CNC mdl

Engraver Ver. 01a

Not only Engraver
Part 01

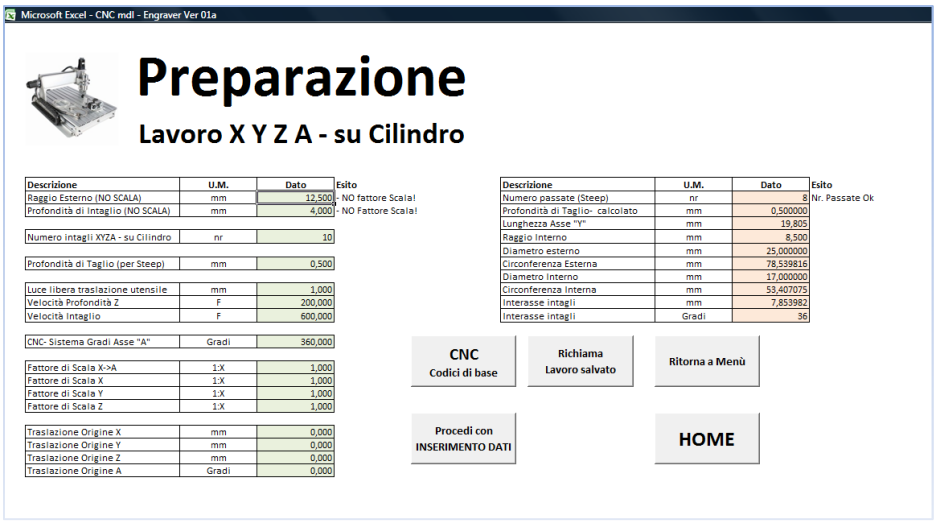
WORK EXAMPLES

Engraver, even though it was designed to perform incisions, can also do something else. This software does not automatically prepare preliminary and final grinding; it can however, as the examples below, give him some commands fit for purpose.
In the pages that follow are given, only for instance, some examples to provide ideas. The images were obtained during testing of the software.
For the execution of the tests, it is used mainly as wood, in addition to the cuts to "empty" at maximum speed; this to speed up and, consequently, test the speed of execution instructions and the correspondence with the machine tool.
Obviously, the cut in the steel or in alloys will be much “cleaner” than wood.
Enjoy.

STRAIGHT CUT ON THE CYLINDER

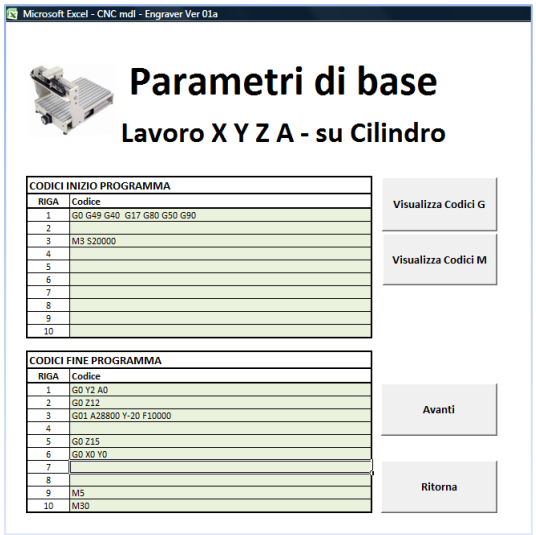
Open the software and click on the XYZA button

Set the cutting parameters:



As we can see we will make a cut 4 mm deep, removing 0.5 mm per step, and will perform on the cylinder 10 cuts.

Now let's check the codes “CNC base codes”:



We can see that in the final part of the program we manually entered some “G-Codes”: these codes will be executed at the end of the program.
The codes are placed there for a final cleaning and adjustment of our work.

In detail we wrote:

G0 Y2 A0

- G0 (rapid positioning)
- Y2 (go to the coordinated Y2)
- A0 (bring the A-axis to zero degrees)

G0 Z12

- G0 (rapid positioning)
- Z12 (bring the Z-axis to quota 12)
    - Note: we set dimension “Z” equal to 12 so our adjusted diameter will be 24 mm.

G01 A28800 Y-20 F10000

- G01 (linear interpolation)
- A28800 (turn A-axis of 28800 degrees, or rather, turn the A-axis for 80 laps)
- Y-20 (go to the coordinated Y-20)
- F10000 (hold a feed of 10000)
    - Note: we calculated a pass of 0,25mm per revolution, then for cleaning 20mm we have to perform 80 laps (20mm * 4laps/mm * 360 degrees = 28800 degrees)

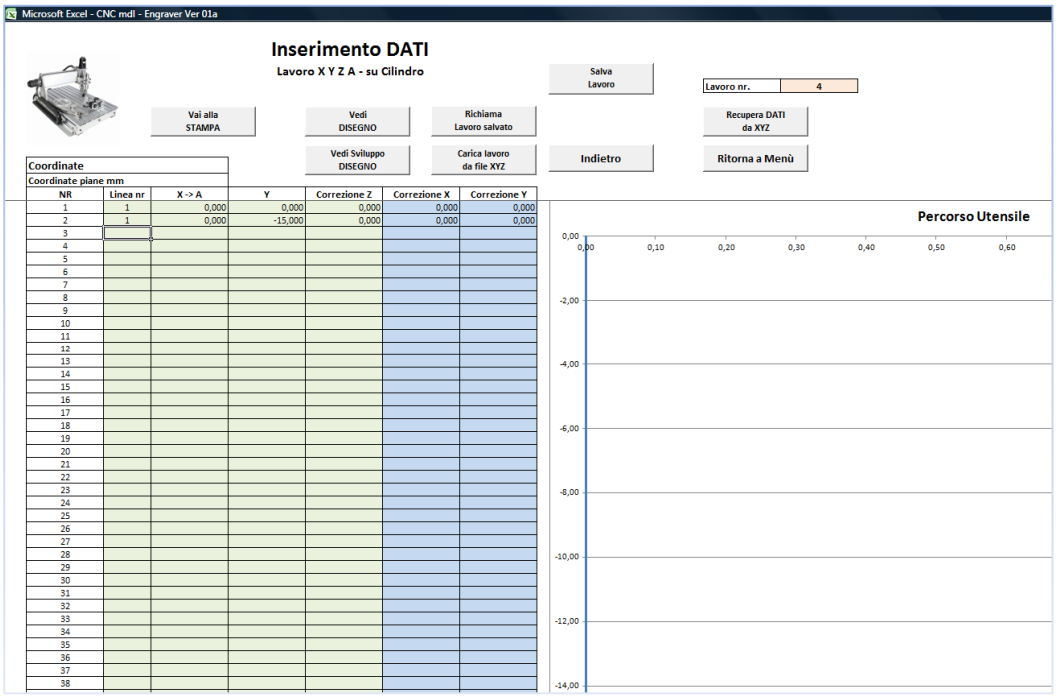
G0 Z15

- G0 (rapid positioning)
- Z15 (bring Z-axis to quota 15)

G0 X0 Y0

- G0 (rapid positioning)
- X0 (go to the coordinated X0)
- Y0 (go to the coordinated Y0)

Then we insert the data:

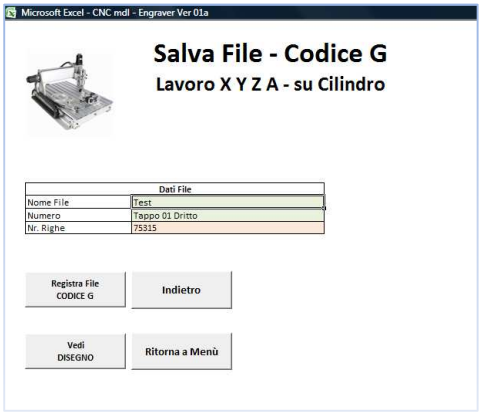


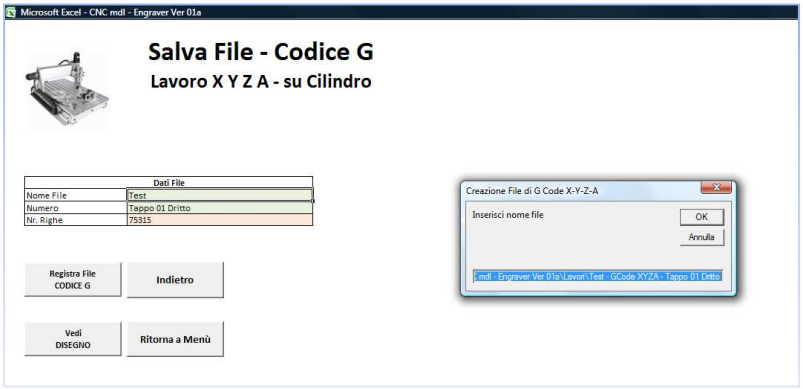
As we can see we wrote only two lines:

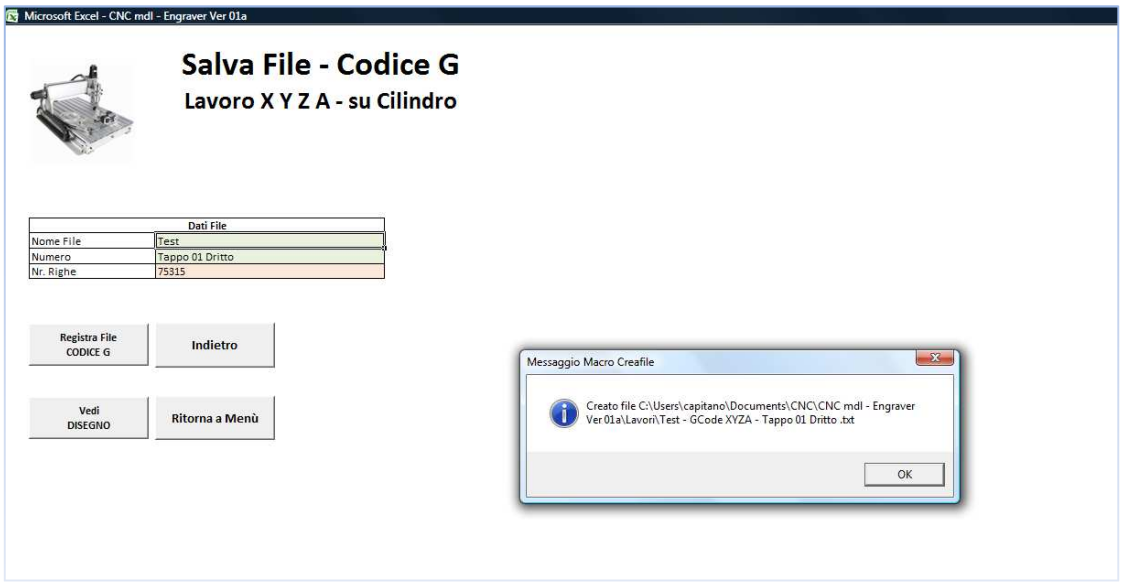
- starting point;
- ending point.

