

CNC

**MANUFACTURING MANUAL
SUSTRACTIVE**

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Subtractive (CNC, turning, drilling)

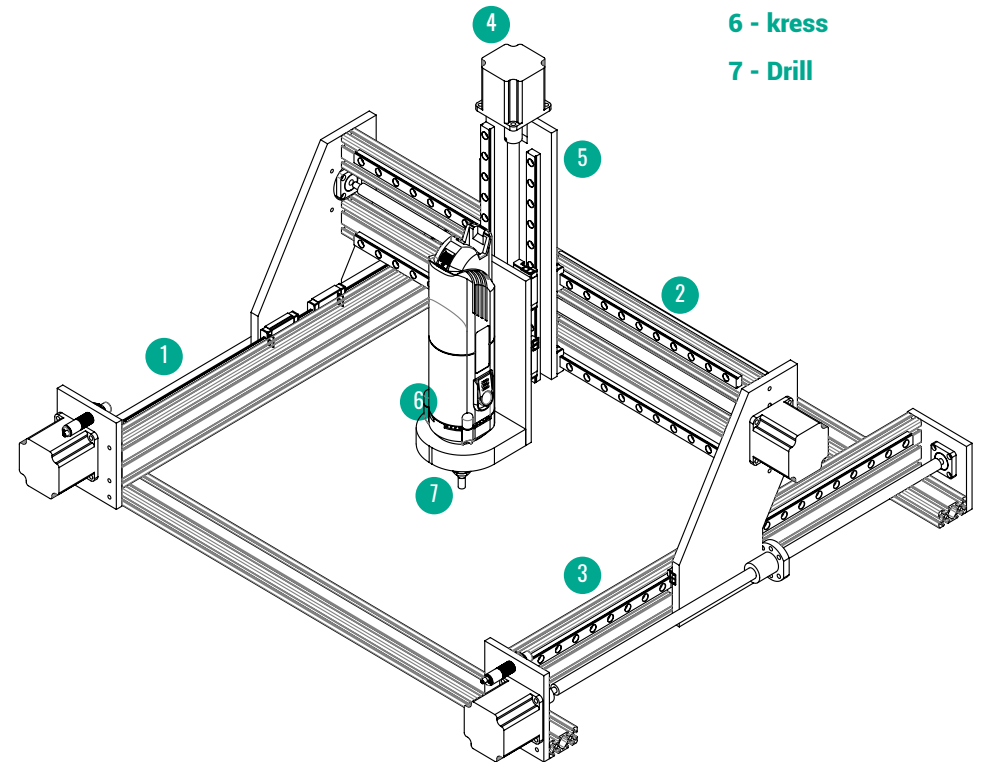
Subtractive manufacturing begins with a block of solid material, and uses cutting tools to extract the material and achieve a final shape. Milling, turning, drilling and cutting operations are examples of subtractive techniques. Subtractive manufacturing is capable of producing high precision parts with excellent surface finish.

Subtractive manufacturing is limited by a number of factors. Most designs require computer-aided manufacturing (CAM) to trace tool paths and efficient material removal. Tool access must also be taken into account when designing parts for subtractive manufacturing, as the cutting tool must be able to reach all surfaces to remove material.

Subtractive manufacturing is also generally considered a wasteful process, due to the large amounts of material that are often removed to produce the final part geometry.

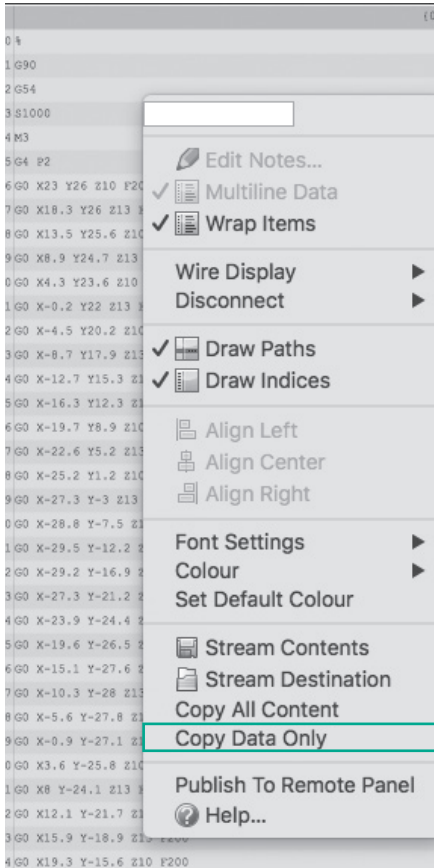
Agama cnc

- 1 - Frame Y
- 2 - Frame X
- 3 - Frame Y
- 4 - Motor Nema 23
- 5 - Frame Z
- 6 - kress
- 7 - Drill



STEP 1

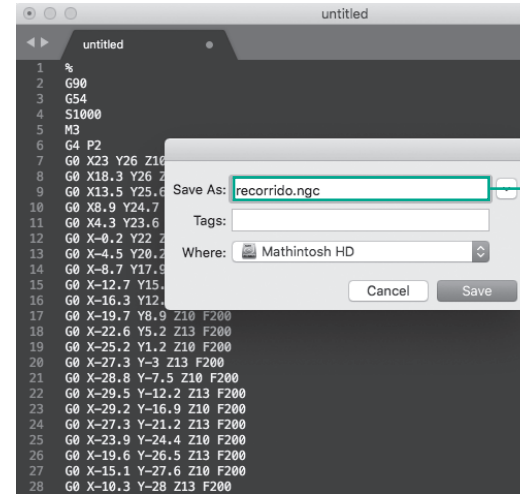
Export the file from Grasshopper



we need to export the code we'll find in the Grasshopper file.
Select the last panel and right click.
And then select "Copy Data Only".

STEP 2

Export as .ngc

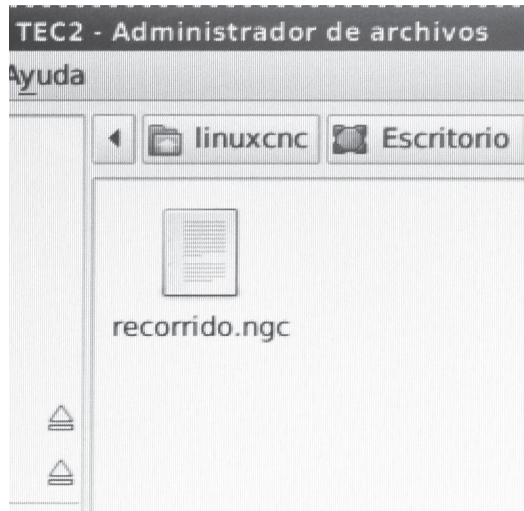


We open a text or source code editor such as "Sublime text".
or by default the one that we will have in the computer as "notes".

We will copy the code and save it in a Pen drive as: name.ngc

STEP 3

Save in TEC2 folder on the desktop

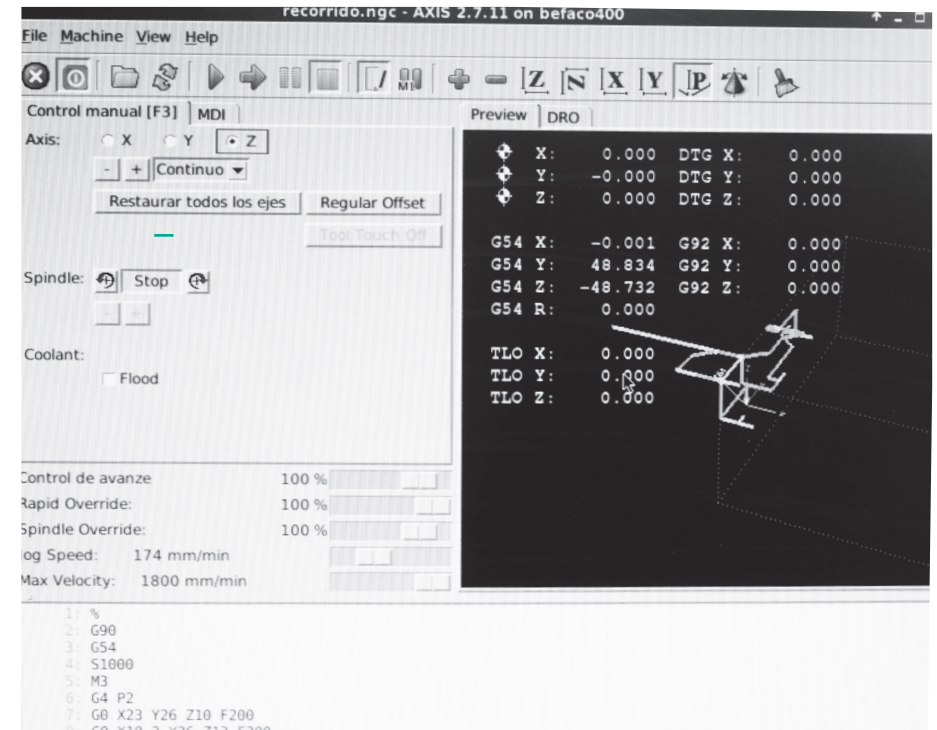


We'll save our file in the desktop folder called TEC2.

STEP 4

open Machinekit

We open in the Machinekit desktop.(with the name of the cnc that we are using)
It is a platform for machine control applications.



STEP 5

Fix material



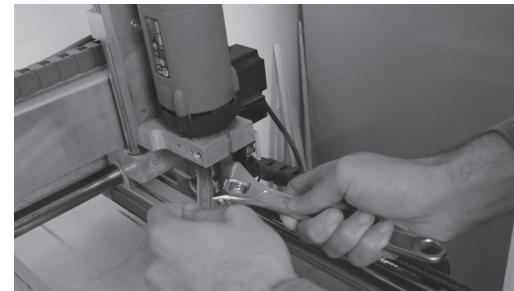
STEP 6

Change drill bit

We can change the drill bit with two wrenches pressing in.

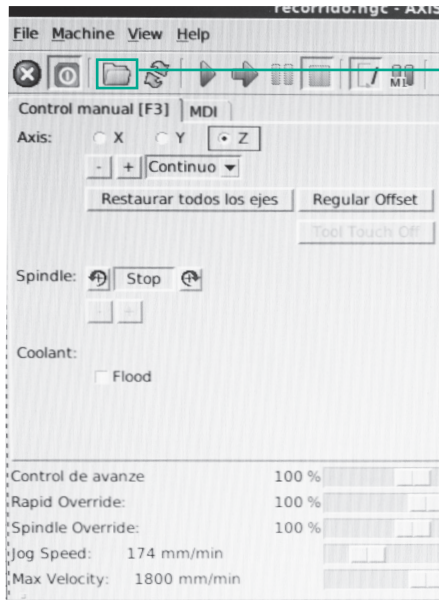


To adjust drill press out.

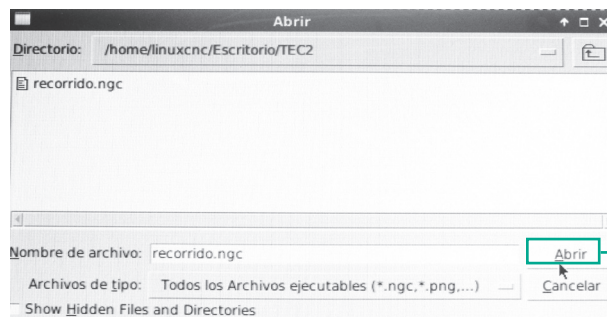


STEP 7

Open .ngc file from Machinekit



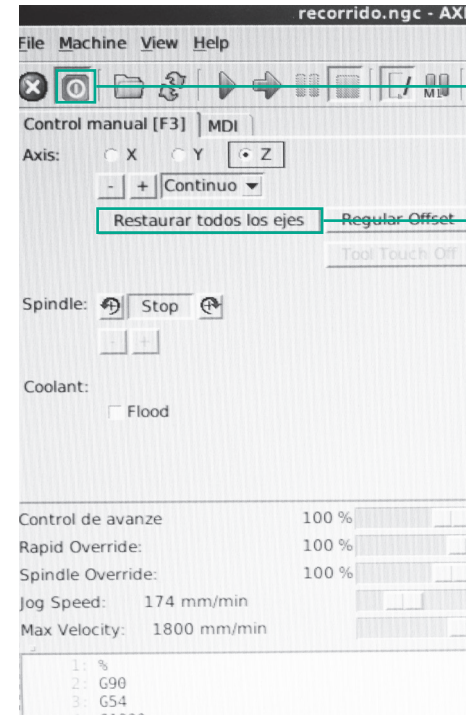
We look for the icon of the folder to open the file in TEC2



We look for the TEC2 folder on the desktop and proceed to open.

STEP 8

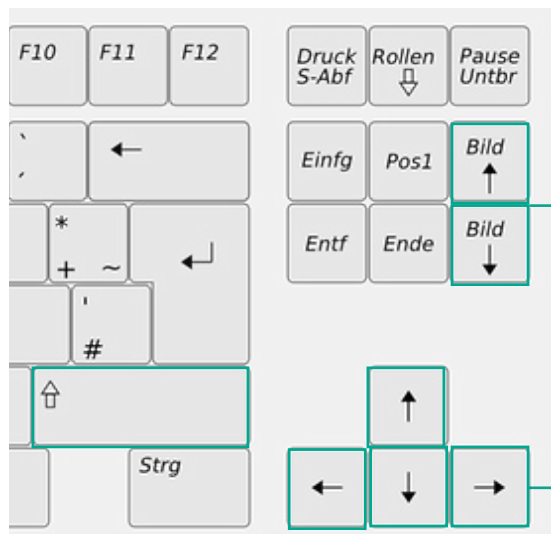
Turn on/restore all axes



Turn on the cnc from Machinekit and restore all the axes (home)

STEP 9

Commands to move with the machine



To move in the space we will use the following commands in the keyboard:

Pressing:

SHIFT (to go faster)+ (XYZ axis keys)

Move in the Z axes

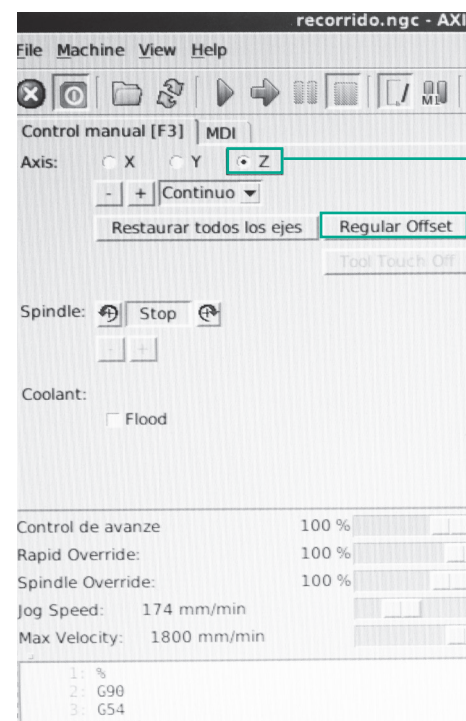
Move on the XY axes right left

STEP 10

X Y Z axis configuration



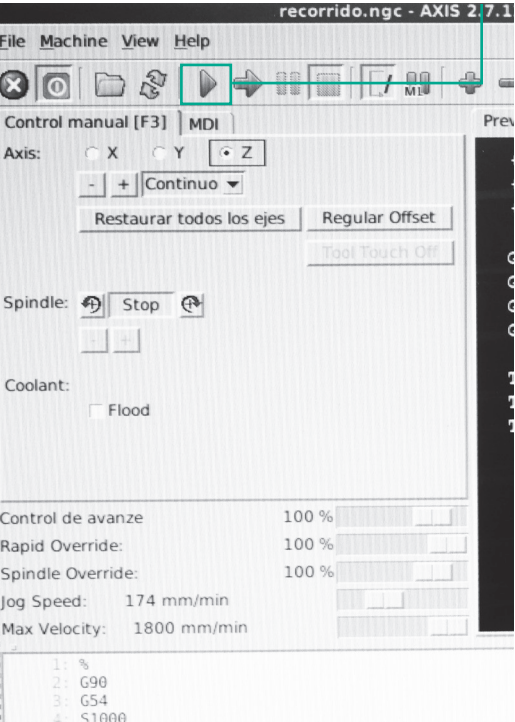
Select our start of coordinate axis by placing the drill in position "X0 Y0 Z0".



To define our position X0 Y0 Z0.

Let's select for example: the Axis Z and then select Regular offset. Repeat the operation with the axis Y, X

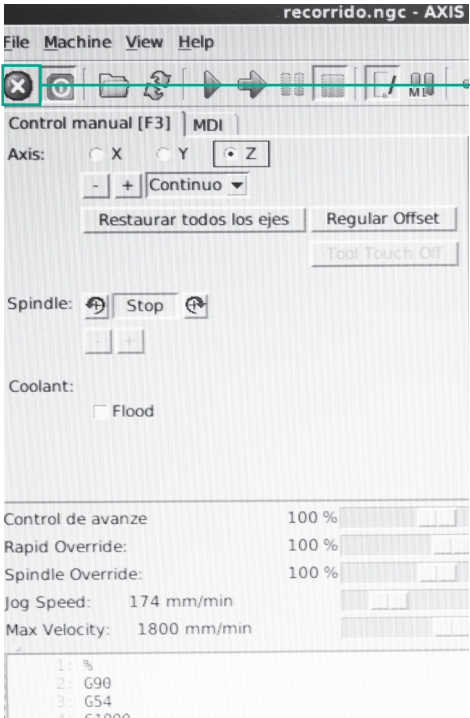
start



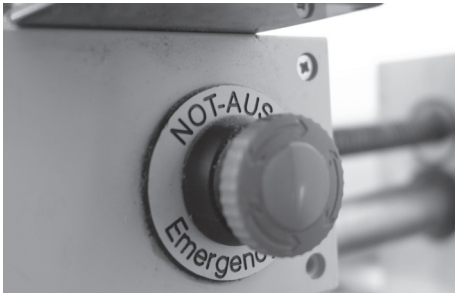
play to start



Emergency Power Off



To cancel printing press this button



EMERGENCY OFF

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