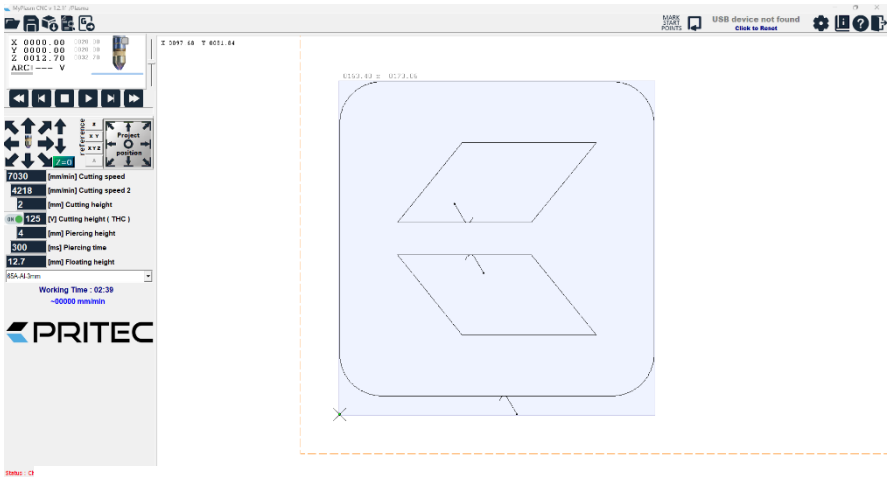
CE

ACROS
CNC SYSTEM

PRITEC



Software User Guide*

**This manual is not an assembly, installation and commissioning manual, which can be downloaded from [our website]*

v1.2.soft.

Contents

1.0 Introduction

The main focus of the Acros CNC system is simplicity of commissioning and operation. It has severely limited functionality to only the most essential aspects of plasma cutting for which it is designed. The software is based directly on vector drawings and does not support G-codes, making it ideal not only for users who appreciate minimalism, but also for unskilled CNC operators, as it only takes a few clicks to operate the machine.

The operation of some functions may differ from those shown in the manual, depending on the hardware configuration and optional machine components.

This manual **does not cover the** assembly, installation, and configuration of the Acros CNC system. It assumes that the system has been put into operation in accordance with the manual available at https://pritec-automation.com/pages/handleidingen

2.0 Safety

Plasma sources generate dangerous stresses for health and life and pose the risk of damage to electronic equipment. It is forbidden to operate the machine without properly performed grounding / safety switches / if the cables and/or control components are found to be damaged.

In case of emergency Use the safety switch immediately.

Basic principle of safety in the workplace

Most accidents occur because safety regulations are not taken into account or ignored. Safety equipment such as guards, safety goggles, dust masks, hearing protection, etc. reduce the risk of accidents. However, even the best safety precautions do not protect you in the event of poor judgment, inattention or carelessness. Pay attention at all times in the workshop and use common sense. When something seems too dangerous, don't try it, but find a safer solution, even if it may take more time. Remember: your personal safety is your own responsibility.

The user of the machine must be sure of the following:

Persons operating the machine have received instructions/training and have been made aware of the dangers and safety regulations.

The safety regulations are observed and can preferably also be read at the workplace. For this reason, the manual is a part of the machine and should be kept within easy reach of the machine at all times. When the machine is resold, the manual must be handed over!

Basic safety regulations for working with machines

1. Make sure you understand this manual before you start using the machine. Failure to follow this instruction may result in serious bodily injury, property damage, and/or damage to the machine.
2. Make sure you have read and understood all the warnings in this manual and those printed on the machine. Failure to comply with these warnings may result in serious bodily injury.
3. Replace warning labels when they are no longer legible or removed.
4. This machine is designed and intended for use by professional and experienced staff. If you are not familiar with the use of the machine, do not use it until you have gained sufficient experience and knowledge.
5. Do not use this machine for any purpose other than that for which it is intended. If this does happen or if the machine is modified, the warranty will be void and the manufacturer will not be liable for any damage or injury caused as a result.
6. Use ANSI approved safety goggles or face mask at all times when operating this machine.
7. Do not wear jewelry, loose-fitting clothing and/or watch while using the machine, as they may grip in grabbing parts. Long hair should be tied up or tucked into a hairnet. Wearing non-slip footwear or applying anti-slip strips to the floor is recommended.
8. Do not use this machine when you are tired or under the influence of alcohol/medication/drugs.
9. Check that the main power switch is in the 0 position (OFF) before connecting the machine to the power supply.
10. Never use this machine outdoors or expose it to rain and/or moisture.
11. Never operate the machine in a hazardous working environment. Use of power tools in humid environments or in the rain may cause electrocution.
12. Make sure the machine is properly grounded.
13. When an extension cord is used, be sure that it is in good condition and that it can handle the power of the machine. An extension cord that is too light can cause loss of power and overheating. Refer to the EN 60204-1:2006 standard for the correct size. This depends on the length of the cord and the specifications of the machine.

14. When carrying out repairs or maintenance on the machine, the plug must be unplugged from the power supply.
15. Use only accessories and fasteners prescribed by the manufacturer, the use of other accessories/fasteners may cause damage to the machine and/or bodily injury.
17. Remove materials, tools, wrenches and the like from the machine before it is put into operation.
18. Keep safety panels in place at all times when the machine is in use. If these are removed for maintenance, transport, etc., they must be replaced before the machine is put back into service. Before use, check that all safety panels and/or guards are in place.
19. Do not force the workpiece and/or the machine. Doing so may result in damage to the machine and/or bodily injury.
20. If a defect occurs during the start-up or use of the machine, the operator must stop the machine and report the defect to the workshop manager or the technical service.
21. When the machine is not in use, it must be switched off.
22. Observe the prescribed maintenance and inspection instructions at all times, which can be found in the user manual.
23. Make sure the machine is securely secured to a solid, stable surface.
24. Check the machine for defective parts before each use. Before using the machine, it must be checked that a damaged part is still functioning properly and can perform its intended function. Check the alignment of moving parts, the connection of moving parts, broken parts, assembly, and other phenomena that may affect the operation of the machine. In the event of a defective part or protection panel, the machine must be taken out of service until the affected part has been repaired or replaced, this should only be done by an authorised company/technician and defective parts should only be replaced with original PRITEC parts, which are available from your PRITEC point of sale.
25. Make sure there is enough obligation and space around the workplace.
26. Keep the floor around the machine free of sharp materials, oil and grease.
27. Keep visitors at a safe distance from the workplace and keep children away.
28. Make your workshop "child proof" by working with padlocks on the main switches and by removing keys when the machine is not in use.
29. Focus your full attention on your work. Looking around, having conversations, etc., distracts your attention, which can result in serious injuries.
30. At all times, make sure that you have a firm footing and that you never reach over so that you cannot fall into the machine or other moving parts.
31. Never overload the machine. Use the machine at the correct speed and feed rate. Do not force the machine to perform a task for which it is not intended.
32. Maintain your machine carefully. Keep it clean and replace worn parts for the best and safest performance. Follow the instructions for cleaning, lubrication, and replacing parts.
35. Switch off the machine before cleaning or servicing the machine. Use a brush or compressed air to remove dust, chips, chips, and debris, not your hands.
36. Do not stand on the machine. If it falls over, serious injury can occur.
37. Never leave the machine unattended. Turn off the power and do not leave the machine until it has come to a complete stop, as this may cause unauthorised injury.
38. Remove loose objects and unnecessary workpieces from the workstation before starting the machine.

Specific Safety Regulations for CNC Cutting Tables

1. Do not operate the machine until it has been assembled and installed according to the instructions in this user manual.
2. If you are not familiar with a CNC cutting table or have never worked with it before, please be instructed and/or guided by an experienced/specialized person first.
3. Follow all technical requirements and prescribed electrical connections.
4. Use the guards and guards at all times, check in advance that they are in place and functioning properly.
5. Keep fingers, hands and arms away from the gears and other rotating parts.
6. Avoid strange controls and hand positions where unexpected slipping may result in contact with the plasma head.
7. Never start the machine with the plasma head against the workpiece.
8. If necessary, use an extraction system if the room is not well ventilated.
9. Support long or wide workpieces with material supports/roller stands.
10. Disconnect the machine from the power supply before making any adjustments, installing or removing accessories, or when servicing or repairing the machine.
11. Remove the machine from the power supply and clean the machine and working environment before leaving it.
12. We recommend using the following Personal Protective Equipment (PPE): safety shoes, gloves and goggles.

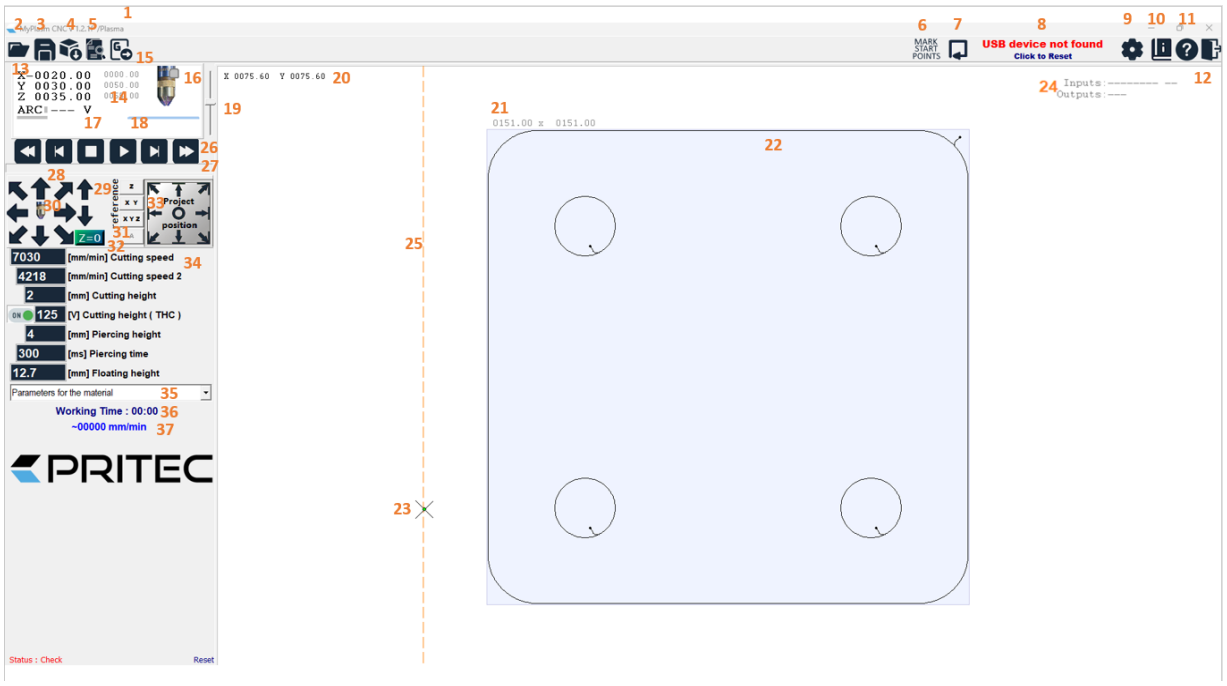
Description of Warning Stickers

	CAUTION: Place the CNC cutting table in a well-ventilated area and on a stable surface. Melting metals can cause unpleasant odors and smoke during cutting.		CAUTION: Unplug the power cord in case of emergency or short circuit.
	WARNING: HOT, DO NOT TOUCH The plasma cutter head and cut-out workpieces reach high temperatures during cutting. Make sure everything has cooled down before touching these parts again. Or use the right gloves and PPE for this.		Safety goggles mandatory
	WARNING: MOVING PARTS Be careful with your fingers and other parts of the body when the cutting table is operating. The moving parts of your PRITEC ACROS can potentially cause damage. Do not touch the rotating parts of the cutting table when it is in use.		Safety shoes mandatory
	WARNING: Do not place the cutting table near flammable materials.		Gloves required
	CAUTION: Be careful with electrical voltage. The control box is powered with 220 volts AC and the output voltage is 24 volts DC.		Using the instructions for use
	WARNING: KEEP THE CNC CUTTING TABLE NEARBY WHEN IT IS IN USE.		PLEASE NOTE: The emergency stop is mounted on the control box, it must be within reach at all times during operation.

3.0 Startup / Main Window of the Software.

The order in which the equipment is turned on is not essential to the operation of the system. It is advisable to turn on the plasma source immediately before the start of the cut, eliminating the risk of it being started accidentally.

After launching the software, the main program window appears:



1. Software Version / Current Profile.
2. Open Acros Project
3. Save.
4. Importing vector graphics files (MyMiniCAM module).
5. Path analysis.
6. Marking of piercing points function.
7. Driving along the broad outlines of the project.
8. Communication status with CNC control.
9. Software/System Configuration Window.
10. This manual.
11. Version Info
12. Program closing.
13. Material coordinates (position with respect to [0,0] material).
14. Machine coordinates (position relative to machine reference points).
15. Graphical representation of the vertical position of the Z-axis.
16. Floating main sensor indicator.
17. Arc voltage measured by plasma interface
18. Graphical representation of the position of the material surface (height)
19. Zoom in / zoom out (= mouse wheel).
20. Material coordinates indicated by mouse pointer.
21. X/Y dimension of traces.
22. Loaded project.
23. Current torch position.
24. Status of the controller's inputs/outputs.
25. Operating range of the machine (SoftLimit).
26. Automatic Control Buttons / Initial Path Selection.
27. Progress/paths scrolling indicator.
28. X/Y manual movement keys (= arrow keys on the keyboard).
29. Z manual movement keys (= PgUp / PgDown keys).
30. Plasma power on button (= spacebar key).
31. Homing/reference buttons.
32. Reset button for material coordinate Z (= material elevation).
33. Project/paths positioning on material.
34. Cutting parameters
35. Material database of cutting parameters.
36. Automatic operating time
37. Current feed rate.

The current connection status to the controller is displayed in the upper right corner of the screen. Communication can be restarted (disconnected) by clicking on the left mouse button:

Communication OK - Communication correct (WORKING MODE).

No USB device : Controller not connected or Windows driver issue. **Communication error** : Device installed and connected correctly, but a communication error occurred. Controller power supply issues or incompatible firmware version.

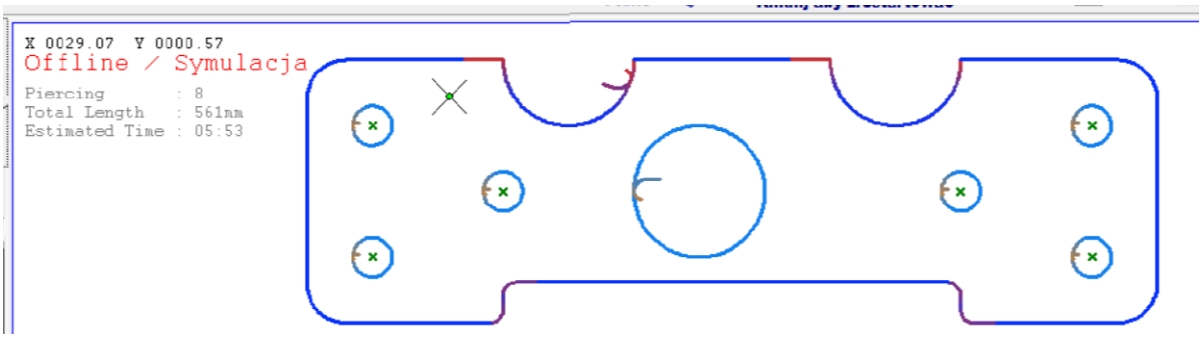
For lost communication, the software runs in SIMULATION mode)

3.1 Project/Paths Preview Panel

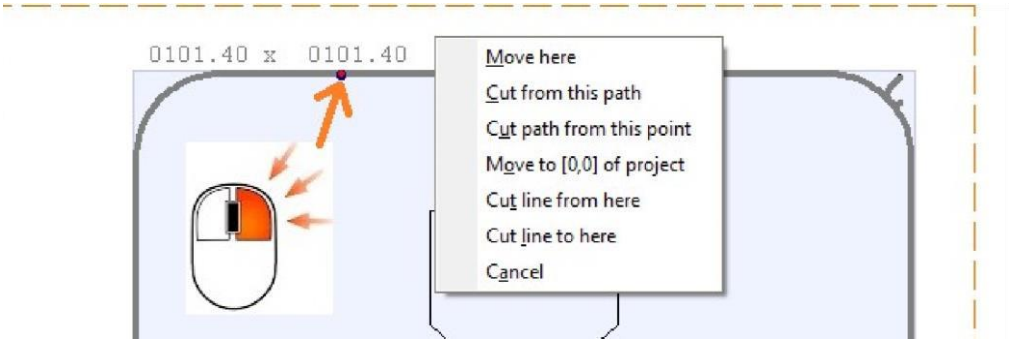
With the help of the mouse wheel, you can zoom in and out of the elements. The element that is currently being referenced with the mouse pointer will be brought closer. By holding down the mouse wheel, it is possible to move the view.

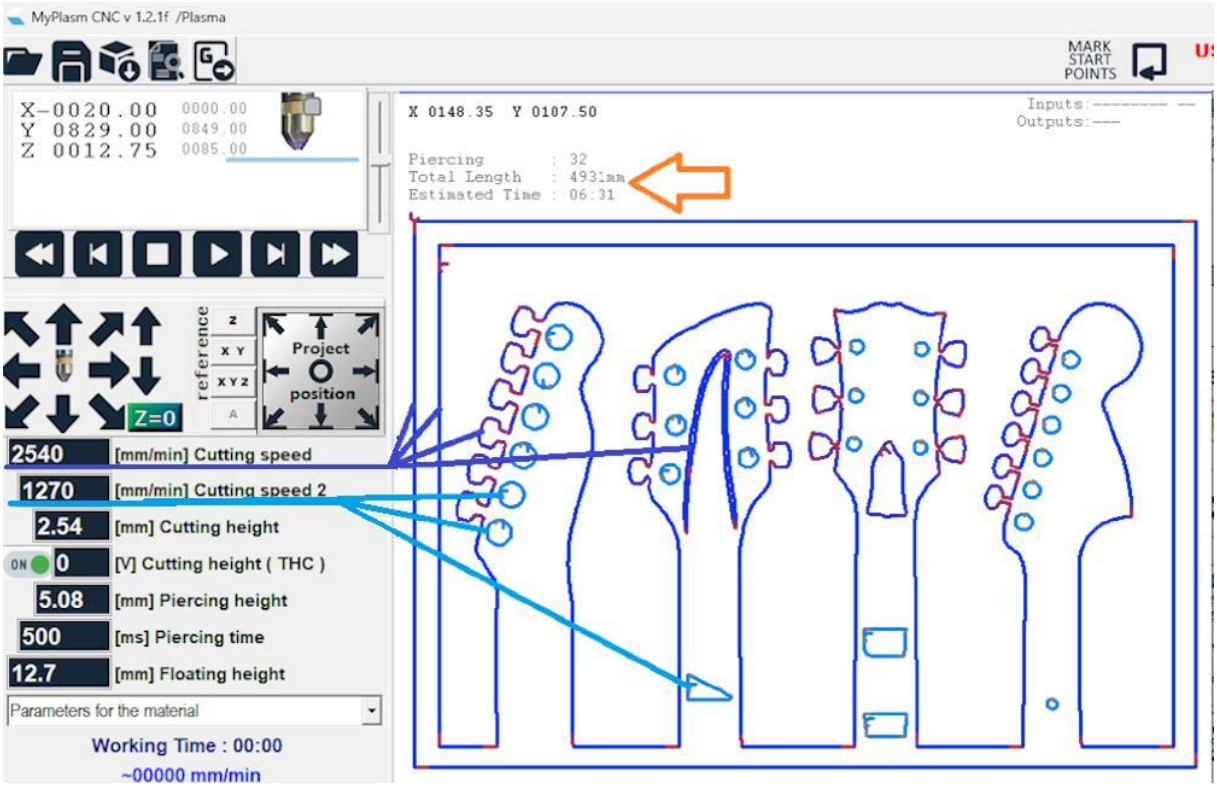
Double-clicking with the left mouse button resets the view (adjusts the magnification to the size of the project).

The right-click brings up a function window, the functions of which are described later.



3.2 Path Analysis

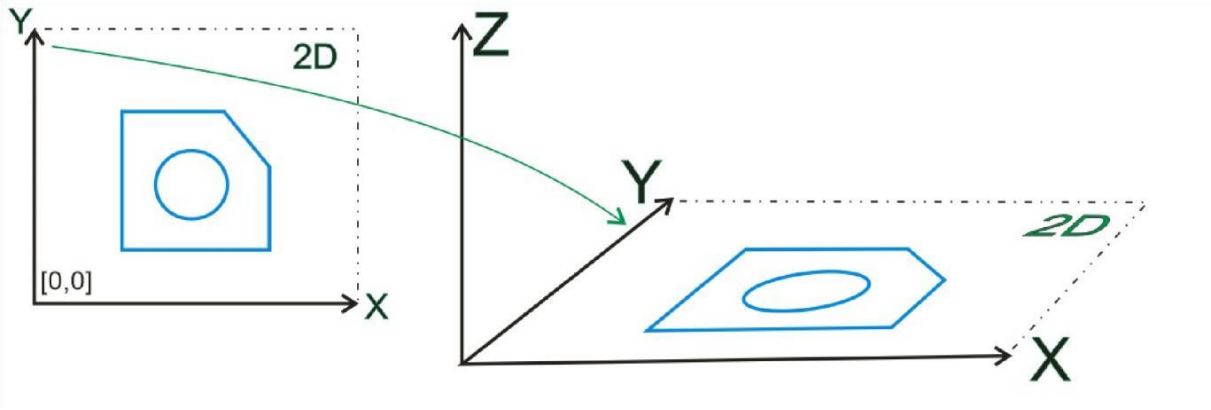




The button displays the analyzed traces in terms of their ability to maintain the set cutting speed. The **dark blue** color indicates the tracks that are cut at the "main speed". **Light blue** shows the tracks that have been cut off at **cutting speed 2** and with the THC controller turned off. The proportional change to **red** indicates that the speed will be reduced at these locations (limited machine dynamic parameters). At these points, the THC function is also disabled (this prevents the flashlight from diving when the feed is slowed down). It also shows some information such as the number of piercings, the length of the cut, and the estimated cutting time. **Green** crosses indicate where the holes are pointing (if activated).

3.3 Orientation of machine/coordinates

The system is based on 2D drawings, and therefore the orientation on the flat material is recorded according to the 2D coordinate system. The vertical torch axis is the Z axis.



The control station (PC) must be positioned in accordance with the configuration of the machine, i.e. so that the arrow moves to the right, the X-axis to the right, etc. Otherwise, the operation of the machine will be significantly impaired.

4.0 Reference / Homing of Machine

Homing (setting shaft reference points) allows the system to determine the position of the tool. When the power is off, the drives are unlocked and can therefore be moved:

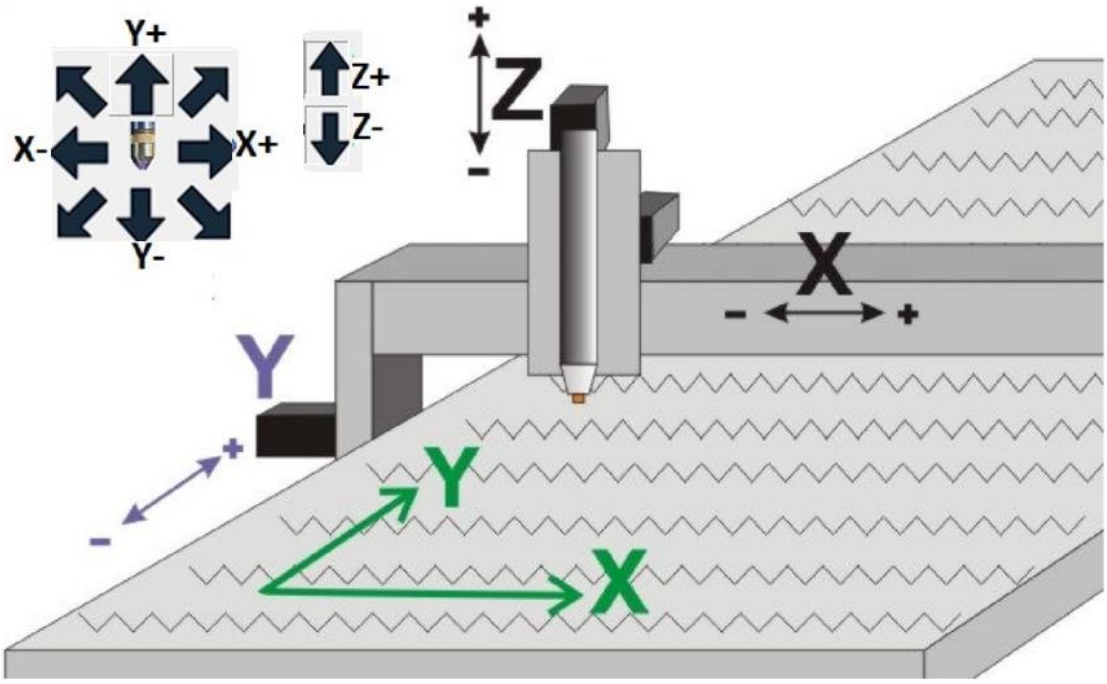
It is recommended to always run the Homing after the power is turned on.

This allows the user to avoid problems associated with out-of-range operation; In addition, if the Homing is automatic (to limit sensors), this greatly facilitates the accurate continuation of operation after a fault has occurred (e.g., power failure, lost steps).

The system makes it possible to work immediately after start-up without homening the machine, but the aforementioned consequences must be taken into account.

4.1 Automatic Homing

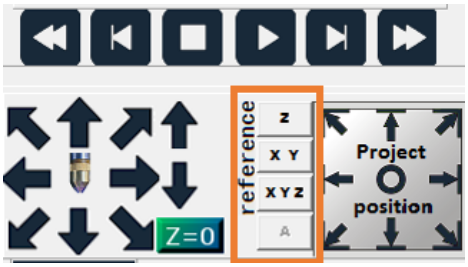
It is a matter of clicking on the reference travel button and the axes will automatically arrive at the limit sensors and assign the corresponding machine values to the axes (ZERO or maximum /

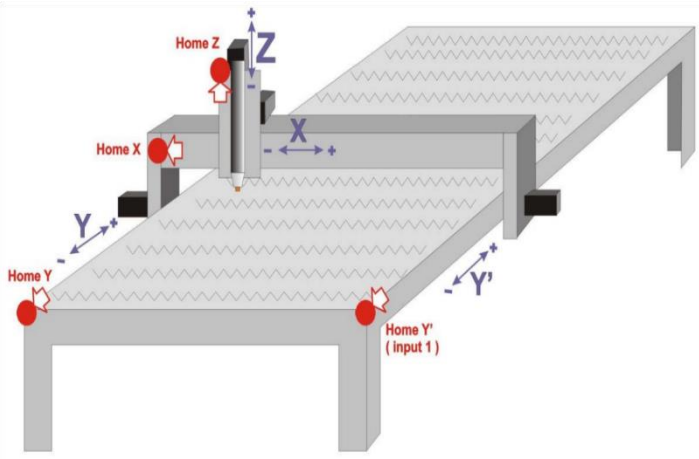


If the gantry is driven on both sides, any misalignment is automatically compensated.

Example of a homing sensor setup with double-sided Y-axis drive (Y + Y').

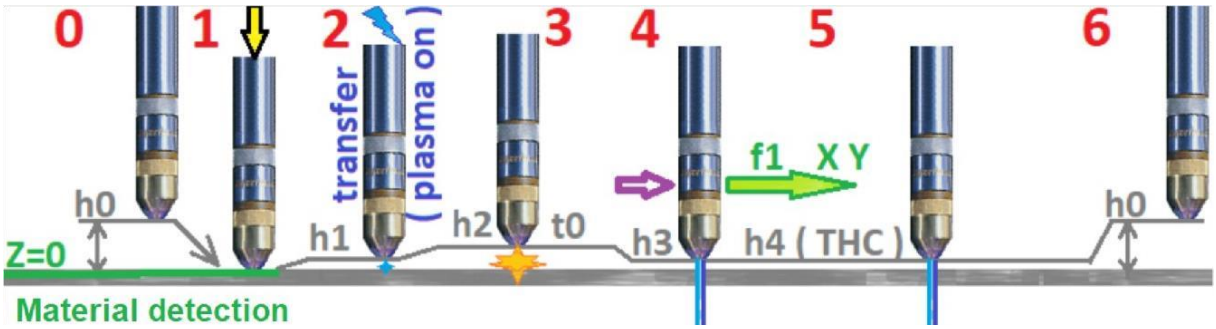
*possible homing on the other side of the X and/or Y axis (MAX).





5.0 Setting the cutting parameters

5.1 Program algorithm



0 - Starting position - torch at H0 (**hovering height**), with maximum speed over the crossing point of the selected path

1 - Material height detection

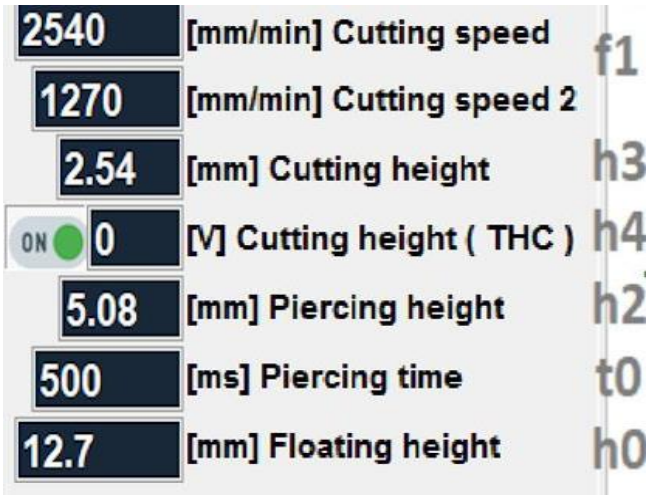
2 - Place the torch at transfer height h1 or **puncture height** h2 if lower than h1, start the plasma source (plasma on)

3 - After detecting the main arc flash, set the torch to H2 (**puncture height**) for time T0 (**piercing time)**

4 - Place the torch at height h3 (**Cutting height**) and start the X Y feed at speed f1 (**Cutting speed**) or (**Cutting speed 2)** for small objects.

5 - When the preset speed f1 (**Cutting Speed**) is reached, the control of the height maintenance (h4) is taken over by the **THC** - Torch High Controller (if active) based on the ARC plasma arc voltage measurement and the specified arc voltage [V] (THC cutting head)

6 - End of pad-disabling plasma source and torch lift to H0 (by height)



Cutting speed - preset cutting speed

Cutting speed 2 - preset cutting speed for small objects/holes.

Cutting height - adjust the cutting height for the disabled THC function

THC Cutting Height - Arc Stress Determination for THC Height Regulator - Higher Stress = Higher Cutting Height

Piercing height - height at which the material is pierced at the beginning of the path, active for time >250ms - if the time is shorter, the piercing at cut height 2.

Piercing time - The time to wait after firing the torch for the material to melt.

Pass-through height – the height at which the flashlight moves quickly between paths.

Determining the right parameters has a significant impact on the quality of the cut. Unfortunately, the parameters are individual for different plasma sources, so it is not possible to give a ready-made solution. The parameters should be selected according to the recommendations of the plasma cutter manufacturer.

For a specific material, the most important factors are: gas pressure, flow, cutting speed and cutting height. If the THC control is switched on, the cutting height is determined by the arc voltage and specified in V. Otherwise, cutting height 2 is maintained - e.g. when cutting holes where the THC function is automatically switched off.

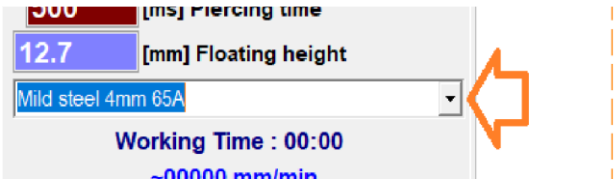
Below is an example.

P 5,5 bar 80 psi	270 l/min 575 cfh	AIR - Clean, dry, oil-free for ISO 8573-1 Class 1.2.2

mm					PRODUCTION		QUALITY		
mm	mm	mm	%	sec	mm/min	V	mm/min	V	mm
3	2	4	200	0,2	8740	121	6460	123	1,7
4	2	4	200	0,3	6930	123	5360	123	1,7
6	2	4	200	0,6	4180	126	3420	124	1,8
8	2	4	200	0,6	2940	128	2370	126	1,9
10	2	4	200	0,6	1960	129	1590	128	2,0
12	2	5	250	0,8	1520	131	1210	131	2,2
16	2	5	250	1,2	880	134	820	135	2,4
20	2	6	300	1,7	640	137	540	138	2,6
25	2				420	142	330	143	3,2
30	2				280	145	190	147	3,7

5.2 Cutting Parameter Database

If the quality of the cut is satisfactory, it's a good idea to save the parameter group to a database for future reference - to do this, enter a name for the parameter group and click **CTRL + S.**

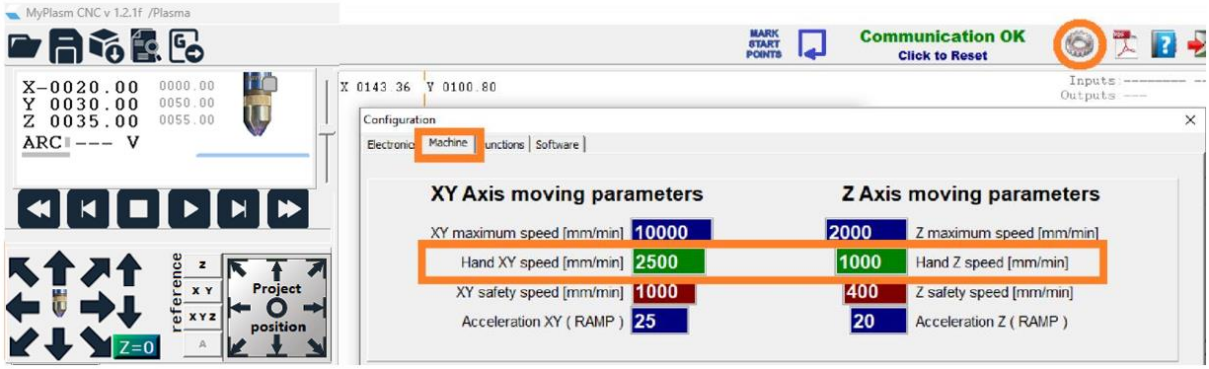


To delete the current item from the database, click **Ctrl + D.**

The reading of previously saved parameters is done automatically when they are selected from the list.

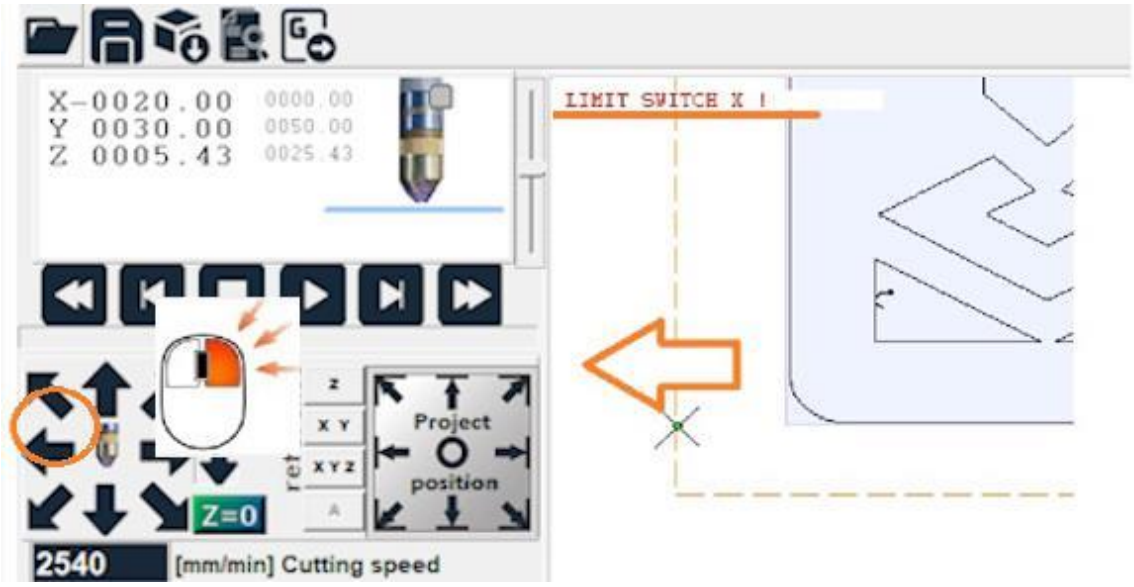
6.0 Manual operation mode.

Manual movements of the machine can be performed with the arrows in the main program window or with the keyboard - Left-right arrows handle the X-axis, up-down the Y-axis, and the PageUp/PageDown buttons are assigned to the Z-axis.



By default, movements are made at the speed defined in the settings / configuration → "Machine" tab.

When pressed, **the SHIFT key enforces** movements at maximum speed, and the **CTRL key** forces precise movements (10% of the preset speed).



The range of motion is limited by software stops and limits. If these should be ignored, use the right mouse button.

6.1 Manual Movement Distance

It is also possible to determine the distance of manual movements of the XY axis.

To do this, right-click in the coordinates box, which displays additional options:

XY Jog Distance : The movement distance of the axis (**0 = no limit**) **One-click jog mode** : Enables the "one click" mode (the axis moves with a preset distance without having to hold down the arrow)

6.2 Manual Cutting

The above steps can be used for manual straight cuts without the need to set up the design. A useful feature if you want to separate material or test/adjust cutting parameters. Parameters must be specified.

Cutting Speed - **Cutting Speed**

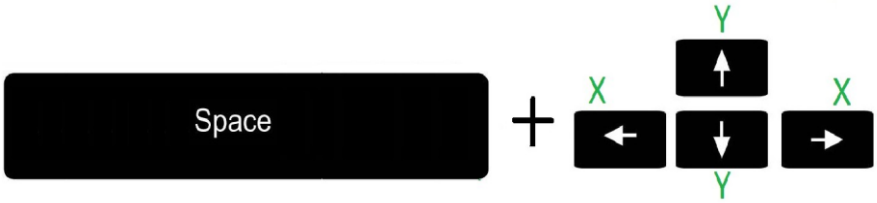
Cutting speed 2 - not for manual cutting

Cutting height 2 - not applicable to manual cutting **Cutting Height (THC)** - Preset arc stress (to maintain a constant height above the material during cutting) Higher value = higher height above the material. If the corresponding THC voltage value is not known, **0 [V] can** be entered, forcing the THC into automatic mode (not recommended if you know the correct value). Relevant source parameters such as pressure, flow should also be set.

MAKE SURE THE CLAMP IS IN GOOD CONTACT WITH THE MATERIAL.

Be ready for an emergency stop of the machine at any time

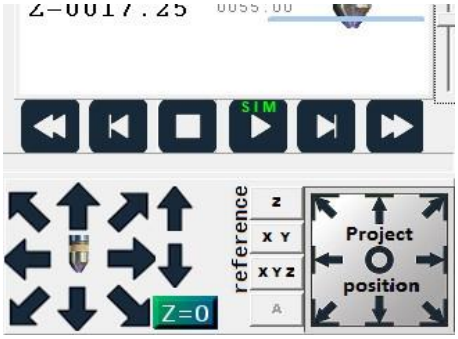
Place the torch at the breakthrough height of the material (or at the cutting height for the automatic THC mode), turn on the plasma with the **SPACEBAR KEY**, and start the input with one of the arrows (screen or keyboard) of the X/Y manual control (Up/Down/Left/Right).



It is worth checking the displayed arc voltage value (ARC), which can be the basis for entering this value for the material in question, since the AUTO mode can be unreliable due to the possibility of an incorrect reading. **The plasma arc will automatically shut off when the supply is stopped.**

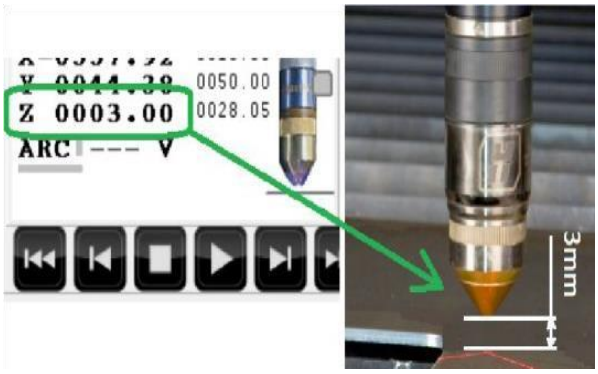
6.3 Semi-automatic cutting.

To make a semi-automatic cut between two points, it is necessary to make sure that the preliminary height adjustment works correctly.



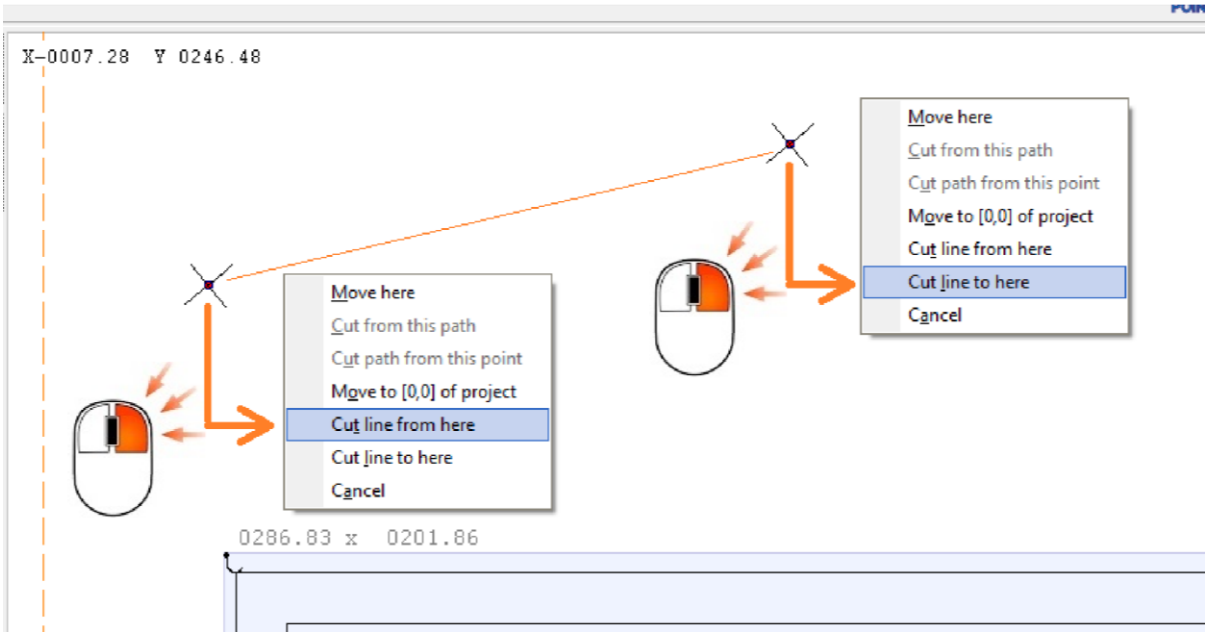
To do this, reset the original height position of the material by touching it with the torch and click [**Z = 0]** **with the LEFT MOUSE BUTTON.**

Then **RIGHT CLICK [Z = 0] (F7 key**) (activates the material height detection function - if the machine has one) the torch should position itself at the puncture height.



As with manual cutting, the cutting parameters for the material must be set.

To define the points between which you want to make a cut, right-click on them on the screen (physically pointing to them with the cutting torch or laser pointer on the machine) and select from the options:



The cut between the points is made automatically. During cutting, it is possible to change the speed with the **+/- keys** and the cutting height with the **PgUp / PgDown** keys.

7.0 Automatic operating mode.

The automatic operation consists of guiding the tool (torch) along a defined path, the method of preparing the paths/project is described later in the manual.

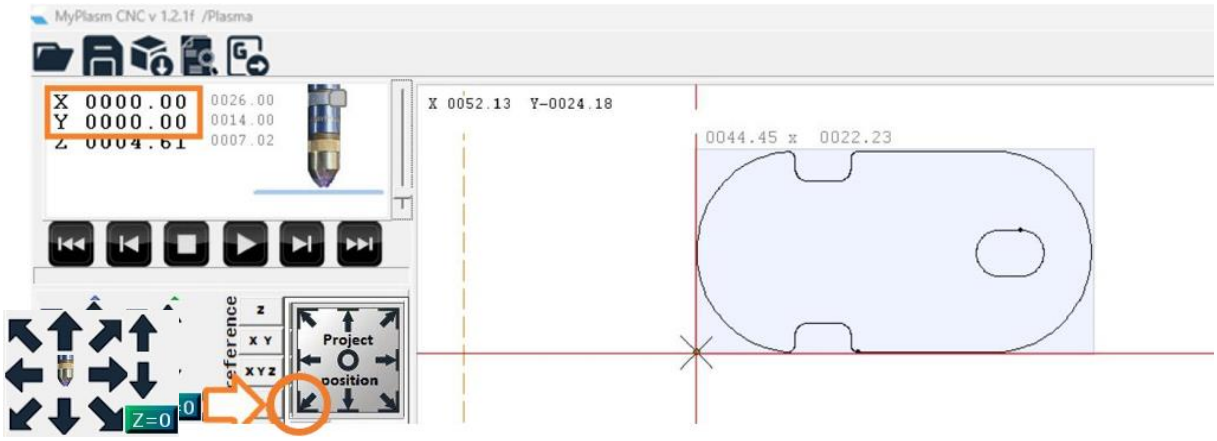
First of all, the cutting parameters must be established **(see point 5)** - to confirm the correctness of the parameters, it is advisable to:

Carry out manual cutting tests on the material concerned (**see paragraphs 6.2** and **6.3**).

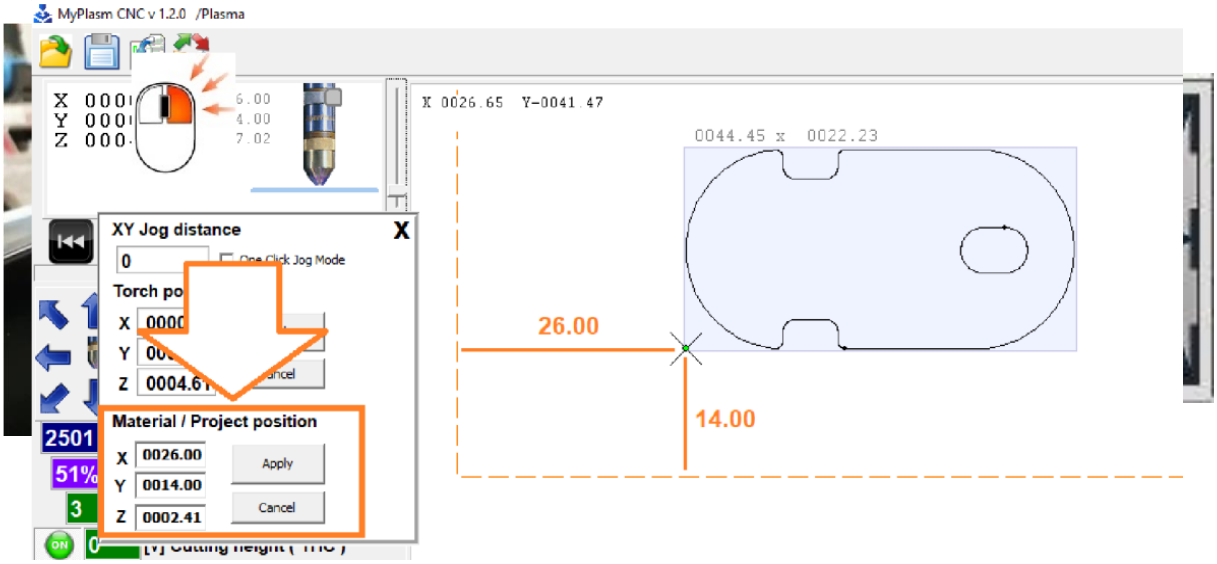
It is advisable to set the reference point of the machine (**see point 4**).

7.1 Positioning of the Project.

Positioning the paths can be done in different ways. The quickest and easiest way is to physically use the cutting torch (or laser pointer*) to pinpoint the position in which you want to place the design on the material, for example a corner/edge of the design. And then click on the appropriate positioning arrow of the design. Below is an example of positioning relative to the bottom left corner of the project/material.



By right-clicking on the coordinates box, the position of the design in relation to the reference points can be accurately determined:



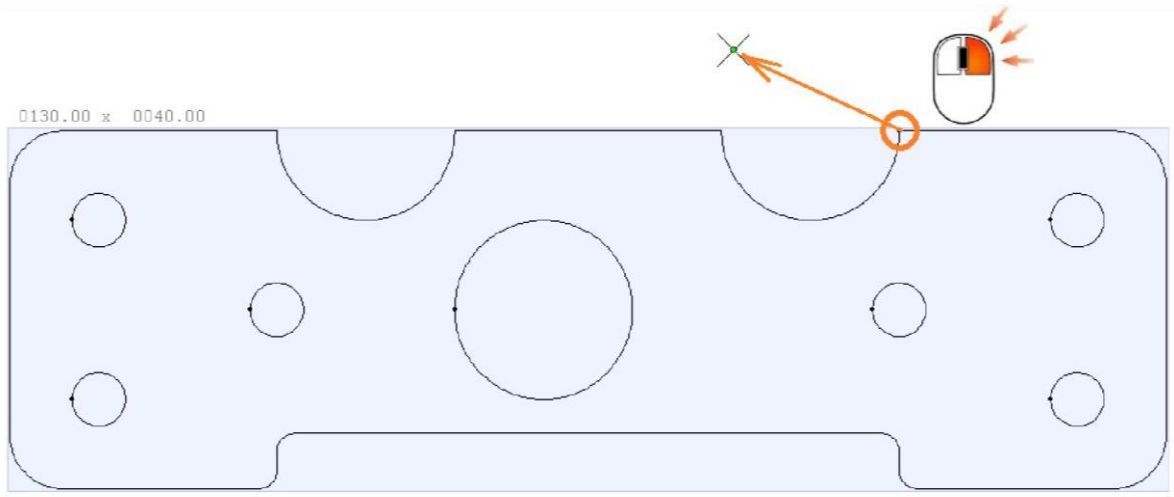
With the third way, the design can be placed anywhere completely freely by moving it with the right mouse button. For example, by sliding the design of interest "below the current position indicated by the torch".

CTRL + Z undoes the operation in case of an unintentional shift. If the design is not positioned correctly (outside the working range of the Soft Limits machine), the work area is marked with a red line and automatic operation is not possible.

The  button initiates the movement of the torch in the X Y axis (at manual speed) along the rectangular perimeter of the design, making it possible to determine if the design is correctly positioned on the material.

7.2 Material Height Determination – Z-axis coordinates zeroing.

The positioning of the material in the Z-axis is performed by zeroing the Z-coordinate when the torch touches the material. Before starting cutting, it is recommended to zero the height even if the machine has an automatic detection system with OHMIC / Floating Head.



7.3 Simulated cutting.

Before starting the actual cut, it is recommended to perform a simulated cut (without turning on the plasma source). Apart from the lack of height adjustment of the THC (simulation is performed at **cutting height 2**), this process is identical to the actual cutting.

To start the simulated cut, press and hold the SHIFT key before clicking the start button (alternatively **SHIFT + F5**).

7.4 Path selection.

The navigation keys allow you to select the track you want to start with.

1 : First path (start)

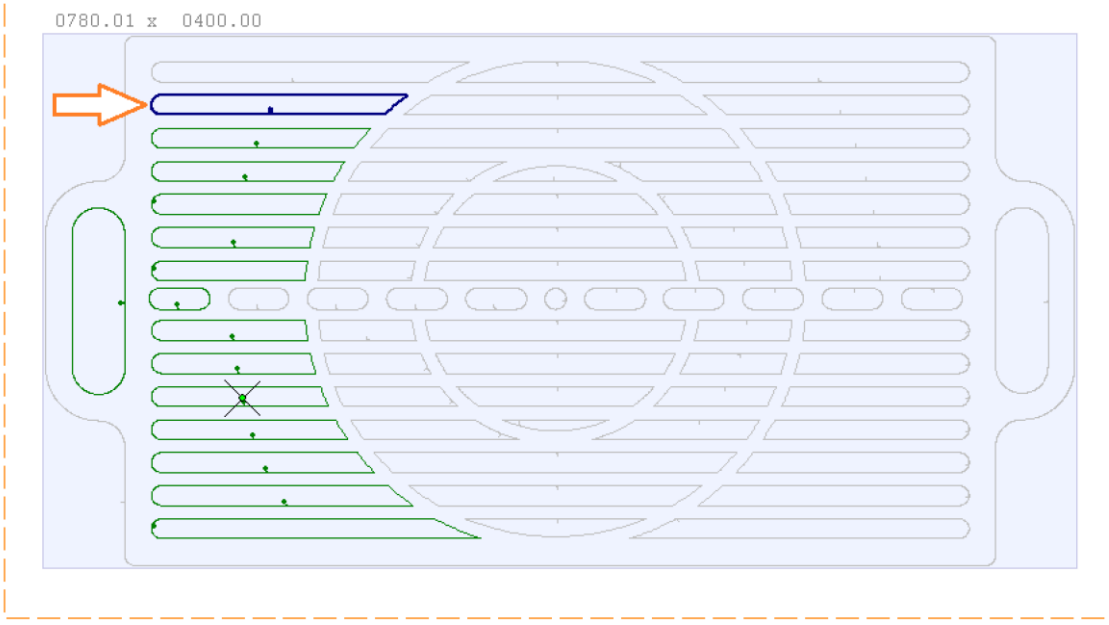
2 : Previous path (backward)

5 : The next path (forward)

6 : Last Path

7 :Progress indicator / fast forward tracks (with mouse pointer)

The selected path is **marked in dark blue**



7.5 Cutting.

If the previous points do not show any abnormalities, the correct cut can be started. Before you start cutting, make sure that:

1 : The machine is correctly set up with reference coordinated (point 4.0)

2 : Parameters are appropriate for the material (point 5.0)

3 : Paths are correctly positioned in XY,Z-axes (point 7.1 , 7.2)

4 : The size of the paths is correct

5 : Material detection function works correctly (point 6.3)

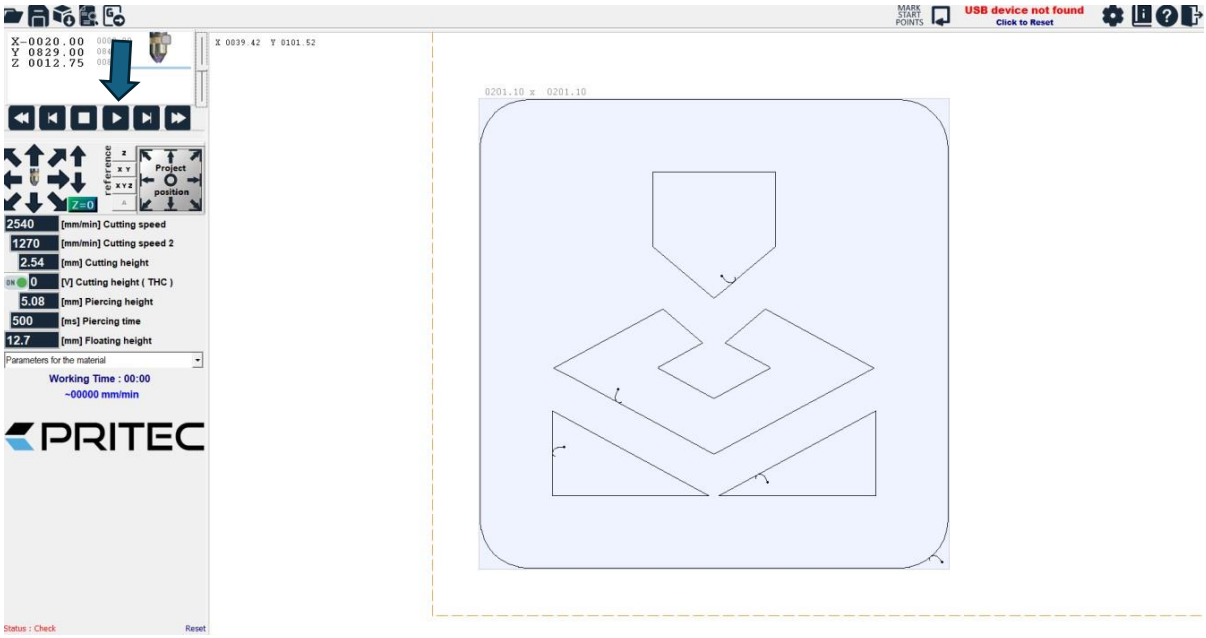
6 : Path originally chosen (point 7.4)

7 : Source parameters are adequate (flow, pressure, controls)

MAKE SURE THE CLAMP IS IN GOOD CONTACT WITH THE MATERIAL.

Be ready for an emergency stop of the machine at any time

Starting the cut is a matter of clicking the **START button** (**F5**)



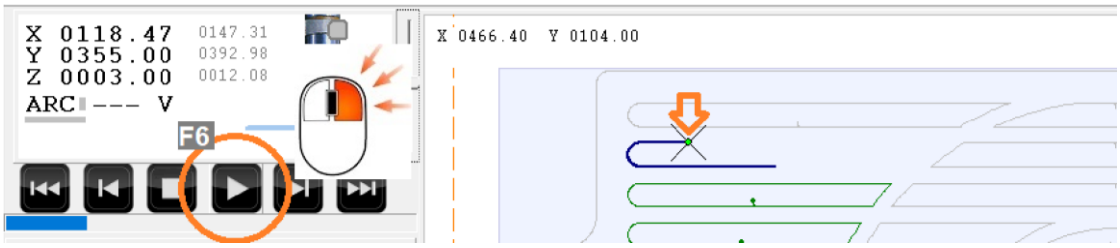
During cutting, it is possible to correct the speed with the **+/-** keys and the cutting height with the **PgUp / PgDown** keys**.**

7.6 Resumption of cutting.

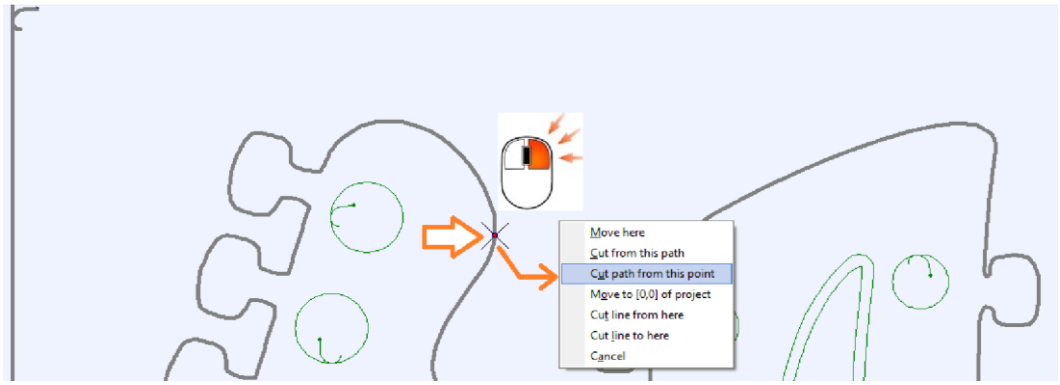
Depending on the circumstances of the interruption, work can be resumed in different ways. In the event of a simple stop with the

STOP [ESC] BETWEEN TRACKS key **(recommended),** click **START [F5]** and the system will automatically continue from the next path.

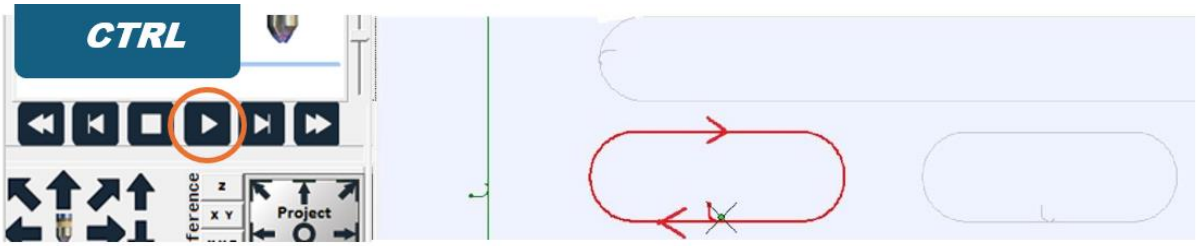
When you have stopped working **DURING CUTTING of a cut,** the **START [F5]** button will start cutting from the beginning. To start from the stop point, right-click **START** or the **[F6]** key.



It is possible to **start** cutting from ANY POINT by simply right-pointing to it and selecting "Start track from this point" from the menu.



If an outline is not cut enough, it is possible to cut it in the opposite direction, which allows it to be cut "from the end". To do this, select those of the tracks and click START while **holding down** the CTRL key.

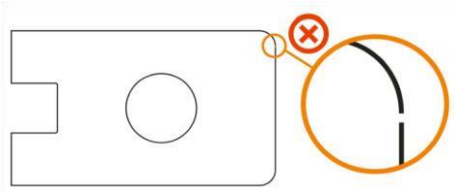


8.0 Project / Paths preparation.

General remark : In order for the plasma cutting to proceed correctly and smoothly, the design must be carefully prepared (drawing of the workpiece in **DXF or HPGL format (PLT)**). Otherwise, some features of the program may not work correctly.

The most common design mistakes are:

1. Unconnected detail lines.

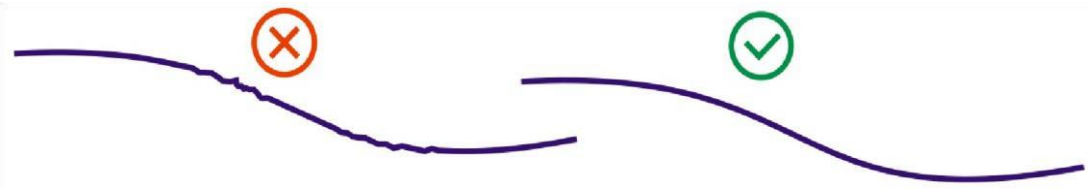


The outline of the detail should be one closed continuous line.

The welding/connecting/closing functions of objects when drawing in CAD make it possible to correct such errors.

Tip: A good way to do this is by using the sum/difference/object operations and the out-of-the-box rounding/cutting angle functions. The object created in this way is always a correct - consistent element.

2. "Frayed lines – small kinks cause the movement to slow down (to change the direction of the shaft), which negatively affects the quality of the cut/overheating of the material and the culture of the machine.

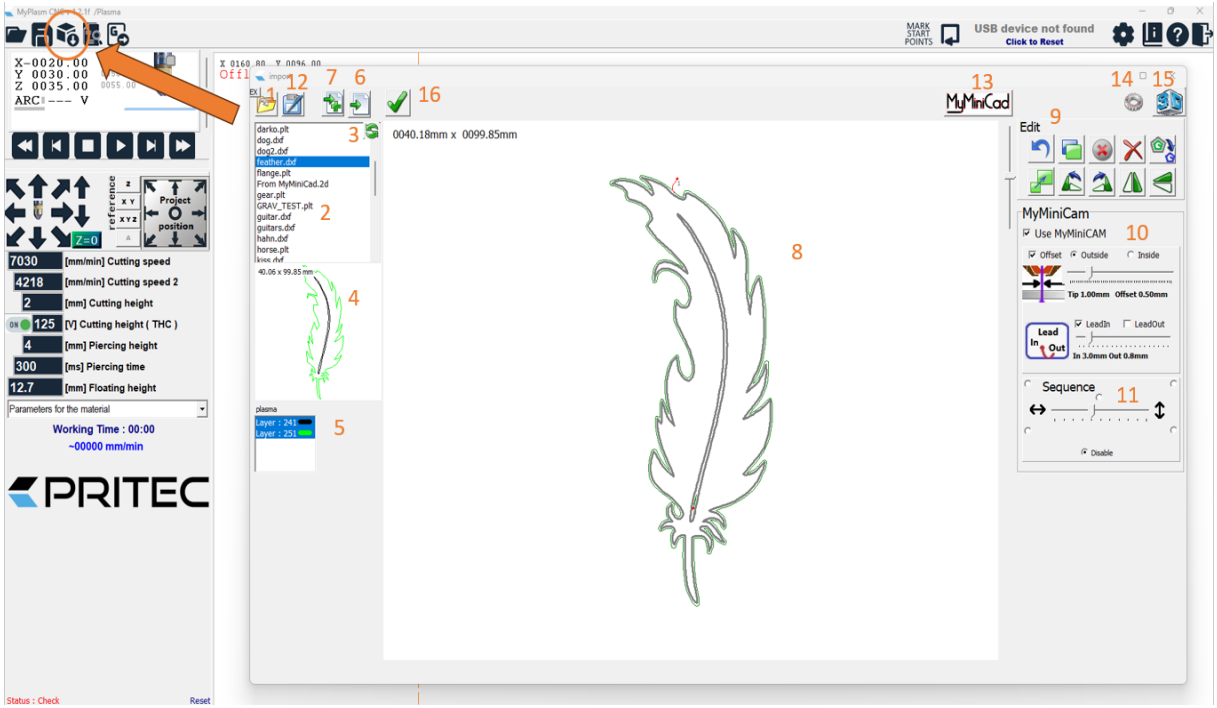


3. Superimposed lines/objects.

4. All objects (especially TEXT) need to be converted to curves before exporting to DXF file.

5. Units used in CAD (including during DXF export) [mm/inch] must be compatible with the Acros CNC settings used.

8.1 Drawing Import Window.



1: Specify which folder the files will be loaded from. EX: Examples.

2: List of files,

3 : Refresh the list.

4 : Quick preview of the selected file,

5 : selection of the active color / layer.

6: Loading the selected file

7: Add another file

8: Main preview window (mouse wheel to zoom in/out, mouse wheel pressed to move the view, double-click to reset the view).

9: Tools for Editing

10: MyMiniCAM Path Generation Module

11: Options for Determining the Cutting Sequence

12: Save Details or Paths for Later Use

13: MyMiniCAD module for drawing simple details

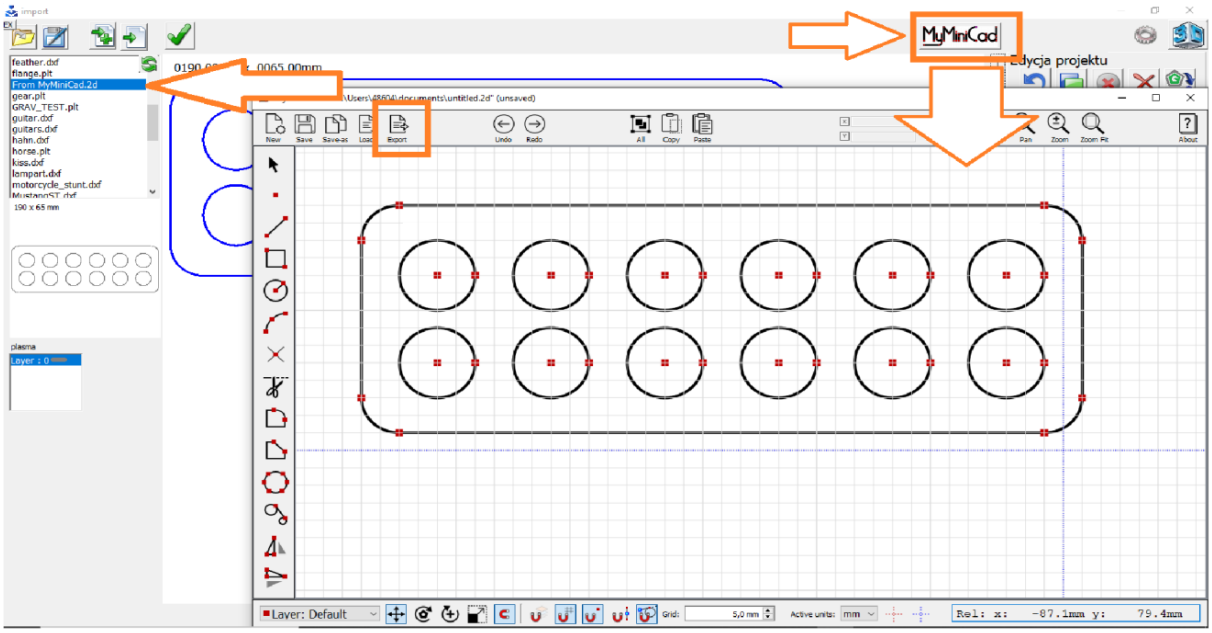
14 : Configuration of File Import Options

15 : 3D preview of loaded details.

16 : Path approval / transfer to the control program window.

The **MyMiniCAD module** has a number of basic graphical tools and allows you to draw simple details directly in the system, which makes your work much easier and faster. If the available tools are not sufficient, use an external professional **CAD program (AutoCad etc...)**.

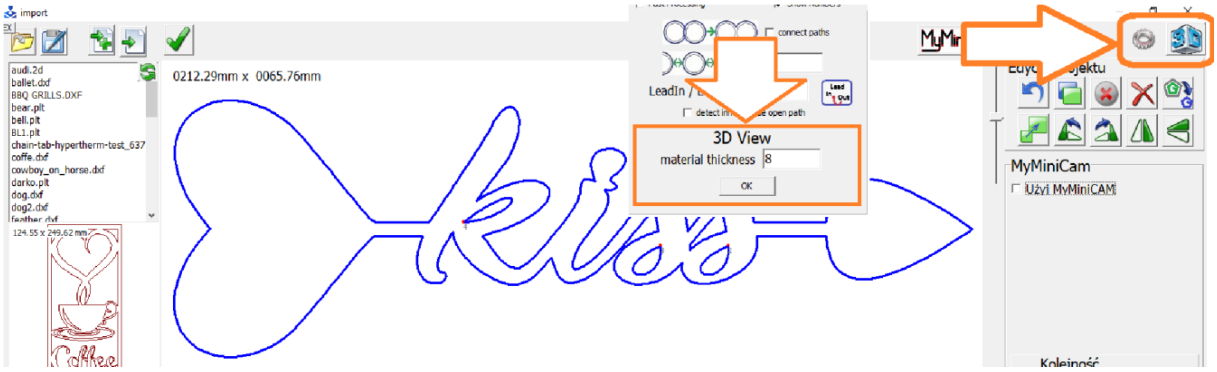
By running the MyMiniCAD module directly from the system, the drawing can be transferred directly to the import window by clicking the Export button:



A separate and detailed manual for the **MyMiniCAD software**/module can be downloaded from https://pritec-automation.com/pages/downloads

Based on the loaded drawing, a 3D preview of the workpiece is generated.

The thickness of the workpiece (material) shown in the 3D preview can be defined in the configuration window:



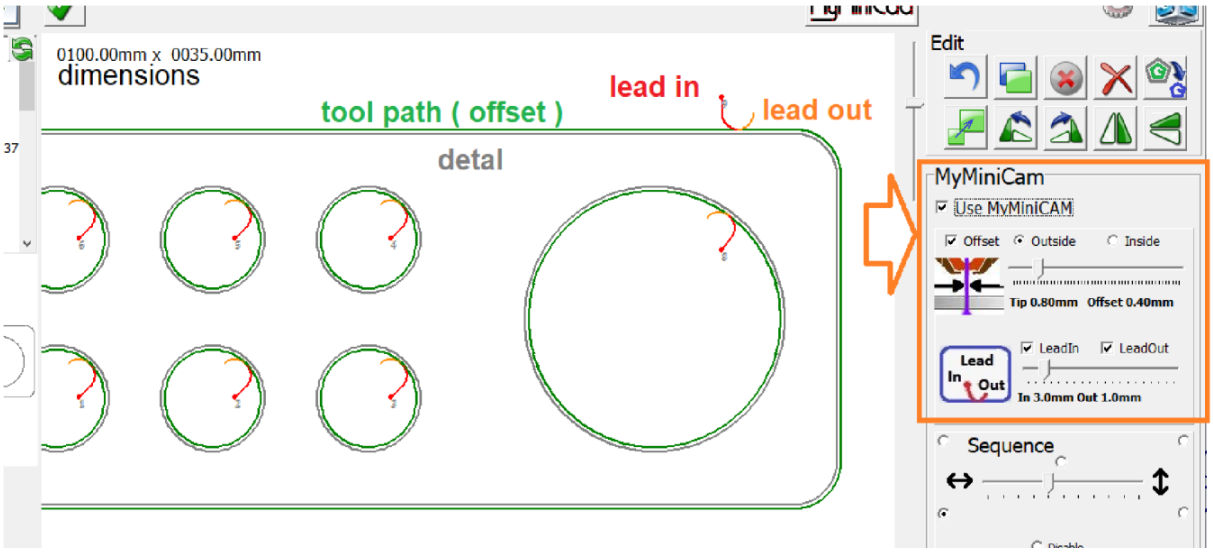
Depending on whether the **MyMiniCAM module** and its options are active or not, the lines are displayed in different colors:

All MyMiniCAM functions active (creation of a tool path based on the workpiece):

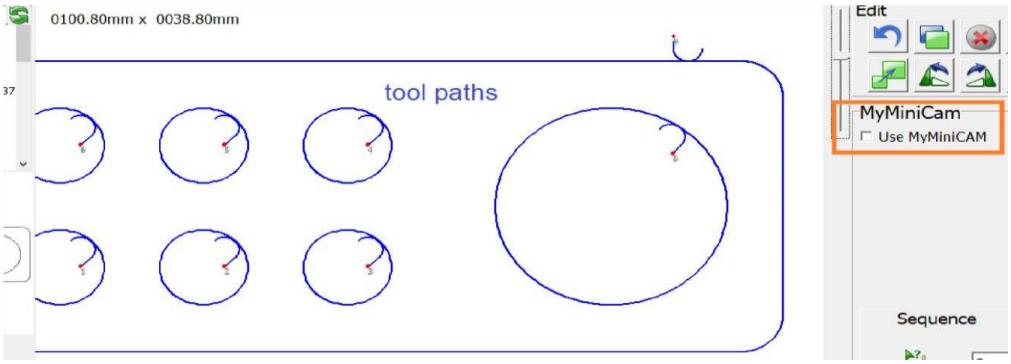
GRAY : outline of the workpiece and inactive lines (not involved in cutting).
GREEN : tool path (shifted).

RED : LeadIn pad.

ORANGE : LeadOut Pad

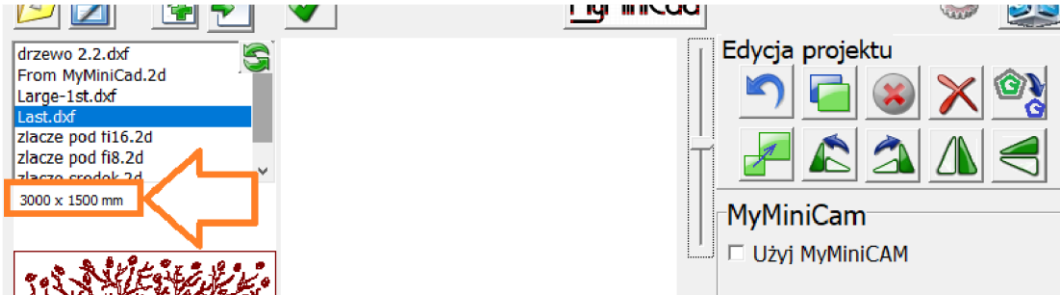


Inactive **MyMiniCAM module**, displays raw 'raw' display
Drawings/traces in blue. Mode used when tracks are generated in external CAM software (g-codes) or to extract pre-generated tracks from the MyMiniCAM module with the button 

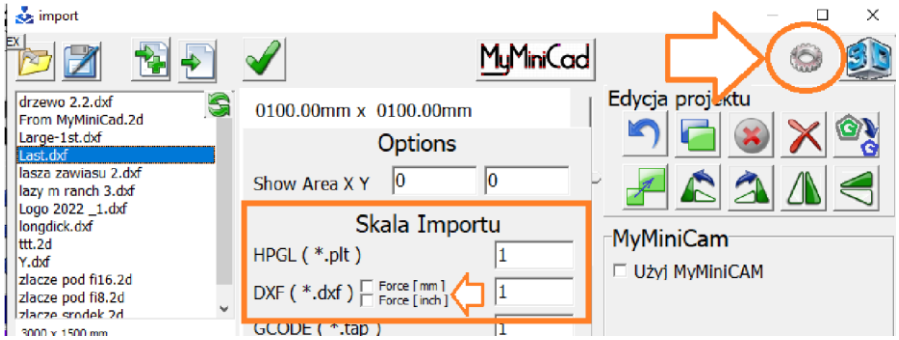


8.2 Importing a drawing / configuring the import

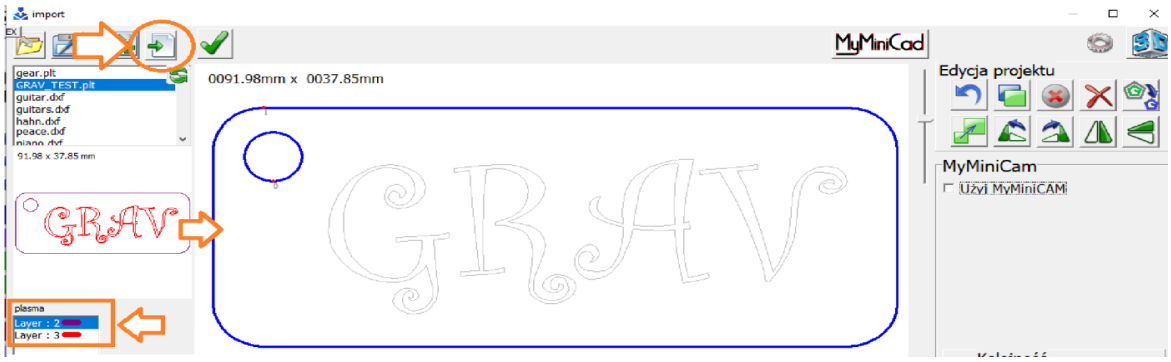
From the list of files, select the **DXF** or **HPGL file of** interest (detail drawing) - if the file was exported from CAD correctly **,** the size displayed in the preview window should match the design.



If the size here doesn't match (it usually deviates significantly from the expected size due to misinterpreted units), force the use of metric or imperial units in the import options, or modify/adjust the import scale (default is 1):



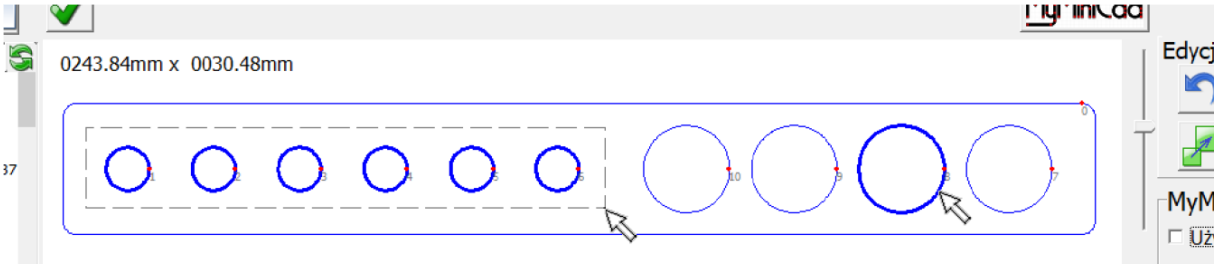
Loading a drawing in the import window is done by clicking on the button 



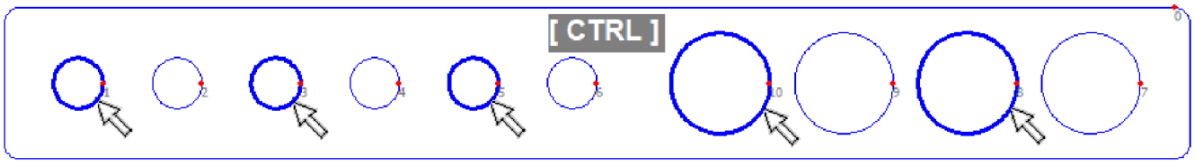
The button allows you to add further drawings. The left mouse button adds up horizontally and the right mouse button adds vertically (upwards).

8.3 Select Objects/Tracks

To select a single drawing element, left-click on it. It is possible to select elements by surrounding them with a rectangular area that is "stretched" with the left mouse button.

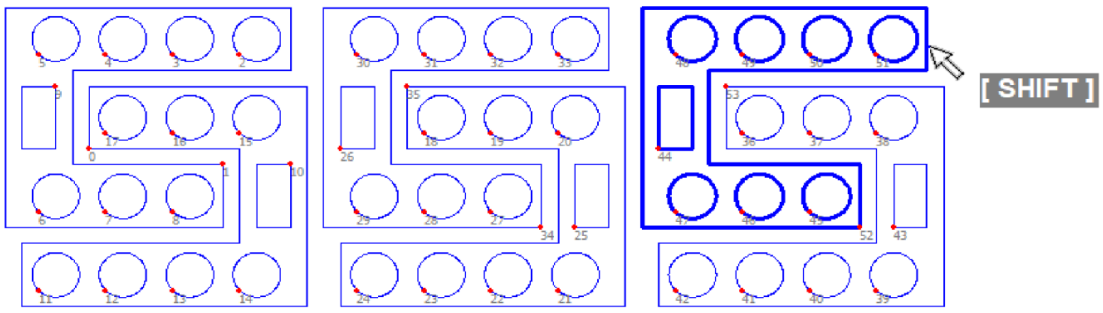


To select or deselect multiple items, press and hold the CTRL key.

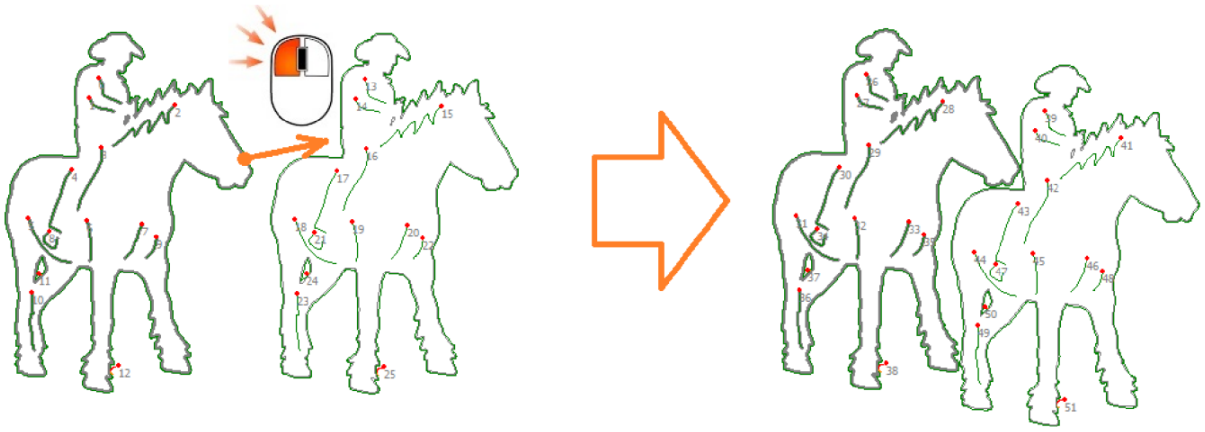


CTRL + A - selects ALL

Clicking on a workpiece outline while holding down the **SHIFT key** also selects all elements within the workpiece.



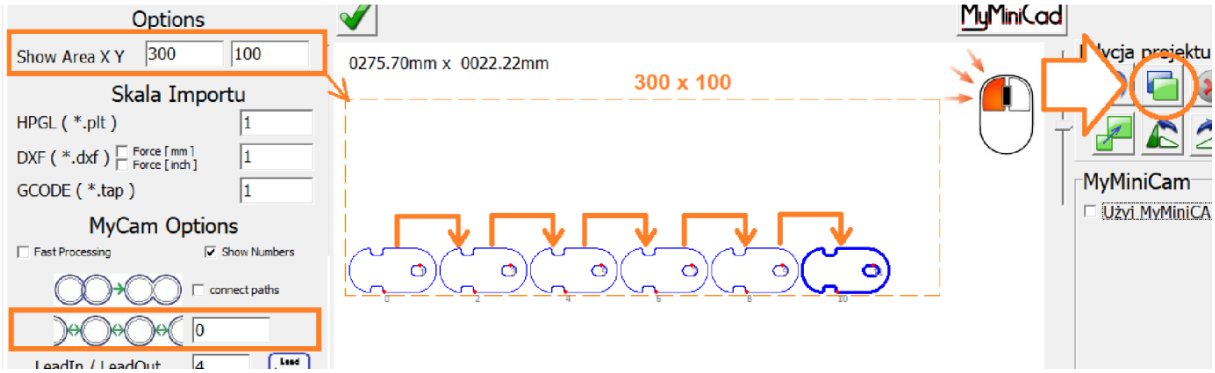
The selected elements can be moved with the mouse for manual positioning.



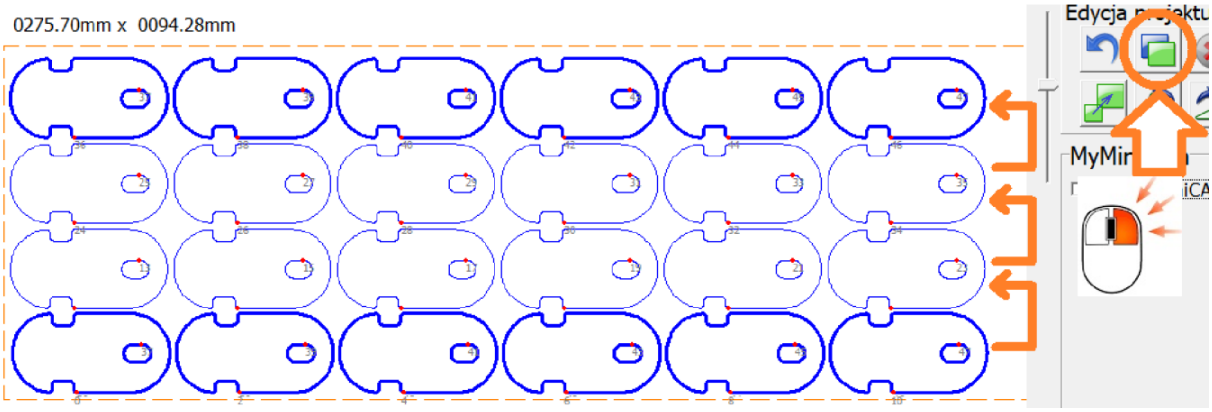
8.4 Editing Tools

 Undo the last edit **[CTRL+Z]**

 Duplicate Objects/Tracks (Copy/Paste) [**CTRL+C]** [**CTRL+V**] The spacing between duplicated elements can be set in the configuration, where "0" **means AUTO match**: three times the width of the slot set with the "offset" slider of the MyMiniCAM module.



To make it easier to replicate the article, it is also possible to define a help area that is represented by an orange dotted line (e.g., indicating the size of the material). The left mouse button duplicates the selected objects horizontally (to the right), while the right mouse button duplicates the selected elements vertically (upwards).

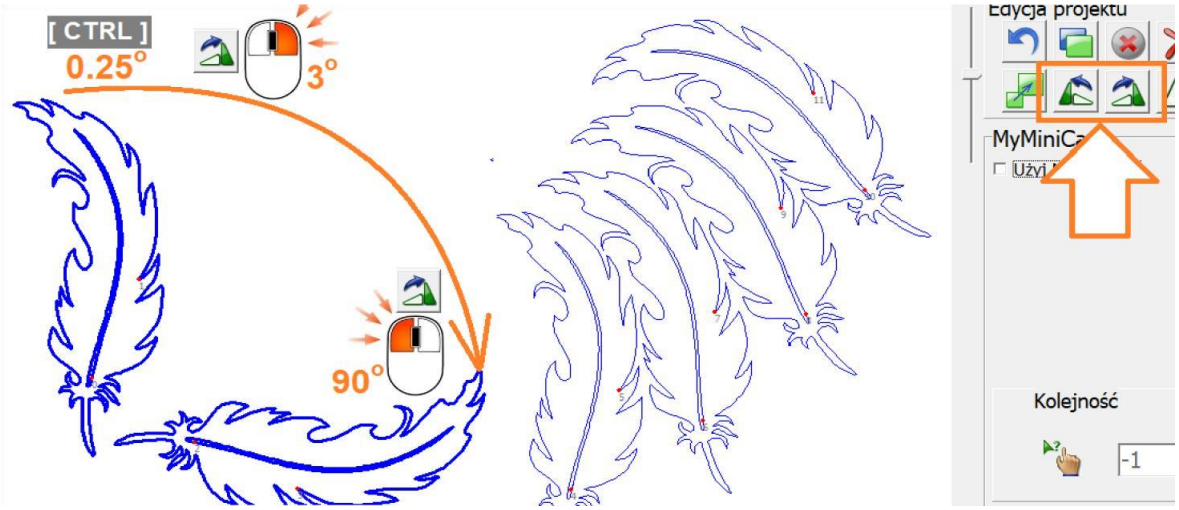


Deactivate the track, it is displayed but not cut, e.g. outlines

Deletion **[Delete]**

Convert the result of the **MyMiniCAM module (if active)** into traces.

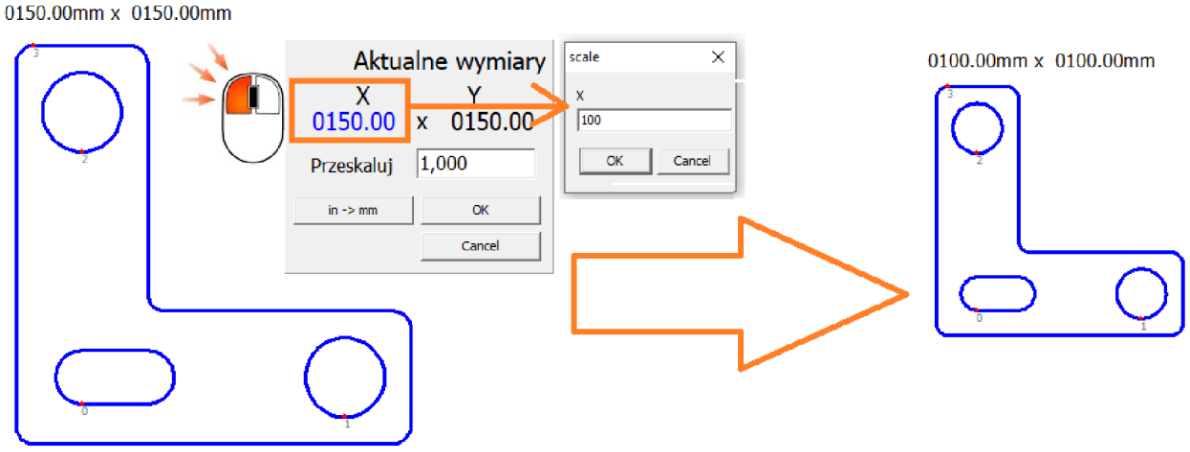
Rotate objects, left mouse button: 90 degrees, right mouse button: 3 degrees, Press and hold the **[CTRL]** key : 0.25 degrees.



Flip Vertically/Horizontally

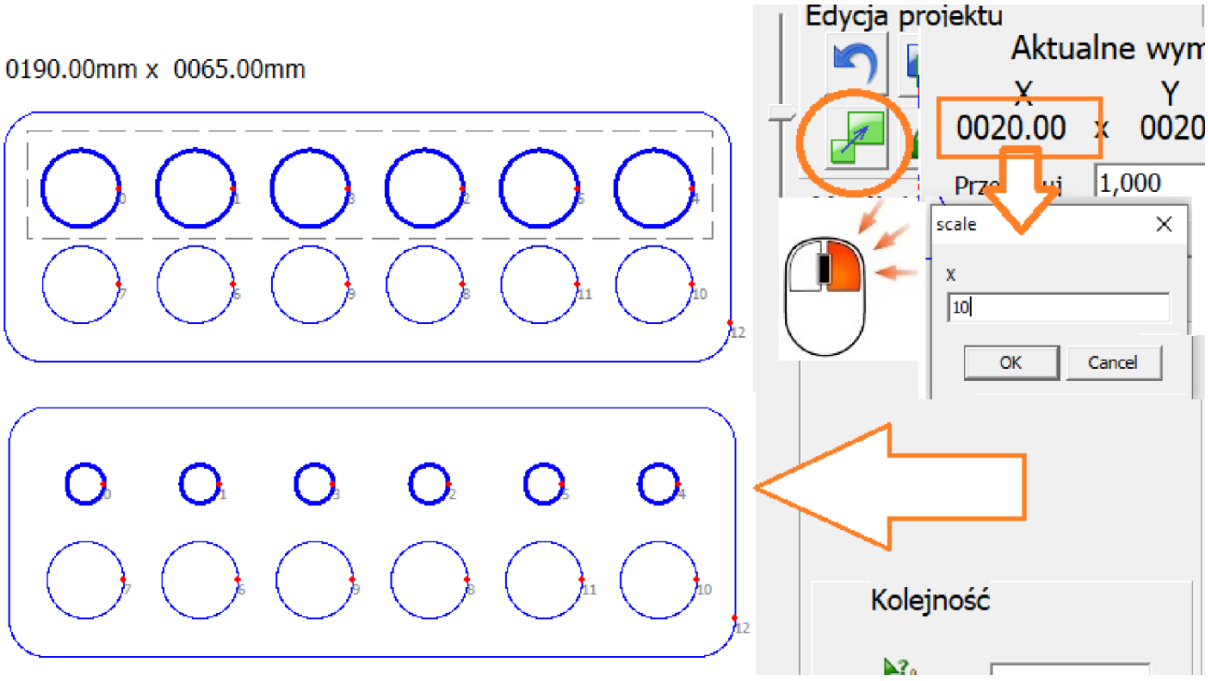
The object scaling tool can be done in a variety of ways. It is possible to enter a scale, e.g. 0.5 reduces the dimensions by two times. It is also possible to enter the desired dimension in the X or Y axis, with the tool maintaining the proportions for the other axis by default.

If you only want to scale in one axis, right-click the dimension you want to change (X or Y):



Right-clicking on the scaling tool will scale the selected objects individually.

A useful tool, for example, for changing the size of several identical holes.



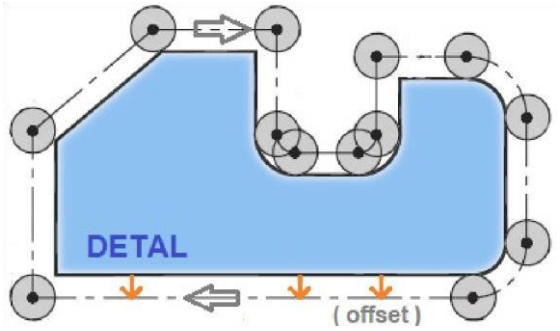
9.0 MyMiniCAM- Generate Path.

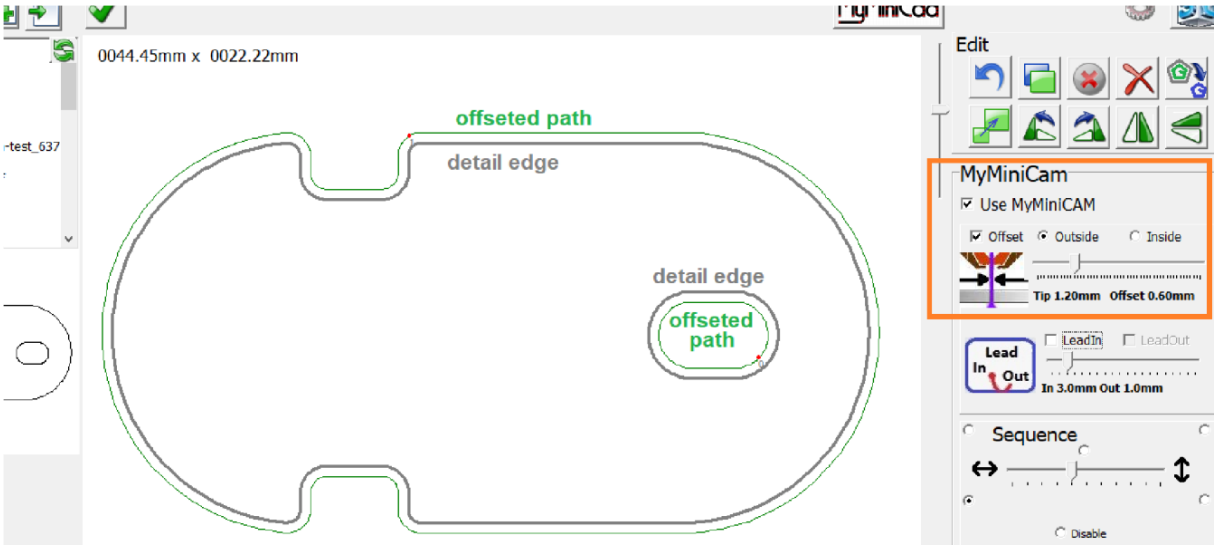
The tool path is the "track to be traveled by the tool (plasma torch)", which is generated from the drawing of the workpiece and parameters such as path shift and input and output traces. **CAM programs** are used to create a toolpath.

For the simplest operations, **the simple built-in** MyMiniCAM module **can** be used, which automatically creates the paths with virtually no user input. For demanding designs, the use of professional external CAM programs (e.g. **SheetCam or Fusion360**) recommended.

9.1 Offset

The basic operation of any **CAM module** is offset – that is, moving the web away from the workpiece to account for the width of the gap created by the cut (nozzle diameter). The Offset tool shifts the toolpath by half the slot width.

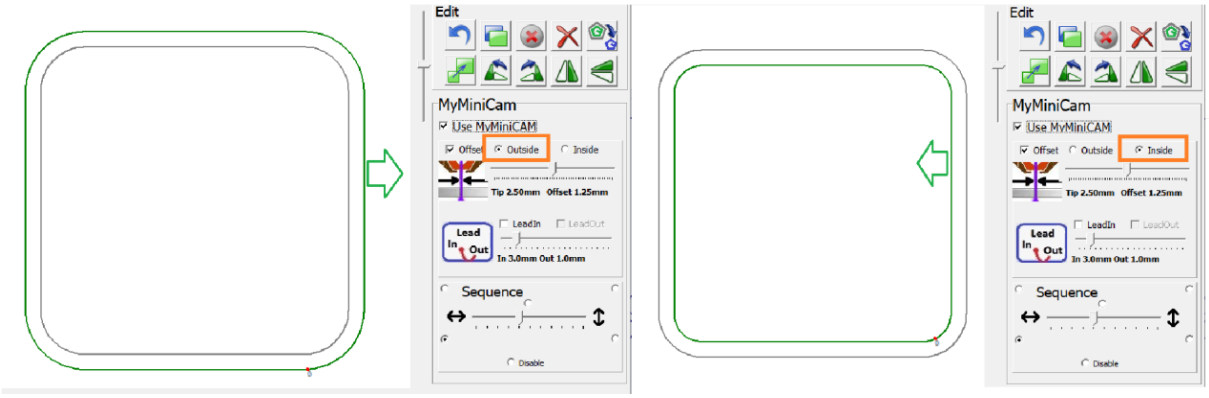




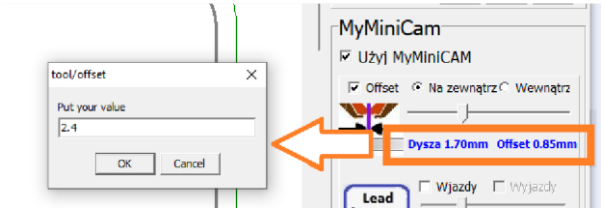
The offset function automatically recognizes whether the offset should be outside (for component contours) or inside (for holes).

PAY ATTENTION! Offset for closed objects only. For open paths (notches or incorrect/non-closed details), the offset is not applied.

For an individual part, specify whether the offset should be outside (for the actual detail drawing) or inside (hole).

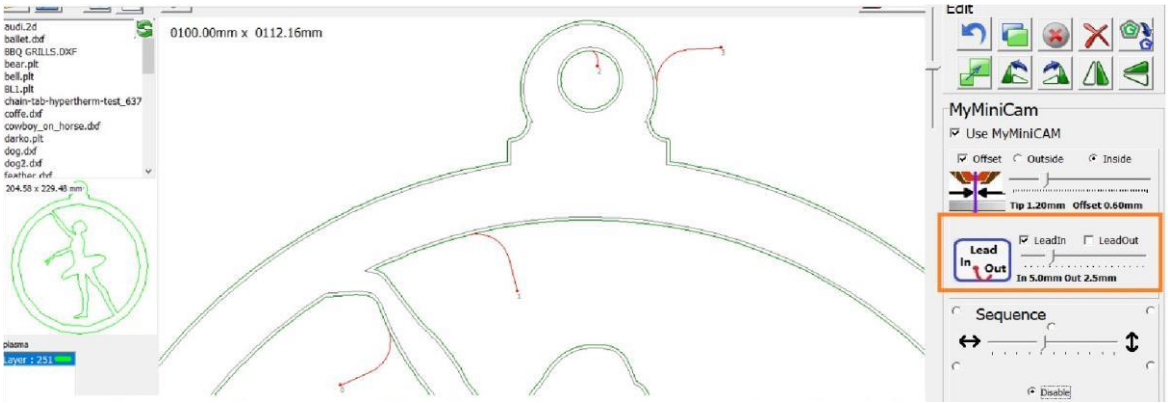


The offset value can be set with the slider or entered manually with the click of a button.



9.2 Lead in / Lead out

The plasma torch creates a "crater" when piercing the material, which damages the edge of the workpiece. Thanks to the run-in track, the crater is moved at a safe distance from the edge of the workpiece so that it is not damaged (piercing into the rubble instead of the actual path). After the material has been pierced, the workpiece is guided to the actual cutting track. The entry method (straight or curved) can be changed by double-clicking on the **entry symbol, the length of the** entry **can be determined with the slider or entered manually:**



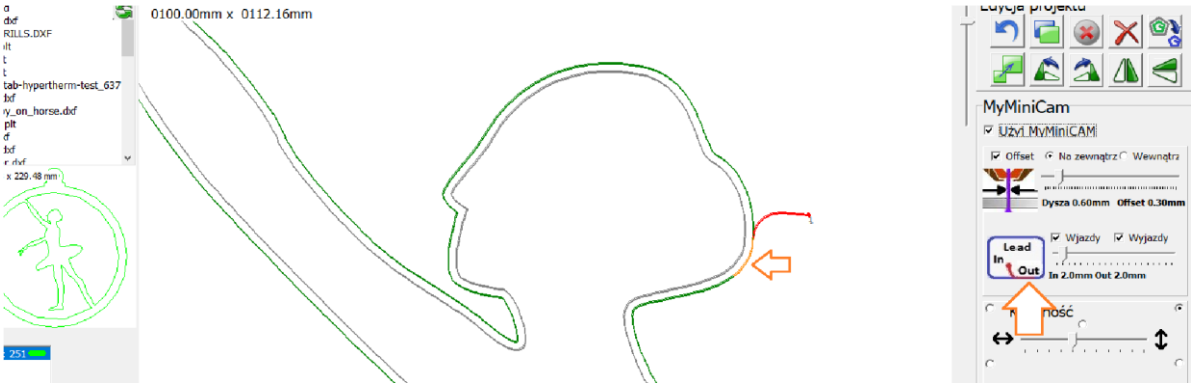
In some cases, the software may shorten or disable the inlet if the cut-through point is too close to another workpiece edge.

The run-out path is used to cut thick materials because when the torch is passed over the material, the arc at the bottom of the material is slowed down, so that the end of the cut at the end of the actual path leads to undercutting of the bottom of the thick material.

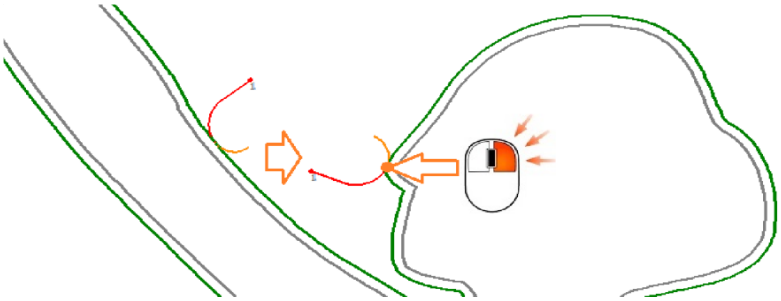
The length of the lead-out path is set in relation to the length of the lead-in path - the ratio can be set in the configuration window,

e.g. a LeadIn / LeadOut ratio = **3** means that the output path is **3** times shorter than the input path.

The type of lead-out (along a bend or along a path) can be determined by double-clicking on the **Lead In/Out** symbol:



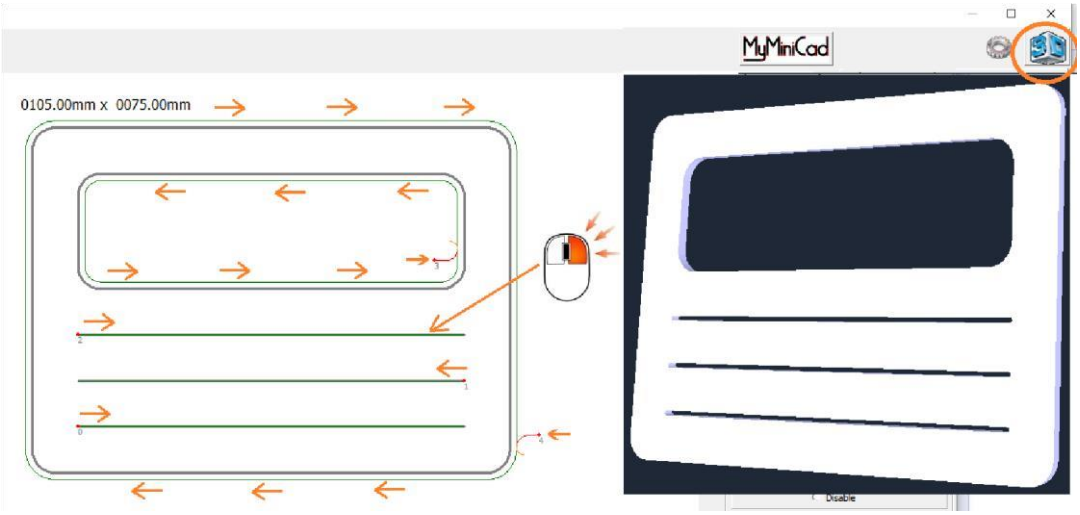
By right-clicking on the overview, you can select the LeadIn location:



9.3 Direction of the path

Plasma torches are designed in such a way (air turbulence) that when cutting from the right side, the best possible cutting quality is obtained at the expense of the cutting quality from the left side. Therefore, all external contours in the CW direction (clockwise) and the holes in the CCW direction (counterclockwise) must be cut.

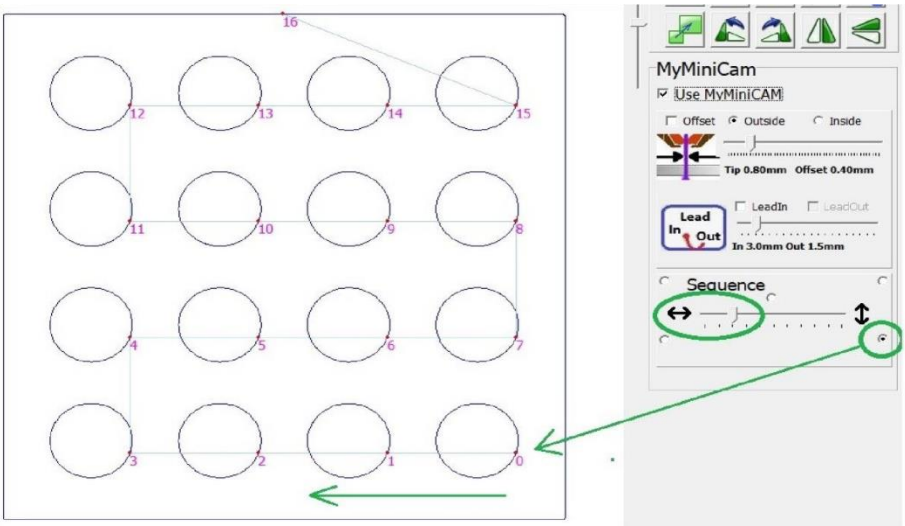
The closed track orientation is set automatically. The direction of an open track (notch) can be changed with the right mouse button.



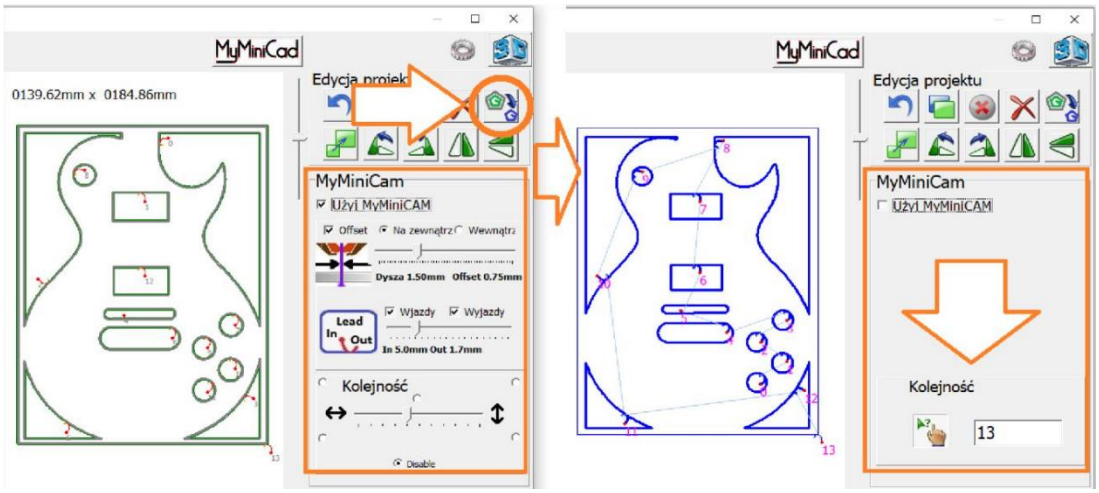
9.4 Path order

The cropping sequence is determined automatically (if "Disabled" is not selected) taking into account the vertical/horizontal bridging settings and which area to start with. Cutting holes is ALWAYS prioritized before cutting out the outline.

When the **MyMiniCAM** module is inactive, it is possible to manually determine the order of the paths.



If you want to use the **MyMiniCAM module** and your own order, you can convert the **MyMiniCAM result** into raw tracks.



Once you've selected the manual sequencing tool, click on the paths in the order you want. The number indicates the path number, which can be set individually.

9.5 CAM Tips

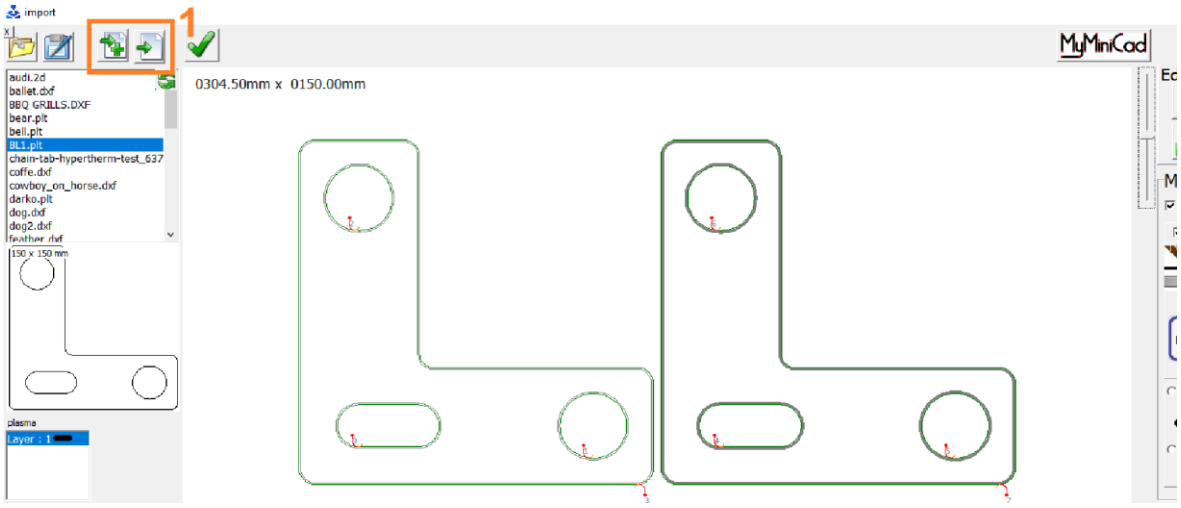
The Cam module performs operations in a specific order :

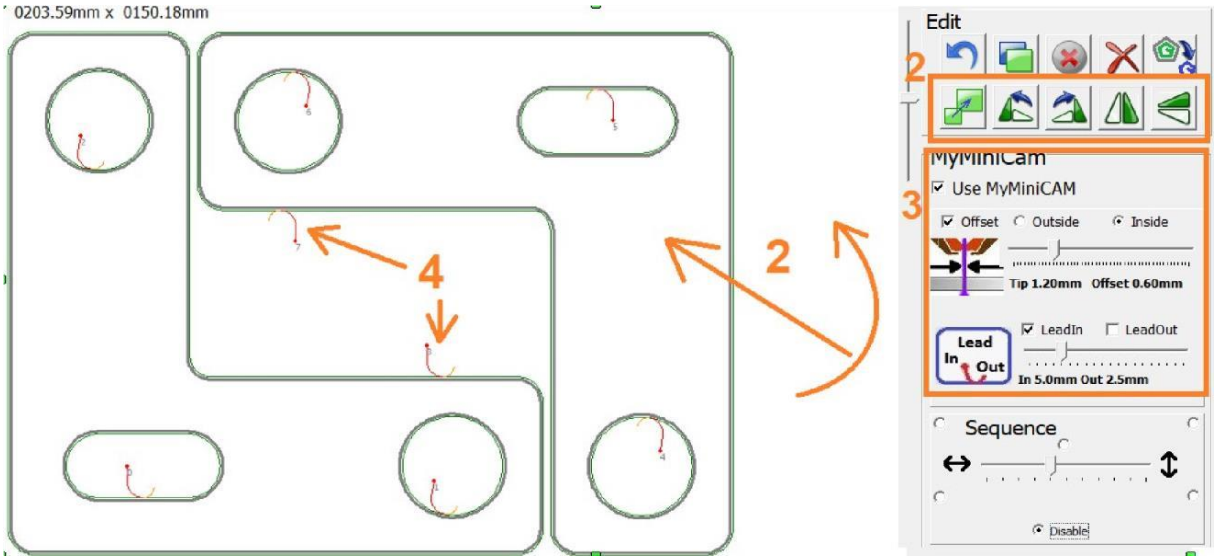
1. Analysis and correction on the loaded drawing ("Auto-welding" of unconnected lines, removal of minor defects in the drawing, etc.).
2. Detection of internal (holes) and external components
3. Generation of tool paths (offset)
4. Path analysis / collision analysis / removal of uncut paths, merging of paths etc.
5. Determining the optimal cutting direction of the paths
6. Addition of entry and exit paths in the waste material
7. determining the order in which the paths are cut

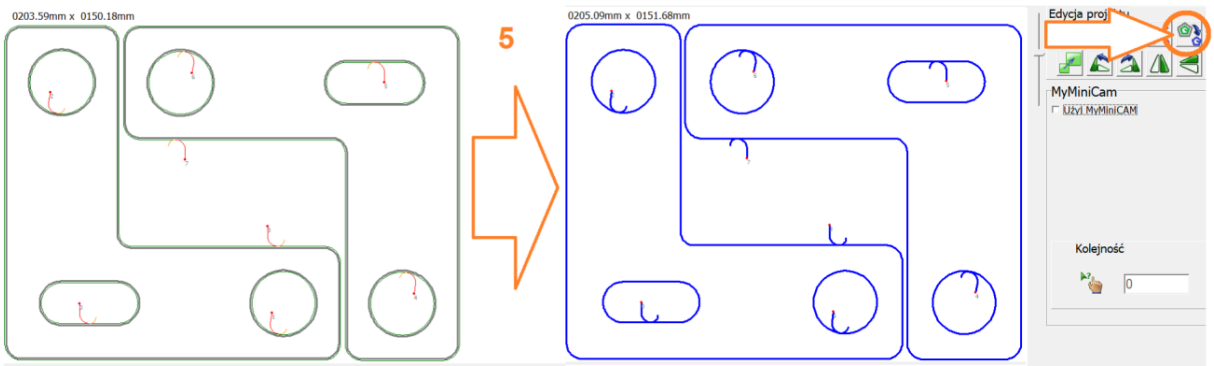
Please note that any change in the details (editing or adding an element) starts the processing procedures from the beginning ... also e.g. a change of offset forces the generation of a new path, which is re-analyzed, the LeadIn/LeadOut paths are regenerated, etc.

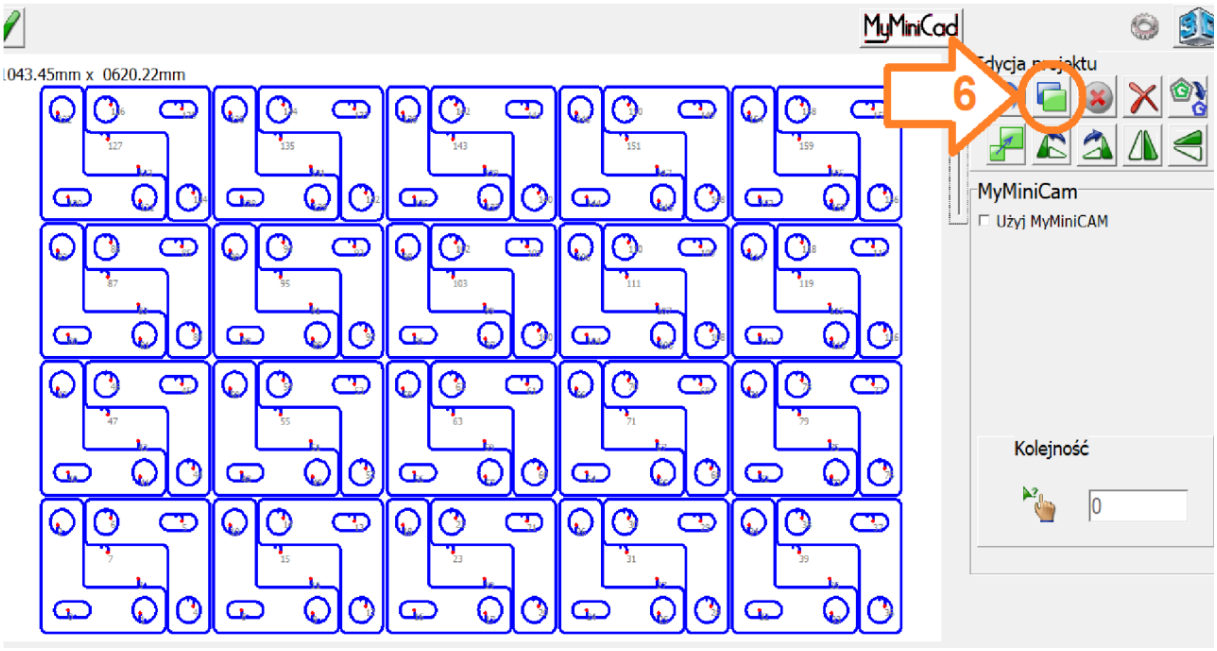
It is recommended to do the steps in the order above, otherwise, for example, it will be changed after editing the element or shift (newly generated paths) once you have set up your own insertion point.

EXAMPLE: Before duplicating and placing components, it's a good idea to pre-generate tracks for individual details (or groups of details) and only perform the duplication after the target paths have been generated.


import
1
MyMiniCad
audi.2d
ballet.dxf
BBQ GRILLS.DXF
bear.plt
bell.plt
BL1.plt
chain-tab-hypertherm-test_637
coffe.dxf
cowboy_on_horse.dxf
darko.plt
dog.dxf
dog2.dxf
150 x 150 mm
plasma
Layer : 1
0304.50mm x 0150.00mm

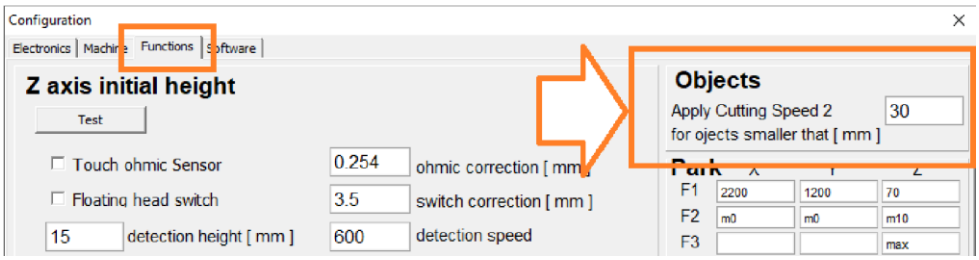

0203.59mm x 0150.18mm
4
2
Edit
2
MyMiniCam
Use MyMiniCAM
3
Offset
Outside
Inside
Tip 1.20mm Offset 0.60mm
Lead In Out
LeadIn
LeadOut
In 5.0mm Out 2.5mm
Sequence
Disable


0203.59mm x 0150.18mm
5
0205.09mm x 0151.68mm
Edycja proj
MyMiniCam
Użyj MyMiniCAM
Kolejność
0

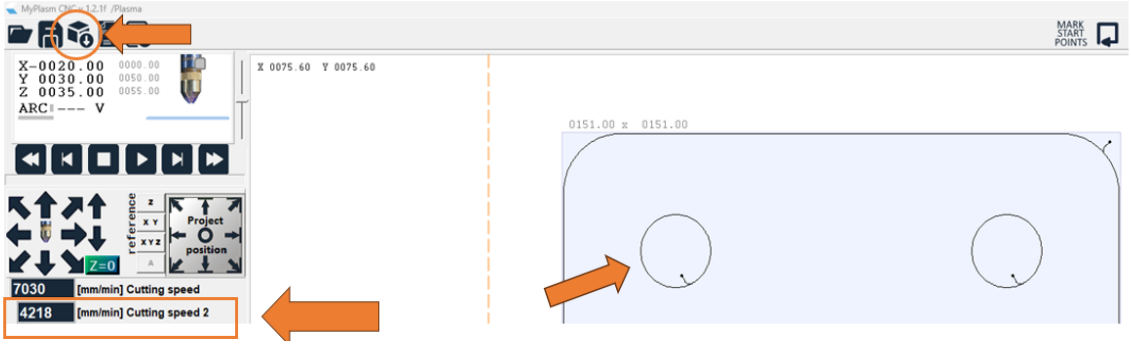


10.0 Additional options

10.1 Reduction of Cutting Speed for Holes

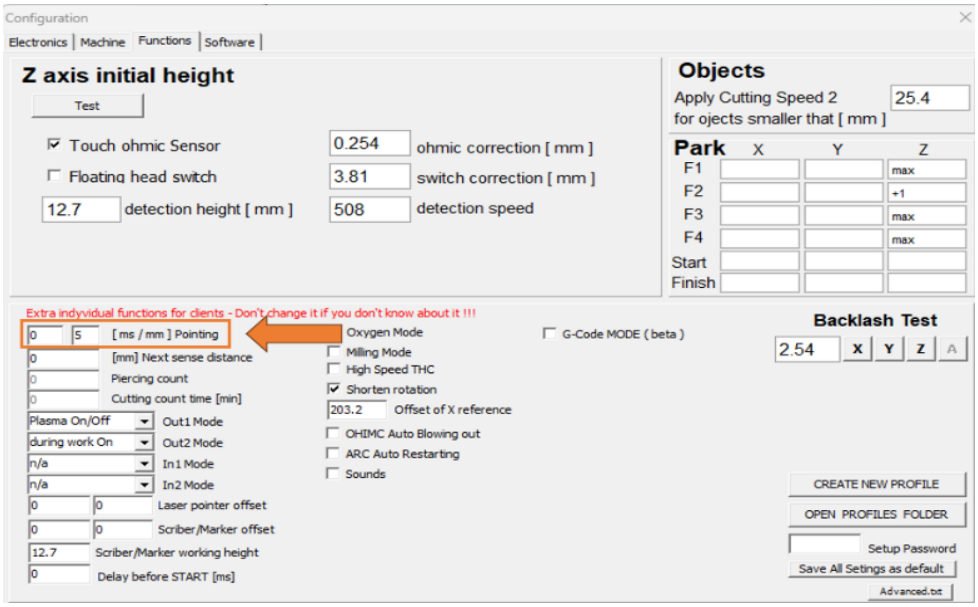


The function forces the use of speed 2 to cut holes (less than the indicated value) Speed 2 can be specified directly or as a percentage (proportional to the set cutting speed). For these objects, the THC height adjustment function is deactivated and the cut is made at cutting height 2. By clicking on the design analysis button, the objects will be light blue.

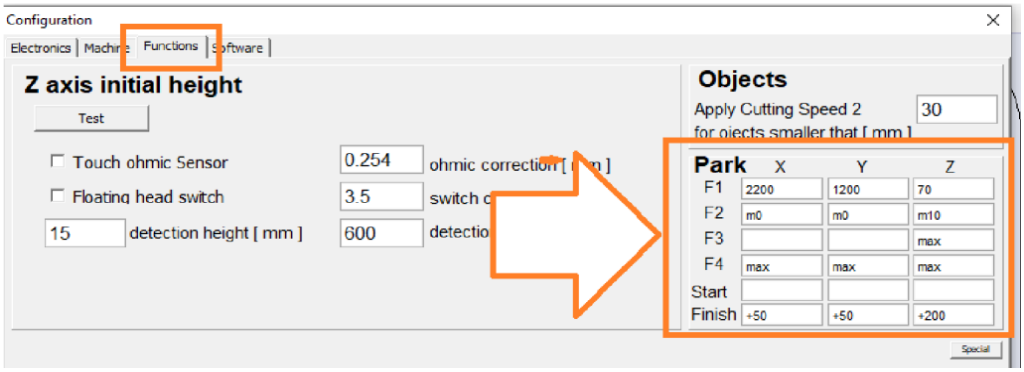


10.2 Straightening holes

The scoring feature forces the plasma to be turned on in the center of the hole for a fraction of a second instead of cutting it to mark the drill point. In the special functions, it is possible to define the time in milliseconds and the maximum hole diameter [mm] to be directed centrally.



10.3 Parking



The parking function allows the user to assign 4 random coordinates to which a movement can be activated using the **F1 - F4 keys** and additionally coordinates for [start] or / and after [finish] work. The coordinates can be entered relative to the reference points of the machine, relative to the zero point of the material, or relative to the current position of the torch.

There are several options available that can be used as a parameter.

[XXXX] Absolute machine coordinates e.g. Defining **1200 2600 100** will result in a Z-axis position of [100 mm] with respect to the table and an XY displacement of [1200,2600] with respect to the lower left corner of the machine. **NOTE:** The use of absolute coordinates requires the machine to be homed correctly!

[mXXXX] Material coordinates : similar to above, but the coordinates are related to the position of the material/design. For example, if you define m0 m0 m5, the torch will be moved to the lower left corner of the design [X=0, Y=0] with the torch placed 5 mm above the material.

[+XX / -XX] Relative displacement relative to the current position. For example, if you define the parking "Finish" as +10 +10 +20, the torch will be raised by 20 mm, and the X,Y axes will be moved by 10 mm at the end of the cut - a useful function, for example, for descending the slot to prevent splashing of the water table at the end of the cut.

[max] - specifies the maximum absolute value defined in the program limits. e.g. defining the Z-axis parking if the "max" value is increased to the maximum.

By leaving the box empty, the ash in question is not taken into account (it remains in its current position).

It is possible to quickly assign the current torch position to the window by clicking [CTRL + F1].... [CTRL + F4] once the desired torch position is set.

11.0 Keyboard shortcuts

11.1 Keyboard shortcuts : The main window of the program:

ESC : STOP

SPACE : torch startup

Arrows on the keyboard : XY-axis control **PageUp / Page Down :** Z-axis control **SHIFT** : force hand speed max.

CTRL : manual speed 10% of setpoint

F1 - F4 : Parking (10.3)

CTRL+F1 ..... CTRL+F4 : Assigning parking coordinates

F5 : Start automatic operation

SHIFT + F5 : start of simulated operation

CTRL + F5 : cut the selected path in the opposite direction (from the end)

F6 : resume cutting at the breaking point

F7 : Material Detection

F8 : Z = 0

F9 : XY = 0

F12 : moving along the project sketch

CTRL + Z : Undo Material Positioning Operation

CTRL + S : save cutting parameters in the base (5.2) **CTRL + D** : remove parameters from the base (5.2)

11.2 Keyboard shortcuts : Import window:

CTRL : Allows you to select multiple items with the mouse

SHIFT : Selects all elements within the outline selected with the mouse.

CTRL + A : Select All

CTRL + C : copy (to clipboard) the selected items

CTRL + V : paste (from clipboard) previously copied items

CTRL + Z : undo the last edit

DELETE : delete the selected items

CTRL + Q : Converts **CAM result** to raw tracks / Disables **MyMiniCam**.

CTRL + E : Export item/path as HPGL.

While holding down the Ctrl key:

Rotation tool: force rotation in 0.25-degree increments

Scaling tool : "serial" scaling of holes (8.4).

12.0 Troubleshooting.

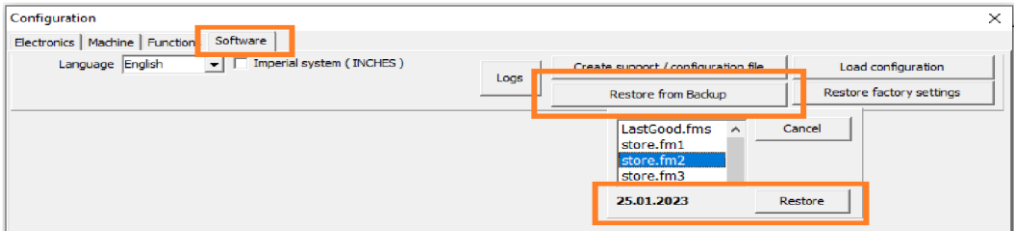
12.1 Problem with the program starting

If the program doesn't start and standard procedures such as restarting Windows don't help, you may need to reinstall the program (you may need to uninstall/uninstall the previous version) manually restore from a copy. The description can be found in the installation manual.

12.2 Problem with the operation of the software

If the program stops working properly, you can try to restore the state to when it was working properly, to do this, in the "Program" tab, click on Restore from Backup and from the list, select the copy file with the date when everything worked fine.

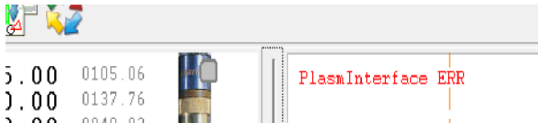
The file named **LastGood.fms** is the file that is created when a snippet of a properly processed file is completed without any problems. If this is listed, this is probably the "best" safety backup.

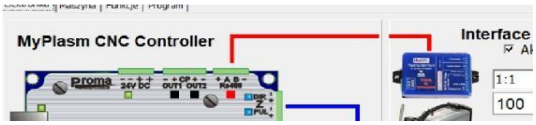


12.3 USB Controller Communication Problem with Computer

Communication problems can be caused by incorrect power supply, a damaged or incorrect USB cable, improper driver installation, an incompatible version of the PC software and the controller firmware and in the event of a communication interruption during plasma arc startup, improper grounding and/or shielding may be the problem. See the installer's manual for more information.

12.4 Problem with the communication of the plasma interface





In the case of this message, please turn off the power and check the **RS485 connection cable** between the modules. If the electrical connection is correct, it means that the plasma interface or RS485 communication modules in the controller and/or plasma interface are damaged. **Do not switch on the power supply - contact the manufacturer Pritec Automation.**

Due to the high voltage and current present during plasma arc ignition, inaccurate grounding, poor insulation, shielding, ground loops, lack of ground with the plasma interface, and/or poor contact between the earth clamp and the material to be cut will result in damaging the electrical components.

12.5 Problem with maintaining the cutting height / THC

First of all, check the correctness of the cut with a stiff and even material and the THC turned off. Pay attention to the correct cutting height (cutting height 2) and whether the ARC voltage reading is correct (70170V). If the cutting height is incorrect, it means that the material detection is not configured correctly. Incorrect voltage measurement can be caused by improper configuration/connection of plasma interface (see installer's manual), by worn consumables (nozzle, electrode), improper air pressure/flow rate, or by

INCORRECT CONTACT OF THE EARTH TERMINAL WITH CUT MATERIAL. If the cutting height is correct and the tension is correct, the cause may be that the THC cutting height (voltage) is not set correctly. See Section **6.2**.

12.6 ARC OK Problem with Main Arc Detection

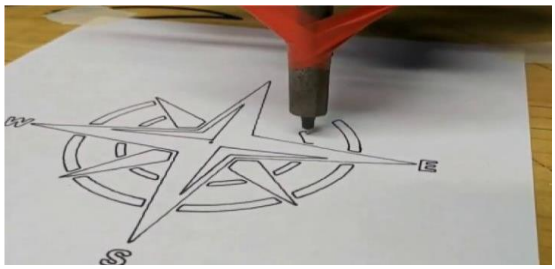
The main problem with arc fault detection is caused by an incorrect reading of the plasma arc voltage (refer to the installer's manual), too long a drilling time of the material (the material under the torch burned out before the XY movement begins), worn consumables (nozzle, electrode) or incorrect air pressure/flow rate.

12.7 Problem with importing DXF files

In order for DXF files to be imported correctly by the system, they must be saved in R14 DXF version. Before exporting/saving, all fonts (preferably selecting the whole project) should be converted to curves (e.g. EXPLODE function in AutoCad).

12.8 Cut Quality Problem

Many factors affect the quality of cutting. First of all, it is necessary to recognize where the problem originated: in the control system, mechanics or plasma source / torch. It's a good idea to try to draw the element instead of cutting it out.

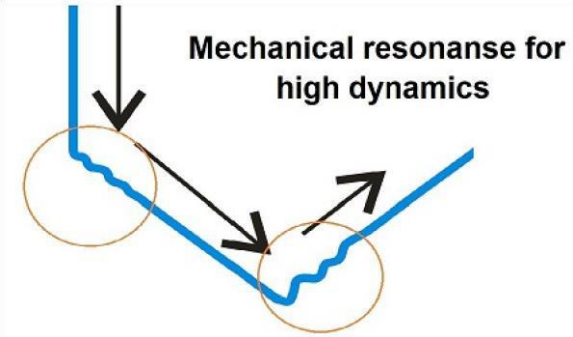


Popular issues include:

1. Chamfer: Mainly depends on the cutting parameters such as cutting speed, cutting height, air pressure, and wear of consumables (nozzle, electrode), if the beveling is only in one axis (e.g. X), please rotate the torch 90 degrees to diagnose whether the problem is the torch.

2. Distorted holes, failure to maintain dimensions: this is usually a backlash problem on the X or Y axis. The clearance test can be carried out in special functions (the motor rotates gently, but the shaft does not move). The backlash must be located and eliminated.

Vibration of the machine when dynamically changing direction - in machines with too little stiffness, the torch can become resonant in the event of sudden changes in direction - the dynamics of the machine must be reduced or the structure stiffened.

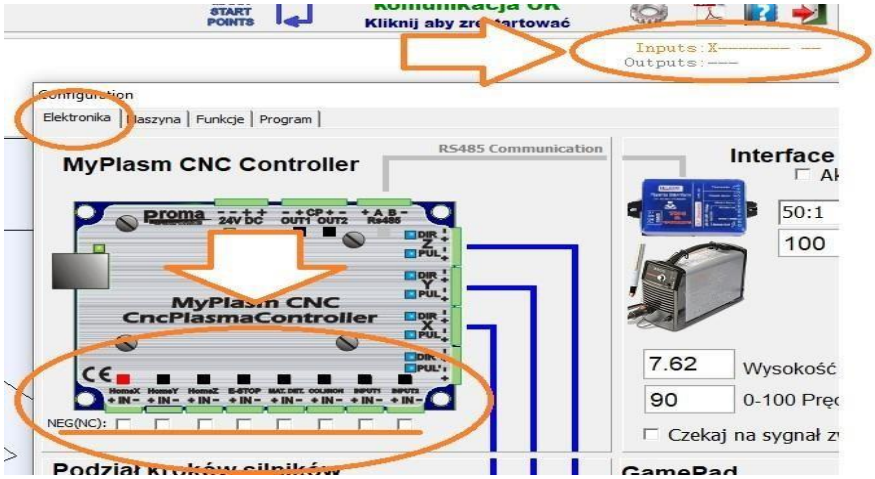


In the event that the quality is poor even when drawing and not cutting, the user should check under high magnification whether the imported drawing has any minor defects:

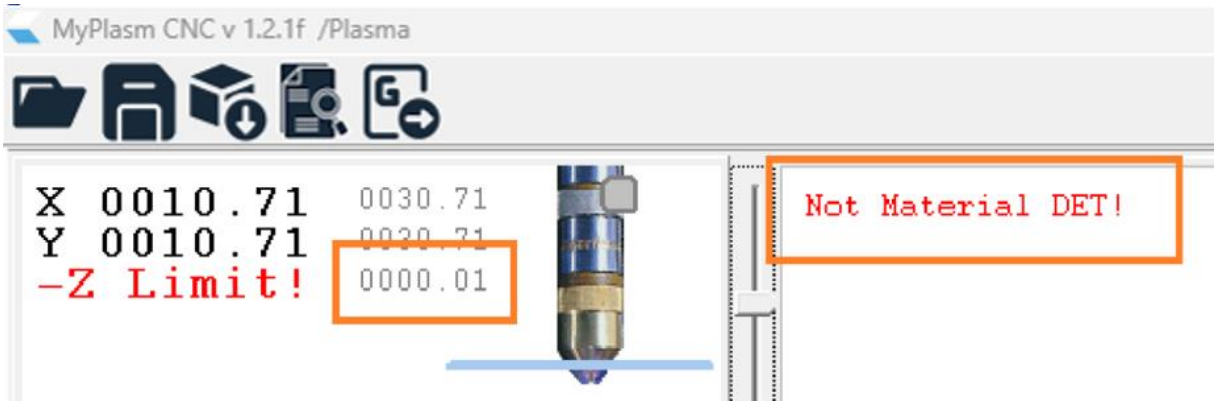
12.9 Inputs - Problems - Stopping the Machine

Inputs such as emergency stop or Home X, Y Z (Limits) stop the machine even if there is a very short signal on their input, which may be caused by excessive interference, etc. To make sure that if this is the cause of the problem, you can disconnect the input plugs before starting work.

To verify the proper operation of the sensors, check the input lights in the electronics tab to see if they are consistent with the activation of the sensors.



13 Material Detection Issues



" **Not Materieal DET!** " : A material detection problem notification is displayed when during

the detection function, the OHMIC or Floating Head material detection sensor was not activated and the end of the operating range of the Z-axis was reached, i.e. the machine coordinate of the Z-axis = 0, which means that the torch has reached the lower position of the working range (SoftLimit). The problem can have several causes:

1. Improper operation of the detection sensor (OHMIC/Floating Head).
2. Unreferenced Z-axis (4.0)
3. Incorrectly set operating range of the Z-axis (Soft Limit Z). (When touching the material, the machine coordinate of the Z-axis should be "Positive"".)
4. Improper assembly of the torch – a torch mounted too high may not reach the material and may not activate the detection sensor.
5. Active material detection input before starting the detection routine.