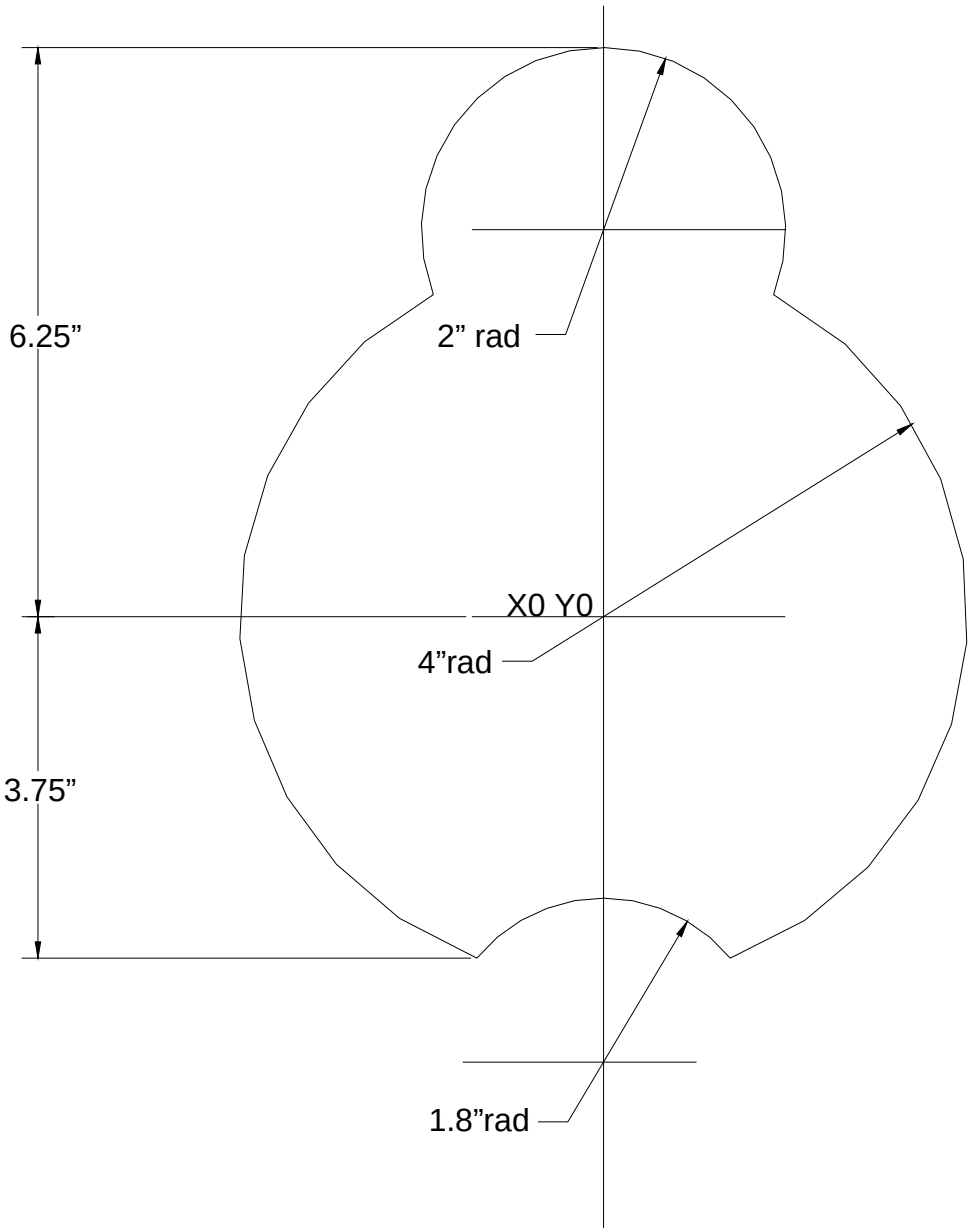
Type of dimensioning ABS/INC.
Units INCH/MM.
Turns Arrows ON/OFF.
Turns ON/OFF element labels.
Turns Axis marrkers ON/OFF.
Turns grid ON/OFF.
Size of grid.

When high light is on paths press  the pop-up menu will appear.

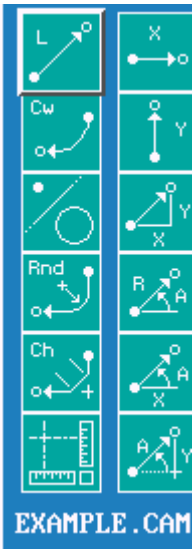


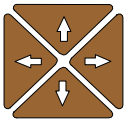
Out-put program name.
Over write existing program.
Out-put type ABS/INC.
Unit INCH/MM.
Only out-put Axis if it moves.
Text on while posting.
Program number.
Block number.
Tool change requirements.
Format Number of decimals

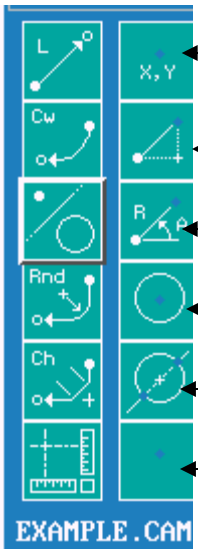
The part below needs to be pocketed.



When **CAM** is accessed The high light will be on the top left icon,
for the following exercise the third icon down is the one required.



Press  down arrow key twice icon on right will become point definitions.



Enter a point using X & Y coordinates.

Increamentally move from an existing point.

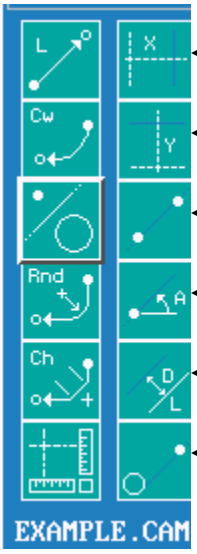
Move an existing point using an angle and a radius.

Center of a circle.

Intersect between two elements.

Using an existing point.

Press  icon on right will change to line definitions.



A line along X axis.

Aline along Y axis.

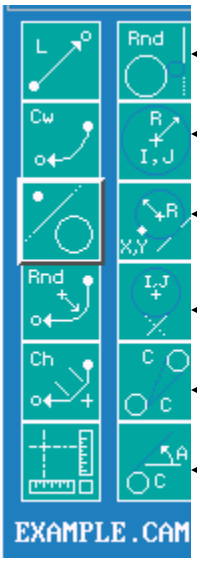
Aline between two points

A line through a point at an angle.

A line parallel to an existing line.

A line tangent to a circle through apoint.

Press  to get to circle icons.



Circle between two existing elements.

Circle knowing center point and radius.

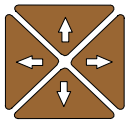
Circle tangent to a line through a point knowing radius.

Circle tangent to a line knowing center point.

Line between two circles, four options.

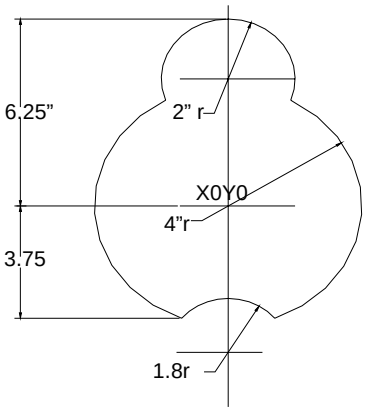
Line tangent to a circle through a point.

High light third Icon down on left.

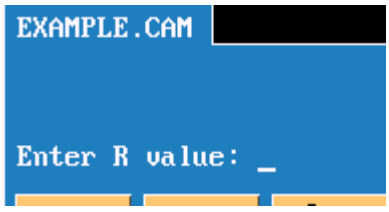
Press  right and then up.

Circle icon high lighted

Geometery icon turn blue.

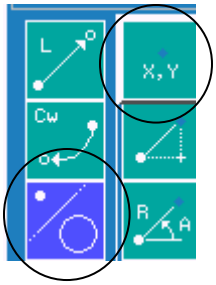


Press 



R value =4

Press 

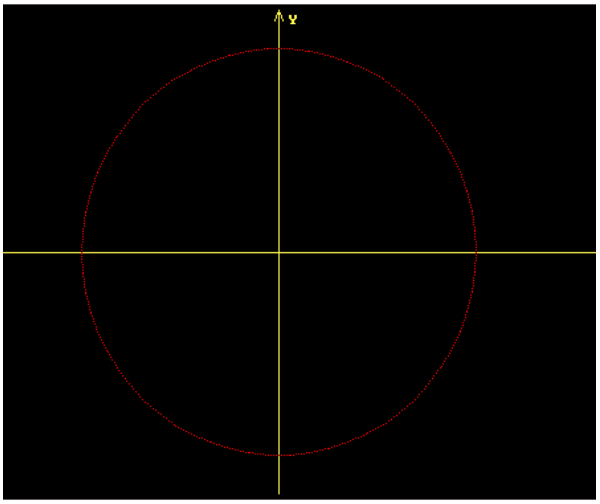


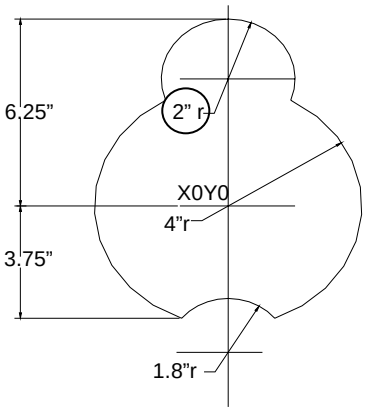
It will now ask for center definition and point definition will appear in right column of icons. The top icon will be high lighted.

Press  it will ask for an value in X0 and Y0  twice.

When entry is 0 (zero) ,it is not required to press the 0 key.

Press **F5** **Display** Fit and screen show the circle that was just entered.





Using same icon put in 2” radius ccircle.

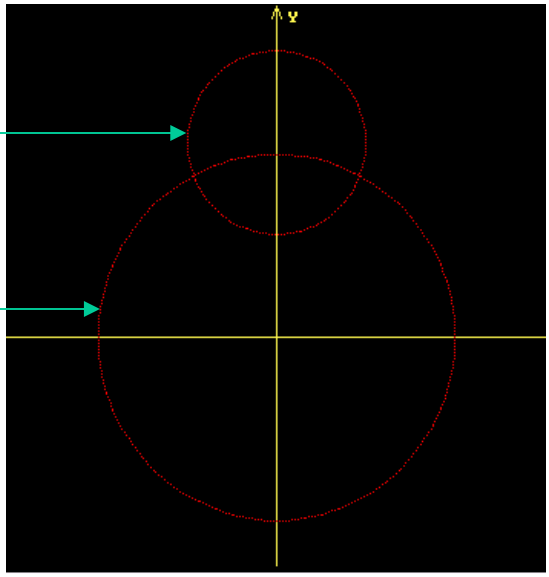
Press  enter 2” for radius

Press  press  to select point value X0 , value Y 4.25 (6.25-2) press 

Two circle will now show up on screen.

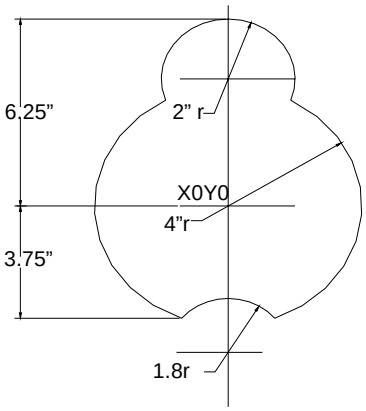
2” Radius

4” Radius



The next element required is the 1.8 radius arc.

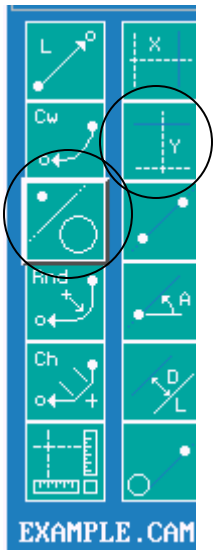
In order to do this it is necessary put in some construction geometry.
First a line has to be draw at -3.75 in the Y axis.



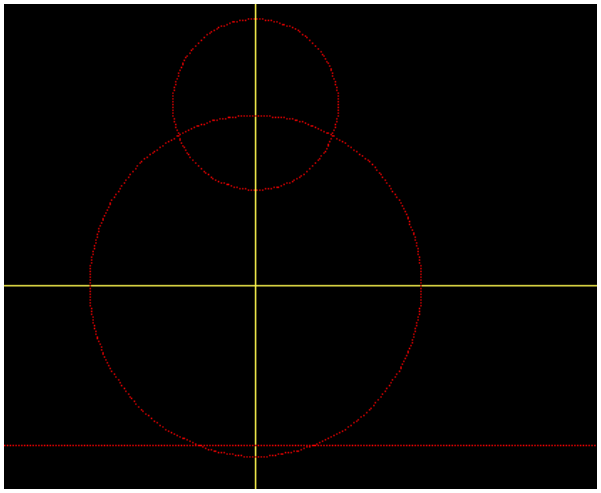
First high light geometry icon as shown below,

press  until line definition appear.

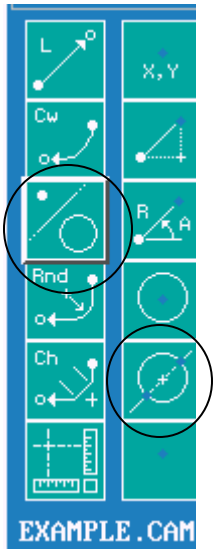
Use arrow keys to get to circled line definition.

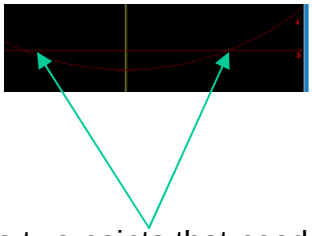


Press  enter a value of -3.75 



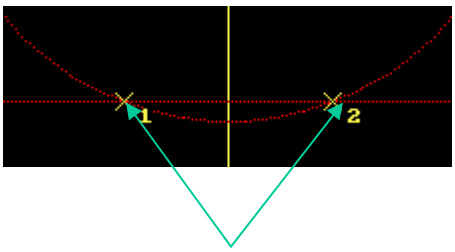
The next geometry required are two points at the intersect of the 4” radius circle and the -3.75 line. To do this use icon circled below.



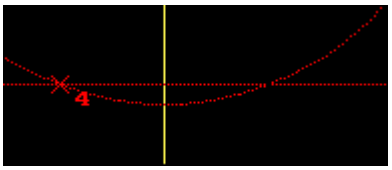


These are the two points that needed to be found.
They are the intersect of circle #1 and line #3.

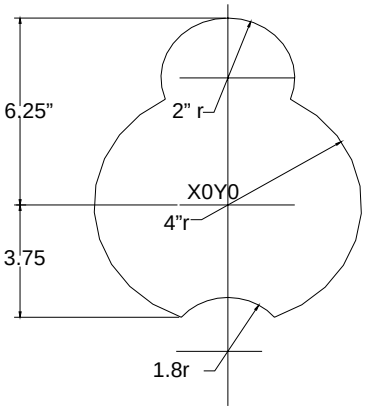
Press  Enter number of first element 1 press  second element 3. 



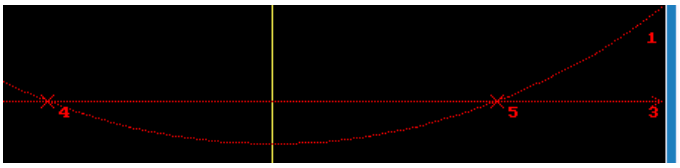
There are now two selections, press 1 press 

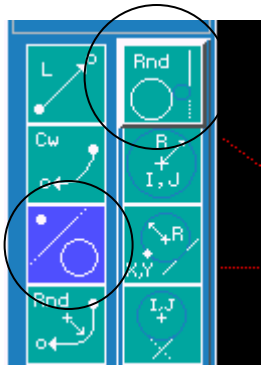


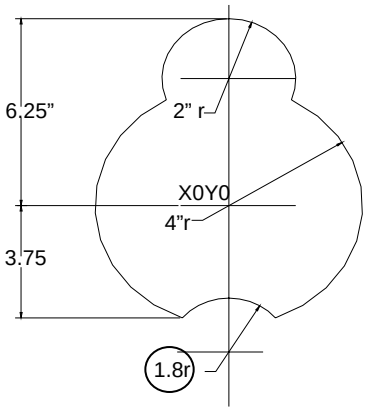
Thre is now an element #4 on left intersect.
Do the same again only select #2.



It is now posible to drive an arc between points #4 & #5.





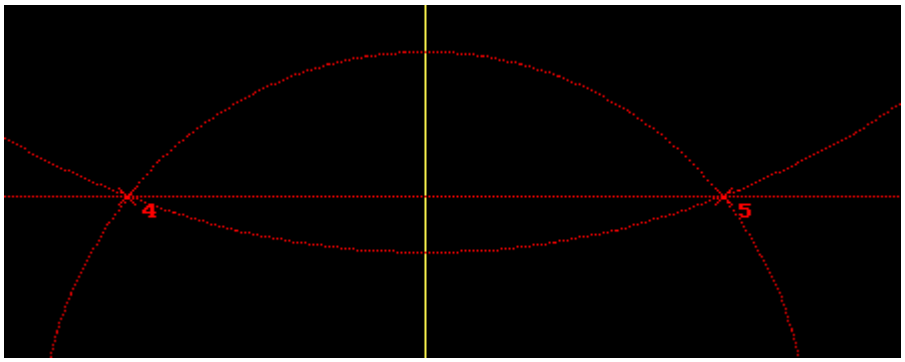


Use the Icon that allows a circle between two elements.

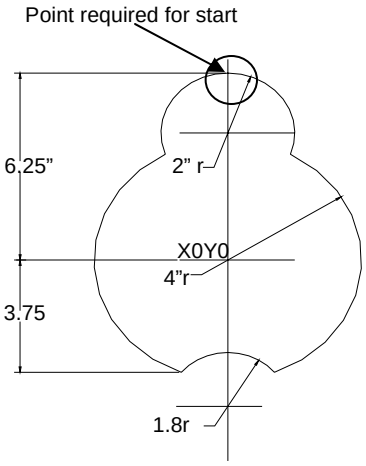
First question R value. `Enter R value: 1.8_` Press 

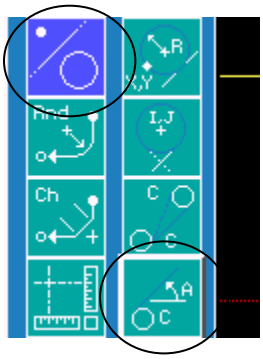
Second question `Enter number of first element: 4_` Press 

Third question `Enter number of second element: 5_` Press 



It is necessary to figure the best place to start. On this part the top will allow us to completely clean this shape.





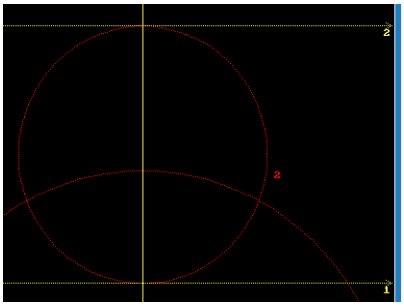
Use icon circled line tangent to a circle at an angle.

First question 

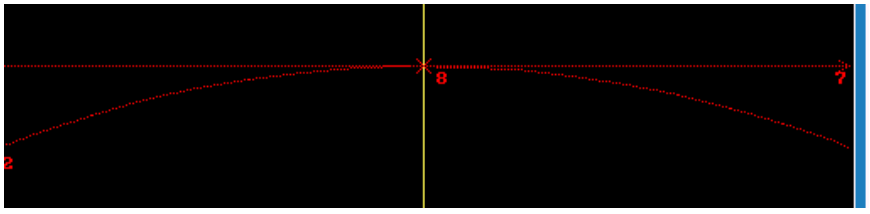
Press 

Second question 

Press 

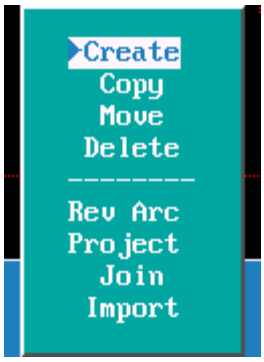


There are two chooses #1 or #2 we will take #2



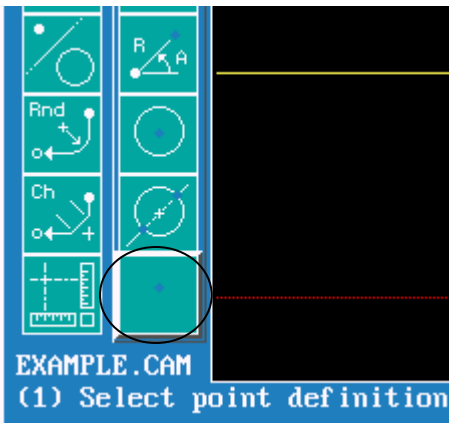
All the necessary geometry has been established, the next thing is to make a shape, to pocket and contour.

Press **F3** **S-Edit**

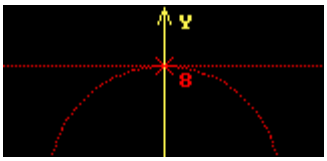


A start point needs to be established for are shape, high light will be on **Create.** Create will set where the shape is going to start.

Press  select point definition,Use the icon circled.



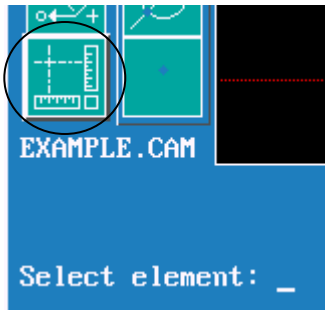
Press   Enter 8 when it says “From point”



Press 

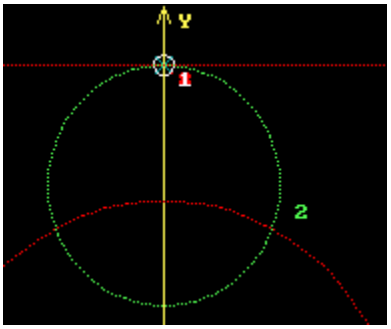
The white number one is the start point for shape #1.

The icon circle is the construction icon, high light it press  it will ask for an element tobe selected.



Enter -2 press 

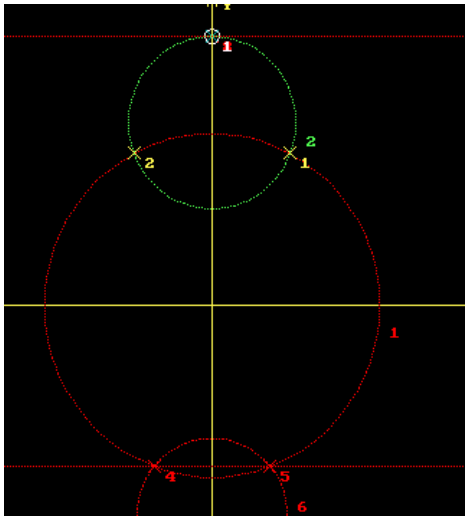
When selecting circles if cutting in clockwise the number is positive if counter clockwise the number is negative as shown above.

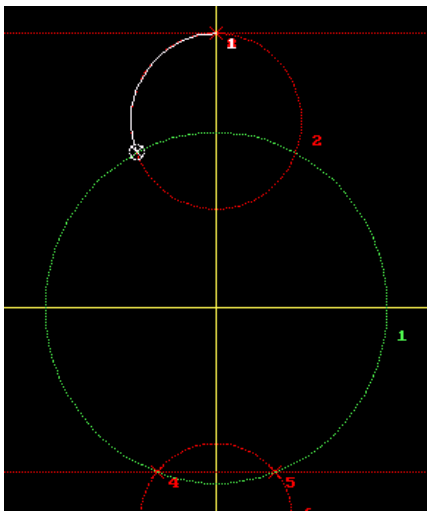


Selected element will show up in green.

The next selection is -1 and there are selection 1 and 2, inthis case 2 is required.

Press 2 





Notice that after 2 was selected element #2 when from green to white and element #1 became green.

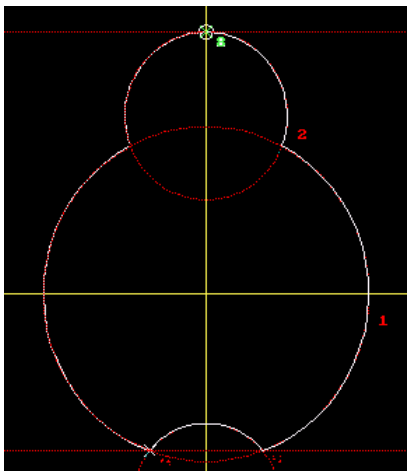
The next element is #6, this is positive because the direction is clockwise.

Press 6  select #2 

press -1  select #2 

press-2  select#2 

press 8 



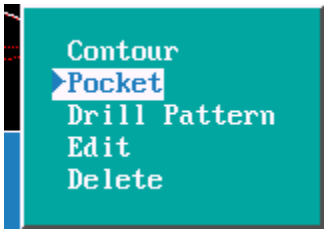
Notice the shape is now outlined in white.

The shape is now complete press **F9** **Cancel**

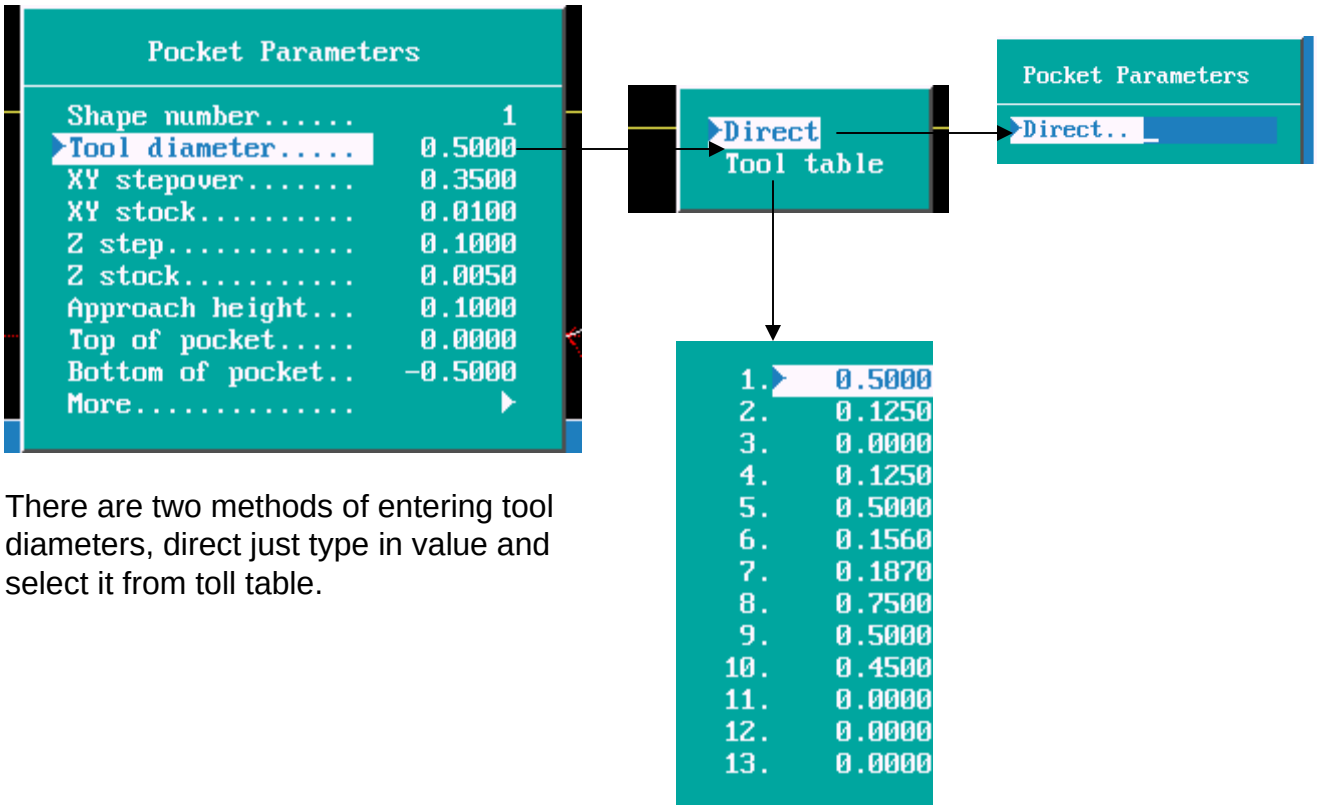
The geometry and shape are complete, the next is to produce a tool path to pocket and contour.

Press **F7** **Motion**

The first tool path is **pocket** using arrow keys high light pocket press.



Press



There are two methods of entering tool diameters, direct just type in value and select it from toll table.

Tool table

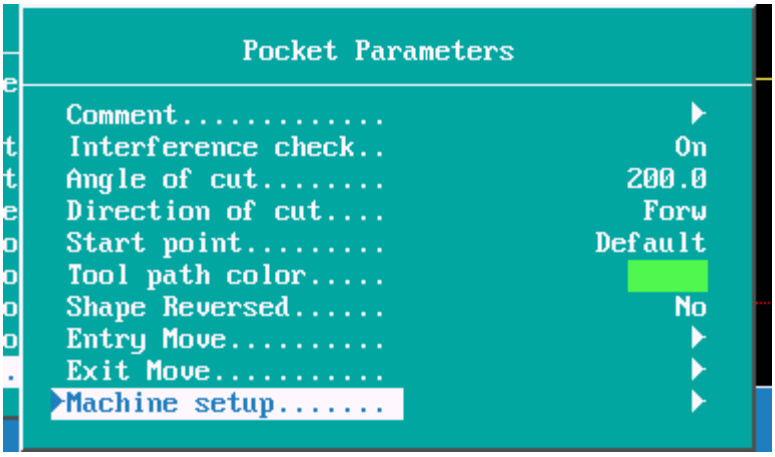
A pop-up window will appear as above.

To enter a value in any of these parameters first press 

enter value press 

When **More** is reached it will bring up anew pop-up window.

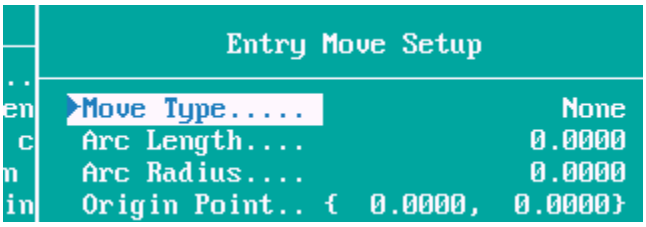
Second page of parameters.



Angle of cut can be left at default or an angle entered, on this part an angle of 200 deg's will be entered.

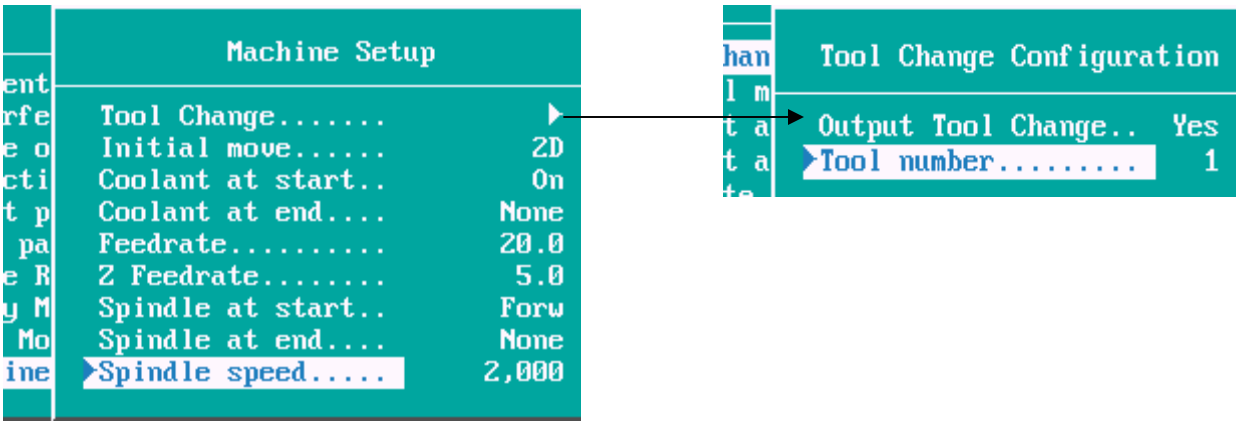
Entry and Exit Move  these are the three options.

Linear is straight line move on to start point, circular ram on move.



Arc Length is the angle arc ramping on move.
Arc Radius size ram radius.

When **Machine Set** is hight lighted will go to a new pop-up window.

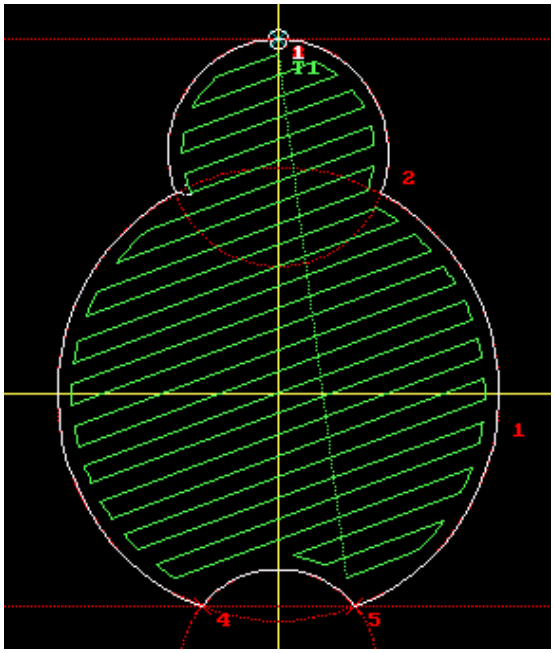


Coolant turn ON at start but not OFF at end as the same tool will be used for pocketing and contouring. The same applies with spindle.

Press **F10** **Cont** Press **F10** **Cont** Press **F8** **Calc**

On the right is how it will appear on screen.
Red is geometry.
White is the shape outline.
Green is tool path.

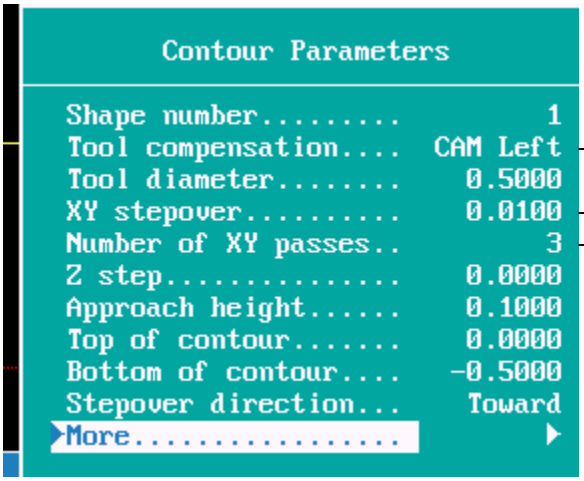
F1 **Yes**



The Contour now need to be done as the edges are still rough.

Press **F7** **Motion**

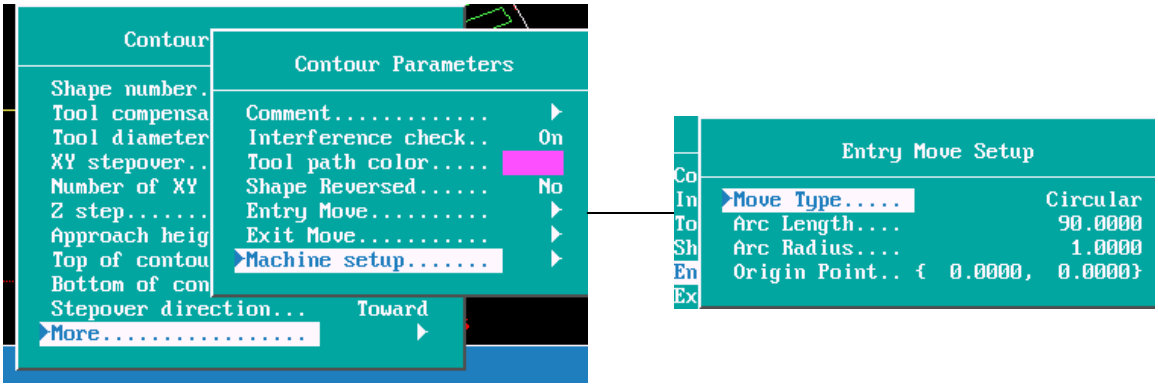
press



It now needs to know which side to put tool comp.

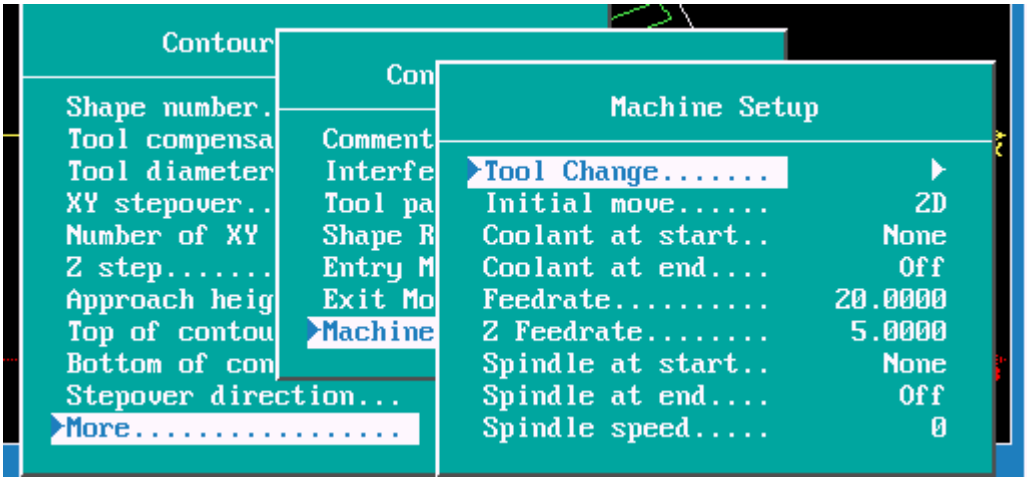
Stepover this is around contour only.

Number of passes around contour.



Do this for both Entry and exit moves.

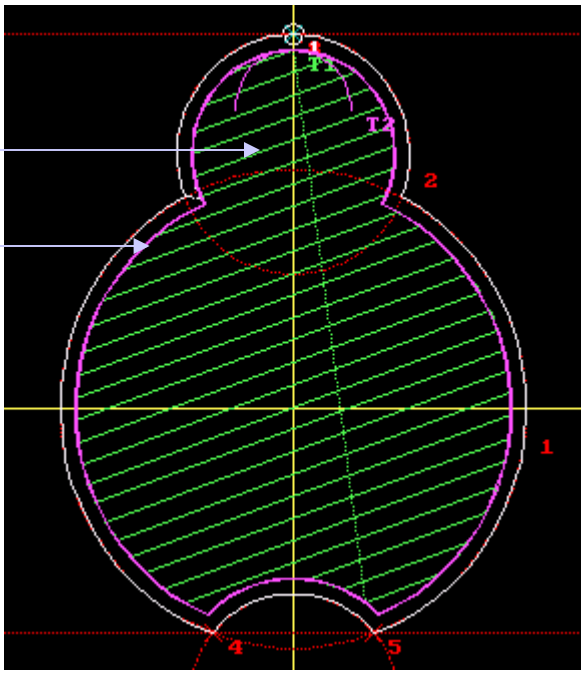
There is no need for a tool change because the same tool is being use for the contour as pocketing.



Note: Coolant and spindle at start are entered as **None** and turned **Off** at end,as they are still on from pocketing.

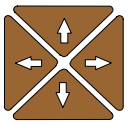
Pocket tool path #1

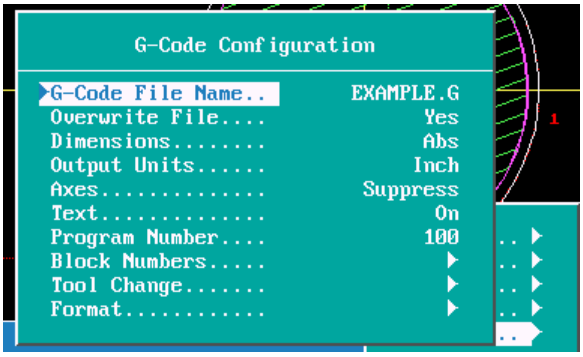
Profile tool path #2



F1 **Yes**

F9 **Setup** Arrow down to post





If machine has a tool changer arrow down to Tool Change press enter arrow down to Tool Change Format if M06 is required it should read as follows **T%02DM06**.

Block Number are set to start at 10 and increament by 10 this can be change dependinng on your preferance.

Format is set for 8 decimal place change these to 4.

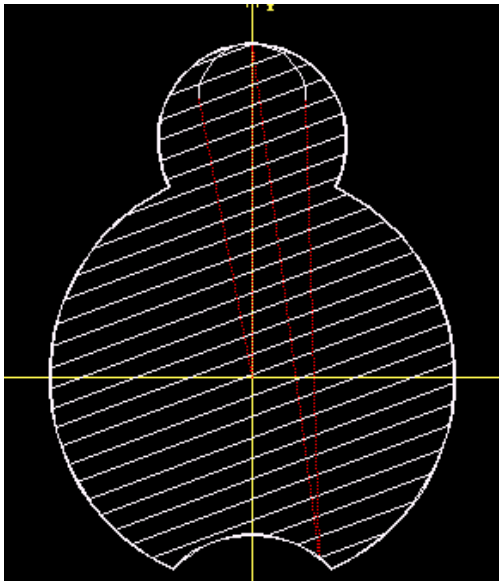
Press **F10** **Cont** press **F9** **Setup**

Press **F8** **Post**

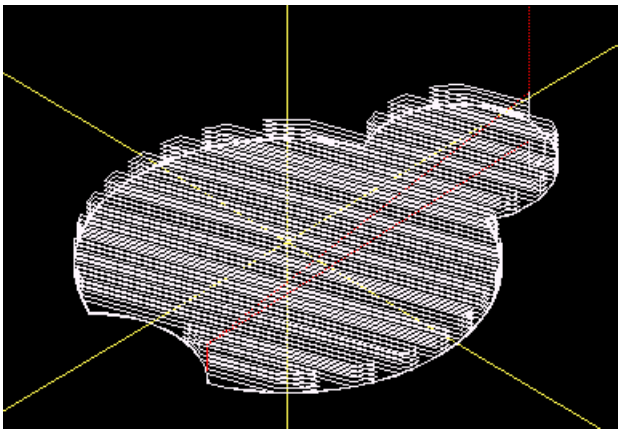
When finish press **F10** **Exit** it will now return to Program Page.

High light EXAMPLE.G press **F7** **Draw**

press **F5** **Display** fit will be high lighted press 



XY view



Isometic view

All that is left to do is set tool length offsets and fixture offsets, part is ready to run.

If the G-Code Configuration is now correct it can be save for future use.

Press  F5 **Display** until top left corner shows ..\ high light EXAMPLE.CAM press F9 **Utility** high light will be on **Copy** press  Arrow down to **Other** Type in

C:\P5M\DEFAULTS.CAM