Let’s check the work development: will be shown the cuts and the related measures.

Now we save our G-Code file:







We have finished.

Now we upload our files on our CNC, we set the machine coordinates and begin our work.

This is the result:

Start job of cleaning and grinding:

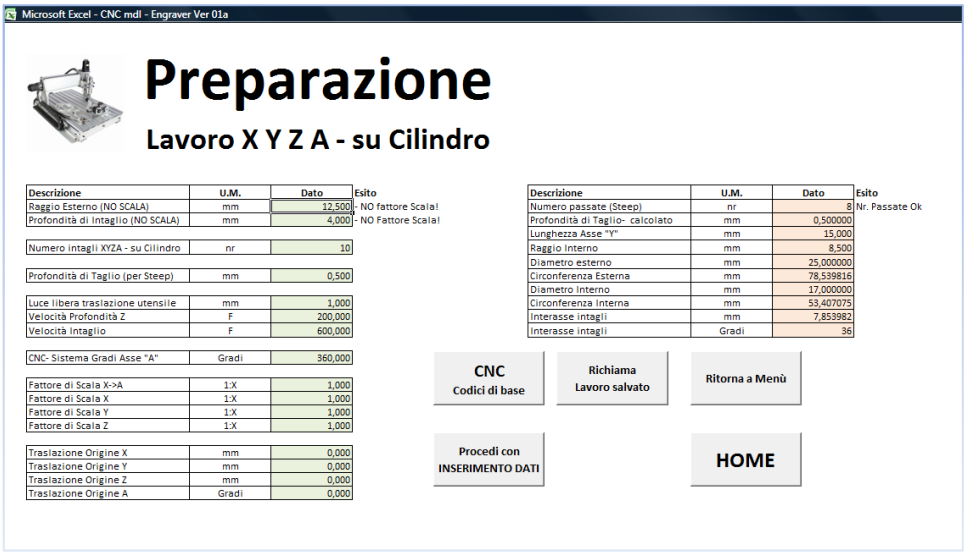
The work finished as instructed:

An example for “Bottle cap”

CUTTING SCREW ON CYLINDER

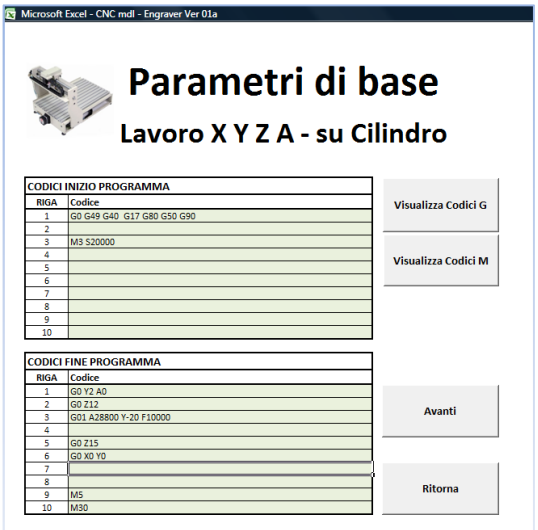
Open the software and click on the XYZA button

Set the cutting parameters:



As we can see we will make a cut 4 mm deep, removing 0.5 mm per step, and will perform on the cylinder 10 cuts.

Now let's check the codes “CNC base codes”:



We can see that in the final part of the program we manually entered some “G-Codes”: these codes will be executed at the end of the program.
The codes are placed there for a final cleaning and adjustment of our work.

In detail we wrote:

G0 Y2 A0

- G0 (rapid positioning)
- Y2 (go to the coordinated Y2)
- A0 (bring the A-axis to zero degrees)

G0 Z12

- G0 (rapid positioning)
- Z12 (bring the Z-axis to quota 12)
    - Note: we set dimension “Z” equal to 12 so our adjusted diameter will be 24 mm.

G01 A28800 Y-20 F10000

- G01 (linear interpolation)
- A28800 (turn A-axis of 28800 degrees, or rather, turn the A-axis for 80 laps)
- Y-20 (go to the coordinated Y-20)
- F10000 (hold a feed of 10000)
    - Note: we calculated a pass of 0,25mm per revolution, then for cleaning 20mm we have to perform 80 laps (20mm * 4laps/mm * 360 degrees = 28800 degrees)

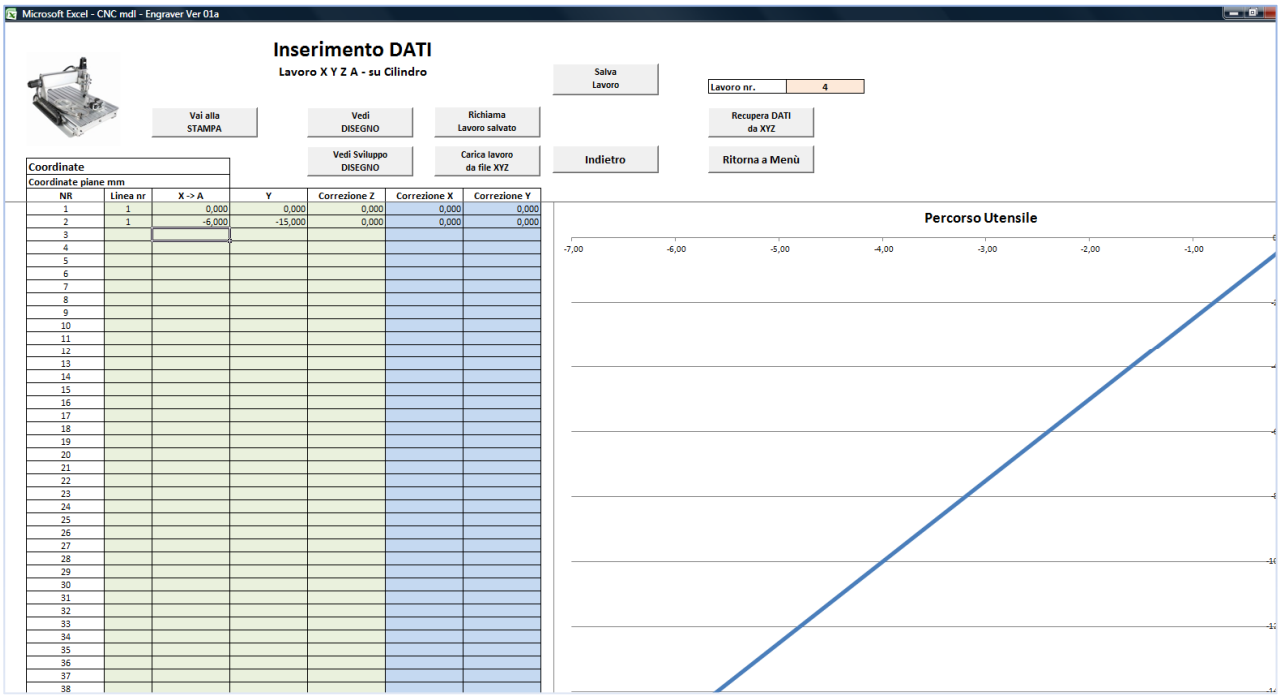
G0 Z15

- G0 (rapid positioning)
- Z15 (bring Z-axis to quota 15)

G0 X0 Y0

- G0 (rapid positioning)
- X0 (go to the coordinated X0)
- Y0 (go to the coordinated Y0)

Then we insert the data:

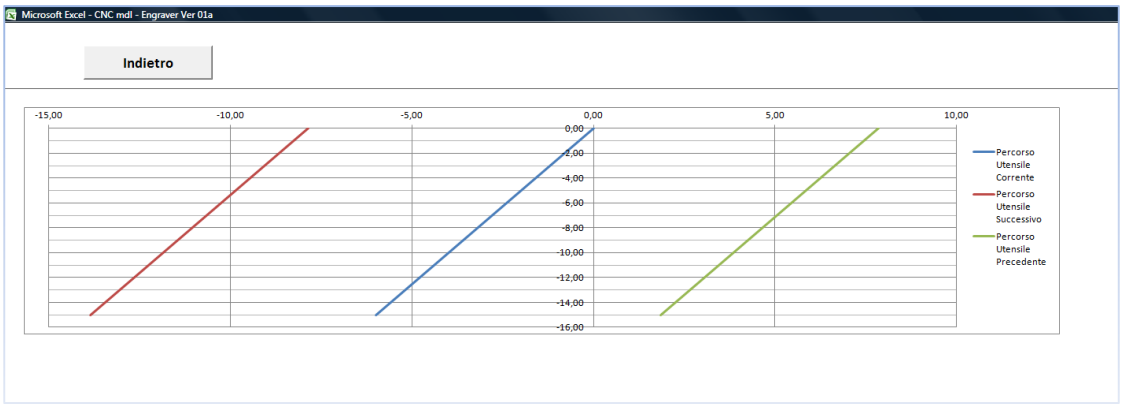


As we can see we wrote only two lines:

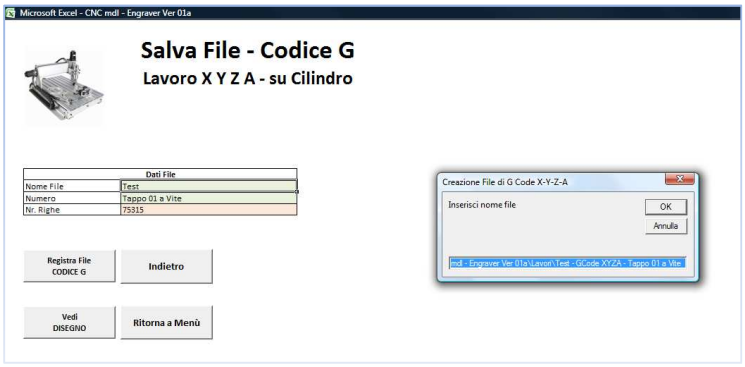
- starting point;
- ending point.

