

# MyMini CAD

v0.7.4RC1

User guide EN

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# 1 Introduction and licence provisions

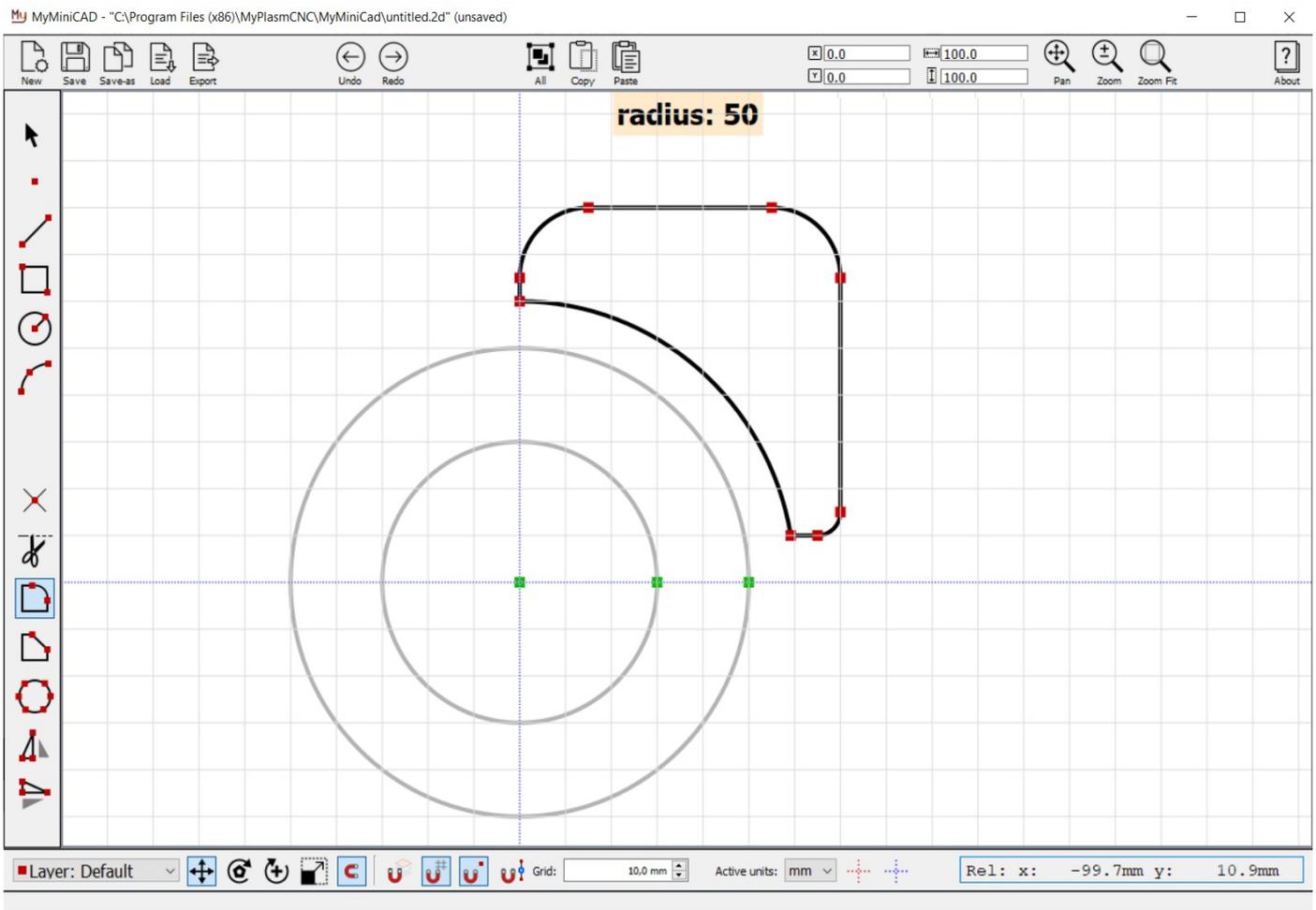
The MyMiniCAD application was created as a free addon / module for the MyPlasm CNC System control system to design / draw simple parts directly in the CNC machine control system which makes the process of preparing simple parts much easier and shorter.

The MyMiniCAD module does not have the ability to load external files (created in other software) nor does it have the ability to save / export to external programs. It only allows simple details to be drawn directly for the MyPlasmCNC system.

The application is supplied under freeware licence - it is fully free to use as a module of the MyPlasm CNC System product. For complex and advanced projects it is recommended to use professional CAD tools such as AutoCad.

Proma-Elektronika provides the software free of charge as is and is not responsible for any losses caused by incorrect functioning of the software.

## 2 Program window



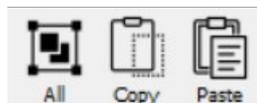
## 2a Description of tools



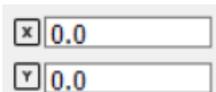
File management: Create new project/file, Save project ( / changes ) to disk, Save project under new name, import project from file, export project directly to **MyPlasm CNC software**



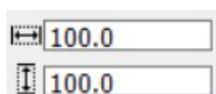
Undo [ Ctrl + Z ], redo [ Ctrl + Y ] the last operation.



Select all [ Ctrl + A ], copy selection [ Ctrl + C ]  
Paste copied item [ Ctrl + V ]



Position of marked objects ( geometric centre )



Dimensions of the selected objects



Zoom in/out and pan view tools (does not change objects).

