



# TWISTER

*Computerized  
Hot Wire Cutter*

*Operating Instructions*

## Warranty & Repair Policy

MegaPlot warrants all of its computerized hot wire machines to be free from defects in materials and workmanship for 5 years. It does not apply to normal wear and tear such as belts and cutting wire or damage from misuse, abnormal use, neglect, abuse, accidents, or external causes. If a defect is found, our entire liability and your sole remedy shall be, at our option, free repair or replacement. If a defect is found, call Demand Products for instructions at: 1-800-325-7540. Further, Demand Products has no liability for incidental or consequential damages, such as data loss, or any loss of business due to defective or damaged equipment. In cases where we utilize other manufacturer's equipment, such as the computer system etc, that manufacturer's warranty will apply.

### How We Handle Defective Claims:

Since most problems are associated with incorrect execution of the software, we will first attempt to determine the nature of your problem via telephone or email. We may request you send us your drawing file so we can analyze it for errors. Once we determine the problem does not appear to be software related, we will likely recommend you email or fax us with the problem and possibly email a digital picture of the part in question. Then we may ask you to send us the part we suspect could cause the problem. It will be your responsibility to get the part to our location. Be sure to package the part well enough to prevent transit damage. Also insure the contents to cover the repair or replacement cost in the event damage occurs.

#### Claims Procedure

1. Carefully pack the part and ship it to us, insured, via ground freight.
2. We will evaluate the part in question, and if found defective, will ship you a replacement part by ground freight.

Once we determine the part is defective, we will reimburse you for any and all charges equal to an insured ground shipment to our location. Demand Products will pay for ground freight services including insurance to get all defective parts back to your location. It is the customer's responsibilities to pay for any expedited special transit request that incur fees exceeding ground transit charges. We do not accept COD shipments.

### If Your Part Has Failed and is Not Defective:

You will be notified of the charges.

#### Wire

The proper size (diameter) cutting wire must be used on your Demand Foam Cutting/MegaPlot Computerized Hot Wire Machine. Using anything other than the specified wire will void your warranty.

- 8 Foot Wire Length uses TAW8
- 4 or 5 Foot Wire Length uses TAW45
- Shape Wire: NWRW 16

### Machine Maintenance:

It is your responsibility to see that the machine is inspected and maintained weekly. This means cleaning the rails and bearing races and adjusting the belt tension if the belts become loose. If the machine is moved after its initial setup, the machine must be re-leveled and the trolleys adjusted. This procedure is found in the assembly manual. If belts are replaced, the proper installation is critical. Please follow the procedure in your assembly manual.

**W**e 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 accurate cuts. We offer 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 graphics 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.

***For instructional purposes, we are going to work with foam blanks that are 5" in diameter and 24" long. The steps to cut the shapes below will be described in detail on the following pages.***



5" Blank  
2D Cut  
Page 17



24" Baluster  
Page 22



8" Profile  
2D Cut  
Page 18



Glass  
Flat Cut  
Page 26



Glass  
Spiral Cut  
Page 27

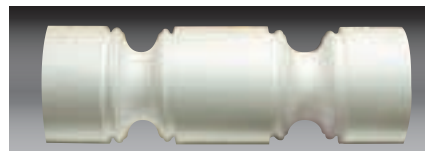


Rope Column  
Spiral  
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Thread Column  
Spiral  
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Groove  
Column  
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Base/Cap Shape Wire  
Lathe Cut  
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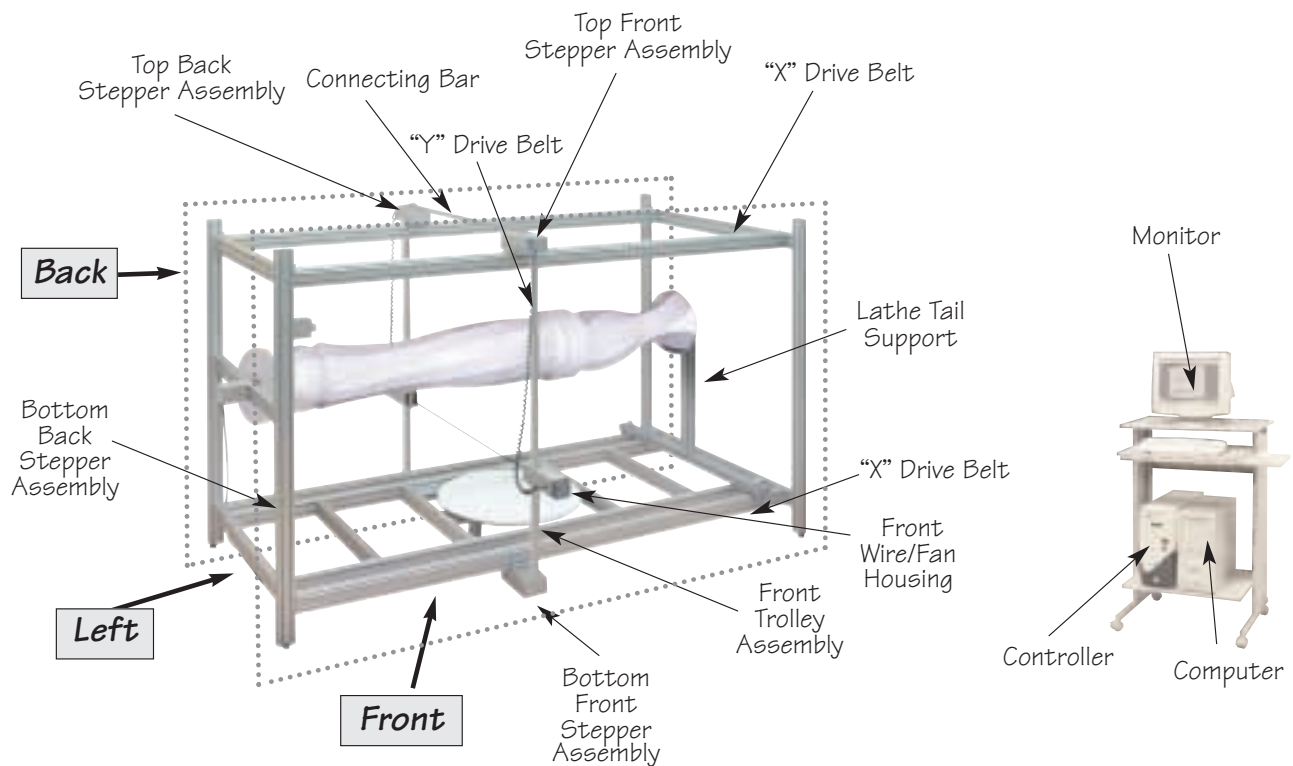
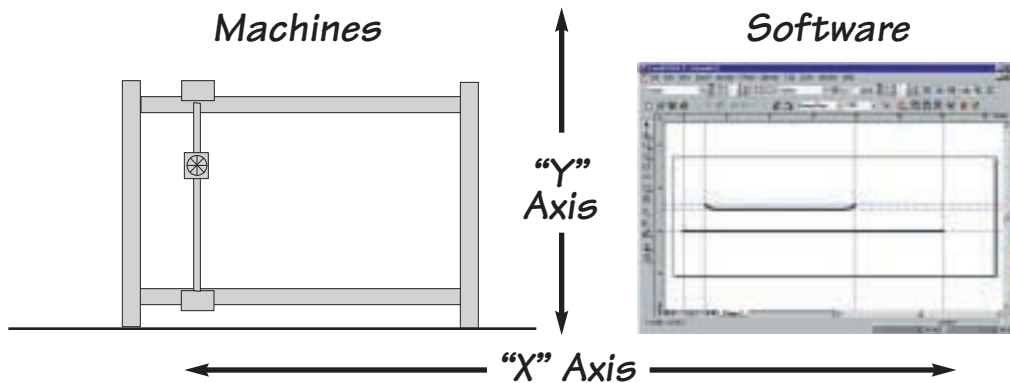
Base/Cap  
Shape Wire  
Lathe Cut  
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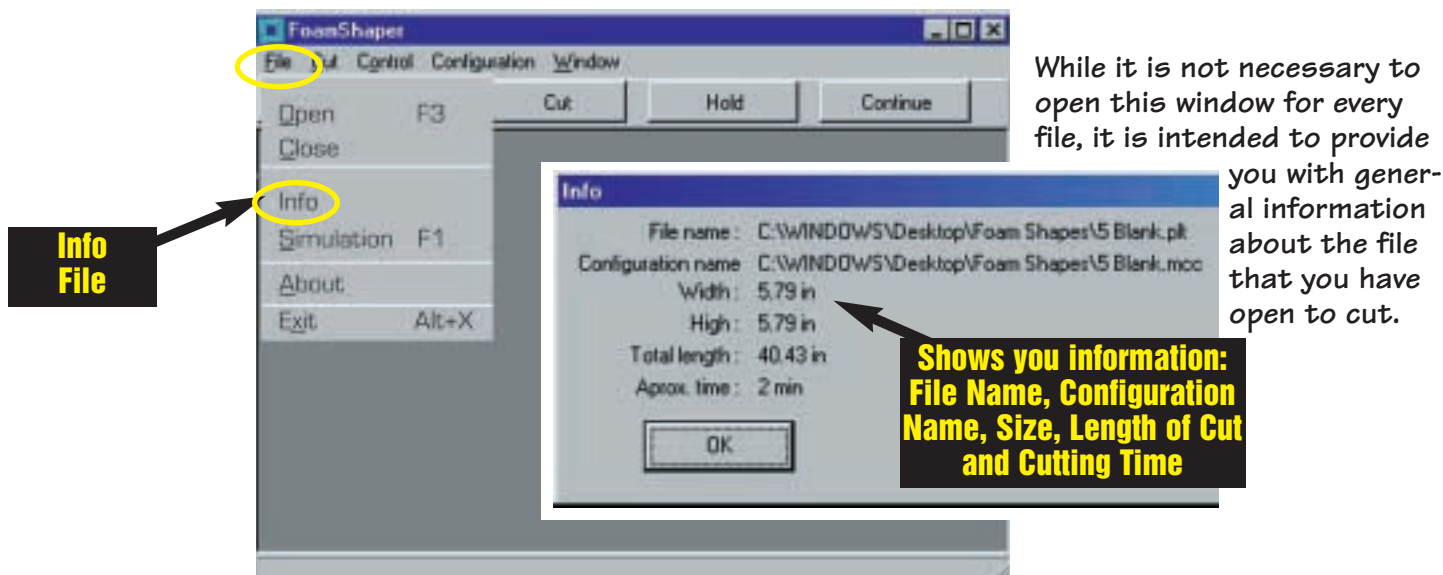
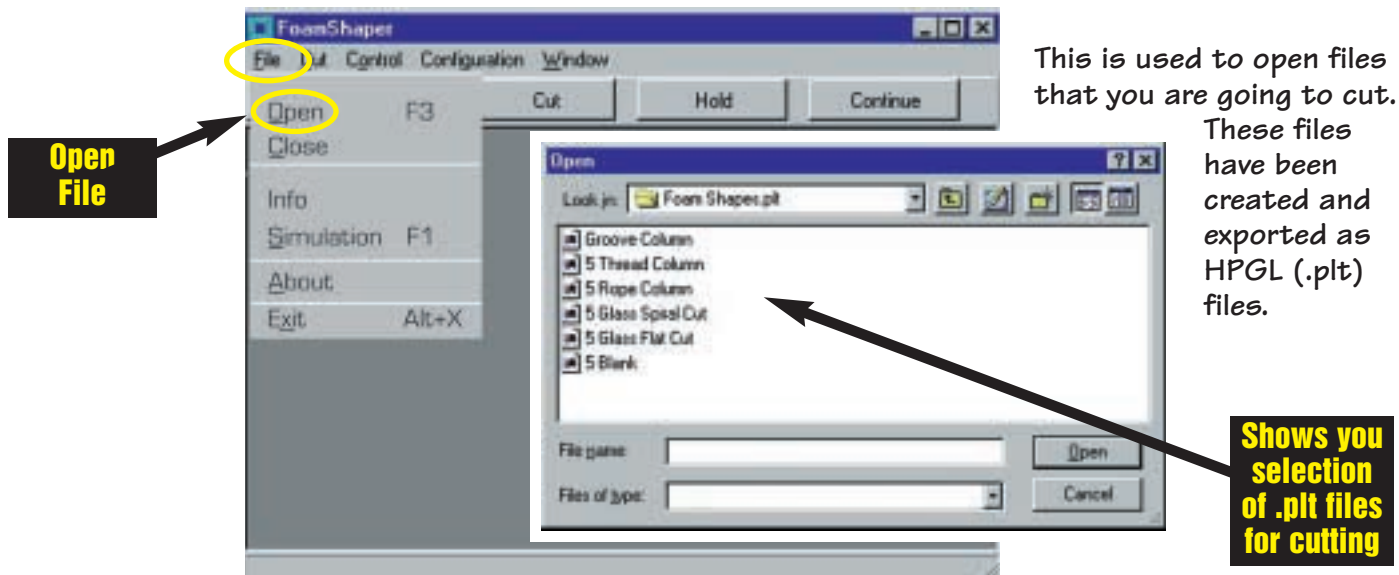
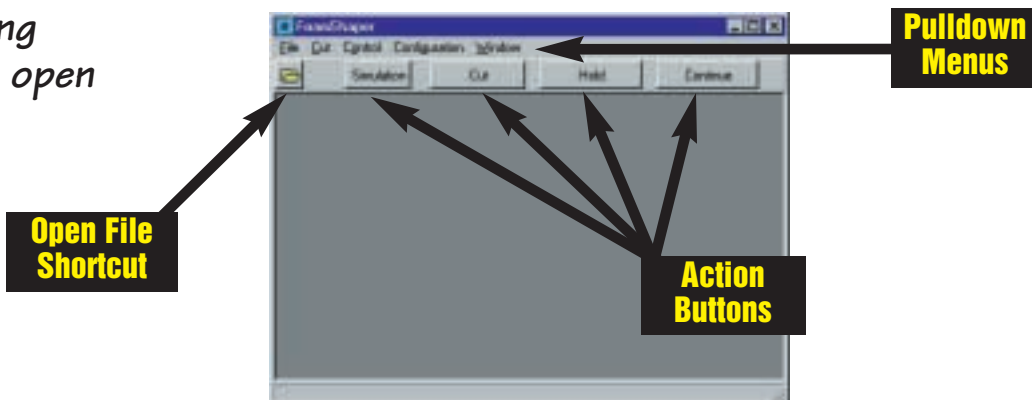
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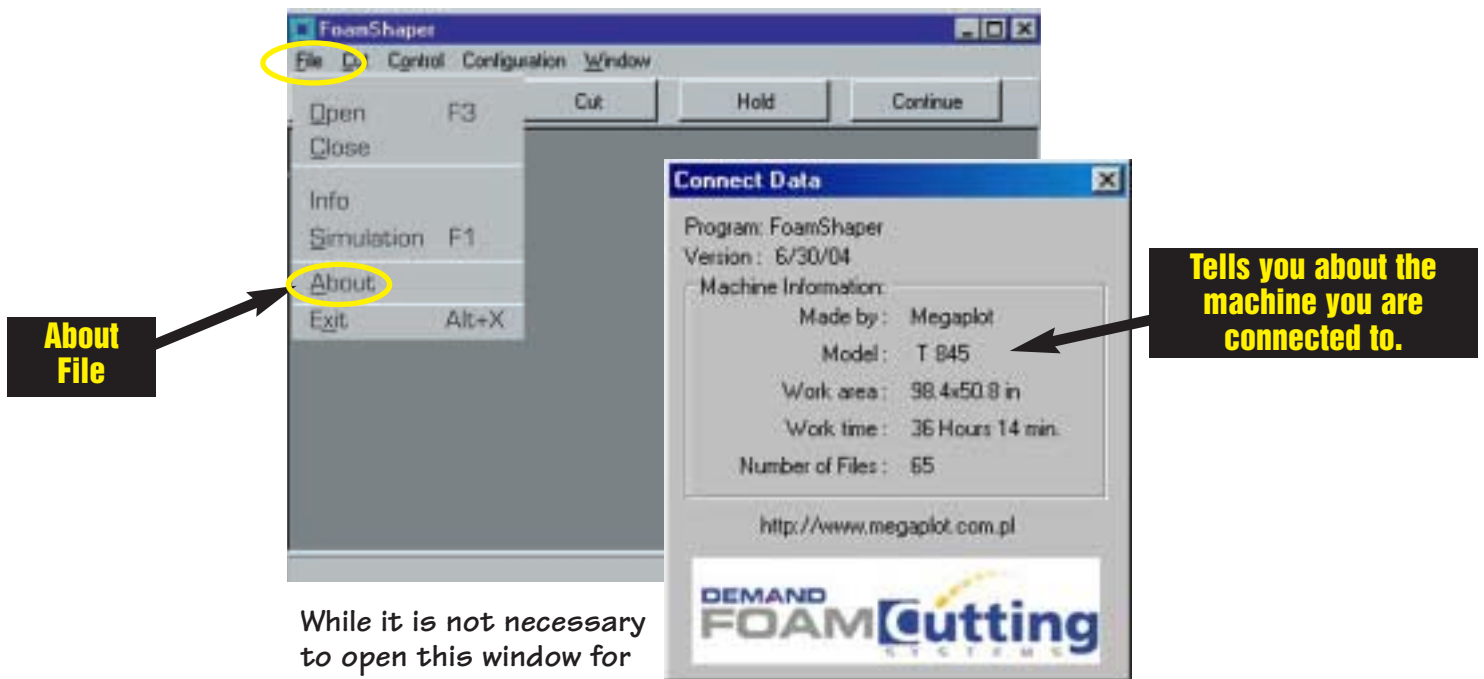
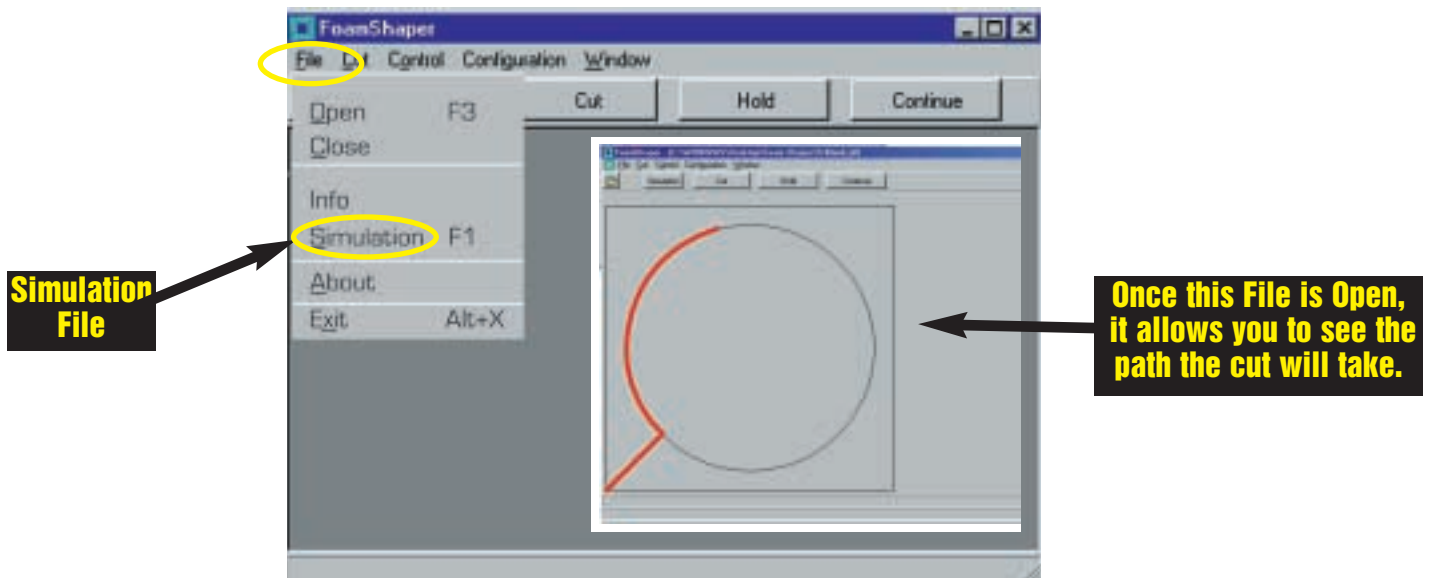
*Before getting started, please familiarize yourself with the following list of terms and parameters –*

