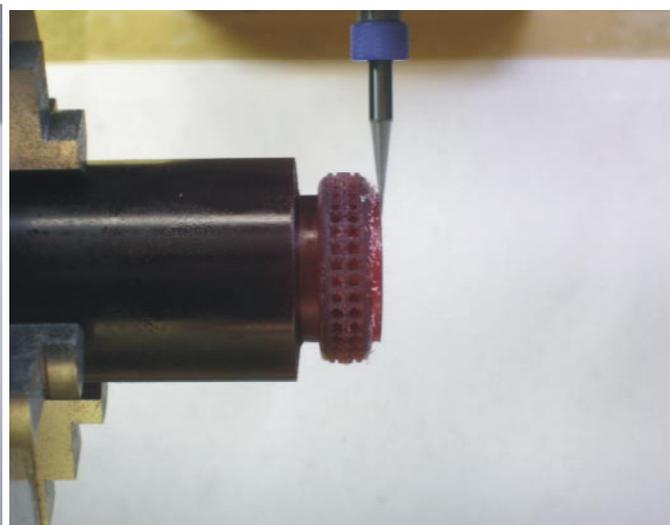
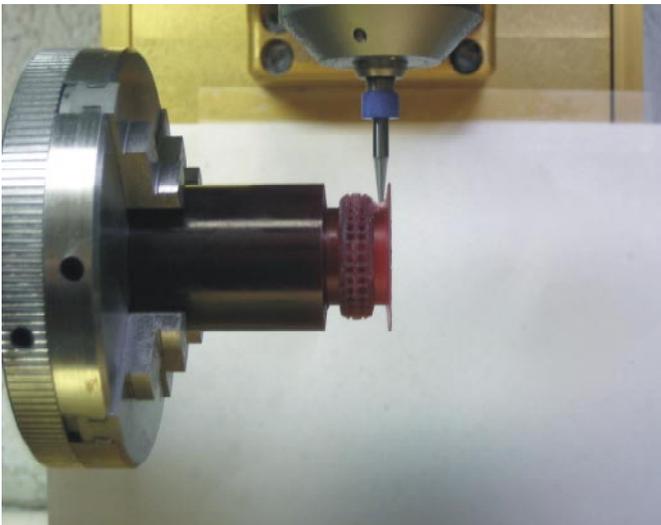
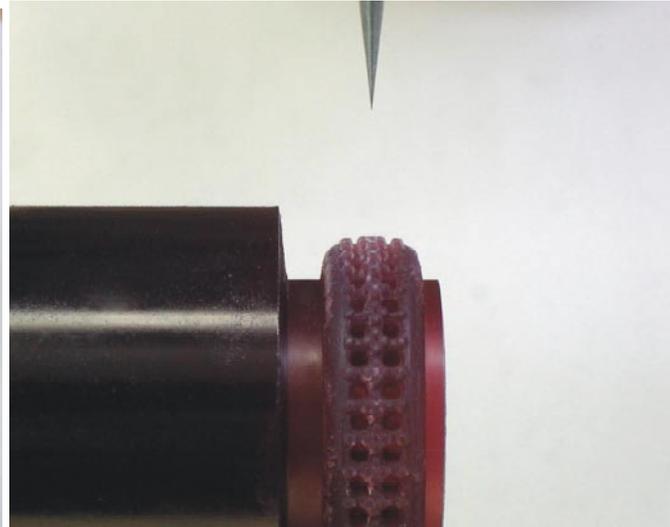
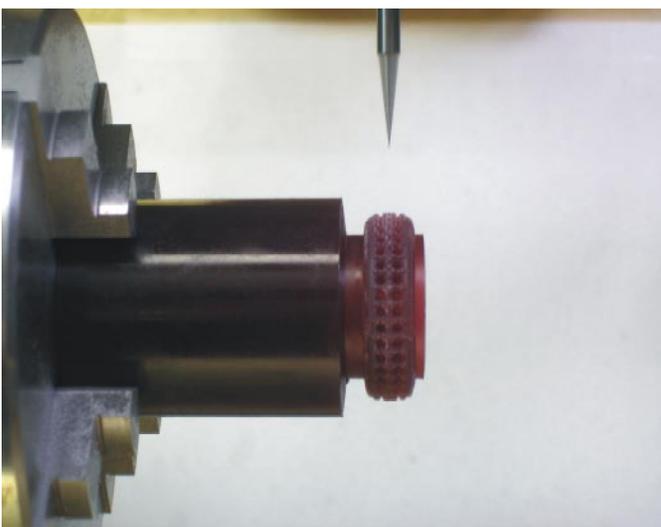


