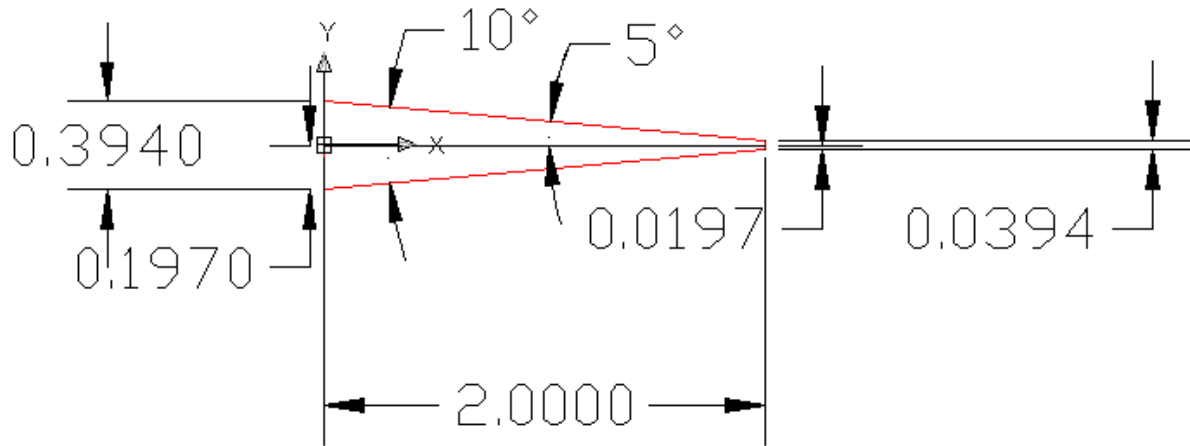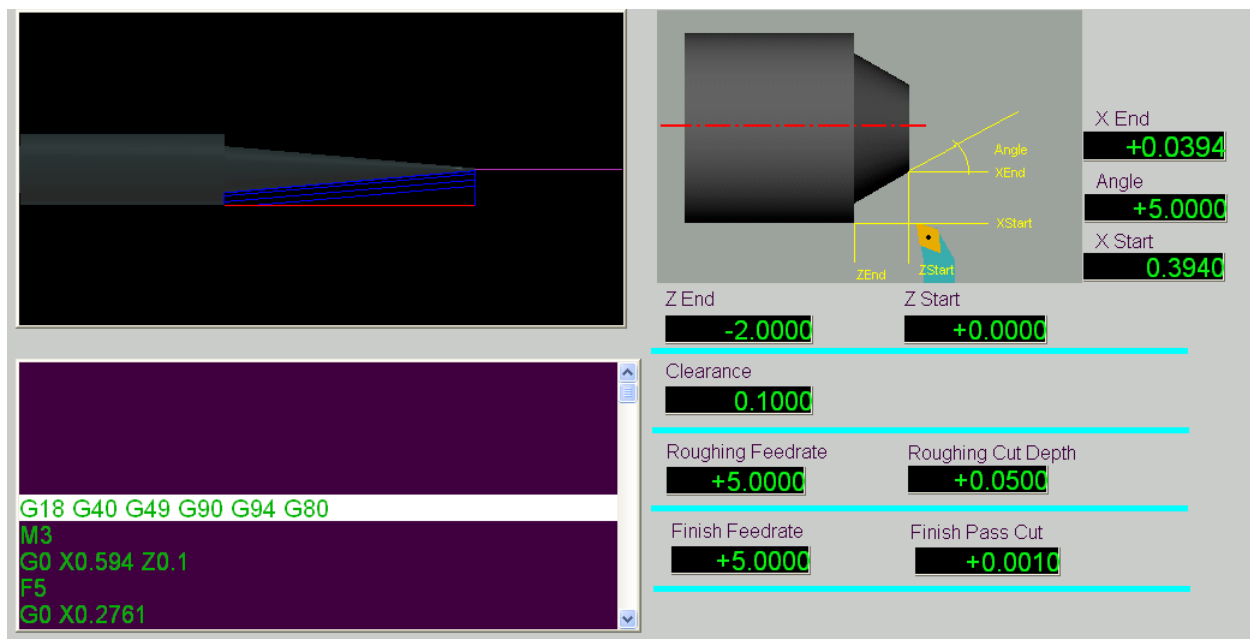# OD TAPER WIZARD

Figure 1 is a drawing of the taper that is desired.
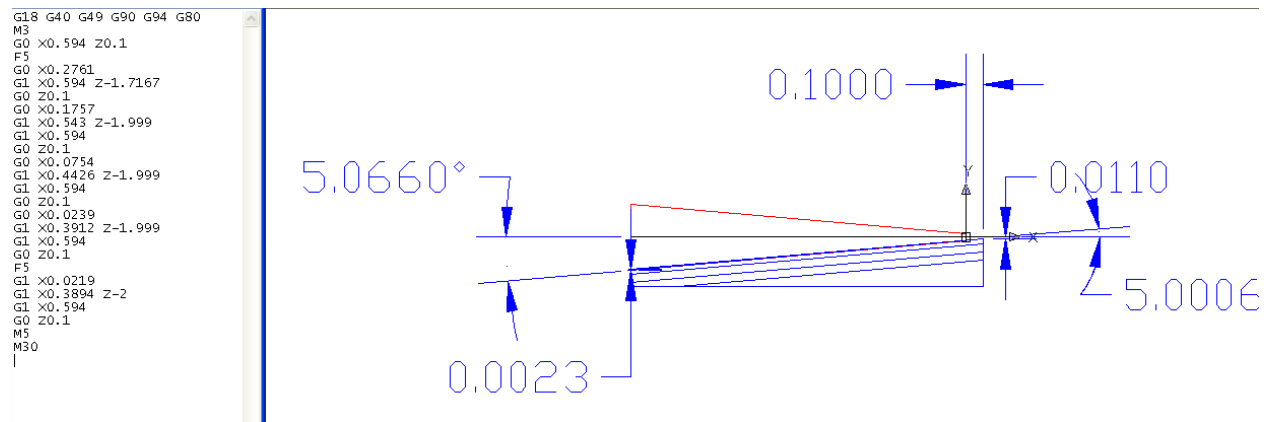

FIGURE 1

Figure 2 shows the OD Taper wizard by Brian. Note the following:
- Inputs are in inches and the lathe was in diameter mode and axes X&Z position
   is 0,0 with no G54 / no work offsets and a tool not selected.
- Angle is 5 degrees (see Figure 1) (10 degrees would be incorrect).
- Z End is -2.000" along the horizontal axis of Z
- Define the clearance, feederate, depth of cuts to suite your lathe.


```
G18 G40 G49 G90 G94 G80
M3
G0 X0.594 Z0.1
F5
G0 X0.2761
```

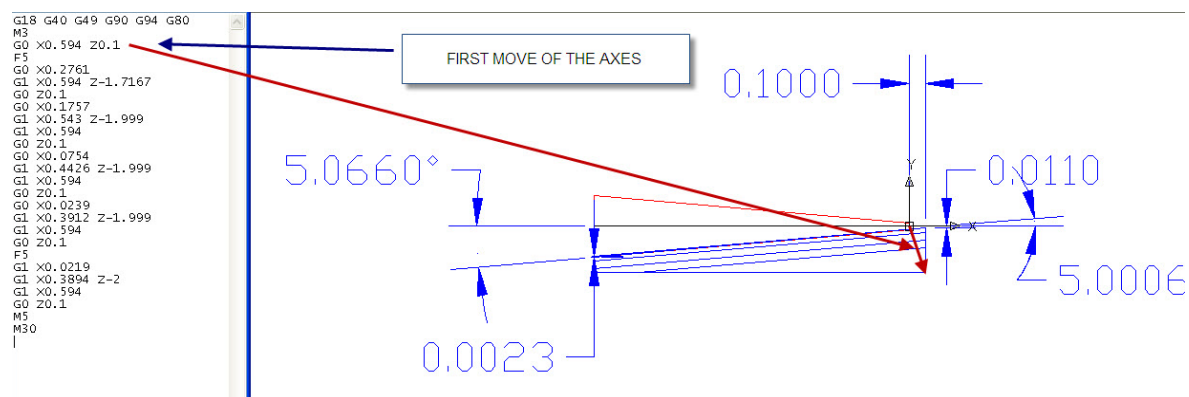|	
X End	+0.0394
Angle	+5.0000
X Start	0.3940
Z End	-2.0000
Z Start	+0.0000
Clearance	0.1000
Roughing Feedrate	+5.0000
Roughing Cut Depth	+0.0500
Finish Feedrate	+5.0000
Finish Pass Cut	+0.0010

FIGURE 2

Figure 3 shows the posted code from the wizard and a backplot of the code.
The red lines are the taper with the face of the taper at X & Z=0.
The blue lines represent the lathe pathing from the code.

```
G18 G40 G49 G90 G94 G80
M3
G0 X0.594 Z0.1
F5
G0 X0.2761
G1 X0.594 Z-1.7167
G0 Z0.1
G0 X0.1757
G1 X0.543 Z-1.999
G1 X0.594
G0 Z0.1
G0 X0.0754
G1 X0.4426 Z-1.999
G1 X0.594
G0 Z0.1
G0 X0.0239
G1 X0.3912 Z-1.999
G1 X0.594
G0 Z0.1
F5
G1 X0.0219
G1 X0.3894 Z-2
G1 X0.594
G0 Z0.1
M5
M30
```

0.1000

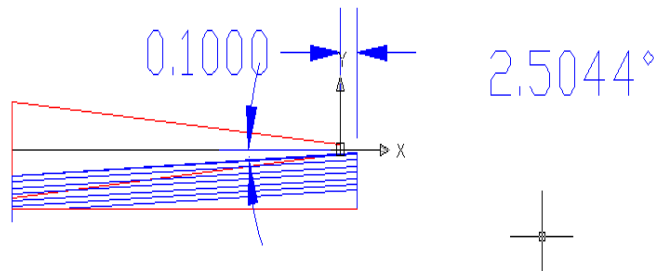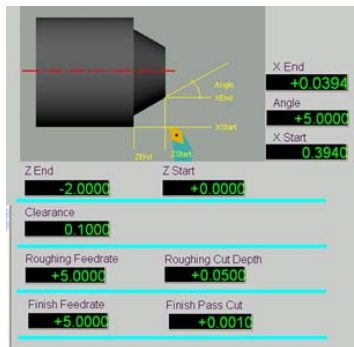5.0660°

0.0110

5.0006

0.0023

FIGURE 3

Always have a review the first axis movements in the gcode to insure the your job setup is correctly. Likewise know where the controlled point will be at the end of the code.
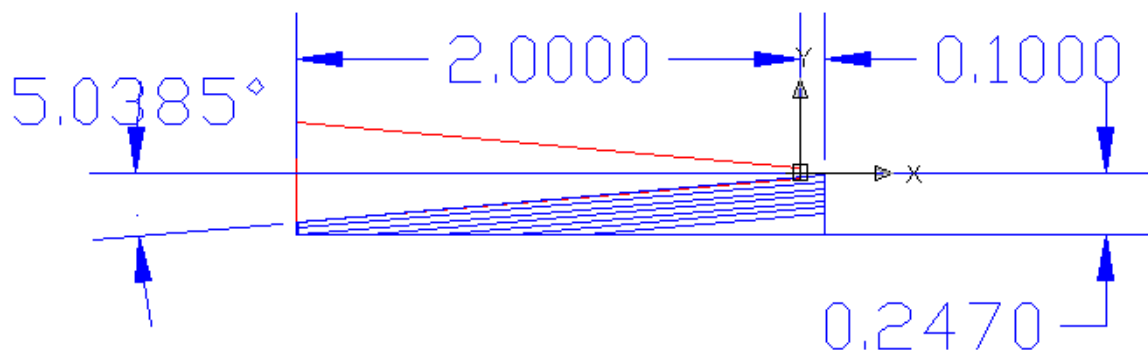
```
G18 G40 G49 G90 G94 G80
M3
G0 X0.594 Z0.1
F5
G0 X0.2761
G1 X0.594 Z-1.7167
G0 Z0.1
G0 X0.1757
G1 X0.543 Z-1.999
G1 X0.594
G0 Z0.1
G0 X0.0754
G1 X0.4426 Z-1.999
G1 X0.594
G0 Z0.1
G0 X0.0239
G1 X0.3912 Z-1.999
G1 X0.594
G0 Z0.1
F5
G1 X0.0219
G1 X0.3894 Z-2
G1 X0.594
G0 Z0.1
M5
M30
```

FIRST MOVE OF THE AXES

0.1000

5.0660°

0.0110

5.0006

0.0023

FIGURE 4

Now be carefull. I tested the wizard with the same inputs as in Figure 2 above and shown below
Which was for "diameter mode" If used, you will get incorrect gcode as shown by the backplot.

When is radius mode you would need to use 10 degrees for the angle and not 5 deg.
You must use the "total angle" which is 10 degrees as show in Figure 1. The backplot of
Radius mode and 10 degree angle is shown below.

COMMENTS ON WIZARD USE

The lathe wizards where written years ago and many do not have built in error coding.
You won't find much specific input instructions for them.
Not all the wizards work in both Diameter and Radius mode, and, unfortunately I can't recall
which ones work in both modes and the small degrees of inaccuracy in the pathing sometimes.
I doubt very much if any of the lathe wizards will ever be updated. Don't assume that the
wizards will default to current configuration.

A few users have updated the lathe wizards for their use such that they do work in both lathe
modes and additional are more user friendly.

Hope this helps you and others,
RICH