Whether 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.

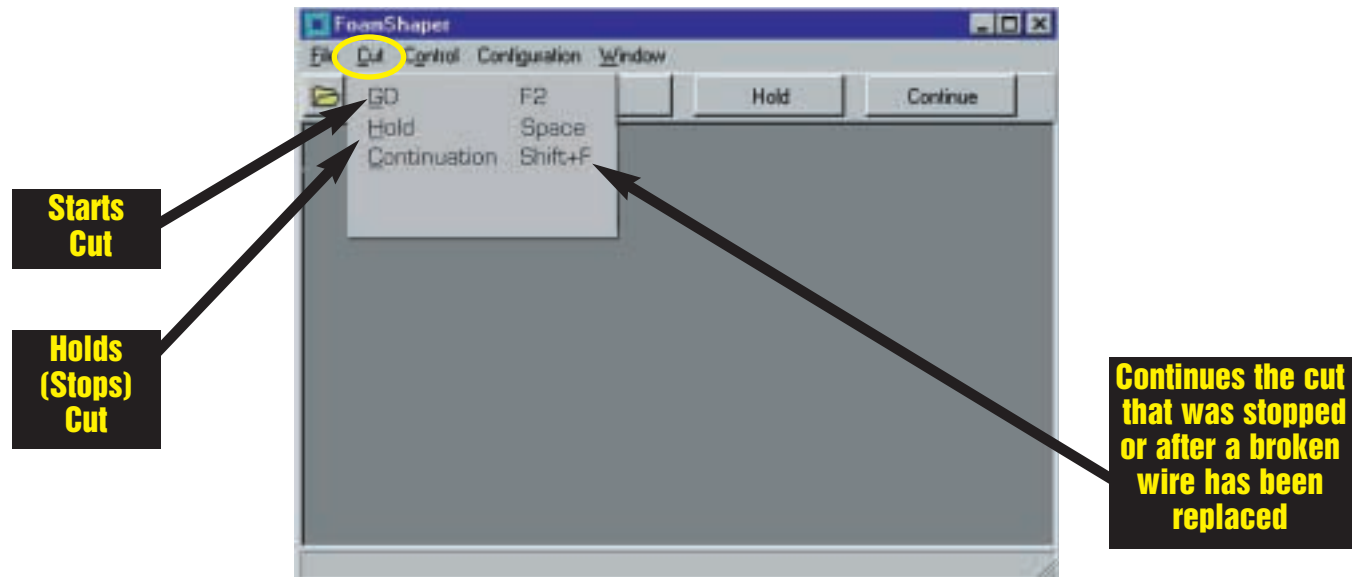


This is the opening window when you open the FoamShaper software.





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.

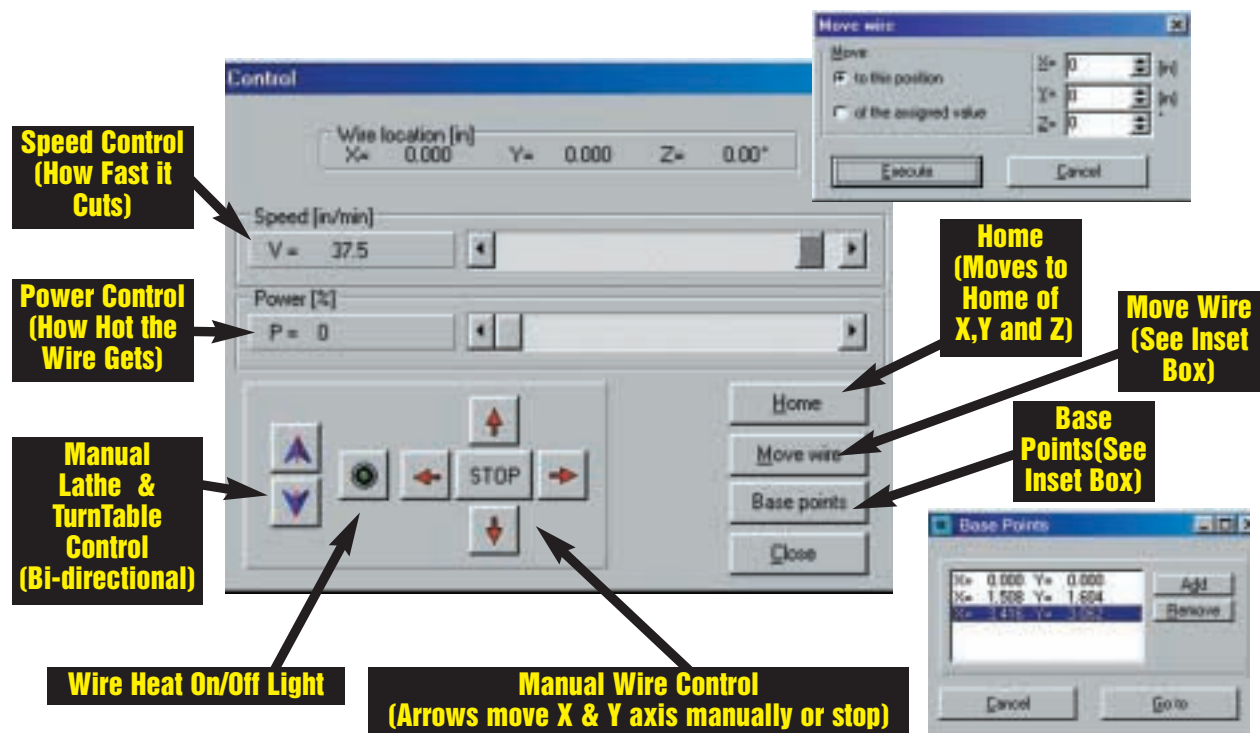
Speed — This control lets you manually change the speed of a cut. It will also override the configuration settings of the cut you are doing. It will not affect any other saved settings.

Power — This control lets you manually change the 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  $X=0$  &  $Y=0$  when you select home. You are asking the machine ‘s wire trolleys to go to its O.O position. This position is important because it clears old information from the controller and software memory and allows a fresh start.

Move Wire — “to this position”: the machine will go to whatever the X and Y coordinates are set to. “of the assigned value”: the machine will add to whatever the “to this position” was set at. ie. If the “to this position” was set at both 2” for X and Y and then you checked “of the assigned value” and you left the settings at 2”, the cutting wire would move an additional 2”

Base Points — Base Points are used to save a particular current location of the wire. ie. you move the wire somewhere to the middle of the machine and save this location as a base points. Then when you finish cutting - you can easily come back to that base point by simply selecting the saved value from the list (and then of course you might want to cut second identical project)





## Configuring Working Parameters

**Working Parameters**

**Material Diameter** [in] 15.00

**Cutting Speed** [in per min] 45.00

**Switching Speed** [in per min] 118.11

**Heat Power** [%] 60

**Preheating Time** [MillSek] 1000

**Angle Pause** [MillSek] 300

**The Number of Rotations** 0

**Number of Cuts** 8

**Scale** [%] 100

**AutoSave** ☐ **Save** **PreSets**

**Mode**

- ☒ Shape Wire
- ☐ Rotary Cut
- ☐ 2D Cut
- ☐ Serial cut

**Unit**

- ☐ mm
- ☒ inch
- ☐ feet

**Cutting Direction**

- ☐ Right
- ☐ Left
- ☒ Two-way

**Adapt Rotation Direction** ☒

**Rotation Direction**

- ☒ Right
- ☐ Left

**Lathe** ☒ **TurnTable** ☐

**Hold After Every Step** ☐ **Heavy Material** ☐ **Add Frame** ☒

**Cancel** **OK**

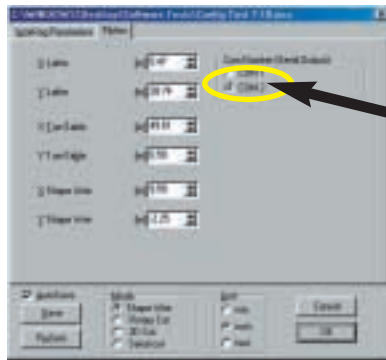
**Mode**

Mode	Accessory	Wire
• Shape Wire (Lathe or TurnTable)	Twister Shape Bar	16 gauge Shape Wire
• Rotary (Lathe or TurnTable)	Twister	.016 Gauge Wire
• 2D Cut	None	.016 Gauge Wire
• Serial Cut (TurnTable)	None	.016 Gauge Wire

**Callouts:**

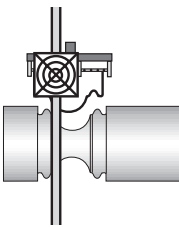
- Sets material diameter
- Sets cutting speed
- Sets heat power of wire
- Sets Angle Pause
- Sets % of twist & cuts per length
- Sets the number of cuts in a 360° rotation
- Reproduction Size
- Lets you Save current settings
- Lets you select previously saved settings
- Changes direction of the cut for both rotary & lathe direction
- Tells machine to cut in two directions
- Should be Activated in most cases
- Changes direction of rotation for both rotary and lathe operations
- Set for either Lathe or TurnTable (Lathe must be set under Mode)
- Adds frame to item being cut
- Unit sets the measurement by either millimeters, inches or feet
- Used for large and/or heavy objects with either the lathe or turntable. Starts turns slowly and increases to configuration settings.
- Stops the cut after each pass. This allows removal of cut foam without disturbing a cut that is in progress.

## Com Port Settings

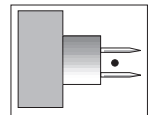
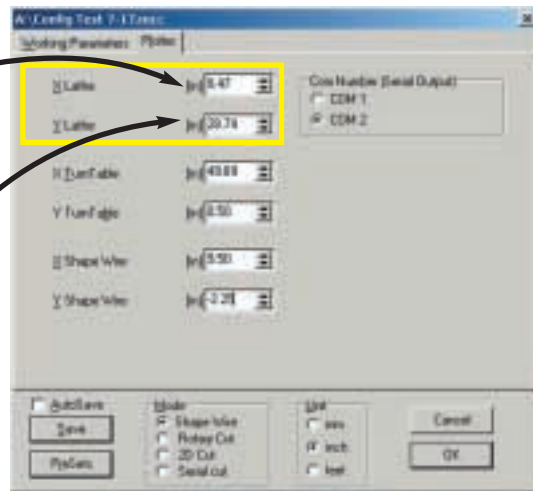
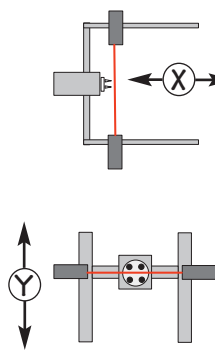


**Sets "Com Port" (Serial Port) to match connection on the back of your computer.**  
**If not set correctly, when you open the FoamShaper software, you will get the message "No communication with a foam cutter".**

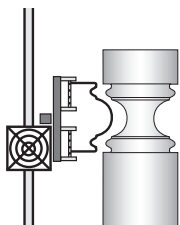
## Lathe Settings Calibration - See page 19



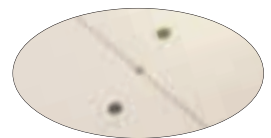
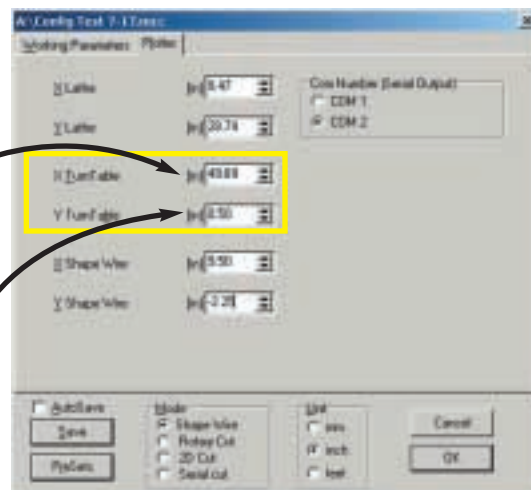
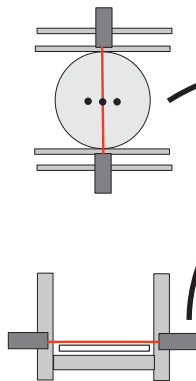
**Tells the controller where the exact center of the lathe is located. (see page 12)**

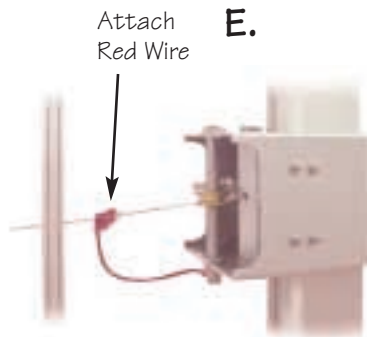
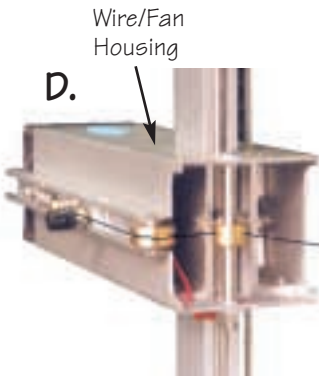
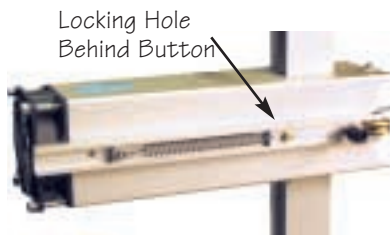
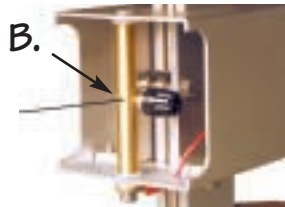


## TurnTable Settings Calibration - See page 20



**Tells the controller where the exact center of the lathe is located. (see page 12)**





## Note —

It is VERY important on a 2-Wire machine that both wires be used an equal amount. As a wire ages with use and heat, its characteristics will change, i.e., if you use a new and an old wire together, they may not have compatible characteristics. One may stretch more and react to heat differently.