You start with a 2inch piece of wax tubing

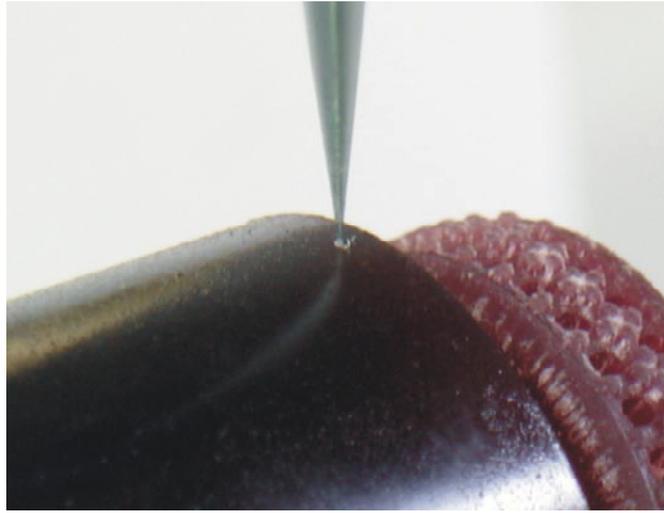
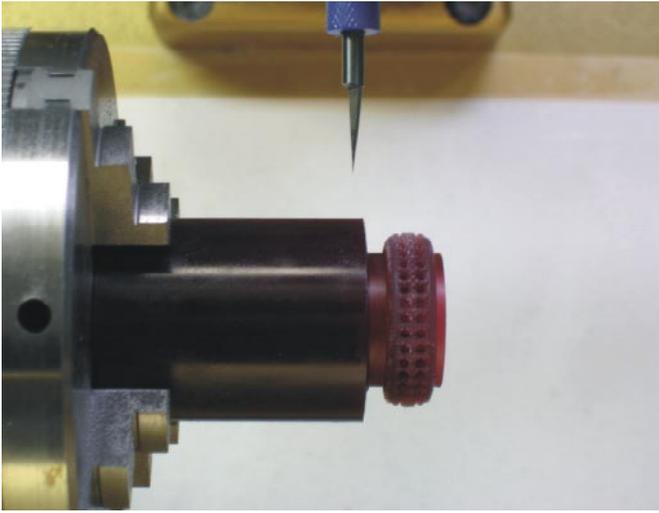
and start the outside toolpath near the end of the



When it finished use the same tool to cut the excises off some it will easier to get to the inside Toolpath.



After cutting the excises off. Bring the tool back to it starting point.



Now just using x- axes move it until you are above the tube wax that is not milled. Then uses z- axes and slowly come down until you barley touch the top of the wax. With the spindle on put a very small hole so you can see it with a loop.

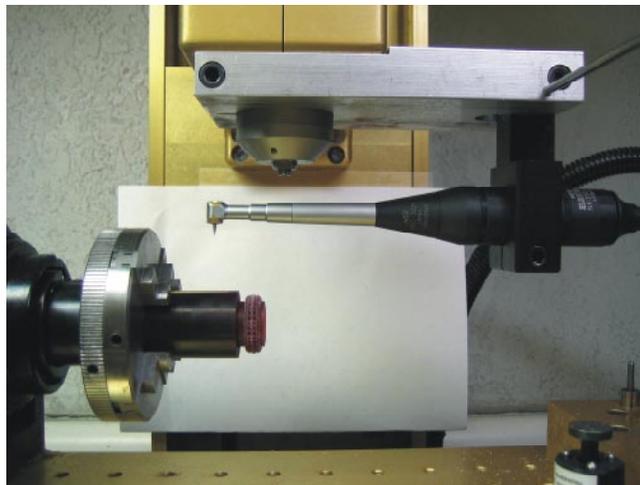
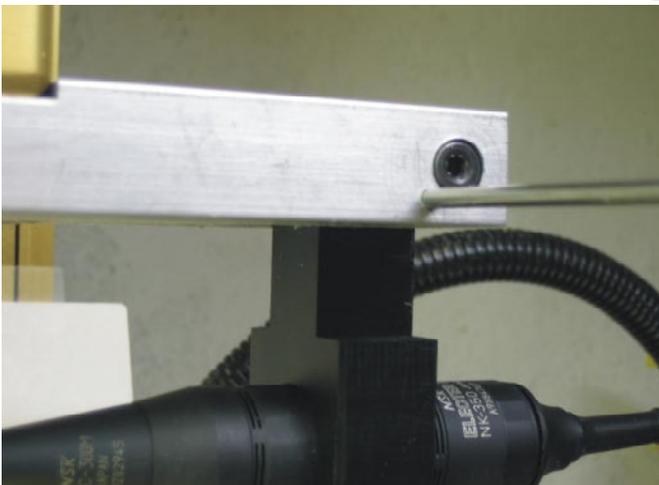
Program		Set	0	Machine		Clear	0
X	-7.633	X	N/A	Y	N/A	Z	N/A
Y	0.000	Y	N/A	A	N/A		
Z	13.526						
A	0.000						