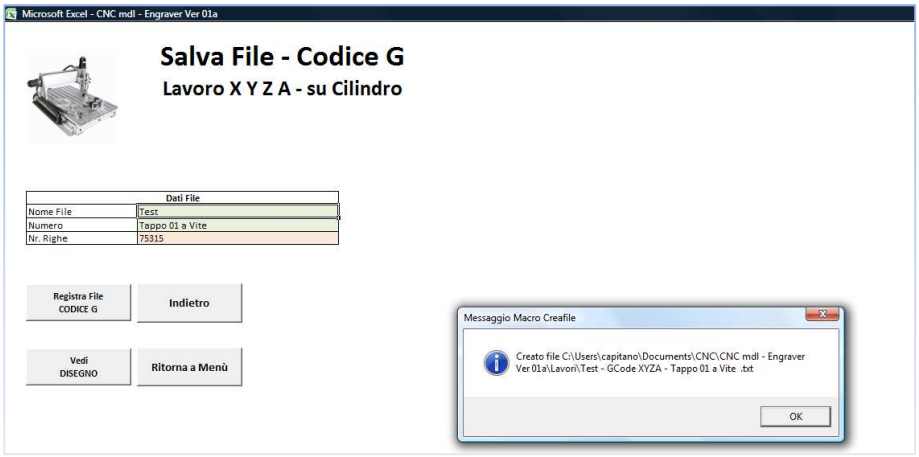
In this case we set the axis “X-> A” to -6: which means that the axis “A” will make a clockwise rotation for a number of degrees equal to the extent of the arc of the outer circumference to 6 mm (in this case we have a base for the outer circumference a radius of 12.5 mm or a diameter of 25 mm).
At the same time the Y-axis will step back of 15mm (“-“ sign).

Let’s check the work development: will be shown the cuts and the related measures.



Now we save our G-Code file:

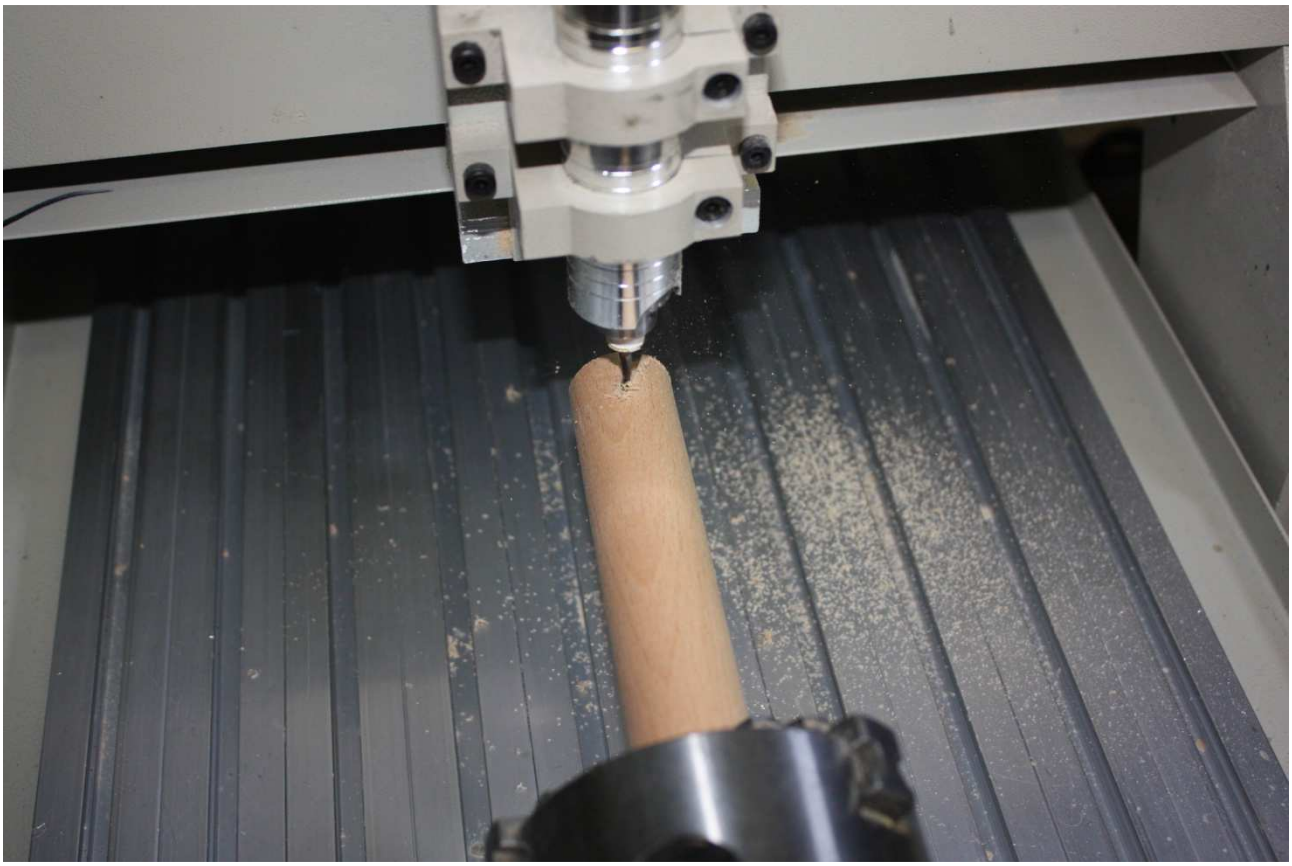




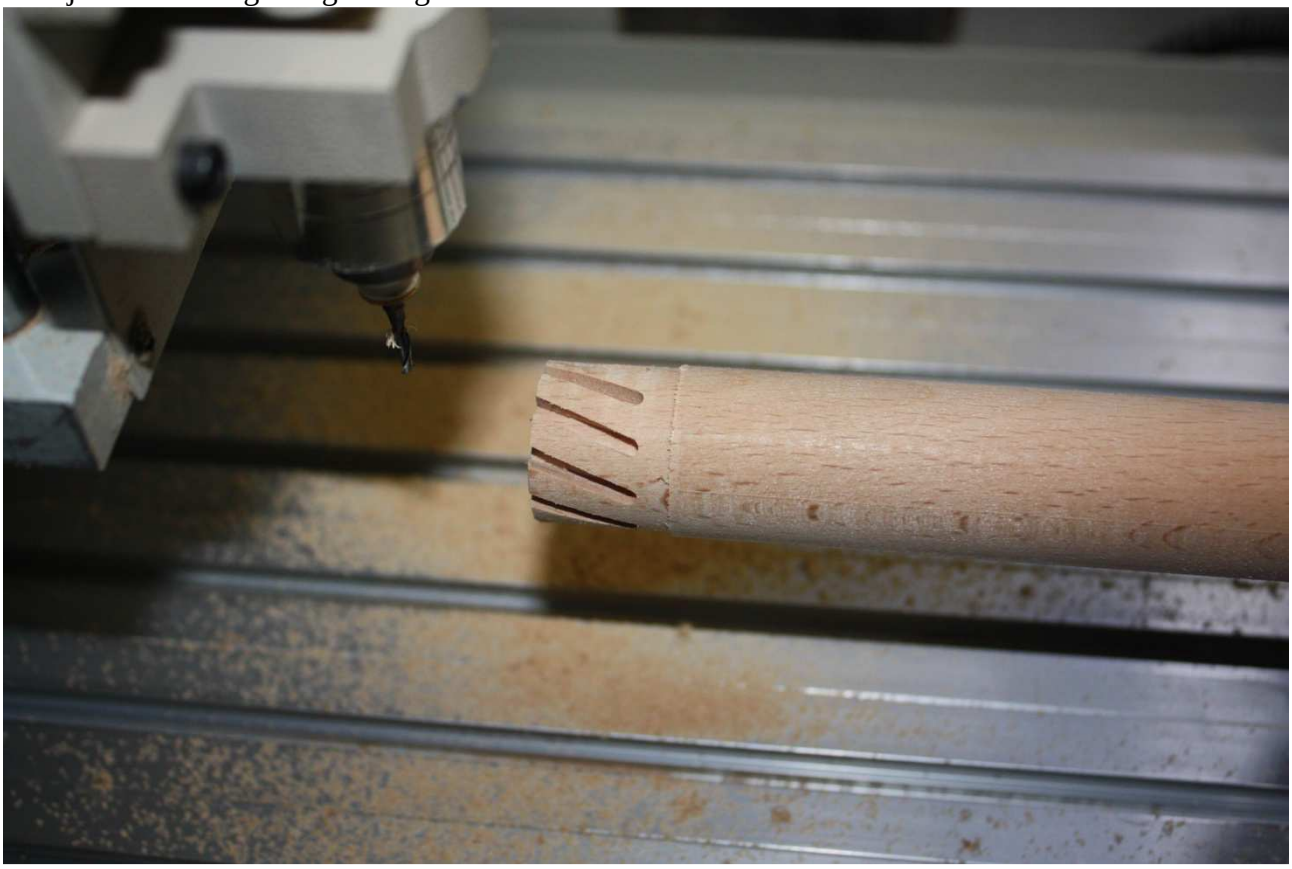
We have finished.

Now we upload our files on our CNC, we set the machine coordinates and begin our work.

Here is the result:



Start job of cleaning and grinding:

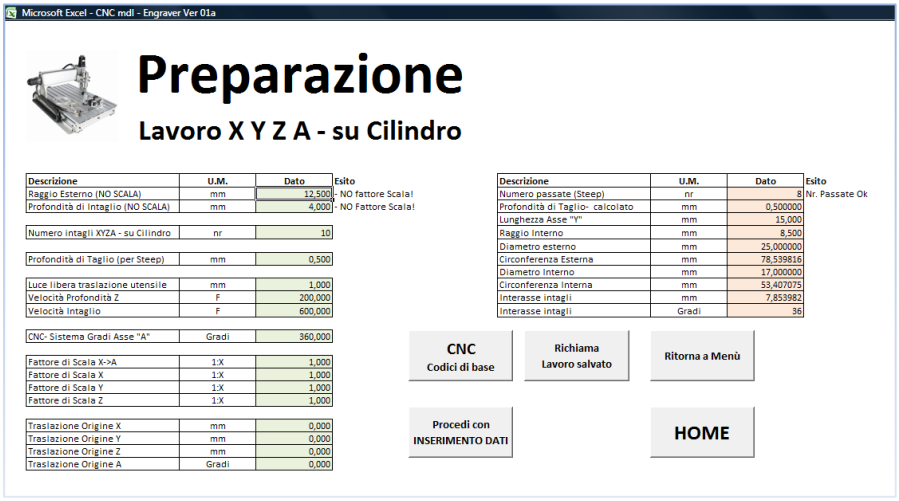


An example of “Bottle cap”

CUTTING SCREW ON CYLINDER FITTING ZERO

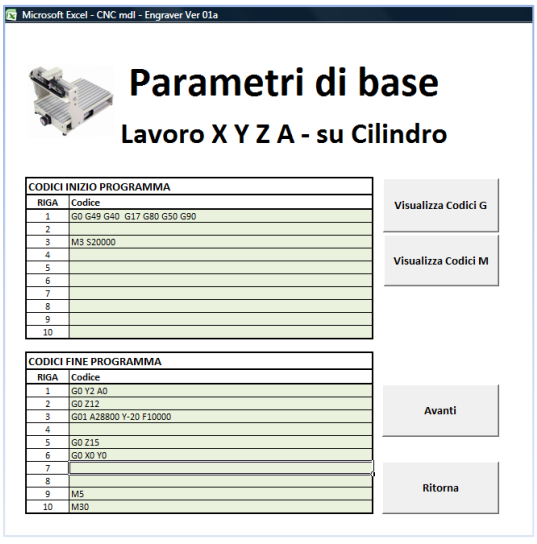
Open the software and click on the XYZA button

Set the cutting parameters:



As we can see we will make a cut 4 mm deep, removing 0.5 mm per step, and will perform on the cylinder 10 cuts.

Now let's check the codes "CNC base codes":



We can see that in the final part of the program we manually entered some "G-Codes": these codes will be executed at the end of the program.
The codes are placed there for a final cleaning and adjustment of our work.

In detail we wrote;

G0 Y2 A0

- G0 (rapid positioning)
- Y2 (go to the coordinated Y2)
- A0 (bring the A-axis to zero degrees)

G0 Z12

- G0 (rapid positioning)
- Z12 (bring the Z-axis to quota 12)
  - Note: we set dimension "Z" equal to 12 so our adjusted diameter will be 24 mm.

G01 A28800 Y-20 F10000

- G01 (linear interpolation)
- A28800 (turn A-axis of 28800 degrees, or rather, turn the A-axis for 80 laps)
- Y-20 (go to the coordinated Y-20)
- F10000 (hold a feed of 10000)
  - Note: we calculated a pass of 0,25 mm per devolution, then for clearing 20 mm we have to perform 80 laps (20mm*4 laps/mm*360 degrees = 28800 degrees)

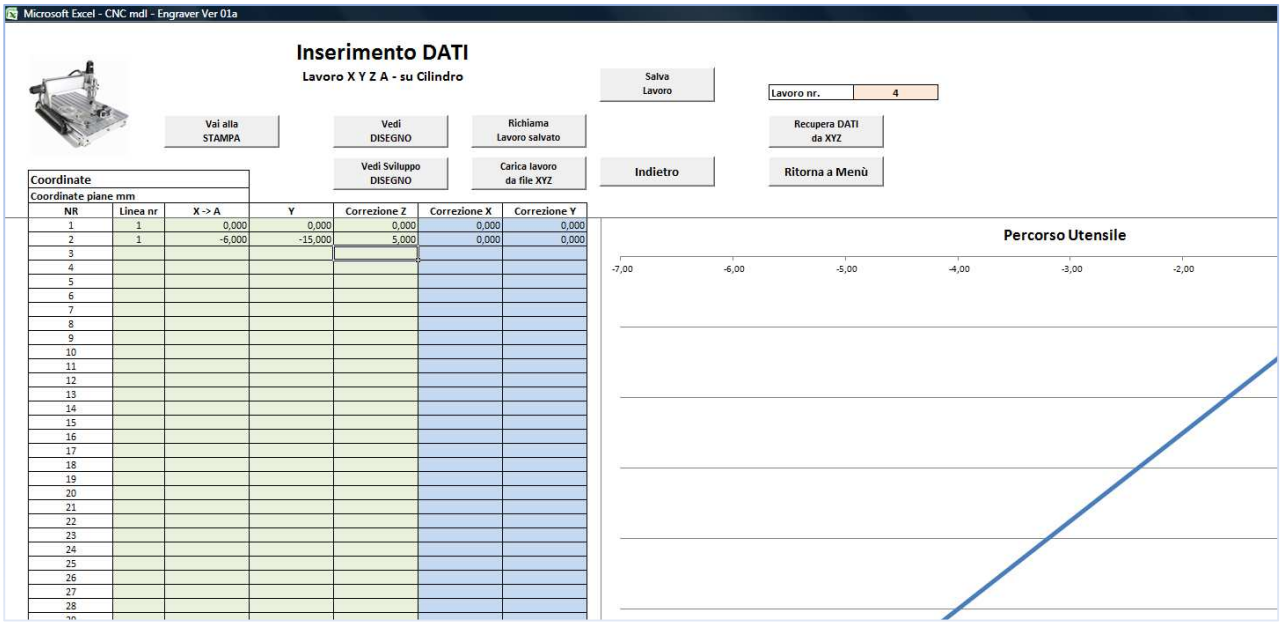
G0 Z15

- G0 (rapid positioning)
- Z15 (bring Z-axis to quota 15)

G0 X0 Y0

- G0 (rapid positioning)
- X0 (go to the coordinated X0)
- Y0 (go to the coordinated Y0)

Then we insert the data:



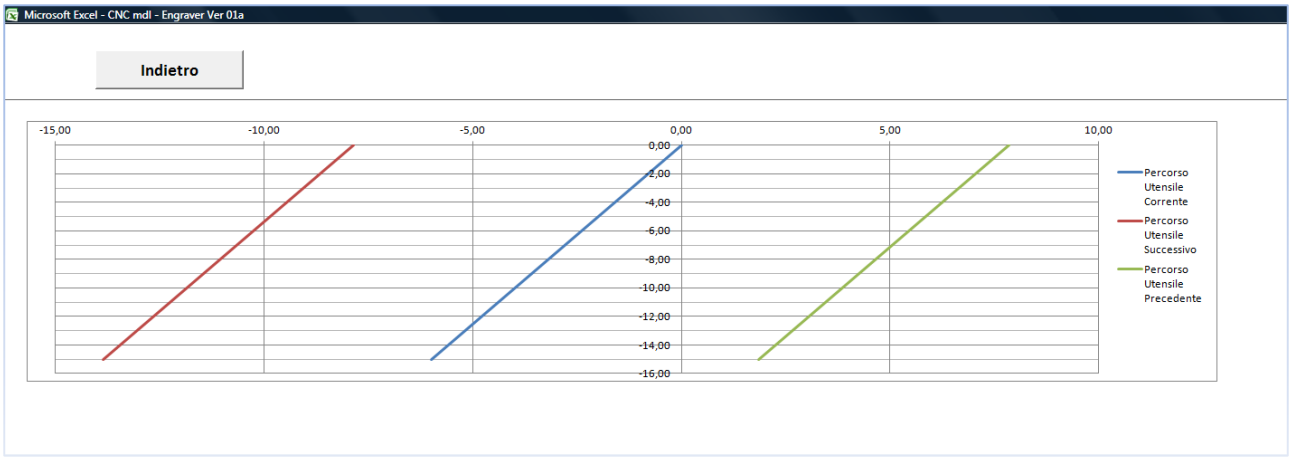
As we can see we wrote only two lines:

- starting point;
- ending point.

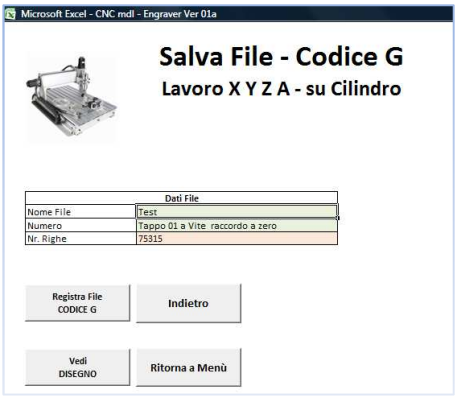
In this case we set the axis "X → A" to -6: which means that the axis "A" will make a clockwise rotation for a number of degrees equal to the extent of the arc f the outer circumference to 6 mm (in this case we have a base for the outer circumference a radius of 12,5 mm or a diameter of 25 mm).

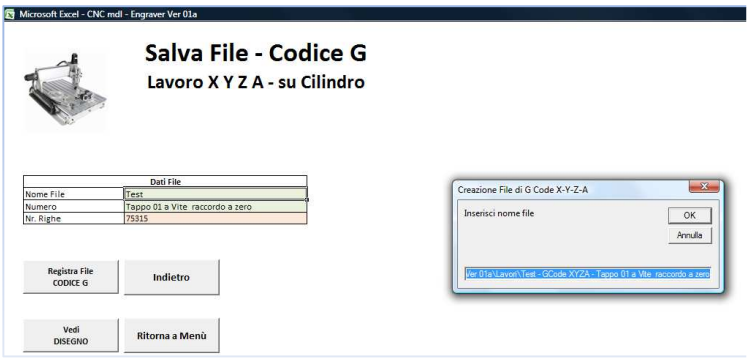
At the same time the Y-axis will step back of 15mm (“-“ sign).
This time we used a “Z correction” on the second line of 5 mm: which means that, for every step, the tool will start at the indicated quota but, going to the second line and for interpolation, it will rise of 5 mm. In the pictures we will see the result.

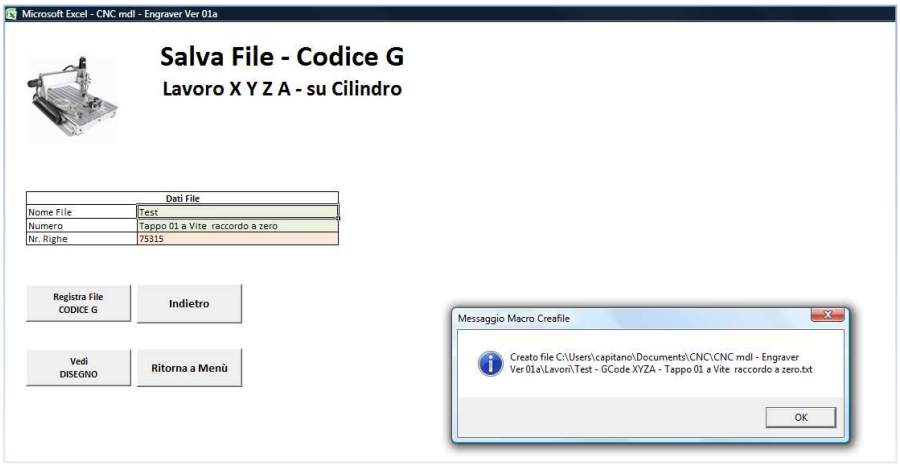
Let’s check the work development: will be shown the cuts and the related measure.