A. With the Controller turned on, choose Manual Control and raise the wire/fan housings in the “Y” axis to a comfortable level to install the Titanium Alloy wire.

B. 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.

C. Lock the tensioner by sliding it to the right while pushing the locking pin until it drops into its locking hole.

D. Now thread the cutting wire around the brass pulleys, loosen the black plastic knob and wrap the the cutting wire around the post and tighten the knob. Release the tensioner lock. The proper tension is now on the wire.

E. Attach the alligator clip (red wire) to the cutting wire as shown in the photo. Attaching this wire insures that the cutting wire utilizes its maximum capabilities.

F. Using Manual Control, move the wire/fan housings to the bottom of the Y axis. Then click “Home”.



## Rule of Thumb! —

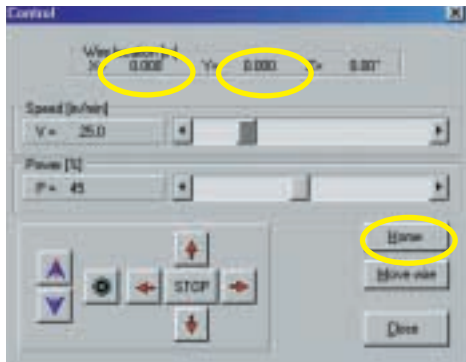
Never attempt to manually move the trolleys and housings when the Controller is turned on. This can cause premature failure of the drive belts and possibly damage the stepper motors.



## Adjusting the Two Wire trolleys —

Turn the locking knob counterclockwise to loosen the wire/fan housing, and reset the housing distance from the other housing. Measure the distance between housings and set the other side of the machine at the same measurement.

## Going to “Home” —

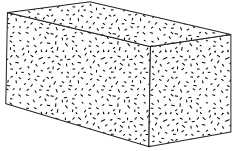


## Important!

Open the Control panel (F5) and press “Home”. This will move the trolleys and cutting wire to their starting position. This is important because it clears the controller’s memory and gives the program a clean starting point.

You will notice that when you go to “Home”, both the X and Y coordinates will show “0”.

## 1. EPS Foam Densities —



EPS comes in many densities. 1 pound, 1½ pound, 2 pound, etc. You'll need to know 4 important settings before you begin cutting.

You will do this by starting out with a block of eps of the same density and size you will be using throughout your project.

Info on EPS Foam Suppliers: [www.epsmolders.org](http://www.epsmolders.org) (click on Related Sites, then EPS Manufactures at top)

## 4 Main Criteria for Cutting Foam:

- A. Speed — Speed and temperature are mutually and directly dependent. The higher the speed, 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 a temperature will significantly reduce the life and durability of the cutting wire and aid in its surface oxidation.
3. 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. It simply keeps the wire from cutting the corners too fast.
4. 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.

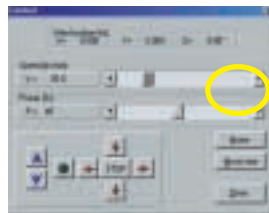
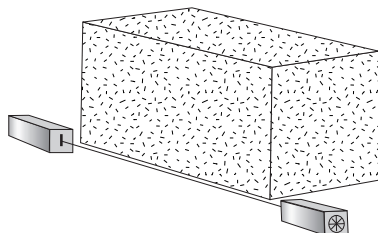
## 2. Test Cuts — Using Control Panel (F5), set Speed at 25 and Power at 45.

Note: We suggest these numbers to get you started. Your actual test results may call for + or - adjustments.

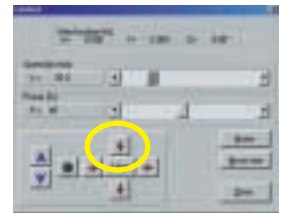
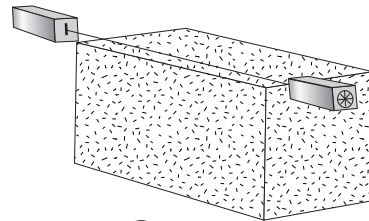


### Rule of Thumb! —

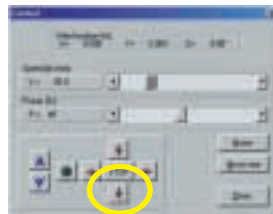
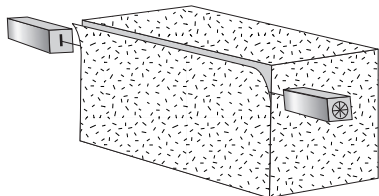
Remember: The length and density of the EPS are the two key factors that determine your configured settings. When testing to determine the heat, speed and angle pause, you must test with the exact size (length) and density of foam block you will be using for your project. For example — Cutting a 4'x1 lb. density EPS block calls for different settings than an 8'x1 lb. block. If your project calls for an 8' wide cut, use 8' wide material of the same density to determine your heat, speed and angle pause. Using a smaller size will yield different results.



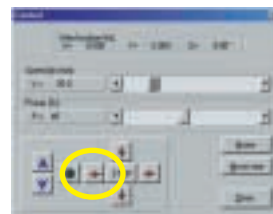
1. With the wire in the "Home" position, place a block of eps foam on the machine. Align it to within 1/8" from the wire.



2. Use the up arrow to position the wire above the block and about 1/4" to the right.



3. Using the "down" arrow key, make a cut 4" - 5". Then using the "left" arrow key, bring the wire out of the foam. If this cut is satisfactory, open Configuration and record these settings in Working Parameters.



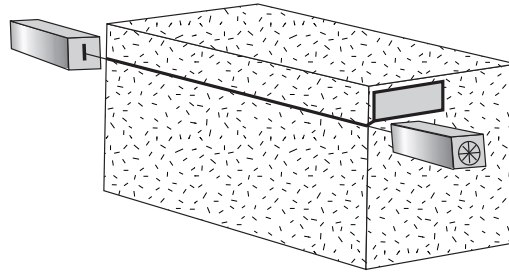
You want a smooth cut that does not show wire drag lines. Change your settings slightly on one or both settings until you achieve a smooth cut. Cutting too fast will cause the wire to break. Too slow may cause over-burn. Record the correct test settings in the Configuration, "Working Parameters" tab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



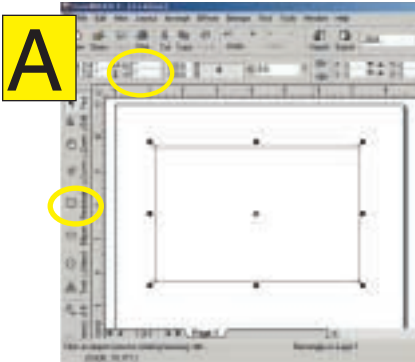


4. Now that you have a starting point for Speed and Heat, let's set our Angle Pause. What is Angle Pause? Angle Pause is the how fast or slow the wire stops and starts when going around a corner or curve.

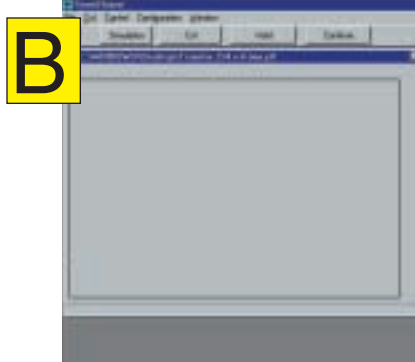
Let's create 6" box and cut it out to see how crisp the corners are. They should be perfect 90° corners not rounded.



There are 3 basic steps in cutting a shape:



A. Draw the shape and Export it as an HPGL (.plt) file.

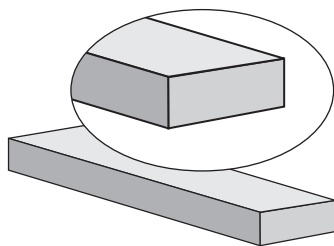
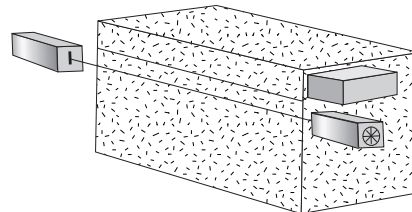


B. Open the .plt file in FoamShaper.

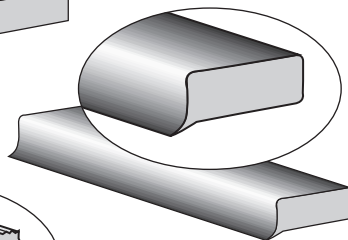


B. Set the Configuration. Our starting point is Speed of 25 and Heat of 45 with Angle Pause of 300.

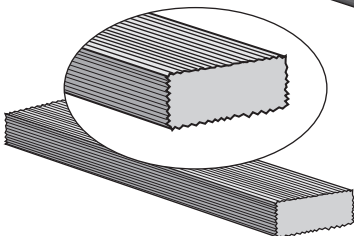
5. When the box has finished cutting, push it out of the foam and inspect the cut and the corners.



**This is your benchmark** — You want relatively smooth cut with clean square corners with no rounding and the same entry and exit line (no tail). See page 14 for "Defect and Solution".

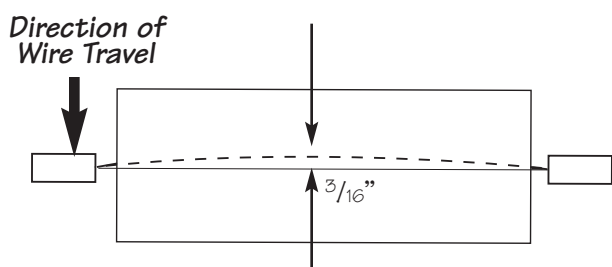


**Rounded corners and a tail** — You want relatively smooth cut with clean square corners with no rounding and the same entry and exit line (no tail). See page 14 for "Defect and Solution".



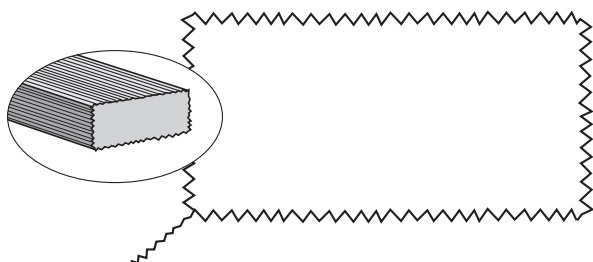
**Chatter lines** — You want relatively smooth cut with clean square corners with no rounding and the same entry and exit line (no tail). See page 14 for "Defect and Solution".

1. Speed — Speed and temperature are mutually and directly dependent. The higher the speed, the higher the temperature should be.
2. Wire Temperature — The higher the temperature the faster the speed should be. There is however a limit on increasing temperature. Too high a temperature will significantly reduce the life and durability of the cutting wire and aid in its surface oxidation.
3. 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. It simply keeps the wire from cutting the corners too fast.
4. Wire Tension — Wire tension must be maintained. Stretching of the wire due to heat or lost of spring tension can cause inaccurate cuts.



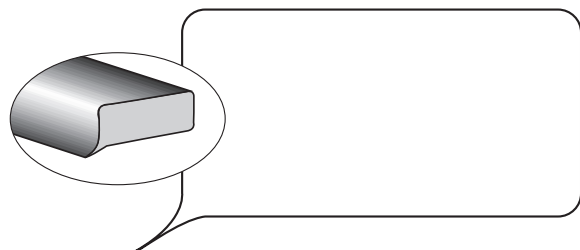
## Rule of Thumb! —

The highest quality of cut is obtained when the cutting wire is slightly arched. About  $\frac{3}{16}$ " in the center is recommended.



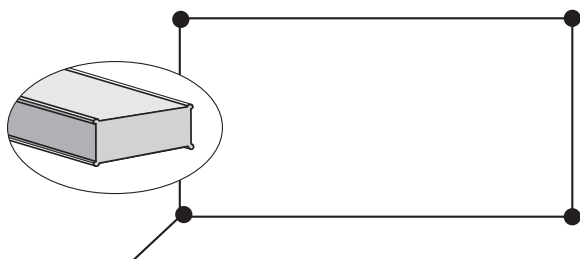
**Defect** — Serrated, choppy cut, sometimes called wire chatter.

**Solution** — Decrease Temperature  
Increase Speed



**Defect** — Rounded corners. The point of entry and exit are not the same line. It leaves a "tail".

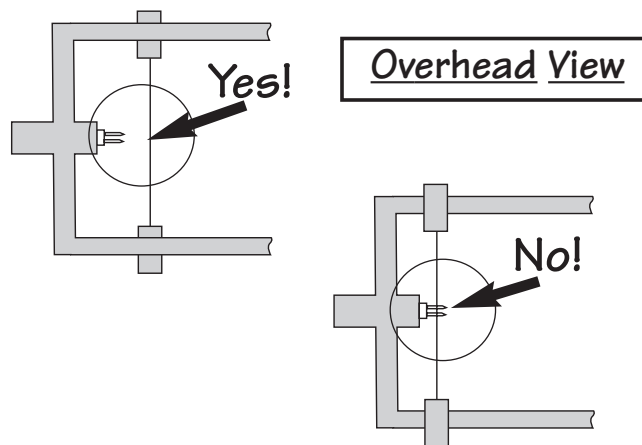
**Solution** — Increase the Angle Pause  
Decrease Speed  
Increase Temperature



**Defect** — Overheated corners. Round marks at each corner.

**Solution** — Decrease the Angle Pause. The wire is staying too long at the corner and the foam is melting before the wire moves into the cut.

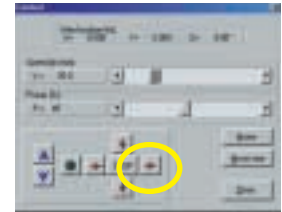
## Before Clicking “Home” —



## Caution!

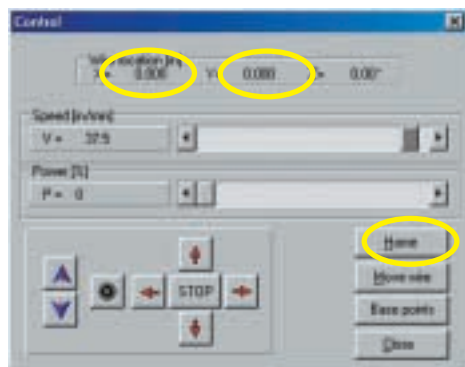
Before you click on “Home” be sure that you move the wire below the spike plate using the Manual Control (F5).

Be aware that the wire could hit the spike plate when going home. If the wire hits the spike plate the circuit breaker is activated. This can be reset on the back of the controller



Only after the wire is clear of the spike plate should you click the home button

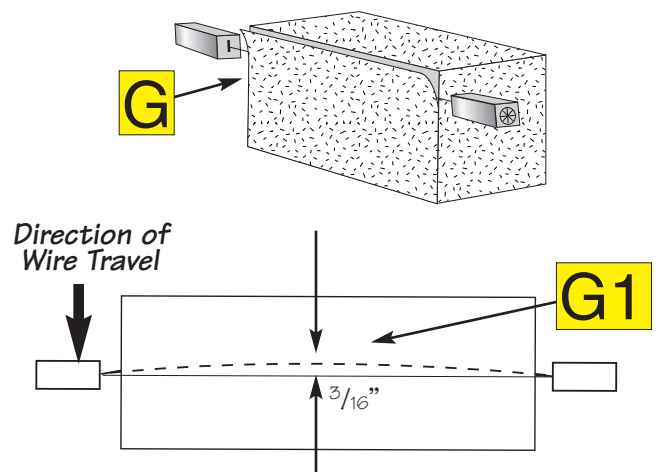
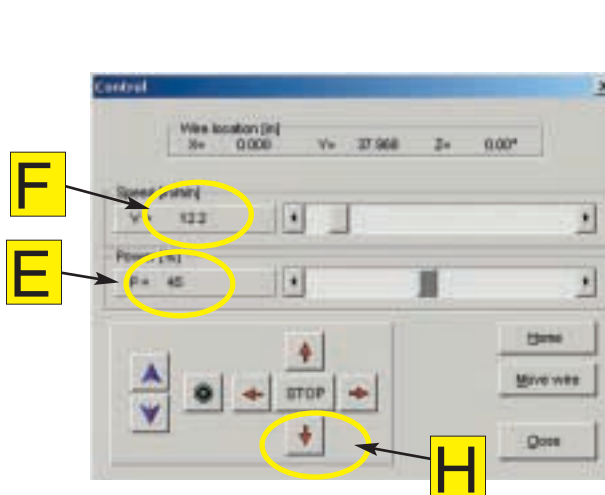
## Going to “Home” —



## Important!

Open the Control panel (F5) and press “Home”. This will move the trolleys and cutting wire to their starting position. This is important because it clears the controller’s memory and gives the program a clean starting point.

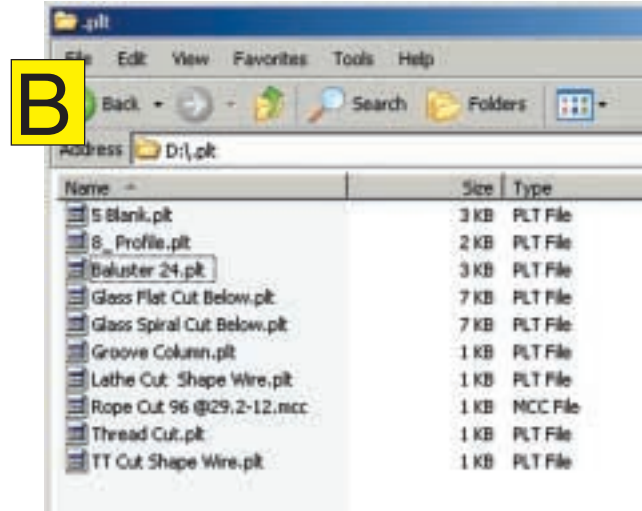
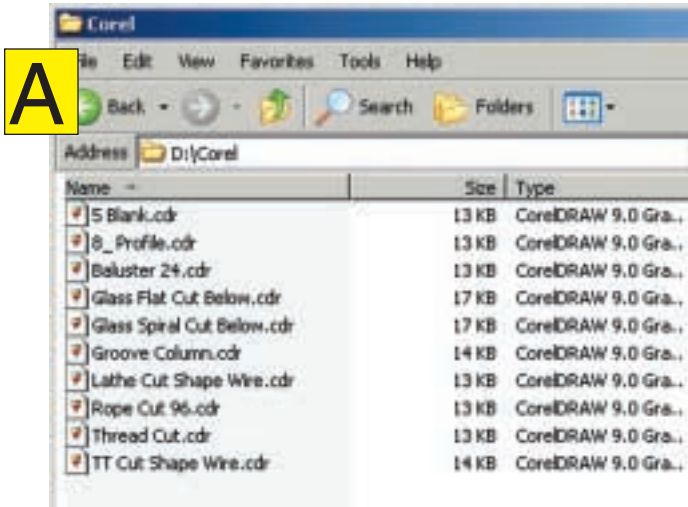
You will notice that when you go to “Home”, both the X and Y coordinates will show “0”.



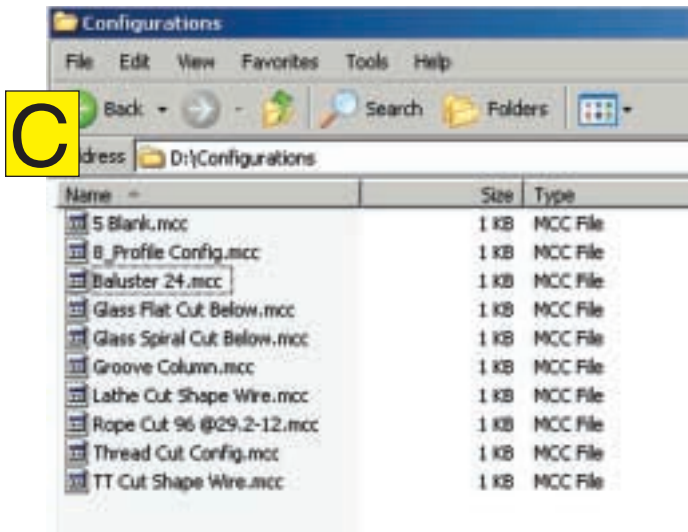
Note: Save these parameters in your configuration window and save it as a “Test “ for whatever width and pound of foam you are testing ie, (Test Cut 4’ 1#). Set angle pause at a starting point of 200.



These program files are included on your CD. We suggest that you transfer them to your hard drive for ease of access.



Note: If you are working in a CAD program, save the drawing as a .dxf file. You may now open this file directly into FoamShaper.

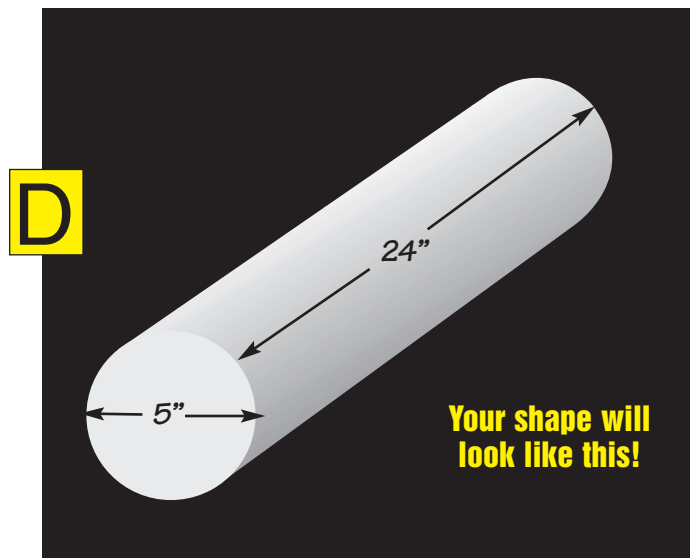
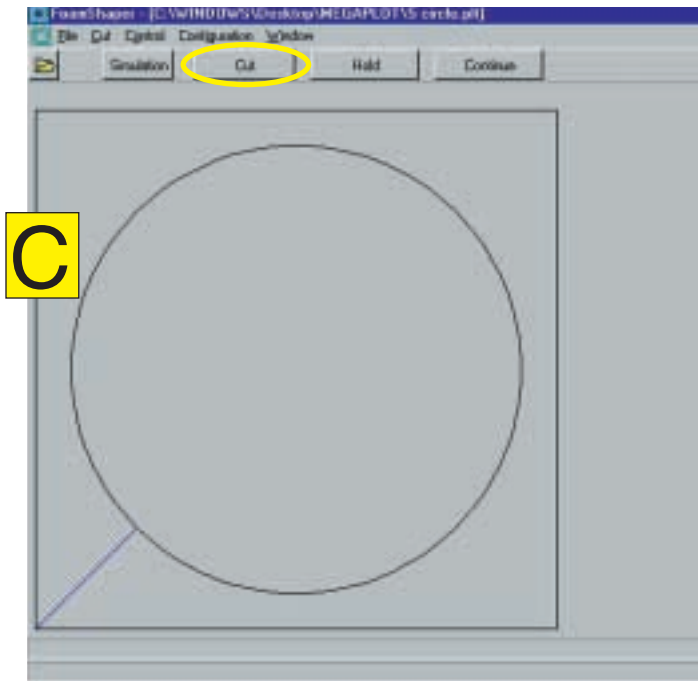
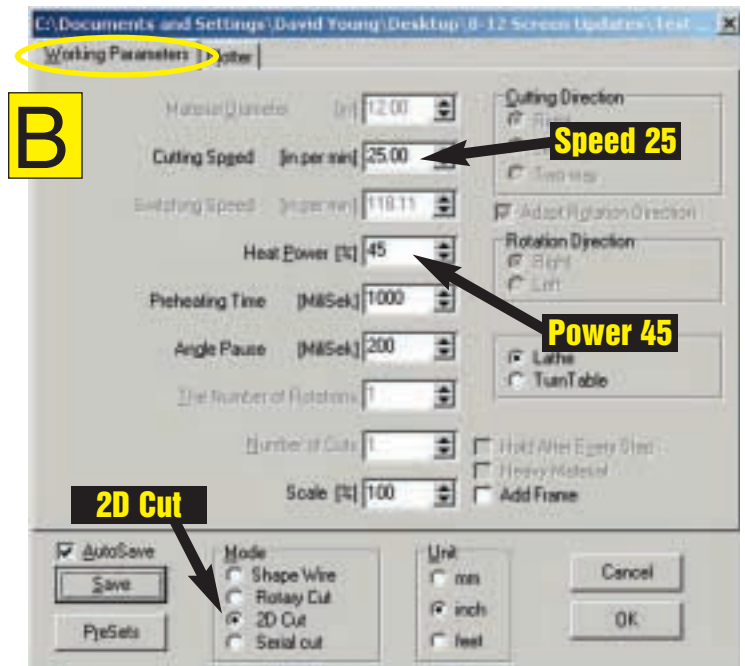
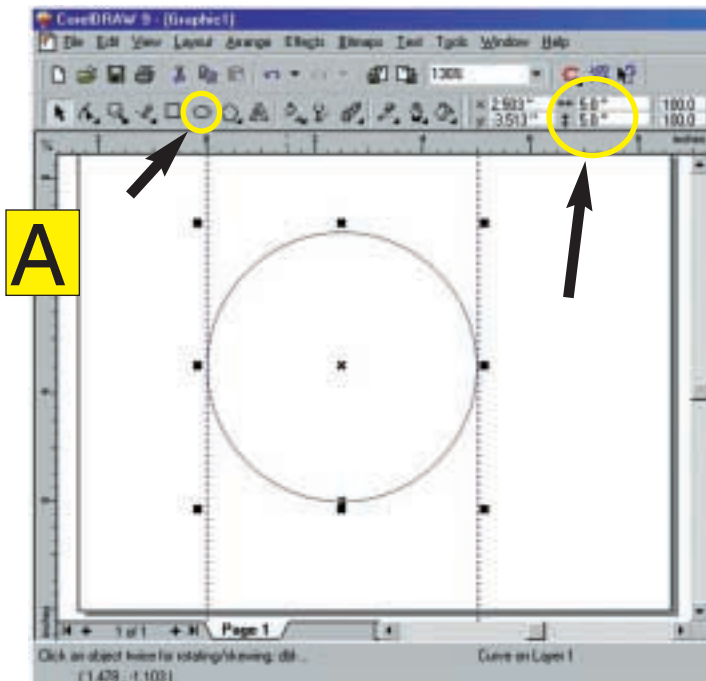


These program files are used in progressive steps. All files you save for a project will follow this sequence.

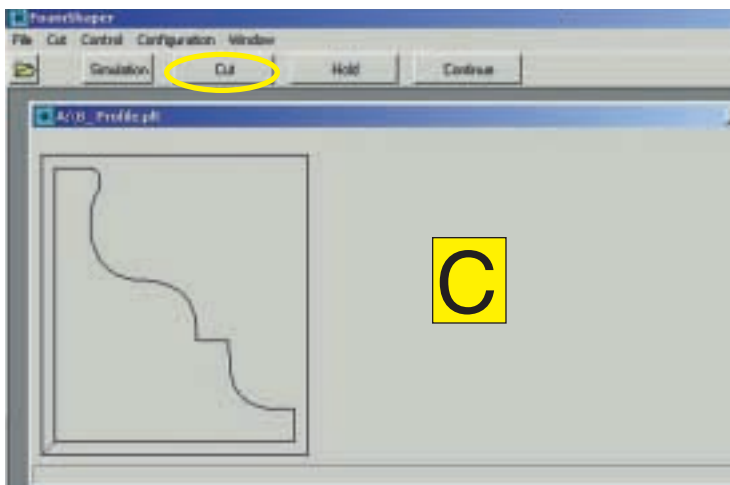
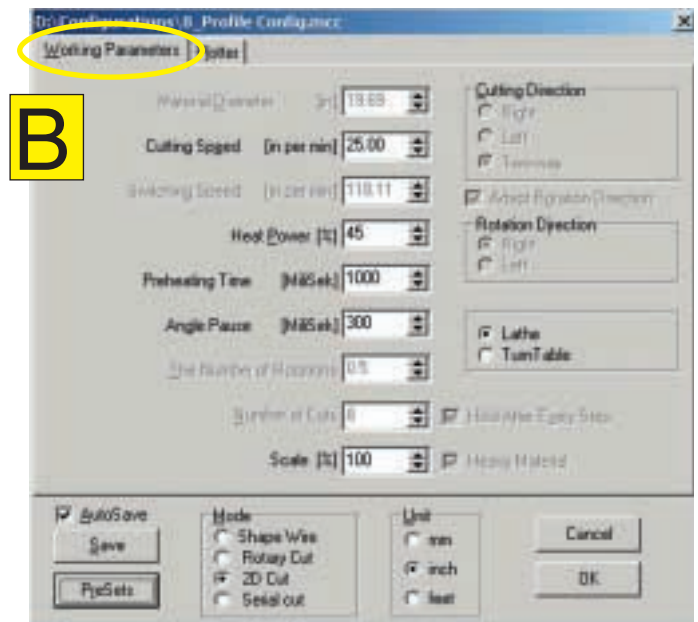
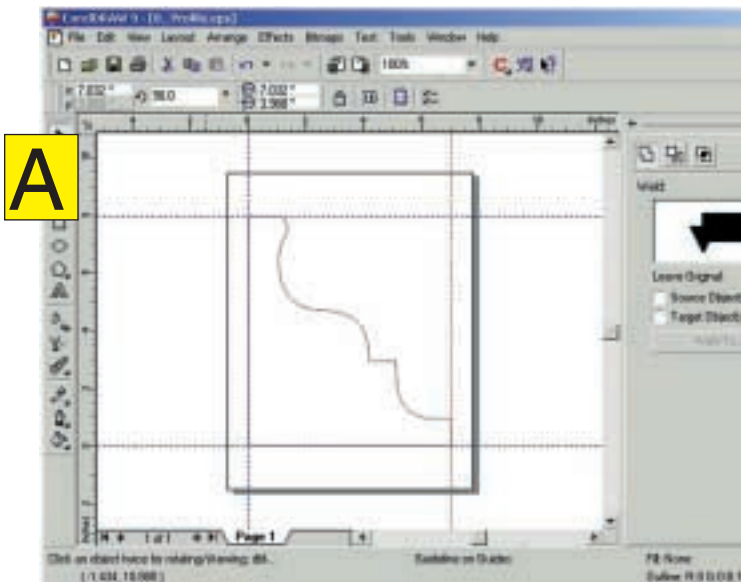
- A.** Create the *Line Art (Vector Art)* drawing and save it by a name you will recognize later.
- B.** After saving the file as a graphic file, export it as an *HPGL (.plt)* file.
- C.** Create a *Configuration* file with the *Speed*, *Heat* and *Angle Pause* that you have developed by testing your foam sample. (Pages 12-14)

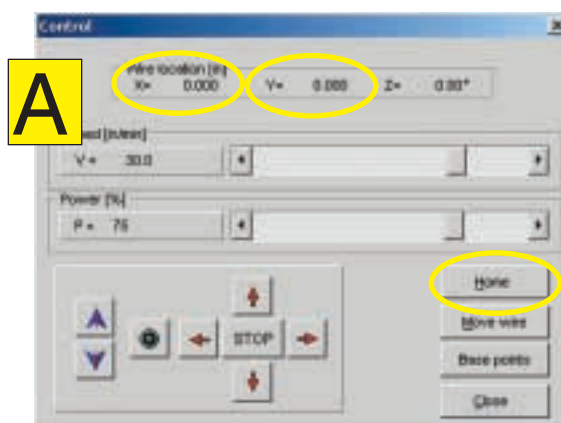
## Cutting a Circle Blank (Example Piece is 5" by 24")

- A. Draw the Shape — Draw a 5" circle using Corel Draw or similar graphics program. Save as a HPGL file (.PLT).
- B. Open Configuration — Set the Working Parameters as shown in picture "B". You are setting the type of cut (2D), speed, heat power, angle pause, etc. Save this setting by a name you will recognize.
- C. Open the Circle File — Under File (F3), open the 5" circle you have created. Tell the program to "Cut". A dialog box will appear and ask you if you want to cut the box around the circle. Tell it either Yes or No. The circle will now start cutting.