The mouse wheel works in a similar way to the tool when you select a point to zoom in/out or zoom out/reduce. By clicking on the mouse wheel it is possible to move the view with the mouse.



Selection / Modification tool [ Esc ]

Drawing:

Point/Vertex [ V ]  
Section/Line [ L ]  
Rectangle [ R ]  
Circle [ C ]  
Arc [ A ]

Operations on objects :



Detection / insertion of intersection points [ I ]

Scissors : Removal of unnecessary points / lines / details [ S ]

Rounding corners [ F ]

Chamfering corners [ Shift + F ]

Division of the district

Vertical and horizontal mirroring

Layer: Default Selection of the currently used layer

Definition of the function performed by the operational tool



Moving objects,



Rotation about the geometric centre of objects



Rotation about the centre of the coordinate cover



Scaling

Attraction options:



Global inclusion of attraction



Attracting to an inactive layer



Attracting to the net



attraction to points

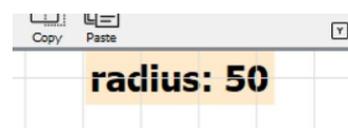


Pulling to the centre of the stretch / curve

Grid: 10,0 mm Resolution / Grid density

Active units: mm Unit selection Metric / imperial [ mm / inches ]

Coordinate system selection : Red - individual / temporary coordinate system ,  
Blue - absolute coordinate system



Keyboard input - activates automatically when working with the tool.

## 3 General rules for using the program / drawing

### 3a Creating a new project

To create a new project, click on the \_ button or use the keyboard shortcut [ Ctrl + N ]. When starting the program, a new project is created automatically and there is no need to perform this operation. If the project is not a "one-off" it is worth saving it to disk immediately ( see 3b, 3c ).

### 3b Saving changes in the file

To save changes to the file, click or use the keyboard shortcut: [Ctrl + S ]. In spite of the automatic mechanism of creating a safety copy, it is worth making a habit of saving the progress of work on a project so that in the case of a failure of the programme or a computer, we do not lose the results of previous work.

To save the file under a new filename, click



### 3c Reading a project from disk

To load a file previously saved on disk, click . The program only supports .2d files created in MyMiniCAD and does not have the ability to import files created in other programs.

### 3d Export project to MyPlasmCNC

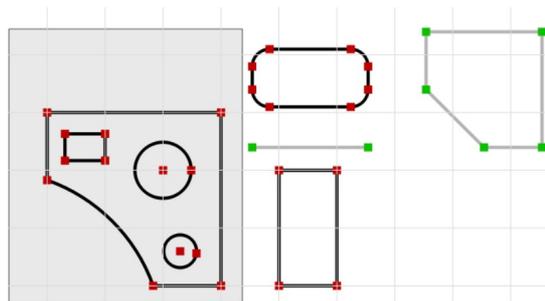
To quickly transfer your project to MyPlasmCNC, simply click the icon  . The project will automatically be loaded into MyPlasmCNC.

Please note that during export the project is not automatically saved under its current name and if it is to be used in the future it must be saved before closing MyMiniCAD.

### 3e Selecting objects

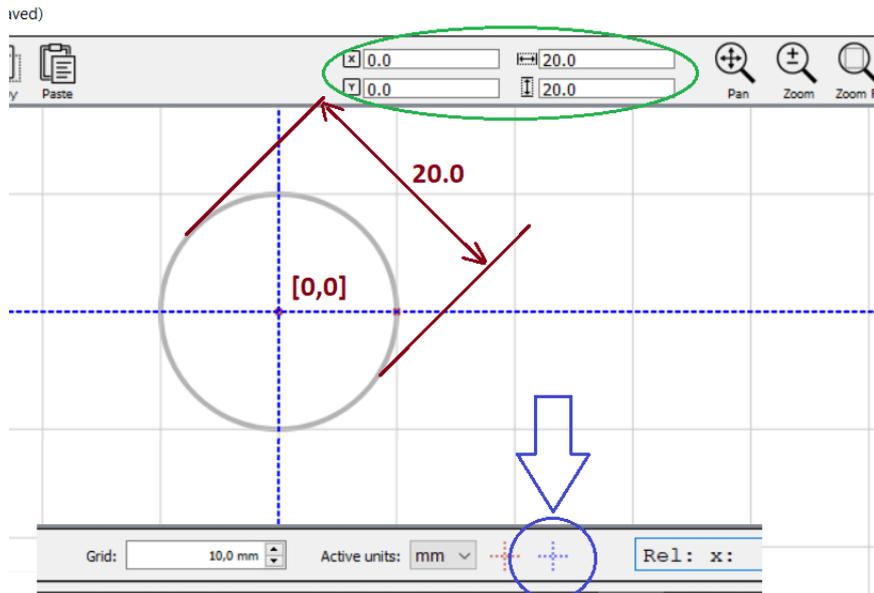
- To select a single segment, arc or point, simply click on it.
- To select an entire object, double-click on any element of it.
- in order to select objects in a certain area, these objects must be included in a rectangular area stretched with the mouse

In order to select more than one object, select the objects one by one while holding down the [ Ctrl ] key.



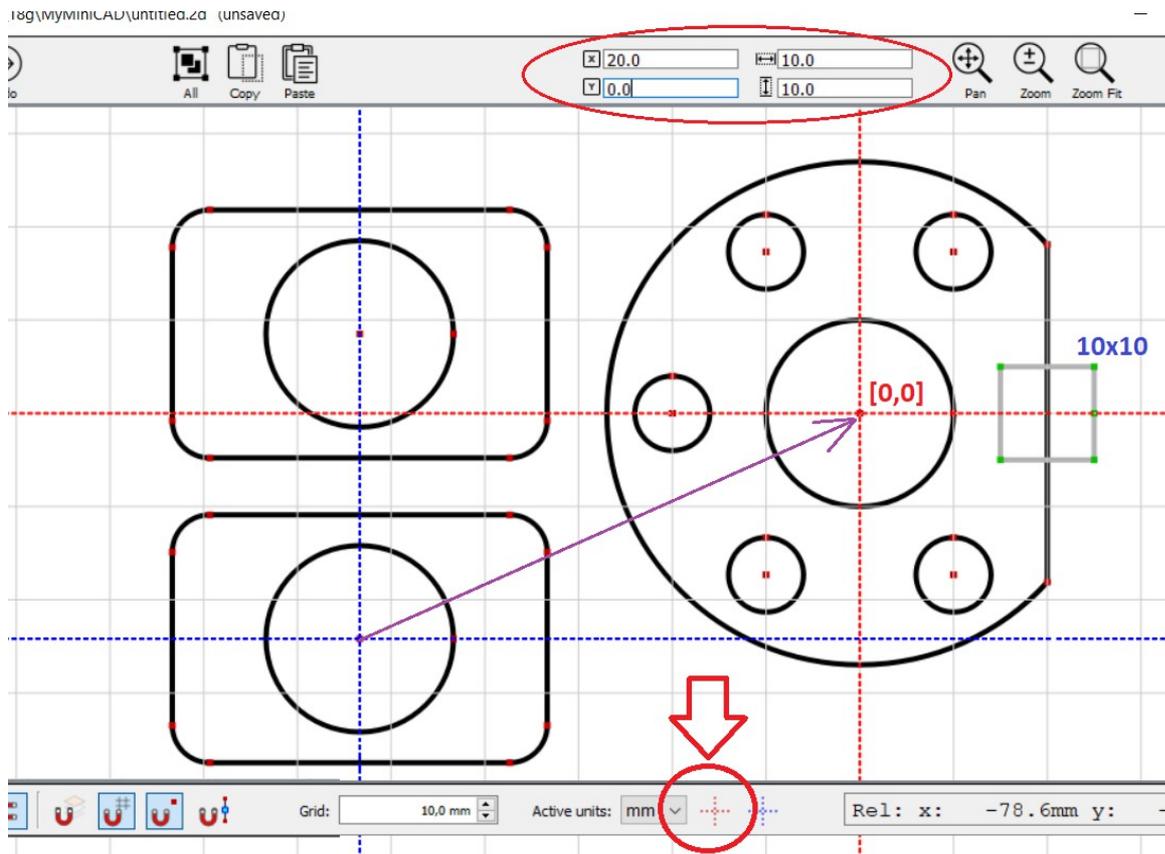
### 3f Coordinate Reference Systems

In the project window, the blue lines indicate the absolute origin of the coordinate system, which is used to determine the position of objects as shown in the following image :



If there is a need to temporarily move the system ( making operations much easier ) you can "place" a temporary datum anywhere.

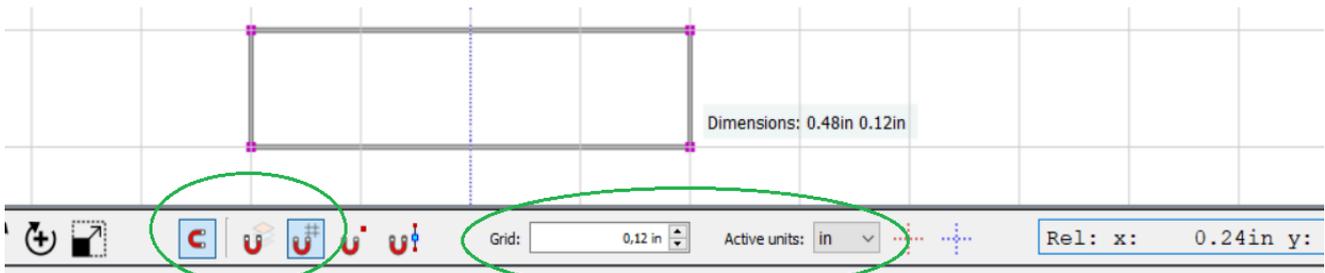
An example of using the function is given below :



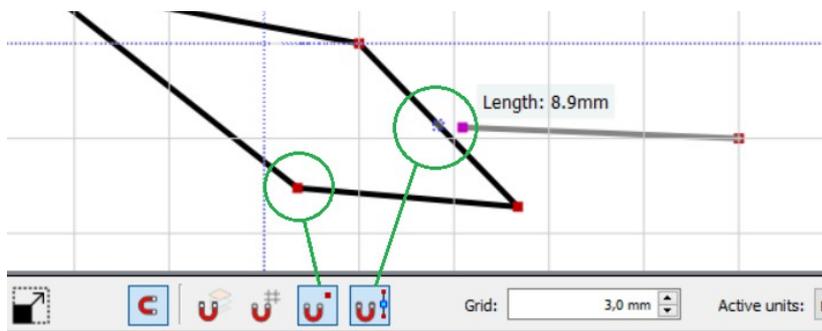
Until the global origin of the coordinate system ( blue ) is selected again, all coordinators will be in relation to temporary point ( red )

### 3g Attraction options

To make manual drawing easier, you can enable the grid snapping option and set the grid density / spacing.



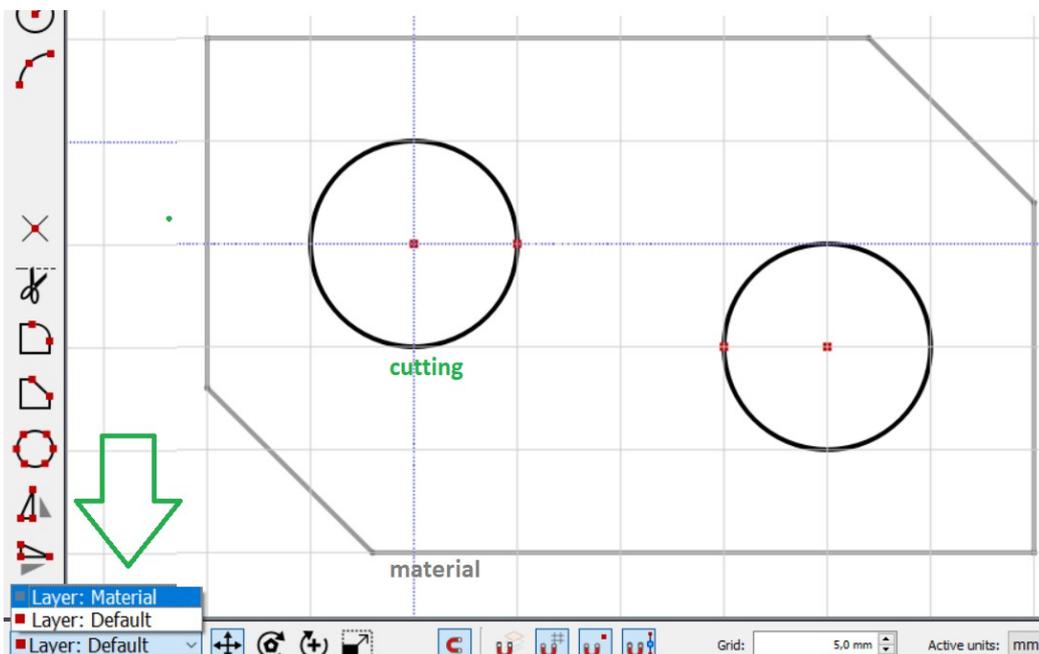
It is also possible to enable the cursor to snap (while drawing) to points on an object and to snap to the centre of a segment.



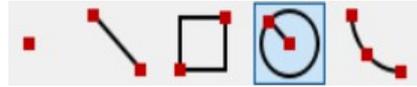
### 3h Layers



By selecting a layer other than the base layer (e.g. material) it is possible to draw objects which will be ignored by the control program during cutting. This is convenient, for example, when we want to draw the outline of a material or finished part, in which the machining will be performed. After exporting to the control program the layer will be visible and it will be possible to position the project on its basis, however the objects on the layer will be ignored during the machining on the CNC machine.



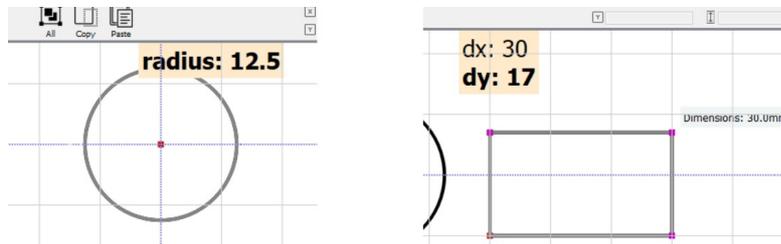
## 4 Drawing objects



Once you have selected one of the tools for drawing objects, it will remain active until you select another tool or terminate drawing by pressing [ ESC ] or using the right mouse button.

### 4a Using the keyboard when drawing objects

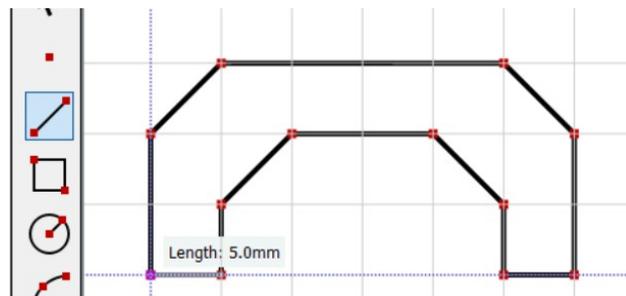
When drawing objects, it is possible to use the keyboard to enter the coordinates of the origin as well as the size of the objects - simply enter the numerical values while drawing - an additional window will appear displaying the entered data. Once you have selected a tool, you can enter the origin coordinates: the [ Tab ] key allows you to select the X or Y coordinate to be entered. If the object is already being drawn, use the keyboard to enter its dimensions in the same way: width, height for a rectangle, radius for a circle. Confirm the data entered by pressing [ Enter ].



### 4b Section / Line



With this tool [ the L (Line) key ] you can draw segments by pointing with the mouse at the beginning and the end of the segments, thus creating a straight line / objects composed of segments or individual segments. You can stop drawing at any time with the [ ESC ] key or by clicking the right mouse button.



### 4c Point (vertex)



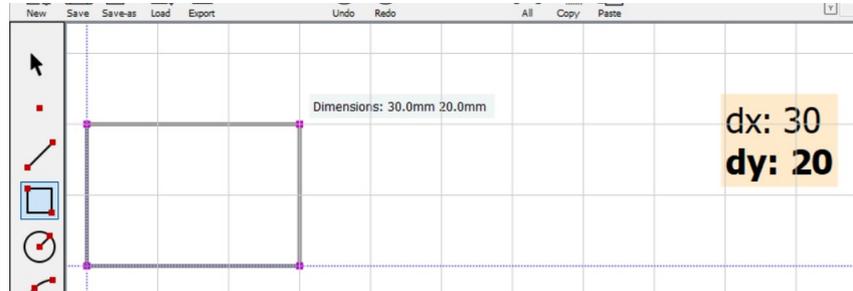
This tool [ V (Vertex) key ] allows you to draw / place auxiliary points in any area or on lines, thus dividing them into sections.

Note that points are treated as auxiliary objects when creating a project and are not transferred to MyPlasmCNC.

#### 4d rectangle



The Rectangle tool [ R key (Rectangle) ] allows you to draw a rectangle by indicating the beginning and the end of the rectangle with the mouse. After selecting the tool, the coordinates of the beginning of the rectangle as well as its size can be entered from the keyboard.



#### 4e circle



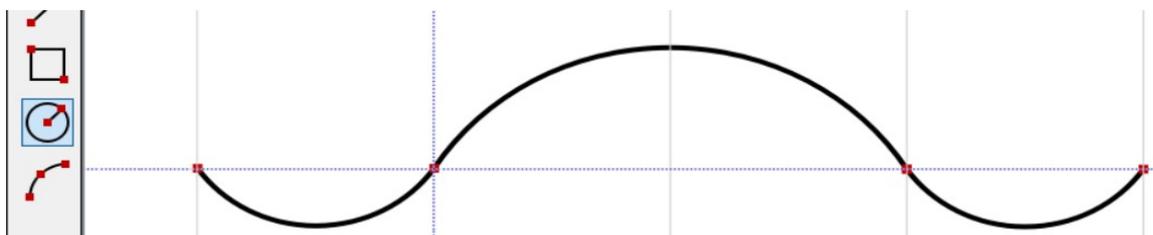
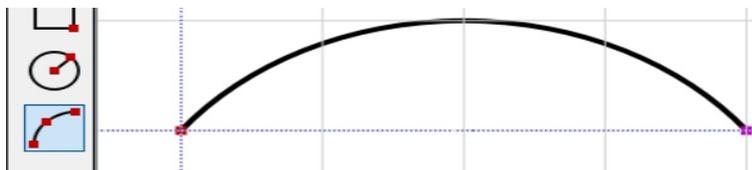
After selecting the [ C (Circle) ] tool, select (or enter the coordinates from the keyboard) the centre of the circle and then its radius.



#### 4f arc (segment of a circle)



After selecting the tool for drawing a segment of a circle/arc [ A (Arc) key], indicate the beginning and the end of the arc and then a third point on the arc.

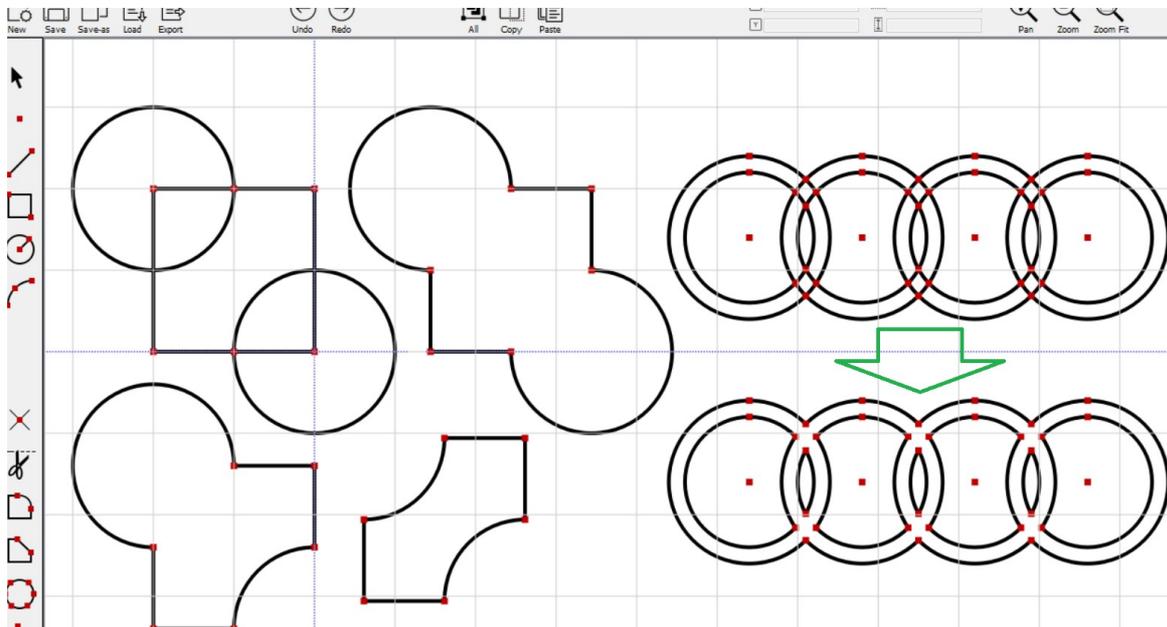


## 5 Operations on objects

### 5a Intersection detection



The [ I (intersections) ] tool detects and inserts intersections of selected objects while dividing them into sections. Using this tool, it is possible to create differentiated objects, composite objects or use their common part. It is enough to remove unnecessary sections. Przykłady wykorzystania :



The tool works on pre-selected objects or, after selecting the tool, you can click on the object to be sectioned with collision objects.

### 5b Removal of unnecessary elements

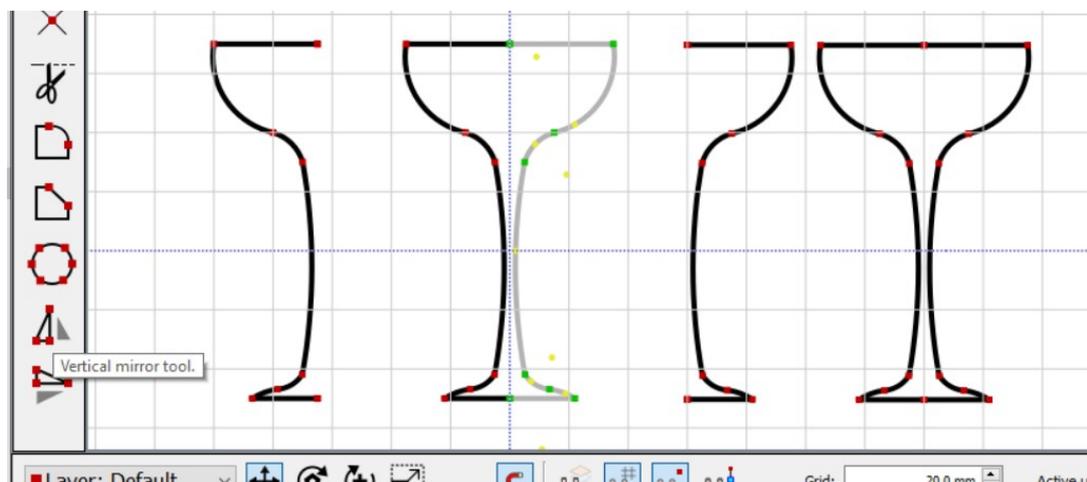


Narzędzie nożyczki [ S (scissors) ] usuwa zbędne obiekty, linie i punkty / wierzchołki. Wszystkie zaznaczone obiekty przed wybraniem narzędzia również zostaną usunięte.

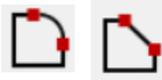
### 5c Mirroring



The tool reflects vertically or horizontally previously selected objects.

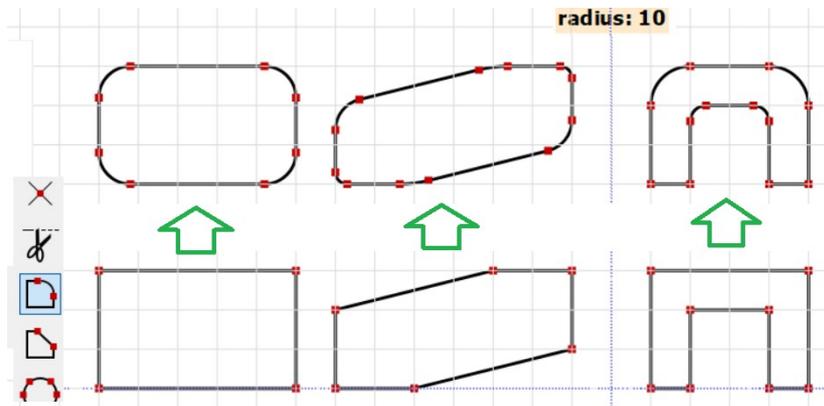


### 5d Rounding and chamfering vertices



To round off a corner, select the tool and enter the value of the rounding radius using the keyboard. By clicking on the individual vertices, they will be rounded off (if possible) to the desired radius. If vertices were selected before the tool was selected, they will also be rounded off (in groups).

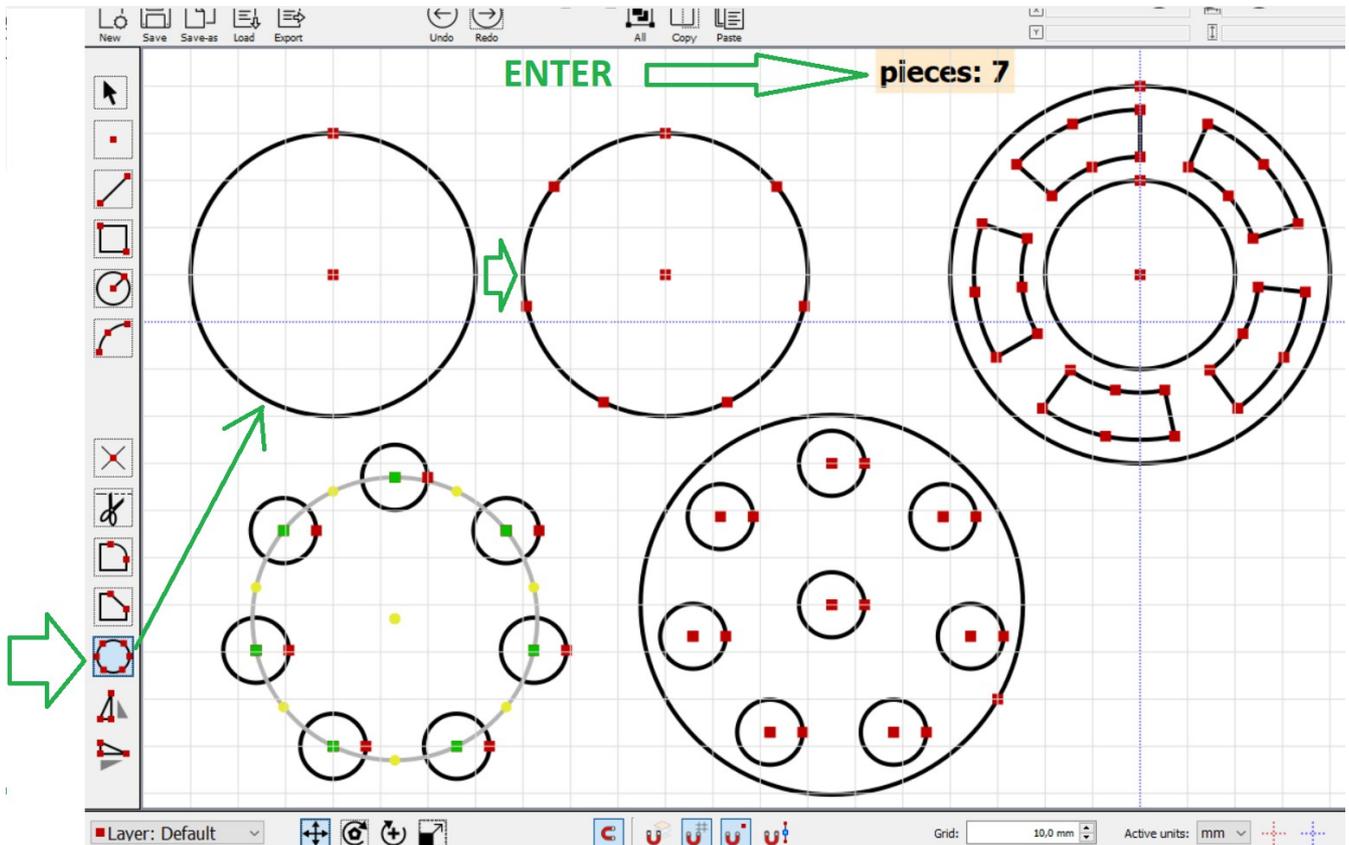
The same applies to the chamfer / symmetrical shear tool for vertices.



### 5e Divide a circle or arc

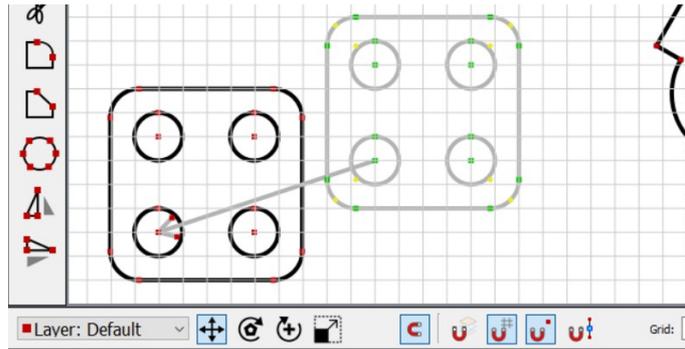


The tool allows you to divide arcs and circles into any number of pieces, which makes it much easier to create designs using circular arrangement of elements. After selecting the tool and marking the circle, enter the value of the division by pressing the [ Enter ] key.

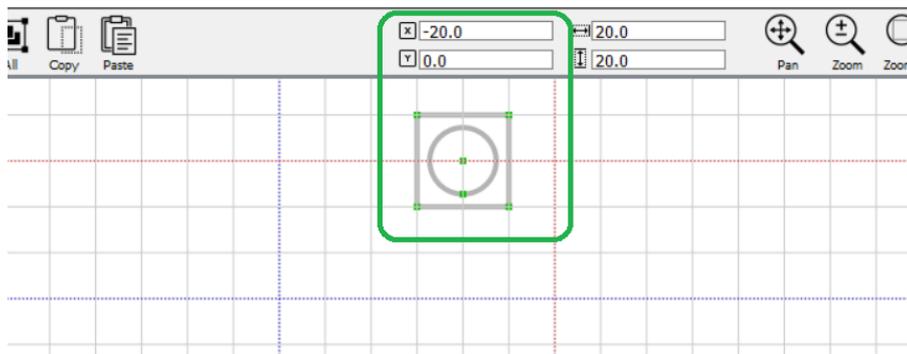


## 5f Shifting / arranging objects

This tool allows you to move selected objects with the mouse.

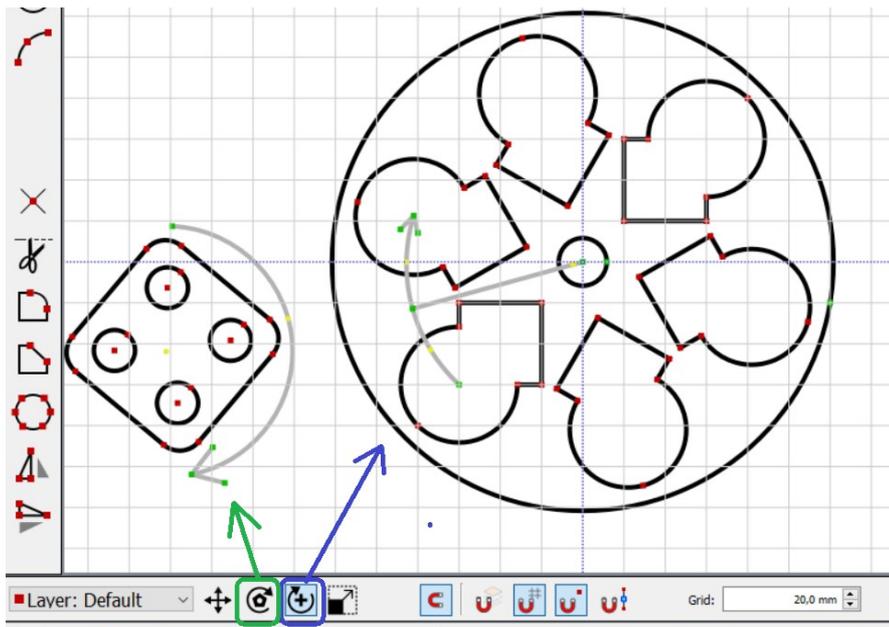


The position of selected objects (their geometric centre) in relation to the selected datum is displayed on the top bar of the software and can be modified manually (by entering XY values from the keyboard).



## 5g Rotation of objects

With these tools it is possible to rotate the selected objects with respect to their geometric centre or to a selected reference point.  

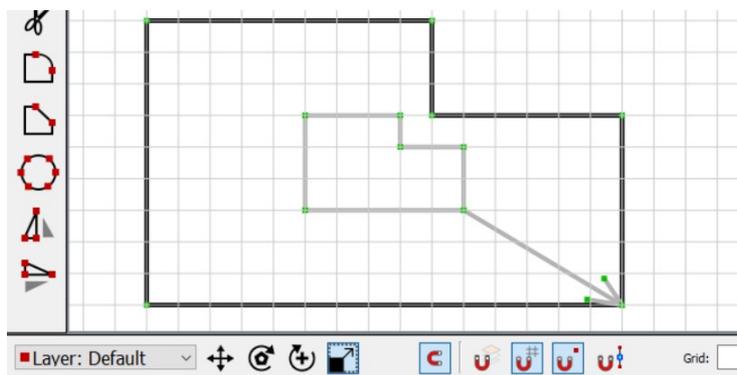


By default the resolution of rotation is set to 2.5 degrees, Holding down the [Ctrl] key it is possible to rotate objects freely.

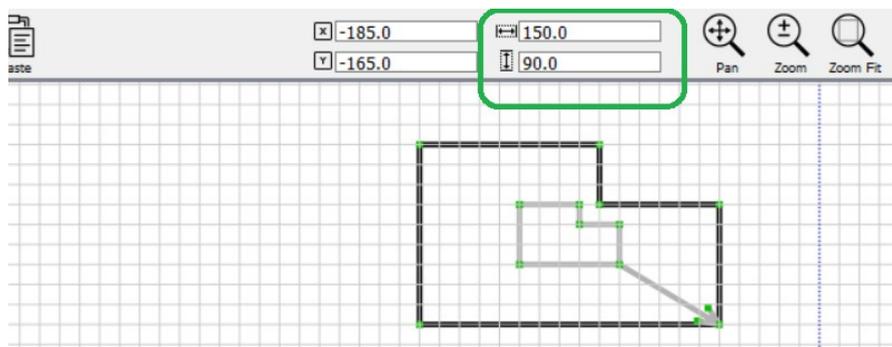
## 5h Scaling of objects



Narzędzie to pozwala na skalowanie wybranych obiektów za pomocą myszy.



The external dimensions of the selected objects are displayed on the top bar of the program and can be modified manually (by entering the X Y dimension values from the keyboard).



Scaling is done by proportionally changing the distance between control points. Due to this specificity, the algorithms do not work properly for arcs and circles.

## 6 Keyboard shortcuts

ESC - disable drawing tools / quit drawing

DEL - Delete selected objects

Ctrl + Z ; Ctrl + Y - Undo last operation, Redo

Ctrl + A - select all

Ctrl + C; Ctrl + V - copy/paste selected objects

Ctrl + N; New file

Ctrl + S - Save changes

V - draw a point / vertex

L - draw a line / segment / broken line

C - draw a circle

A - draw an arc

F - round off the corners

Shift + F - chamfer the corners

I - detect / insert intersection points

S - activate the scissors tool

O - set a temporary reference point

Shift + O - reset reference point

Ctrl+T - move

Ctrl+R - rotation

***Ctrl + E - Export project directly to MyPlasmCNC***

As mentioned earlier when using the program you can use the keyboard to enter the coordinates and dimensions of objects to be drawn. For example, to draw a circle with a radius of 12.5mm ( 25mm diameter ) in the centre of the datum click C 0 Enter 12.5 Enter for example to draw another circle offset 30mm to the right enter C 30 Enter 12.5 Enter. Below is the effect of the above operation:

