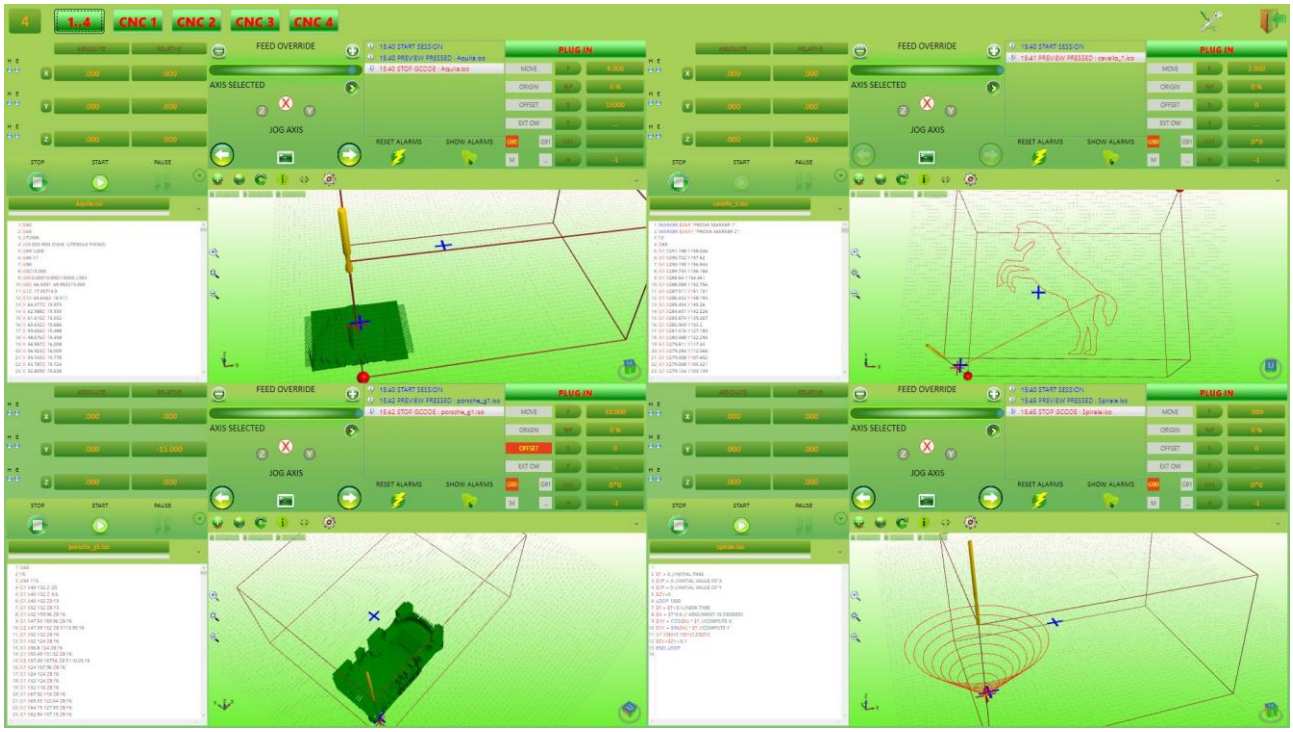
IsoUs – Ultimate Step
User Interface

www.promax.it

PROMAX Motion & Control

1 Preface

The new IsoUs is the EVOLUTION of IsoNs application. IsoUs is adaptable all modern PC interfaces.
IsoUs has been simplified in the use but enhanced about the capabilities.
The “MULTIPROCESS” interfaces are more clear and you can see all CNC simultaneously



2 Reduction of IsoUs Window

IsoUs when is in execution occupies the entire screen of the pc.
Is possible reduce the window of **50 %** with click on button "**number of visible interface"**:

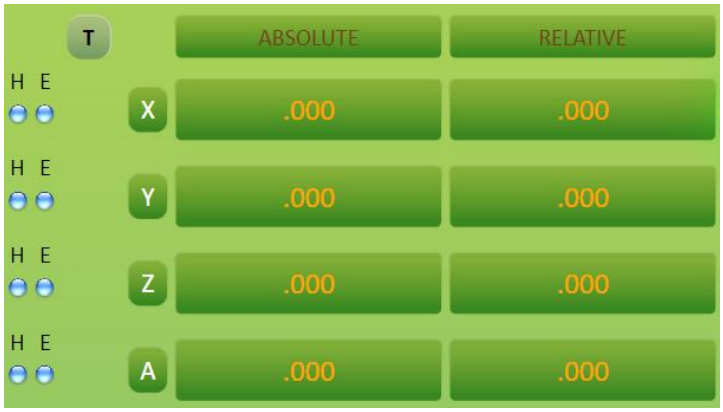
The window will be reduced and will be moved in the screen like a normal window.

Click for move Window

By new click on "**number of visible interface"** the window will be shown to entire screen.

3 Axes Panel

The Axes panel integrates all informations about the Axes values.



3.1 Button Type Values Visualization

Press the following Button for change the type values visualization:

T → Axes Demand Position

R → Axes Real Position

E → Following Error

This button is present only if the **MACHINE PARAMETER** ***"VISUAREAL"*** is setted on **DEMAND** or **ERROR.**
Besides for enable the Real Position or Following Error the VTB application must read these values.

3.2 Axes State

The LED **H** and **E**, show the state **ENABLE** (E) or **HOMING** (H) of the Axis.

ON operation made

OFF operation is not made

3.3 Absolute Axes Values

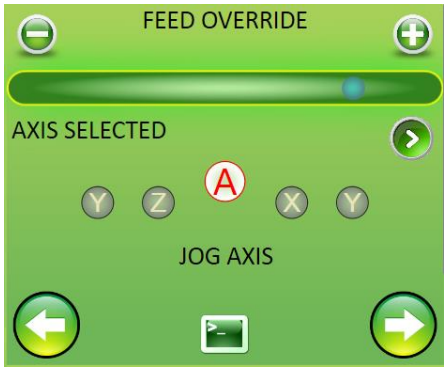
This field indicates the ***ABSOLUTE AXES VALUES*** from the machine origins.

3.4 Relative Axes Value

This field indicates the ***RELATIVE AXES VALUES*** from the **WORK ORIGIN SETTED.**

4 JOG Panel

The **JOG panel** allows the **MANUAL** Axes movement.
Before Axis jog, it must be Enabled and the **HOMING** must be performed.



4.1 Feed Override

With the **VIRTUAL POTENTIOMETER** you can change the Axes **FEED** from 0-100%.
The Override acts also when the Gcode is in execution.

4.1.1 SLIDER

Drag the **SLIDER** to left for decrease or to right for increase, the Axes **FEED**

4.1.2 Buttons

Press the buttons **-** **+** for decrease / increase the Axes **FEED**

4.2 Axis Selector for JOG

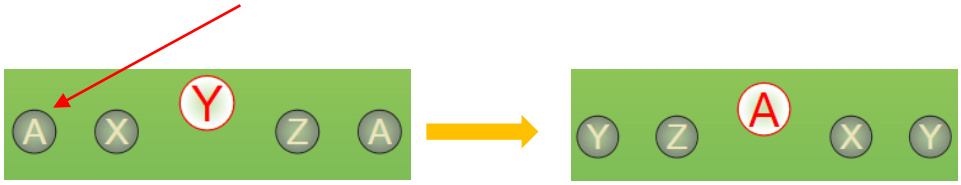
With the **AXIS SELECTOR** you can activate the relative axis for **JOG** or **MDI JOG**.

4.2.1 Select by Button

Press the Button until the desired Axis isn't selected:

4.2.2 Direct Selection

Press in the desired **Label** for select the Axis for **JOG**.



4.3 JOG Axes

Press the **BUTTONS JOG** for move the selected Axis in the desired direction.
The Axis will move to **FEED** setted in the relative Parameter and with the relative percentage setted in the **OVERRIDE.**
For **STOP** the movement, release the **BUTTON**.
The Axes can't exceed the relative Axis **LIMIT** setted in the Axis Parameter**:**

4.4 MDI JOG

For activate the **MDI JOG WINDOW** press the **BUTTON:**

MDI:

4.4.1 Select Absolute or Incremental movement

Press **BUTTON**:

ABSOLUTE **INCREMENTALE**

ABSOLUTE
With this selection the **JOG**, and TARGET VALUE, are refered to **ABSOLUTE VALUES** from Machine Origins.

INCREMENTAL
With this selection, the **JOG Buttons** moves the Axis with an INCREMENT **x1** (0.001mm) **x10** (0.010mm) **x100** (0.100mm) **x1000** (1mm)
Determined by AXES INCREMENT SELECTOR.

The Values **INSERTED IN THE MDI WINDOW** are relative to **CURRENT AXIS POSITION**.

4.4.2 Axes Increment Selector

For select the Increment Value x1 x10 x100 x1000 press the **BUTTON**:

x1	0.001 mm
x10	0.010 mm
x100	0.100 mm
x1000	1 mm

4.4.3 Target Value

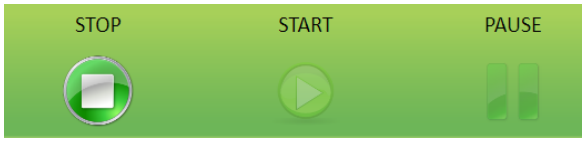
With **MDI**, you can insert a **TARGET** value for the Axis **SELECTED**.

Insert in the Field the **TARGET VALUE** (with sign **–** if it is <0)

Press the **BUTTON** for **START**:

The selected Axis will move to the TARGET in the mode described MOVEMENT SELECTED AXES

For STOP press **BUTTON STOP in the COMMAND PANEL**

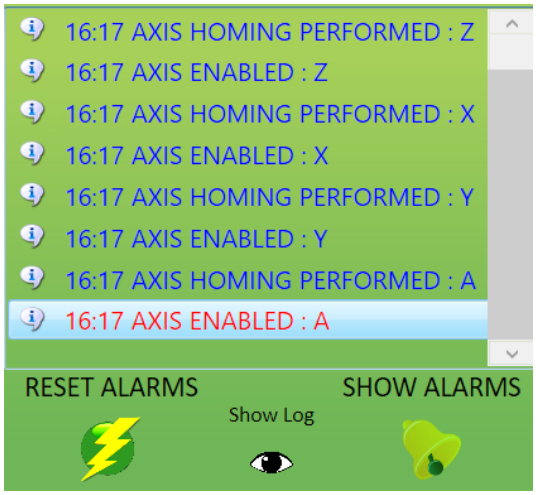


WARNING

THE BUTTON STOP DOESN'T GUARANTEE AN EMERGENCY CONDITION
THIS OPERATION MUST BE GURANTEED FROM EXTERNAL CERTIFIED PARTS

5 Notify Panel

In this Panel, IsoUs show all **INFORMATIONS**.



5.1 Reset CN Alarms

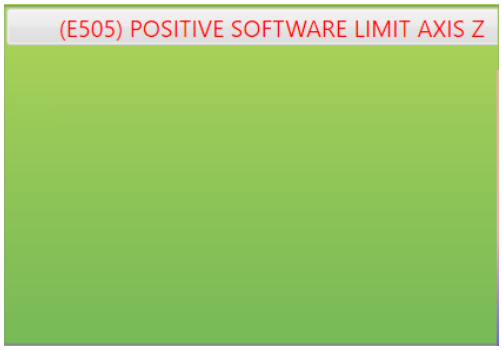
For **RESET** a **NOTIFY** of **CN ALARM**, press the **BUTTON**:

The **NOTIFY** will be **RESET** only if the **ALARM** will be deleted.

5.2 Show CN Alarms

When the **CN** is in ALARM, the **ALARM** button blink:

Press this button for show the **CN ALARMS**



Press the button for return to **NOTIFY**

5.3 Show LOG File

IsoUs records a LOG file that contains all operation made in a time.
This file can be showed.

Press the **BUTTON**:

When this file has reached a determinate dimension (setted in the IsoUs configuration), a BackUp copy is made and a new LOG file is created.
For Showed a BackUp copy press **BUTTON**:

6 Recovery Essential BackUp

IsoUs saves a BackUp copy of ESSENTIAL Data every 7 days.
The folder is in ***ApplicationPath*_*UsBackup**Essential***.
In this folder there are the following files, that can recovered when is necessary:

Cartelle:

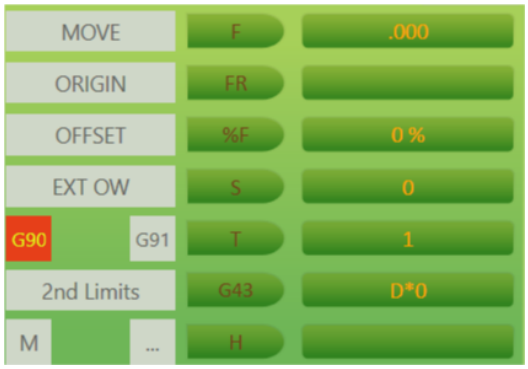
_CmdBinary
_Source_HM
_Source_M
Data_HM
Data_M
Environment

Files:

IsoUs.cfg
Origins_n.val (where n is a CNC number 0,1,2 etc.)
UsToolBarConfig.xml
Zeri.val

7 MONITOR Panel

Monitor Panel shows the main indications of IsoUs.



7.1 Signal LED

When The signal is Activated, the color is **RED**

MOVE

Indicates when the Axes are in movement

ORIGIN

Indicates when the Work Origins are activated (G92-G94 etc.)

When the Origins are activated, one click with left mouse on the **LABEL**, will show the values setted

ORIGIN

Axis	Index	Value
X	0	2.268
Y	0	4.392
Z	0	-13.947
A	0	145.419

Index Origin Index Setted for the Axis
Value Origin Value Setted for the Axis

OFFSET

Indicates when the Work **OFFSET** are activated (G93-G95 etc.)

When the Offset are activated, one click with left mouse on the **LABEL**, will show the values setted

OFFSET

Axis	Index	Value
X	0	230
Y	0	120
Z	0	-18
A	0	14.12

Index Origin Index Setted for the Axis
Value Offset Value Setted for the Axis

EXT OW
Indicates when the **EXTERNAL OVERRIDE** is Activated

Click on the **LABEL** for **ENABLE/DISABLE** the **EXTERNAL OVERRIDE**.

G90 G91
Indicates the Movement type **ABSOLUTE G90 INCREMENTAL G91**

2nd Limits
Indicatesi f the 2nd Software are enabled

M

Indicates f is in **EXECUTION** an **M** on **CN**. In The right field the number of **M** is showed

7.2 General Informations

F
Indicates the current **FEED** setted with Function Gcode **F**

FR
Indicates the **REAL FEED** in the CNC

%F
Indicates the **OVERRIDE** Percentage - FEEDOVERRIDE

S
Indicates the **SPINDLE SPEED** setted with Function Gcode **S**

T
Indicates the **CURRENT TOOL NUMBER SETTED** with Function Gcode **T**

G43
Indicates if the **TOOL LENGTH** is activated with Function Gcode **G43**

If the tool length is **ACTIVATED** the following informations are showed:

The value **D*** indicates the Tool Length read with the function **T** from the **TOOL TABLE**, **BUT THIS ISN'T ENABLED**

If the Tool Length is ENABLED, by function **G43** o **G45** (ex: G43 x125 Z+), the LABEL BLINK:

The Value indicates the tool length **SETTED**

H

Indicates the HEAD SETTED with the Function Gcode **H**
Click on the Label for show the Head offset setted

H		
Axis	Index	Value
X	1	3000
Y	1	0
Z	1	0
C	1	0
B	1	0

8 COMMANDS Panel

COMMAND Panel allows to use the **FUNCTIONS**:
START,STOP,PAUSE etc.

8.1 Button START

When the Gcode file is loaded and it is correct, the button **START** will be **ENABLED**. Push it for Gcode execution.

8.2 Button STOP

The button **STOP** is always **ENABLED** and allows the following operations:

STOP EXECUTION GCODE FILE
STOP EXECUTION MDI COMMAND TARGET VALUE

8.3 Button PAUSE

The button **PAUSE** is **ENABLED** when the Gcode is in **EXECUTION**
When the Gcode is in **PAUSE**, teh **BUTTONS START** or **STOP** can be pressed.

8.4 Button EXPANDER

The button **EXPANDER** allows the access to additional some functions.

8.4.1 Preview

PREVIEW allows the show the Gcode file in the SIMULATION.

8.4.2 Step

STEP Enables/Disables the Gcode execution **STEP** by **STEP**, i.e. the Gcode is executed a BLOCK at time at each **START** button pressure.

8.4.3 Calculation Work Time

The button **TIME** allows to calculate the time of Gcode execution.

The expected time is showed in the Gcode Editor Panel.
The TIME can change with some situations, it is calculated considering the **OVERRIDE FEED** at 100%.
The TIME uses only the G0-G1-G2-G3 and G4, therefore other situations are excluded (ex: wait_input etc.)
Is possible to add the extra time by the Gcode function Gcode **G4.1 Ftime**. This function, is coconsidering only during the calc time. This function should be insert in the M functions M3-M4-M5_m6 etc. For configure the Calc Time use the Editor Configuration.

8.4.4 Off Line Simulation

The Button **SIMULATION**, allows to activate the Off Line Simulation.
This no needs of CNC connected

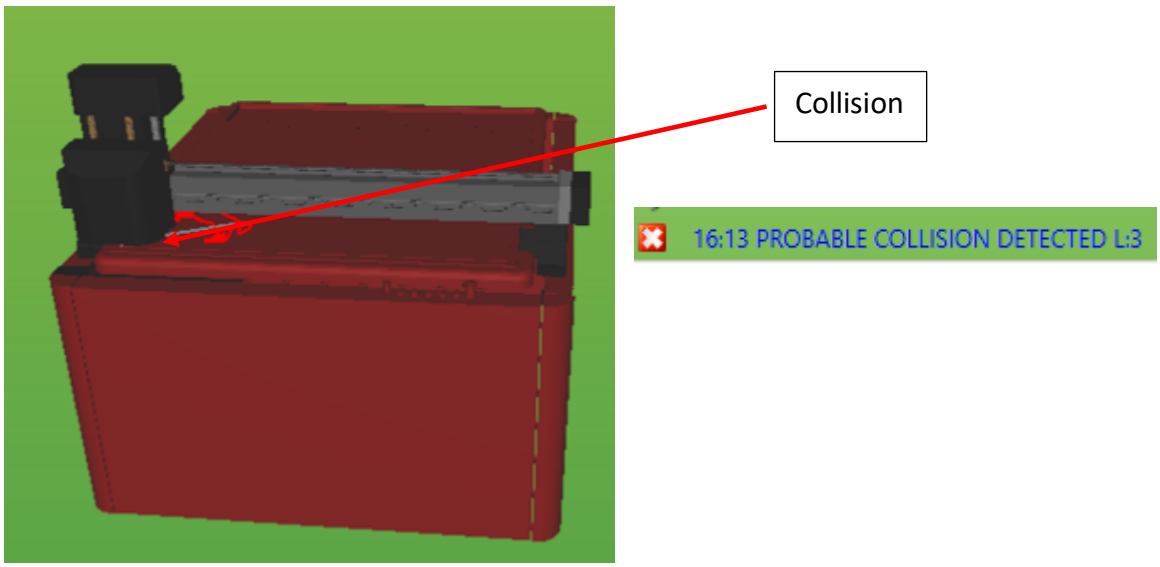
The simulation Speed can be changed by cursor:

SPEED - **SPEED+**

8.4.5 Test Collisions

Il Button **COLLISION**, allows to make a test of Axes Collisions, must be used the Preview ***Cursor Type->Machine***
And parameter ***General->Enable Test Collision*** (Preview Setting)

The test is execute after the click button and the collision is shown in the Preview and in the notify panel



9 Panel PLUG IN

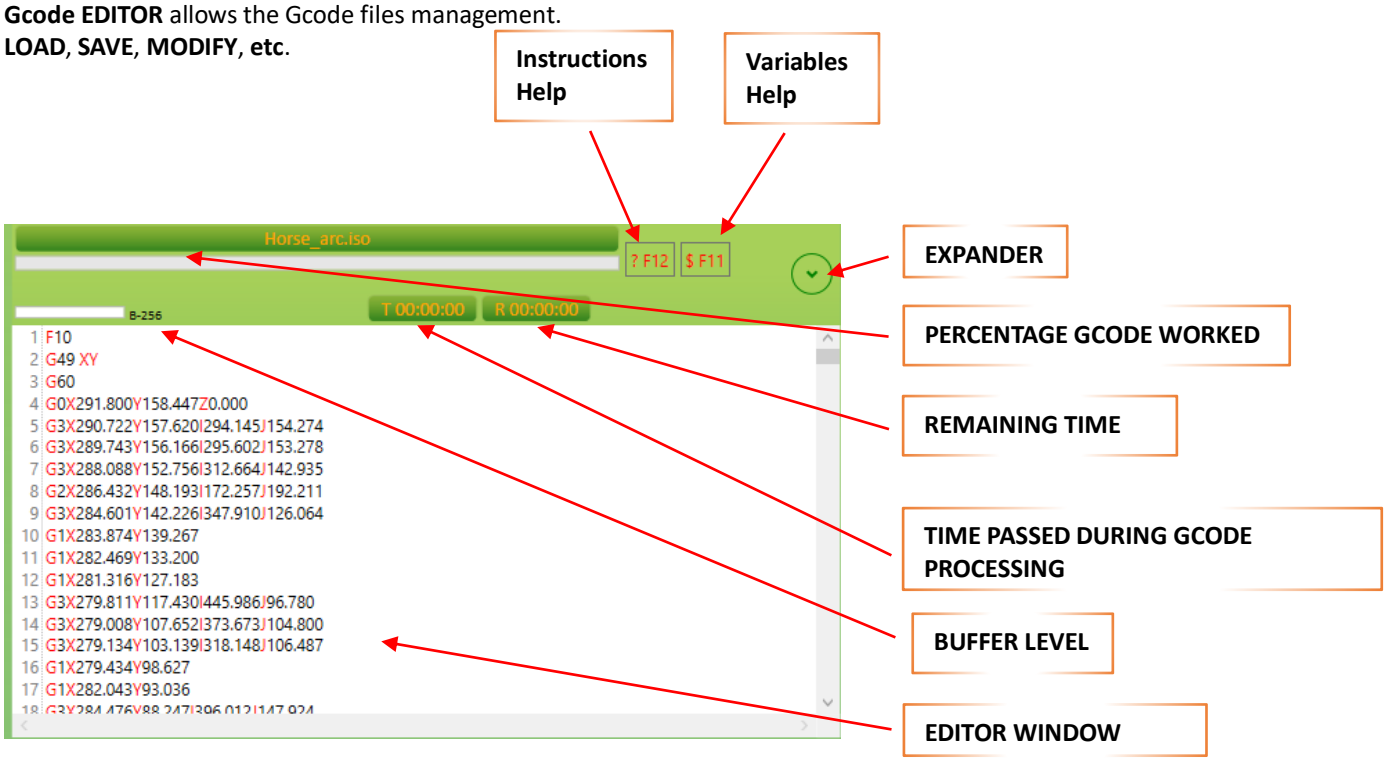
The **PLUG IN** panel contains all PlugIn installed .

Press the **BUTTON** for open or close the **PLUG IN** window.

For PlugIn activation press **BUTTON**.

10 Gcode EDITOR

Gcode EDITOR allows the Gcode files management.
LOAD, **SAVE**, **MODIFY**, **etc**.

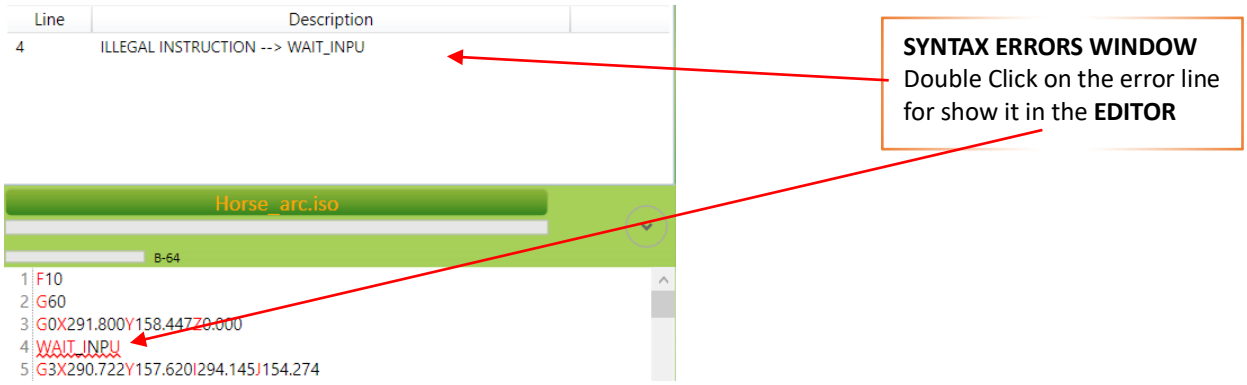


10.1 EDITOR Window

EDITOR allows to show or edit a Gcode file.

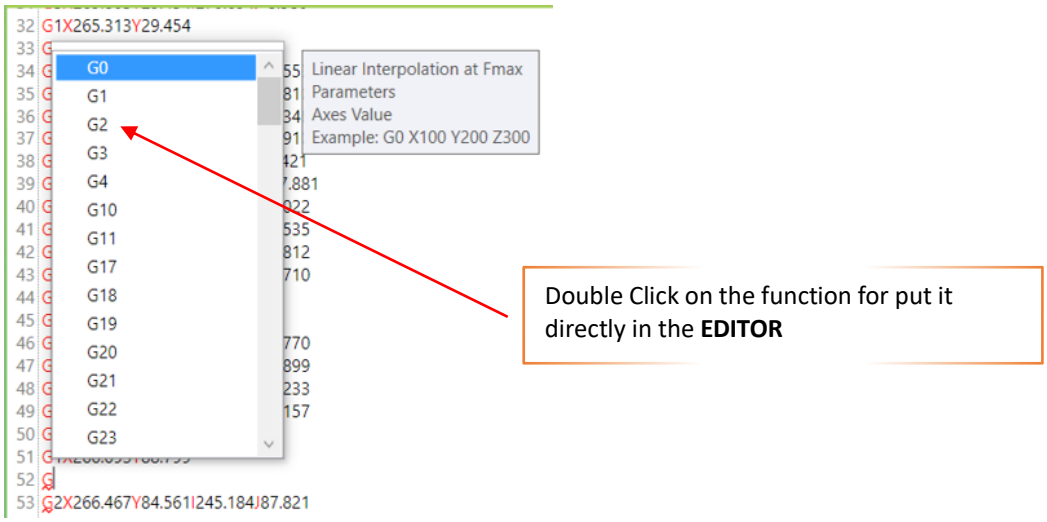
10.1.1 Syntax Errors

The Syntax errors are **AUTOMATICALLY** showed in the window



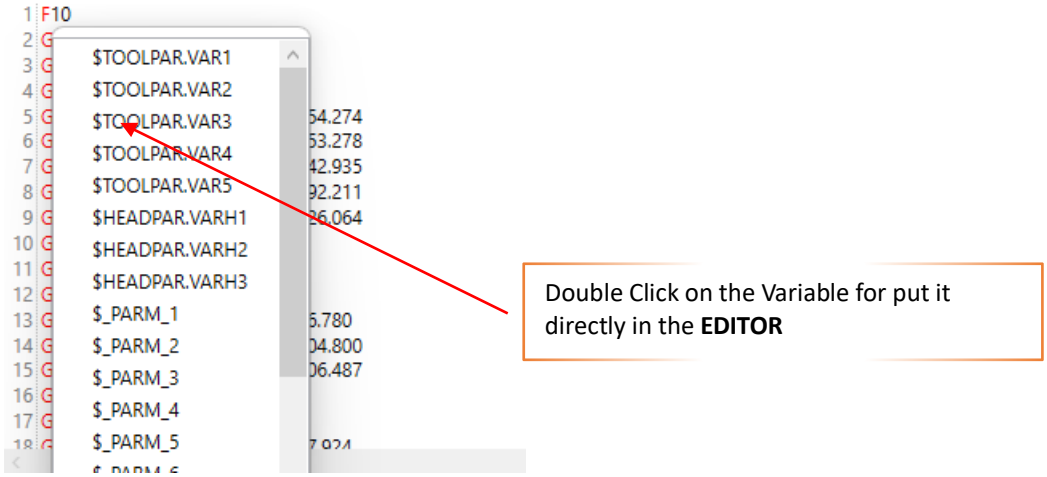
10.1.2 Instructions Help

The **INSTRUCTIONS HELP** is showed when is pressed the **BUTTON FUNCTION** Key **F1-F12.**
Help shows all Gcode functions and their use



10.1.3 Variebles Help

The **VARIABLES HELP** is showed when is pressed the **BUTTON FUNCTION** Key **F1-F12.**
Help shows all Gcode **VARIABLES** and **STRUCTURES DATA** used



10.1.4 Percentage Gcode Worked

The Progress Bar indicates the pergentage of Gcode worked:

10.1.5 Buffer Level

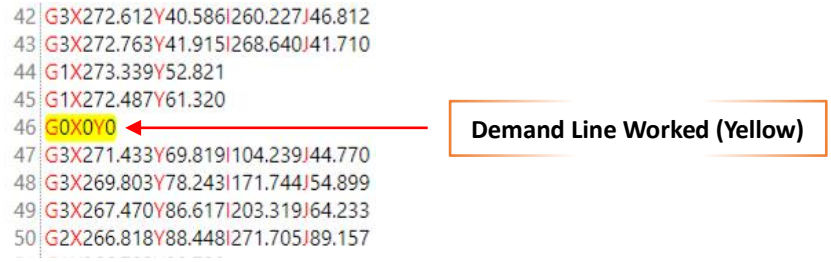
The buffer level shows an information very important.
It indicates the "***TANK LEVEL***" of the **BLOCKS LOADED** in the **CN**.
This information is valid only when is used the **FUNCTION G60** and the "***TANK LEVEL***" **MUST NOT BE NEVER** empty except when some functions are executed (**G0**, **M**, **G62** etc.)
B-n indicates the number of block that the CN can contain (ex: B-64 indicates 64 Blocks)
This value can change from CN used

Buffer Full – Functions Regular

Buffer during the emptying phase

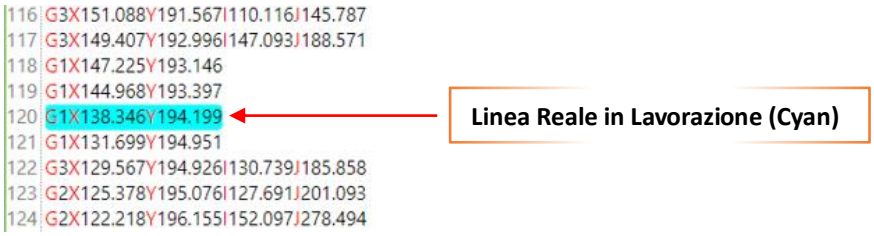
10.1.6 Show Demand Line Worked

When IsoUs works a Gcode file, in the **EDITOR** (if configured) can be showed the **DEMAND LINE WORKED.**
The Demand Line Worked generally is greater than **REAL LINE WORKED**.



10.1.7 Show Real Line Worked

When IsoUs works a Gcode file, in the **EDITOR** (if configured) can be showed the **REAL LINE WORKED.**
The Real Line Worked generally is lower or equal than **DEMAND LINE WORKED**.



10.1.8 Button Expander

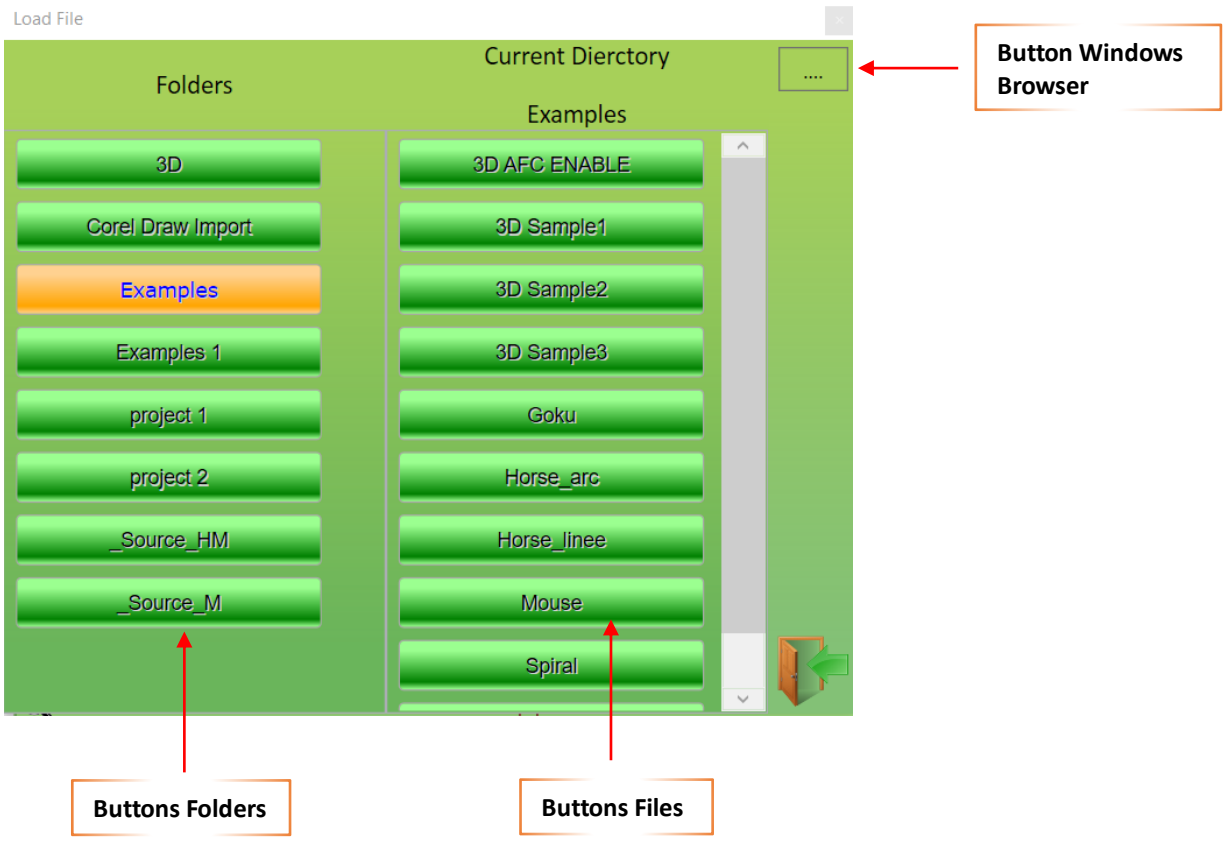
The Button **EXPANDER SHOW** or **HIDE** additional functions of Gcode EDITOR.

10.2 Load a Gcode File

For load a Gcode file press **BUTTON**:

Following the Load **BROWSER** is showed.

10.2.1 Us Browser – Load File



Buttons Folders
Press the relative Button for open the folder and show the files

Buttons Files
Press the relative button for load a file in the **EDITOR**.

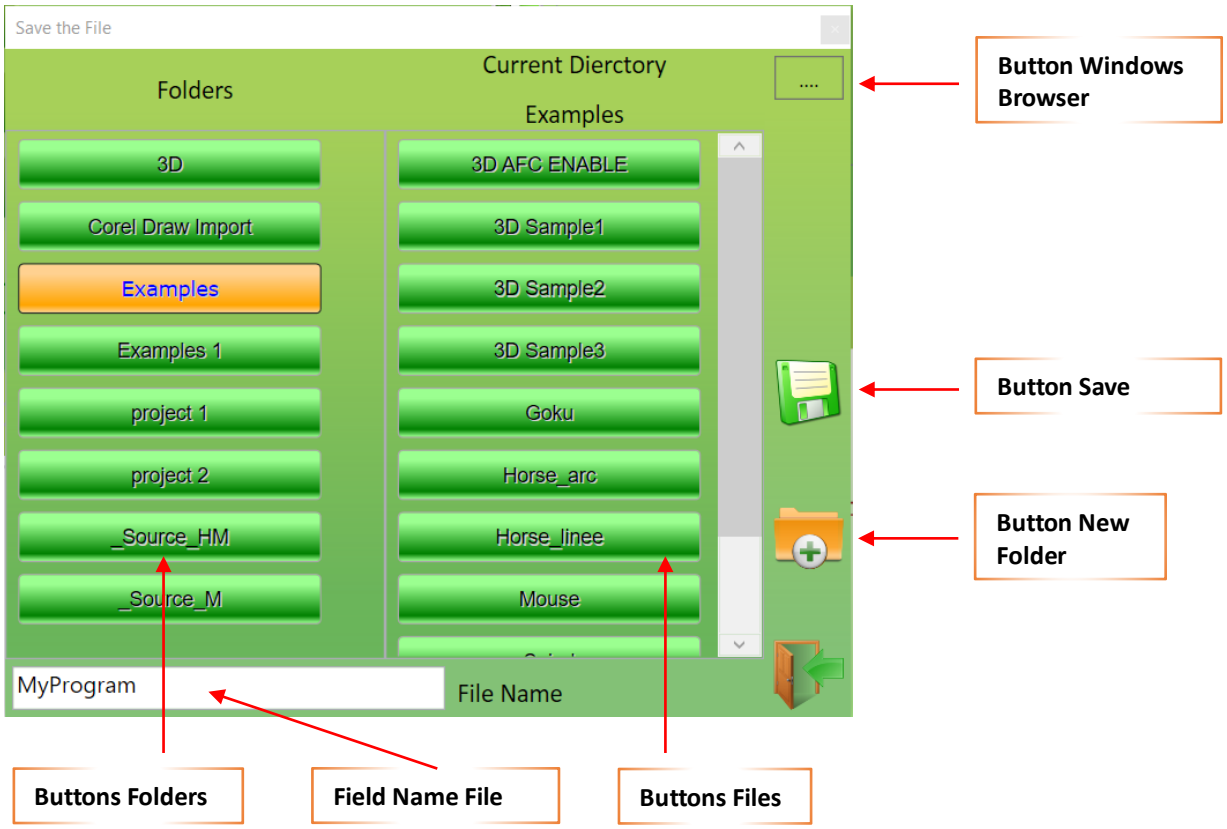
Button Windows Browser
Press this button for open the standard windows browser.

10.3 Save a Gcode File

For Save a Gcode file press the **BUTTON**:

Following the Save **BROWSER** is showed.

10.3.1 Us Browser - Save File



Buttons Folders

Press the relative Button for open the folder and show the files

Buttons Files

Press the relative button for Select the name file in the button.

Button Windows Browser

Press this button for open the standard windows browser.

Button Save

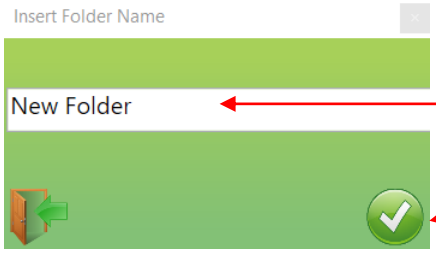
The file name inserted in the **FIELD NAME FILE** will be saved in the **SELECTED FOLDER**

Field File Name

Insert the file name.

Button New Folder

Press this button for create a new Folder**.**

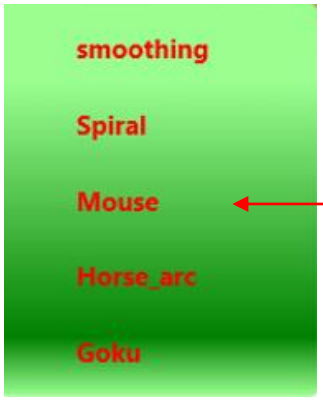


Insert The name of NEW FOLDER

Press OK for Confirm

10.4 Last Files Used

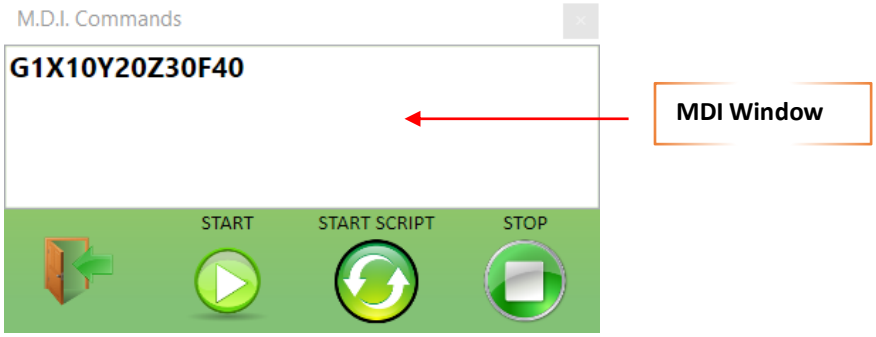
Is possible choose the files for load by the list of the **LAST FILES USED**.
Press the **BUTTON**:



Click for Load File

10.5 MDI Interface

The **MDI** interface allows to put direct Gcode commands.
For open MDI press **BUTTON**:



10.5.1 Button Start

The button **START** of **MDI** executes the **COMMAND** inserted in the **WINDOW MDI** in **NORMAL MODE**.
This means that the Gcode will be execute in the same mode of the **EDITOR WINDOW**.
All Gcode functions are managed.
This button **ISN'T ACTIVATED** during **PAUSE**.

10.5.2 Button Start Script

START SCRIPT of **MDI** executes the **COMMAND** inserted in the **WINDOW MDI** in **SCRIPT MODE**.
In **SCRIPT MODE** all functions are not activated – Only **G0-G1-M-F**.
This buttons **IS ACTIVATED** during **PAUSE**.

10.5.3 Button Stop

The **MDI** button **STOP is the same of** **STOP** of **COMMAND PANEL**.

10.6 Input Data Mask

IsoUs can use the "**INPUT DATA MASK"** combine with a Gcode file.
This allows to insert some parameters (IsoUs Variables) in direct Mode with a simple **DATA INPUT INTERFACE**.
When a Gcode files, contains a **DATA INPUT MASK**, the following **BUTTON** is showed in the **EDITOR**

When the button is pressed, the following window is showed **"INPUT PARAMETERS".**


```
1  //# INIT MASK AREA
2  $VAR1=10 //OFFSET X
3  $VAR2=10 //OFFSET Y
4  $_PARM_1=1 //ENUM VAR
5  $VAR2=1 //TEST VAR 1
6  $_PARM_7=1 //TEST VAR 2
7  $_PARM_10=1 //TEST VAR 3
8  //# END MASK AREA
9  F10
10 G1X[$VAR1] Y[$VAR2]
```

The **DATA INPUT MASK** can contain one or more **TABLES** (In this ex. We have two **TABLES** "**File Data**" - "**New Mask 1**").
Above the Gcode file that contains the **INPUT DATA MASK.**
The lines contained among **//# INIT MASK AREA** and **//END MASK AREA**, can't be modified by **EDITOR**.
Only the **INPUT DATA MASK INTERFACE** can modify these values.
The **INPUT DATA MASK,** can manage also **ENUMERATIVE VALUES**, that allows to insert **VALUES by DESCRIPTION**.

For insert a value, make a double click in the **VALUE FIELD**.
If the field is an enumerative value, a Combo Box with description will be showed.

Press Button **OK** for confirm all data input

For add an **INPUT DATA MASK** to Gcode file see New Input Mask

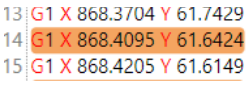
10.7 Break Points

IsoUs allows to use **BREAK POINTS** in the Gcode file
This functions, generally is used, for a **DEBUG** a Gcode file and it must be enabled from EDITOR CONFIGURATION
When the Break Point is reached, teh Gcode will go in **PAUSE MODE**.
For resume the execution press **BUTTON START**.
This procedure, allows to check the IsoUs Variables and also to use the **STEP MODE**.

10.7.1 Break Point Insertion

Click with Right Mouse on the desired line

If the break point is inserted, the line, will be showed in color **BROWN**.



10.7.2 Break Point Remove

Click with Right Mouse on the desired line that contains the Break Point

You can also use **REMOVE ALL BREAK POINTS** Function

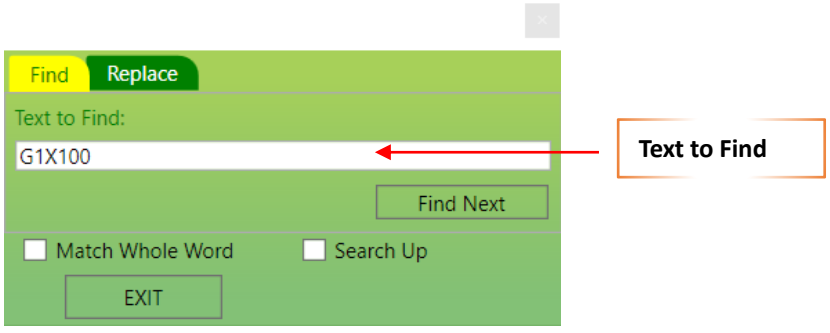
10.8 Options and Utility

For access to **OPTIONS** and **UTILITY** menù press **BUTTON**:

10.8.1 Find and Replace in the Gcode

Allows to **FIND** and **REPLACE** a Text in the Gcode.

Find

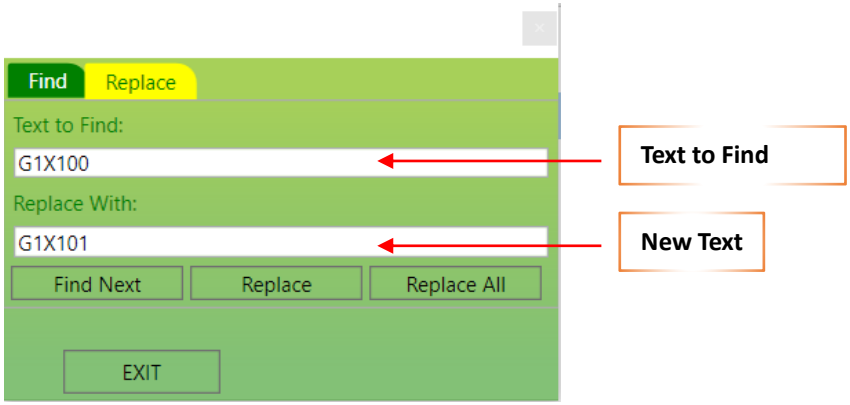


Insert the Text in the field **"TEXT TO FIND"**
Press **BUTTON FIND NEXT** to find.

Match Whole Word If Enabled, only the Whole Word will be found

Search Up Search Up or Down in the file

Replace

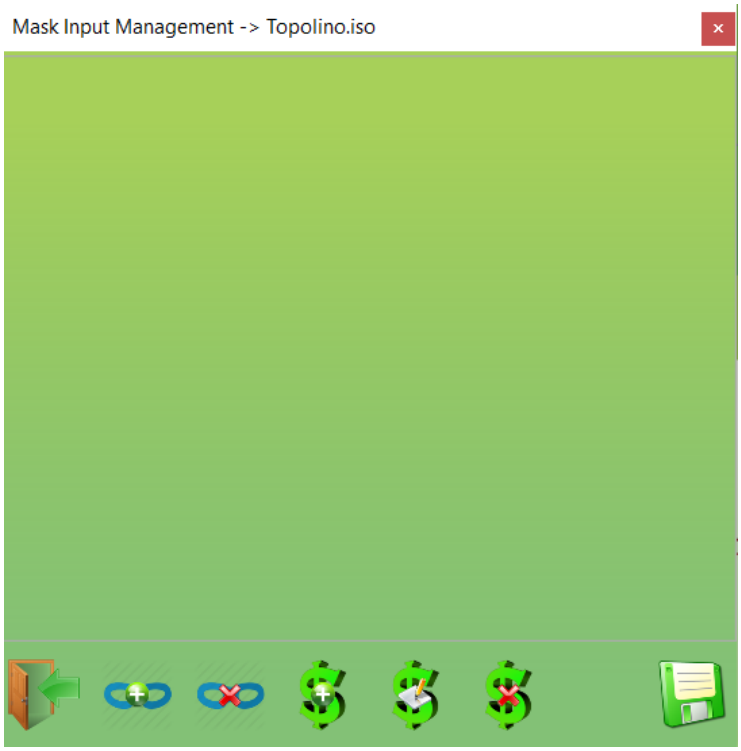


10.8.2 New Gcode

Press New Gcode for delete the **EDITOR**

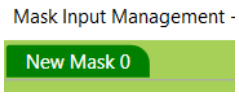
10.8.3 New Input Mask

Allows to Modify or Create a new **INPUT DATA MASK**
The **BROWSER LOAD FILE** will be open for choose the Gcode file for association the New Mask or Modify the existing Mask.



10.8.3.1 Add a New Table to Input Data Mask

For add a new Table to Input Data Mask press the **BUTTON:**.



10.8.3.2 Remove a Table from Data Input Mask

For Remove a Table from Data Input Mask press **BUTTON:**
(For select the table click on the Table Name)

10.8.3.3 Add a Variable to Table Selected

Select the Table and press the **BUTTON**:

Mask Name Insert The Table Mask Name

Variable Name Choose a Gcode variables that are present in the Gcode file.

Description Insert the description

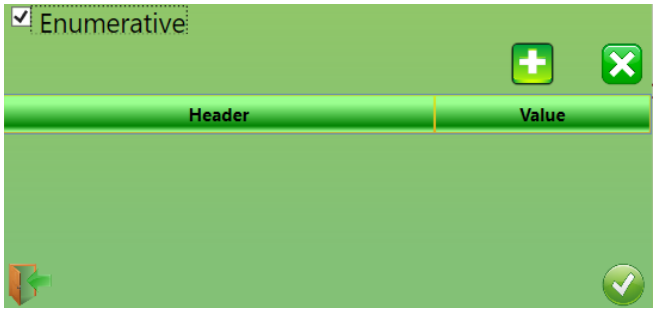
Minimum Value Insert the **MINIMUM** value

Maximum Value Insert the **MASSIMO** value

Default Value Insert the **DEFAULT** value

Decimal Place Insert the **DECIMAL PLACE**

Enumarative If this flag is activated, the menù for **ENUMERATIVE VALUES** will be showed



Add an Enumerative Field
Press **BUTTON**:

Header	Value
F0	0

Insert in the Field **HEADER** the enumerative description (make a double click).

Header
Enum Description Example

Insert in the field **VALUE** the enumerative value that will assigned when the field is select

Remove an Enumarative
Press **BUTTON**:

Confirm the Values Inserted
Press **BUTTON**:

10.8.3.4 Modify a Variable from the Table
Select the desired Variable and press **BUTTON**:

See Add Variable to Table Selected

10.8.3.5 Remove a Variable from Table
Select the desired Variable and press **BUTTON**:

10.8.3.6 Save the Data
Press **BUTTON**:

The Mask will be inserted in the **FILE GCODE**.

10.8.4 Show Demand Line

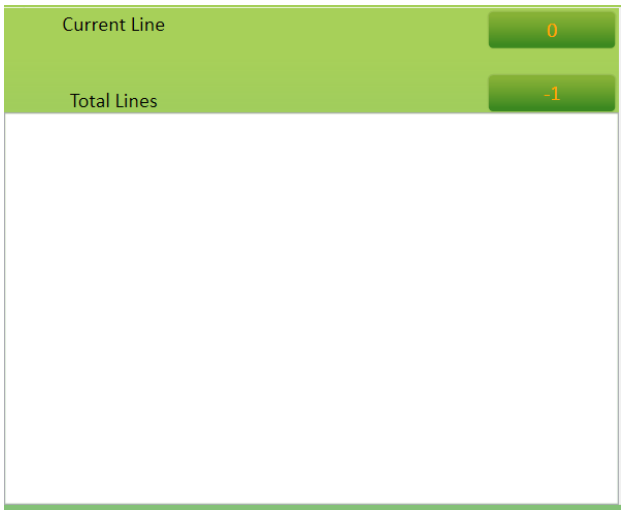
This flag **ENABLE/DISABLE** the **SHOW DEMAND LINE WORKED** during Gcode execution.

10.8.5 Show Real Line

This flag **ENABLE/DISABLE** the **SHOW REAL LINE** during Gcode execution.

10.8.6 Fast View

FAST VIEW is an option that allows to work Big Gcode files, this option doesn't loads the file in the **EDITOR** (for minimize memory usage) but executes directly the Gcode file.
When this function is activated, the Gcode file is loaded in **BMC MODE** (Block Mode Compiler), it means that the Gcode File will worked in **BLOCKS** each time (you can configure the number of blocks in the IsoUs configurator)
This allows to accelerate the Gcode execution when these have a BIG dimensions.
When a Gcode file is open, and it has a Big dimension, IsoUs Shows a message that indicates the use of **BMC MODE**



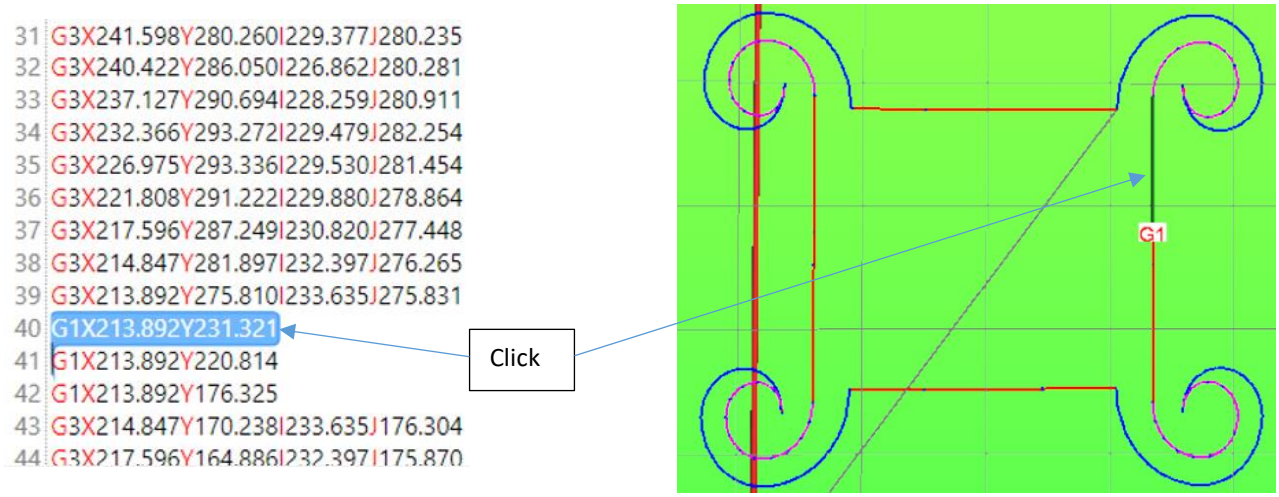
In **BMC MODE,** are showed only a portion of Gcode lines if is configured the option **FULL**.

LIMITATION OF BMC MODE

There must be no **CYCLES IF - ENDIF**
There must be no **CYCLES LOOP**
There must be no **GOTO to LABEL**
There must be no **GOSUB or IMPORT**

10.8.7 Show Line in Preview

This function allows to show the Gcode editor line in the Preview window. The Gcode must be simulated.
By left click on the Editor Gcode line, the line will be shown in the preview window



10.8.8 Remove Lines Numbers

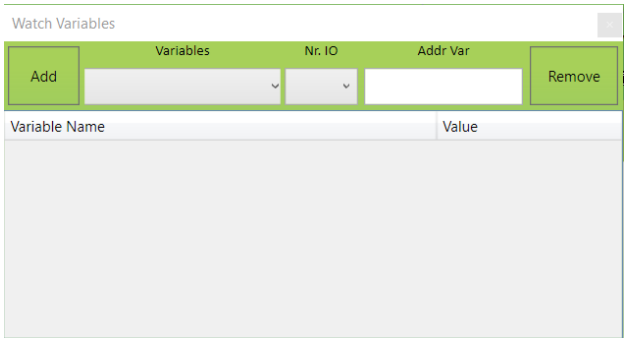
Removes the lines numbers in the Gcode – **Nxxx**, otherwise the lines numbers are considered as Label and can use many memory
Normally in IsuUs the lines numbers aren't considered.

10.8.9 Remove All Break Points

Remove all Break Points inserted in the Gcode file

10.8.10 Watch Variables

Allows to see the Variables Values or set the values in the variables

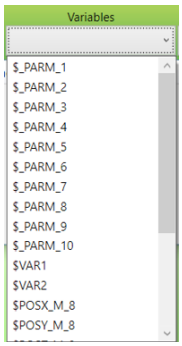


Variables Type:

All $ variables used in the Gcode file
All Addres Variables
All Digital Inputsi
All Digital Outputsi
All User generic Variables

10.8.10.1 Add a $ Variables in the watch window

Open the list



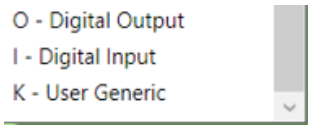
Choose the **$ VARIABLE** desired and press the **BUTTON ADD**.

10.8.10.2 Add a Variable by Address

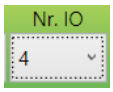
Select **Variables by Address** and insert the **Address** - press the **BUTTON ADD**.
The variable can be for TASK 1 or TASK 2

10.8.10.3 Add a Digital Input, Output or User Generic

Open the list
Choose type:



Choose the I/O number (Input, Output, User Generic) desired in the field Nr. IO



Press **BUTTON ADD**.

10.8.10.4 Write a Value in the Variable

Make a double click on the field value of the desired variable, insert the value and press Key CR of keyboard
WARNING
The digital inputs can't be forced to a value.

10.8.10.5 Remove a Variable from List

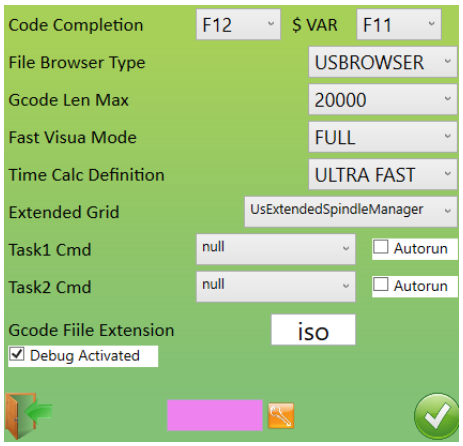
Select the Variable and press **BUTTON REMOVE**.

10.8.11 Preview After Load

If this option is activated, after the Gcode load, a **PREVIEW** is invoked

10.8.12 Editor Settings

EDITOR can be configured base on Your preferences.
PassWord LEVEL 0 or greater is required only for DEBUG FUNCTION activation (Break Points and Watch Variables)



10.8.12.1 Code Completion

Defines how the **INSTRUCTIONS HELP** is managed.

F1…F12 Help activated from Key F1-F12

10.8.12.2 $ VAR

Defines how the **VARIABLES HELP** is managed.

F1…F12 Help activated from Key F1-F12

10.8.12.3 File Browser Type

Defines which file Browser is used for LOAD and SAVE files.

WINDOWS Browser standard of Windows
USBROWSER Browser of IsoUs

10.8.12.4 Gcode Len Max

Defines the Max len gcode in Kbytes before, that the message, **BMC MODE** will showed
Default value **20000 Kb**

10.8.12.5 Fast Visua Mode

Defines how the **BMC MODE** is managed

FULL Some Gcode lines will be showed during the execution
NORMAL None Gcode lines will be showed during the execution

10.8.12.6 Time Calc Definition

It defines the precision of Time Calculation.

AUTO The algorithm is chosen based on Length of Gcode file
ULTRA FAST Algorithm ultra fast time valued for 35000 lines approximately 4 sec precision 5-8%
FAST Algorithm fast time valued for 35000 lines approximately 10 sec precision 4-7%
MEDIUM Algorithm medium time valued for 35000 lines approximately 16 sec precision 3-4%
PRECISION Algorithm precise time valued for 35000 lines approximately 33 sec precision 1-2%
HIGH PRECISION Algorithm high precision time valued for 35000 lines approximately 66 sec precision 0-1%

The real percentages can be different to those indicated

10.8.12.7 Extended Grid

Defines the component type to load in Extended Grid.
The Extended Grid is a space up or bottom to Gcode Editor Window
The component will be load to next run of IsoUs

UsExtendedSpindleManager	Load Extended Spindle Manager (see ExtendedComponenents)
UsExtendedMDI	Load Extended MDI
UsExtendedFavorites	Load Extended Favorites
UsExtendedState	Load Extended UsState
Null	Nothing

10.8.12.8 Task1-Task2 Cmd

Defines the CMD to Load automatically, in the TASK1 TASK2, at each Gcode.
If select AutoRun the CMD besides load is executed with the main process, otherwise the execution is by TASK.RUN
null No CMD Load

10.8.12.9 Gcode File Extension

Defines the Gcode File Extension. Default .**ISO**

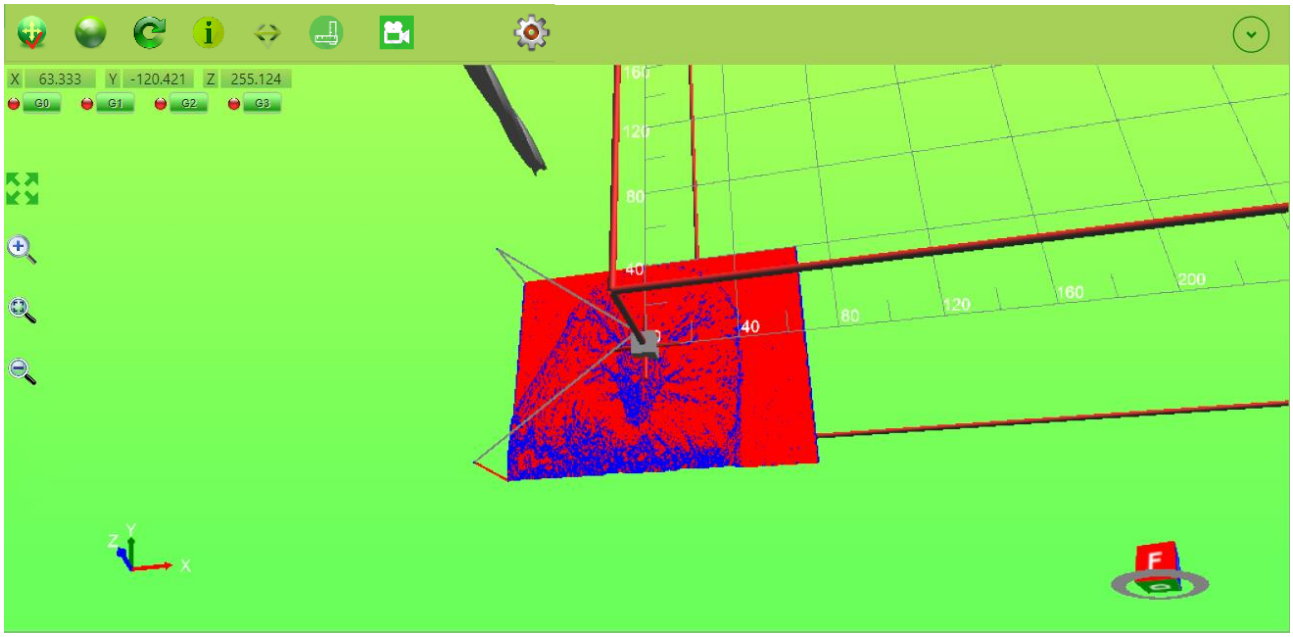
10.8.12.10 Debug Activated

This option is activable with **PASSWORD LEVEL 0** or greater.
If the option is activated is possible the managing **BREAK POINTS** and **WATCH VARIABLES**

Pres **OK**  for save the **CONFIGURATION**

11 PREVIEW Panel

PREVIEW allows to simulate a Gcode file.

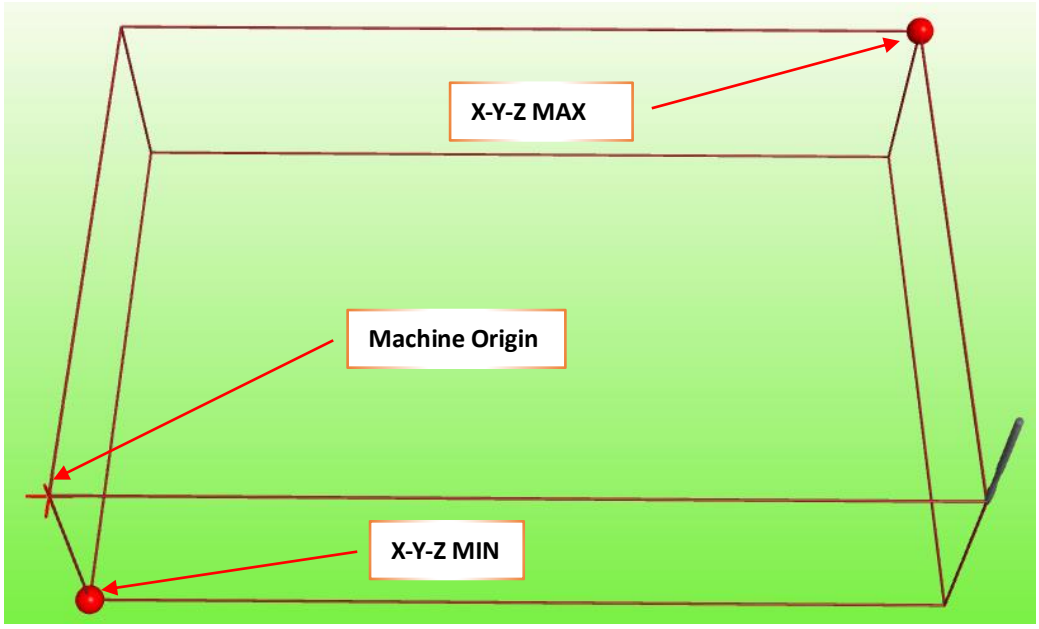


11.1 Simulate a Gcode

For simulate a Gcode, it must be load in the **EDITOR** and press **BUTTON PREVIEW**.
The Gcode file is simulated in **REAL MODE** all Gcode functions are worked and the result is really how it will work in the machine.

11.2 Machine Work Plane

The **MACHINE WORK PLANE** is showed as a **CUBE** with real dimensions set in the IosUs parameters **LIMIT X,Y,Z**



11.3 Zoom and Pan

With mouse buttons is possible to make **ZOOM** and **PAN** of entire area.

11.3.1 Zoom with Mouse

Use the mouse wheel for **ZOOM +** and **ZOOM -**

11.3.2 Zoom with resistive Touch

Use the following Buttons. These must be enabled in **CONFIGURATION PREVIEW**

 ***Zoom +***

 ***Zoom -***

 ***ZOOM Center***

11.3.3 Zoom with capacitive Touch

Use the fingers for **PINCH TO ZOOM**.

11.3.4 Pan with Mouse

Enable the button **PAN**:

Click with left mouse button in the area and drag

11.3.5 Pan with resistive and capacitive Touch

Enable the button **PAN**:

Use the finger and drag in the area.
If the **ROTATION** is activated, **DISABLE IT**

11.4 Preview Full Screen

Click on the button  for enlarge the Preview panel to Full Screen. Press again for restore the simulation panel

11.5 Draw Rotation

Is possibile rotation the draw in all directions.

11.5.1 Rotation with Mouse

Clcik with right mouse button and drag in the area.

11.5.2 Rotation with resistive Touch

Enable the button **ROTATION**:

Use the finger and drag in the area.

11.5.3 Rotation with capacitive Touch

Press the finger in the area for 1 sec without moves it until the square will showed:

Release the finger. Press new the finger and drag in the area

11.6 Origins and Offset

In Preview all informations about Origins and Offset are showed

11.6.1 Symbols

Minimum and **Maximum** Origins of Work Plane

Origins **ACTIVATED** (ex. G94 etc.)

Offset **ACTIVATED** (ex. G93 etc.)

Origins define in the **ORIGINS FILE**
(that doesn't means the origins activated)

HEAD Origins **ACTIVATED** (ex. H1)

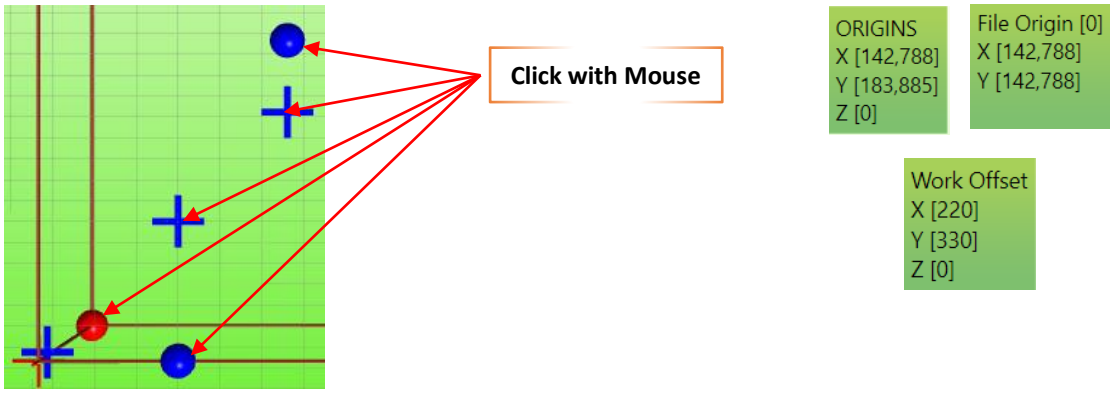
Machine Origins **X0Y0Z0**

Work Plane

11.6.2 Marker on Origins

For get informations about **ORIGINS** and **OFFSET** set, activate the **BUTTON**:

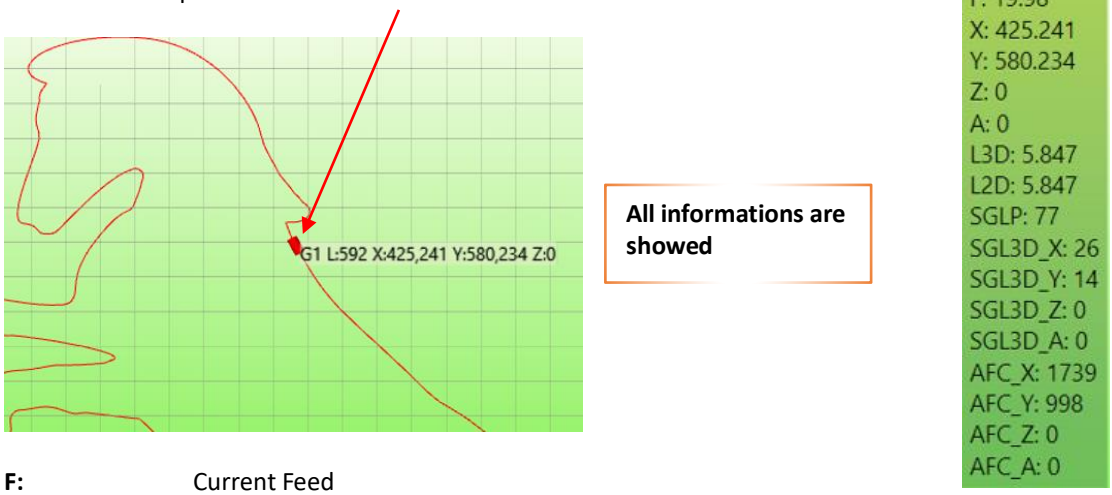
Following click with mouse on the origin symbol desired
The **MARKER** are showed based on configuration.



11.7 Gcode Line information

Activate **BUTTON**:

Move the muse pointer on the desired line:

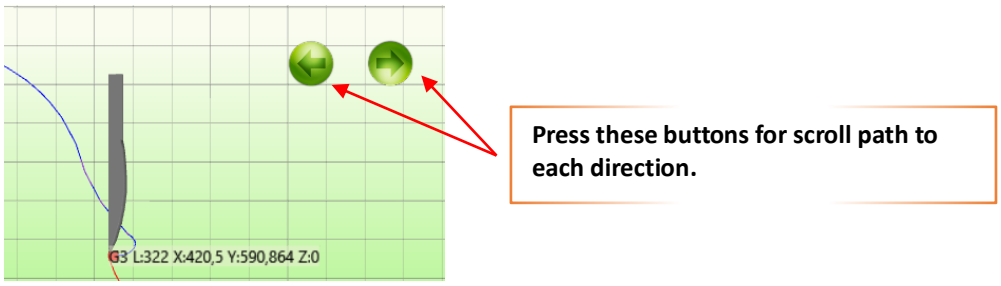


F: Current Feed
X,Y,Z,A: Axes values
L3D: Len 3D
L2D: Len 2D (ex: X,Y)
SGLP: Edge threshold (refer **MACHINE PARAMETER SGLP**)
SGL3D_ Edge threshold 3D (refer **MACHINE PARAMETER SGL3D_)**
AFC_ Refer **MACHINE PARAMETER AFC**
If the line is an ARC:
R: Arc Radius
ACCR: Centrifugal Acceleration Arc (refer **MACHINE PARAMETER ACC_RAGGIO_MAX**)

11.8 Show Path

For show path activate the **BUTTON**:

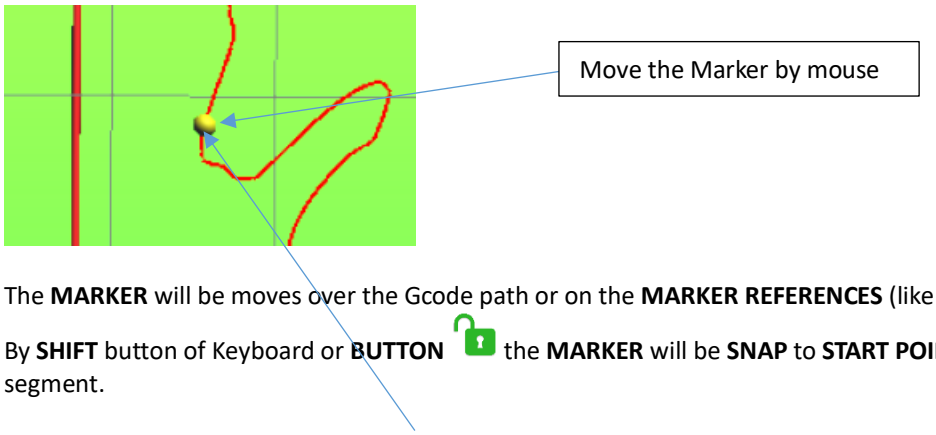
Click with mouse on the first desired line for activate **SCROLL PATH**:



11.9 Measures

For get measures from Gcode activate the **BUTTON**:

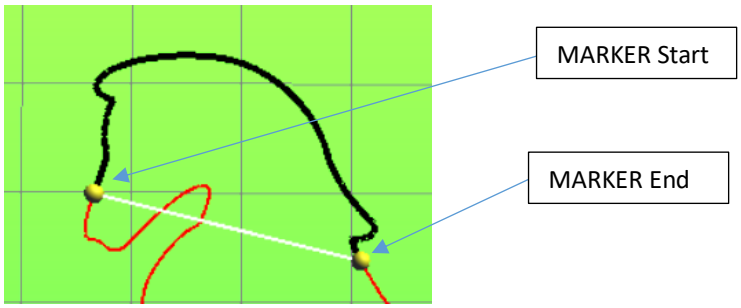
Move the first **MARKER** on the point desired for start measure reference:



The **MARKER** will be moves over the Gcode path or on the **MARKER REFERENCES** (like to WORK ORIGINS, OFFSET Etc.)

By **SHIFT** button of Keyboard or **BUTTON** the **MARKER** will be **SNAP** to **START POINT** or **END POINT** of Gcode segment.

Confirm the **START** point by mouse **CLICK** on the **MARKER**
After will be activated the **SECOND MARKER** , where are get the references for the measures:



Dx: 85.862
Dy: 31.994
Dz: 4.65
D: 91.747
Len(G0G1G2G3): 188.24
Len(G1G2G3): 85.425
Line Start: 3
Line End: 29
G0: 1
G1: 26
G2: 0
G3: 0
MinX: 200.927
MinY: 77.058
MinZ: 10.35
MaxX: 291.198
MaxY: 158.046
MaxZ: 15

Will be shown the following informations:

Dx,Dy,Dz	Distance **Start** to **End** in X,Y,Z
D	Total Distance from **Start** to **End** (Length of white line)
Len (G0G1G2G3)	Length of segments **G0,G1,G2,G3** included from **Start** to **End**
Len (G1G2G3)	Length of segments **G1,G2,G3** included from **Start** to **End**
Line Start	Gcode Line Number Marker **Start**
Line End	Gcode Line Number Marker **End**
G0	Number of **G0** detected from **Start** to **End**
G1	Number of **G1** detected from **Start** to **End**
G2	Number of **G2** detected from **Start** to **End**
G3	Number of **G3** detected from **Start** to **End**
MinX	**MINIMUM** value of **X** detected from **Start** to **End**
MinY	**MINIMUM** value of **Y** detected from **Start** to **End**
MinZ	**MINIMUM** value of **Z** detected from **Start** to **End**
MaxX	**MAXIMUM** value of **X** detected from **Start** to **End**
MaxY	**MAXIMUM** value of **Y** detected from **Start** to **End**
MaxZ	**MAXIMUM** value of **Z** detected from **Start** to **End**

11.10 Visione UsPxVision

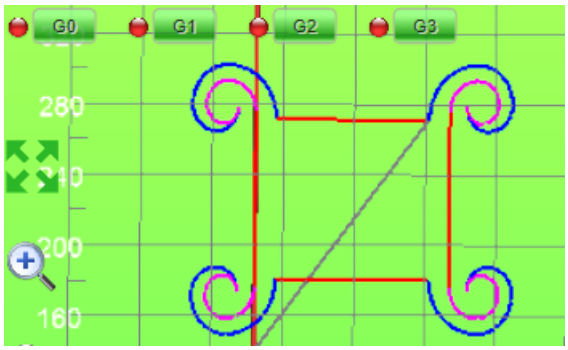
Show the machine vision by camera **UsPxVision**

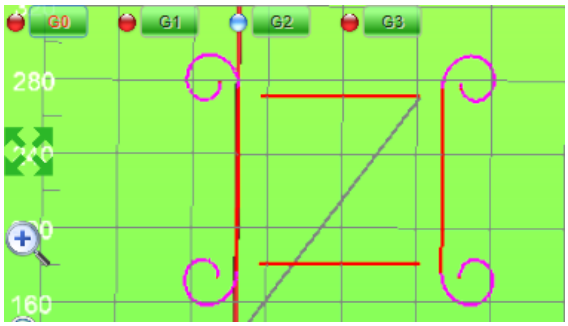
See UsPxVsion

11.11 Exclude Gcode Elements

The segments of G0,G1,G2,G3 can be exclude from the simulation by the **BUTTONS**:

The button enable or disable the segment visualization.



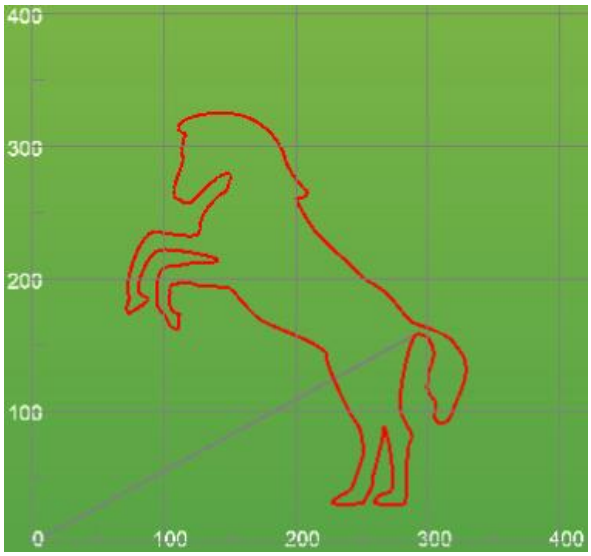


11.12 Standard Views

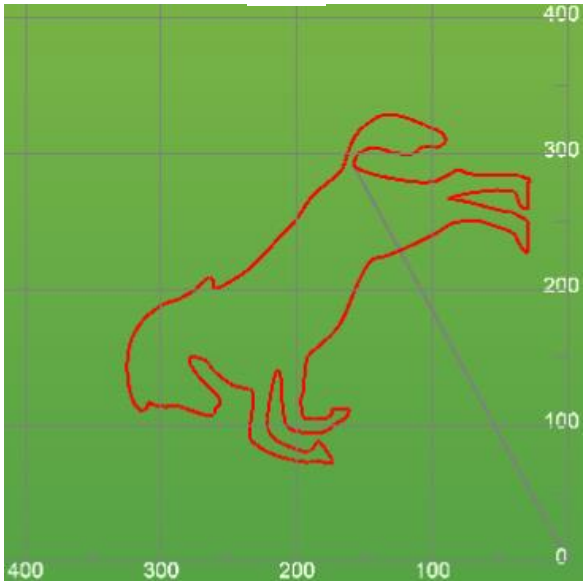
By the **EXPANDER BUTTON** is possible set the Standard Views:

All Buttons **F** (Front) **L** (Left) **B** (Back) **R** (Right) **U** (Up) **D** (Down) can set 4 predefined Views
The Button **SAVE** saves the current view

F

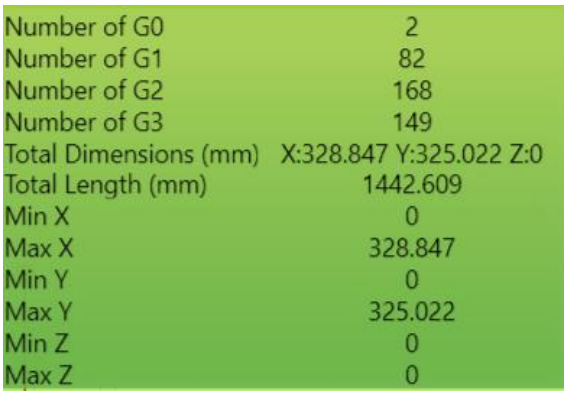


L

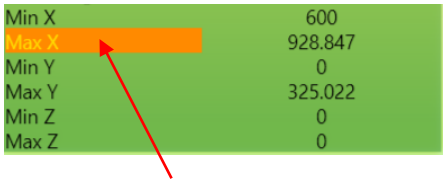


11.13 General Informations on Gcode

Push on **EXPANDER** to show the general informations about the Gcode in preview:



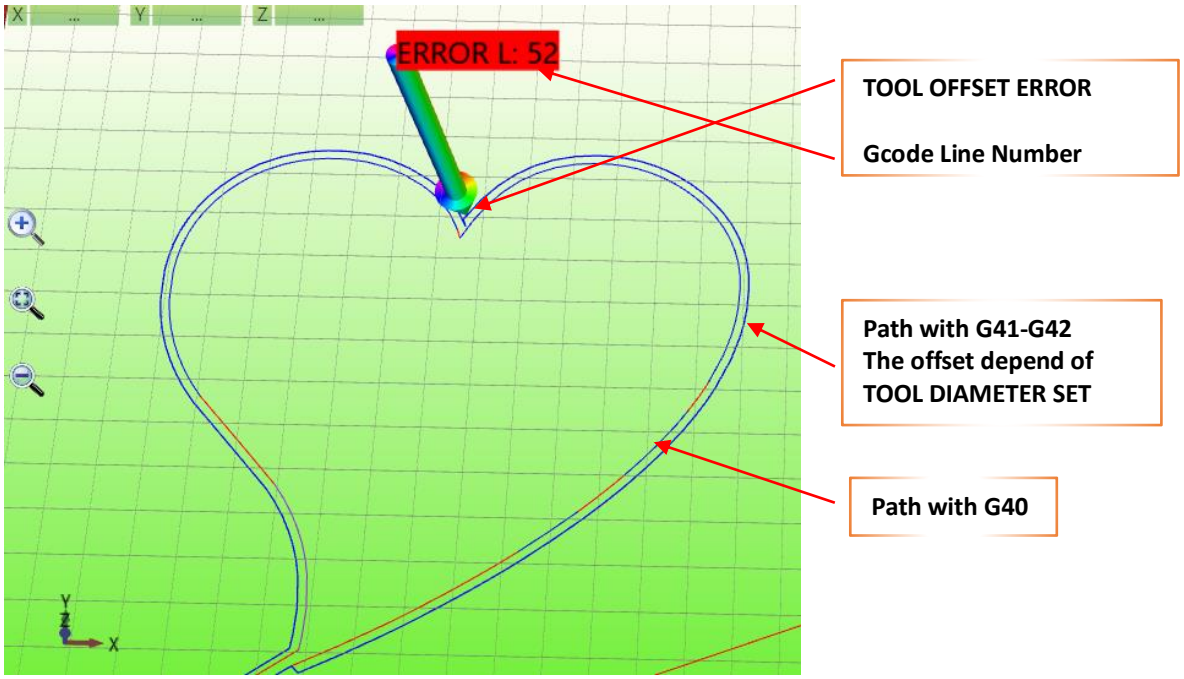
If the Gcode in preview will have some errors, the expander will open automatically



Click on the **LABEL** for view in the **EDITOR** the relative line that has generate the **ERROR**

11.14 Simulation with G41-G42

When the Gcode file contains the **G41/G42** functions (offset Tool), this is showed in the preview with possible **OFFSET TOOL ERRORS**



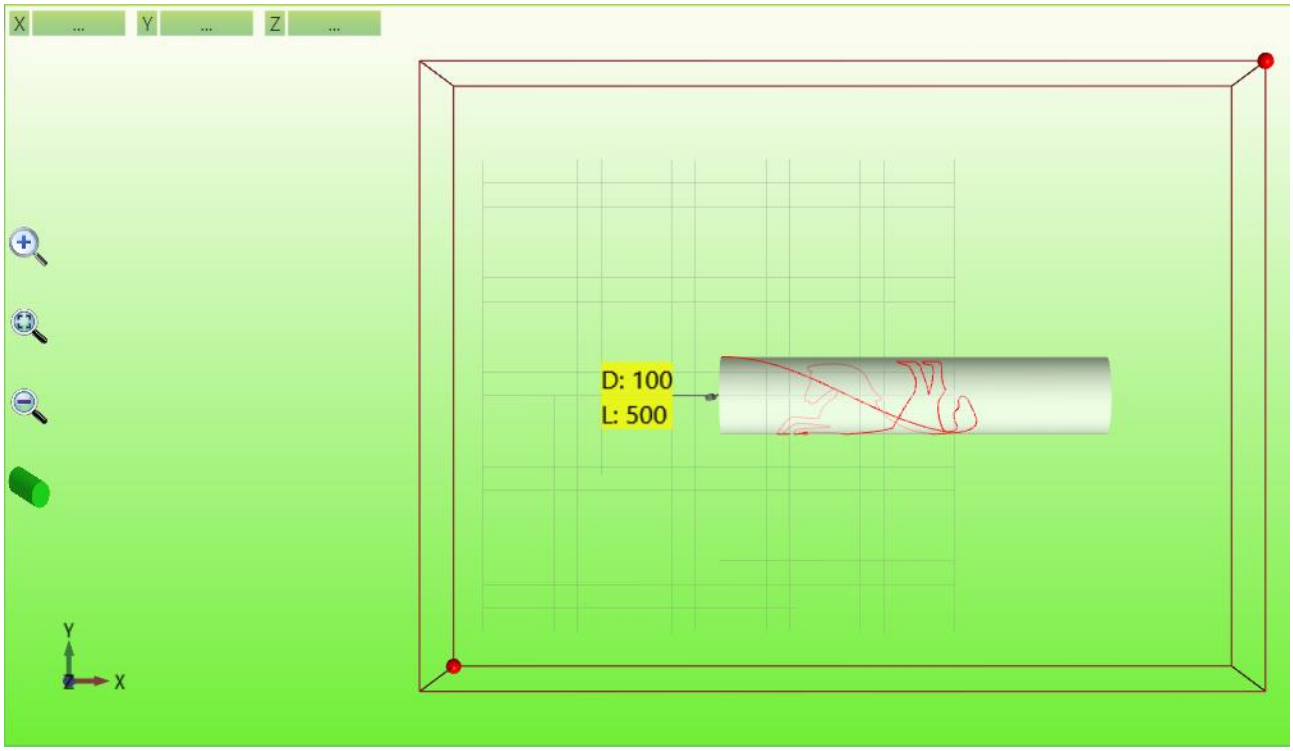
The path is showed based to TOOL DIAMATER SET in the Gcode, by function **D** or **Tn.**
Possible **ERRORS** caused by **TOOL DIAMETER TO BIG,** are showed with a **MARKER** and a **LABEL,** this indicate the line number that has generated the **ERROR**.

11.15 Rotative Axis Simulation

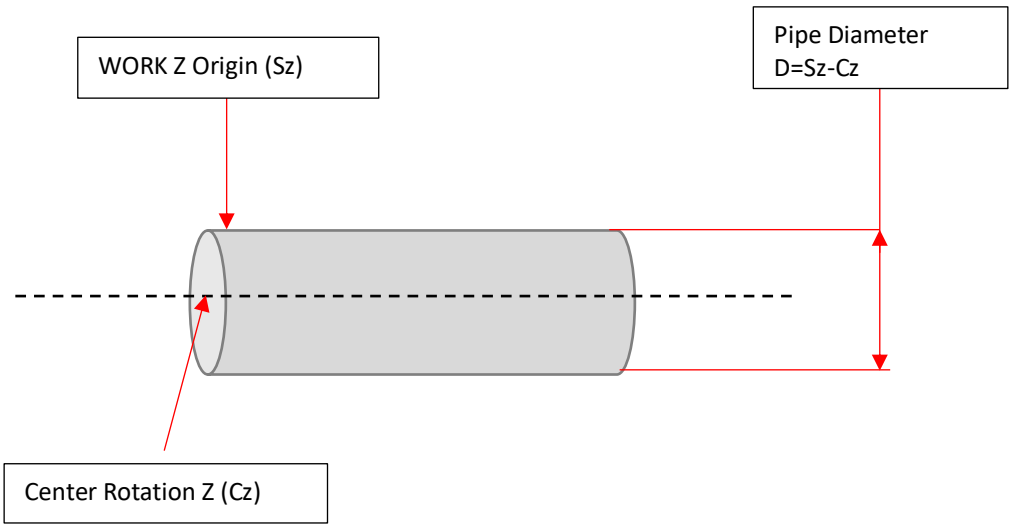
IsoUs can simulate the ROTATIVE AXIS in preview
For enable the simulation see Preview Settings – Rotative Axis

11.15.1.1 Rotative Axis X,Y like a lathe

IsoUs represents the Gcode in the **PIPE with DIAMETER SETTED**

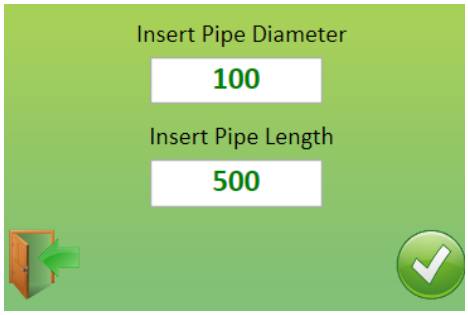


The PIPE Diameter is setted from the WORK ORIGIN of Z Axis and the CENTER Z parameter



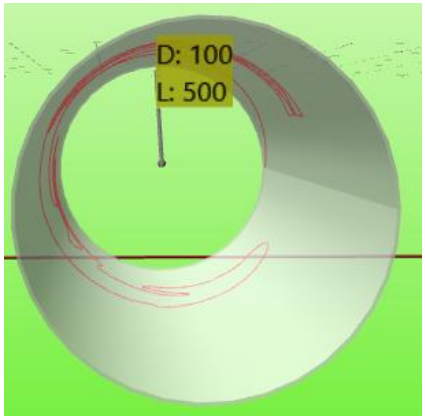
The final diameter is showed in the simulation

This diameter should be equal to desired diameter.
Is possible change this diameter with right click on button:

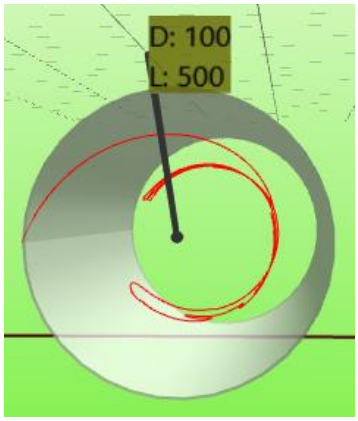


The preview shows the Z depth

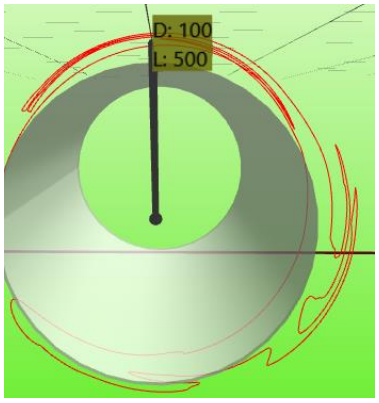
Depth Z=0



Depth Z<0 (with Z negative in down direction)

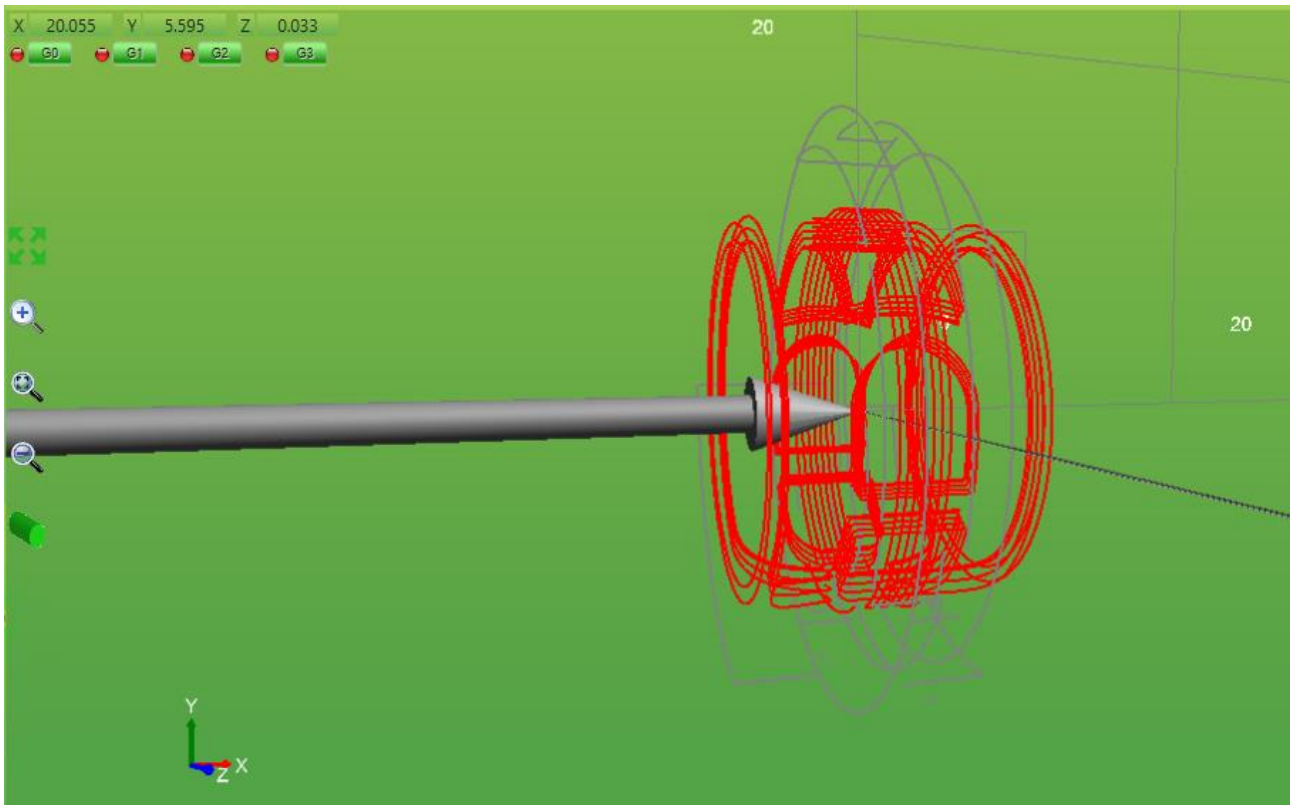


Depth Z>0 (with Z negative in down direction)



11.15.1.2 Rotative Axis X,Y,A

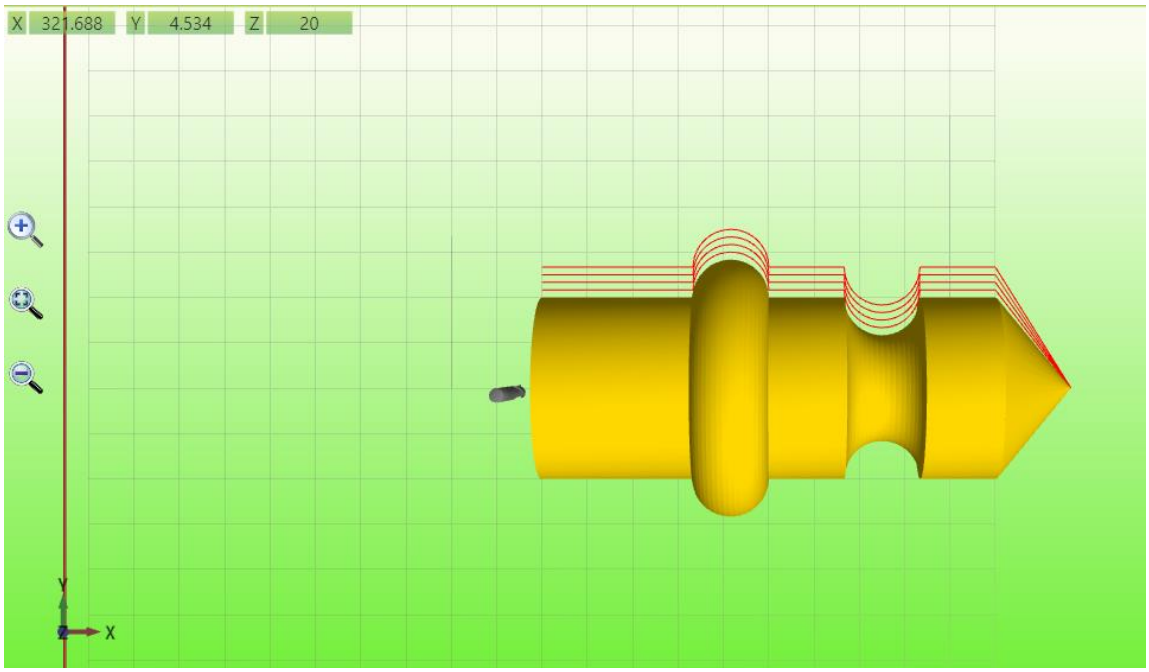
For machines that have X,Y linear and A rotative
For enable the simulation see Preview Settings – Rotative Axis



X-1.2 Y0
Z15.935
G1 Z10.935 F700
A119.507 F1700
A120.709
A121.88
A123.051
A124.221
A125.392
A126.595
A127.797
A128.967
A130.138
A131.309
A132.479
A133.682
A134.885
A136.055
A137.225
A138.397
A139.567
A140.769

11.16 Lathe simulation

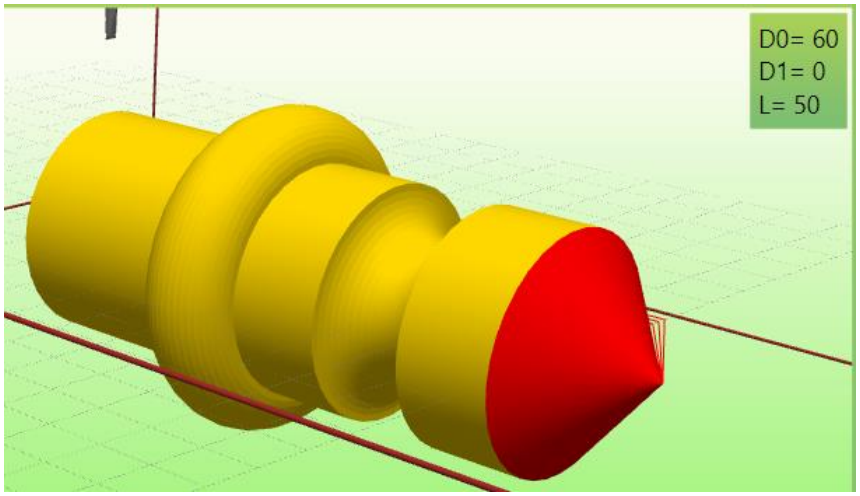
About LATHE MACHINES, IsoUs allows a special preview that can show the 3D solid model.
The Solid Diameter is obtained from X Axis value.
For enable the Simulation Lathe insert in Preview Settings Simulation Type type **LATHE**.
If enabled this type, the simulation for rotative axis, will be disabled



The final result is a real 3D model

With the button INFO

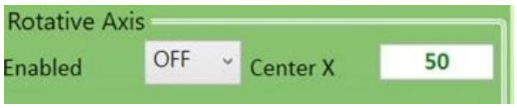
Is possible show the Diameter and Length by mouse. (move the mouse cursor on the desired path)

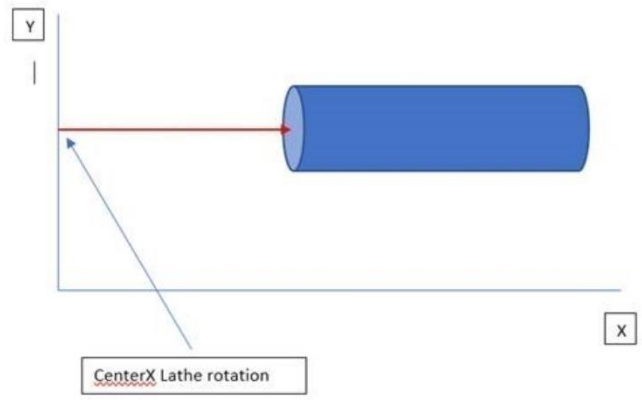


D0 Start Diameter
D1 End Diameter
L Length of path

The Lathe Preview, uses a parameter that indicate the Center of Rotation Axis referred to Y coordinate in Preview. This is got from the parameter Center X (see **Rotative Axis**)

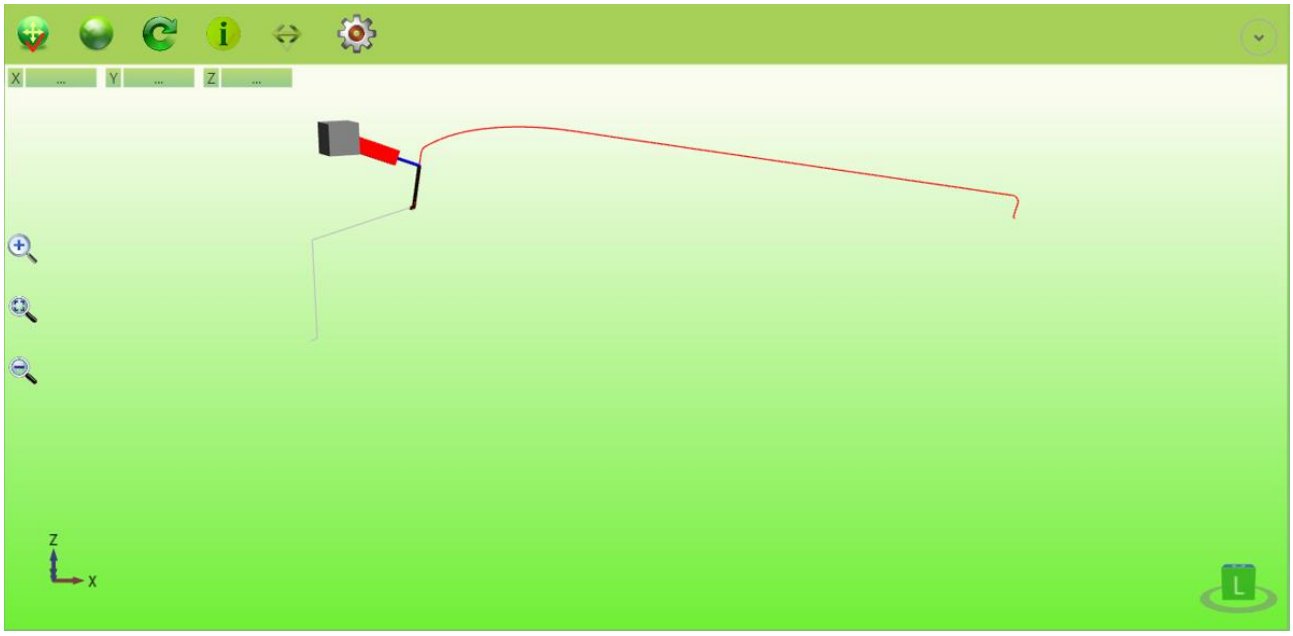
Warning: this parameter is indicated as Center X, but it is referred to Y axis in the Preview
In this case, the rotative Axis Enabled Must be OFF





11.17 5 Axes RTCP Simulation (Rotate Tool Center Point)

This simulation is for the 5 Axes machines with RTCP in A,C Axis.
The parameters for the rotation Axes are get from the machines parameters section RTCP
This simulation is enabled from Preview Settings – Cursor Type

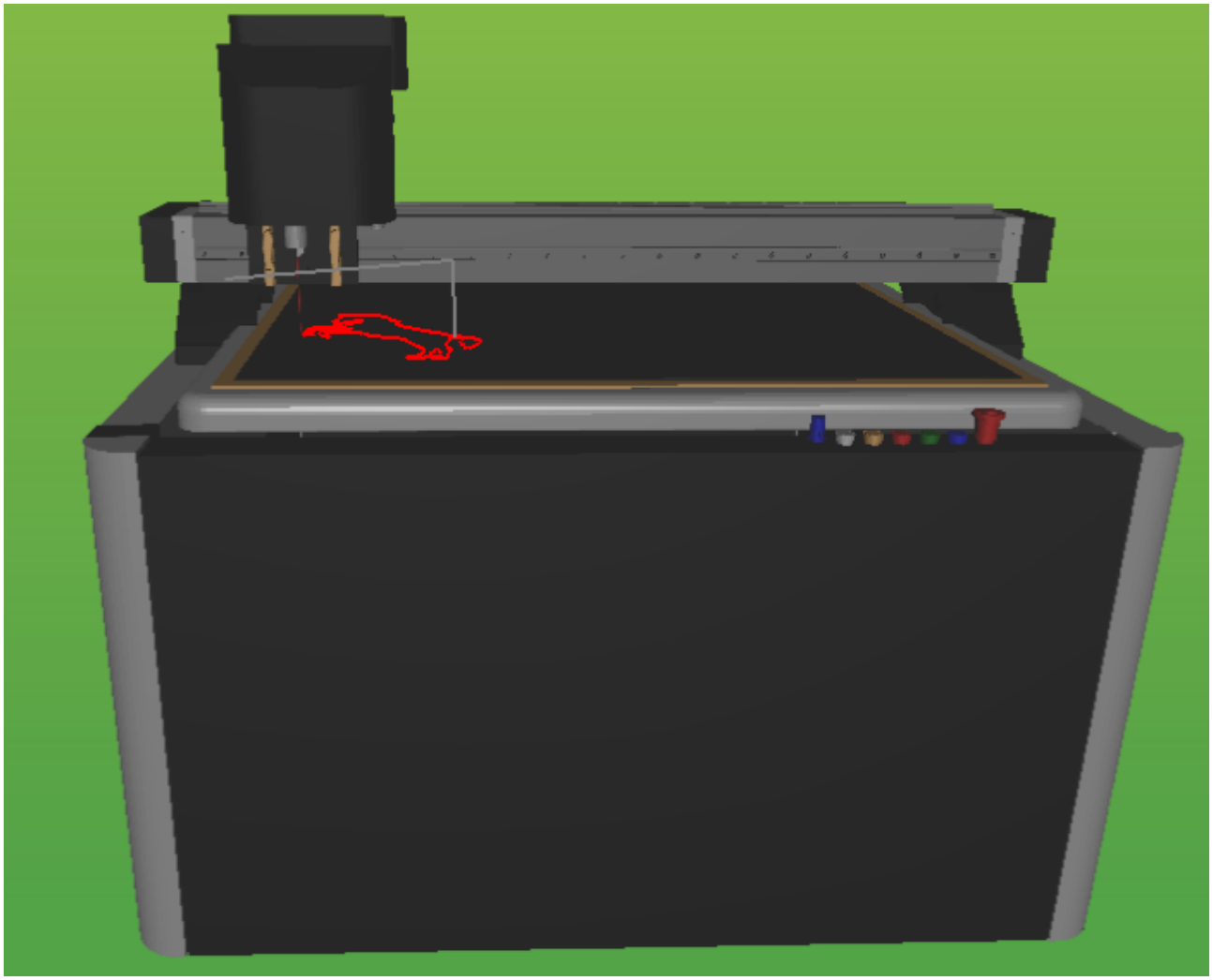


11.18 Real Machine Simulation (RMS)

The Real Machine Simulation allows to have a 3D model of machine like to **Real Machine**.
For configure a machine is used the "**Machine Builder**".
The simulation is enabled from Preview Settings – Cursor Type

The RMS allows the following features:

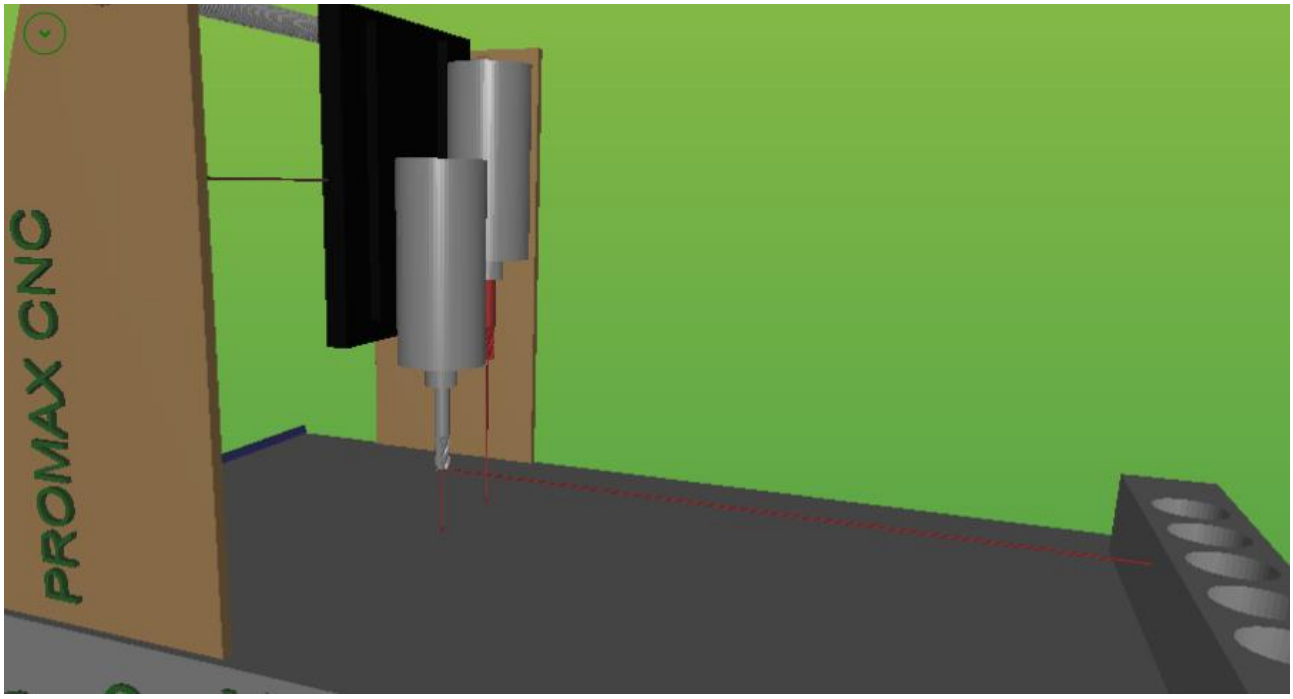
TEST AXES COLLISIONS (Test Collisons)
D.M.L.U. (Dynamic Manual Limits Update) Dynamic limits control from manual movimentation
P.O.M. (Preview On Material) Show Gcode Path on Material

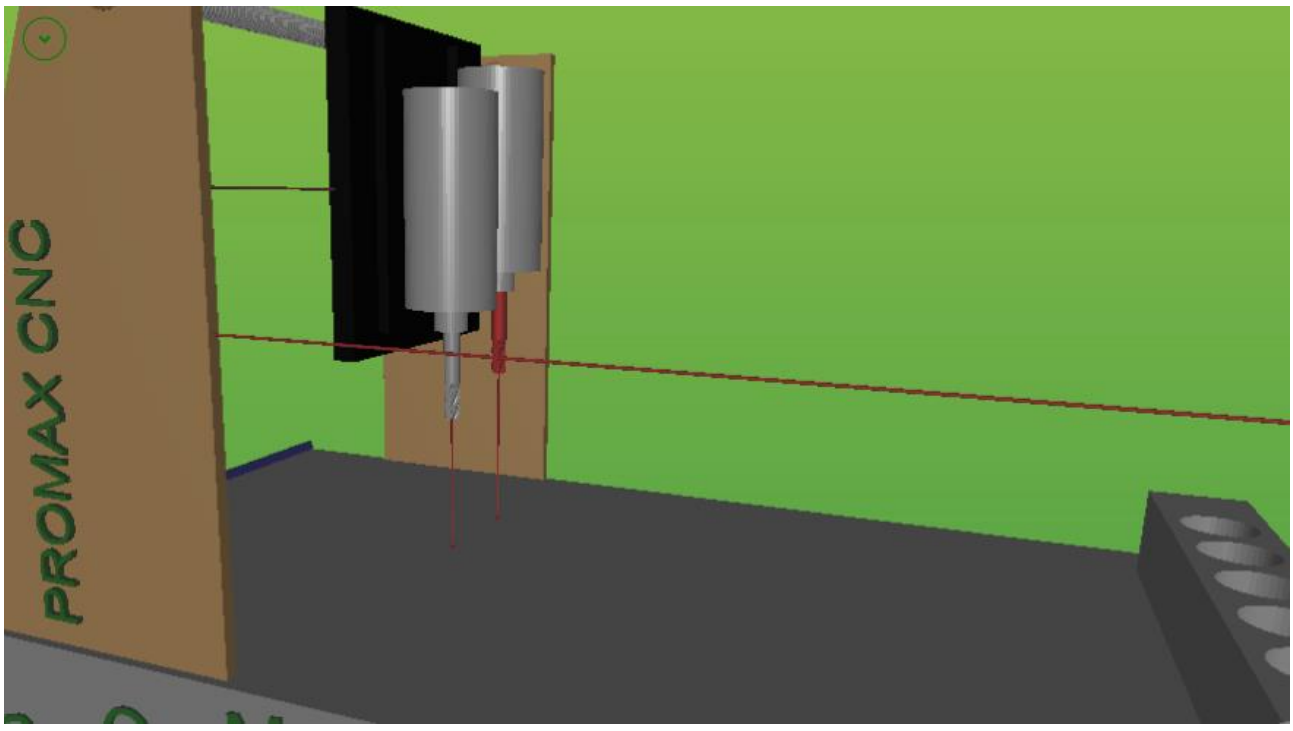


11.18.1 D.M.L.U (Dynamic Manual Limits Update)

Allows to set in automatic mode the Axes limits during the manual movements.
For enable this function : **Preview Settings->General->Enable DMLU Marker**.
Is possible also set a tolerance for limits : **Preview Settings->General->Collision Tolerance**

By this function the axes stroke is automatically update based the axes position and mechanical parts.



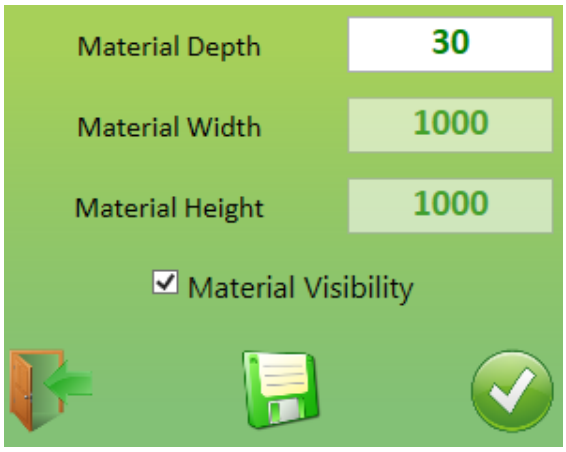


11.18.2 P.O.M (Preview On Material)

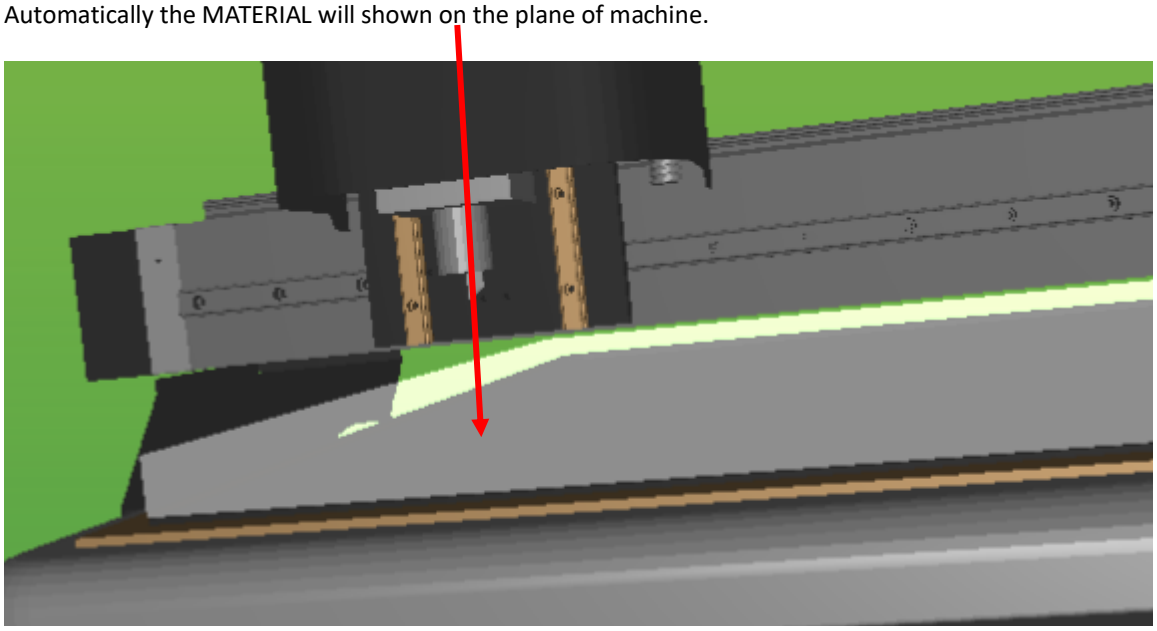
Allows to show the Gcode path real position on the material.
This function insert the MATERIAL with real Depth on the plane of machine.

Click on Button 

Insert Depth Material:
Press Ok for accept and Save for save configuration



Automatically the MATERIAL will shown on the plane of machine.



This allows to see the real MATERIAL dimensions (Width, Height, Depth)
Now the Gcode path will shown in a position relative to MATERIAL position.
For enable by Gcode is necessary set the Preview parameters $[Pn] for simulate TOOL ON/OFF

$[P15]=1 ***Laser ON***
$[P15]=0 ***Laser OFF***
$[P16]=1 ***Tool ON***
$[P16]=0 ***Tool OFF***

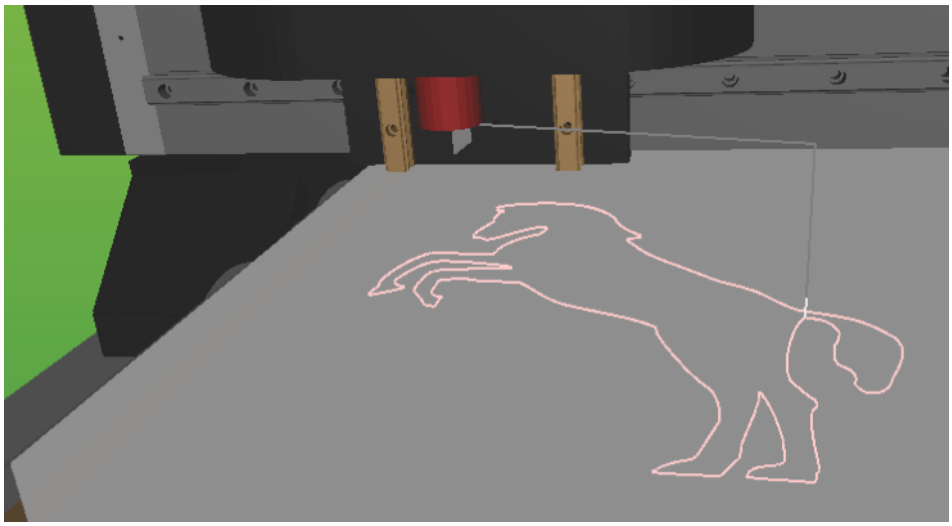
These parameters can be insert in the **MACRO** for tool management.

TRACE COLORS

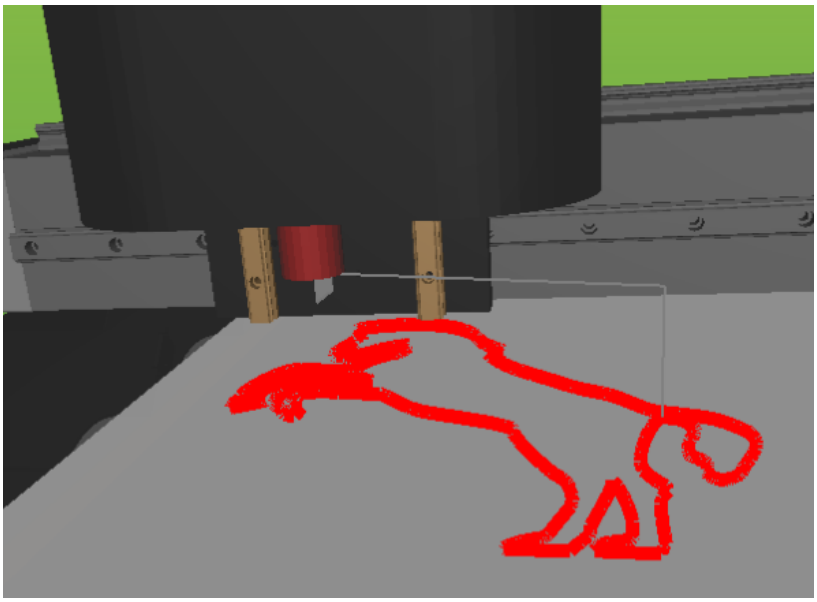
Tool Toll. + Line Color	Trace OVER MATERIAL
Tool Toll. - Line Color	Trace UNDER MATERIAL
Tool Off Line Color	Trace with Tool OFF

```
F10
G60
$[P16]=1 // TOOL ON
G0 X291.198 Y158.046
Z-110
G1 X290.722 Y157.62
G1 X290.195 Y156.943
G1 X289.743 Y156.166
G1 X288.84 Y154.461
```

Tool inside the material (correct):

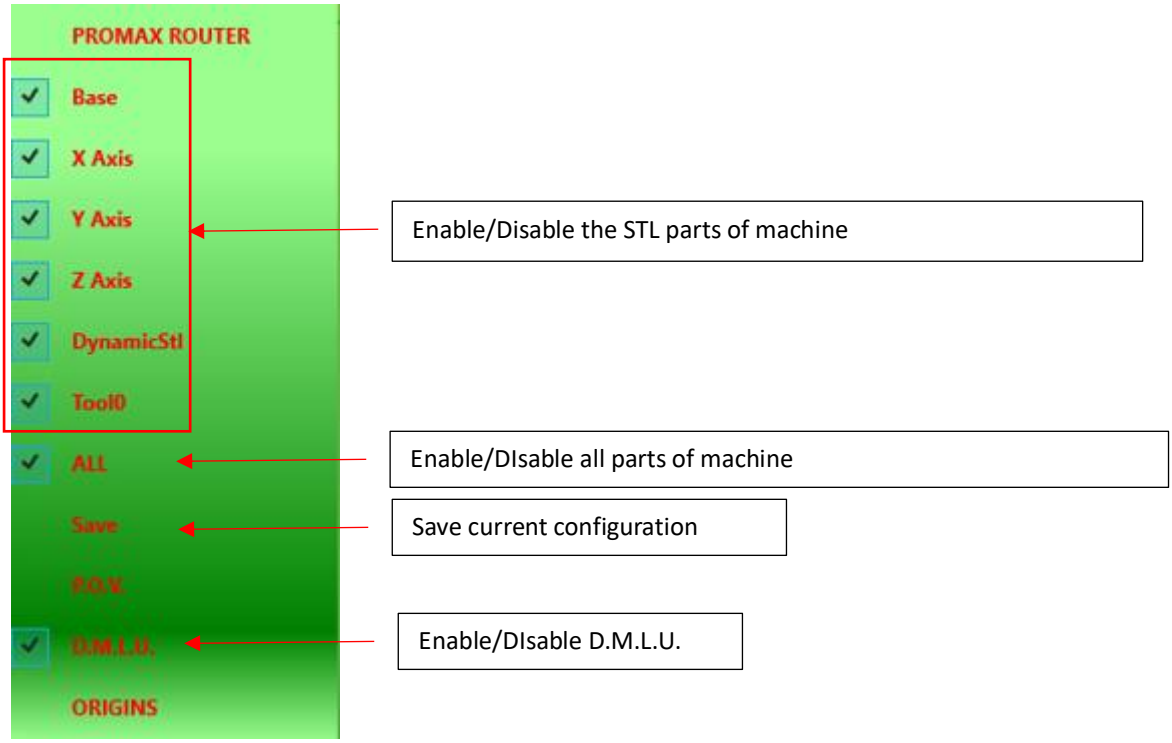


Tool Over the material (no correct):



11.19 Parameters managements R.M.S.

By the **Expander** button is possible to set the R.M.S. parameters

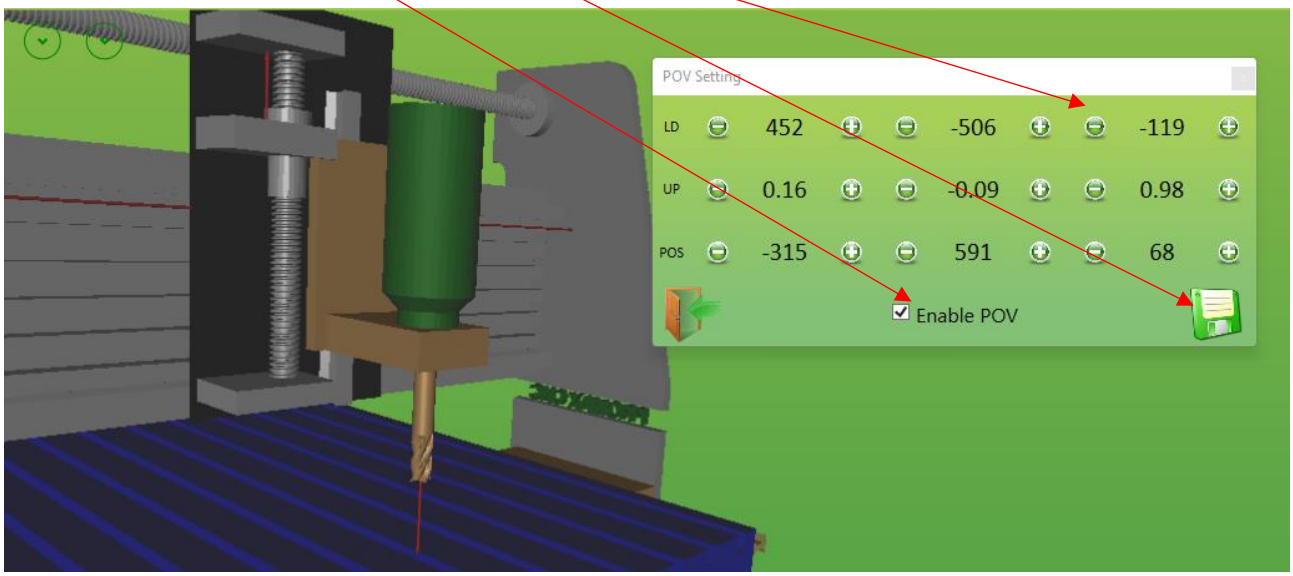


P.O.V. (Point of View)

Allows to set a **Point Of View** when the machine is in RUN. The **CAMERA** will be move for maintain the **Point Of View** set.

The view can be moved by mouse or by **BUTTON**.

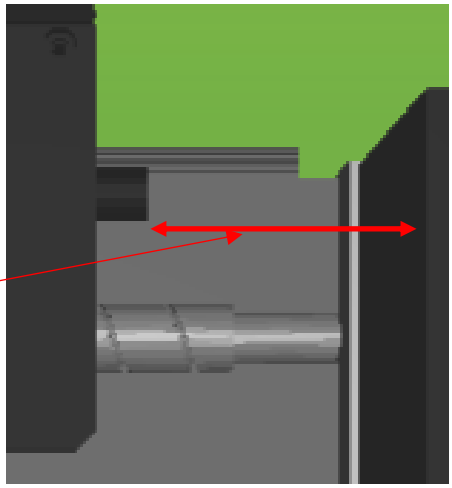
Choose the view, enable the **P.O.V.** and click **SAVE** for save the current view.



ORIGINS

For have a correct show of Model 3D respect of real machine, the model 3D parts must be set in the correct position like the Real Machine (home position). In each part of model 3D, can be insert the 3D parts as ORIGINS.
The ORIGINS are the pieces of Real Machine where can be measured the distance (ex: by caliper) and after is possible set the same measure in the model 3D.
Ex:

In this example, the parts of Real Machine that can be measured are indicate by RED arrow.

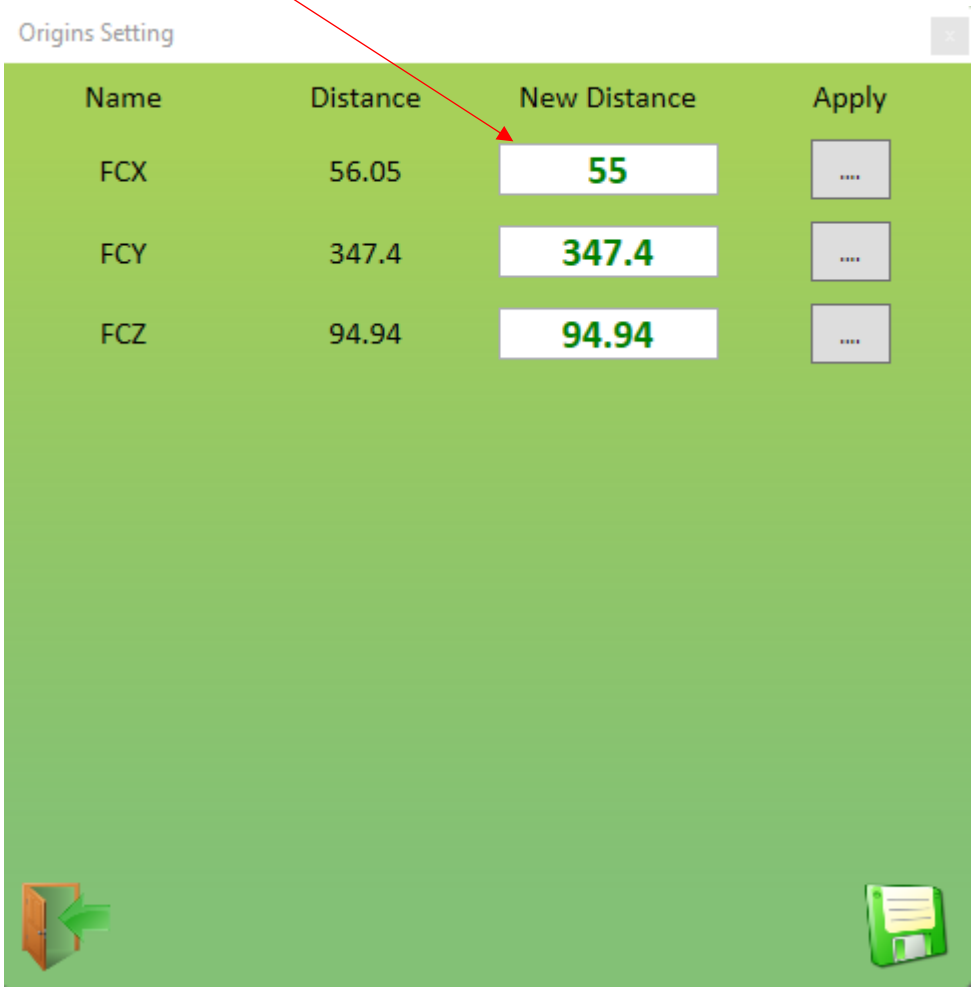


1) Measure the distance by caliper in the real machine
2) Write the distance in the Model 3D

The Model ORIGINS are defined during the configuration (one origin for each axis)

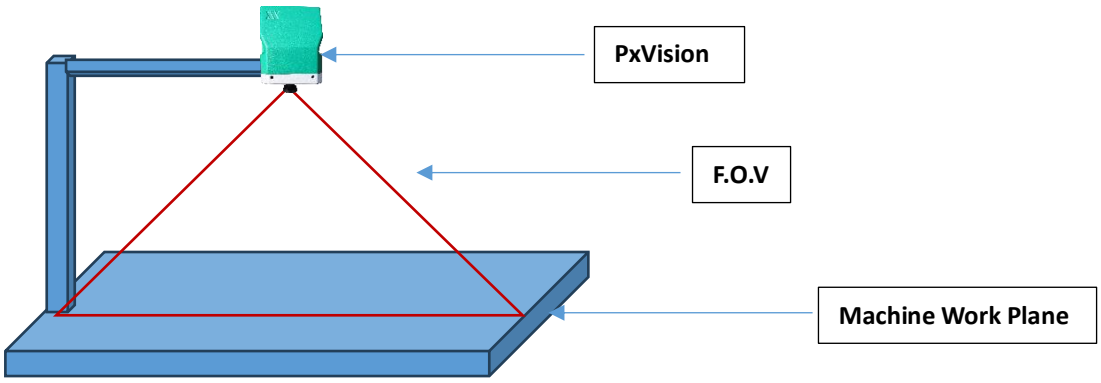
REAL DISTANCA mm 55

Insert in the **ORIGIN** the value measured in the real machine
Press APPLY and SAVE for save the configuration

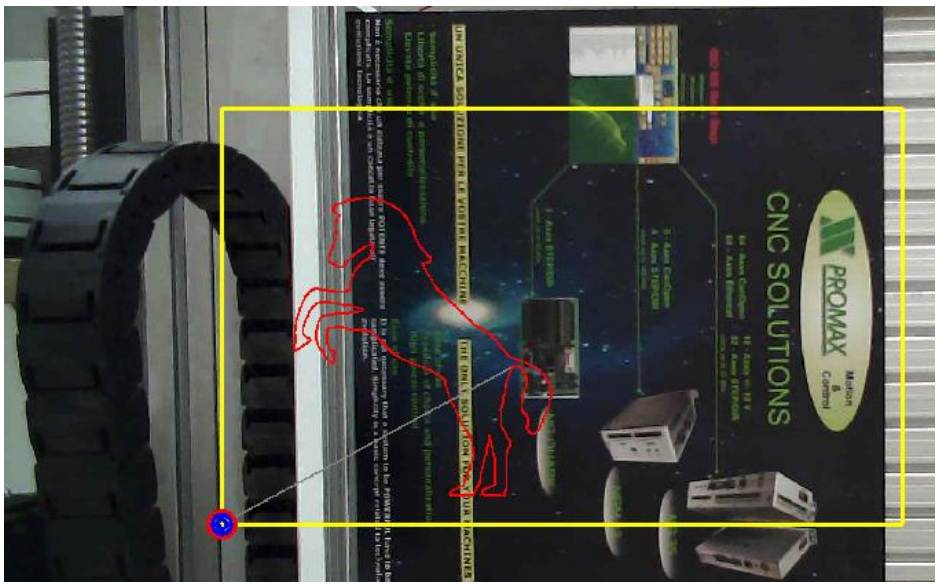


11.20 UsPxVision simulation

The UsPxVision use a Camera (PxVision) for enable e Real Time view of work plane of machine
This allows to see where is worked the Gcode Part Program and is possible correct same parameters



Example



WARNING
If the function is activated by **RIGHT CLICK OF MOUSE**, it's running in **VIDEO MODE**
This **MODE** is protect by Password

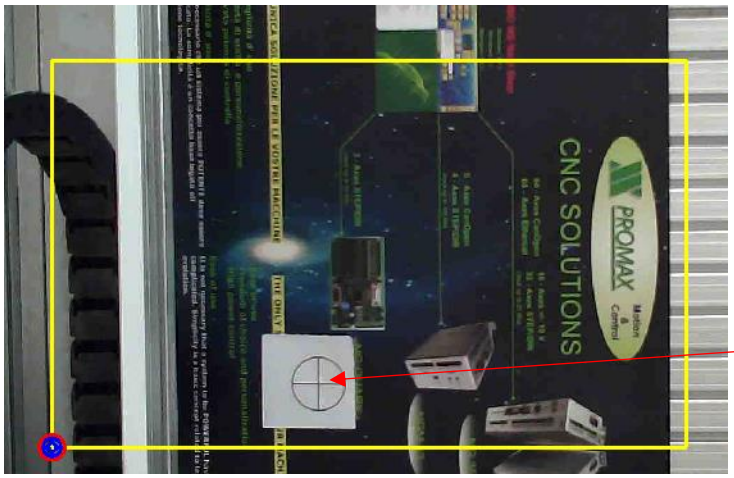
11.20.1 Menu

11.20.1.1 Origins and ROI

Allows to define the origins parameters and the FOV of camera

Work Plane Origin

Defines the **WORK PLANE ORIGIN X,Y** of machine.
This allows to have a **REAL VISION** from simulation and machine.
The Work Plane Origin of UsPxVision must be the same of machine.
In the following example, a **MARKER** is insert of **REAL MACHINE OPRIGIN**.
After click with mouse on the center of marker for acquire the position of Work Plane (Yellow Rectangle)



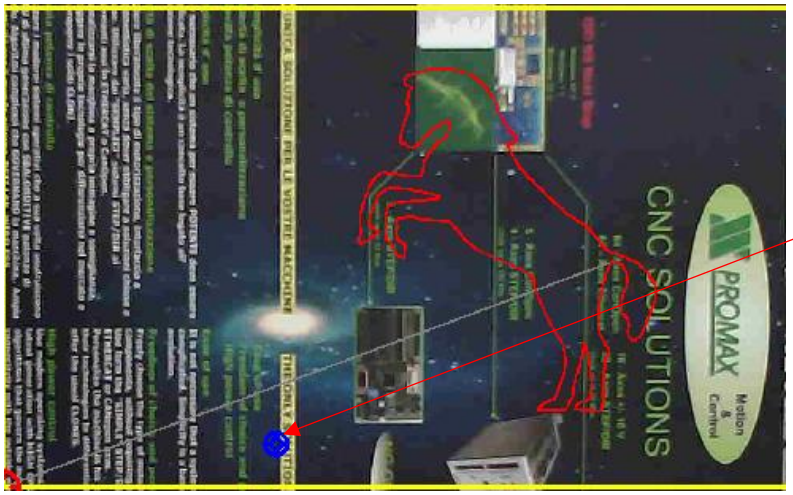
New origin acquired

The YELLOW RECTANGLE is the REAL WORK AREA of machine.

Work Origin

Work Gcode Origins definition

Click with mouse in the desired point



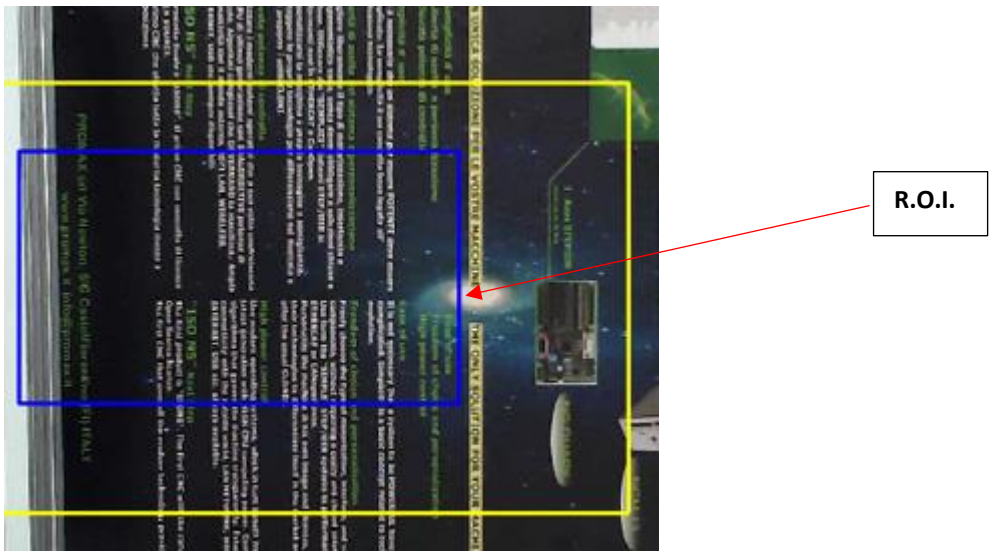
The Gcode is translated at new origin.

Reset Work Origin

Reset Work Origin X=0,Y=0

Image R.O.I. (Region Of Interest)

Select a R.O.I. of image. Only the R.O.I. will be shown.
Drag the mouse from start point to end point.

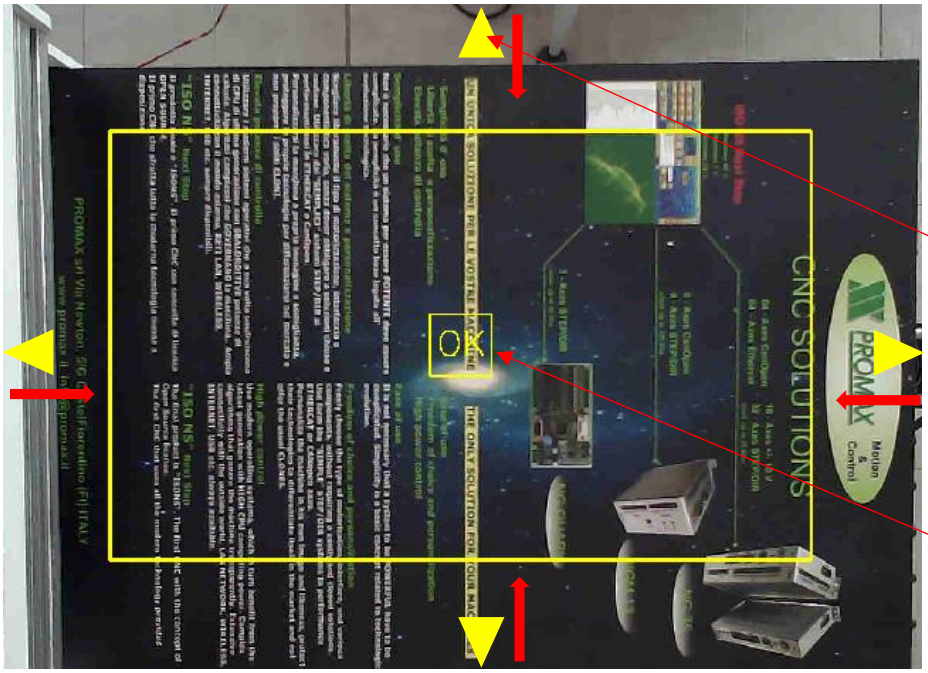


Reset R.O.I.

Reset R.O.I.

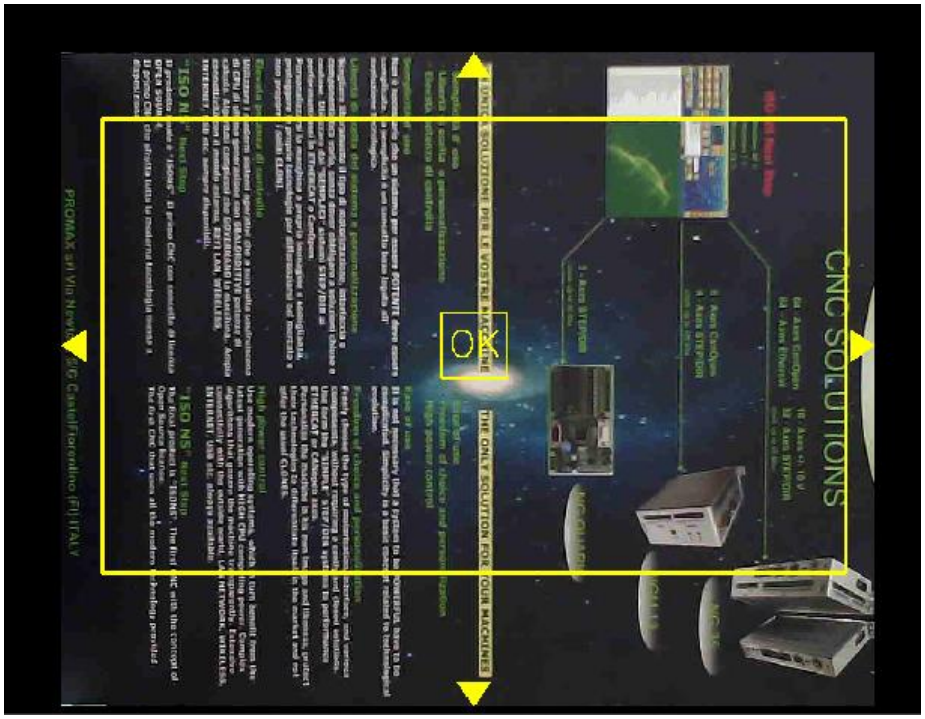
Image Border

Allows to set a BORDER Dx,Sx,Up,Down for remove the parts of image



Drag the Yellow cursors up to the desired point

Press button OK for confirm



Reset Image Border

Reset the selected border

11.20.1.2 Markers

 Markers management

Show Grid
Show/Hide Grid

Show Origin
Show/Hide Work Origin

Show Heads
Show/Hide Heads Marker

Show Marker Axes
Show/Hide Axes Marker (Position of Axes)

Show Work Plane
Show/Hide Rectangle Work Plane

Show Probe
Show/Hide Probes

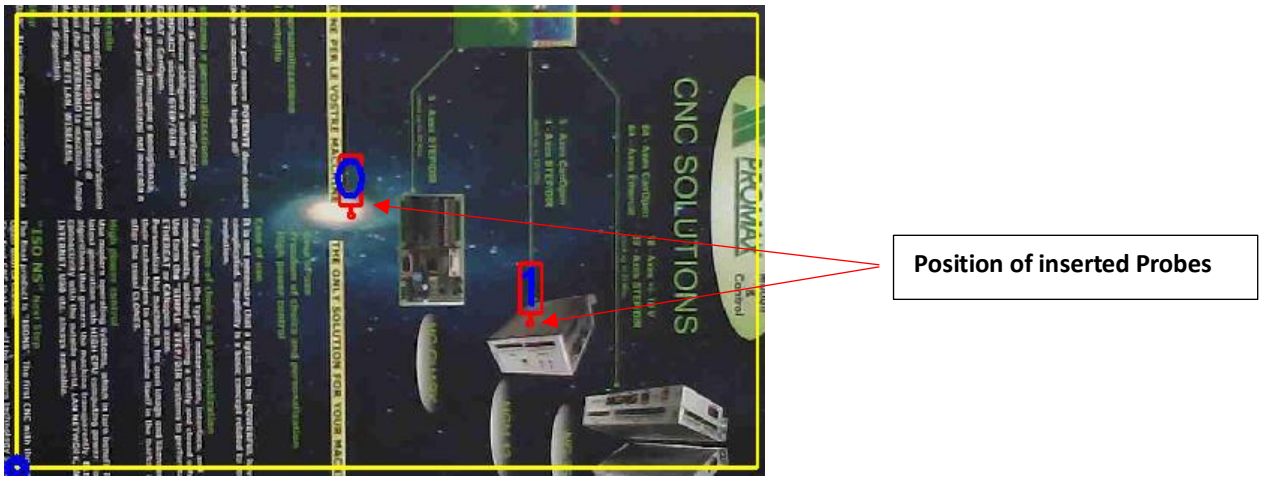
11.20.1.3 Probe

Probe Management

The Probes are the Virtual references insert in the Work Plane.
Generally are used for get the X,Y position for a mechanical real probe.
The X,Y position of Probes insert can be read by the Gcode function:
EXD.PXV_READ_PROBE … (See IsoUS Gcode Language)
This function return the X,Y position of probe read

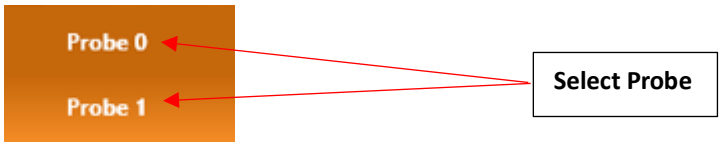
Add Probe

Add a new Probe.
Click in the desired point.



Remove Probe

Remove a probe.
Is shown a list of inserted Probes, select the probe for remove



11.20.1.4 Image Zoom

Image Zoom

11.20.1.5 Measure Tool

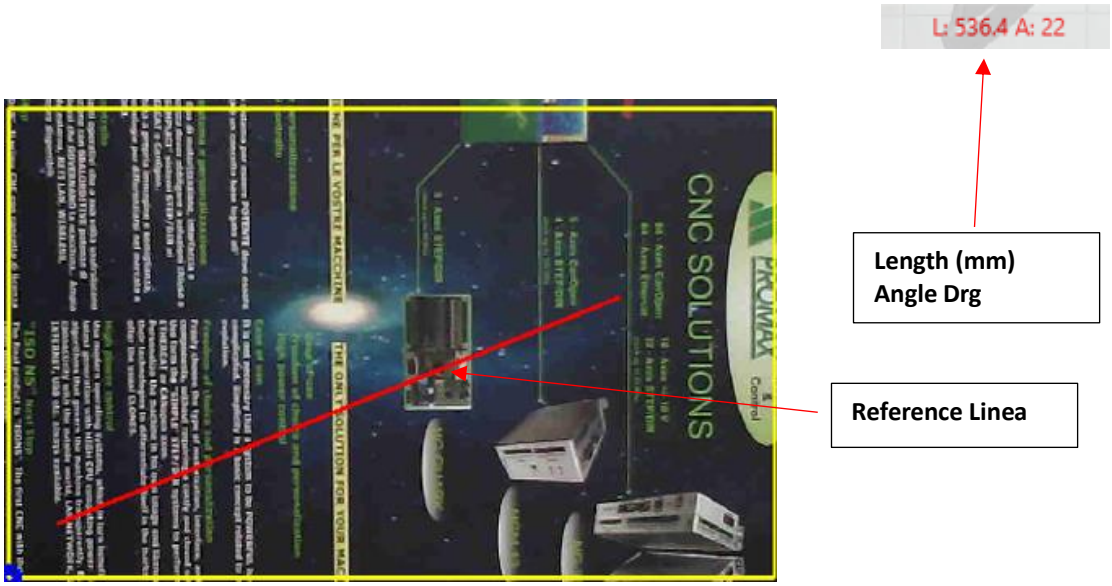
Allows to get a linear and angular measures of images part.

Select by mouse the start point and drag the line in the desired point.

By Shift key the line will be the line is moved by step of 15 drgs

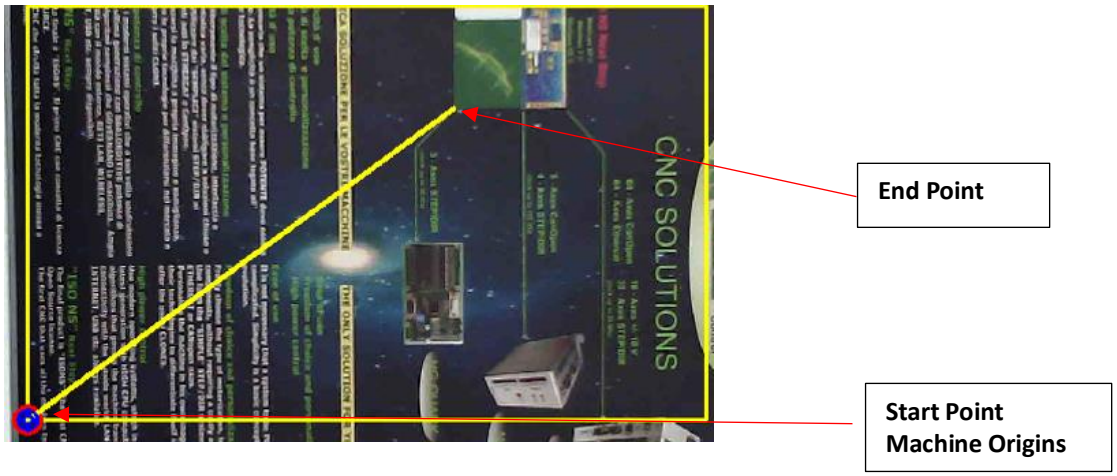
The length and angle is shown..

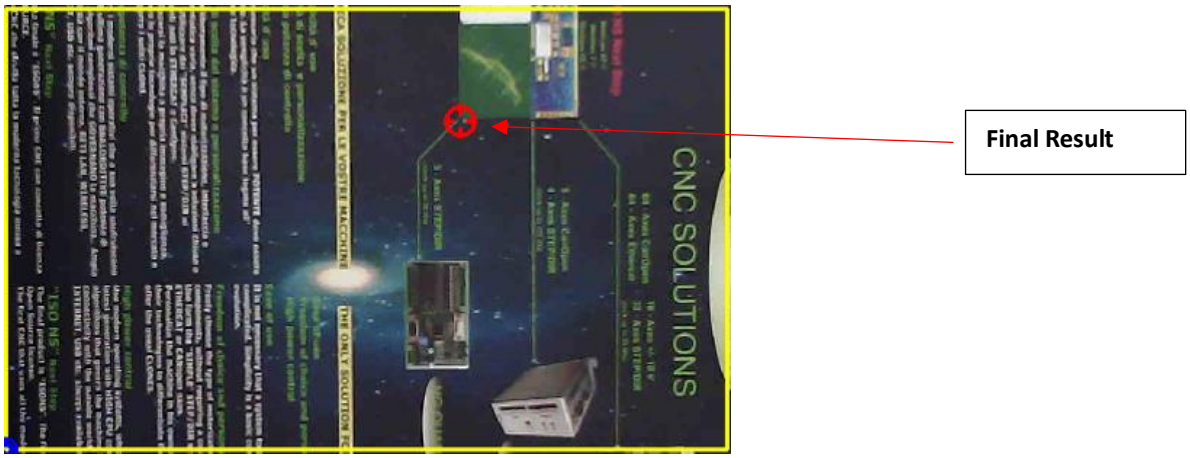
For a correct Length must be calibrated the camera parameter Pixels per mm.



11.20.1.6 Manual JOG Assi

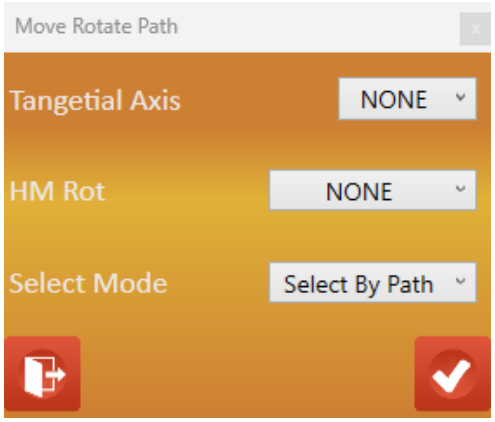
Allows to move the AXes X,Y in visual mode, from a start position to a end position.
Will be Shown the start positions available (Machine Origins or Heads Origins).
Select the desired origin start.
Following is shown a LINE from a selected Start Point, click in the desired End point.
The Axes after confirmation, will be moved in the final point.
The FEED an mode is configured in the Command **CMD GCODE JOG** (see UsPxv configuration).





11.20.1.7 Move Rotate Path

Allows to apply a Rotation and Translation of all Gcode or single Paths
By this function is possible to work the gcode in a precise point of piece.
After the activation the following menù will be shown:



Tangential Axis Index of Tangential Axis if present (ex. Cutter)
HM Rot Number of HM for rotate tool up tangential axis, if present
Select Mode Selection Path mode

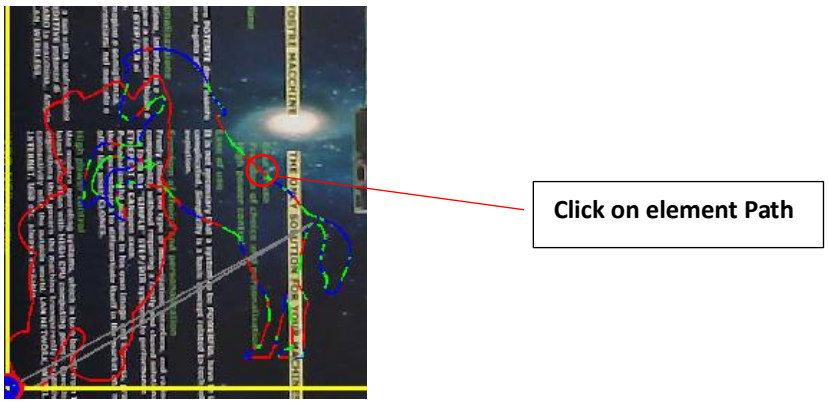
Select By Path
Select by mouse of single Path

Select By Area
Select by RECTANGLE AREA of one or more Paths

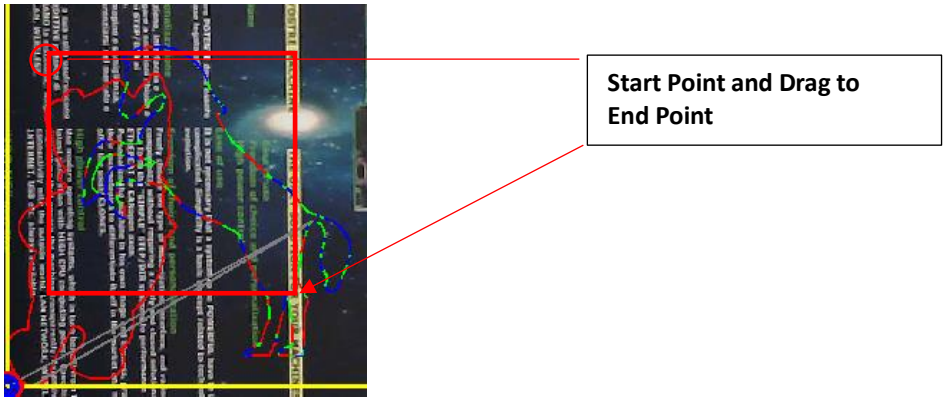
Select All Path
Select all Gcode

Button Ok for confirmation

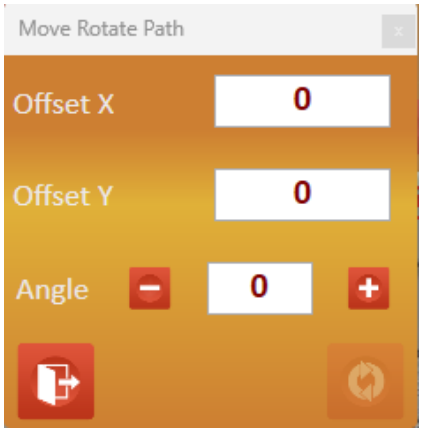
Select By Path
Move the mouse near to gcode path element and click by left button mouse.



Select By Area
Click by left button to start RECTANGLE AREA, drag the mouse up to end RECTANGLE AREA



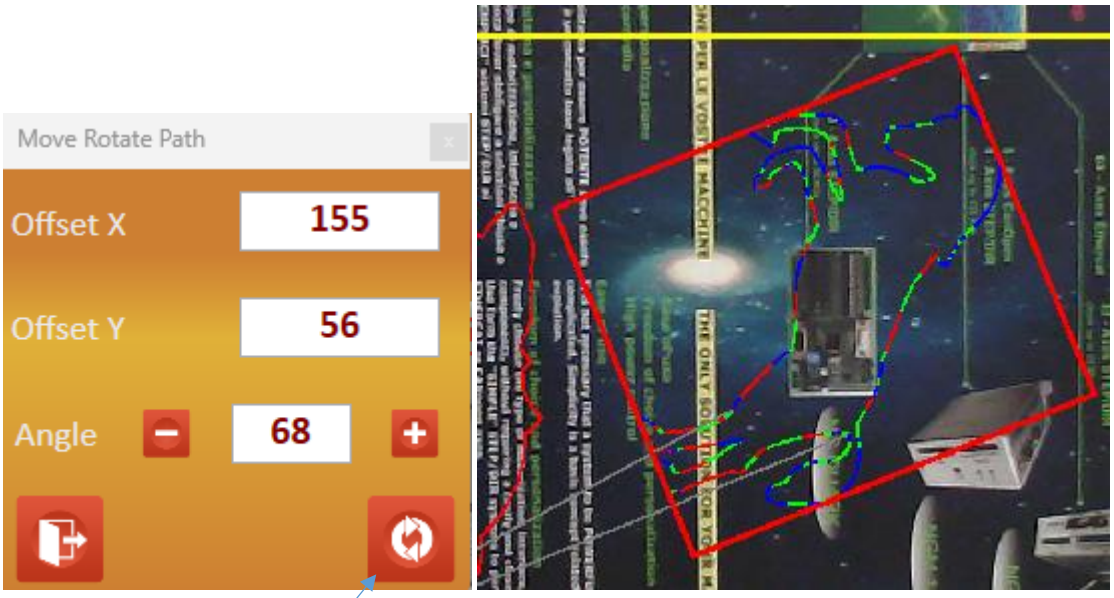
After the selection Path will be shown the RECTANGLE SELECTION and the following window menù.



By click and drag inside the RECTANGLE AREA the path is move in the desired position.

The X,Y offset is shown in the fields **Offset X**, **Offset Y.**
Is possible insert manually the Offset X and Y.

By the buttons **Angle** and **Angle** is possibl rotate the path from 0 to 360 drgs.
The angle can be insert manually in the relative field



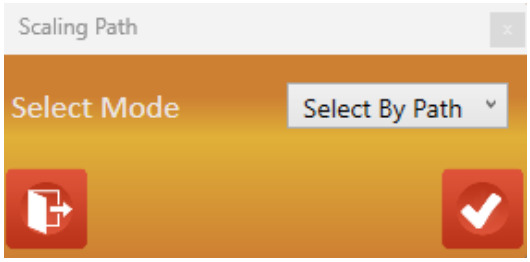
By button "**Apply Roto Translation**" the Rotation and Translation is applied to Gcode.

For cancel the function press button "**Reload Original Gcode**"

Rules for recognition single Path
This function recognition the separation from paths, bye the Z Axis deept
G0(G1) Z0 is recognized as separator for paths.

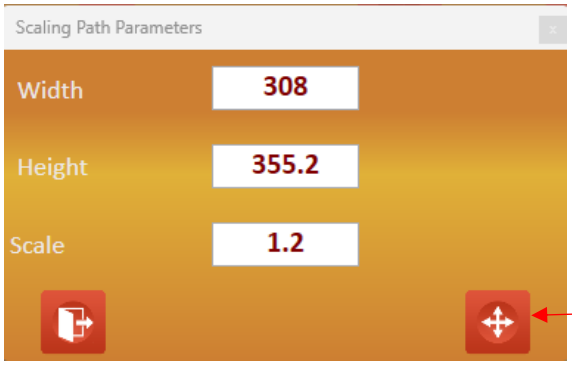
11.20.1.8 Scale Path

Allows to apply a scale to Path
The scaling is **ONLY IN PROPORTIONAL MODE** (same value in X and Y)



Selection Path mode (see Move Rotate Path)

Scaling parameters



Apply the scaling to Gcode

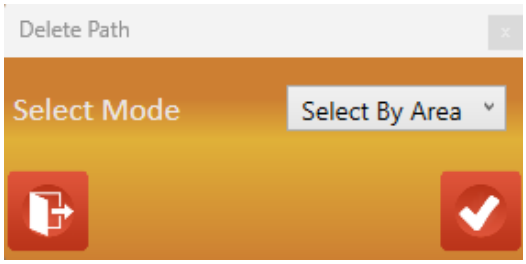
Width Width Path. Input this value, the Height is automatically adapted
Height Height Path. Input this value, the Width is automatically adapted
Scale Scale Factor. Input this value, the Width and Height are automatically adapted

Press button Apply for confirm operation to Gcode

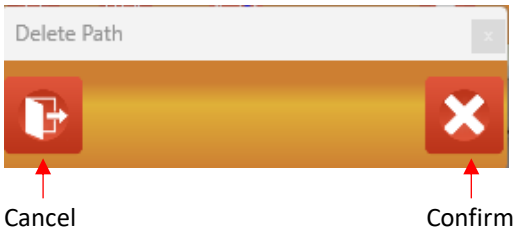
For cancel the function press button "**Reload Original Gcode**" 

11.20.1.9 Delete Path

Allows to Dlete a Path



Selection Path mode (see Move Rotate Path)



For cancel the function press button “**Reload Original Gcode**” 

11.20.1.10 Path Acquisition

Allows to acquire paths automatically or manual from UsPxVision or from file **JPG**.
The acquired paths can be converted in **GCODE** or **DXF** format.
The **AUTOMATIC** acquisition path need a good **CONTRAST** from **OBJECT** and **BACKGROUND**.
In some cases could be required insert a "BACKGROUND" for obtain a good contrast (normally background light and object dark).

Mode of Path Acquisition

Automatic	Automatic find Paths from **CAMERA or FILE**
Manual	Paths Draw by mouse from **CAMERA or FILE**
Raster	Image Raster (for LASER machines) from **CAMERA or FILE**

Automatic Acquisition Paths

Is a complex function with many parameters, therefore is recommended check the rights .
When the function is activated the image will be shown in **BLACK** and **WHITE** (binarized).
For a good results the image to acquire, must be uniformly **BLACK**.

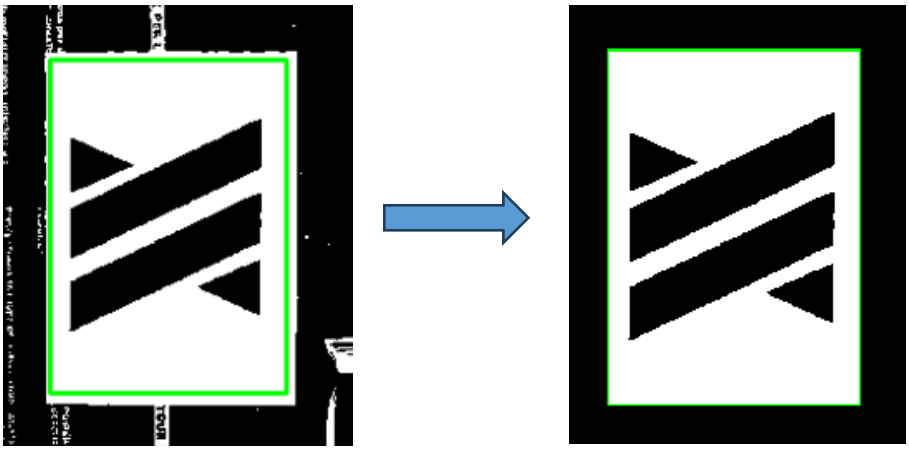
By button IMG the image can be load from **FILE JPG**

The following image (Promax Logo) is captured from **CAMERA**, it's a good contrast **BLACK** on **WHITE**.

Acquisition Steps

1) First to all, define a RECTANGULAR REGION for to delimit the field of acquisition.

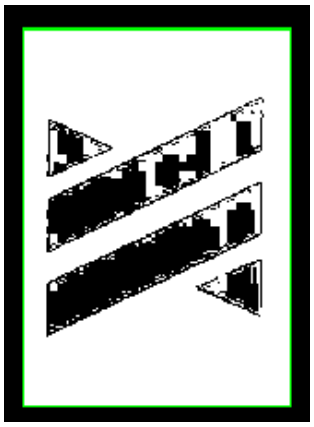
   Press Button Region and by Left button mouse select start point and drag to end point.
   .



All parts outside the **REGION** are excluded from image.

1) By **"Filter Type"** check the best filter

Type 0 Image Binarization
The **TH VAL** parameter defines the thresholds
TH MAX max thresholds (Generally 255)
BLUR Blurring level image
PAR1 NOT USED



TH VAL LOW

TH VAL GOOD

Type 1 Adaptive Binarization
The system find the best value for **TH Val**
TH MAX max thresholds (Generally 255)
TH VAL NOT USED
PAR1 NOT USED

Type 2 Binarization Type 2
All filter parameters are activated

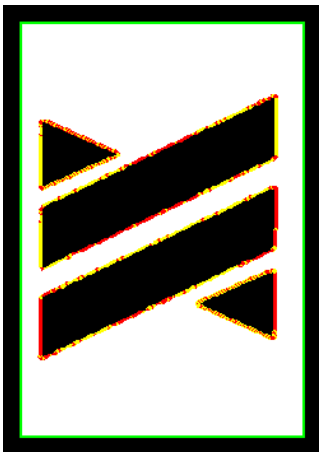
Type 3 Binarization Type 3
All filter parameters are activated

The Button 

remove a previous **REGION**

2) When by filters the images will be good, press button 

for **ACQUISITION PATHS** (Press again for return to filtering image). After all paths acquired will be shown**.**

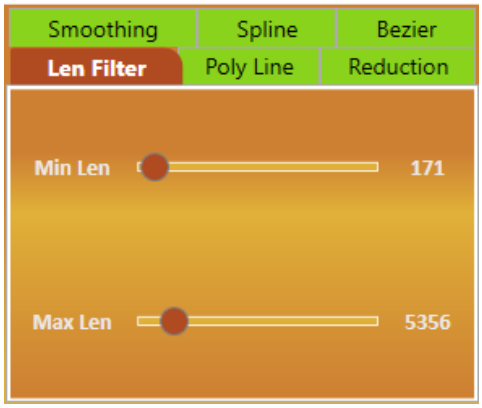


YELLOW LINES AND RED LINES elements of paths

Path Parameters

Normalize all paths to values X=0 e Y=0

Smoothing Paths



Len Filter
Lines reduction to **MIN LEN** and **MAX LEN** values.

Poly Lines
Poly lines detection from value **Poly Res**

Reduction
Reduction lines by **Len Line** and **Angle Line**

Smoothing
Smoothing paths by value **Smoothing**.

Spline
Spline detection bye **Resolution** (Spline resolution) and **Order** (Spline order).

Bezier
Like to Spline. Are present 3 parameters, **Resolution** (Bezier resolution), **Smoothing** (Smoothing level), **Min Len** (minimum length of lines segment)

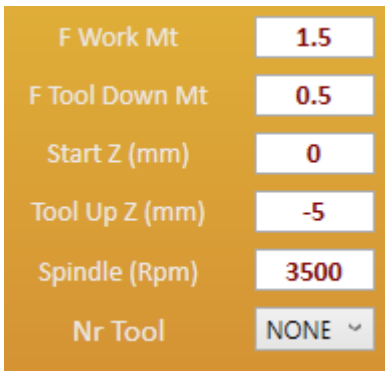
By this function is possible remove all internal paths.

Show only paths without image background

Head choice
If the machine has more HEADS the Tool Type allows to select the desired Head.

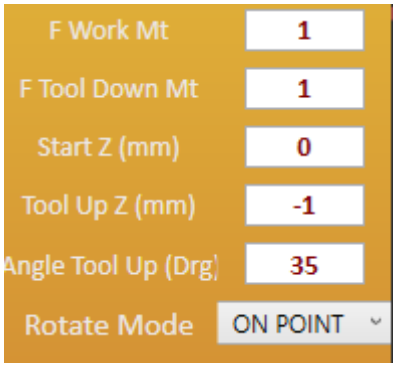
Gcode Parameters

MILLING HEAD



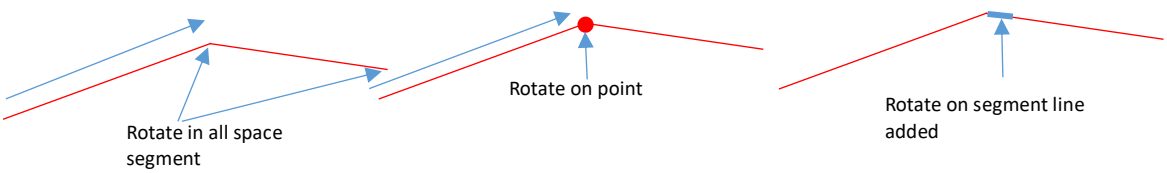
F Work Feed Work
F Tool Down Feed Tool Down
Start Z Start Z value
Tool Up Z Tool Up Z (for G0 movements)
Spindle Spindle rpm
Nr Tool Tool number (Tn)

BLADE HEAD

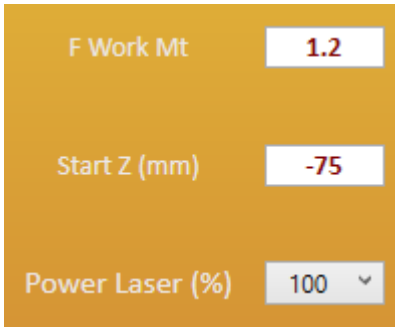


F Work Feed Work
F Tool Down Feed Tool Down
Start Z Start Z value
Tool Up Z Tool Up Z (for G0 movements)
Angle Tool Up Angle Threshold for Tool Up
Rotate Mode **Normal** – The tool will be UP bye Angle Tool Up
On Point for angle less to **Angle Tool Up** the tangential axis rotate on the point
Add Line for angle less to **Angle Tool Up** will be insert a segment of line and the tangential axis rotate in the segment

Normal **On Point** **Add Line**

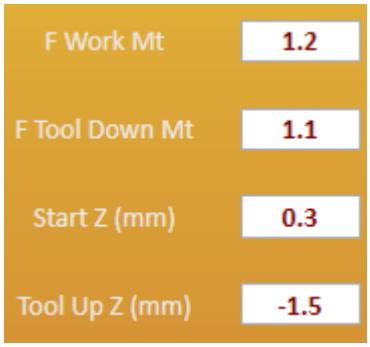


LASER HEAD



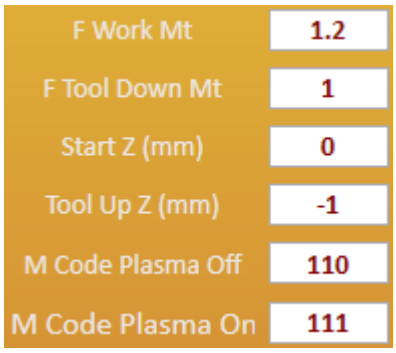
F Work Feed Work
Start Z Start Z value
Power Laser Laser Power 0.100%

PEN HEAD



F Work Feed Work
F Tool Down Feed Tool Down
Start Z Start Z value
Tool Up Z Tool Up Z (for G0 movements)

PLASMA HEAD



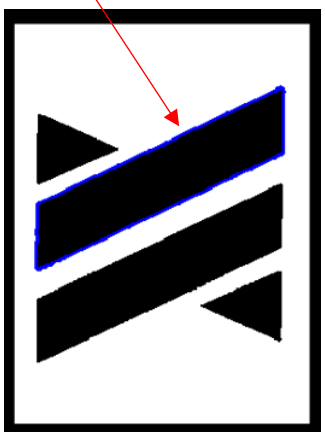
F Work Feed Work
F Tool Down Feed Tool Down
Start Z Start Z value
Tool Up Z Tool Up Z (for G0 movements)
M Code Plasma Off **M** code for Plasma **OFF**
M Code Plasma On **M** code for Plasma **ON**

Paths delete

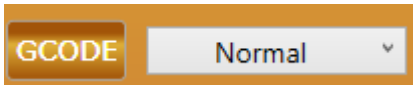
Delete Allows to delete a path selected by Mouse.

Undo Recovery path deleted selected in the **ComboBox**

Show Show the path deleted selected in the **ComboBox**
(press and old the left mouse button)



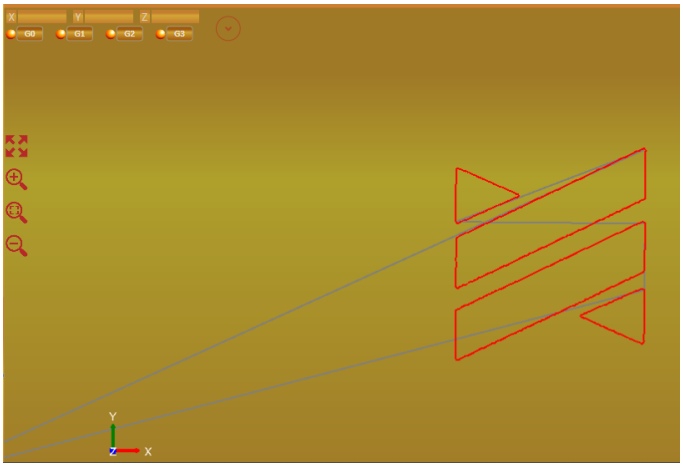
Gcode generation file



Gcode generation Mode

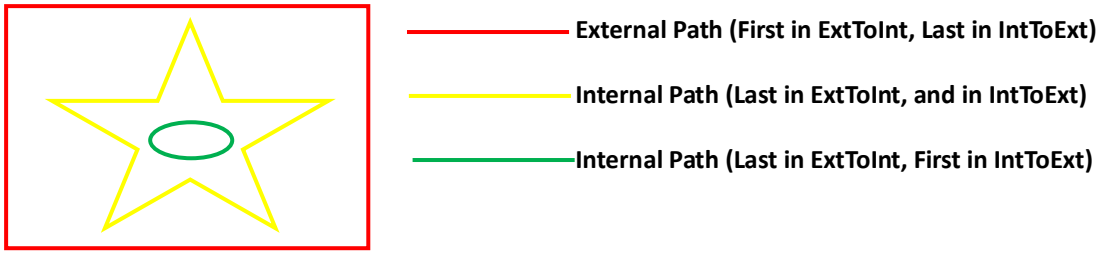
The **GCODE** button convert all acquired paths in Gcode

```
//USPXVISION GCODE PATH CONVERSION (C) PROMAX SRL
//14/09/2023 15:13:24
G60 F1.2
H0
M110
G0 Z-1
G0 X618.4 Y161.6
G1 Z0 F1
G62
M111
F1.2
G1 X618.4 Y124.8
G1 X617.7 Y124.1
G1 X617.7 Y118.1
G1 X618.4 Y117.3
G1 X616.2 Y115.1
G1 X614.7 Y116.6
```



There are many modes to convert the paths in Gcode, selected by **ComboBox Gcode generation Mode:**

Normal All paths are generated by order of acquisition
IntToExt The **INTERNAL** paths are generated for **FIRST** and after the **EXTERNAL** Paths
ExtToInt The **EXTERNAL** paths are generated for **FIRST** and after the **INTERNAL** Paths



MinHorizontalDist All paths are sorted by **SHORTEST ROUTE** with a **HORIZONTAL RASTER**

MinVerticalDist All paths are sorted by **SHORTEST ROUTE** with a **VERTICAL RASTER**

MinAdaptDist All paths are sorted by **SHORTEST ROUTE POSSIBLE**

MinX All paths are sorted by **X LESSER**

MinY All paths are sorted by **Y LESSER**

MaxX All paths are sorted by **X GREATER**

MaxY All paths are sorted by **Y MAJOR**

MinArea All paths are sorted by **AREA LESSER**

MaxArea All paths are sorted by **AREA GREATER**

MinLength All paths are sorted by **LENGTH LESSER**

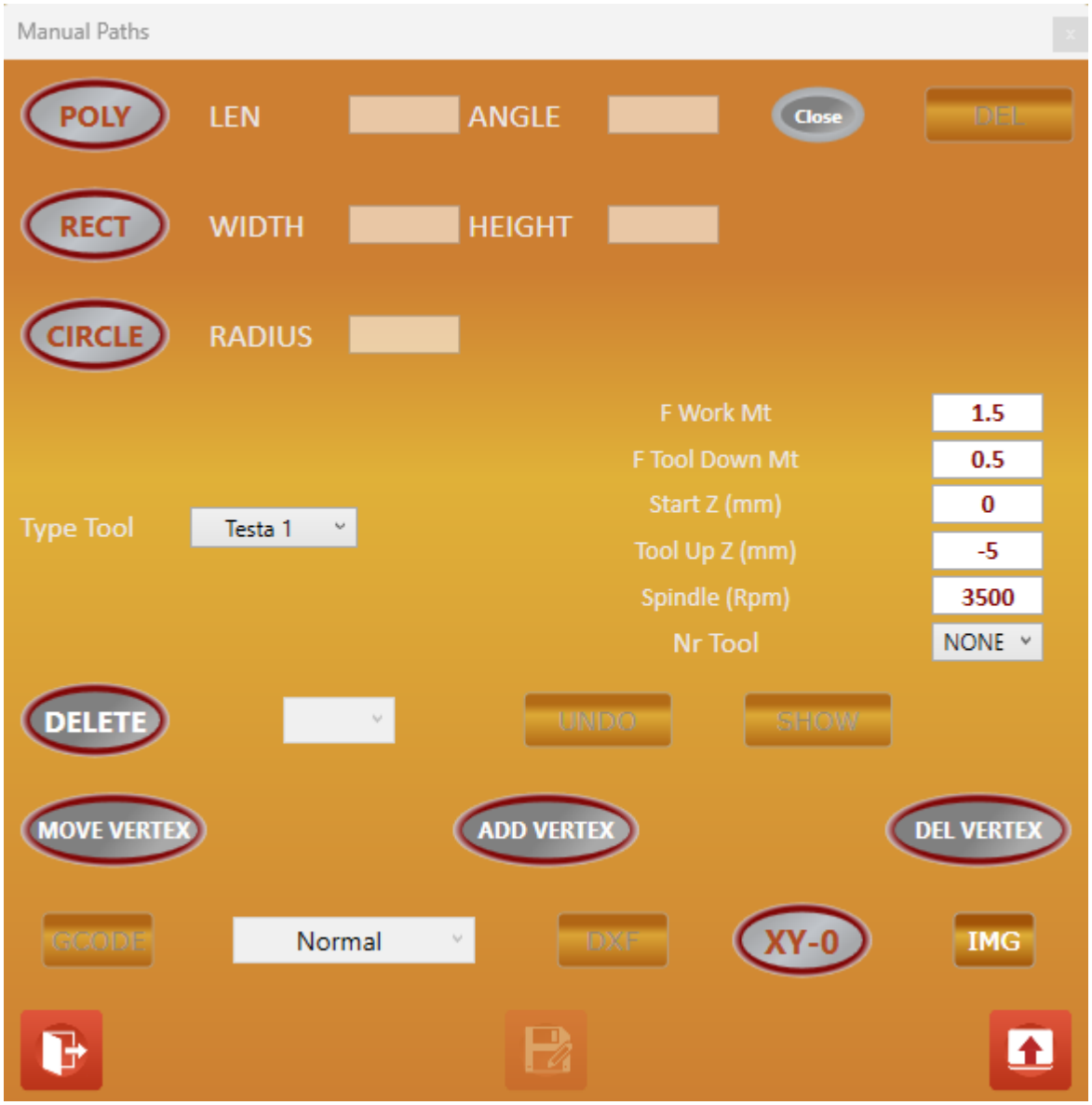
MaxLength All paths are sorted by **LENGTH GREATER**

NearToPathCenter All paths are sorted by **MINIMUM DISTANCE OF CENTER BOUNDING BOOX OF ALL PATHS**

FarToPathCenter All paths are sorted by **MAXIMUM DISTANCE OF CENTER BOUNDING BOOX OF ALL PATHS**

Dxf Export

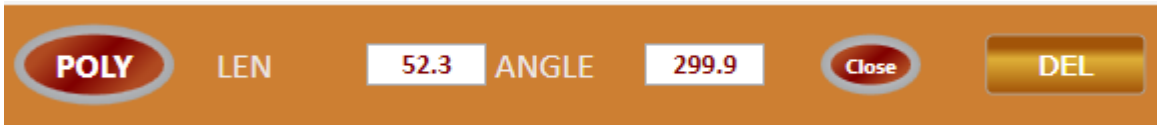
Manual Paths Acquisition



Allows to **DRAW PATHS** on the image.
There are 3 **GEOMETRY TYPE**, **POLY LINE, RECTANGLE, CYRCLE**.
In this function isn't necessary a **BINARIZATION** of image.

The image can be get from a **CAMERA** or **FILE JPG** by button 

POLY LINE



Draw a POLY LINE closed or not.

Poly line function init. By mouse select the VERTEX position.

If during the **VERTEX** position, is pressed the **KEY Shift** of keyboard the **LAST SEGMENT** of **POLY LINE** is locked to **FIRST SEGMENT** of **POLY LINE** (closed curve). The Poly line will be terminate.

If the **CLOSE** button is checked, by **RIGHT CLICK** the **POLY LINE** will be terminate, the **LAST SEGMENT** of **POLY LINE** is locked to **FIRST SEGMENT** of **POLY LINE** (closed curve). If isn't **Checked**, the **POLY LINE** will be terminate in the **Right click position** (open curve).

LEN The TextBox **LEN** show the current length of Poly Line segment.
If is inserted the manual **LEN** in the the TextBox and confirm by **CR**, the **LEN** of segment is locked, only the angle is changed by mouse. If also the **ANGLE** is locked, the segment is terminate.

ANGLE The TextBox **ANGLE** show the current angle of Poly Line segment.
If is inserted the manual **ANGLE** in the the TextBox and confirm by **CR**, the **ANGLE** of segment is locked, only the len is changed by mouse. If also the **LEN** is locked, the segment is terminate.

For **UNLOCK** Angle/Len input a null value in the TextBox and press **CR**.

The button **DEL** remove the last segment inserted

Rectangle

Draw a Rectangle.

Enable the Rectangle function . Click on the first point (release the mouse button) and drag/click in the end point

WIDTH The TextBox **WIDTH** show the current width of Rectangle.
If is inserted the manual **WIDTH** in the the TextBox and confirm by **CR**, the **WIDTH** of rectangle is locked, only the Height is changed by mouse. If also the **HEIGHT** is locked, the Rectangle is terminate

HEIGTH Like to Width.
.
For **UNLOCK** Width/Height input a null value in the TextBox and press **CR**.

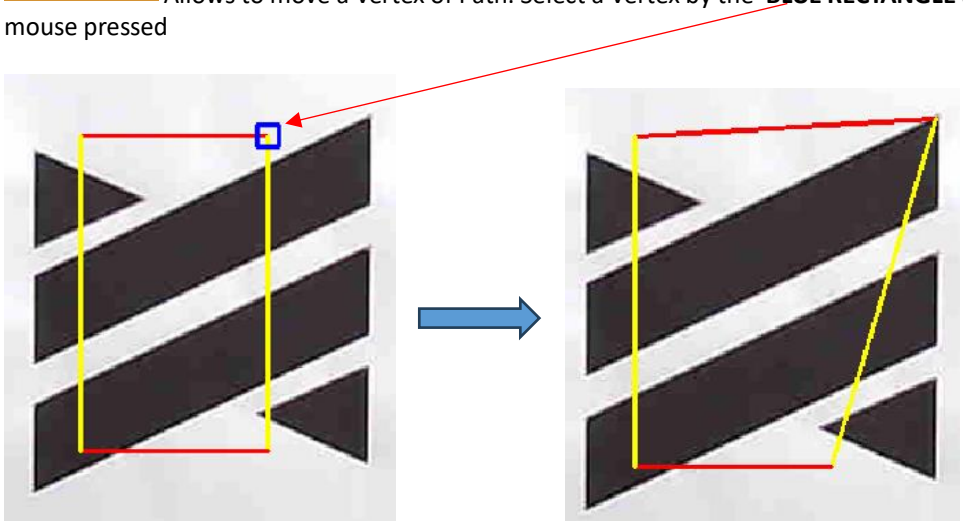
Circle

Draw a Circle

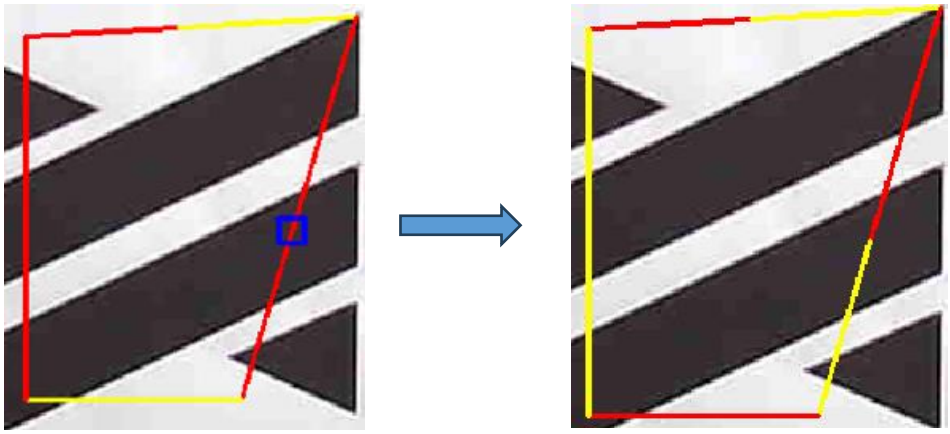
Enable the Circle function. Click on the (release the mouse button) and drag/click in the end point
.

RADIUS The TextBox **RADIUS** show the current Radius of Circle.
If is inserted the manual **RADIUS** in the TextBox and confirm by **CR**, the Circle is terminate

Allows to move a Vertex of Path. Select a Vertex by the **BLUE RECTANGLE** and Drag the vertex with left mouse pressed



Allows to add a Vertex in the Path. Select the desired point and Click.



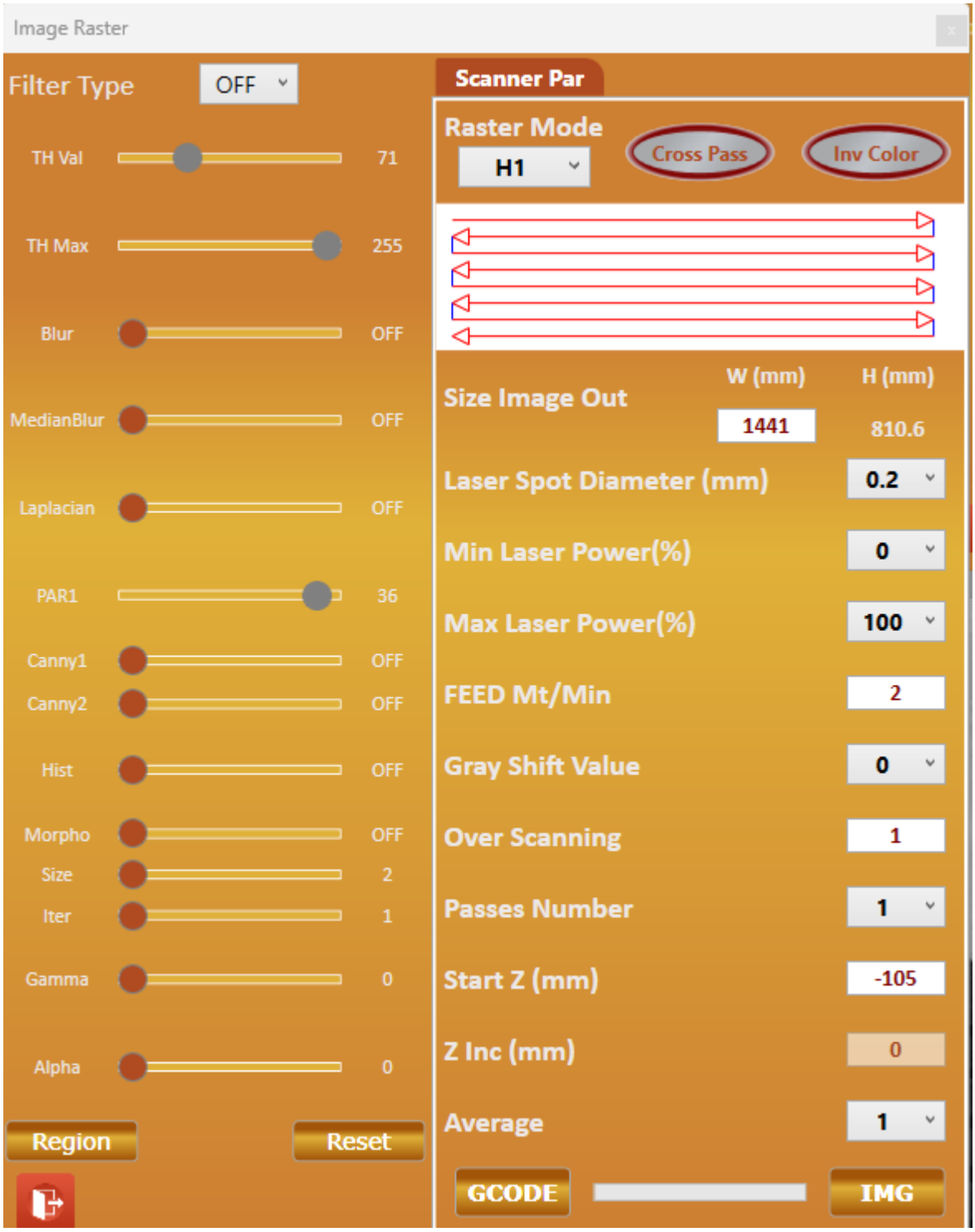
Delete a Vertex. (see Move Vertex)

Delete Path, XY-0, Gcode,DXF, Head Type
See **"Automatic Acquisition Paths"**


Save Paths in the File


Load a Paths from file

Image Raster



Allows to **RASTERING AN IMAGE** for work with the **LASER**.
The process convert the image in **GRAY SCALE** or **BLACK/WHITE**, the intensity of each pixel will be get and convert in **POWER LASER**. **WHITE** pixel **POWER MIN**, **BLACK** pixel **POWER MAX** (or vice versa).

First to all get an **IMAGE** by **CAMERA** or by **FILE** with 

This function can use the **IMAGE BINARIZATION** (black/white), or in **GRAY SCALE**.

FILTER TYPE

OFF Gray Scale
0-10 Image **BINARIZATION** whit different mode type
Set the parameters for get a desired image effects.

The button 

get a REGION of entire **IMAGE** (recommended).

The button 

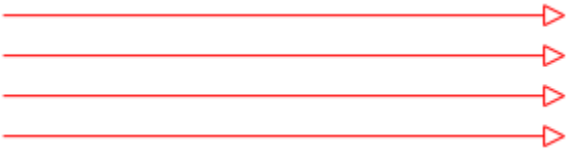
remove the **REGION**

Scanner Par
IMAGE scanner parameters.

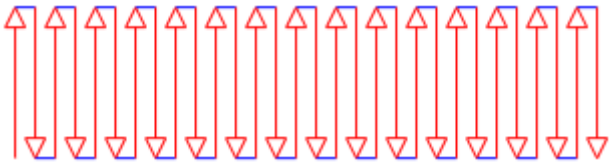
Raster Mode Defines the mode of image raster.

H1 Raster in **X** from **SX** to **DX**, Increment **Y**, return from **Dx** to **SX**

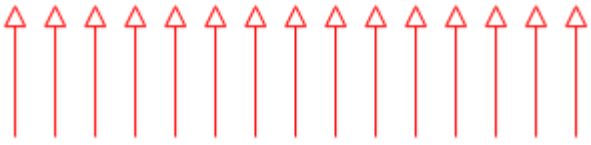
H2 Raster in **X** from **SX** to **DX**, return in **X** ,Increment **Y**



V1 Raster in **Y** from **DOWN** to **UP**, Increment **X**, return from **UP** to **DOWN**

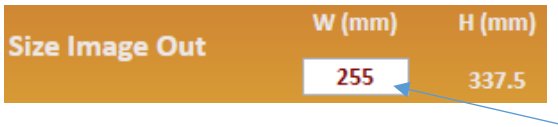


V2 Raster in **Y** from **DOWN** to **UP**, Return in **Y** ,Increment **X**



Make a **CROSS PASSING** (merge two mode):
H1 with **V1**
H2 with **V2**
V1 with **H1**
V2 with **H2**

INVERT LIGHT with **DARK**



Width, Height final image.
Only the Width can be inserted. The Height is calculate in **PROPORTIONAL** mode.

SPOT LASER diameter. Insert the right value of laser source.

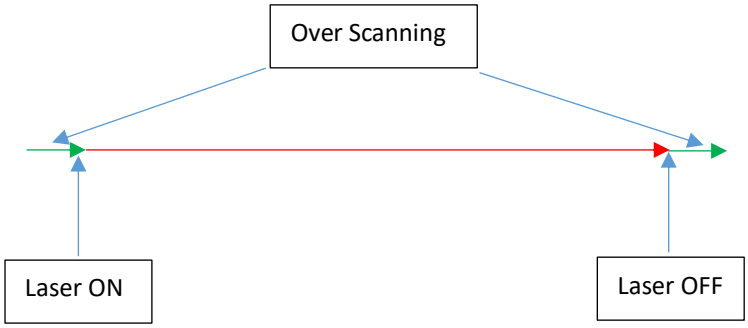
Min **LASER POWER** (0-100%)

Max **LASER POWER** (0-100%)

Work **FEED**

Gray Shift. Image **DEFINITION REDUCTION**.
0 None
6 Max reduction (gcode file more small)

Over scanning Passed. This value is added to **INIT** and **END** raster pass. Allows to eliminate the **ACCELERATION AXES PROBLEM** and the final image will be more define to **BORDER**.



Number of passes

Start Z

if the number of passes is > 1 can be insert the **AXIS Z INCREMENT** for pass.

Average on laser **POWER**, limits the **POWER VALUE VARIATION**. Values **HIGH, IMAGE MORE LOW DEFINITION**.

Gcode Preview

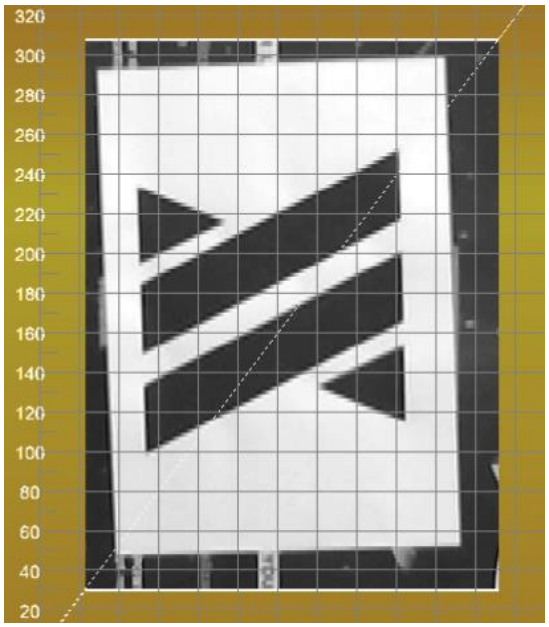
After the **GCODE** generation by button 

is possible see a **REAL PREVIEW** by Gcode simulation.

Terminate the **CAMERA VISION** by button  , and simulate the Gcode by button 

(don't close the **PARAMETERS LASER SCANNER WINDOW**)

With **LASER RASTER SIMULATION** activated (**$[P37]=1**), the **PREVIEW** result will be as following:



The Gcode will be simulate with an **IMAGE GRAY SCALE** like to **LASER** result.

For modify image, return in **CAMERA VISION** mode by button  and change the **LASER PARAMETERS**

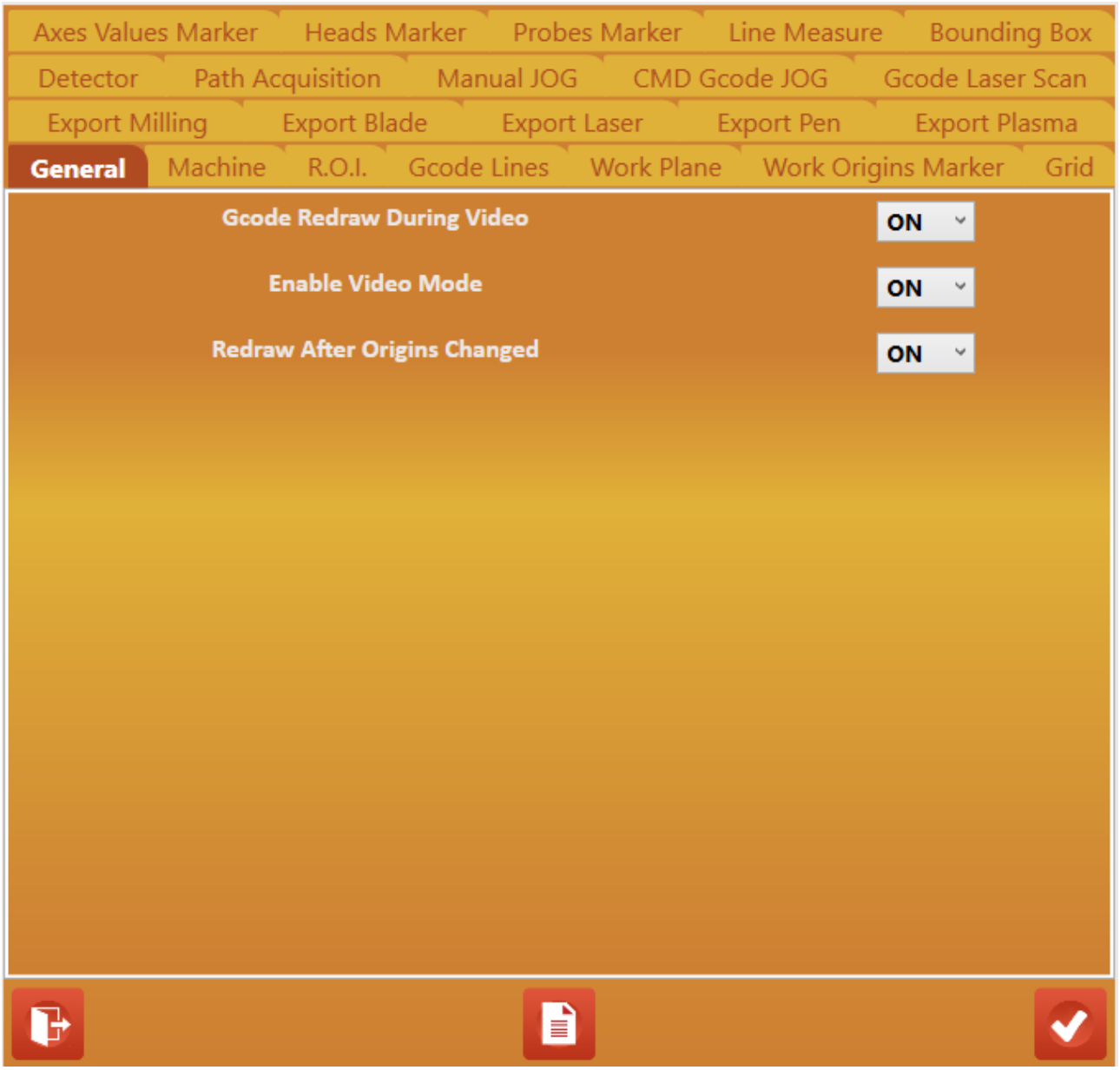
11.20.1.11 USPXVISION Settings

UsPxVision Parameters

Settings Edit

Save Preferences (Save the parameters)

.



General

General Parameters

Gcode Redraw During Video	Enable/Disable Gcode redraw in **VIDEO MODE**
Enable Video Mode	Enable/Disable **VIDEO MODE**
Redraw After Origins Changed	Enable/Disable Gcode redraw when the **ORIGINS ARE CHANGED**.

Machine

Machine Parameters

Tangential Axis	Index if present
Rotation HM	**HM** number for **AXIS TANGENTIAL ROTATION DURING TOOL UP**

R.O.I.

REGION Parameters

Line Color	Line Color
Line Thikness	Line Thikness

Gcode Lines

Gcode Parameters

G0 Line Color	Line Color **G0**
G1 Line Color	Line Color **G1**
G2 Line Color	Line Color **G2**
G3 Line Color	Line Color **G3**
Line Thikness	Line Thickness

Work Plane

Work Plane Parameters

Line Color	Line Color
Line Thikness	Line Thickness

Work Origins Marker

Marker Work Origins Parameters

Line Color	Line Color
Line Thikness	Line Thickness
Dimensions	Dimensions

Grid

Grid Parameters

Line Color	Line Color
Line Thikness	Line Thickness
Step (mm)	Grid Step

Axes Value Marker

Marker Axes Values Parameters

Line Color	Line Color
Line Thikness	Line Thickness
Dimensions	Dimensions

Heads Marker

Marker Heads Parameters

Line Color	Line Color
Line Thikness	Line Thickness
Dimensions	Dimensions
Font Line Color	Font Color
Font Line Thikness	Font Thickness

Probes Marker

Marker Probe Parameters

Line Color	Line Color
Line Thikness	Line Thickness
Dimensions	Dimensions
Font Line Color	Font Color
Font Line Thikness	Font Thickness

Line Measure

Marker Measure Parameters

Line Color	Line Color
Line Thikness	Line Thickness

Bounding Box

Bounding Box Parameters

Line Color	Line Color
Line Thikness	Line Thickness
Min Distance Path Select	Min Distance from Paths for selection

Detector

Detector Parameters

Enable	Enable/Disable Detector
Time Out (Ms)	Time Out Error detector
Nr. Attempts	Attempts for errors
Type	Detector Type

Patrh ACqusition

Acquistion Paths Parameters

R.O.I Line Color	Line Color **REGION**
R.O.I. Line Thikness	Line Thickness **REGION**
R.O.I. Border Dimensions	Dimensions **BORDER OF REGION**
Path Line Thikness	Line Thickness **PATH**
Line Color1	Line Color 1
Line Color2	Line Color 2
Line Color Delete	Line Color Path Delete
Arch Len Divide Pergentage	Percentage segmentation **ARCH**

Manual JOG

JOG ASSI Parameters

Line Color	Line Color
Line Thikness	Line Thickness
Confirmation Before Axis Move	Confirmation **JOG AXES**

CMD Gcode JOG

CMD JOG ASSI Parameters

CMD JOG NAME	**CMD** name
Update IsoUs StartUp	If set to **ON** the **CMD** is **UPDATE** at IsoUs **STARTUP**
Gcode	Gcode **CMD**

The CMD is organized in the following mode:
PARAMETER 1 X Axis Position to reach
PARAMETER 2 Y Axis Position to reach

Example

```
G91.1                       // SET G90 SAVING  G91
$VX=$[X18]                  // READ VALUE AXIS X
$VY=$[X19]                  // READ VALUE AXIS Y
G940 G0 X[$VX] Y[$VY]       // MOVE X,Y
G91.2                       // RESTORE INITIAL CONDITION
```

Gcode Laser Scanner

Laser Scanner Parameters

Gcode Start Gcode Start (es.)

```
G90 G60
$[P37]=1    // ENABLE PREVIEW LASER SCANNER
$[J22]=1    // ENABLE CONVERSION S ON G100
```

Gcode End Gcode End (es.)

```
G0 Z0S0     // Z0 - LASER OFF
G0 X0Y0     // X0 Y0
$[P37]=0    // DISABLE PREVIEW LASER SCANNER
$[J22]=0    // DISABLE CONVERSION S ON G100
```

Export Milling
MILLING HEAD Parameters

Head Name — **HEAD Name**
Enable — Enable/Disable **MILLING HEAD**

Gcode Start — Gcode Start (es.)
G60
M3 **// SPINDLE ON**

Gcode End — Gcode End (es.)
M5 **// SPINDLE OFF**
G940G0Z0
G940G0X0Y0

Export Blade
BLADE HEAD Parameters

Head Name — **HEAD Name**
Tangetial Axis — Index Tangential Axis
Blade Rotate Mode — Roattion Mode
On POINT
ADD LINE
Enable — Enable/Disable **BLADE HEAD**

Gcode Start — Gcode Start (es.)
G60

Gcode End — Gcode End (es.)
G940G0Z0
G940G0X0Y0A0

Export Laser
LASER HEAD Parameters

Head Name — **HEAD Name**
Enable — Enable/Disable **LASER HEAD**

Gcode Start — Gcode Start (es.)
$[J22]=1 **// ENABLE CONVERSION S ON G100**
H0

Gcode End — Gcode End (es.)
G0X0Y0Z0S0
$[J22]=0 **// DISABLE CONVERSION S ON G100**
H0

Export Pen
PEN HEAD Parameters

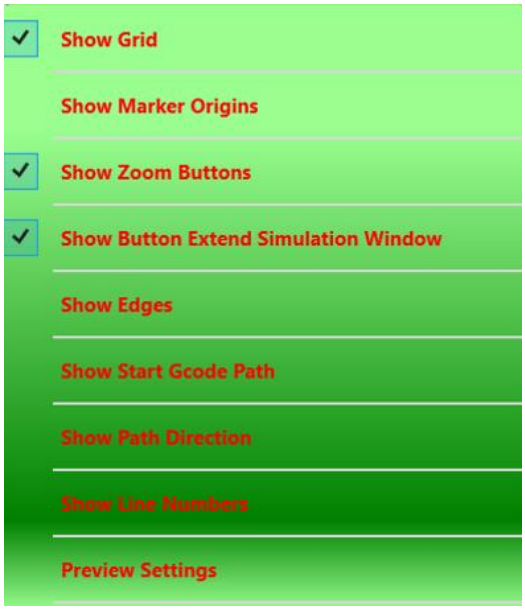
Head Name	**HEAD Name**
Enable	**PEN HEAD**
Gcode Start	Gcode Start (es.)
H0	
Gcode End	Gcode End (es.)
G0X0Y0Z0	
H0	

Export Plasma
PLASMA HEAD Parameters

Head Name	**HEAD Name**
Enable	Enable/Disable **PLASMA HEAD**
Gcode Start	Gcode Start (es.)
H0	
Gcode End	Gcode End (es.)
G0X0Y0Z0	
H0	

11.21 Preview Setting

For preview setting press **BUTTON:**

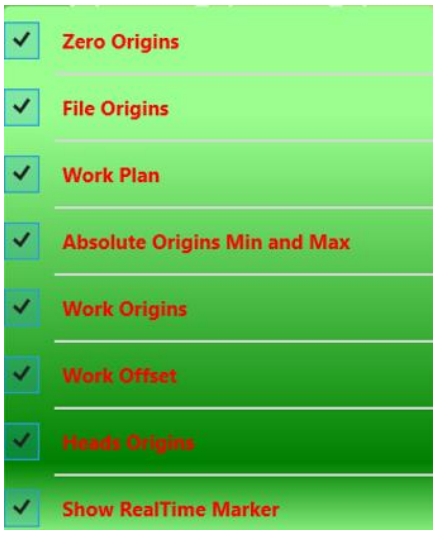


11.21.1 Show Grid

Allows to show Grid.
The Grid ha a fixed dimension with an interval of 40mm

11.21.2 Show Marker Origins

Allows to configure the **MARKER** that will be showed in the simulation.



11.21.2.1 Zero Origins

Enabled/Disabled the visualization of **MACHINE ZER ORIGINS**

11.21.2.2 File Origins

Enabled/Disabled the visualization of **FILE ORIGINS**

11.21.2.3 Work Plane
Enabled/Disabled the visualization of **WORK PLANE ORIGINS**

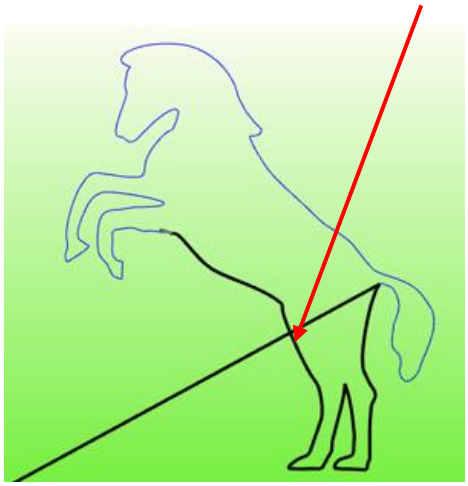
11.21.2.4 Absolute Origins Min and Max
Enabled/Disabled the visualization of **ABSOLUTE ORIGINS**

11.21.2.5 Work Origins
Enabled/Disabled the visualization of **WORK ORIGINS**

11.21.2.6 Work Offset
Enabled/Disabled the visualization of **WORK OFFSET**

11.21.2.7 Heads Origins
Enabled/Disabled the visualization of **HEAD ORIGINS SETTED**

11.21.2.8 Show Real Time Marker
Allows to show the lines of Gcode **worked**

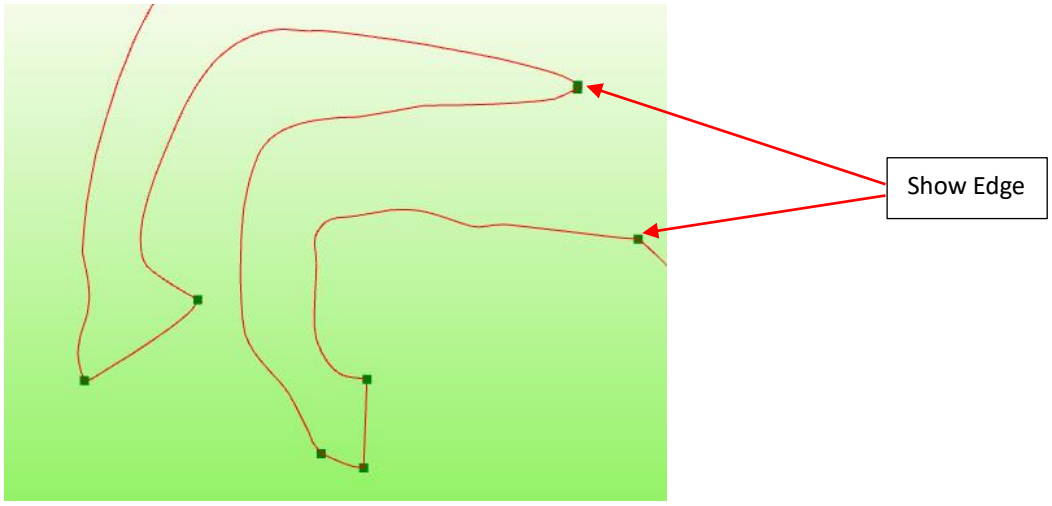


11.21.3 Show Zoom Buttons
Enabled/Disabled the visualization of **ZOOM BUTTONS**

11.21.4 Show Button Extend Simulation Window
Enable or Disable the Display of the **BUTTON PREVIEW FULL SCREEN**

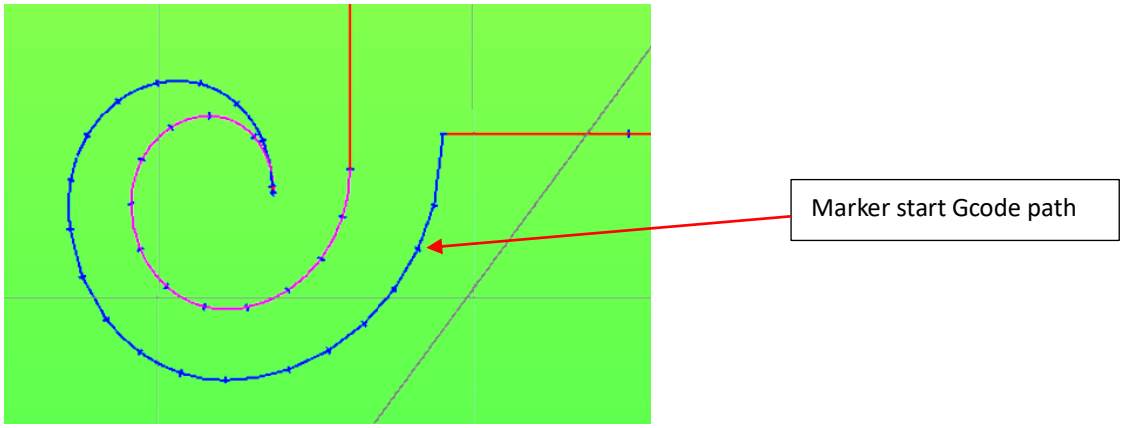
11.21.5 Show Edges

Enabled/Disabled the visualization of Edges based on SGLP e SGL3D_.
The Edges are the points where the CNC stop the axes
The edge is shown by a little square



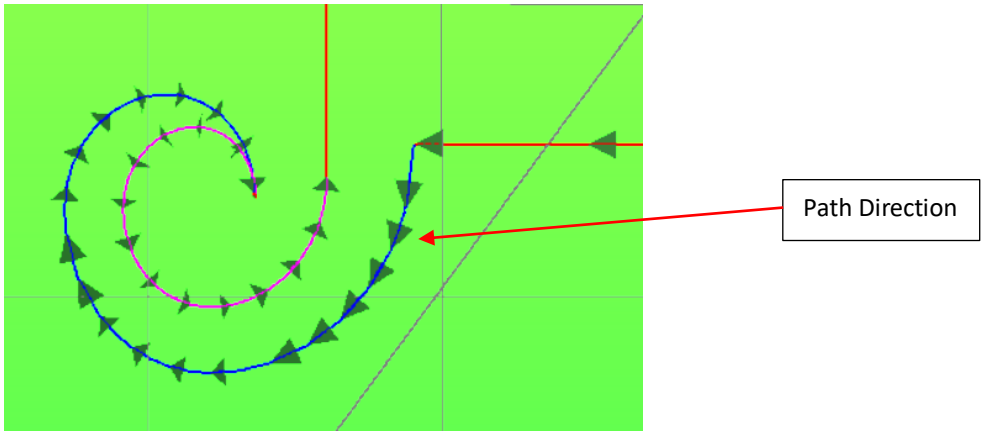
11.21.6 Show Start Gcode Path

Enabled/Disabled the visualization of Start Gcode Path G0,G1,G2,G3



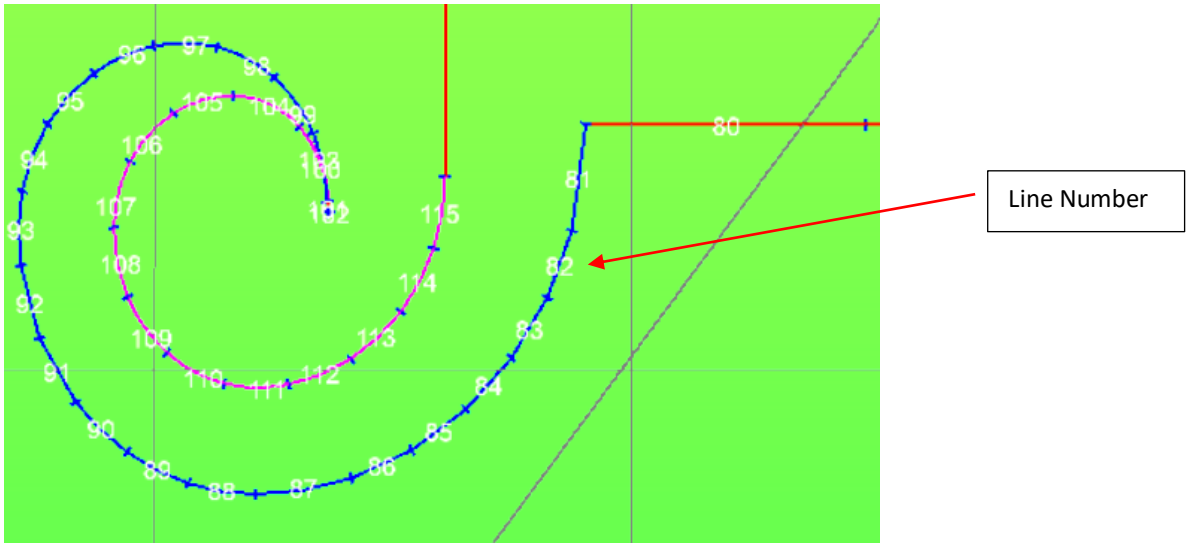
11.21.7 Show Path Direction

Enabled/Disabled the visualization of Path Direction in G0,G1,G2,G3



11.21.8 Show Line Number

Enabled/Disabled the visualization of Gcode Line Number



11.21.9 Preview Settings

Preview parameters configuration

11.21.9.1 General

Max Show Segments

Maximum number of **LINES G0-G1_G2-G3** can be showed in the SIMULATION. When this limit is reached, no more segments will be showed in the preview. Its value, depend of PC **MEMORY RAM INSTALLED**

Indicative Values:

35.000 lines G1 with Mesh Tot RAM 110 Mb
without Mesh Tot RAM 80 Mb

Button Zoom Factor

Buttons ZOOM FACTOR

Default Tool Diameter

Indicates the **DEFAULT DIAMETER** (mm) for **TOOL TYPE TOOL**xx If no diameter is set in the Gcode file.

Tool on Box Tolerance

Tolerance for Tool inside in the BOX material. See:
P.O.M. (Preview on Material)

Arc Resolution

Indicates the resolution for **ARC** when the lines are **G2-G3**.
A high resolution uses more **RAM MEMORY** of **PC**.

ULTRAHIGH	Max Definition (recommended for PC with RAM >=8 Gb)
HIGH	High Definition (recommended for PC with RAM >=4 Gb)
MEDIUM	Medium Definition (recommended for PC with RAM >=2 Gb)
LOW	Low Definition (recommended for PC with RAM <=1 Gb)
ULTRALOW	Ultra Low Definition (recommended only for big Gcode with G2-G3)

Use Heads Offset

If is **ON**, is used the Heads Offset during Preview, therefore the Drawing is shifted on the Preview.
If is **OFF**, the Heads offset is not used

Lathe Resolution

Indicates the resolution **SOLID** for lathe simulation
More high is the resolution , more high is the Solid definition, but more slow is the Simulation

ULTRAHIGH	Max Definition
HIGH	High Definition
MEDIUM	Medium Definition
LOW	Low Definition
ULTRALOW	Ultra Low Definition

Camera Type

Defines the camera perspective mode of view

PerspectiveCamera (recommended)
OrthographicCamera

Enable Test Collision

Enable/Disable the check of tools collision for simulation **REAL MACHINE**

Collision Tolerance

Collision tolerance (if Enable Test Collision)

Enable DMLU Marker

Ebale the marker **D**ynamic **M**anual **L**imits **U**pdate for simulation **REAL MACHINE**

Enable UsPxVision

Enable **UsPxVision** system if present
(see UsPxVsion)

11.21.9.2 Colors

Color G0-G1-G2-G3 Line
Color of **G0-G1-G2-G3** lines

Color Marker Line
Color of **real time marker line**

Color Offset Line
Color of **G41/G42** lines

Canvas Background color
Color of **BackGround canvas**

Line Number Text
Color of **Line Number Text**

Tool Toll. + Line Color
Color of **Line over the piece**

Tool Off Line Color
Color of **Line Tool OFF**

Grid
Color of **Line Grid**

Grid Text
Color of **Text Grid**

Grid Back Text
Color of **BackGround Text Grid**

Info Line Text

Color of **Text Info Line**

Info Line Back Text
Color of **BackGround Info Line**

Line Measure Color
Color of **Line Measure**

Line Marker Start Point Color
Color of **Marker Start Gcode Path**

Line Number Back Text
Color of **BackGround Line Number**

Tool Toll. - Line Color
Color of **Line under the piece**

11.21.9.3 Simulation

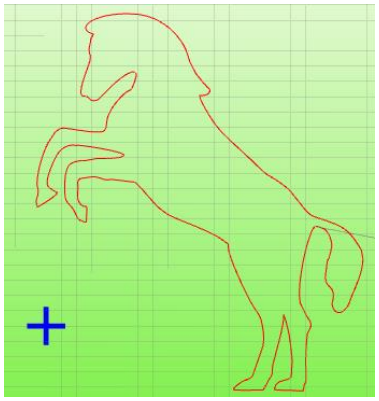
Simulation Type

Type of Simulation.

Lines
Mesh
Lathe
CloseMesh
LayerT

Lines

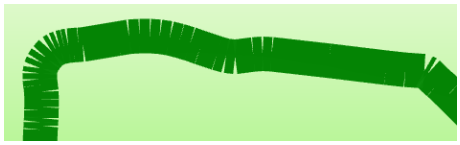
Uses a lines for preview. Generally it is used for **BIDIMENSIONAL GCODE**.



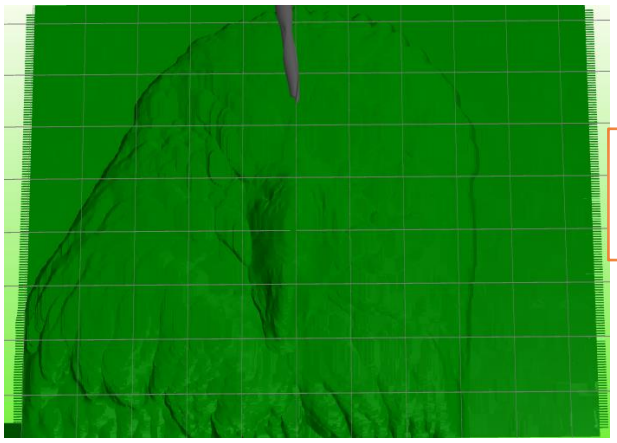
Mesh/CloseMesh

Uses a **MESH** for Preview. Generally it is used for **TRIDIMENSIONAL GCODE**.
The thickness of **MESH**, depend by **TOOL DIAMETER SETTED.**

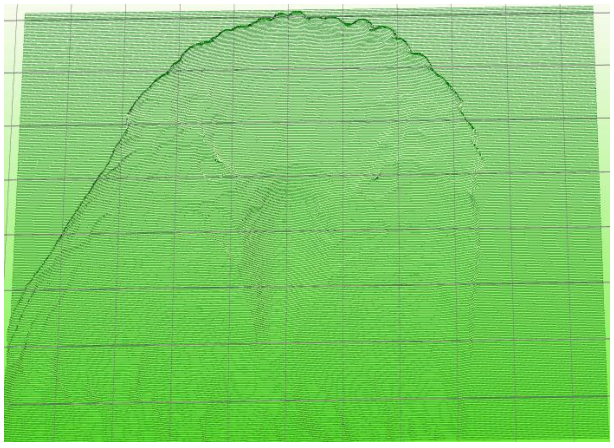
Without CloseMesh



With CloseMesh



TOOL DIAMETER CORRECT.
All mesh are connected



TOOL DIAMETER SMALL.
The mesh are not connected

Lathe

Simulation for LATHE MACHINE
See Simulation for Lathe

LayerT

Allows to show different colors for Gcode parts worked with different tools selected by function **Tn.**
For each tool is associated a color from 0 to 15, so for a 16 tools

By the selection , the layer is show or hidden

Cursor Type

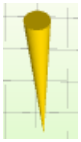
Type of cursor used for simulation

RealTool	MILLING TOOL (Select Tool Type **Tool**xx). The real tool diameter will be showed
Pointer	Pointer
Blade	**CUTTER** (Select Tool Type **Blade**xx) This cursor can be linked to a Rotative Axis that really manages the cutter in the machine. It allows to visualization the real position of cutter
RTCP	Cursor for 5 Axes machines with RTCP **A**,**C**. The parameters for the cursor type are get directly from the machines parameters section **RTCP**

Machine	Real Machine

Tool Type

Choose the tool.

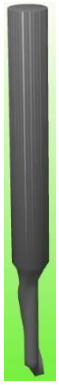


Pointer

Tool1.obj

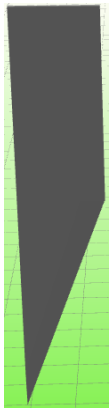
Tool2.obj

Tool3.obj

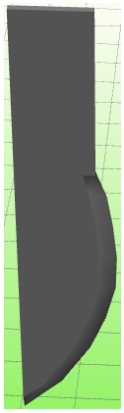


Tool4.obj

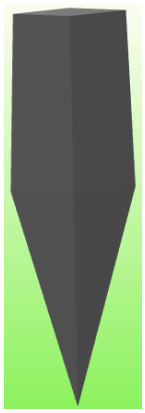
Blade1.obj



Blade2.obj



Blade3.obj



Select Machine Model

Select model machine if Cursor Type-> Machine

Show Material

Enable/Disable the Show of material if Cursor Type-> Machine

11.21.9.4 Lines Thickness

Thickness Work Plan Line
Thickness line of WORK PLANE.

Thickness G1 G2 G3 Line
Thickness line of **G1-G2-G3**

Thickness G0 Line
Thickness line of **G0**

Thickness Tool Offset Line
Thickness line of Tool Offset G41-G42

Thickness Real Time Marker
Thickness line of Gcode Lines Worked

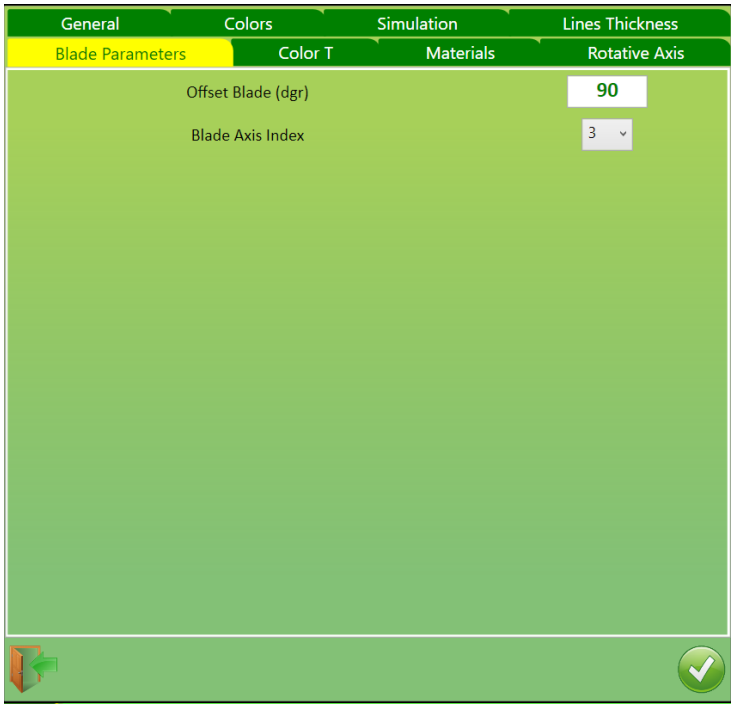
Thickness Grid
Thickness line of Grid

Start Point Line Thickness
Thickness line of **Marker Show Start Gcode Path**

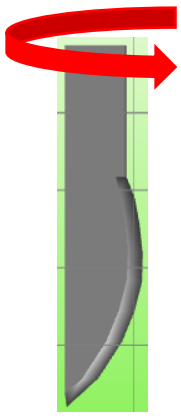
Start Point Line Length
Length line of **Marker Show Start Gcode Path**

Tool Out of Toll. Line Thickness
Thickness line of **Tool outside of piece (+ o -)**

11.21.9.5 Blade Parameters



IsoUs can simulate a **ROTATIVE CUTTER AXES** .
The real angle position of cutter will be showed in the simulation.
This option is valid only if selected a **BLADE** Cursor Type . Set a **Bladexx** Tool Type



Offset Blade (Degrees)

Insert the **BLADE OFFSET** for adjust the simulation angle to machine angle

Blade Axis Index

Insert the Index of Axis where the **BLADE** is connected in the machine.
Ex: for 4 Axes

X ***Index 0***
Y ***Index 1***
Z ***Index 2***
A ***Index 3***

11.21.9.6 Color Layer T

Allows to select a color for the single tool (0-15) when the simulation type is set to **LayerT**

11.21.9.7 Materials

Mesh Material

Type of **MATERIAL** for **MESH**.

Info Line

Type of **MATERIAL** for **Info Line.**

File Origins
Type of **MATERIAL** for **MARKER FILE ORIGINS**.

Work Plane
Type of **MATERIAL** for **WORK PLANE**.

Min Max Origins
Type of **MATERIAL** for **MARKER MIN MAX ORIGINS**.

Work Origins
Type of **MATERIAL** for **MARKER WORK ORIGINS**.

Offset Origins
Type of **MATERIAL** for **MARKER OFFSET ORIGINS**.

Heads Origins
Type of **MATERIAL** for **MARKER HEADS ORIGINS**.

Edges
Type of **MATERIAL** for **MARKER EDGES**.

Rotate Pipe
Type of **MATERIAL** for **PIPE ROTATIVE AXIS**.

Preview Box
Type of **MATERIAL** for **PREVIEW BOX**.

Ball Measures
Type of **MATERIAL** for **MARKER BALL MEASURES**.

11.21.9.8 Rotative Axis

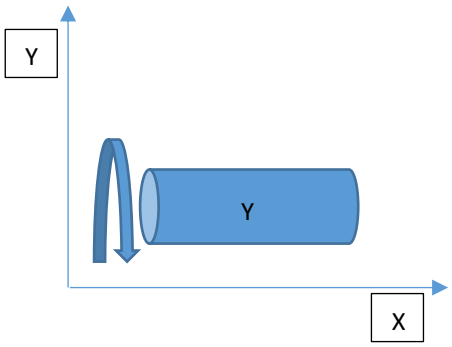
Enabled

ON OFF

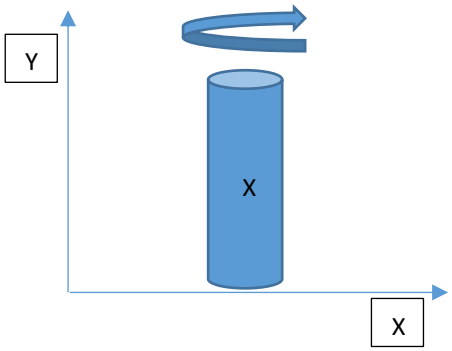
Rotative Axis

(0) Y Rotate To X
(1) X Rotate to Y
(2) A Rotate to X
(3) A Rotate to Y

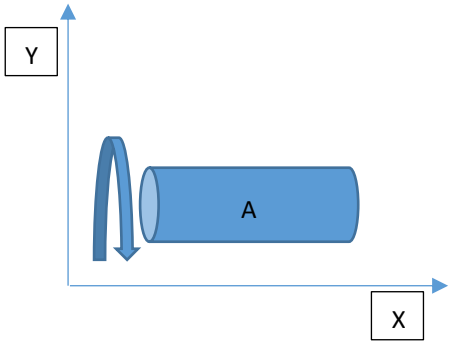
Y Rotate to X



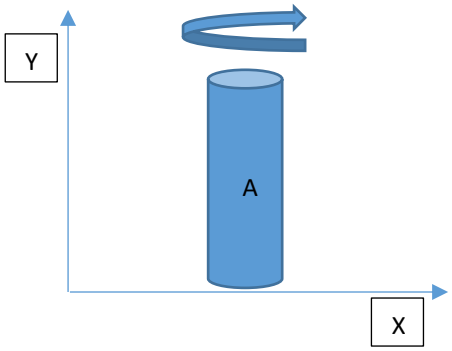
X Rotate to Y



A Rotate to X



A Rotate to Y



Z Direction

AXis Z Direction DownWard (negative or positive)

Center X,Y,Z

Rotation center of X,Y and Z for rotative Axis

12 Multiprocess Interface

IsoUs can manage up to 8 Process in the same PC. When the **MULTIPROCESS** is enabled is possible choose which interface is showed.

12.1 Select a Single Interface

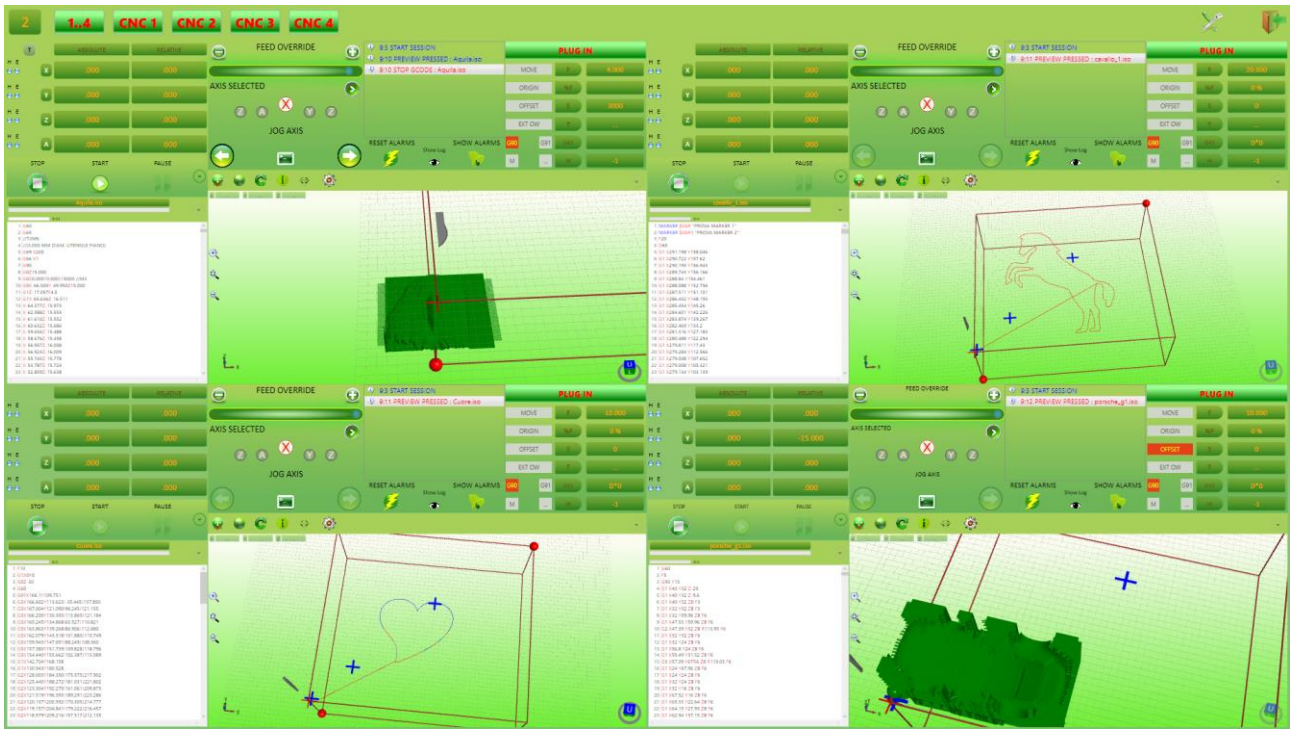
Press the desired interface **BUTTON** (ex for 4 Interfaces):

Current Interface

CNC 1 Interface CN 1
CNC 2 Interface CN 2
CNC 3 Interface CN 3
CNC 4 Interface CN 4

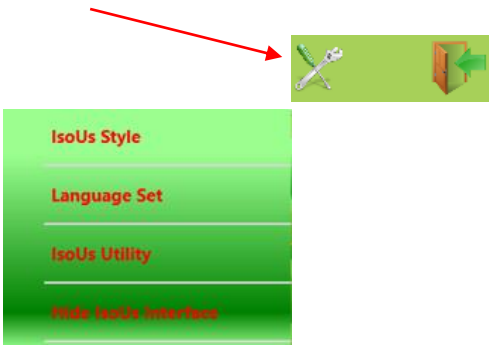
12.2 Select all Interface

IsoUs can show all **INTERFACES simultaneously**.
Press **BUTTON**:



13 Configuration and Utility

Press **BUTTON**:



13.1 IsoUs Style

Choose Your prefered style

13.2 Language Set

Set the IsoUs Language

13.3 IsoUs Utility

See the **ISOUS UTILITY DOCUMENTATION.**

13.4 Hide IsoUs

Press the button for HIDE the IsoUs window
Press the **ISOUS ICON** in Windows Task Bar for return to IsoUs interface.

WARNING:
In this mode IsoUs is working, but **NONE MESSAGE OR ALARMS WILL BE SHOWED**

14 ExtendedComponents

The extended components can be put in a grid upper (if the interface is in Portrait Mode) or bottom the Gcode

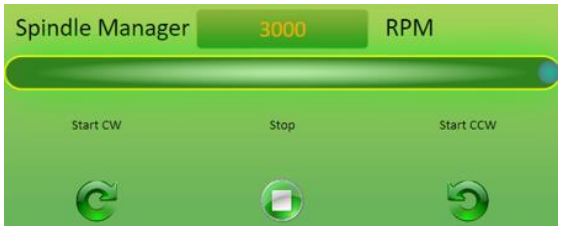
Extended Component

Extended Components available:

UsExtendedSpindleManager
UsExtendedMDI
UsExtendedFavorites
UsExtendedState
Null

14.1 UsExtendedSpindleManager

Load the Spindle manager panel (Spindle)



14.2 UsExtendedMDI

Load the MDI panel (the button in the Gcode Editor will be removed)

14.3 UsExtendedFavorites

Load the last files used (the button in the Gcode Editor will be removed)

14.4 UsExtendedState

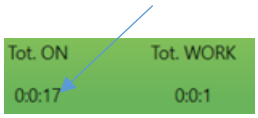
Load the state of isosu panel

Stop,Start,Pause State indicators

Part. ON	Partial time of **MACHINE ON** It is Reset to Power on	**days,hours,minutes**
Part. WORK	Partial time of **MACHINE WORK** It is Reset to Power on	**days,hours,minutes**
Tot. ON	Total Time of **MACHINE ON** It is manually reset	**days,hours,minutes**
Tot. WORK	Total Time of **MACHINE WORK** It is manually reset	**days,hours,minutes**

Reset total Times

Double click on the label Time



Insert the 2 level password and press OK button

Both counters will be reset

15 Interface Portrait Mode

The interface Portrait mode, is loaded automatically if the windows is set in Portrait view

This feature is a little bit different to interface Landscape Mode:

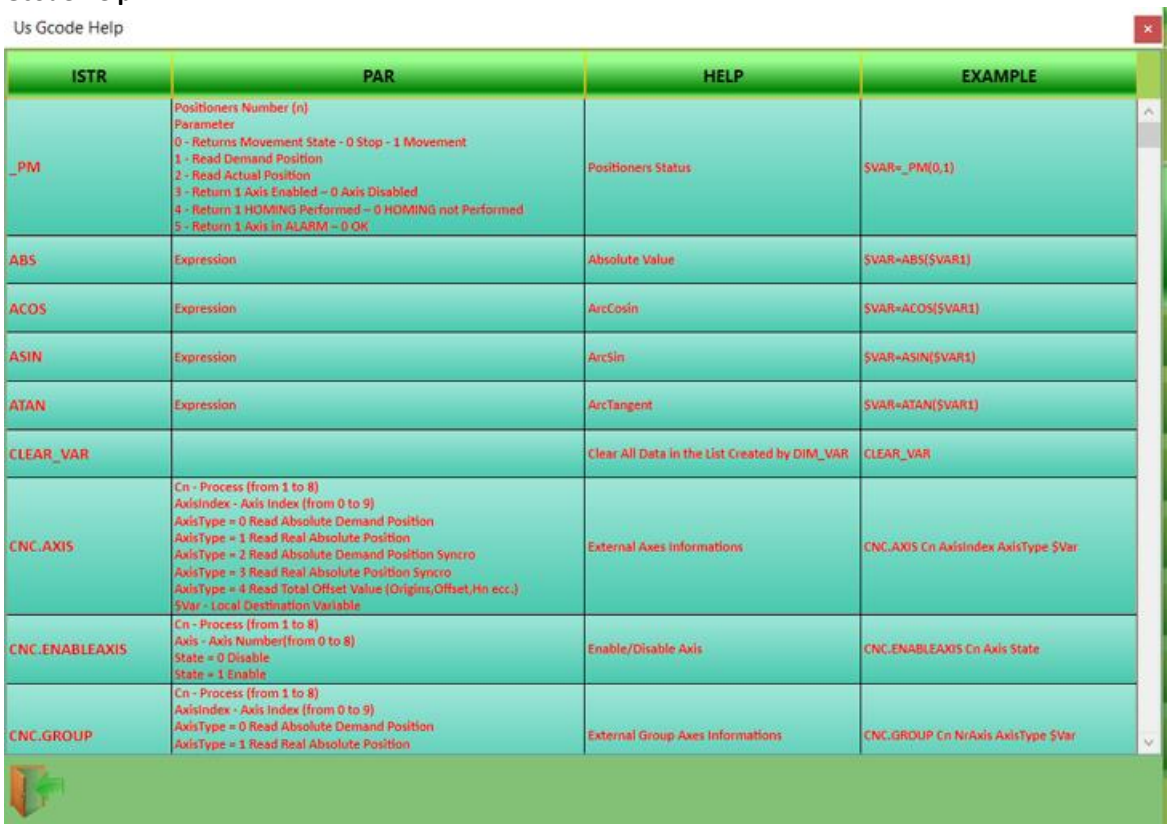
15.1 IsoUs Virtual KeyBoard

The virtual KeyBoard is like to hardware keyboard
In some situation this KeyBoard is not active and is necessary use the Windows Virtual KeyBoard or Hardware KeyBoard.

Special Keys:

SEL+ Select a **character** and move the cursor down
SEL- Select a **character** and move the cursor up
SEL L+ Select a **line** and move the cursor down
SEL L- Select a **line** and move the cursor up
SEL P+ Select a **page** and move the cursor down
SEL P- Select a **page** and move the cursor up
Copy Copy the selected characters
Paste Paste the selected characters
Undo Undo modify
Help Open the Gcode Help Window

Gcode Help



Pressing the IsoUs KeyBoard characters, will be show the Gcode functions in alphabetical order.
Push the CR key for send the Gcode function to Gcode Editor

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