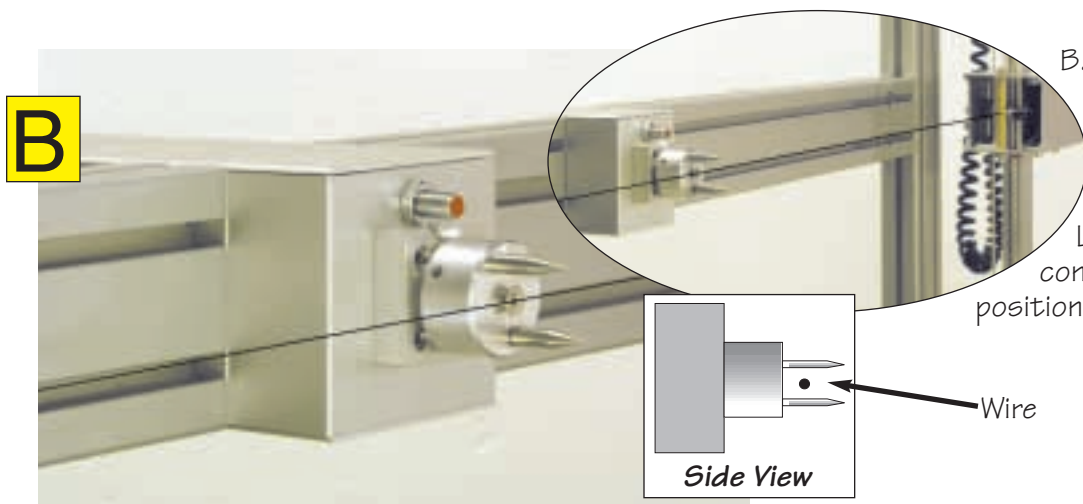


- A. Draw the Shape — Draw a profile using Corel Draw or similar graphics program. Save as a HPGL file (.PLT).
- B. Open Configuration — Set the Working Parameters as shown in picture “B”. You are setting the type of cut (2D), speed, heat power, angle pause. etc. Save this setting by a name you will recognize.
- C. Open the Profile File — Open, under File (F3), the profile you have created. Then tell it to “Cut”. The Profile will now start cutting.





A. Home the Machine — Go to “Home” (F5) which is ‘0.0’ for both X and Y axis.

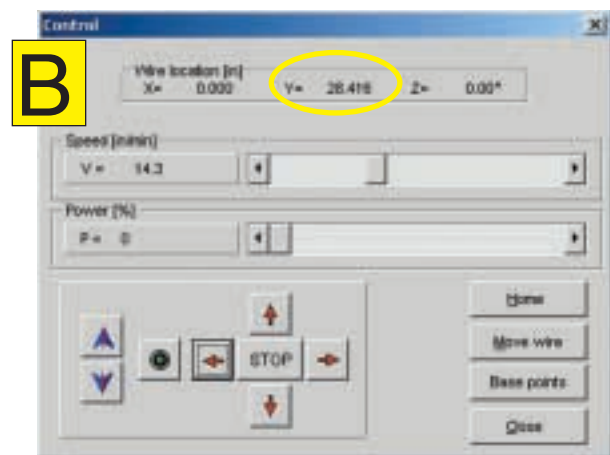


B. Finding Lathe Center—Using the Manual Control (F5), move the wire to the exact center of the lathe spindle drive.

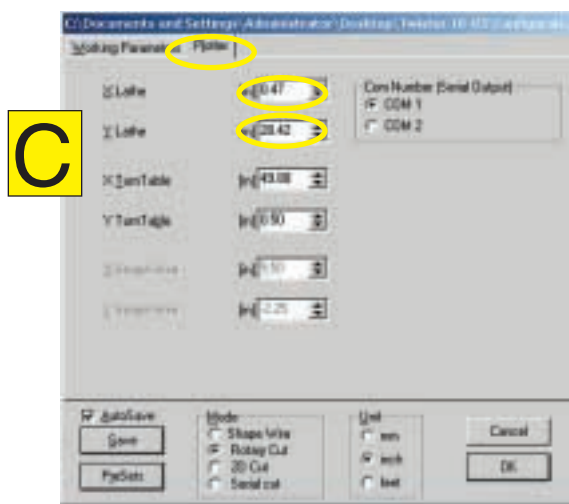
Look at the “Y” position in the control settings and write this position down.

Wire

Side View

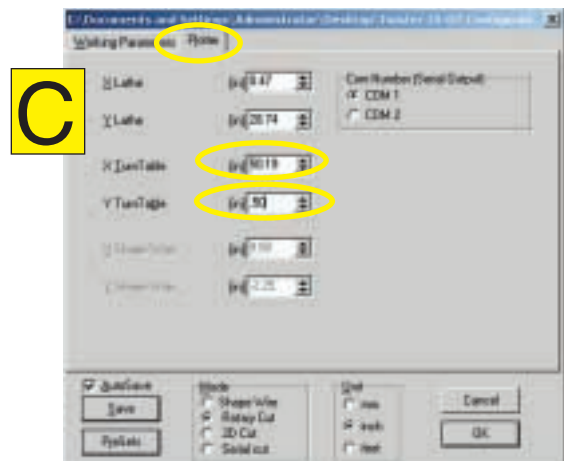
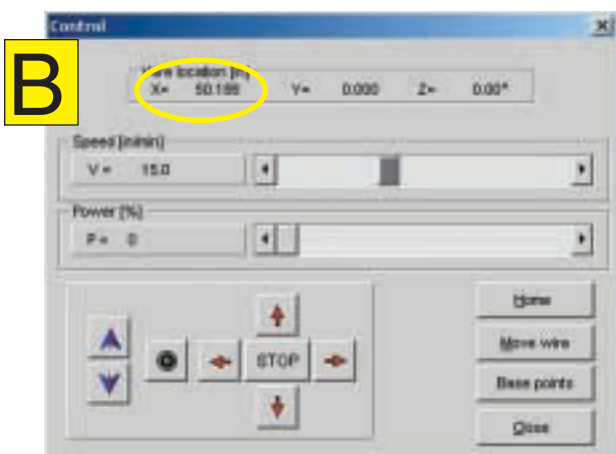
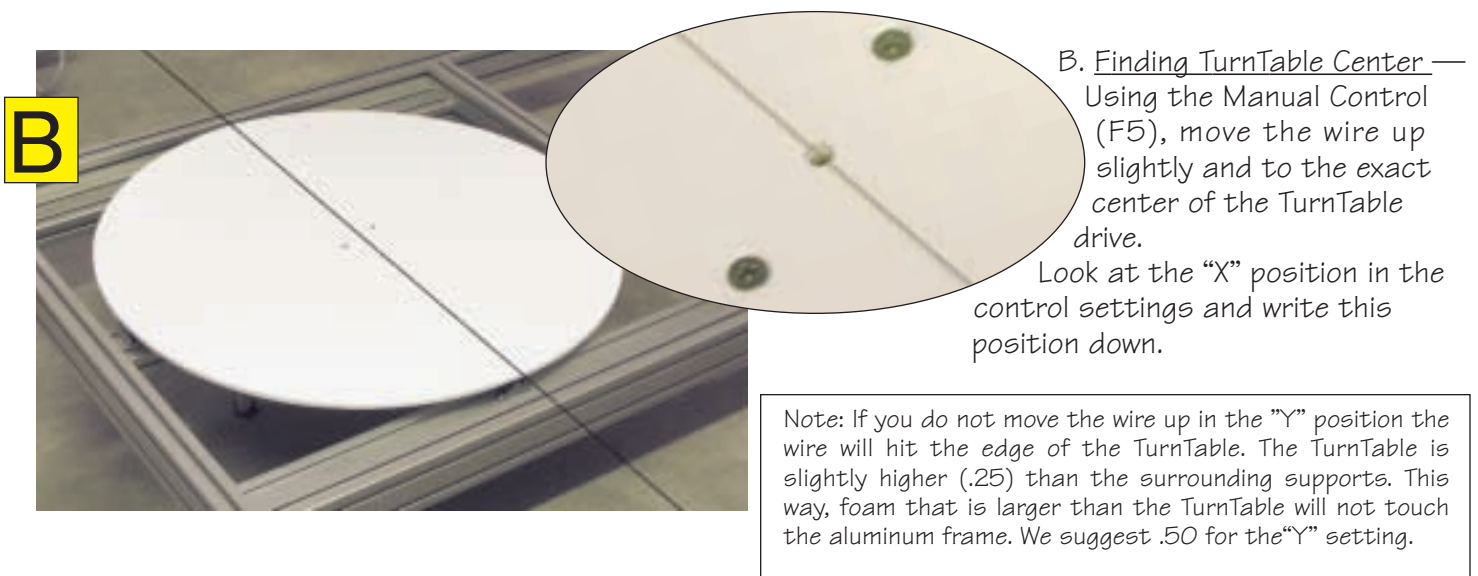
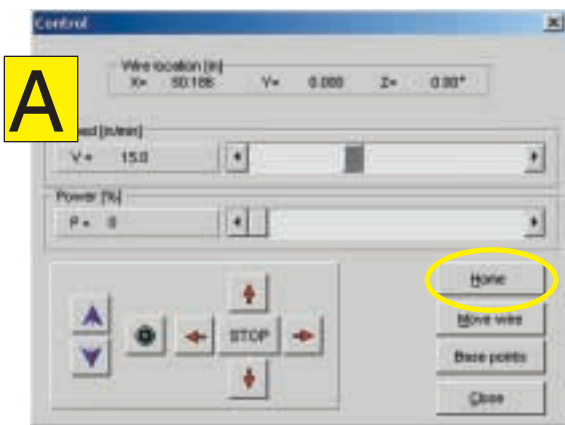


Look at the “Y” position in the the control settings. In this example we found the center of our machine to be 28.704

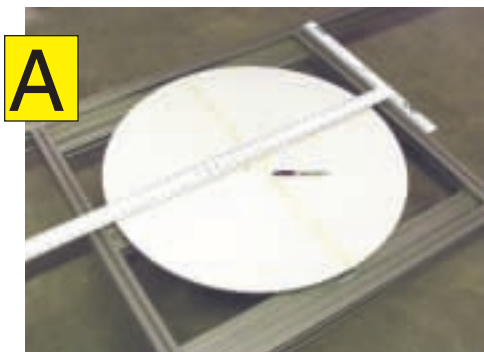


Go to Configuration (F6) and click on the tab “Plotter”. Put 28.704 in the new “Y Lathe” position . You will notice that the “X” setting defaults to .47.

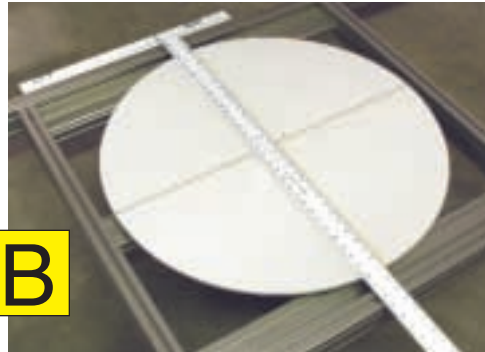




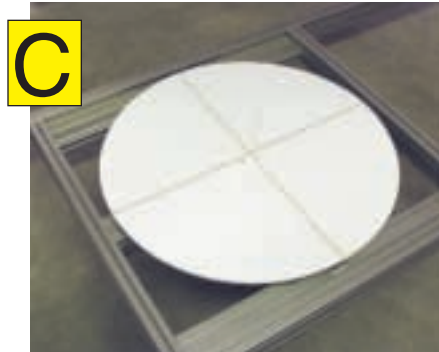
## Installing Alignment Marks —



A. “Home” the trolleys. Use a T-Square and draw a line through the center of the table from side to side. Use a permanent marker so the line will last.



B. Do the same thing at a right angle to the first mark.

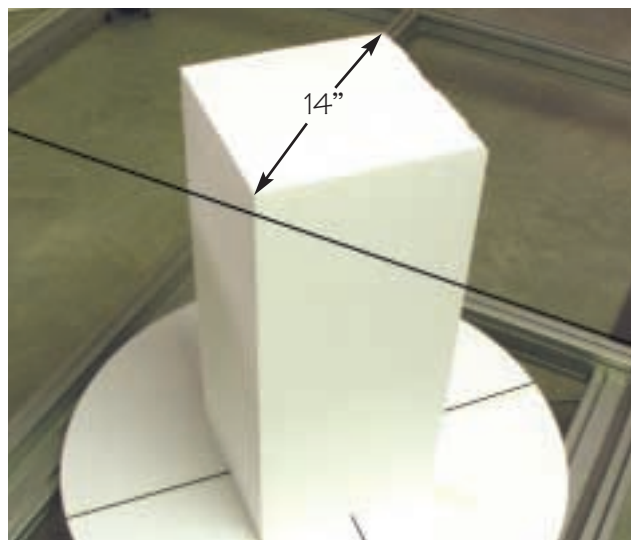
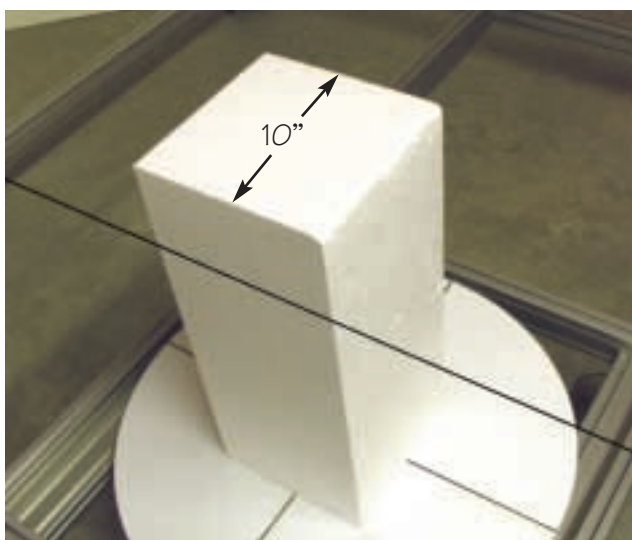


When finished, it should look like this.

## Material Diameter Settings

**Question:** Even though we are using a 10 inch square blank, why would we set the material diameter at 15”?

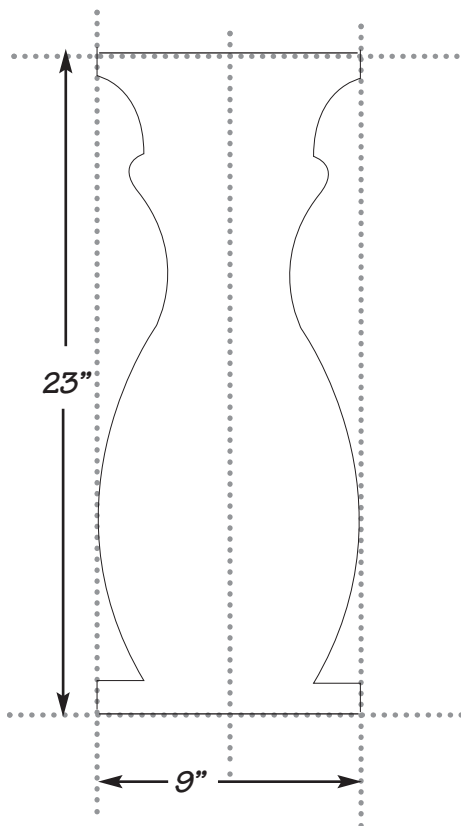
**Answer:** After the initial cut, the TurnTable will turn before making the next cut. Although the blank is a 10” square, the diagonal is 14”. By setting our “Working Parameter” diameter at 15”, this directs the wire to stop at 15” leaving a 1” safety margin.



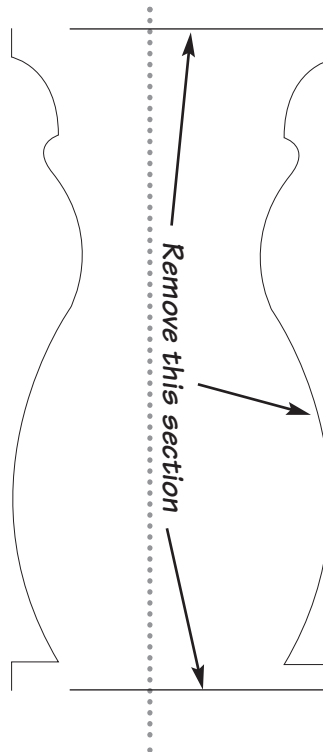
As the blank is turning, the diagonal of the blank is now the widest part.

- A. Draw the Shape you would like to cut
- B. Remove everything except the vertical silhouette line.
- C. Add the center line. The center line tells the controller where the center of the foam blank is located.
- D. Export this file as an HPGL (.plt) file
- E. Open it in FoamShaper to cut it.

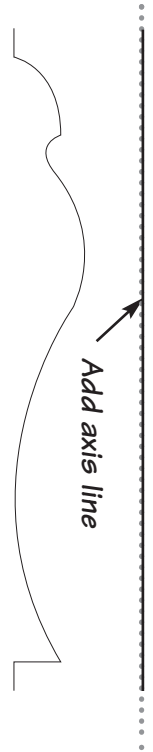
### A. Draw an object.



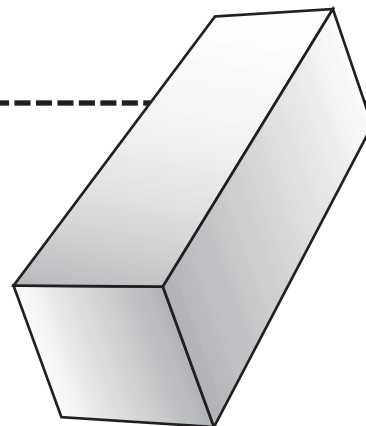
### B. Remove the top, bottom and side you don't need.



### C. Add the center axis line.



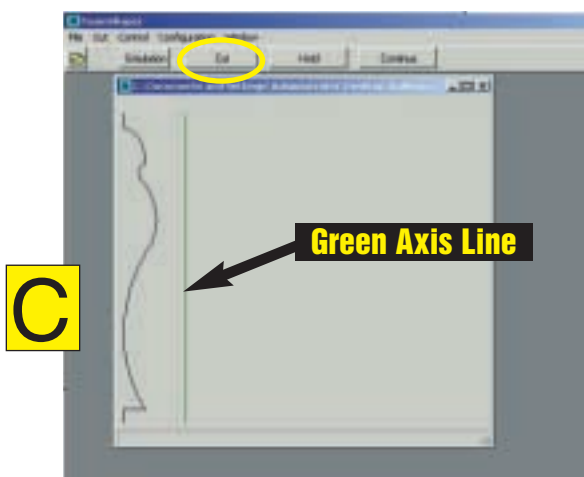
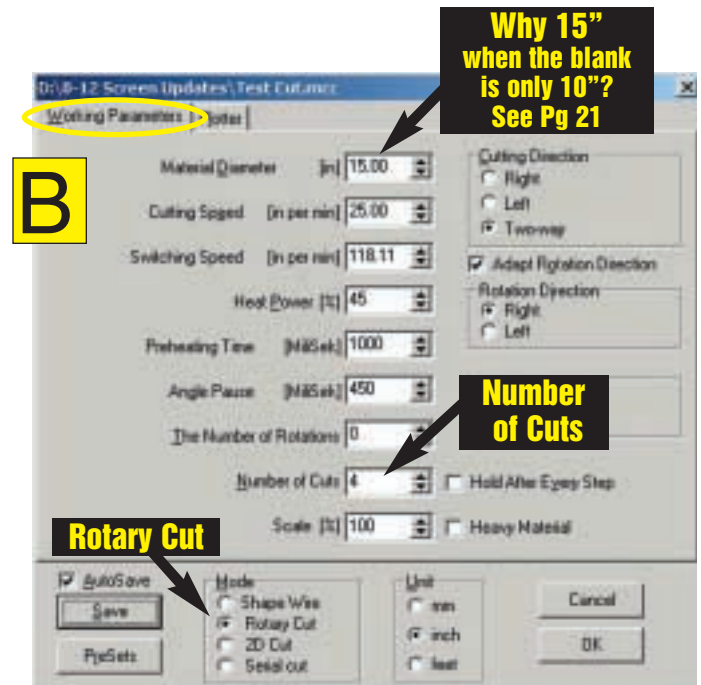
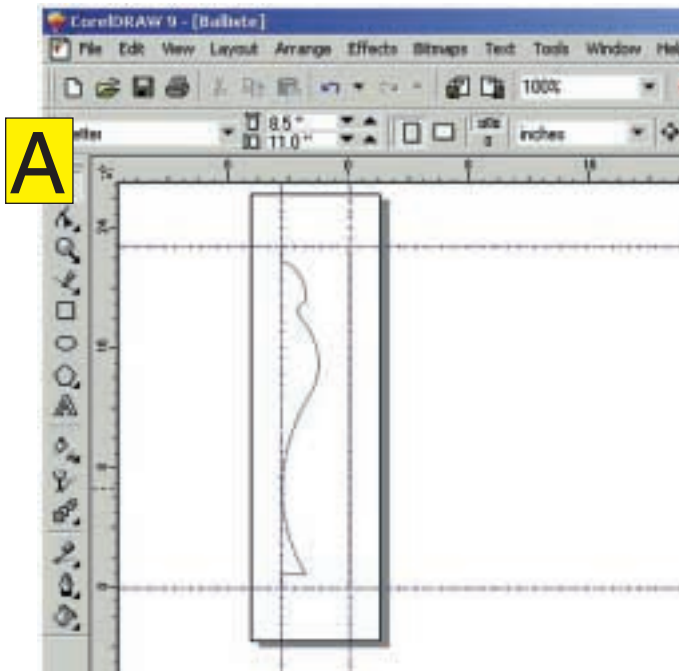
*We will be working with a  
foam block which is 10" x 10" x 24"*





- A. Draw the Shape — Draw a Baluster using Corel Draw or similar graphics program. Save as a HPGL file (.PLT).
- B. Open Configuration — Set the Working Parameter as shown in picture “B”. You are setting the type of cut (Rotary), speed, heat power, angle pause. etc. Save this setting by a name you will recognize.
- C. Open the Baluster File — Open, under File (F3), the baluster you have created. Tell it to “Cut”. The baluster will now start cutting. The blank will turn 4 times. If the configuration steps had been set at “6”, then the blank would have turned six times. It will cut from 2 directions, because you have checked “Two-Way”.

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 the scrap foam while the cut is in progress, you may damage the shape.



**Your shape will look like this!**

## For Cutting from Below the Lathe Center Axis

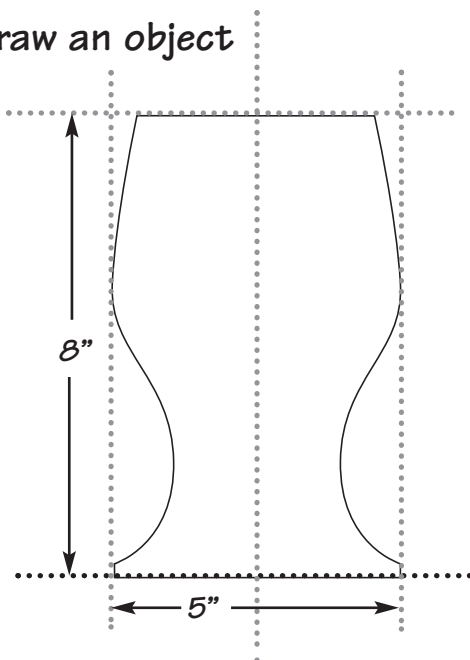
- Draw the Shape you would like to cut
- Turn the shape on its side.
- Remove everything except the horizontal curve below the center line..
- Add the center line. The center line tells the controller where the center of the foam blank is located.
- Export this file as an HPGL (.plt) file
- Open it in FoamShaper to cut it.



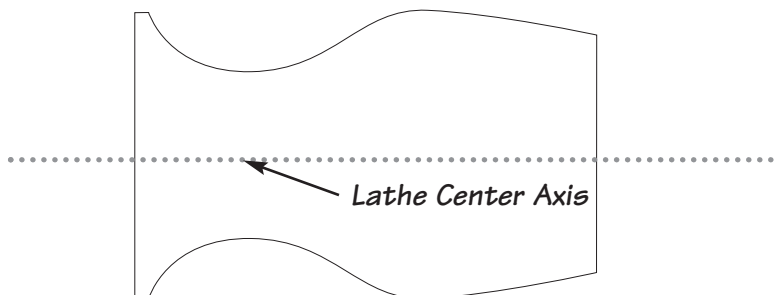
### Rule of Thumb —

Because the foam will drop away as each cut is made, we recommend cutting from the below the center axis. Cutting from below generally eliminates the need to use the function "Hold After Every Step".

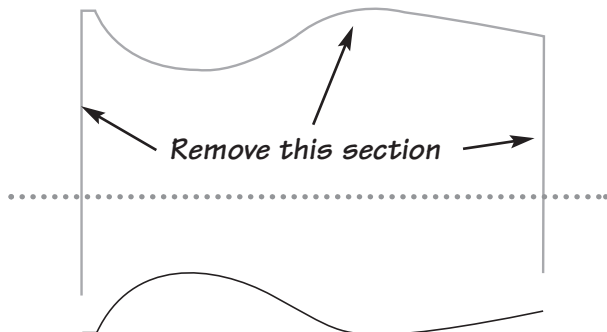
### A. Draw an object



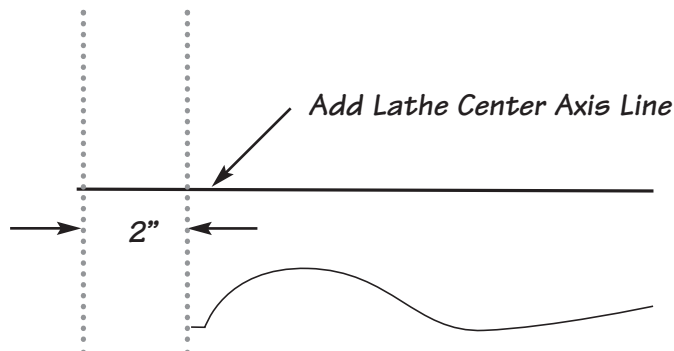
### B. Turn the object on its side



### C. Remove the left, top and right side you don't need



### D. Add the center axis line. We started our cut 2" in from left

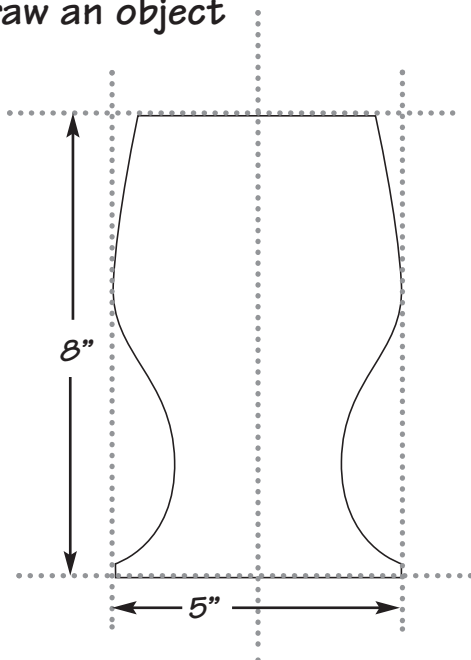


## For Cutting from Above the Lathe Center Axis

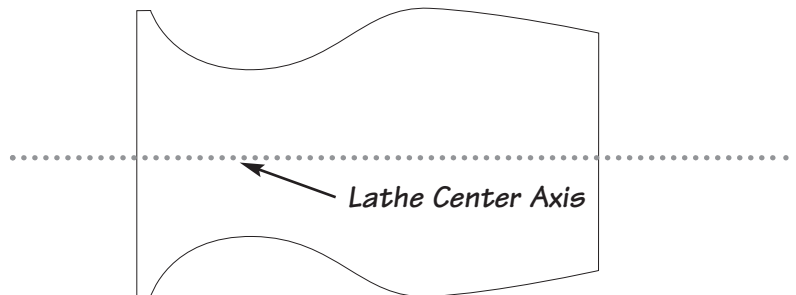
- A. Draw the Shape you would like to cut
- B. Turn the shape on its side.
- C. Remove everything except the horizontal curve above the center line..
- D. Add the center line. The center line tells the controller where the center of the foam blank is located.
- E. Export this file as an HPGL (.plt) file
- F. Open it in FoamShaper to cut it.

Note: When starting your cut from above the center axis line, we suggest you use the function "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 risk damaging your shape.

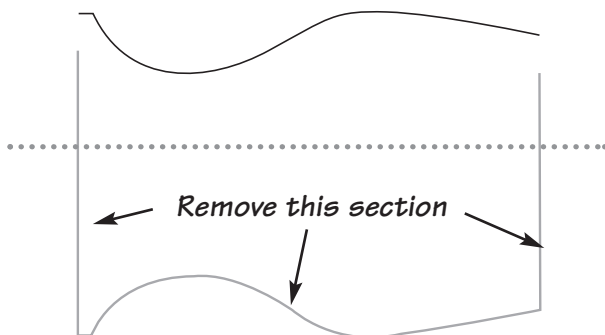
### A. Draw an object



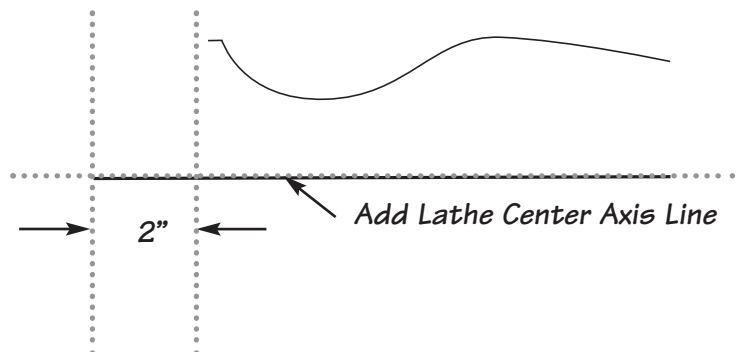
### B. Turn the object on its side



### C. Remove the left, bottom and right side you don't need

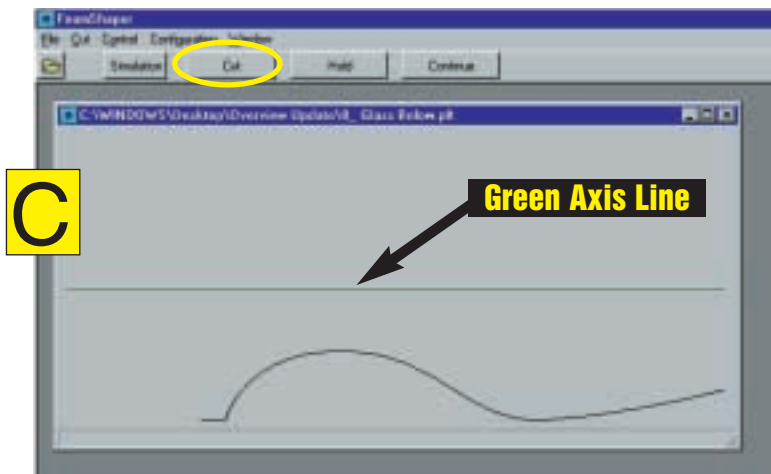
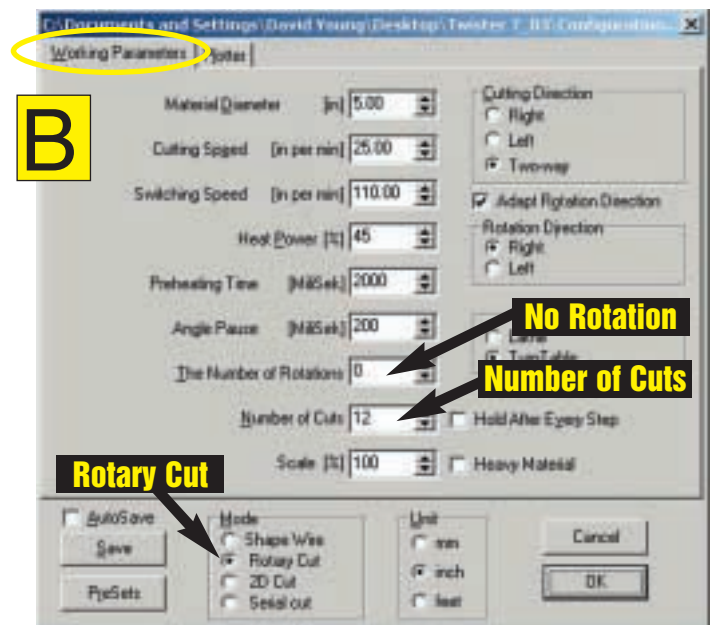
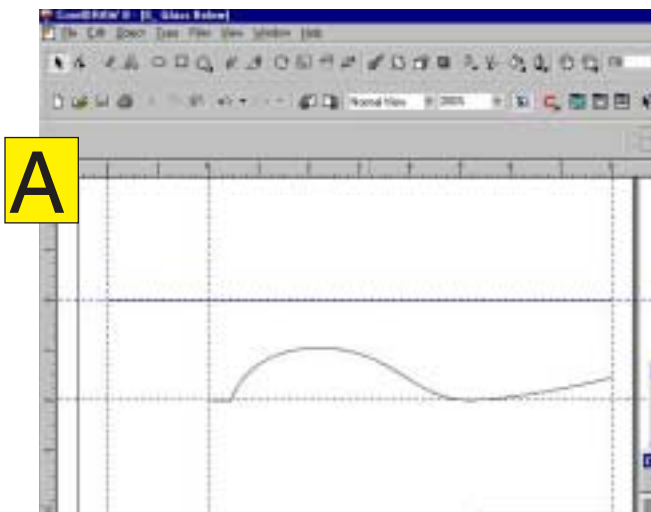


### D. Add the center axis line. We started our cut 2" in from left



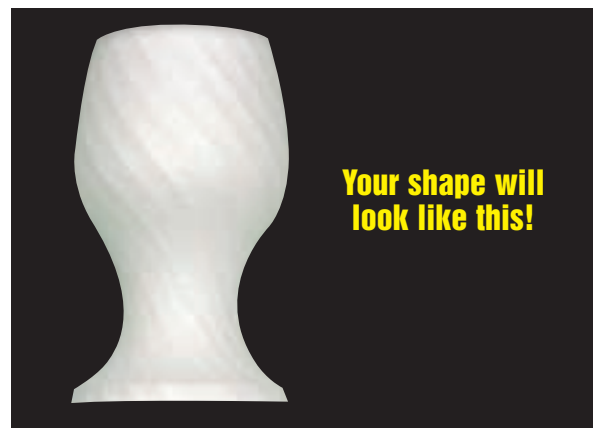
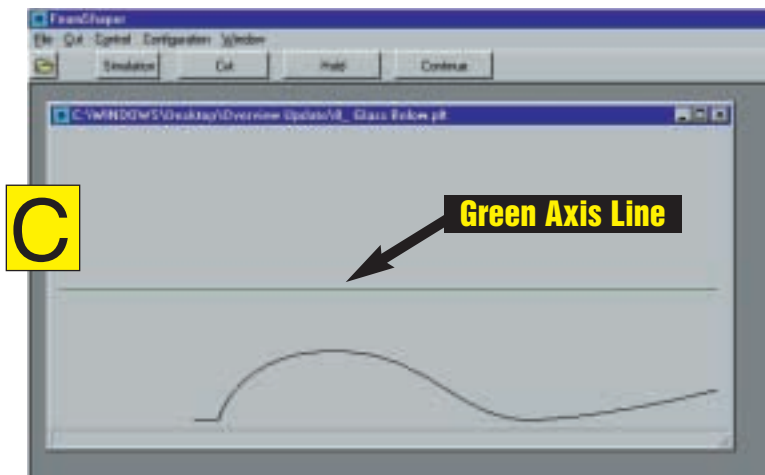
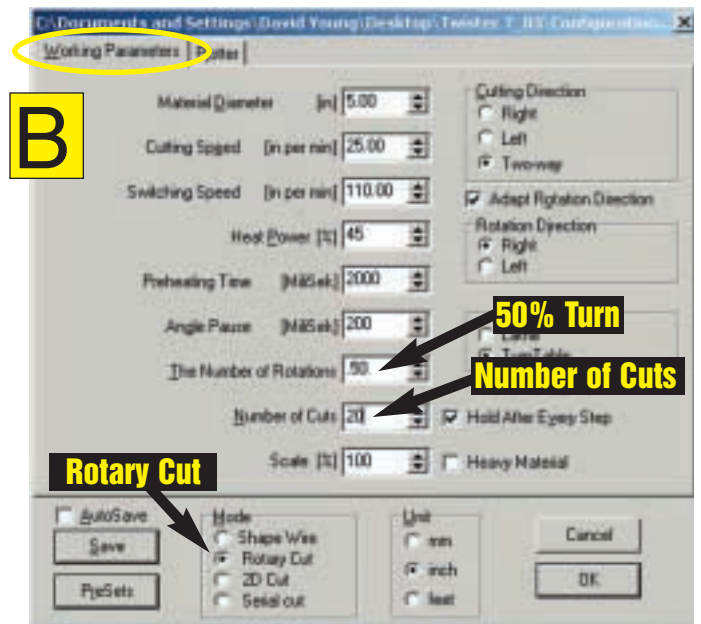
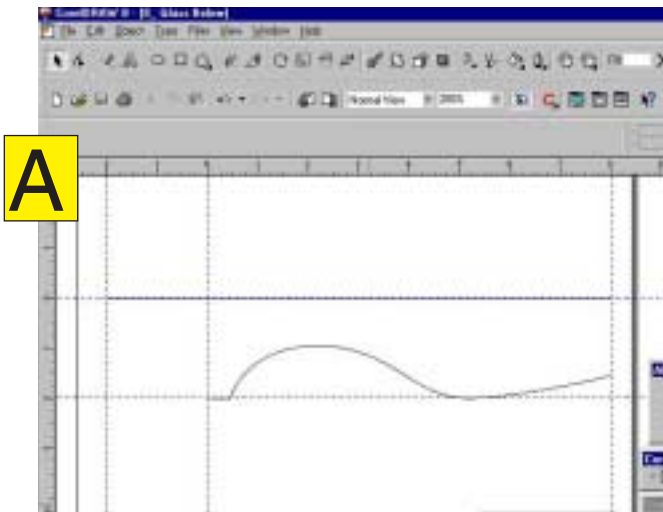
- A. Draw the Shape — Draw a glass using Corel Draw or similar graphics program. Save as a HPGL file (.PLT).
- B. Open Configuration — Set the Working Parameter as shown in picture “B”. You are setting the type of cut (Rotary), speed, heat power, angle pause, etc. Save this setting by a name you will recognize. What this means is: The blank will not rotate, but it will make 12 cuts or steps on the X axis.
- C. Open the Glass File — Open, under File (F3), the glass you have created. Tell it to “Cut”. The glass will now start cutting. The shape will now take 12 cuts. It will automatically do 6 cuts in each direction, because you have checked “Two-Way”.

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. You have two choices: Let it stop and remove the new cuts, or just watch and leave it alone!



- A. Draw the Shape — Draw a glass using Corel Draw or similar graphics program. Save as a HPGL file (.PLT).
- B. Open Configuration — Set the Working Parameter as shown in picture “B”. You are setting the type of cut (Rotary), speed, heat power, angle pause. etc. Save this setting by a name you will recognize. What this means is: The blank will turn 50% of a turn, and it will make 20 cuts or steps.
- C. Open the Glass File — Open, under File (F3), the glass you have created. Then tell it to “Cut”. The glass will now start cutting. The shape will now turn 50% of the circumference and take 20 cuts. It will automatically do 10 cuts in each direction, because you have checked “Two-Way”.

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. You have two choices: Let it stop and remove the new cuts, or just watch and leave it alone!





There are 6 different cutting modes:

1. 2D Cut — This is normally just a straight cut with a tensioned wire. Cuts X and Y axis .
2. Rotary Cut (Lathe) — This is cut with a straight tensioned wire which has an X and Y cut with the addition of rotating the material being cut. You have the option of cutting in two directions.
3. Rotary Cut (TurnTable) — This is cut with a straight tensioned wire which has an X and Y cut with the addition of rotating the material being cut. You have the option of cutting in two directions.
4. Shape Wire (Lathe) — This cut utilizes a shaped wire. This mode is normally used for plunge cuts, flutes, grooves, rope cuts, spirals, threads, etc.
5. Shape Wire (TurnTable) — This cut utilizes a shaped wire. This mode is normally used for plunge cuts, flutes, grooves, rope cuts, spirals, threads, etc.
6. Serial Cut (TurnTable) — This cut utilizes a straight tensioned wire. The Software program will take a series of line art (vector) drawings and cut them in consecutive order. A separate manual is available for Serial Cuts.

Mode		
Mode	Accessory	Wire
• Shape Wire (Lathe or TurnTable)	Twister Shape Bar	16 gauge Shape Wire
• Rotary (Lathe or TurnTable)	Twister	.016 Gauge Wire
• 2D Cut	None	.016 Gauge Wire
• Serial Cut (TurnTable)	None	16 gauge Gauge Wire

Working Parameters | Plotter

Material Diameter [in] 5.00

Cutting Speed [in per min] 30.00

Switching Speed [in per min] 118.11

Heat Power [%] 70

Preheating Time [MilliSec] 1000

Angle Pause [MilliSec] 500

The Number of Rotations 50

Number of Cuts 20

Scale [%] 100

Cutting Direction

☐ Right

☐ Left

☒ Two-way

☒ Adapt Rotation Direction

Rotation Direction

☒ Right

☐ Left

☒ Lathe

☐ TurnTable

☒ AutoSave

Save

PlgSels

Unit

☐ mm

☒ inch

☐ feet

Cancel

OK

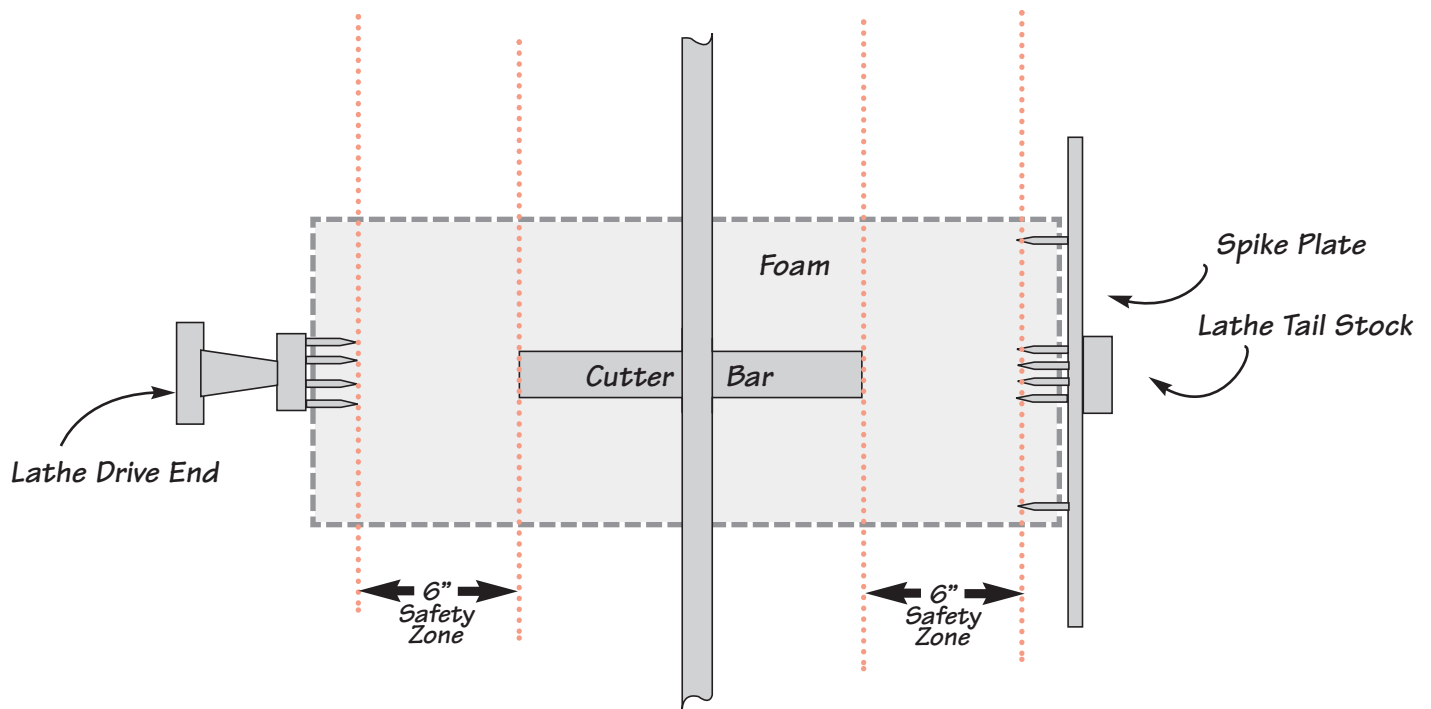
Set for either  
Lathe or  
TurnTable  
("Mode" must  
also be set )

### *Beginning and Ending Points with Shaped Wire and Spike Plates*

When using shaped wire with the cutter bar, please be aware of the 6" Safety Zone. You may be able to move closer than 6", but you run the chance of damage to the machine.