Now we save our G-Code file:

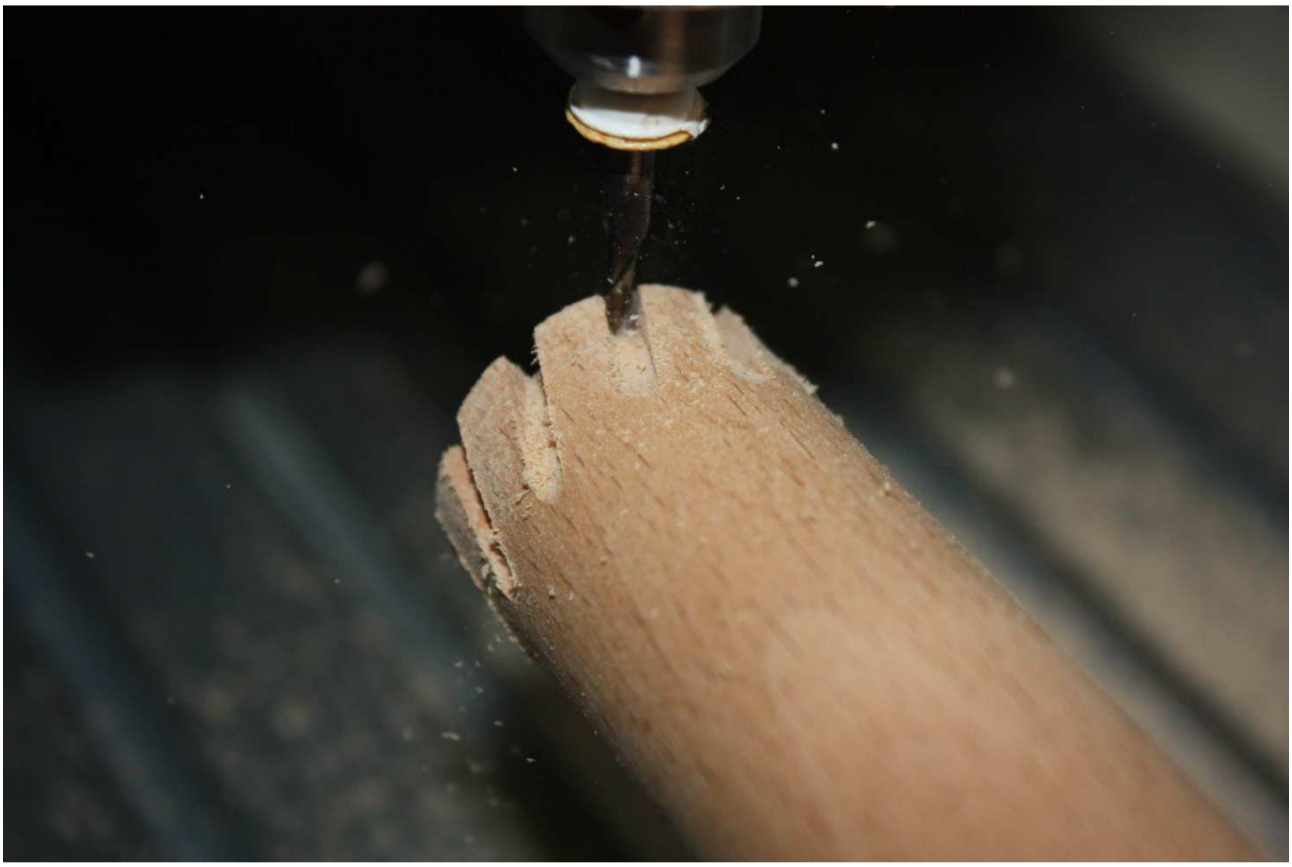




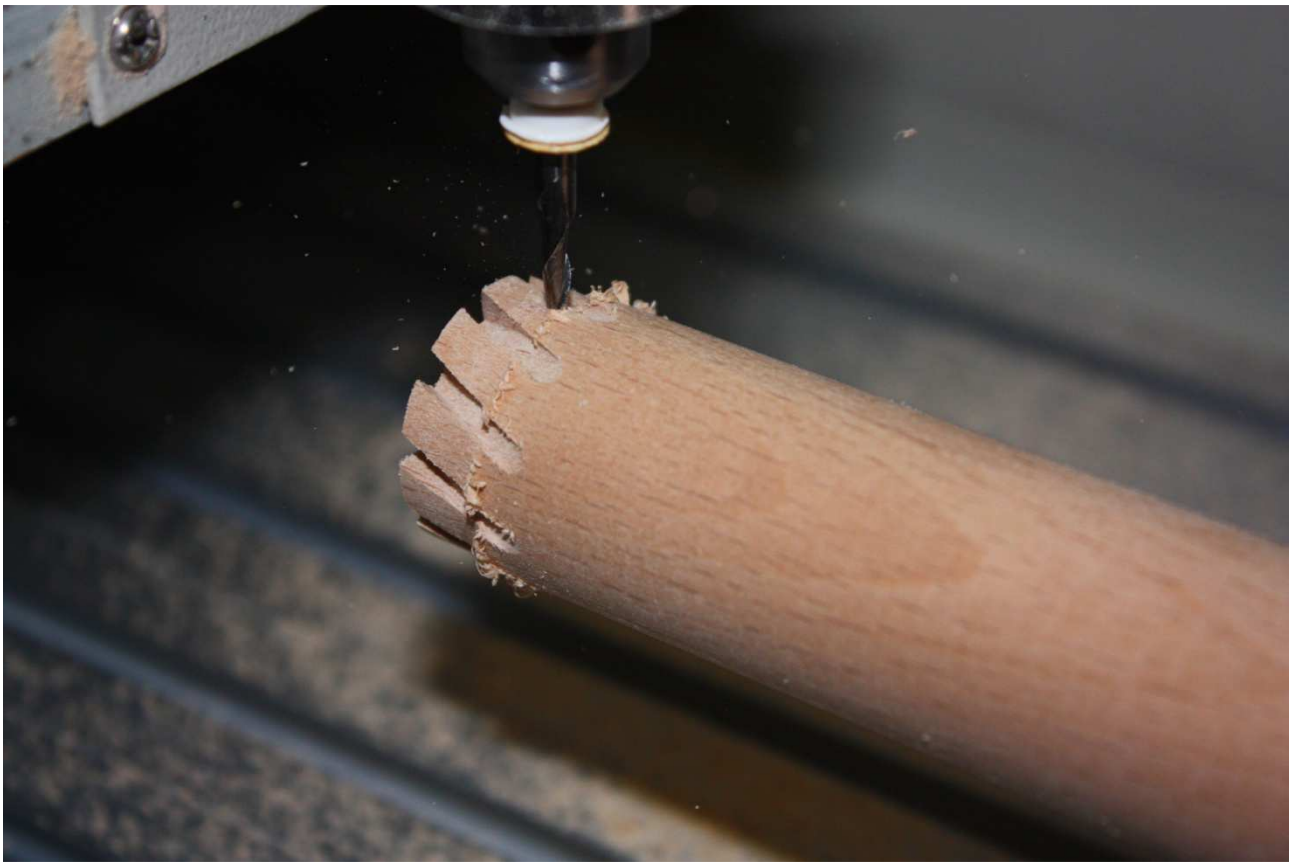


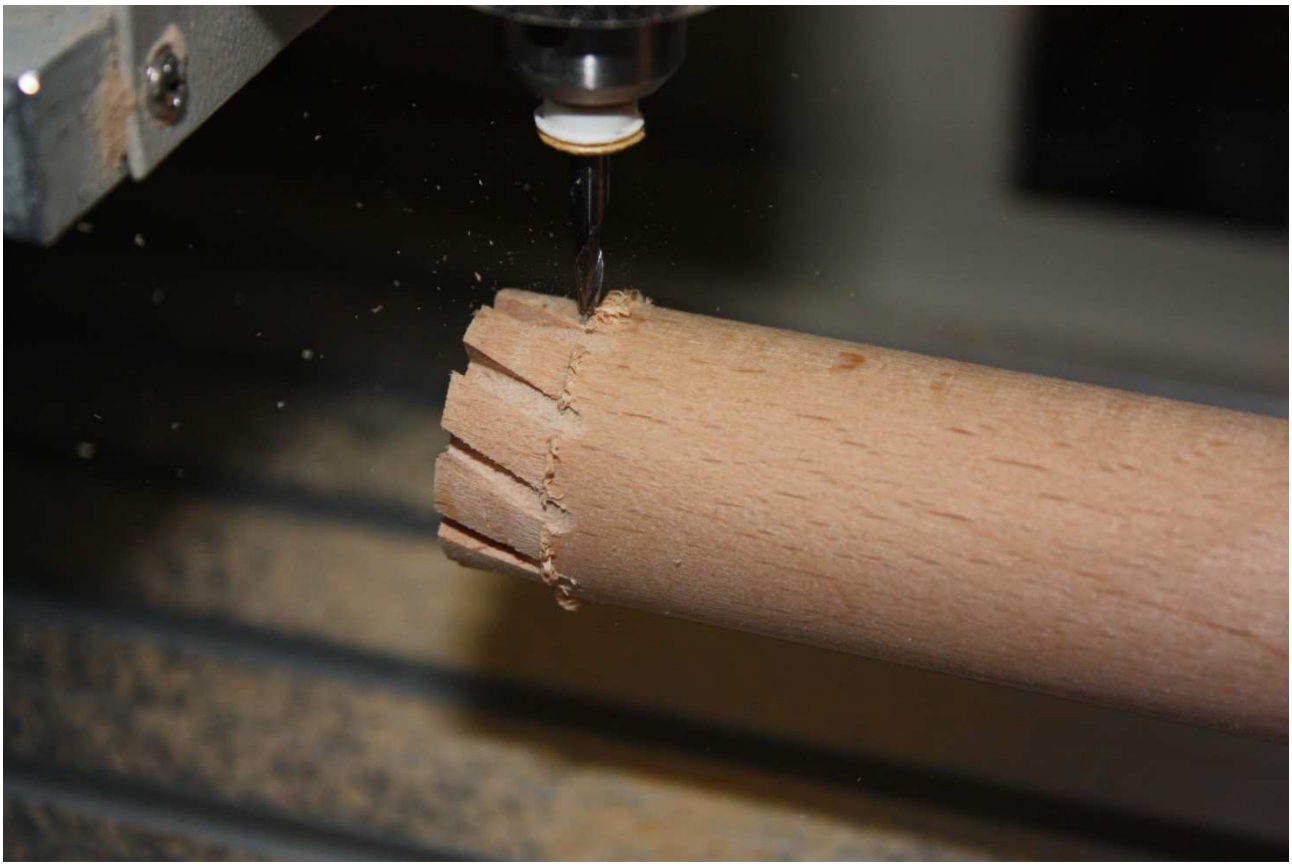
We have finished.
Now we upload our files on our CNC, we set the machine coordinates and begin our work.

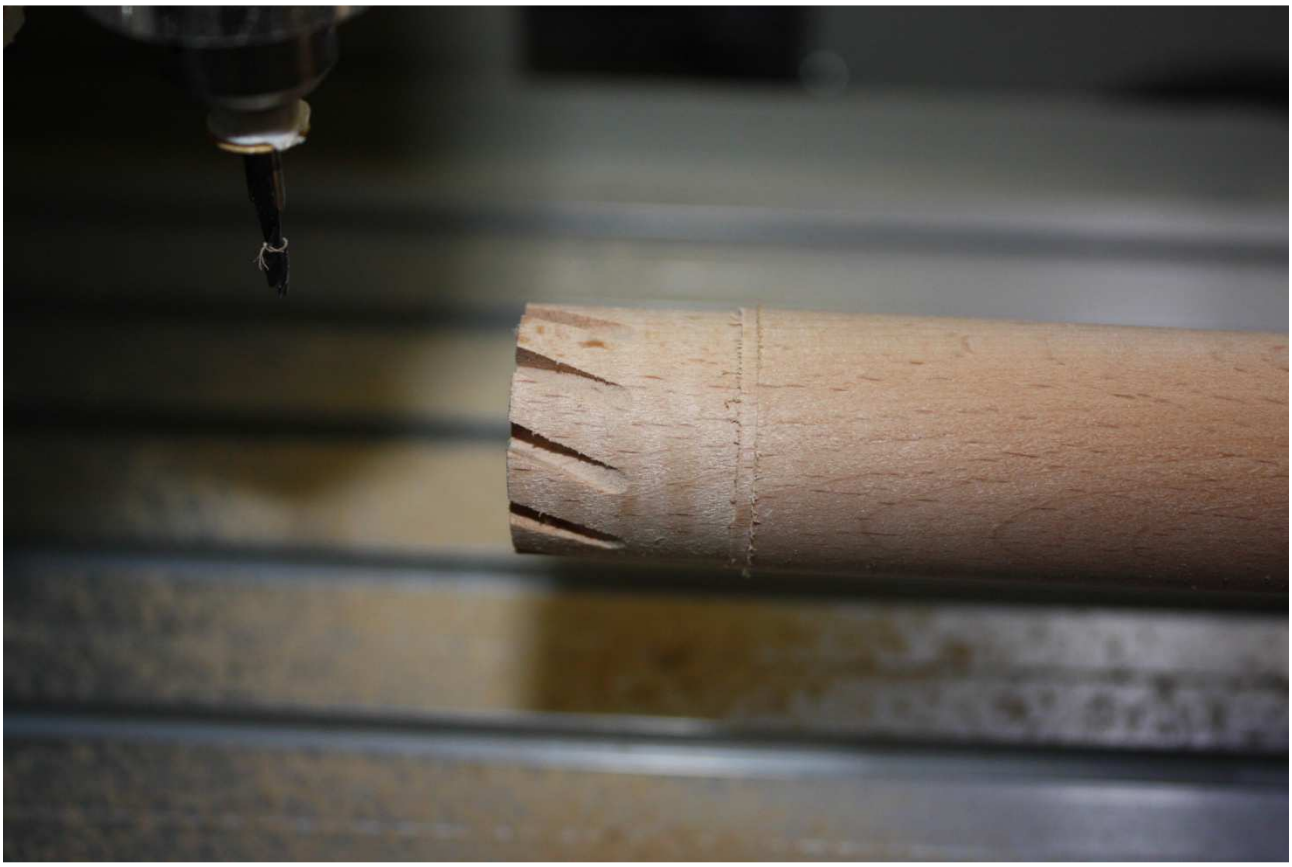
Here is the result:



Start job of cleaning and grinding:





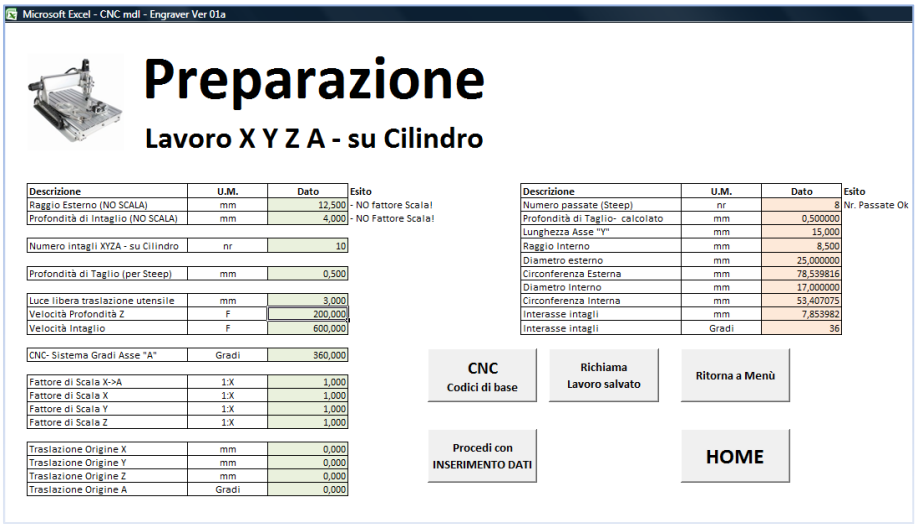


An example of “Bottle cap”

HELICAL CUT WITH INVERSE EXPOSURE

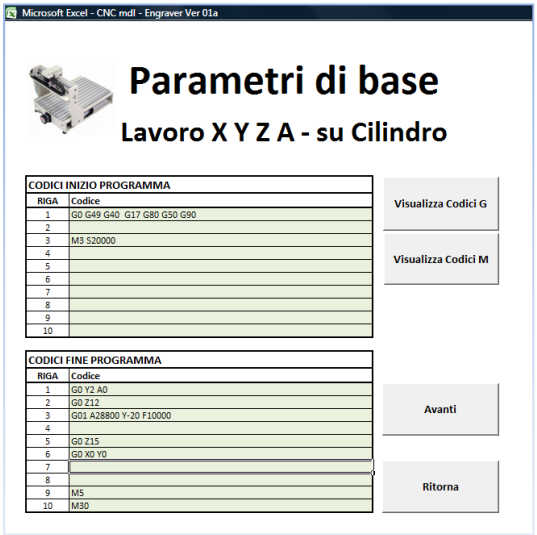
Open the software and click on the XYZA button:

Set the cutting parameters:



As we can see, we will make a cut 4 mm deep, removing 0,5 mm per step and will perform on the cylinder 10 cuts.
The free light was set to 3 mm (the light between the tool tip and the workpiece).

Now let's check the codes "CNC base codes":



We can see that in the final part of the program we manually entered some "G-Codes": these codes will be executed at the end of the program.
The codes are placed there for a final cleaning and adjustment of our work.

In detail we wrote:

G0 Y2 A0

- G0 (rapid positioning)
- Y2 (go to the coordinated Y2)
- A0 (bring the A-axis to zero degrees)

G0 Z12

- G0 (rapid positioning)
- Z12 (bring the Z-axis to quota 12)
  - Note: we set dimension "Z" equal to 12 so our adjusted diameter will be 24 mm.

G01 A28800 Y-20 F10000

- G01 (linear interpolation)
- A28800 (turn A-axis of 28800 degrees, or rather, turn the A-axis for 80 laps)
- Y-20 (go to the coordinated Y-20)
- F10000 (hold a feed of 10000)
  - Note: we calculated a pass of 0,25 mm per devolution, then for clearing 20 mm we have to perform 80 laps (20mm*4laps/mm*360 degrees = 28800 degrees)

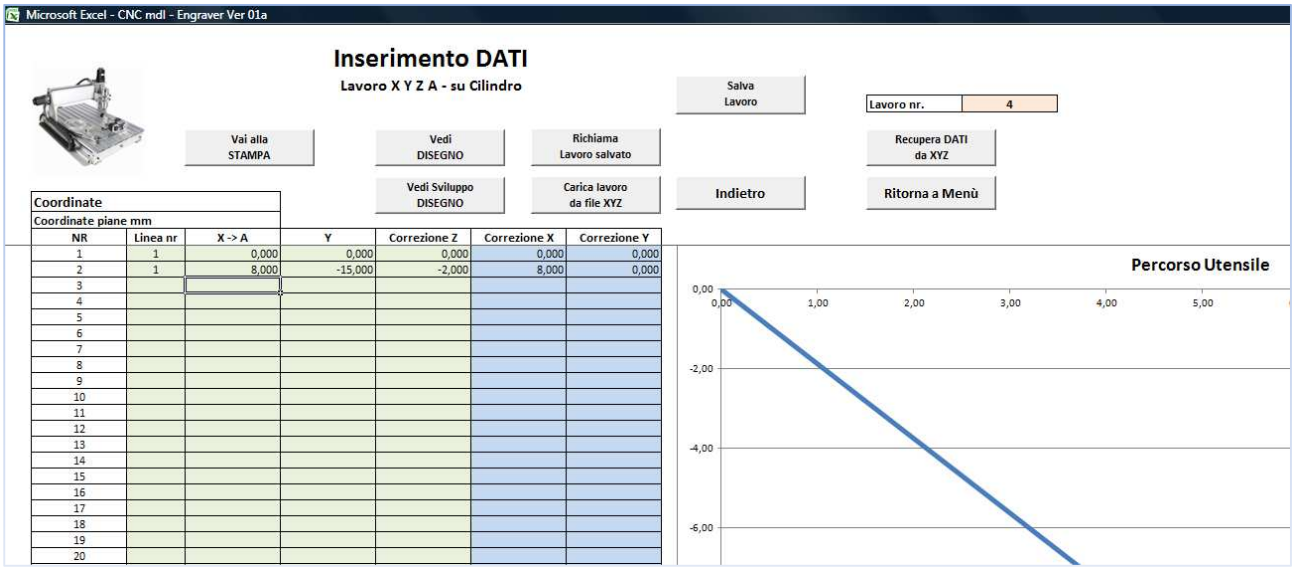
G0 Z15

- G0 (rapid positioning)
- Z15 (bring Z-axis to quota 15)

G0 X0 Y0

- G0 (rapid positioning)
- X0 (go to the coordinated X0)
- Y0 (go to the coordinated Y0)

Then we insert the data:



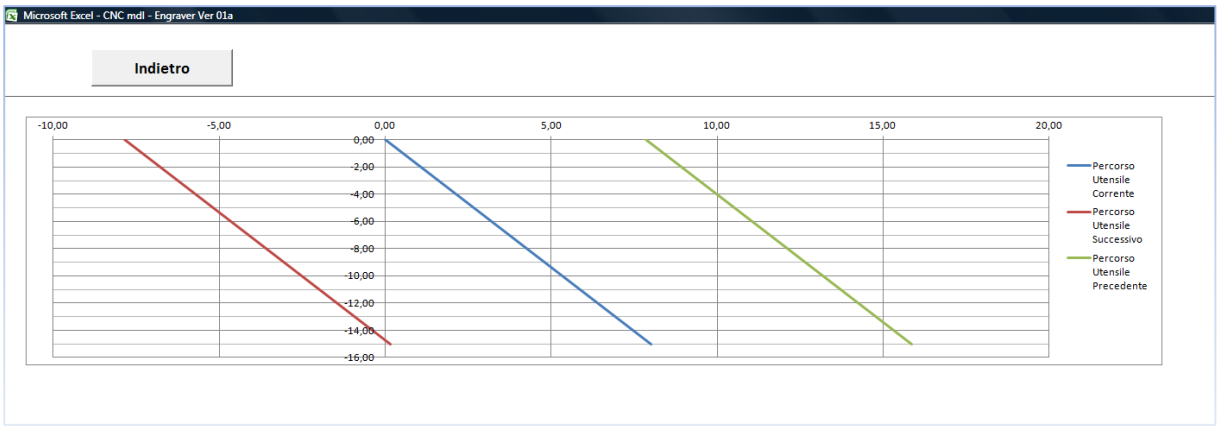
As we can see, we wrote only two lines:

- starting point;
- ending point.

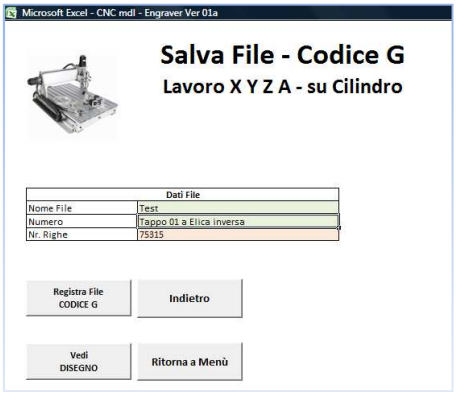
In this case we set the axis "X → A" to 8mm: which means that the axis "A" will make a counterclockwise rotation for a number of degrees equal to the extent of the arc of the outer circumference for 8 mm (in this case we have as base for the outer circumference a radius of 12,5 mm or a diameter of 25 mm).

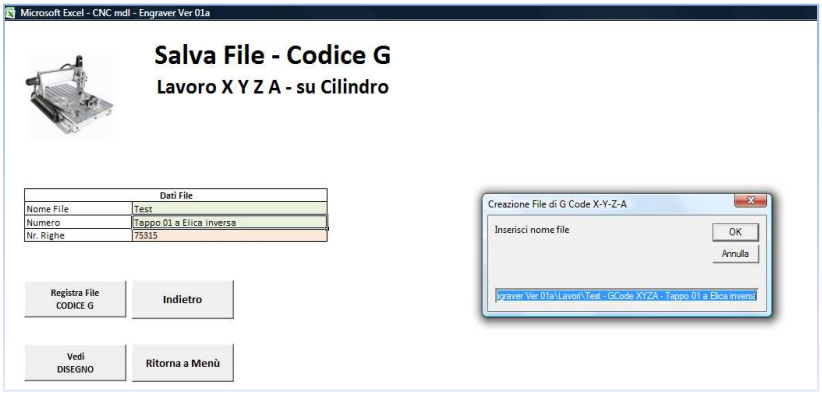
At the same time the Y-axis will step back of 15 mm (“-“ sign).
This time we used a “Z correction” on the second line of -2 mm: which means that, for every step, the tool will start at the indicated quota but, going to the second line and for interpolation, it will be lowered of 2 mm.
We have also set an “X correction” of 8 mm: which means that, for every step, the tool will start from the X-axis at zero but, going to the second line and for interpolation, it will move to the right for 8 mm.
The two corrections (the “Z correction” and the “X correction”) are automatically added together and for interpolation, the tool will catch up the settled point.
In the pictures we will see the result.

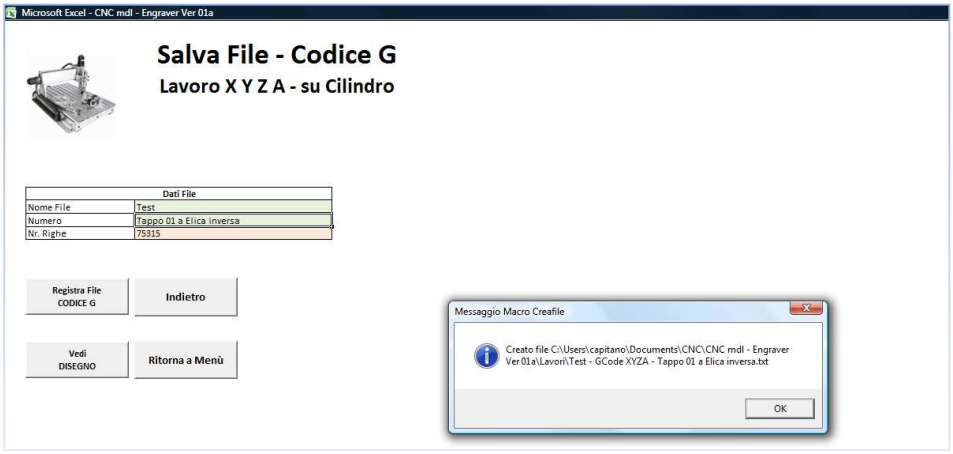
Let’s check the work development: will be shown the cuts and the related measures.



Now we save our G-Code file:

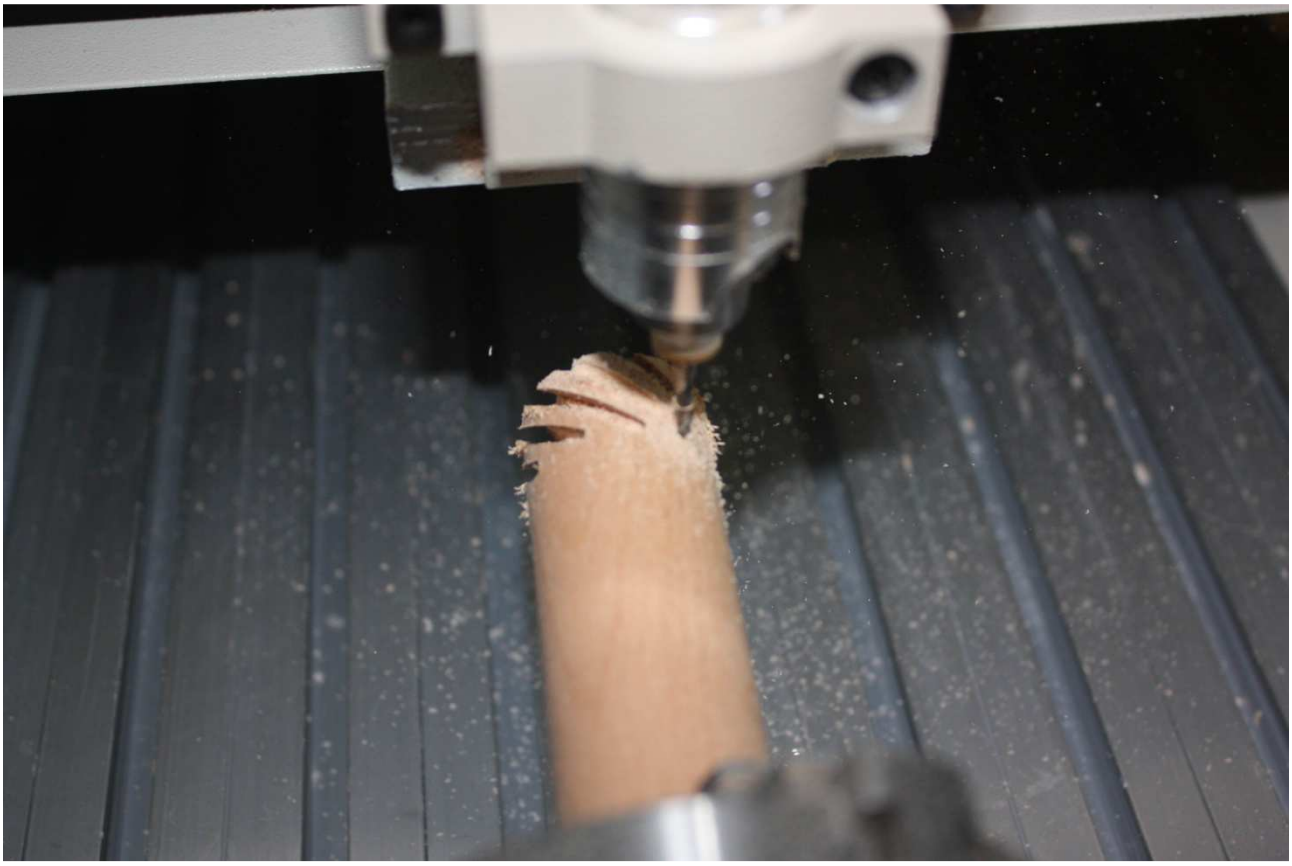




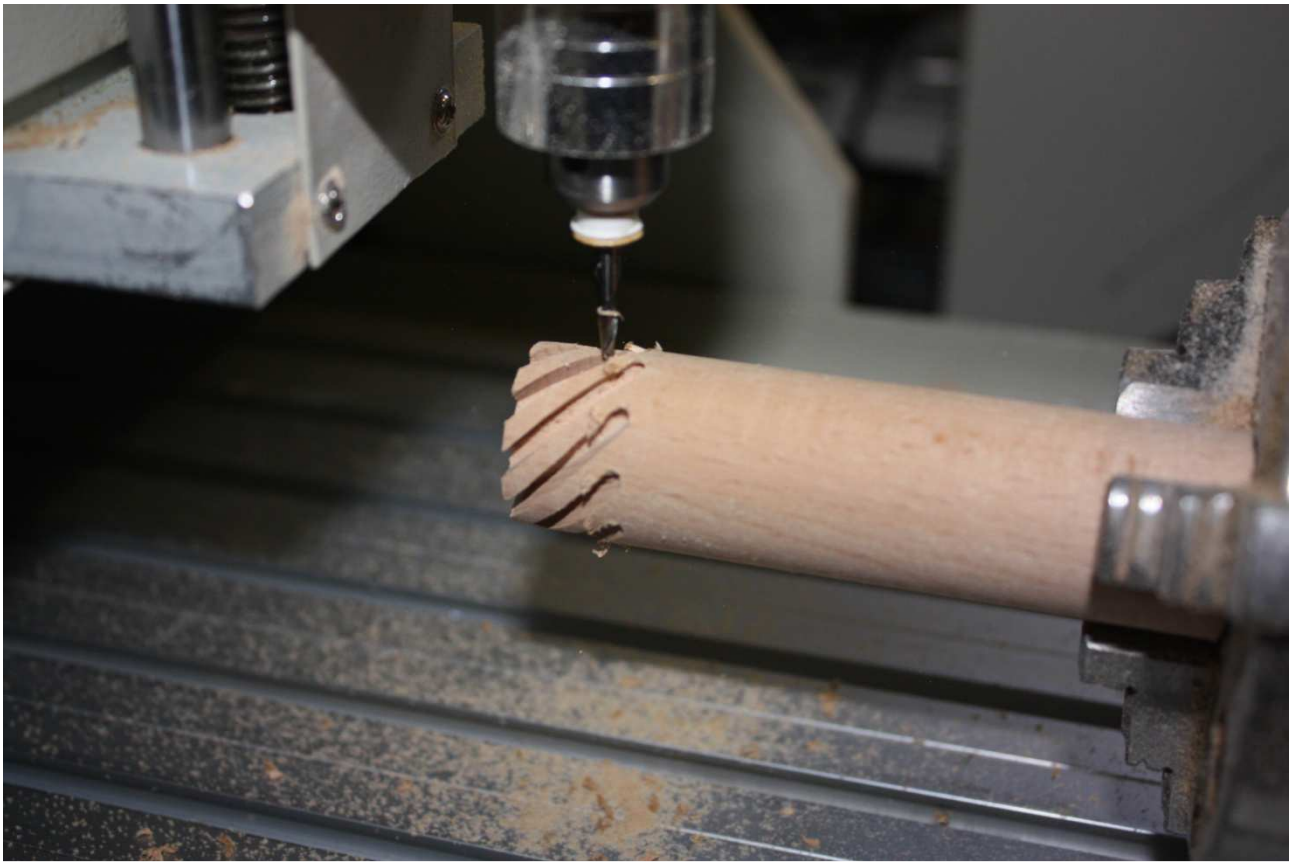


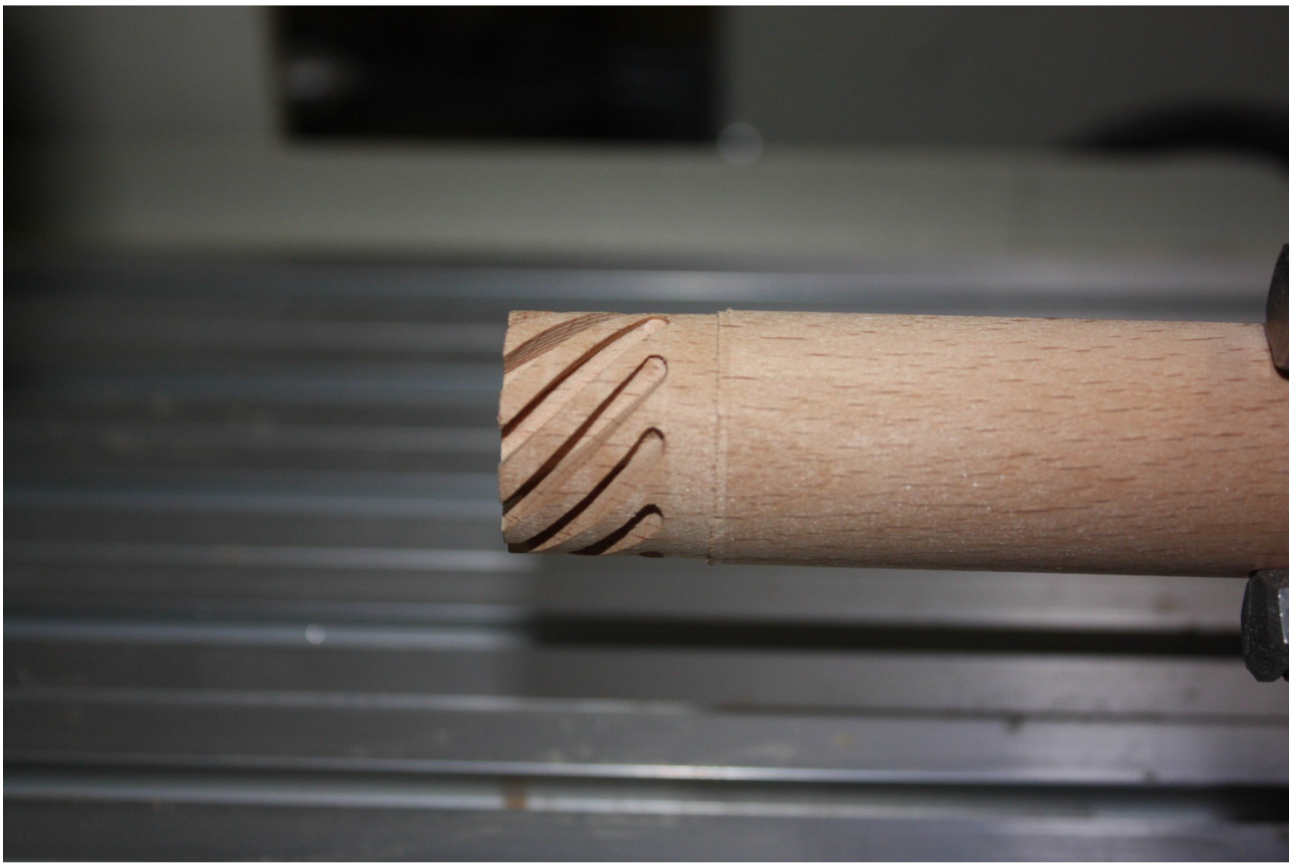
We have finished.
Now we upload our files on our CNC, we set the machine coordinates and begin our work.

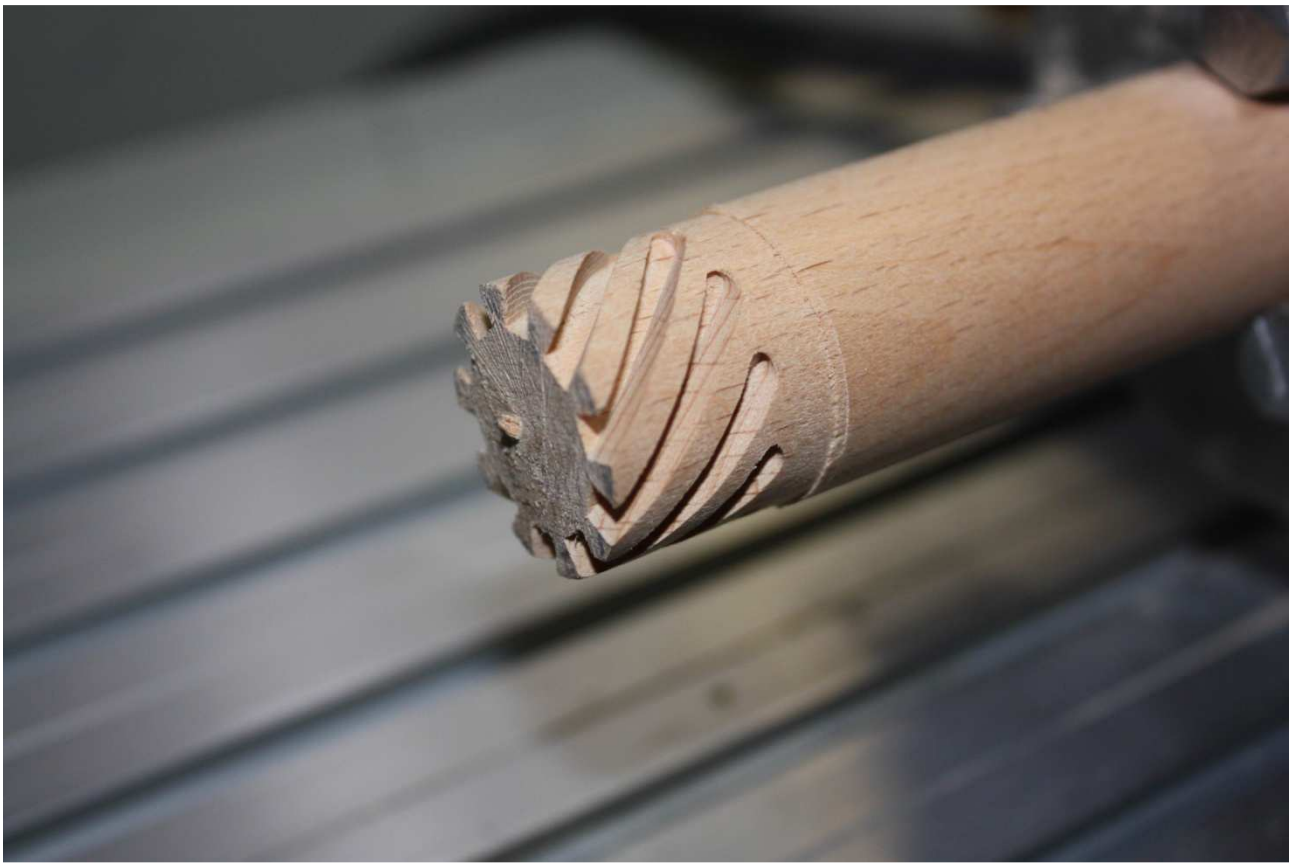
Here is the result:



Start job of cleaning and grinding:







An example of “Bottle cap”

Some bottle caps done during the experimental tests.
I would like to insist on the fact that this software runs automatically only the engravings; the correction was performed by manually entering the codes, as in the examples above.

Notes: