

## **MACH3 – LAZYCAM LATHE**

The following should help you in using LazyCam to generate G-Code for the lathe. It doesn't cover everything, but hopefully it will shorten your learning time. The write up provides step by step instructions. I added comments rather freely, they are just based on what I found and probably won't hold true over time. With that thought in mind

\_\_\_\_Have Fun!

RICH

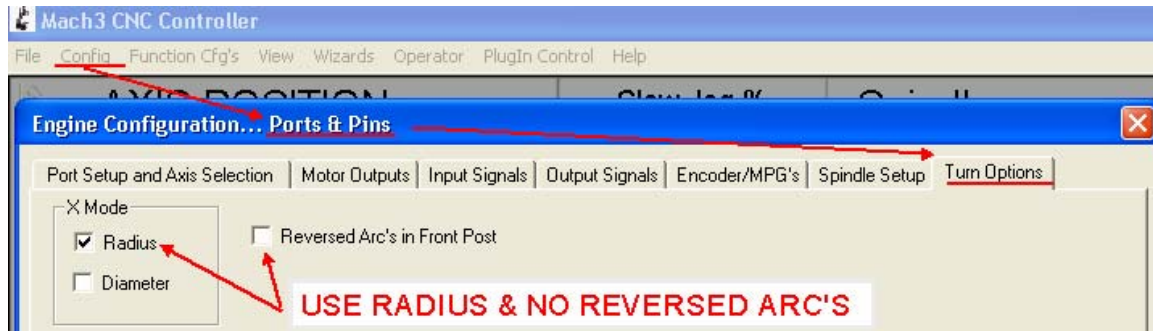
### **BEFORE YOU EVEN START**

It's assumed MACH 3 was installed on your PC. Suggest you do the following:

1. Open MACH3TURN and select Auto



2. You need to do some configurations as follows:

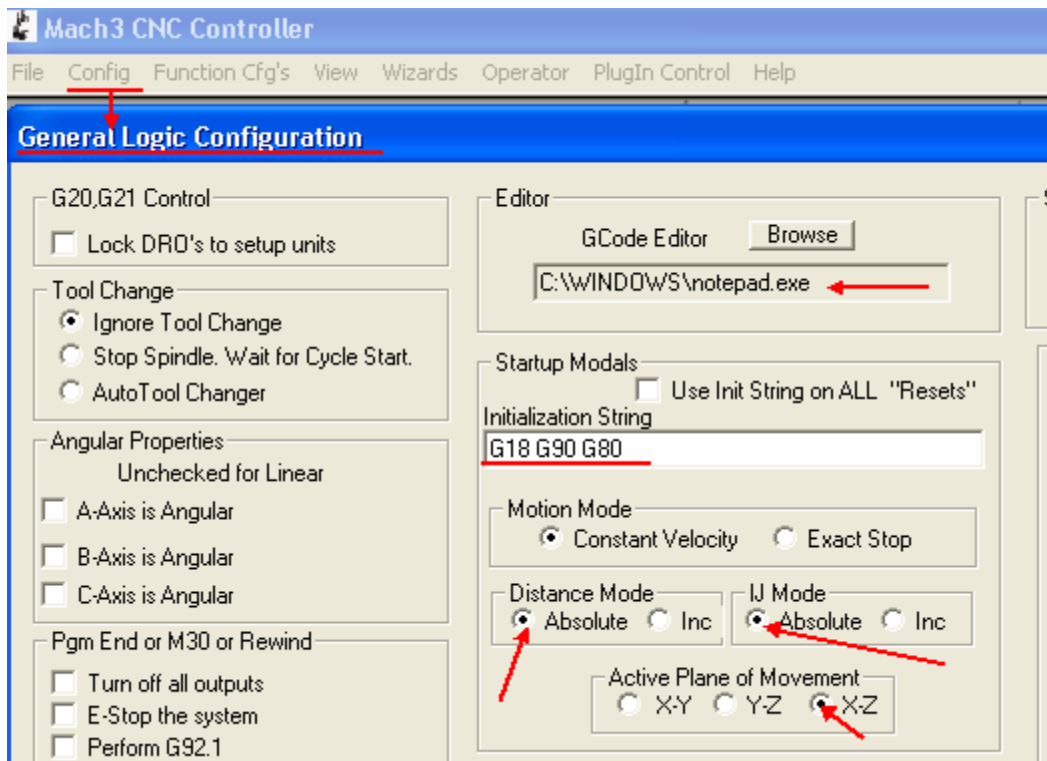


**Click the OK box to save the settings.**

Comment: The diameter mode just didn't seem to work well. I use it with the Wizards all the time and my diameter mode is my preference. Should you use radius from MACH 3 and then put the code into some controller program which is in the Diameter mode, well lets just say your asking for confusion and problems.

3. Go back to CONFIG and select General Logic Configuration and select an Editor of your choice using the browse button to find it on you PC. I use NOTEPAD. Note the selected items in the following view. G18 (XZ PLANE) G90 ( ABSOLUTE DISTANCE MODE) G80 ( CANNED CYCLE MOTION MODE) for initialization string. Distance & IJ are absolute and XZ is active plane of movement.

**Click the OK box to save the settings.**



That's all of the configuration changes in MACH 3 LATHE.

Close MACH 3 Lathe program and re-open it and check that all the changes were saved.

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## DXF FILE

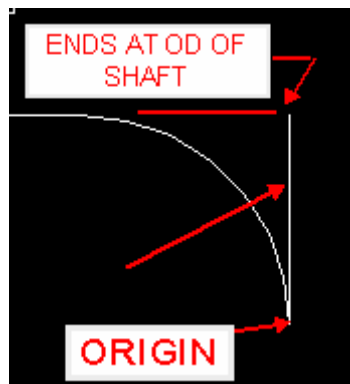
We have found problems when Lazycam brings in a DXF file for use in lathe code generation.  
( see my post )

I use Autocadd 2000i or Microstation to draw the profile in CAD. This is a screen shot of a simple profile which worked. May I suggest KISS ( Keep It Simple Stupid ) for now.

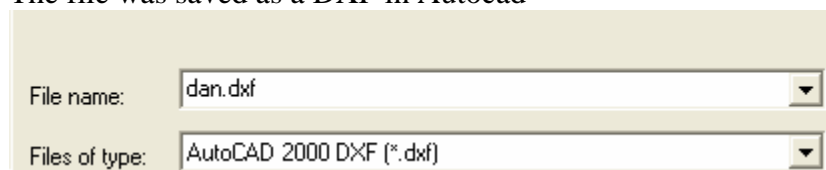


### COMMENTS:

- You can draw this numerous ways using different commands and different programs.
- Note that it's just a shaft with a ball cut on the end .
- All of the lines are on one level, same color, etc.
- It is drawn accurately.
- There are no "open" / overhang connections ie; the radius end point is exactly at the beginning of the horizontal line
- The origin of the profile is at 0,0,0 (ie; I want my Z code values to be negative and any code starting from a 0 point on the axis.
- Drawn to show only half of the actual piece
- Now note that there is a line from the origin which goes vertically up to the diameter of the shaft. (The UCS icon in the upper screen shot removed for clarity). This defines start point and material extents in Lazycam.



The file was saved as a DXF in Autocad

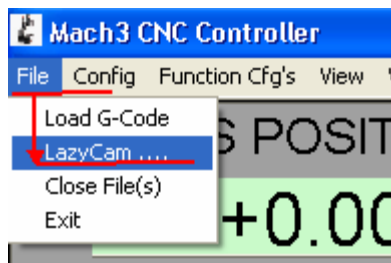
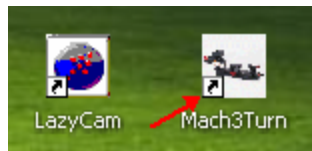


Life is great! Got Mach 3 Lathe configured, have a file for use in Lazycam.  
Now we'll go to Lazycam.

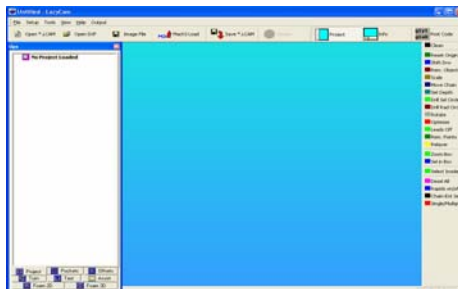
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## LAZYCAM

1. Open MACH 3 Turn, and then open Lazycam from Mach 3.

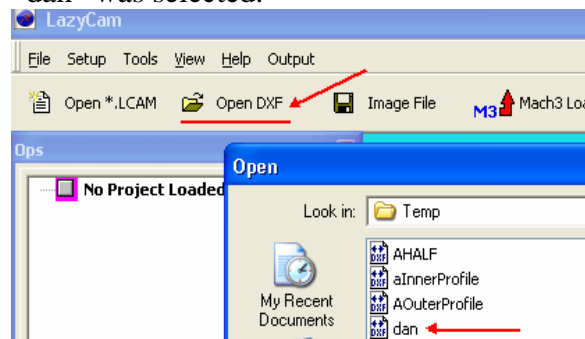


2. Here is the Lazycam opening screen.

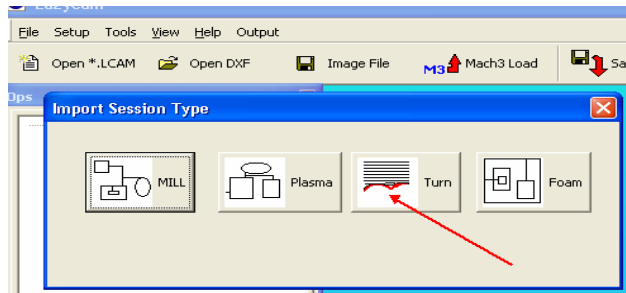


If you fooled around in Lazycam remember that it will save all the settings when reopened.

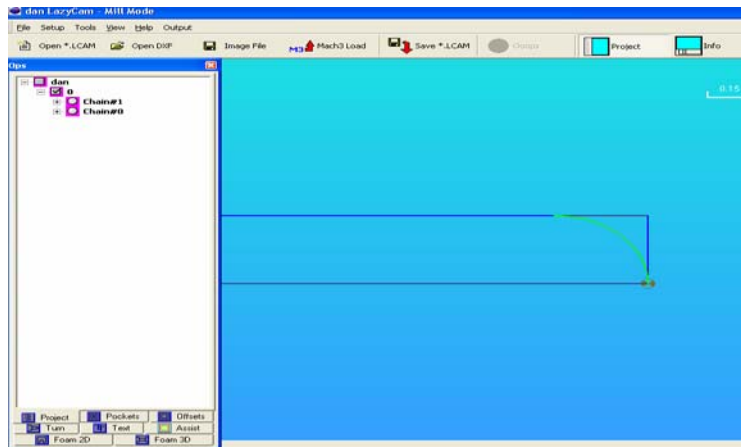
4. Use the button to import a DXF file into lazycam. In this case a file called "dan" was selected.



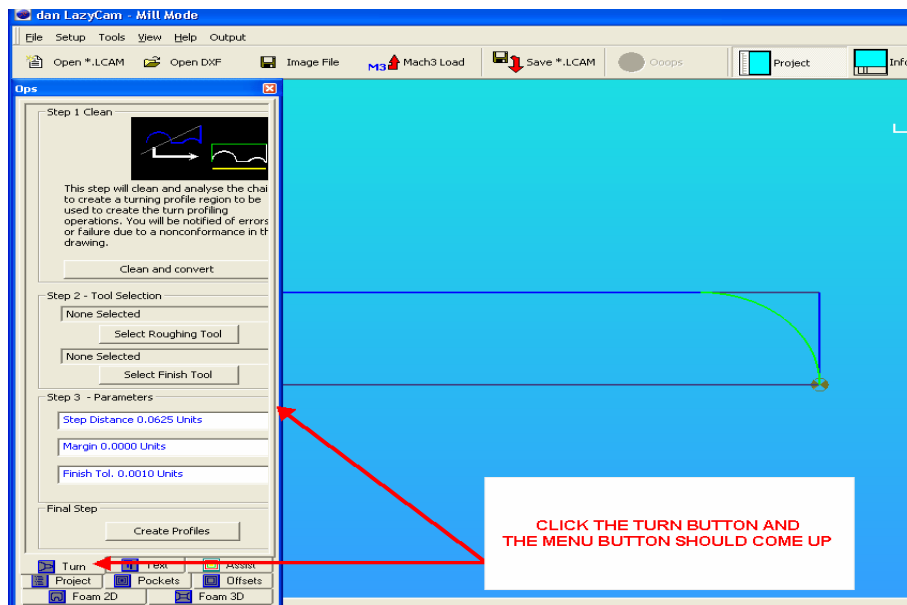
Select TURN



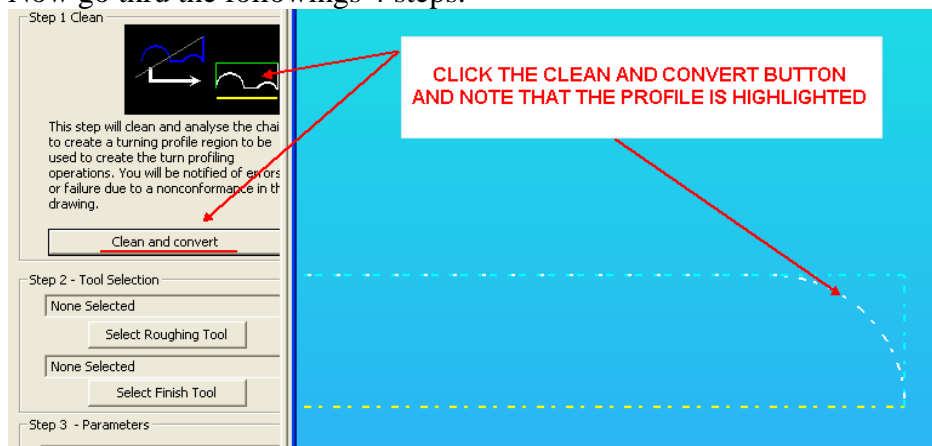
LazyCam creates the chains, etc. as shown on the screen below



Go down to the bottom left side of the screen and click the “Turn” button and a menu should pop up as shown below.



