

MEGAPLOT

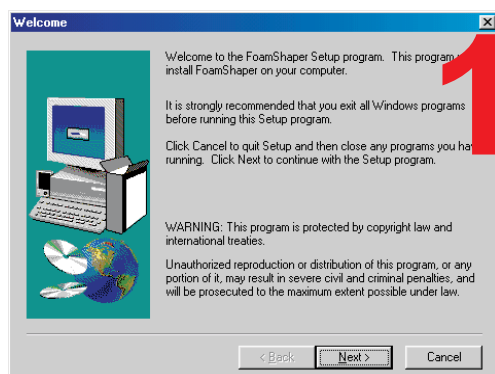
FOAM CUTTERS & ROUTER TABLES PRODUCER

Operation Instruction for MEGABLOCK foam cutters and FoamShaper software

CAUTION!

This manual refers to all of the foam cutter models that are produced by our company.
So if you own a machine which is not equipped with lathe, turntable or shape wire tool please omit the pages concerning these tools.

Installing the FoamShaper software



1. Insert the Megaplot CD-ROM.
2. Open the FoamShaper catalogue.
3. Open the FoamShaper setup-install catalogue.
4. Click the Setup icon - the installation will begin now.

Window **1**: exit all Windows programs and click Next

Window **2**: click Next to install the software in the default catalogue or click browse to select a different one.

Window **3**: click Next

Window **4**: click Next or Back to go back and change e.g. the destination folder.

Window **5**: click Finish

The FoamShaper software is now installed.

Now it is time to connect the foam cutter to your computer.

After you plug the cable into the computer turn on the electronic controller.

On your computer, Go to Start, then Programs and click FoamShaper (you might want to create a shortcut to desktop for easier access in the future).

The FoamShaper software starts - if you do not get any "error message" you are ready to start cutting.

However, if you get the "No communication with a foam cutter" message do the following:

Click "OK"

Go to "Configuration" and then select the tab "Plotter"

Change COM1 to COM2

Click "OK"

Close the FoamShaper

Press the reset button on the electronic controller

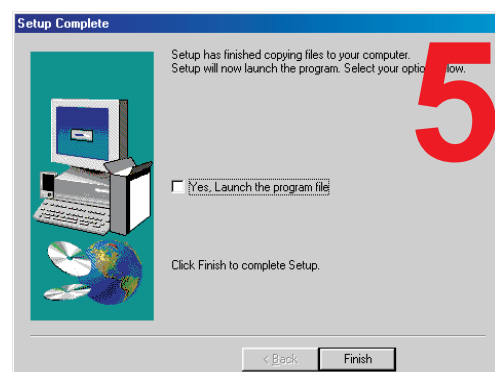
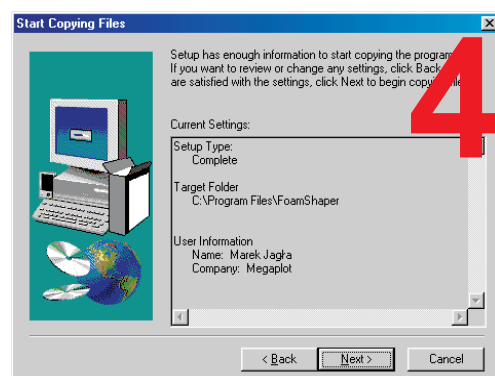
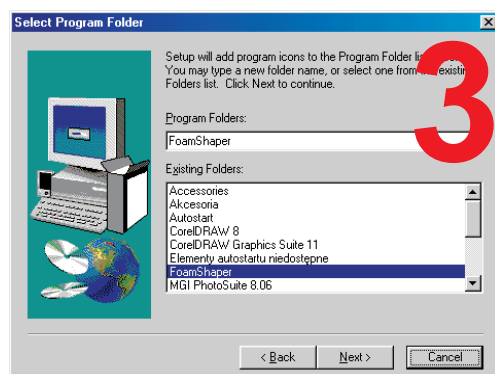
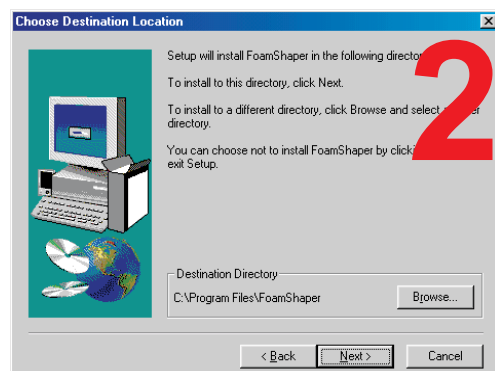
Start FoamShaper again.

If you get the "No communication with a foam cutter" message again, close the software, turn off the controller and your computer, plug the foam cutter into COM2 port of your computer, turn on your computer and then turn the controller. Start FoamShaper.

If you still get the "No communication with a foam cutter" message you might have a problem with the ports in your computer - try installing everything again on a different computer.

Always turn your computer on before you turn on the electronic controller.

Never plug or unplug any cables with the computer or electronic controller on.



We welcome you to the fascinating world of foam cutting. Your machine will give you many years of trouble-free service.

Proper set up and calibration is essential for consistent and accurate cuts. Our dealers offer you this service because we realize that you are expecting accuracy and quality just as you would from any of our professional tools.

If you are using this machine in a dusty, gritty environment, frequent cleaning may be in order to insure the bearings and stepping motors operate at their top efficiency.

The sample shapes shown in these instructions, are meant as a 1st step guide to learn the correct procedure to cut foam shapes. The sequence is important regardless of the shape you are cutting.

If you are new to a graphic software we suggest that you take a course on your software program..

Most all problems associated with computerized equipment are operator errors.
 - Just forgetting which step goes before the next step. This is true of most software.
 We have tried to list the steps in the order that they need to be implemented.

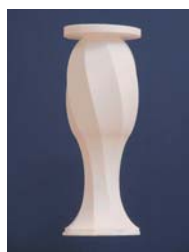
The steps to cut the shapes below will be described in detail on the following pages



Cylinder
2D cut



Glass
flat cut



Glass
spiral cut



Column
with
incisions



Groove
Column



Thread
Column

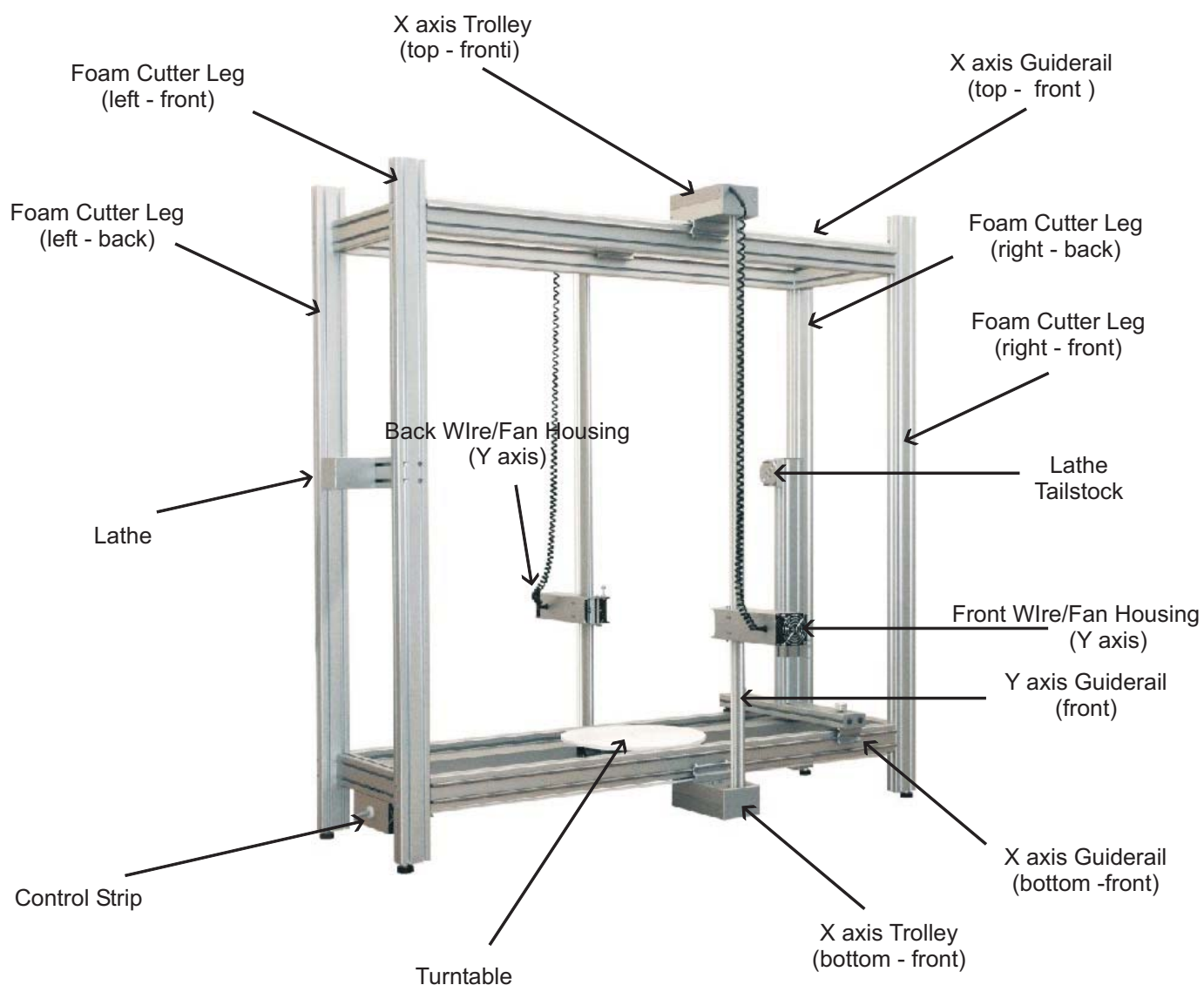
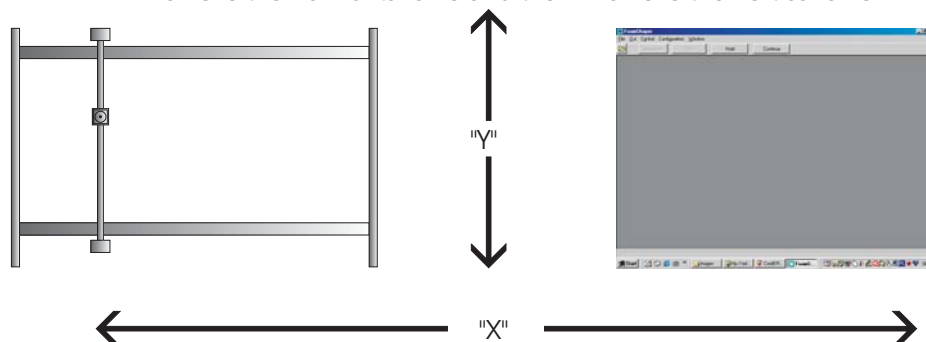


3D Plug

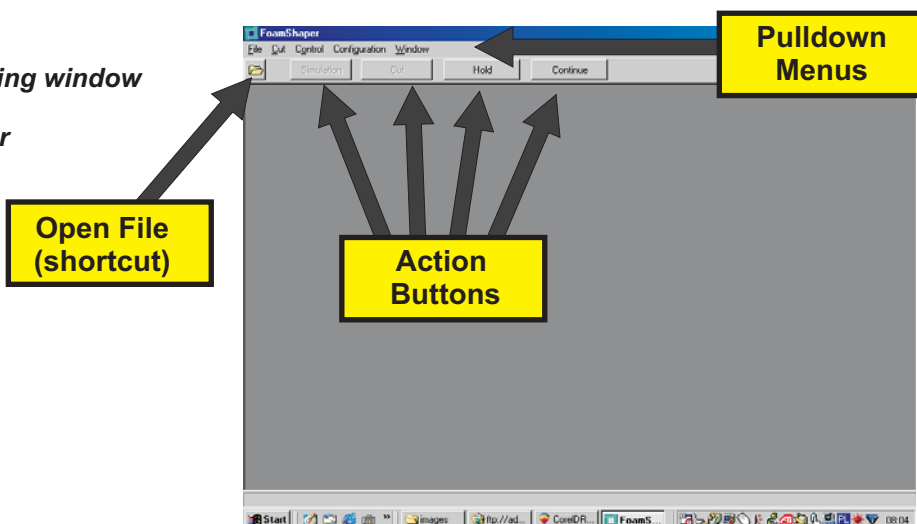
Terms.....	3	Configuring "Home" for Lathe & Rotary Cuts.	7-18
Software Window explanation.....	4-6	Drawing and Cutting a Glass (Flat cut).....	19-20
Manual control.....	7	Drawing and Cutting a Glass (Spiral cut).....	21
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Before getting started, please familiarize yourself with the following list of terms and parameters

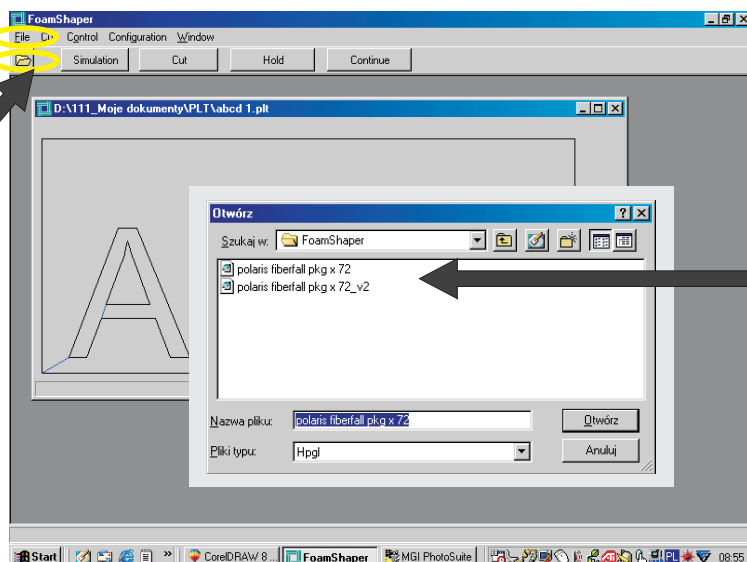
Whenever you are working on a foam cutting machine or in a graphics program, there are two axis points that are common to most all equipment and software. These are "X" and "Y" axis. The "X" axis is the horizontal axis and the "Y" axis is the vertical axis.



This is the opening window when you open the Foam Shaper software



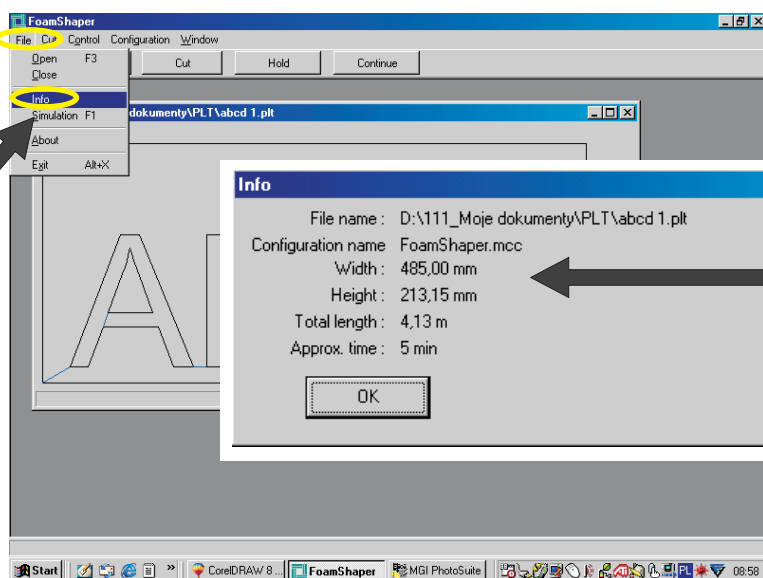
Open file



This is used to open files that you are going to cut. These files have been created and exported as HPGL (.plt) files

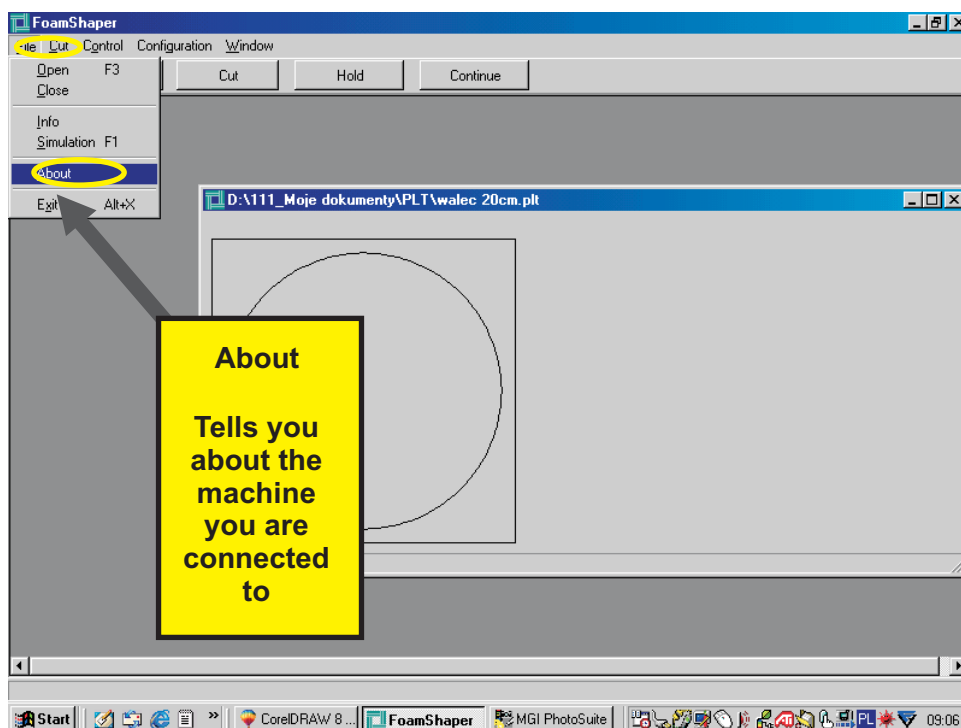
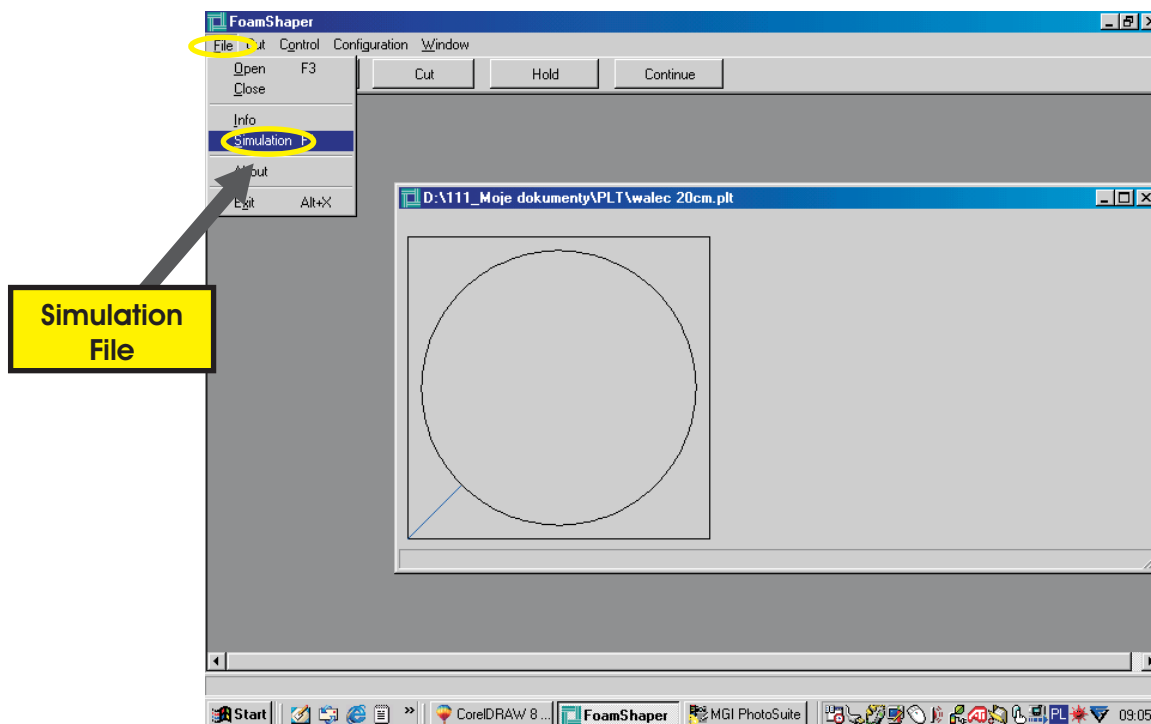
List of Saved HPGL.plt Files

Info concerning opened file

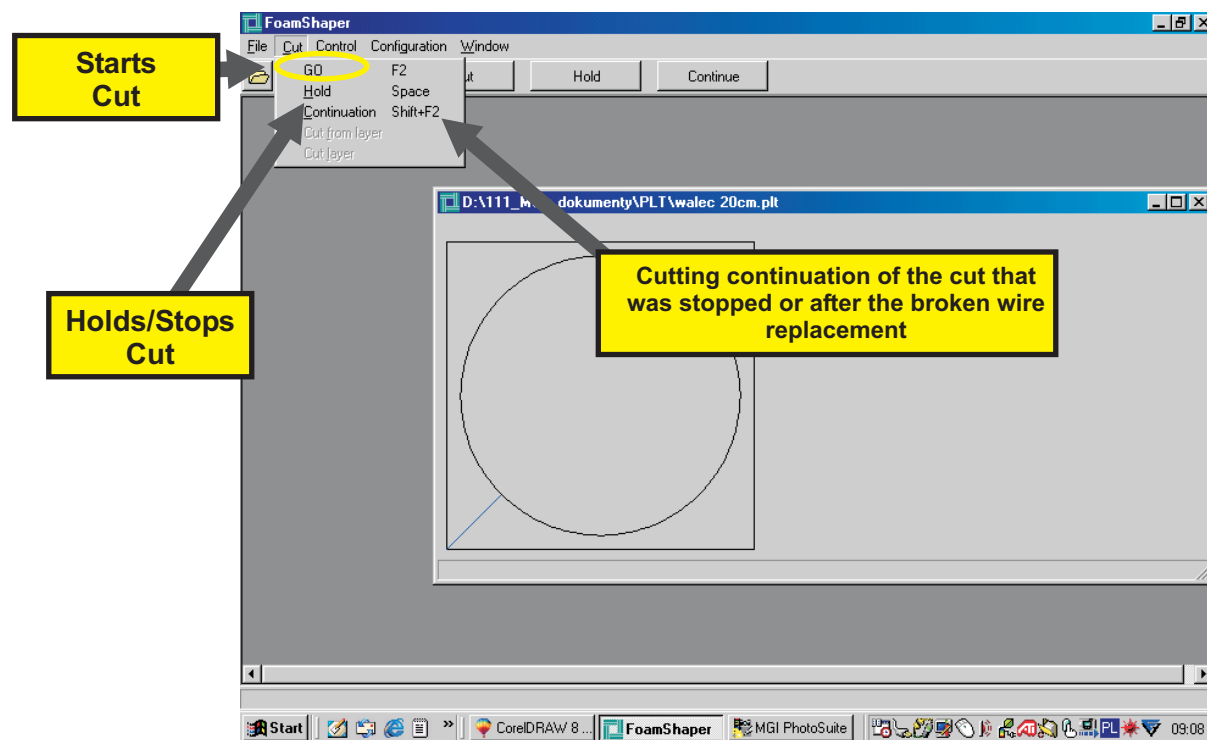


While it is not necessary to open this window for every file, it is intended to provide you with general information about the file that you have open to cut.

Shows you info:
- file name
- configuration
- size
- cutting time

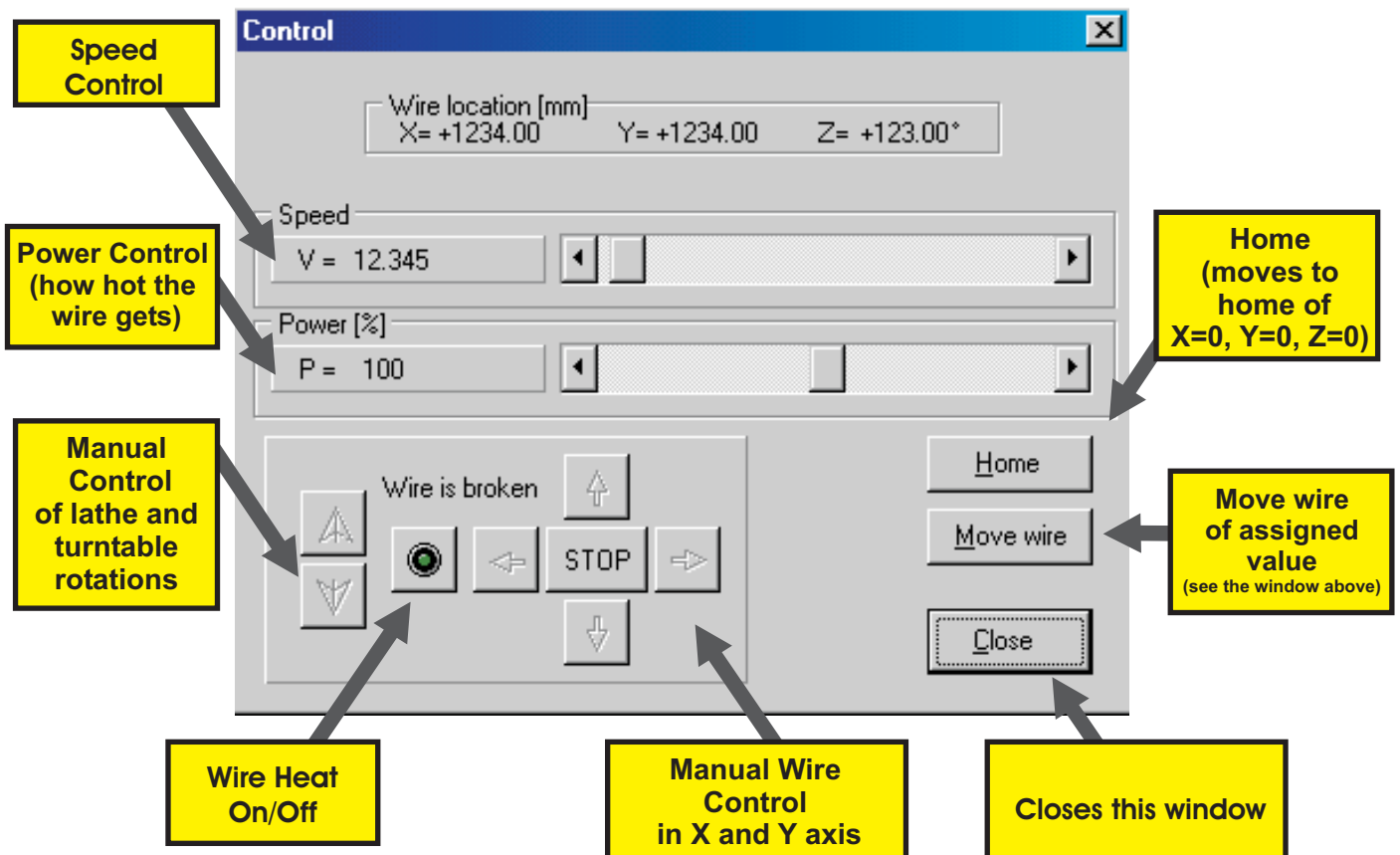
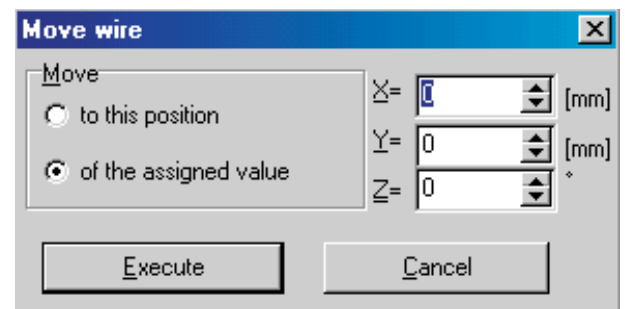


While it is not necessary to open this window for every file, it is intended to provide you with general information about the cutting machine that you are connected to.



You manually control the foam cutter by opening the Control Panel (F5). Both the keyboard arrows and the red arrows in the control panel move the wire.

- Speed** - This control lets you manually change the speed of a cut. It will also override the configuration settings of the cut you are doing. It will not affect any other saved settings.
- Power** - This control lets you manually change the power (heat) of a cut. It will also override the configuration settings of the cut you are doing. It will not affect any other saved settings.
- Home** - The "Home" location is X- 0 and Y - 0 when you select home. You are asking the machine's wire trolleys to go to its 0.0. position. This position is important because it clears old information from the controller and software memory and allows a fresh start.
- Move wire** - „to machine coordinates/to this position”: the wire will go to whatever the X and Y coordinates are set to. „of the assigned value”: wire will move in all axis in which any values ("+" or "-") are set.



Configuration - Setting Workin Parameters

The screenshot shows the **FoamShaper.mcc** configuration window with the **Working Parameters** tab selected. The window contains various input fields, checkboxes, and radio buttons for configuring the foam shaping process. Annotations on the left and right sides explain the function of specific settings.

Left-side annotations:

- Sets material diameter:** Points to the **Material Diameter [mm]** field (500,00).
- Sets cutting speed:** Points to the **Cutting Speed [mm per min]** field (1000,00).
- Sets switching speed:** Points to the **Switching Speed [mm per min]** field (3000,00).
- Sets heat power of wire:** Points to the **Heat Power [%]** field (20).
- Sets Angle Pause:** Points to the **Preheating Time [MiliSek]** field (1000).
- Sets % of rotation per one step:** Points to the **Angle Pause [MiliSek]** field (200).
- Sets the number of steps in a 360 degrees lathe or turntable rotation:** Points to the **The Number of Rotation Per Project Width** field (0).
- Lets you save current configuration settings:** Points to the **Save** button.
- Lets you select previously saved settings:** Points to the **PreSets** button.

Right-side annotations:

- Changes direction of the cut for both rotary & lathe direction:** Points to the **Cutting Direction** section.
- Wire cuts moving in two directions left-right & right-left:** Points to the **Two-way** radio button.
- In most cases this option should be activated:** Points to the **Adapt Rotation Direction** checkbox (checked).
- Changes direction of rotation for both rotary and lathe operations:** Points to the **Rotation Direction** section.
- Stops the cut after each pass. This allows removal of cut foam without disturbing the cut that is in progress:** Points to the **Hold After Every Step** checkbox.
- Reduces lathe or turntable motors acceleration which allows a gentle start:** Points to the **Heavy Material** checkbox.

Internal settings and buttons:

- Material Diameter [mm]:** 500,00
- Cutting Speed [mm per min]:** 1000,00
- Switching Speed [mm per min]:** 3000,00
- Heat Power [%]:** 20
- Preheating Time [MiliSek]:** 1000
- Angle Pause [MiliSek]:** 200
- The Number of Rotation Per Project Width:** 0
- Number of Steps:** 8
- Scale [%]:** 100
- Unit:** mm (selected), inch, feet
- Mode:** Lathe (selected), Rotary Cut, 2D Cut, Serial cut
- Buttons:** Save, PreSets, Cancel, OK

MODE

- * Lathe - with a use of a shapeable wire
- * Rotary cut - with a use of a lathe or a turntable
- * 2D cutting - with a use of a straight cutting wire
- * Serial cutting- with a use of a turntable

Configuration - setting Shaped Wire parameters

for more information
see pages 22-23

Here you set
Shaped Wire
coordinates

FoamShaper.mcc

Working Parameters | Plotter

X Spindle [mm] 12,0
 Y Spindle [mm] 730,0
 X Table [mm] 1000,00
 Y Table [mm] 250,00
 X Tool [mm] -80,0
 Y Tool [mm] 10,0

Com Number (Serial Output)
☒ COM 1
☐ COM 2

☐ AutoSave
 Save
 PreSets

Mode
☒ Lathe
☐ Rotary Cut
☐ 2D Cut
☐ Serial cut

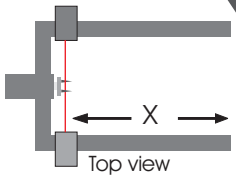
Unit
☒ mm
☐ inch
☐ feet

Cancel OK

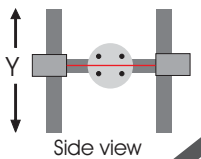
Plotter - calibration for axis position of a lathe and a turntable, ports set up

for more information 17-18

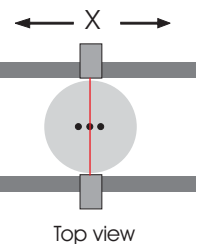
Here you set
X axis position
for a lathe



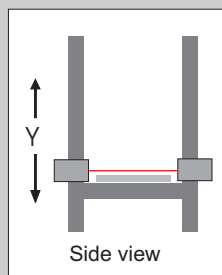
Here you set
Y axis position
for a lathe



Here you set
X axis position
for a turntable



Here you set
Y axis position
for a turntable
(make sure that
the wire is at least
5 mm over a
turntable
plate)



Here you set
a proper
Port your
machine is
connected to

FoamShaper.mcc

Working Parameters | Plotter

X Spindle [mm] 12,0
 Y Spindle [mm] 730,0
 X Table [mm] 1000,00
 Y Table [mm] 250,00

Com Number (Serial Output)
☒ COM 1
☐ COM 2

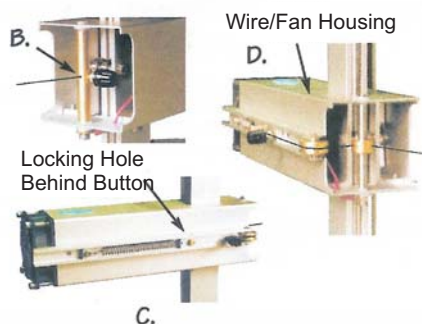
☐ AutoSave
 Save
 PreSets

Mode
☒ Lathe
☐ Rotary Cut
☐ 2D Cut
☐ Serial cut

Unit
☒ mm
☐ inch
☐ feet

Cancel OK

Installing Cutting Wire



IMPORTANT !

Never attempt to manually move the trolleys and housings when the Controller is turned on. This can cause premature failure of the drive belts and possibly damage the stepper motors. Even if the Controller is turned off manual moving the trolleys should be done very carefully.

- Using Manual Control option, raise the wire/fan housings in Y axis to a comfortable level to instal the Ni-Chrome wire. Be sure that both housings are at the same height.
- Attach the far end of the cutting wire by loosening the black plastic knob, and inserting the cutting wire in the hole and tightening the knob.
- Lock the tensioner by sliding it to the right while pushing the locking pin until it drops into its locking hole.
- Now thread the cutting wire around the brass pulleys, loosen the black plastic knob and wrap the cutting wire around the post and tighten the knob. Release the tensioner lock. The proper tension is now on the wire.
- Move both housings down at the same time to the bottom of the Y axis.

MultiWire Foam Cutters



Install the wire tensioner (equipped with a tensioning spring) on the vertical power bar.



Tighten it slightly.



There is another vertical power bar on the other side of the cutter. Install the small aluminium cube on it and tighten it slightly.



Stretch the spring in the tensioner and secure it at this stretched position by tightening the screw.



Insert the wire into the hole in the cube and tighten the screw.



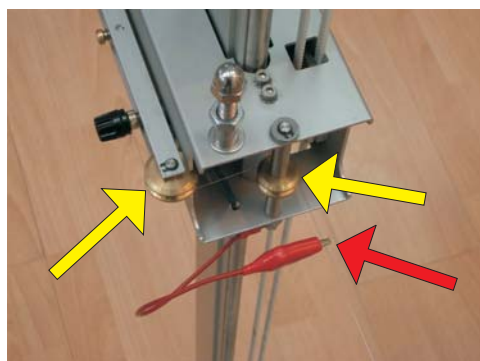
Insert the other end of wire into the second cube and tighten the screw that holds the wire.



Release the spring.



Having completed steps 1-7 for all the wires you plan to use tighten the tensioner to the power bar. Wires are ready to use!



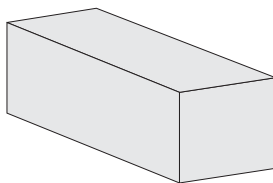
Titanium Wire

The Titanium Wire can be used with all our foam cutters. Its high resistance to stretching makes it possible to use considerably stronger tensioning springs which results in cutting speeds 70-90% higher when compared to regular NiChrome wire.

However, in order to make sure the foam cutter works properly, the voltage needs to be fed to the wire directly through an extra cable (red arrow).

If you do not use this extra cable the Titanium Wire might break in the places indicated by yellow arrows.

Test Cuts for Speed, Heat and Angle Pause



1. Foam Densities –

Styrofoam comes in many densities - 1, 1 ½, 2 pounds etc. You'll need to know 4 important settings before you begin cutting. You will do this by starting out with a block of styrofoam of the same density and size you will be using throughout your project.

4 MAIN PARAMETERS/CRITERIA FOR CUTTING FOAM :

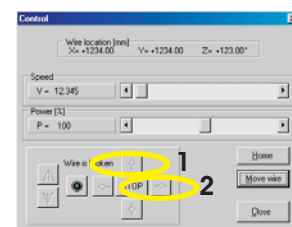
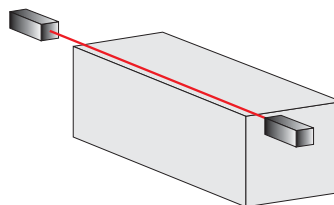
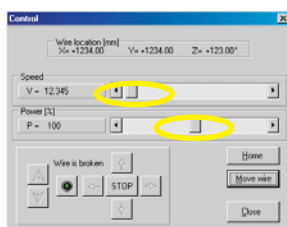
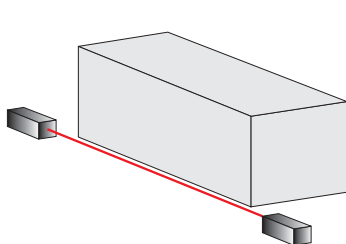
- | | | |
|----|--------------------|--|
| A. | Speed – | Speed and temperature are mutually and directly dependent. The higher the speed is, the higher the temperature should be. |
| B. | Wire Temperature – | The higher the temperature the faster the speed should be. There is however a limit on increasing temperature. Too high temperature will significantly reduce the life and durability of the cutting wire and aid in its surface oxidation. |
| C. | Angle Pause – | Angle Pause must be considered any time a heated wire travels through foam in a circular, curve, or angle motion. It allows time for the wire to catch up with the stepping motors. Thanks to this parameter you can be sure that all of your corners will be cut perfectly. |
| D. | Wire Tension – | Wire tension must be maintained. Stretching of the wire due to heat or loss of spring tension can cause inaccurate cuts. Retention your wire as needed. |

2. Test Cuts - using manual control panel (F5) set speed at - 250 mm/min (10 inches/min) power - 45%

Note:
Values suggested above are only an example.
We suggest these numbers to get you started.
Your actual test results may call for (+) or (-) adjustments

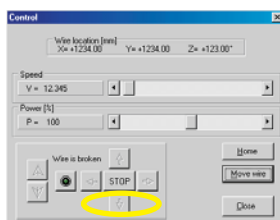
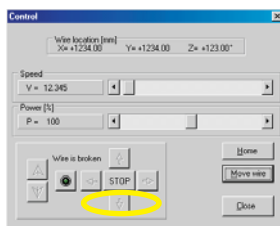
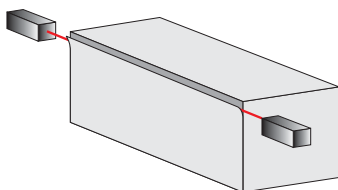
Caution !

Remember: The length and density of the EPS are the two key factors that determine your configured settings. When testing to determine the heat, speed and angle pause you must test with the exact size (length) and density of foam block you will be using for your project.



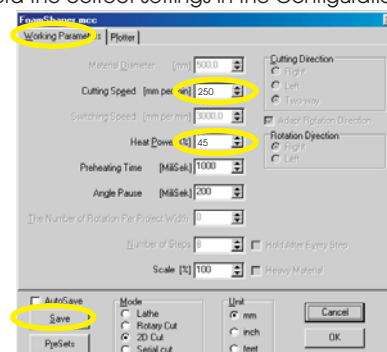
1. With the wire in the "Home" position, place a block of EPS foam on the machine. Align it to within 4 mm (1/8 ") from the wire.

2. Move the wire above the upper/top edge of the material (1), and then to the left above the material (2)



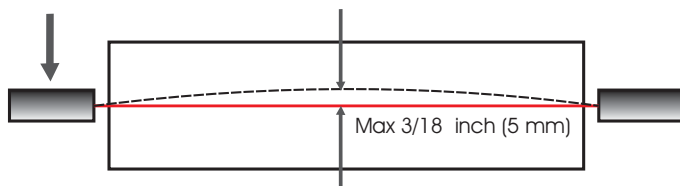
3. Using the "down" arrow key, make a cut. If this cut is satisfactory, open Configuration window and record this settings. If not - repeat the test using different settings.

You want a smooth cut that does not show wire drag lines. Change your settings slightly on one or both settings until you achieve a smooth cut. Cutting too fast will cause the wire to break. Too slow may cause overburn. Record the correct settings in the Configuration, "Working Parameters" tab and save under a name you will recognize later.

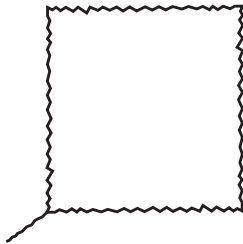


4 MAIN PARAMETERS/CRITERIA FOR CUTTING FOAM :

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- D. Wire Tension – Wire tension must be maintained. Stretching of the wire due to heat or loss of spring tension can cause inaccurate cuts. Retention your wire as needed.

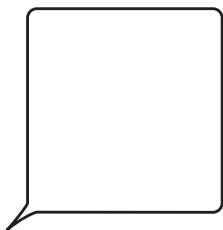
Direction of Wire Travel**CAUTION !**

The highest quality of cut is obtained when the cutting wire during its work is slightly arched. Be sure that this arche is not bigger than 3/18 " (5 mm) because this may cause premature wear of a cutting wire



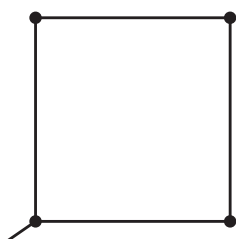
Defect: serrated, choppy cut, sometimes called wire chatter.

Solution: decrease temperature
increase speed



Defect: rounded corners, the point of entry and exit are not the same line

Solution: increase Angle Pause
decrease speed
increase temperature



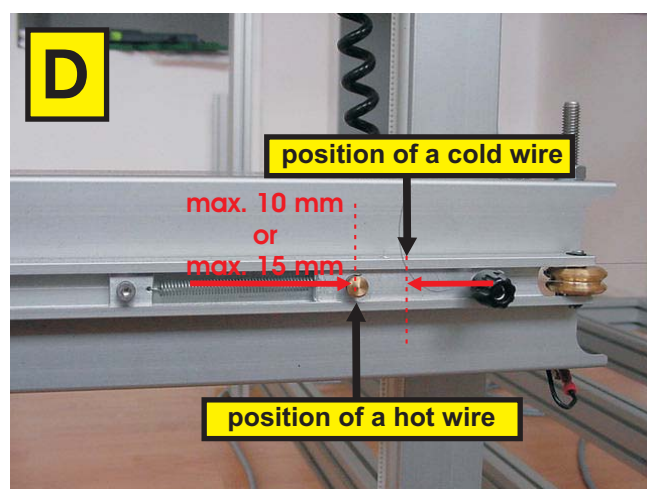
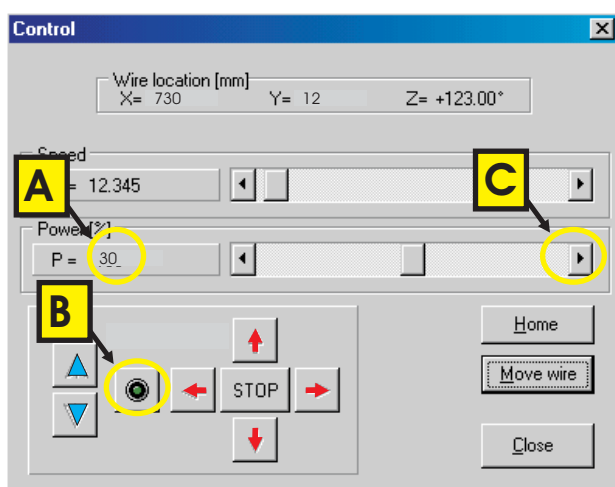
Defect: overheated corners

Solution: decrease Angle Pause

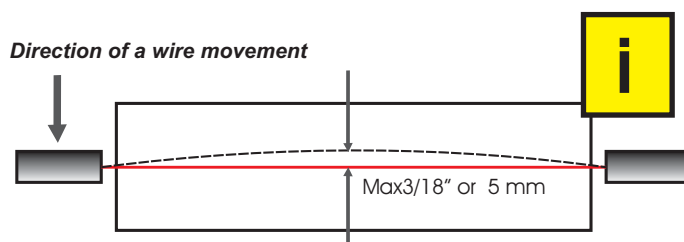
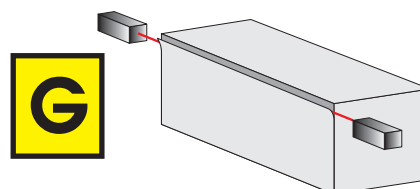
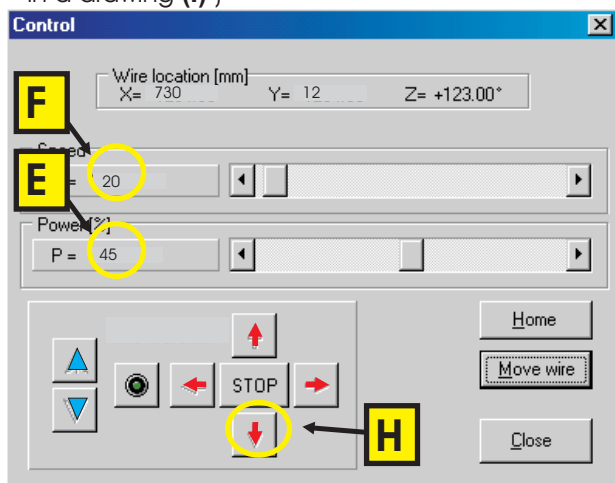
Setting proper speed and power of wire

Speed and Power are the two main parameters that determine the cutting quality. To set them properly follow the steps described below:

1. install a new cutting wire to a foam cutter - do not change the original tension of the tightening spring
2. open "Manual Control" window, set "Power" at 30% (A), turn on/activate the cutting wire (B). Then gradually increase "Power" (C) very gently until you notice that the tightening spring starts becoming shorter. Increase "Power" until the wire lengthening equals max. 10 mm in case of machines with a cutting wire 130 cm (4') long, or 15 mm in case of machines with a cutting wire 250 cm (8') long (D). Do not exceed this values - it will cause permanent wire lengthening and the tightening spring will not compensate the next changes in wire length.



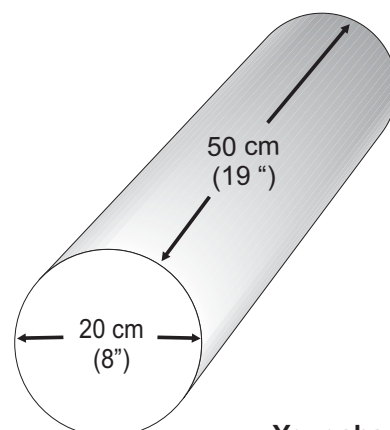
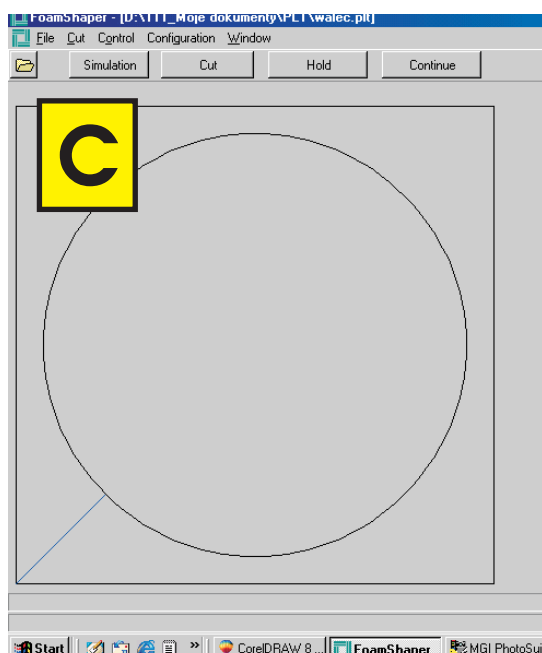
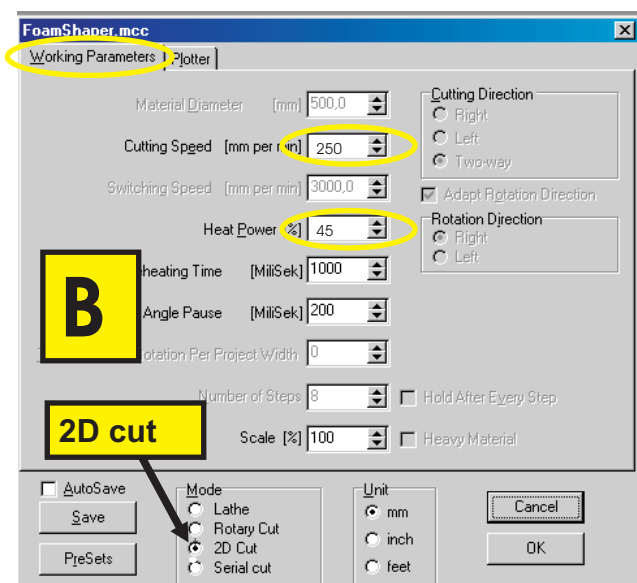
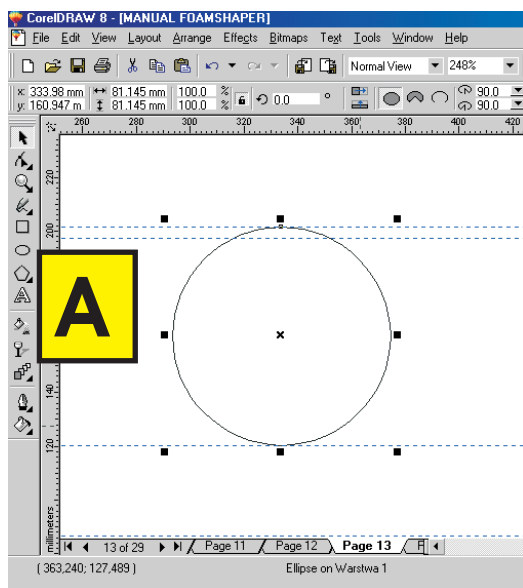
3. Place a block of foam on the machine.
4. Set "Power" according to a measurement procedure done in point nr 2 (E). (Do not care the numbers indicated below)
5. Set a speed at 1"/min (F)
6. Place a wire in a position shown in a drawing (G)
7. Move the wire down (H), and slowly increase the speed until you notice that the wire starts bending (as shown in a drawing (I))



Memorize these parameters (Speed, Power) and insert them in 'Working Parameters' (Configuration). You may set 'Angle Pause' as well. Recommended value - 200.

Cutting a Cylinder (example piece: diameter 8 inches, height 19 inches)

- A. Draw the shape: Using Corel draw a 8" circle. Export it as a HPGL.plt file under the name "cylinder.plt" to a catalogue FoamShaper.
- B. Open Configuration: Set the Working Parameters as shown in the picture "B". You are setting the type of cut (2D), speed, heat power, angle pause, etc. Save this settings by a name you will recognize.
- C. Open file: Open the file "cylinder.plt" (F3). Tell the program to "Start" (F2). A dialog box will appear and ask you if you want to cut the box around the circle. Tell it either Yes or No.



Your shape will look like this

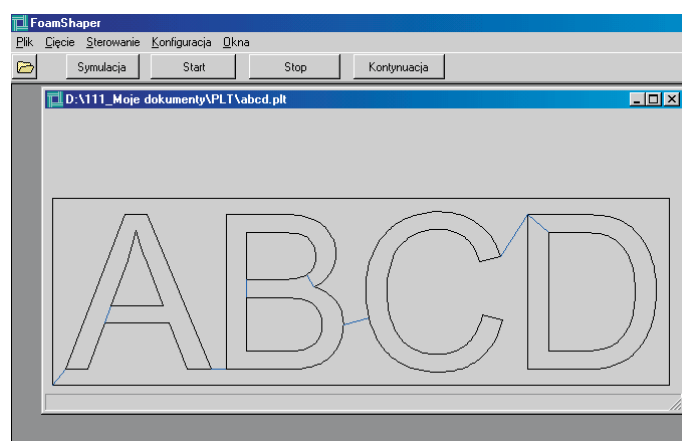
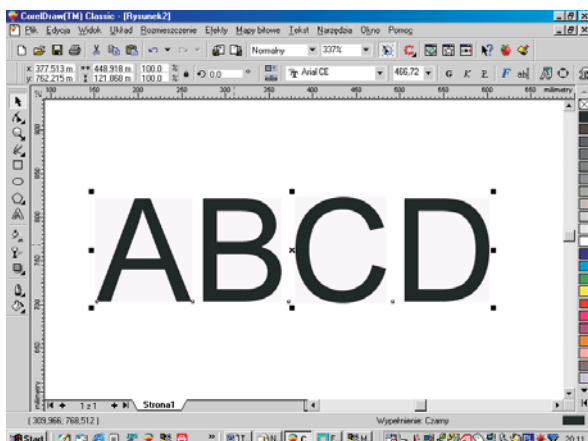
- A. Draw the shape: Using Corel draw the letters - insert a text. Export it as a HPGL.plt file under the name "letter.plt" to a catalogue FoamShaper.
- B. Open Configuration: Set the Workin Parameters as shown in the picture "B". You are setting the type of cut (2D), speed, heat power, angle pause, etc. Save this settings by a name you will recognize.
- C. Open file: Open the file "letter.plt" (F3). Tell the program to "Start" (F2). A dialog box will appear and ask you if you want to cut the box around the circle. Tell it either Yes or number



Insert the letters in Corel.
Export the file.



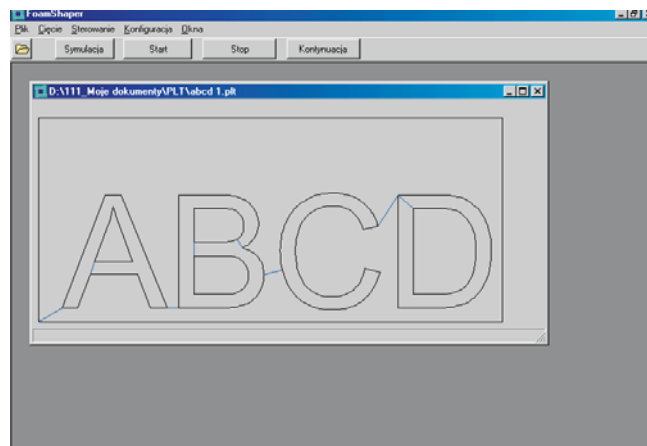
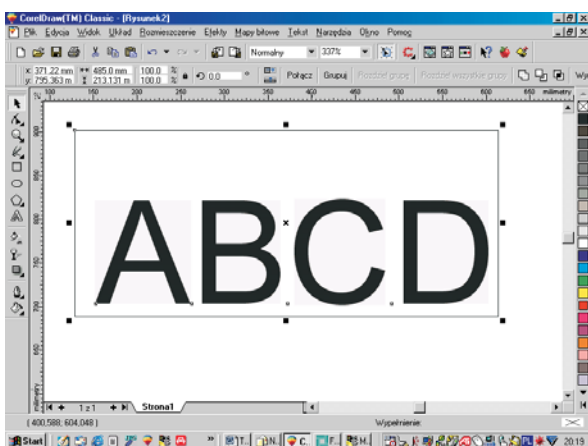
Open the file in a FoamShaper software.
The program will automatically add the frame around the letters.



Draw a frame around the letters.
Export the file.



Open the file in a FoamShaper software.
The program will not add its frame around the letters. Your own frame is sufficient.

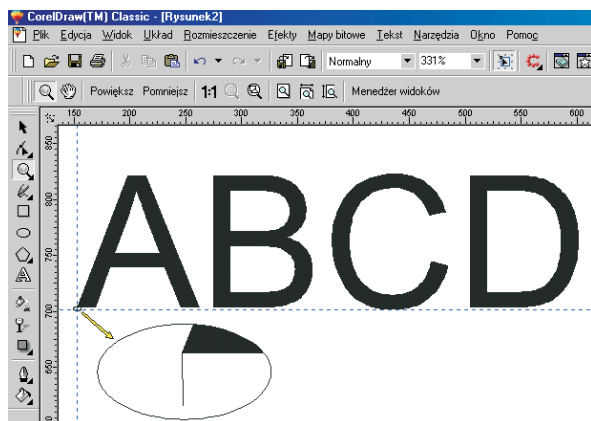


Cutting the Letters and Graphical Signs

A

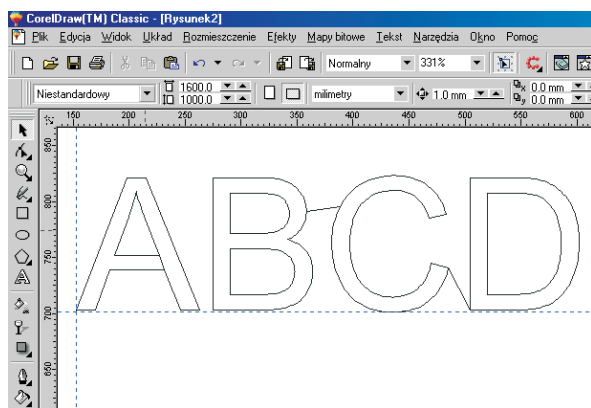
If you want the cut to start in a place chosen by you, draw your own starting line in the left bottom corner.

REMEMBER! Always before this action you should change all objects into curves and activate “snap to objects” option in a Corel.

**A**

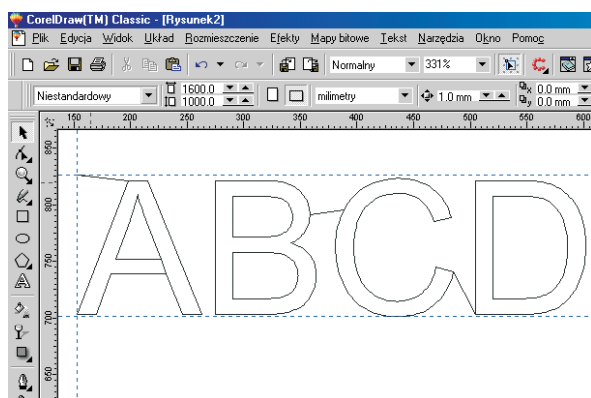
If you do not want the software to join the objects automatically, you can draw your own connecting lines.

REMEMBER! Always before this action you should change all objects into curves and activate “snap to objects” option in a Corel.

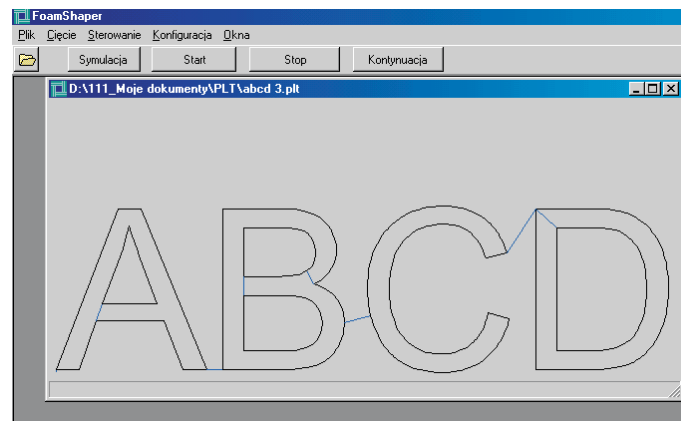
**A**

If you want to start cutting for example in a left upper corner, draw your own line in this corner.

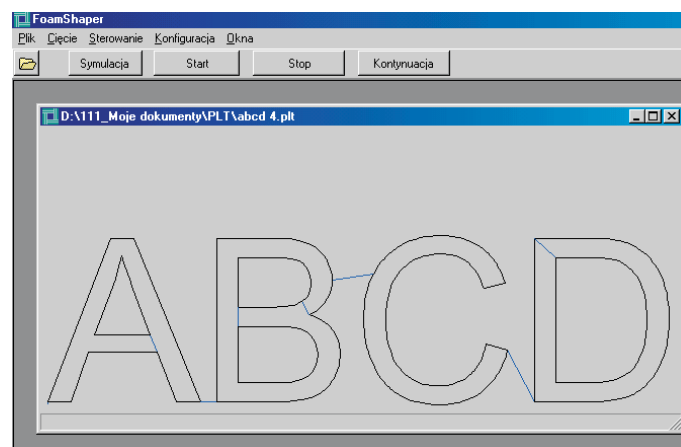
REMEMBER! Always before this action you should change all objects into curves and activate “snap to objects” option in a Corel.

**B**

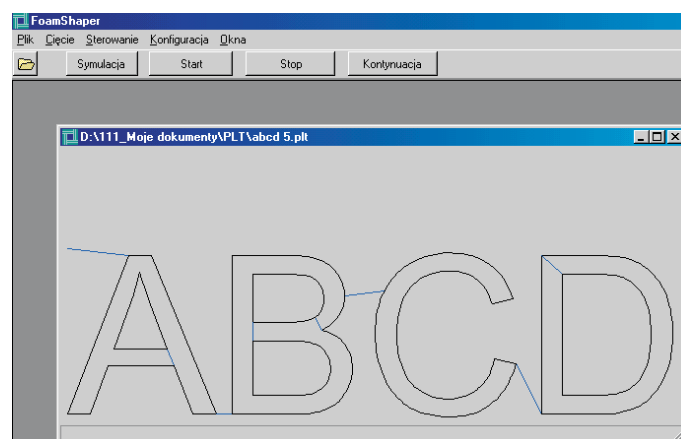
Open the file in a FoamShaper software. The program will not add the frame. In a left bottom corner of a letter "A" you can see a short blue line.

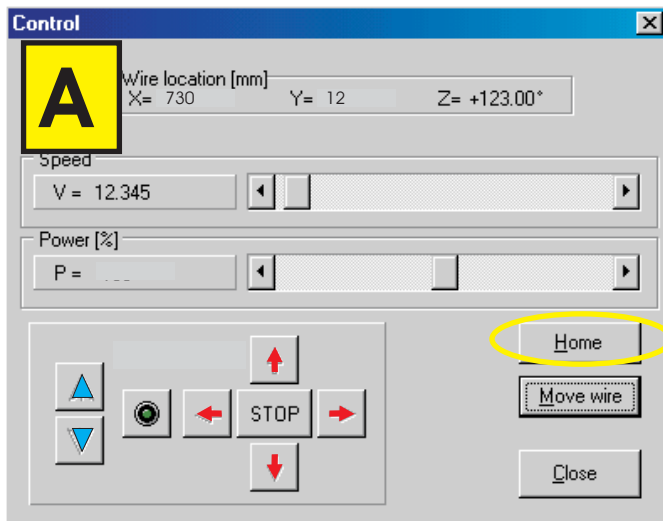
**B**

Open the file in a FoamShaper software. The software will respect your connecting lines. It will automatically join only these objects that has not been connected by you.

**B**

Open the file in a FoamShaper software. The software will respect the entry point drawn by you in a left upper corner.





A. "Home" the machine - choose "Home" from the Manual Control window. Plotter will move to 0,0 coordinates in all axis.

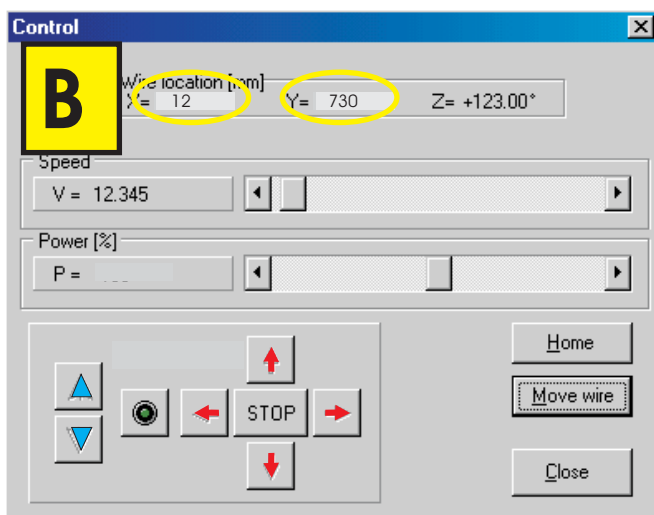
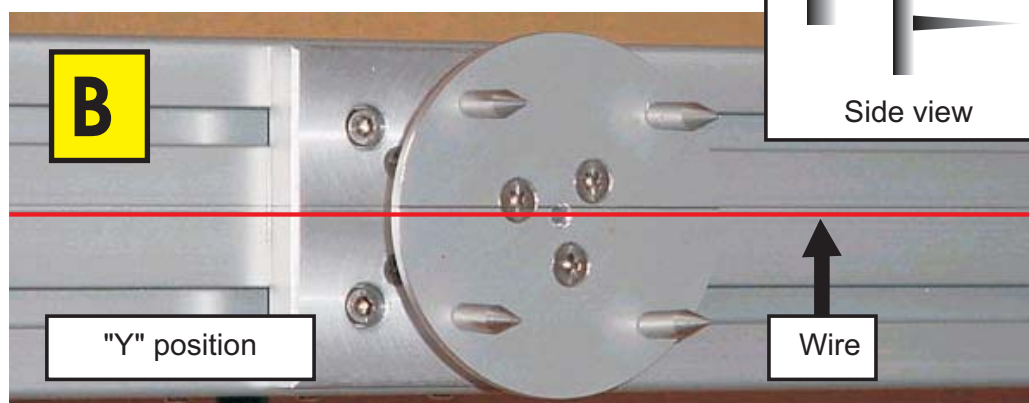
B. Finding Lathe Center

Using Manual Control move the wire to the exact center of the lathe spindle drive.

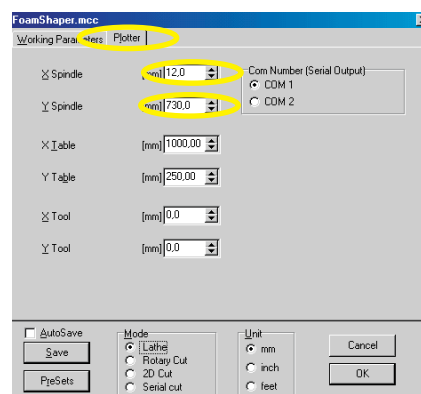
Look at the "Y" position in the control settings and write this position down.

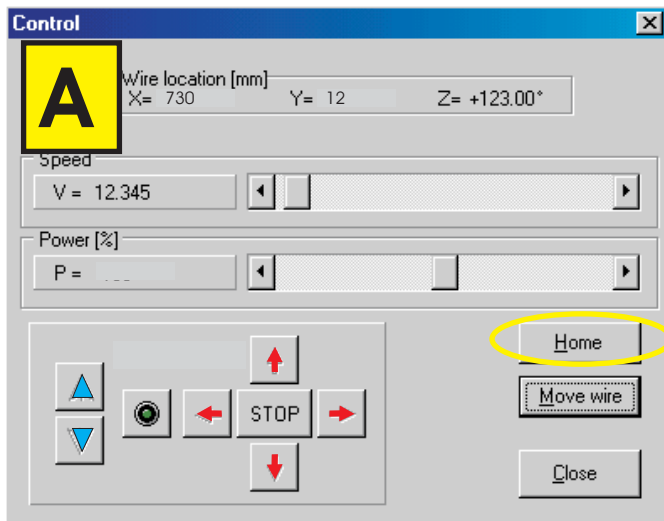
Then move the wire to the left as close to a spike plate as possible.

Look at the "X" position in the control settings and write this position down.



Go to Configuration (F6) and click the tab "Plotter". Insert in "X" i "Y" spindle position previously written numbers.





A. A. "Home" the machine - choose "Home" from the Manual Control window. Plotter will move to 0,0 coordinates in all axis.

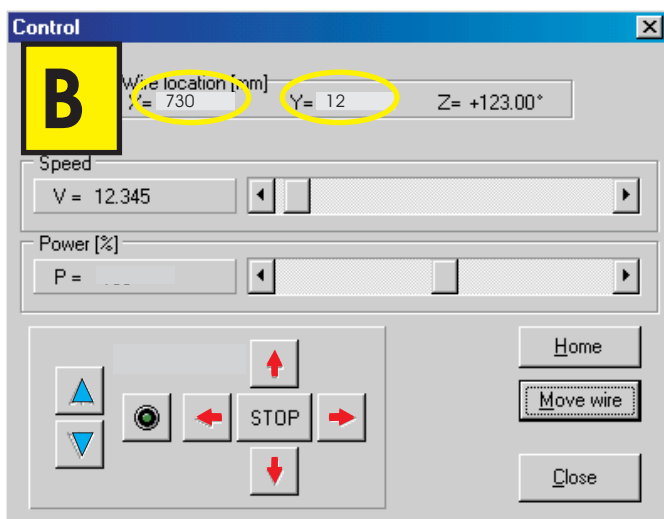
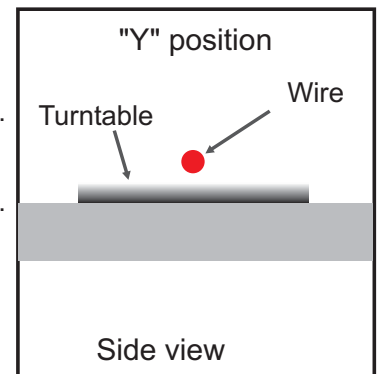
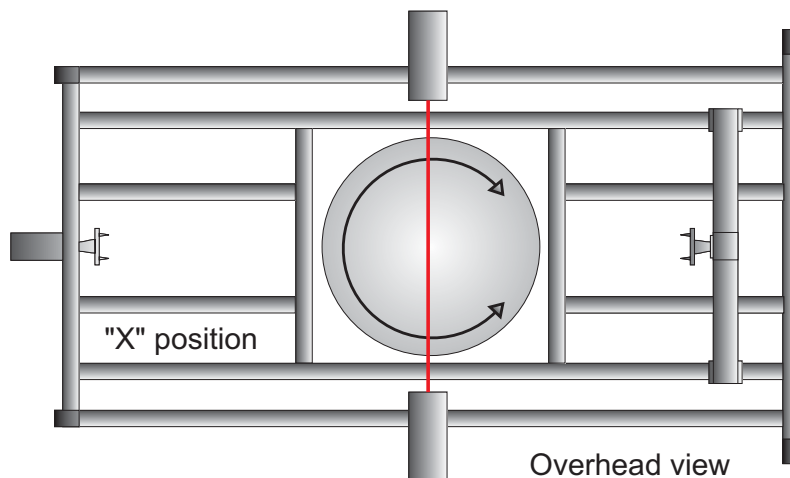
B. Finding Turntable Center

Using Manual Control move the wire up to the height of about 1 1/3" and then to the right to the exact centre of a the turntable plate.

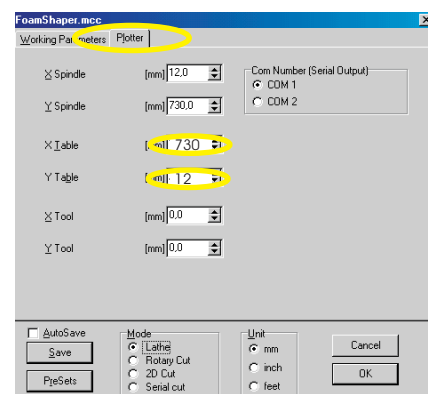
Look at the „X" position in the manual control settings and write this position down.

Then move the wire down about 1/5" from the turntable plate.

Look at the „Y" position in the manual control settings and write this position down.



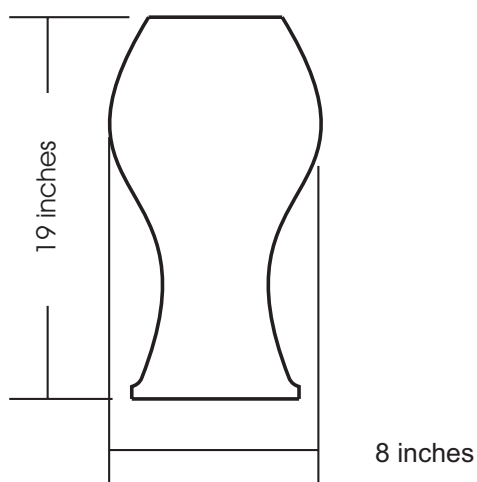
Go to Configuration (F6) and click the tab „Plotter". Insert in "X" i "Y" turntable positon previously written numbers.



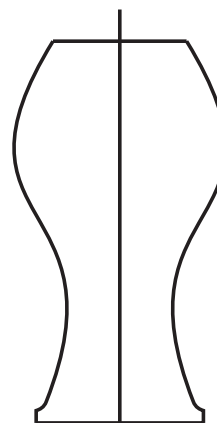
- A. Draw the shape you would like to cut.
- B. In the object center draw a vertical line (axis of rotation/center line)
- C. Turn the shape on its side. Remove everything except the horizontal curve below the center line.
- D. Export this file as an HPGL (.plt) file

Open it in a FoamShaper to cut it.

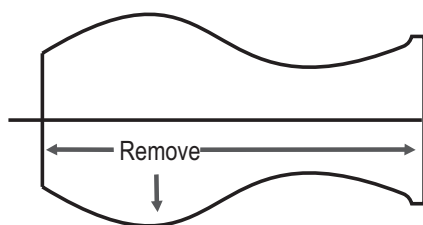
A. Draw an object



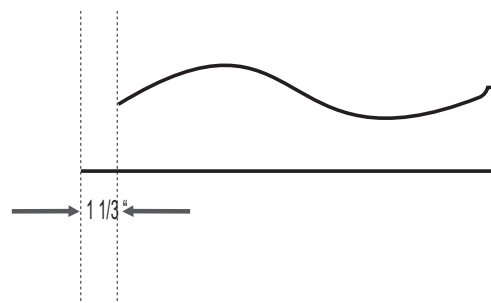
A. Draw the vertical center line (rotary axis)



C. Remove all the lines you don't need, except the curve and rotary axis below this curve.



D. Move the rotary axis to the left, as it is longer of about 1 1/3 " than the curve. Now you can export the file



IMPORTANT

To start cutting you must move the wire to its max. upper position in "Y" axis because it is a place where a machine will start cutting. If you want to start your cutting at the bottom the rotary axis should be placed as in a drawing on the right.

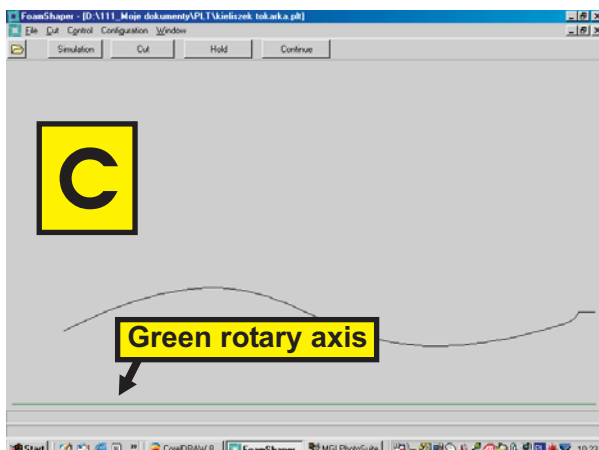
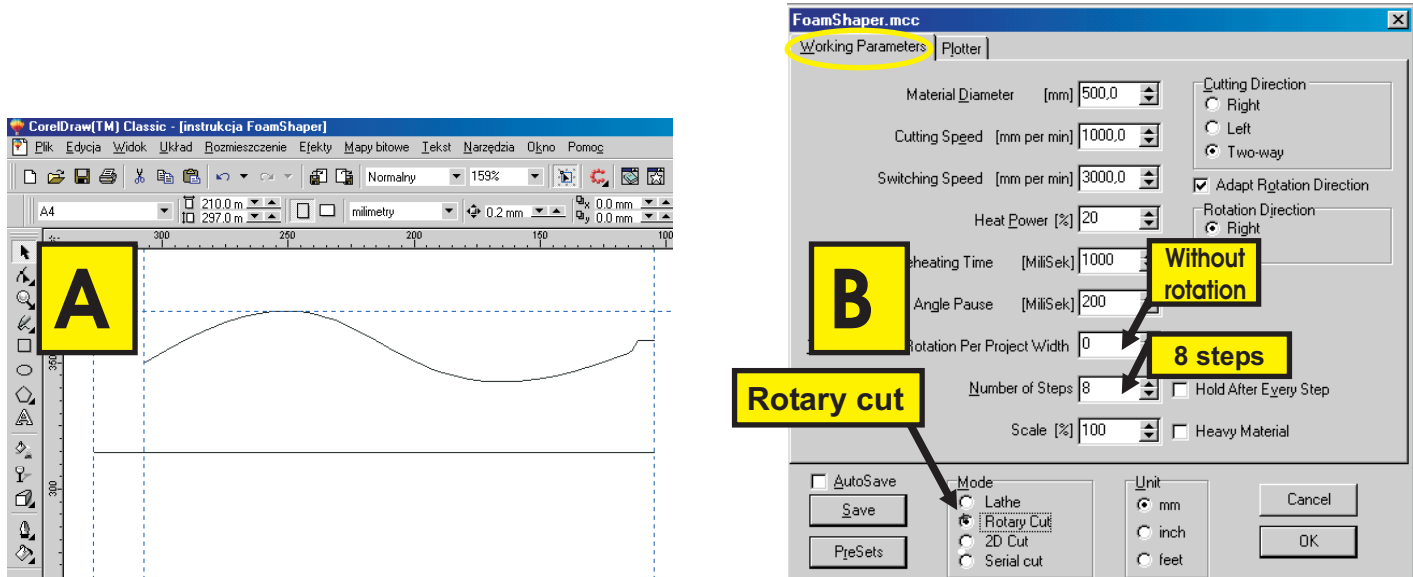


Cutting a Glass (Flat Cut)



- A. Draw the shape: Using Corel draw a glass. Save it as HPGL (plt.) file.
- B. Open Configuration: Set the Workin Parameters as shown in the picture "B". You are setting the type of cut (Rotary), speed, heat power, angle pause, etc. Save this settings by a name you will recognize. What do these settings mean? The cylinder will not rotate but 8 cuts or steps will be done in X axis.
- C. Open file: Open the file you created (F3). Tell the program to "Start" (F2). Now the machine will start cutting a glass in 8 steps. It will automatically take 4 cuts in each direction, because you have checked "Two-Way" option.

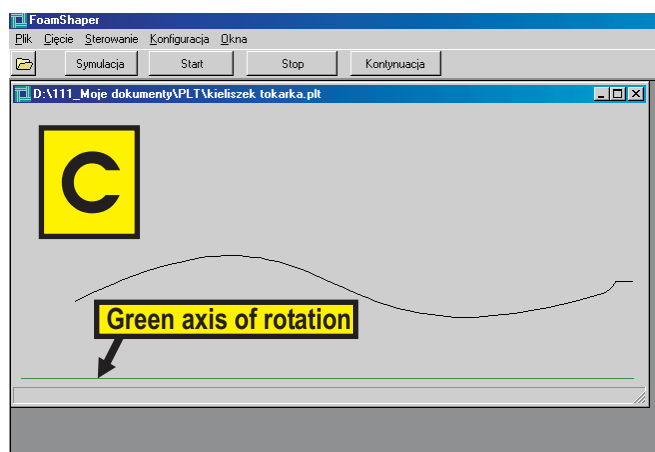
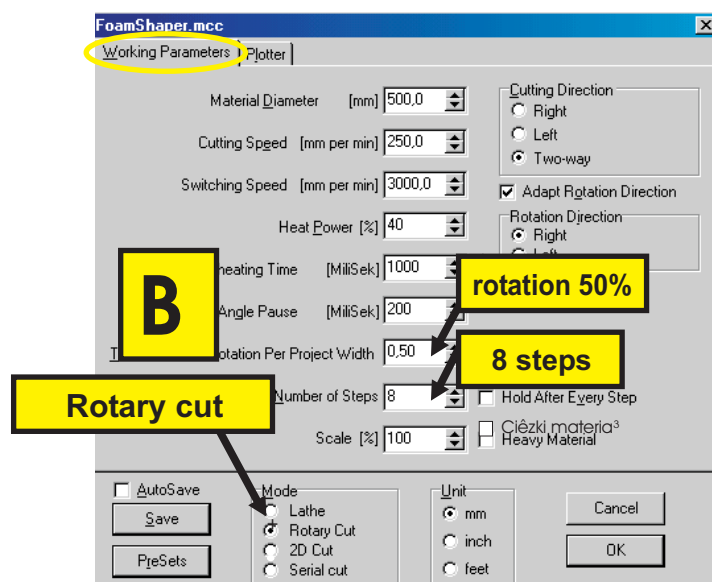
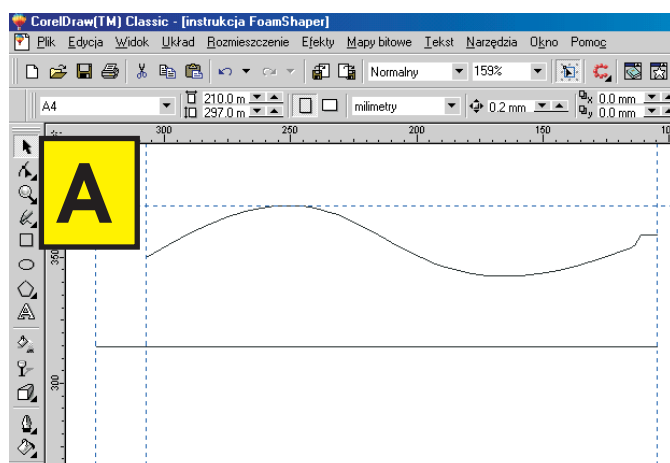
If you want the cut to stop at the end of each cut, check "Hold After Every Step". This will allow you to remove the foam that has just been cut. If you remove scrap foam while the shape is being cut, you will have an inaccurate cut.



Cutting a Glass (Spiral Cut)

- A. Draw the shape: Using Corel draw a glass. Save it as HPGL (plt.) File.
- B. Open Configuration: Set the Workin Parameters as shown in the picture "B". You are setting the type of cut (Rotary), speed, heat power, angle pause, etc. Save this settings by a name you will recognize. The number of rotation per project width - 0,50, number of steps - 8. What do these settings mean? Lathe will take 50% of rotation per one step and it will take 8 such steps.
- C. Open file: Open the file you created (F3). Tell the program to "Start" (F2). Now the machine will start cutting a glass. Lathe will take 50% rotation and it will perform 8 steps. Machine will automatically take 4 cuts in each direction, because you have checked "Two-Way" option.

If you want the cut to stop at the end of each cut, check "Hold After Every Step". This will allow you to remove the foam that has just been cut. If you remove scrap foam while the shape is being cut, you will have an inaccurate cut.



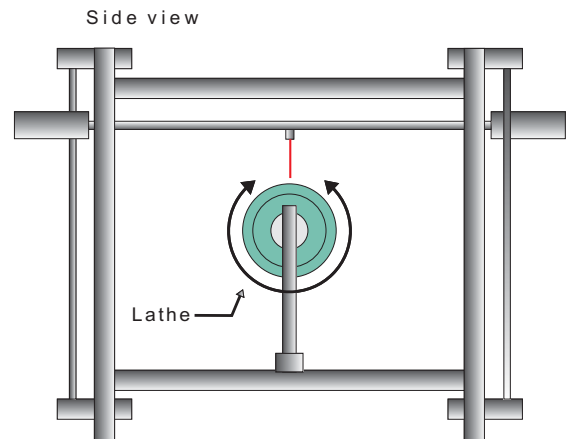
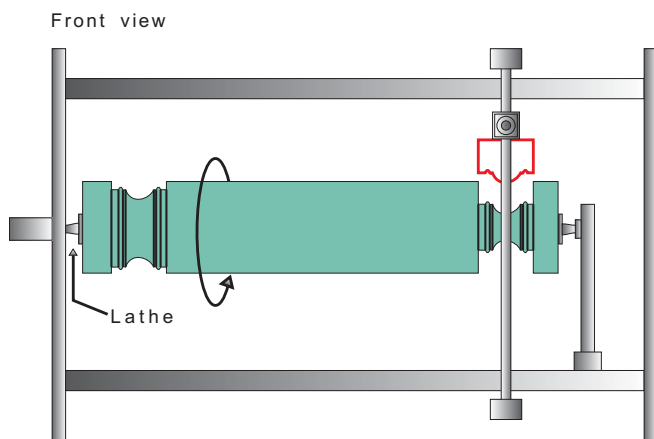
There are 4 cutting modes:

- 2D Cut –** standard cut with a use of a tensioned straight cutting wire, cut is done in X and Y axis
- Rotary Cut –** cut with a use of a straight cutting wire moving in X and Y axis, wire movement is combined with additional rotary movement of the material being cut
- Shape Wire Cut–** cut with a use of a shaped wire, this mode is used for cutting rope, spiral, thread or groove shapes
- Serial Cut -** cut for multilateral objects/figures with a use of a turntable

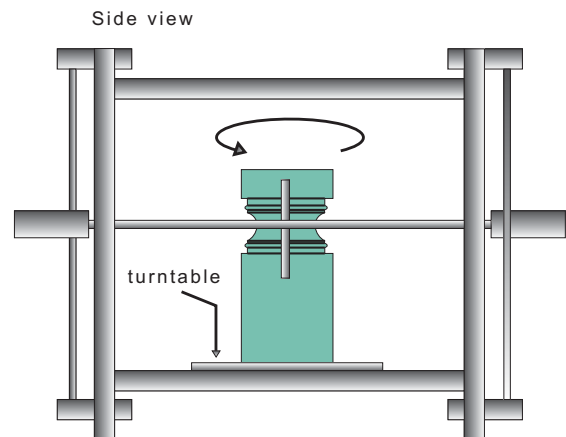
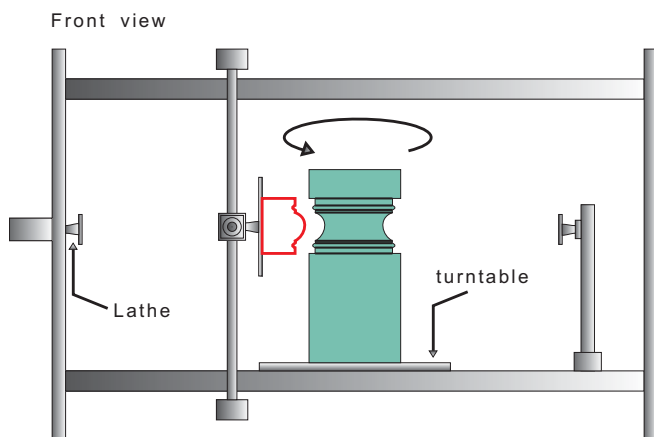
It is very important for shaped wire cutting to define the shaped wire position in relation to a standard position of a straight wire. In a machine's memory only the position of a straight wire is saved. Shaped wire position (value) should be set and inserted manually each time.

There are some ways of assembling the shaped wire in a machine:

Cutting with a use of a shaped wire and a lathe



Cutting with a use of a shaped wire and a turntable



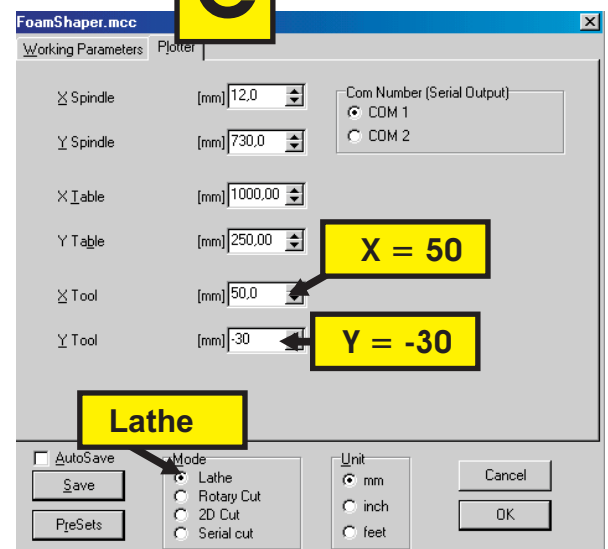
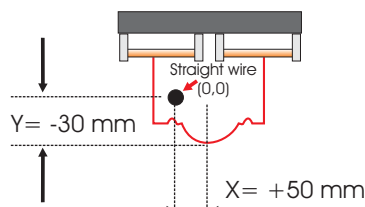
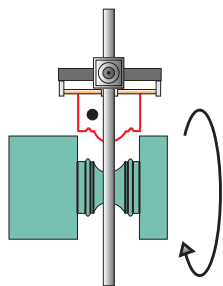
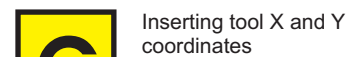
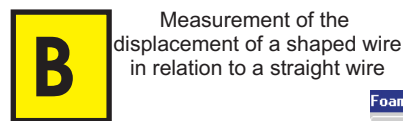
Cutting with a use of a Shaped Wire (calibration)

It is very important for shaped wire cutting to define the shaped wire position in relation to a standard position of a straight wire. In a machine's memory only the position of a straight wire is saved. Shaped wire position (value) should be set and inserted manually each time.

There are some ways of assembling the shaped wire in a machine:

Calibration of a Shaped Wire position for a Lathe Cut

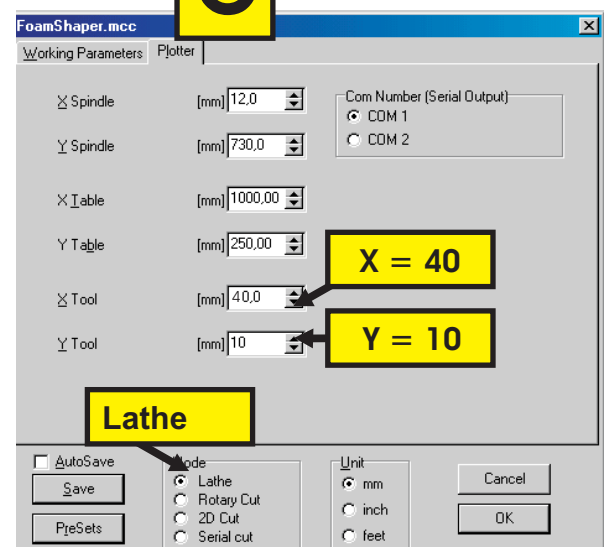
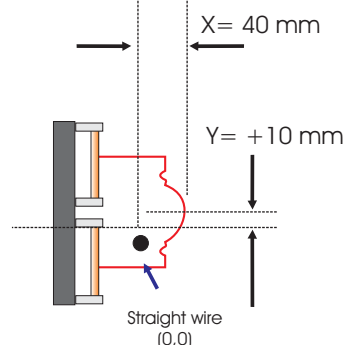
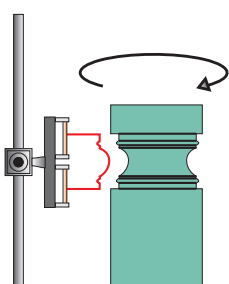
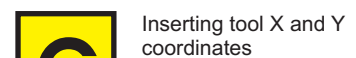
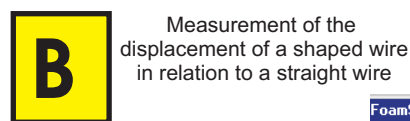
Now you will measure the displacement of a shaped wire in relation to a straight wire. Disassembly the straight wire only when the coordinates of a shaped wire are set.



If the steps A, B, C has been taken you can disassembly straight wire.

Calibration of a Shaped Wire position for a Turntable

Now you will measure the displacement of a shaped wire in relation to a straight wire. Disassembly the straight wire only when the coordinates of a shaped wire are set.



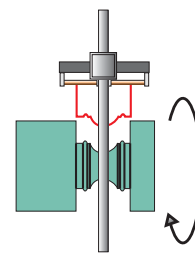
If the steps A, B, C has been taken you can disassembly straight wire.

Beginning and ending points for a Shaped Wire and for a Spike Plate

While using a shaped wire and its tool (beam) one should consider 2 limitations:

1. The beginning line of a cut should be placed 6 " from a spike plate
2. The end of a cut should be placed as well at least 6" from a spike plate.

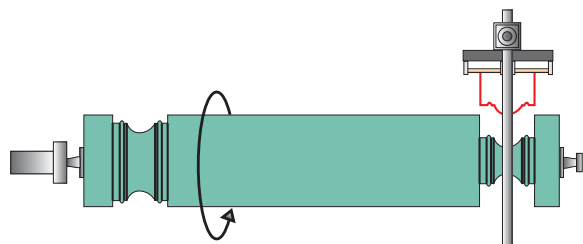
If these values are less than suggested above there is a risk that the shaped wire beam will hit a spike plate that holds the foam.



We will use as an examples a column with incisions shown on the previous pages.



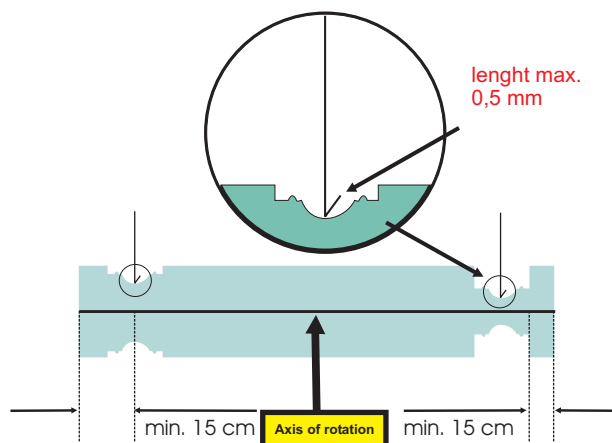
Side view (incisions on a column circumference)



Side view (incisions on a column circumference)
Mark incisions in the chosen places by drawing the vertical lines ended with the slanting lines. The slanting line means that in this place the lathe should perform a full turn.

IMPORTANT: vertical line and slanting line should create ONE object.

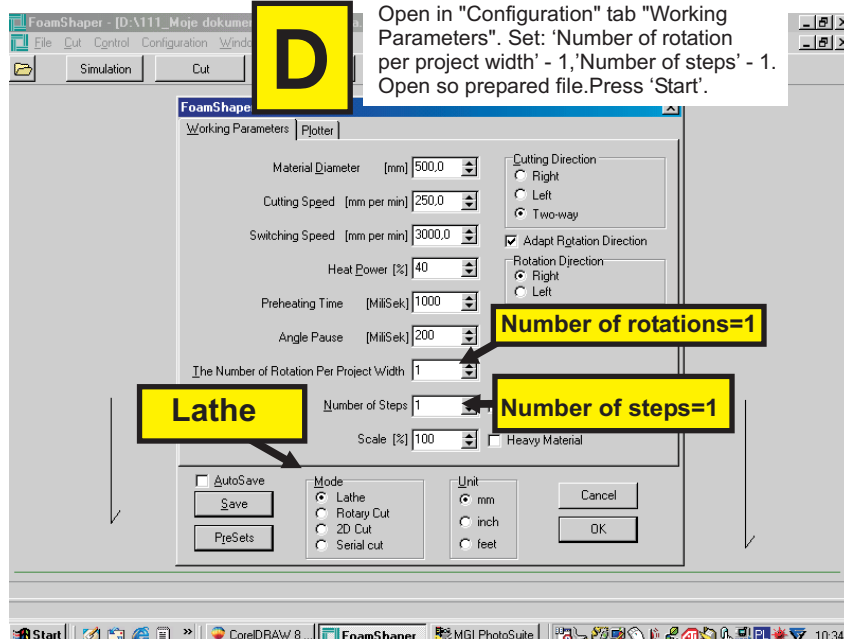
Slanting line nie moze byc dluzsza niz 0,5 mm



A drawing prepared for cutting.

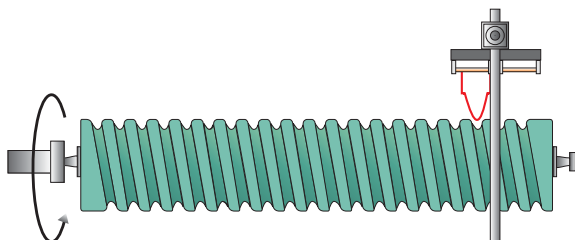


Open in "Configuration" tab "Working Parameters". Set: 'Number of rotation per project width' - 1, 'Number of steps' - 1. Open so prepared file. Press 'Start'.



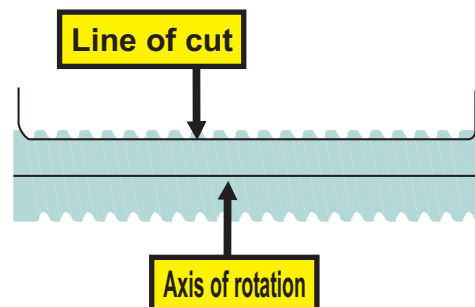
A

Side view (threaded screw)

**B**

Side view (threaded screw)

Draw a straight line of a cut at the bottom of a thread. Endings of a line (left and right) should be drawn over the edge of material. IMPORTANT: the horizontal line and its endings should create one object.

**C**

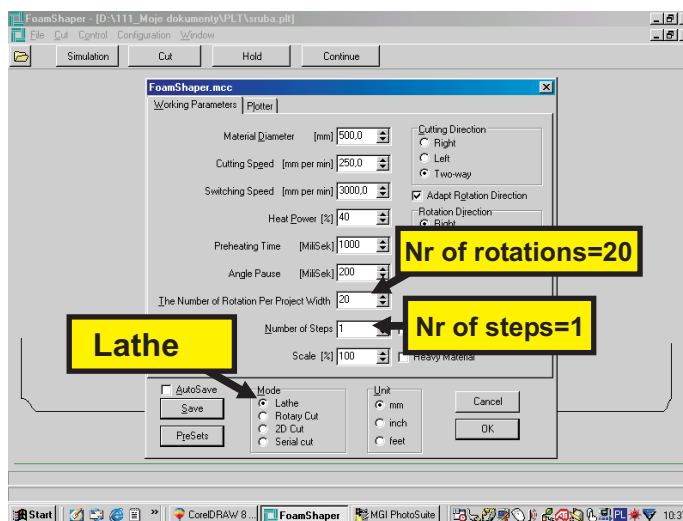
A drawing prepared for cutting.

**CAUTION !**

Make sure that the straight line does not create acute angle with its endings. In this case a foam cutter can perform a full turns in these places which is not needed.

D

Open in "Configuration" tab "Working Parameters". Set: 'Number of rotation per project width' - 20, 'Number of steps' - 1. Open so prepared file. Press 'Start'.



You will perform the same steps while using a turntable instead of a lathe tool. However, you will have to remember that all the drawings should be prepared in a vertical arrangement. Pay attention to the fact that an axis of rotation should be always located on the material right side (as it is indicated in a picture below)



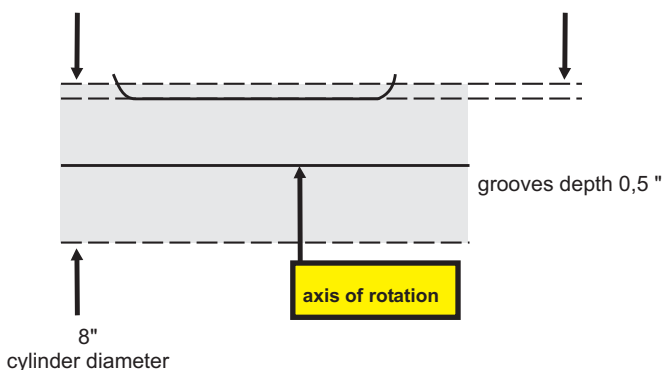
Cutting the grooves on a cylinder circumference

- Axis of rotation – Draw in a Corel an axis of rotation of a length that equals the cylinder length. In this case we will use a cylinder 18" long with a diameter 8". So the axis of rotation should be 8" long.
- Draw a groove shape - Place this shapes in a chosen place where you want to start and stop your incision cut. Saved it as HPGL (.plt) file.
- Open configuration – Set the Workin Parameters as shown in the picture "C". You are setting the type of cut (Lathe), speed, heat power, angle pause, etc. Save this settings by a name you will recognize. What do these settings mean? The cylinder will not rotate but 10 incisions or steps will be done in X axis.
- Open file - Open the file you created (F3). Tell the program to "Start" (F2). Now the machine will start cutting your shape. The shape will not rotate but It will automatically take 10 cuts in X axis - 5 in each direction.

Before you will start cutting the incisions/grooves you have to change the shaped wire position. Normally it is assembled perpendicularly to the shaped wire tool beam. Change this position to a parallel one.

A

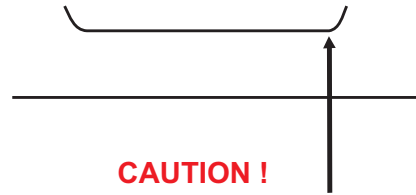
side view (cylinder with incisions)



B

File prepared for cutting.

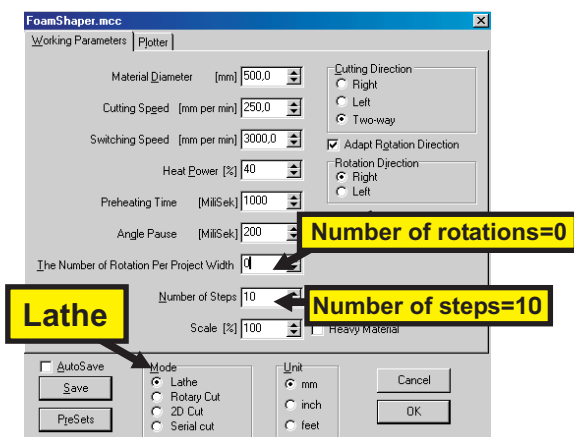
Make sure that the straight line does not create acute angle with its endings (output-input lines)



Make sure that the straight line does not create acute angle with its endings. In this case a foam cutter can perform unnecessary full turns in these places .

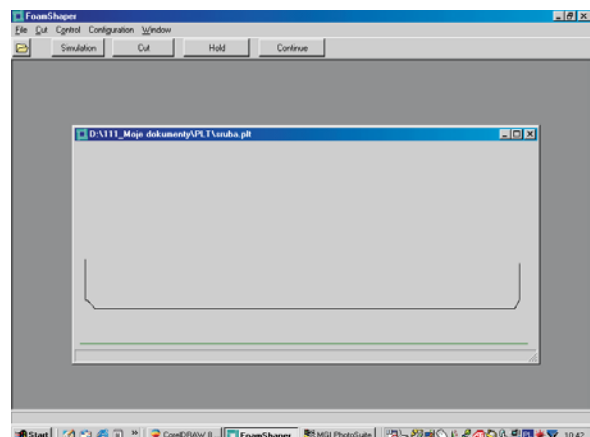
C

In "Configuration" open tab "Plotter". Check: without rotation, number of steps: 10



D

Open a prepared file(F3), press 'Start'.



We will cut a Plug as an example of a serial cutting

1. Prepare a cylinder from EPS - dimensions: 8" diameter, 14" height. Place the cylinder in a turntable center, (it should be stable, not wobbling). It is recommended to use the two-sided adhesive tape to fix it to a turntable plate.

Now you should prepare a project/drawings of an object you want to cut out. You may prepare such project using any graphical software that is intended for a vector graphics and has an option of saving a file as HPGL (.plt) file, ex. CorelDraw.



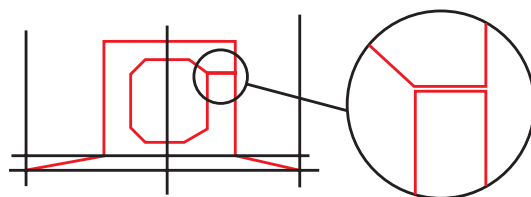
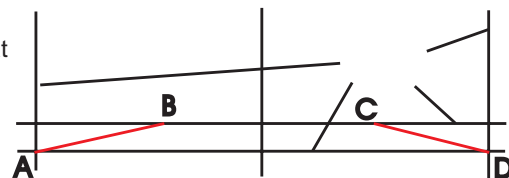
The first step is to decide how many views of an object you will need to cut your project.

View is the solid's outline seen from a particular angle. The more views you draw, the less angular a solid is.

Number of views determines an angle of solid rotation during the cutting process. While cutting, a turntable will take a 180° turn. This angle - 180 degrees - will be divided on the number that equals the number of prepared views.

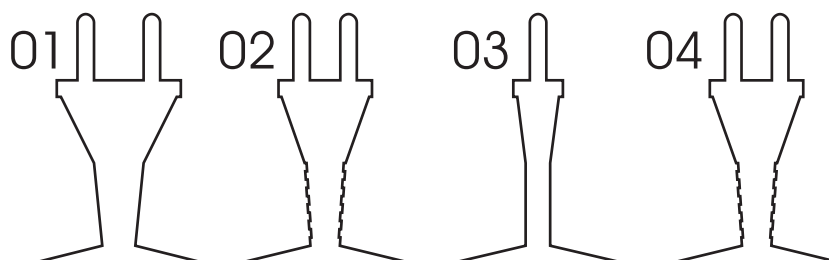
Some hints useful while designing a project:

- 1 - Each drawing showing particular view should have the same width and an axis of rotation exactly in a center. From our experience we can say that it is better to draw the additional input/output lines, that will help to control the drawing width.
- 2 - Each drawing should be created by a one continuous line (no limitation concerning the nodes number).
- 3 - It is not recommended to design the holes in a solid, but if it is necessary you should precisely determine the entry and exit points for a cutting wire to make sure that the hole will be cut out properly. (Remember the hint from the point 2.)



- 4 - It is recommended to design a base that will ensure a solid stability during a cutting process. Lack of such base will cause inaccurate cutting (in this case: the more views will be designed, the less accurate the cut will be).
- 5 - It is recommended to design a solid section which is convex. If you have more figures in a solid section you should design a particular view more precisely.

Below you can see the plug views in order:



So prepared project should be saved (using 'export' command) as HPGL file. Each view should be saved as a separate file under a name that includes a number (01, 02, 03 itd). Remember also to save a whole project files in one folder.

Now you can start FoamShaper and open tab "Configuration". Check a "Serial Cut" option. Others should be set as it was in case of rotary cut. Open tab "File". Open from particular folder only the first file (01.plt). Other files in this folder will be opened automatically.

It is recommended to perform a simulation of each project to be sure that they were designed properly. If, during a simulation you notice that the cutting process does not follow the intended and assigned route, that means that a project was not drawn according to the rules described above.

In a software CD in a folder "SAMPLES" you will find an exemplary files ready for a serial cut.

The most frequent questions and problems.

The list of problems and solutions below refers to all of the MEGABLOCK foam cutters that works with a FoamShaper software.

01

"Broken wire" message is displayed

solutions:

1. Replace a cutting wire
2. Check the safety switch at the back of the controller
3. Check the connectors at the back of the controller
4. Check the BG fuse inside a controller

CAUTION !

Always trim off the cutting wire endings while placing a new wire in a machine. It may happen that the wire endings which are not cut properly trimmed off accidentally touch the frame. This will activate the safety switch. The safety switch will be activated also in case an operator touches the cutting wire.

02

There is no message, but the wire does not heat.

Solutions:

1. You probably activated "Lathe mode". Please check "2D" or "Rotary" (according to what is needed) and try again.
2. Check the settings in a "Manual Control" - maybe the Power parameter is set at 0,0 %
3. Check the "Working Parameters" window - maybe the Power parameter is set at 0,0 %

03

Shaped wire does not heat.

Solutions:

1. You probably activated "2D" or "Rotary" mode. Please check "Lathe" and try again.
2. Check the settings in a "Manual Control" - maybe the Power parameter is set at 0,0 %
3. Check the "Working Parameters" window - maybe the Power parameter is set at 0,0 %

04

Message: "No communication with a foam cutter"

Solutions:

1. Set a proper port in "Configuration" - "Plotter" tab.
2. Check if the transmission cable is properly plugged.
3. Make sure that you have not opened a FoamShaper software twice.
4. If you perform above steps all the plotter data should appear in Menu "About"

05

Plotter does not "Home".

Solutions:

1. Check the end-switches in X and Y axis. While being manually pressed they should give a 'click!' sound
2. Check if all the plotter and controller plugs are plugged properly.
3. Check if the left and right trolley plugs have not been swapped.
4. Reset the controller and the software

CAUTION !

In case of any problems with a foam cutter movements (lack of movement in any axis) always inspect end-switches first, especially when you are working in a dusty, dirty environment. Dust may cause that the end switches get stucked. A properly operating end-switch should freely spring back and give a gentle 'click!' sound. If it does not, press gently the switch with a finger until it operates smoothly.

The most frequent questions and problems

06

Trolleys do not move in one axis

Solutions:

1. Check the end-switches in X and Y axis. While being manually pressed they should give a 'click!' sound
2. Check if all the plotter and controller plugs are plugged properly.
3. Reset the controller and the software

07

*Message on a controller:
"X axis error" or "Y axis error"*

Solutions:

1. Check if all the plotter and controller plugs are plugged properly.
2. Turn off the controller and move the trolleys by hands (a few inches) in X and Y axis
3. Turn on the controller and reset the software

08

The drawing prepared in a Corel does not want to open.

Solutions:

1. Import this file to a Corel again and compare the two files.

09

The cut object differs in size from the drawing prepared in a Corel

Solutions:

1. Import this file to a Corel again and compare it with a previously prepared file. If the dimensions are the same as they were previously, set in a Corel in an export module (Tab "Page") different "Plotter Units". Default for "Plotter Units" equals 1016. If the imported file has the demanded dimensions you should decrease the driving belts tension in a proper axis.

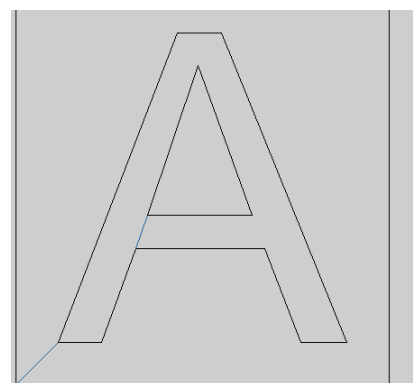
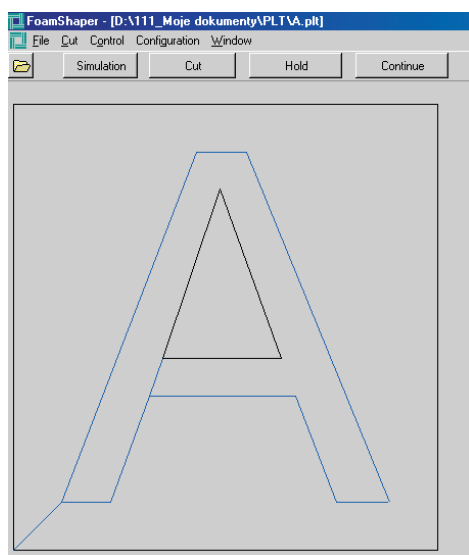
10

Wire performs the strange movements and does not cut properly. During simulation it acts the same way.

Solutions:

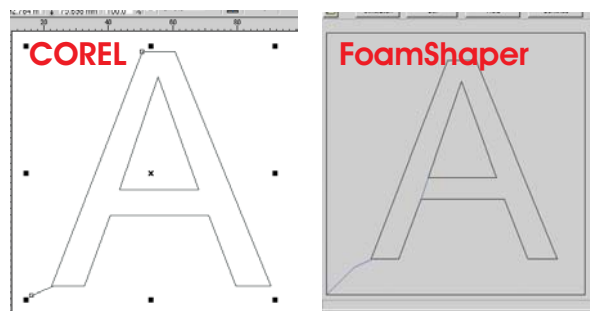
1. All the objects that are intended to be cut out should be the closed objects/figures. The best way to check it is to fill the objects with a color. If not possible - it means that they are open figures. FoamShaper recognizes such situation and marks the particular lines with a blue color. If the drawing has been drawn properly this blue color signifies/indicates **only** the connecting lines joining the objects and input/output lines of the cutting wire.

Thus, connect all the lines again in a Corel software and then export the file.

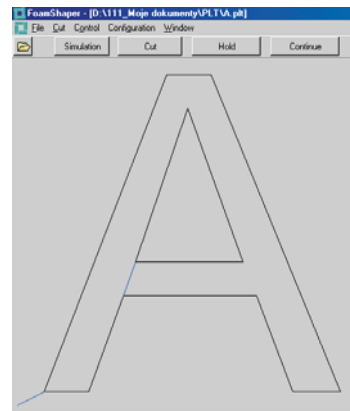


The most frequent questions and problems.**11**

I wanted a software not to add a frame so I drawn my own input/entry lines. Nevertheless a FoamShaper added its frame.

**Solutions:**

1. Joining/connecting line is not connected with an object. To be sure that it is connected properly you should change the object into curves and activate "Pull to the objects option" in a Corel.

**12**

I want to cut with a lathe or a turntable but the message "There is no revolutionary axis in this project" appears.

Solutions:

1. Activate mode: "Rotary cut"
2. Check if the axis of rotation is perfectly horizontal (while using a lathe) or vertical (while using a turntable)

If an axis of rotation is drawn perfectly, the axis line will be green in color in a FoamShaper software (green center axis)

13

I want to cut letters (figures) with a straight cutting wire (do not want to use a lathe or a turntable) but the message "No rotary axis in this project" appears.

Solutions:

1. Turn on mode: "2D"

CAUTION !

If the problem you experience has not been included in a list above do not hesitate to contact a distributor in your area or e-mail us directly using this account:

megaplot@megaplot.com.

To ensure a prompt solution of your problem we kindly ask you to attach to your problem description :

- a) a complete list of data from the file "About" of your software,
- b) .cdr and HPGL.plt files
- c) drawings, drafts, pictures