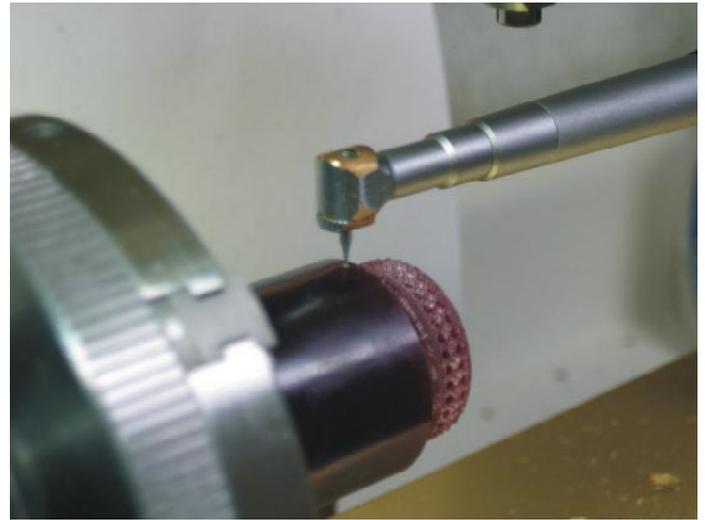
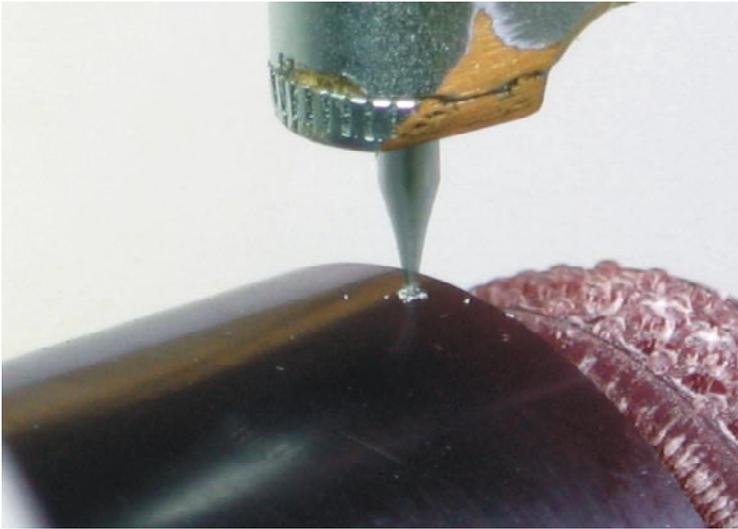
Relative		Set	0	Dist To Go	
X	0.000	X	0.000	Y	0.000
Y	0.000	Y	0.000	Z	0.000
Z	0.000	Z	0.000	A	0.000
A	0.000	A	0.000		

Before you move anything. Look at your **Program Coordinates** and write them down exactly the way you see it EX:(X -7.633 Y 0.000 Z 13.526 A 0.000) Now you can move the tool out of the way

And take it out to make room for the other spindle



With the bracket and spindle in place put the bracket pin in to hold the position.



With the spindle on slowly jog the machine to the little hole you made in the wax.  
Once you are in position go back to your **Program Coordinates**

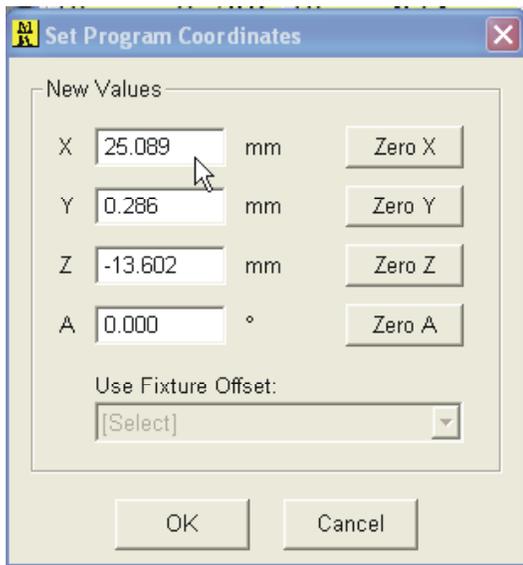
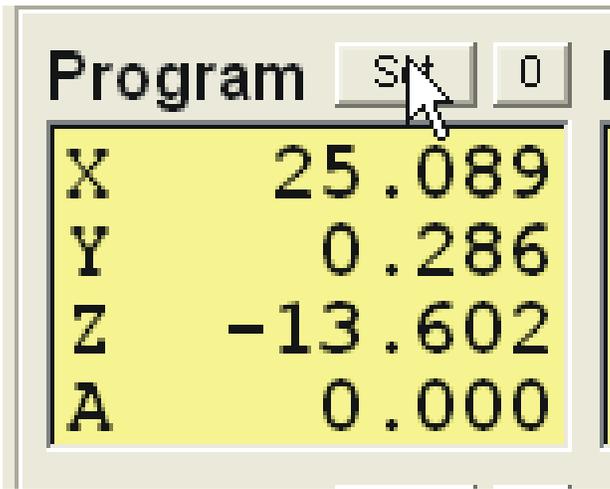
Program		Set	0	Machine		Clear	0
X	25.089			X	N/A		
Y	0.286			Y	N/A		
Z	-13.602			Z	N/A		
A	0.000			A	N/A		

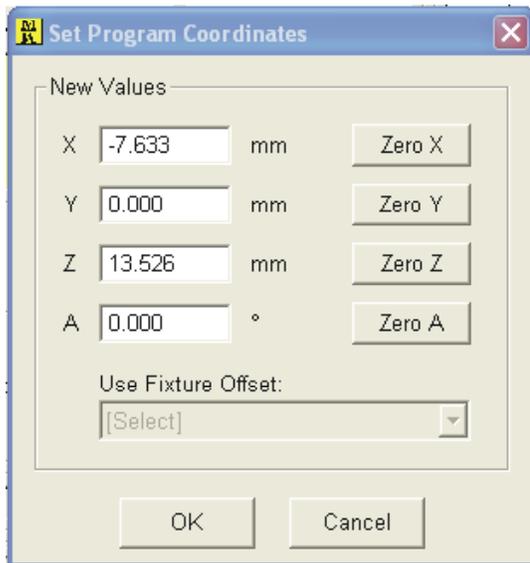
Relative		Set	0	Dist To Go			
X	0.000			X	0.000		
Y	0.000			Y	0.000		
Z	0.000			Z	0.000		
A	0.000			A	0.000		

**Program Coordinates** will read something like the above numbers.

You will need to change these numbers to the numbers you wrote down by resetting the **Program Coordinates** Click on the set button to change the coordinates



Enter the new values. That you wrote down



It should look like this above example after you change it. Press ok. Now your **Program Coordinates**

Should look like this

Program		Machine	
X	-7.633	X	N/A
Y	0.000	Y	N/A
Z	13.526	Z	N/A
A	0.000	A	N/A

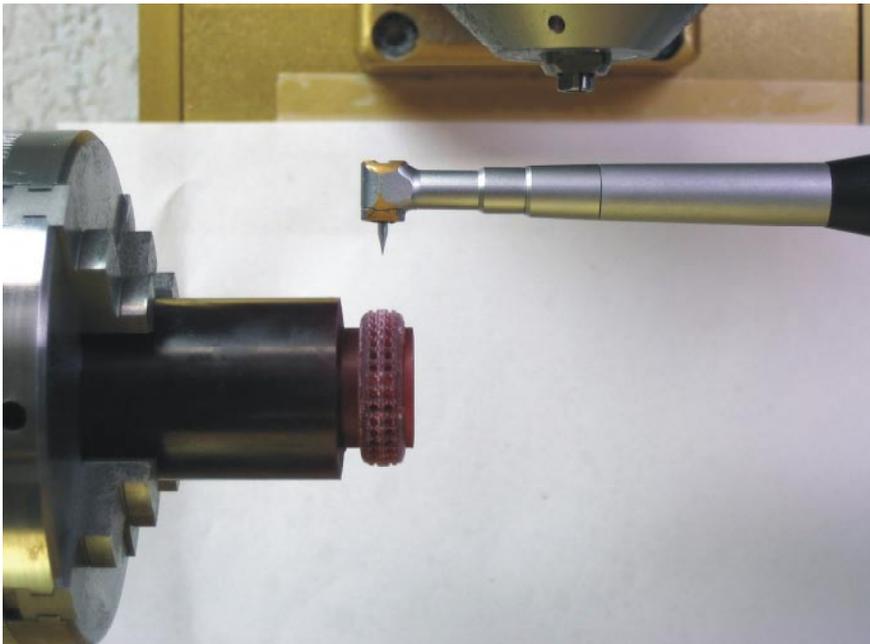
Relative		Dist To Go	
X	0.000	X	0.000
Y	0.000	Y	0.000
Z	0.000	Z	0.000
A	0.000	A	0.000

G-Code   Jog   **Point**   Home   Aux

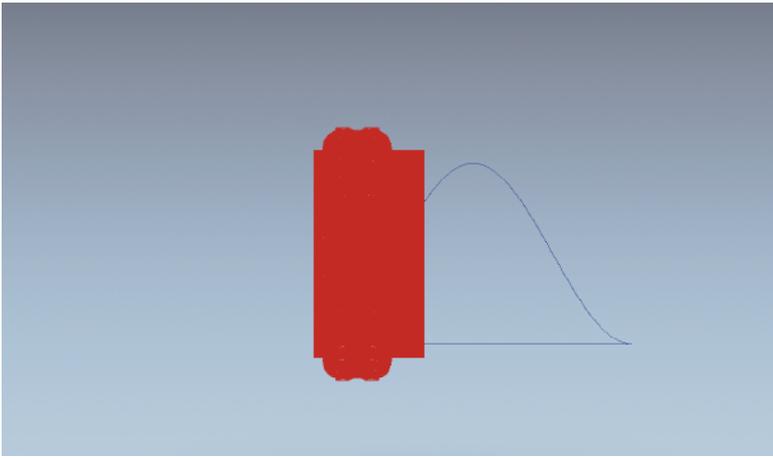
Any Point	Program	Feedrate
Program Zero	X 0.000 mm	500.0 mm/min
Machine Zero	Y 0.000 mm	360.0 %/min
Relative Zero	Z 20.000 mm	<b>Move</b>
Tool Change	A 0.000 °	<b>Feed Hold</b>
<b>Program Start</b>		
Curr. Line Start		
Last Feed Hold		

Go to your point tab and select program start and click on move.

If you did everything right. The spindle tool should line up above and in the middle of the ring.



Before your run the toolpath you need to make sure it was setup right.



To make an inside toolpath file you can use the multi-side machining tab. With the project open  
And all the files closed press the multi-side machining tab.



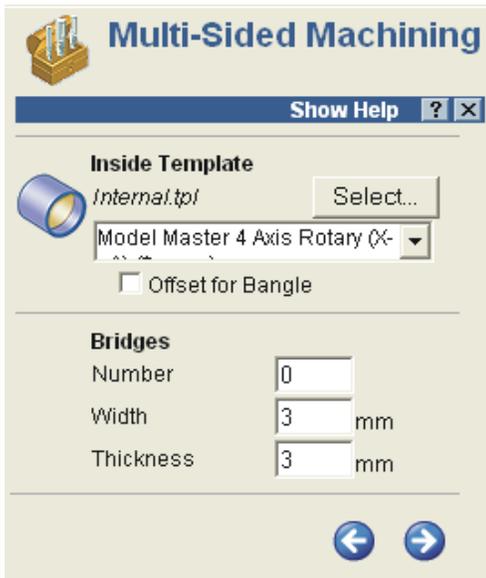
The multi-side machining window will open to the current template that you will change by clicking on the edit settings



Pick Ring and click next on the arrow key the diameter should be about the size of the ring and 40 pix resolution is good. The next window is machining orientations. Pick inside.



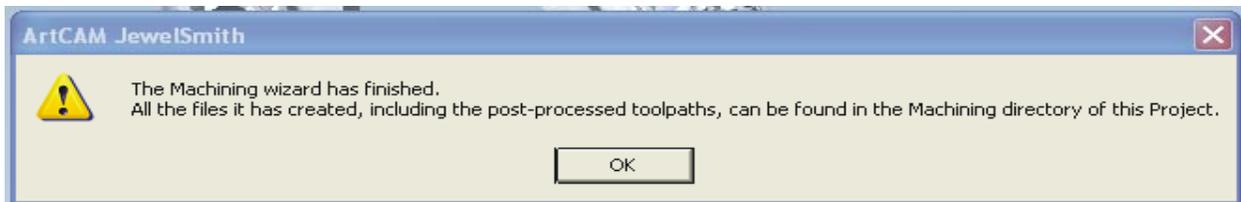
The next window you will pick the post. Use Modelmaster 4Axis rotary (X=A) .mmg And you don't need any bridges. Change the number of bridges to "0". Click next



This will bring you back to the beginning of the multi-side machining with the right setting. Check calculate toolpaths. Click the check tab to begin.



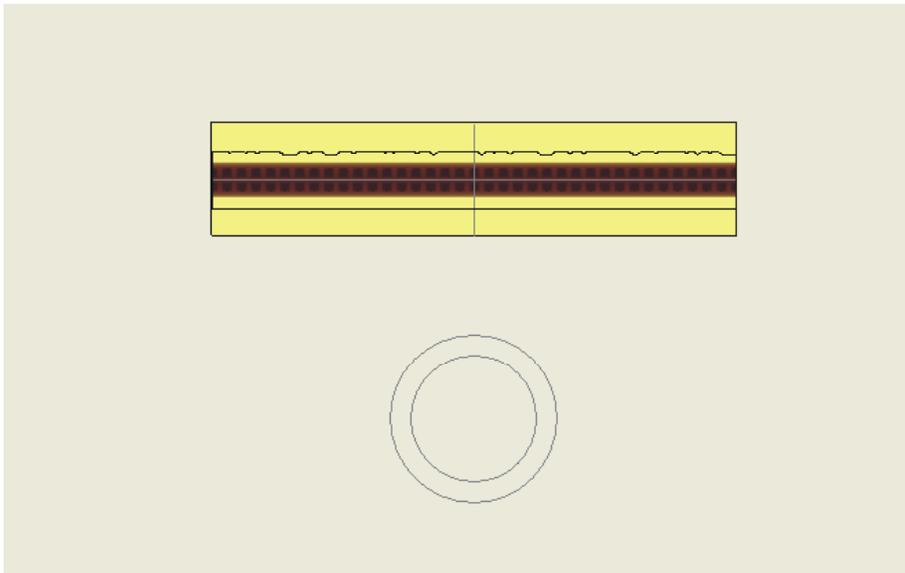
When the wizard is finished.



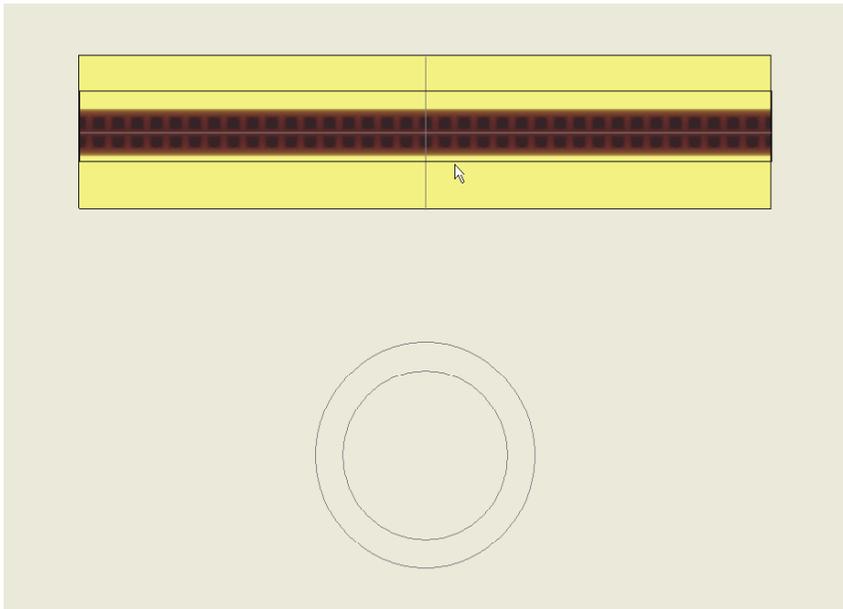
Under project tools click on browse project. In the machining folder is the folder for the ring called InternalRing. Open it.



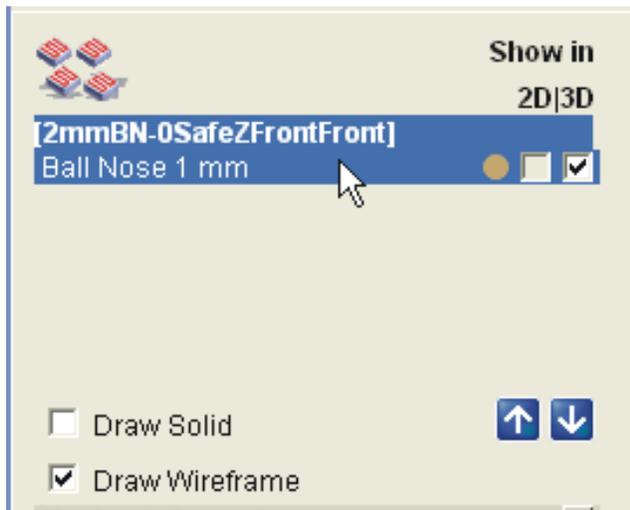
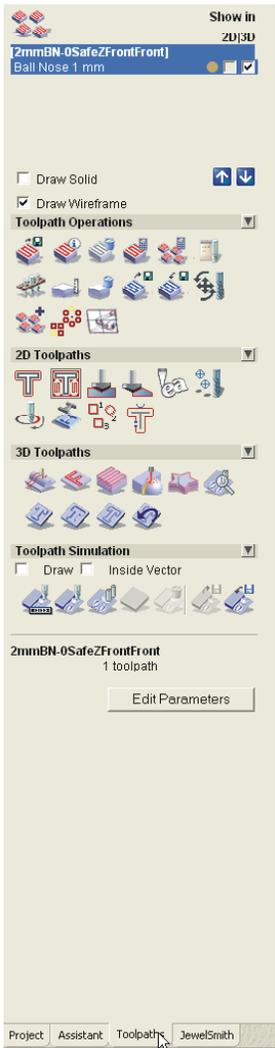
The 2d file will look something like this one



Delete the selected vector lines that the wizard made and make some new one  
Use the center reference line to make two lines above and below the relief and join them on both sides



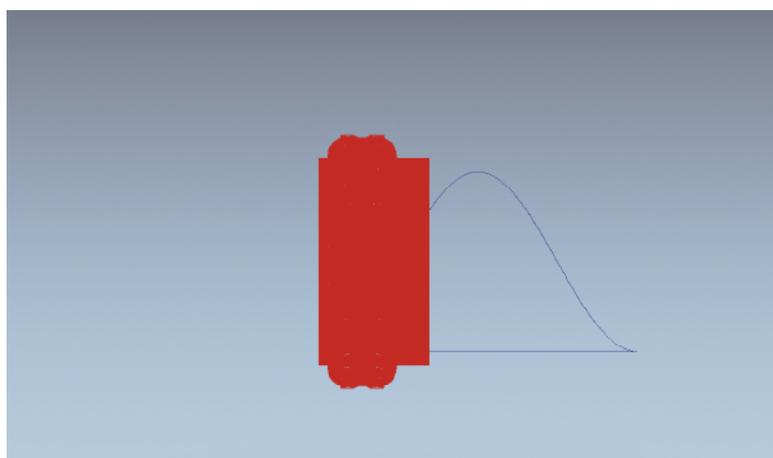
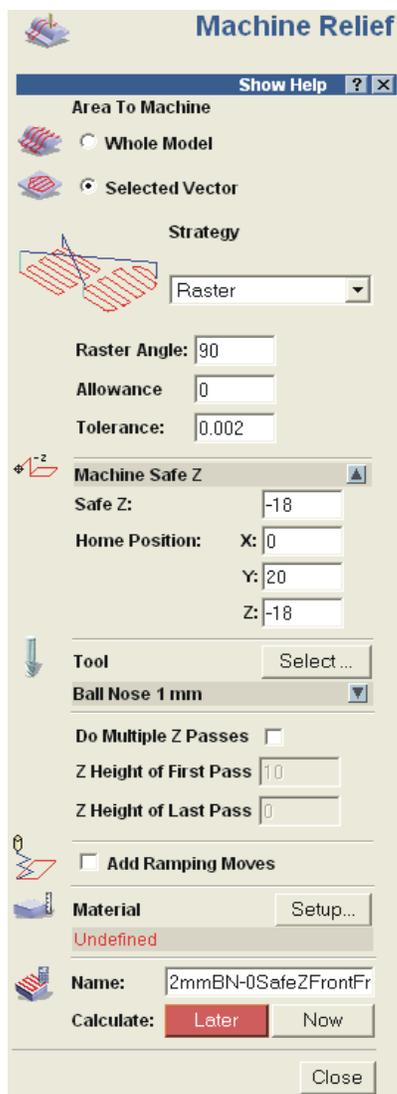
The new vector lines should look like the ones above. The top vector line should be about 2-3 mm above the relief and the bottom vector line should be close to the relief to avoid cutting the ring of the wax tube.



Go to the toolpaths tab and double click on the toolpath that is highlighted.

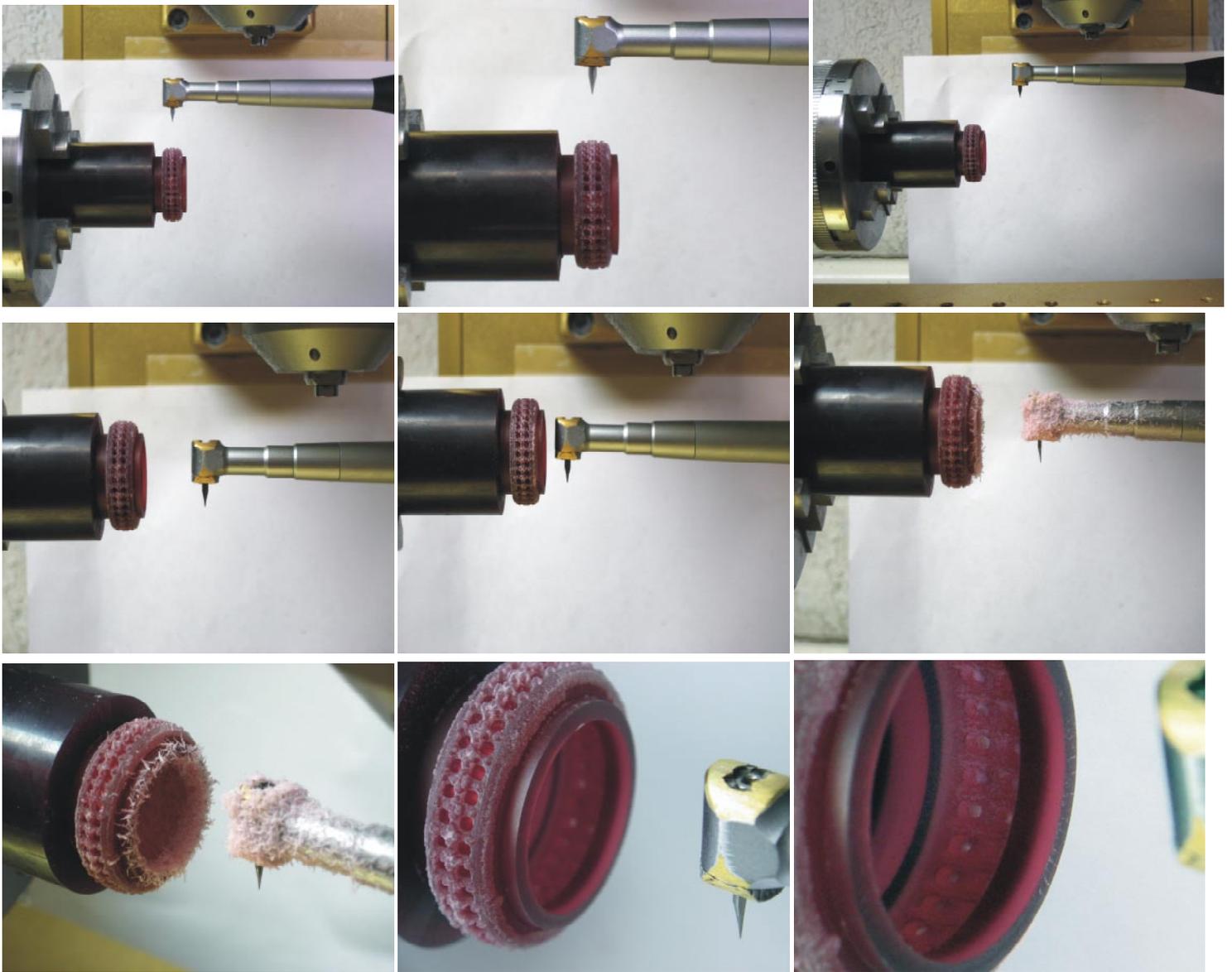
The next window you will see is toolpath. You need to change the tool you want to use and the safe Z.

The safe Z and Z need to be set on -18 this is very important because this is clearance you need to fit in the tube wax to cut the inside. Selected the new vector line you made and press now and this will produce the right toolpath. The toolpath should look like the image below



Now you can send the toolpath to the CNC machine.

Once you load the toolpath in art2part you start the spindle and press the start button.



Congratulations you just cut your first inside toolpath.