Now go thru the followings 4 steps:



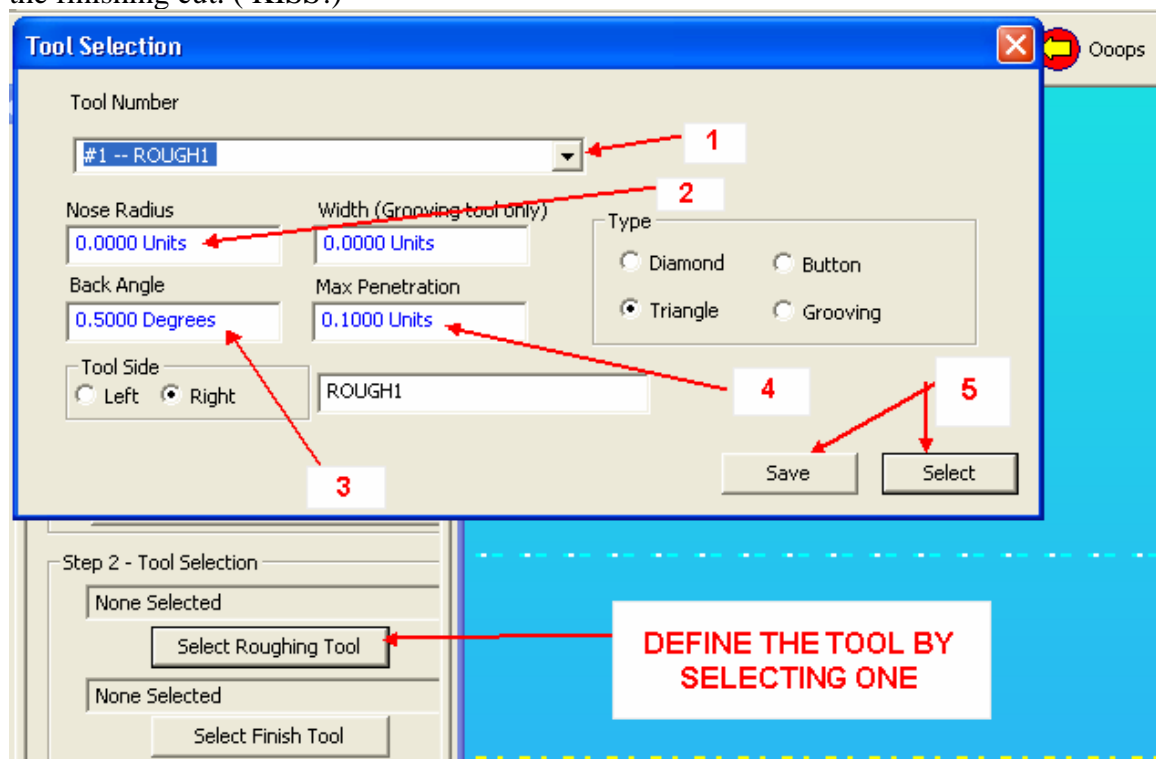
Here is where some bugs exist. Some of the DXF files worked while a number of them would not clean and convert even though they are exactly alike but were drawn in a different way in CAD. But, life is good, and this one works.

PS: If you do multiple cleans you will end up adding additional lines or even Corrupting the file.

Now we need to tell Lazycam some things.

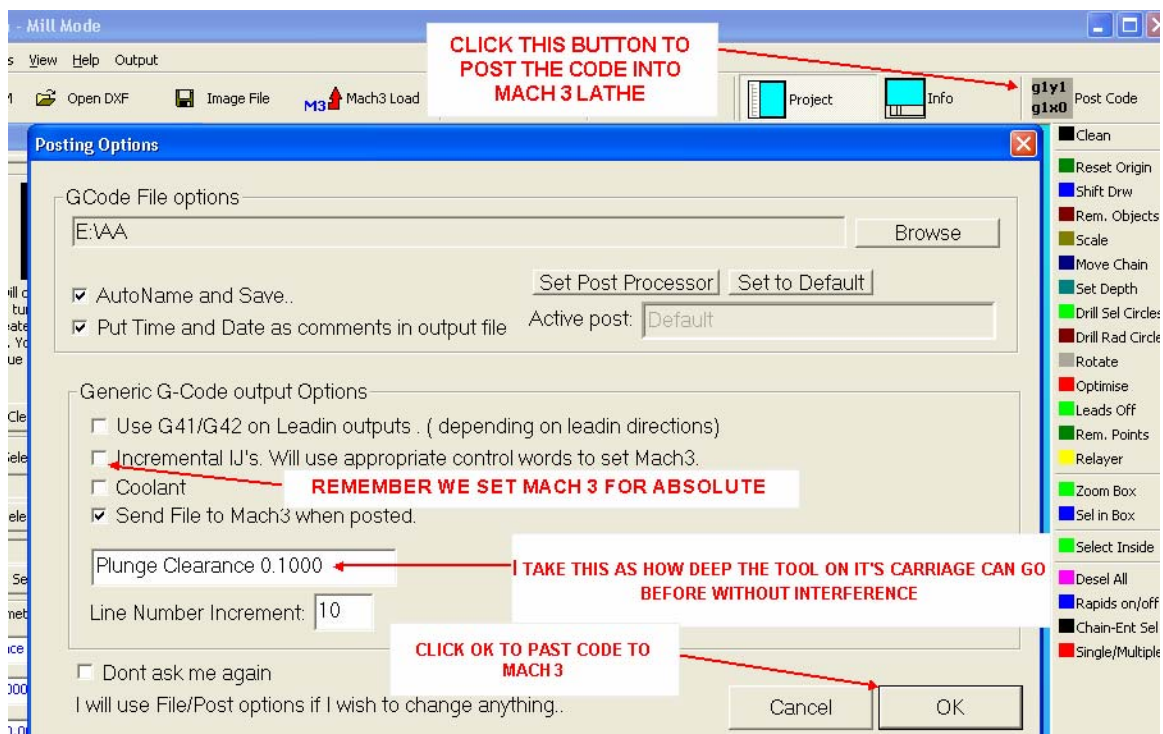
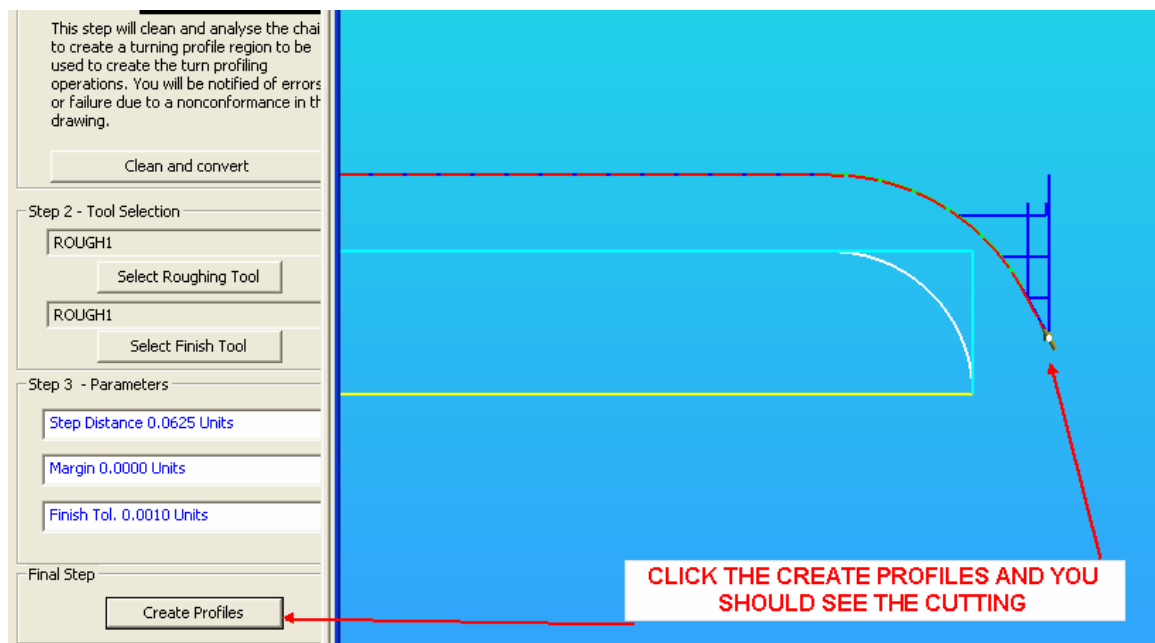
1. Pick a tool from the pull down and give it some values
2. The nose radius on the tool can change the G-code when generated because the program will account for it and will not cut some things ie; a sharp corner when the nose radius is too big. So for now let it be small!
3. I take back angle to be the back grinding on the tool edge, but then, it could also be the actual triangular shape about tool center line providing info to the program so that the shape doesn't interfere with the cut. Beta, no documentation, Good Grief!
4. I take this to be the max distance the tool can protrude into the stock
5. Save the tool and then click select.

The tool should appear in the tool selection window and just select the same tool for the finishing cut. ( KISS!)



Now we need to give the program some more information.

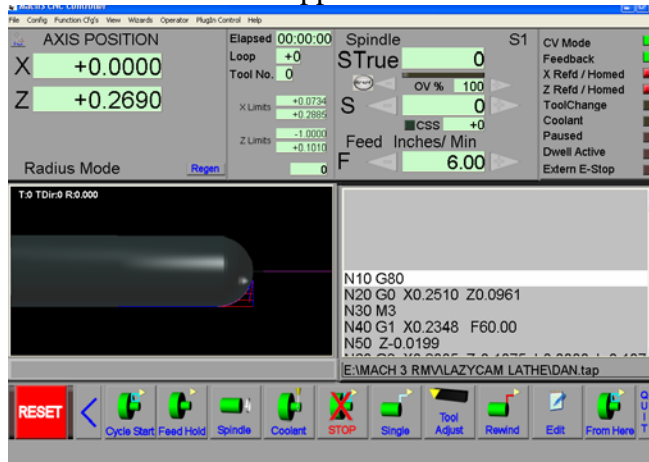




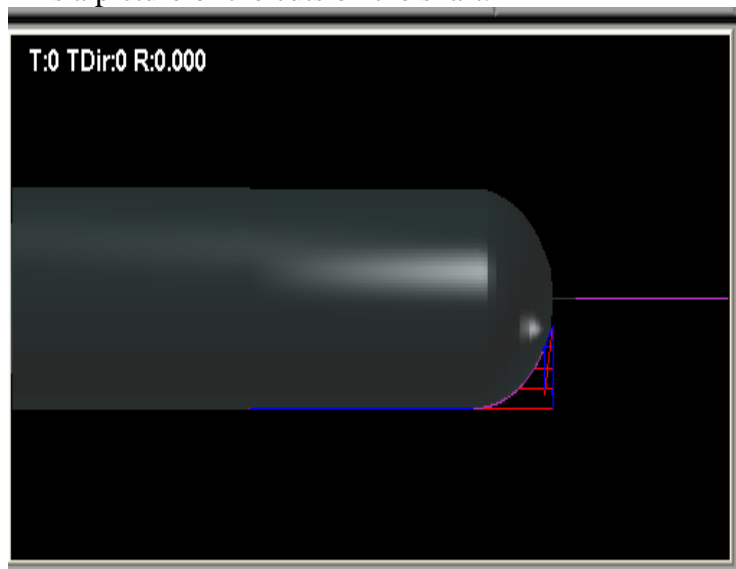
## MACH 3 LATHE

Hopefully you left Mach 3 Lathe running in the background since the Lazycam posted the info for g code file and it's already in Mach 3 lathe. Minimize Lazycam and the

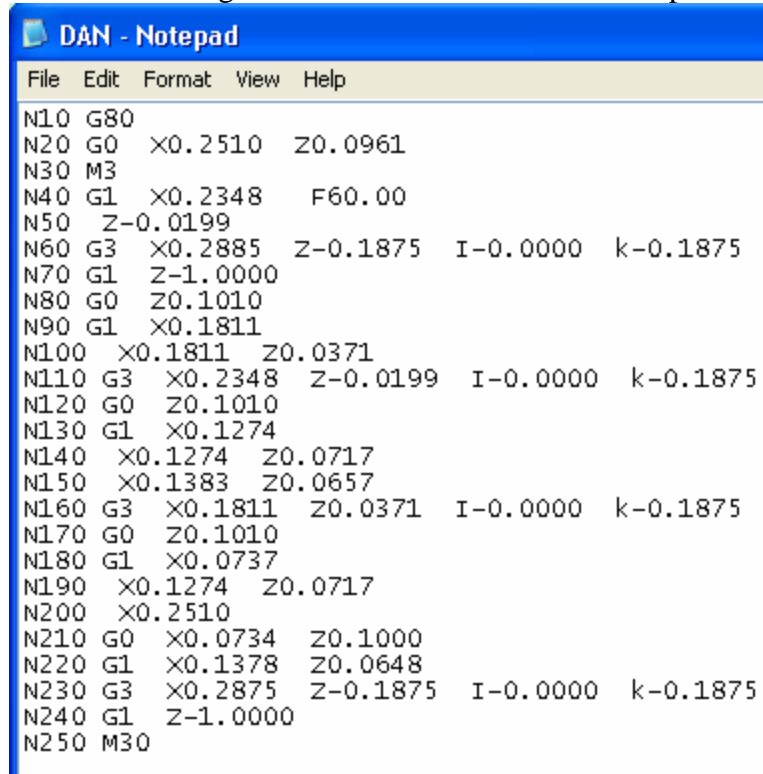
Mach3 Turn window appears as shown below.



This a picture of the cuts on the shaft.



This is the code generated. I haven't checked it but post it here for show.



```
N10 G80
N20 G0 X0.2510 Z0.0961
N30 M3
N40 G1 X0.2348 F60.00
N50 Z-0.0199
N60 G3 X0.2885 Z-0.1875 I-0.0000 k-0.1875
N70 G1 Z-1.0000
N80 G0 Z0.1010
N90 G1 X0.1811
N100 X0.1811 Z0.0371
N110 G3 X0.2348 Z-0.0199 I-0.0000 k-0.1875
N120 G0 Z0.1010
N130 G1 X0.1274
N140 X0.1274 Z0.0717
N150 X0.1383 Z0.0657
N160 G3 X0.1811 Z0.0371 I-0.0000 k-0.1875
N170 G0 Z0.1010
N180 G1 X0.0737
N190 X0.1274 Z0.0717
N200 X0.2510
N210 G0 X0.0734 Z0.1000
N220 G1 X0.1378 Z0.0648
N230 G3 X0.2875 Z-0.1875 I-0.0000 k-0.1875
N240 G1 Z-1.0000
N250 M30
```

**That's all for now. Have fun!**  
**RICH**