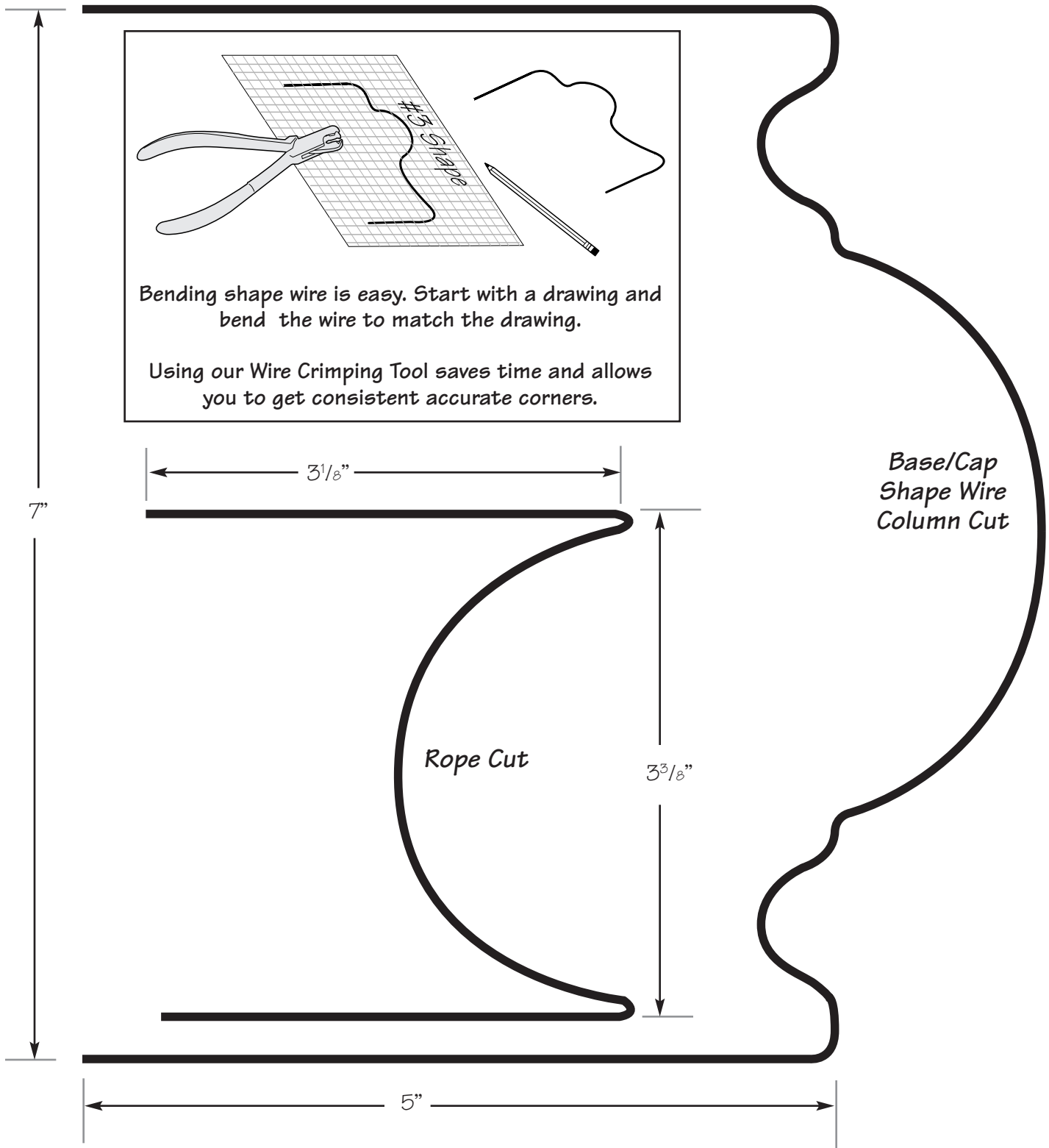
When going to "Home", be aware of the Cross Members, TurnTable and Spikes. When you tell the machine to go to the Home position, the machine will go straight down in the "Y" position to "O" and then to the "O" position of "X".

### Overhead View of Cutting Bar

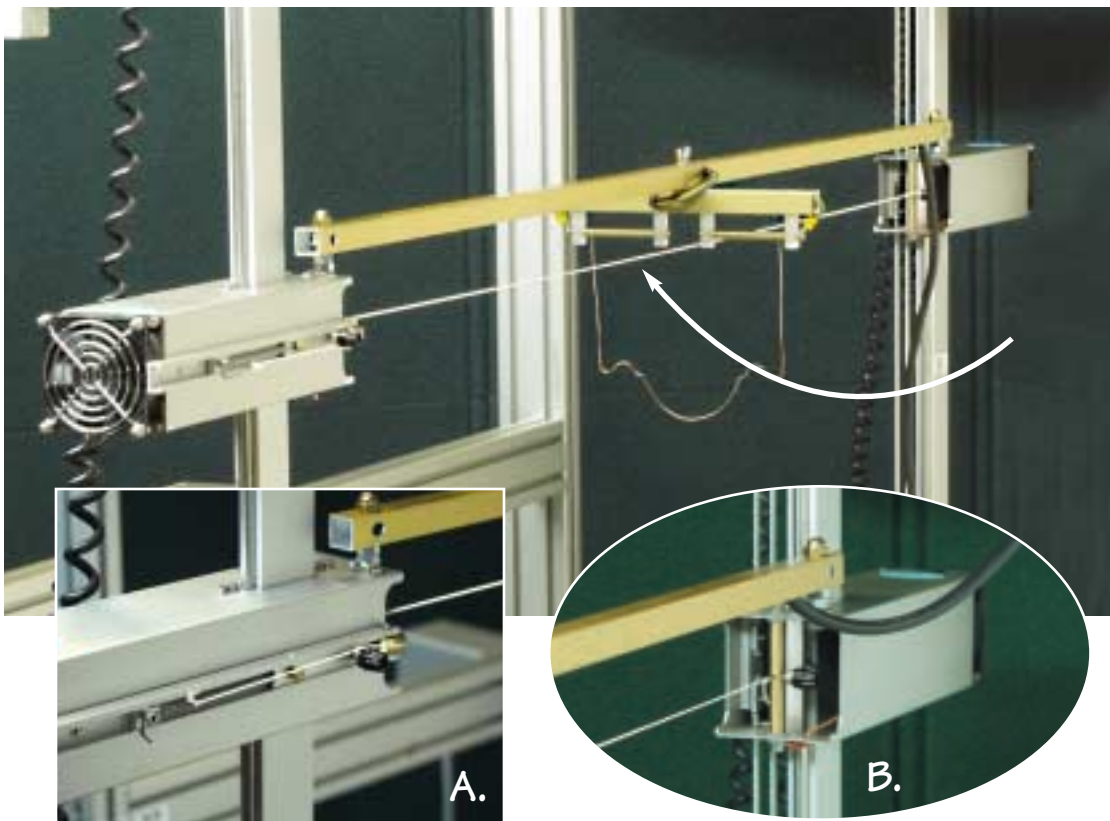




If you wish to copy our Turntable and/or Lathe Sample Cuts,  
Bend your shape wire to fit the corresponding pattern .

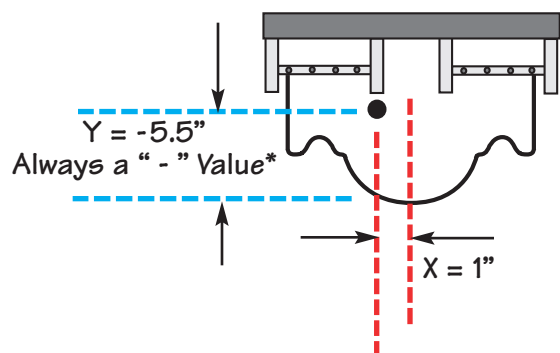


## Shape Wire Calibration

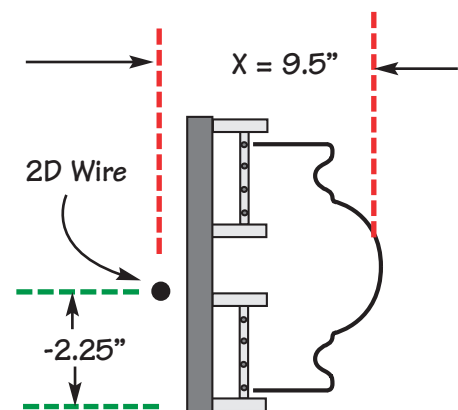


An easy visual aid for calibrating the Shape Wire Bar is the Elastic Guide String. Insert the pin end of the Guide String in the brass post just like the normal cutting wire (Inset B). Wrap the other end through the brass guides and hook the end on anything convenient (Inset A).

If you prefer, you may use the normal cutting wire instead of the Elastic String Guide. We find the string guide is easy to see for calibration and easy to attach and remove.



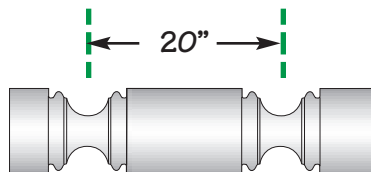
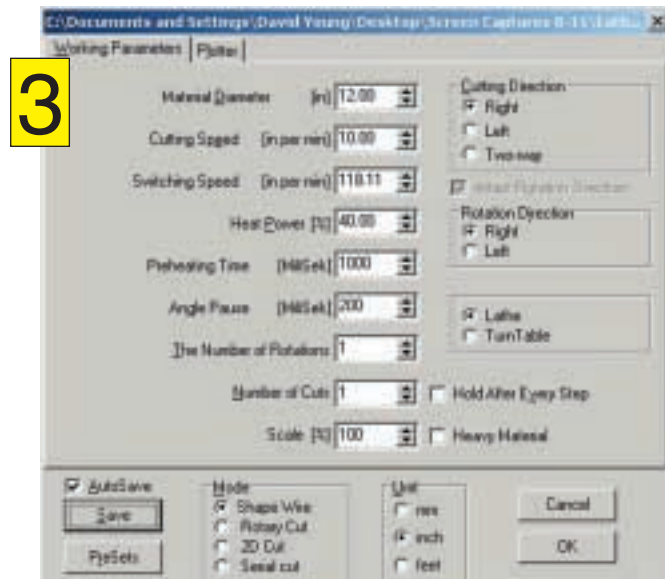
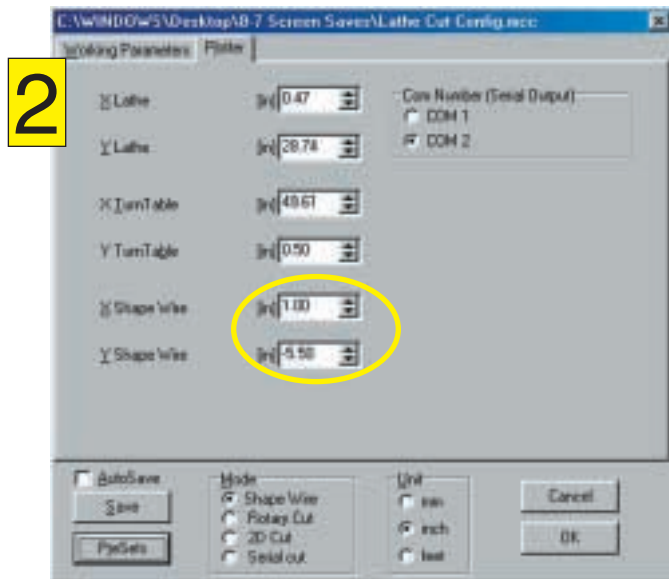
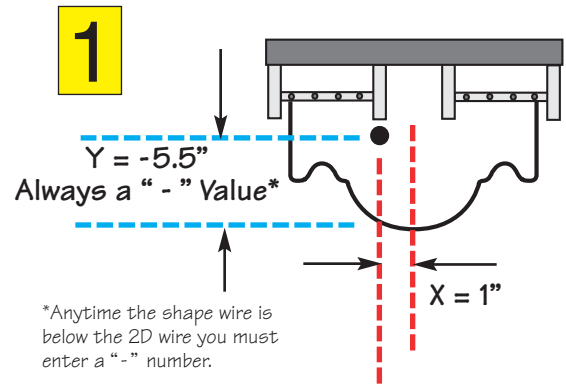
Lathe Cut Calibration Example



TurnTable Cut Calibration Example

## Lathe Shape Wire Calibration Settings

1. Determine the distance from the 2D wire to the deepest part of the shape wire. In our example it is -5.5 inches. Set the "Y" Shape Wire in the Plotter window to -5.5".
2. Measure from the 2D wire to the center of the Shape Wire. In our example it is 1.0 inches. Set the "X" Shape Wire to 1.0".
3. In the Working Parameters window, set the "Cutting Direction" to Right, and enter all the other information.

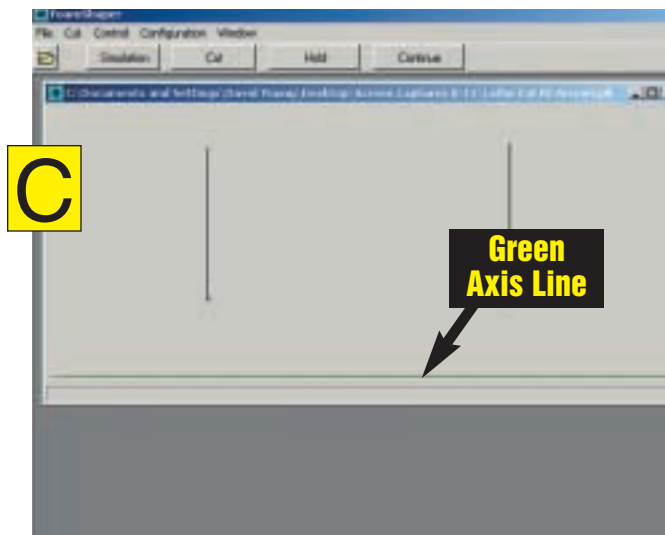
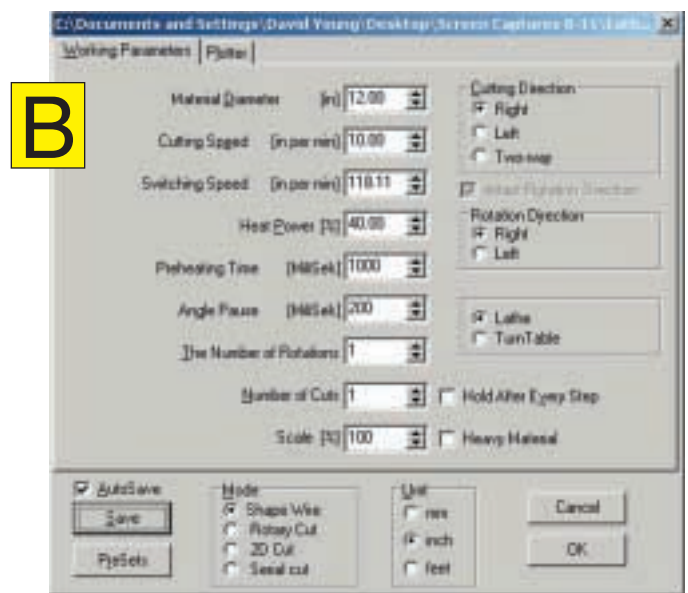
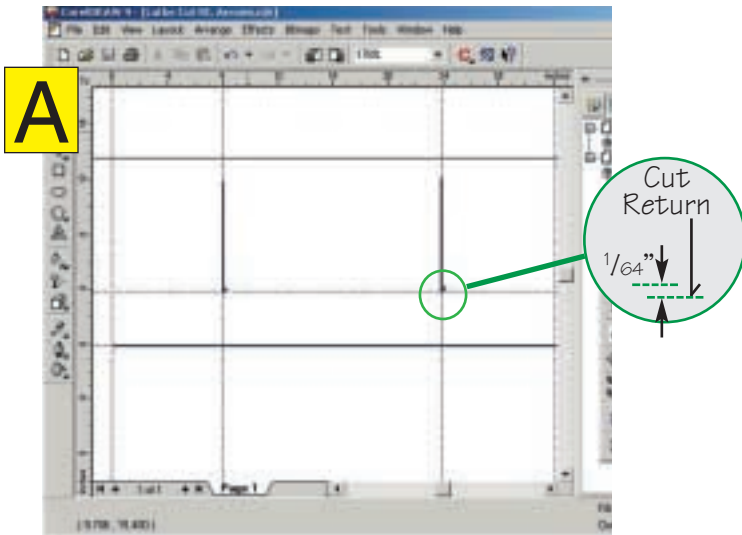


In our example cut we are showing two cuts on a 12" cylinder that is 32" long. The two cuts are to be 14" apart at their centers, and each cut will be 4" deep.

The software has a 1.0" default on the left side (lathe motor spike plate). i.e. If the art shows the first cut at 0", the actual cut will be at 1". Adjust your artwork to reflect this default.

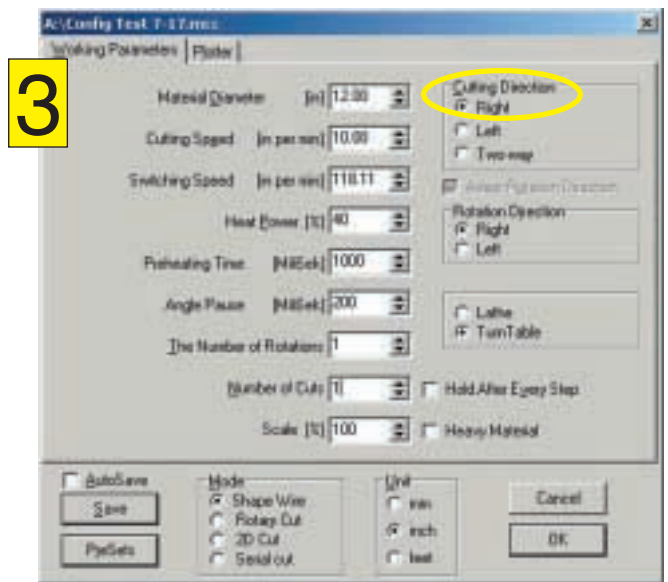
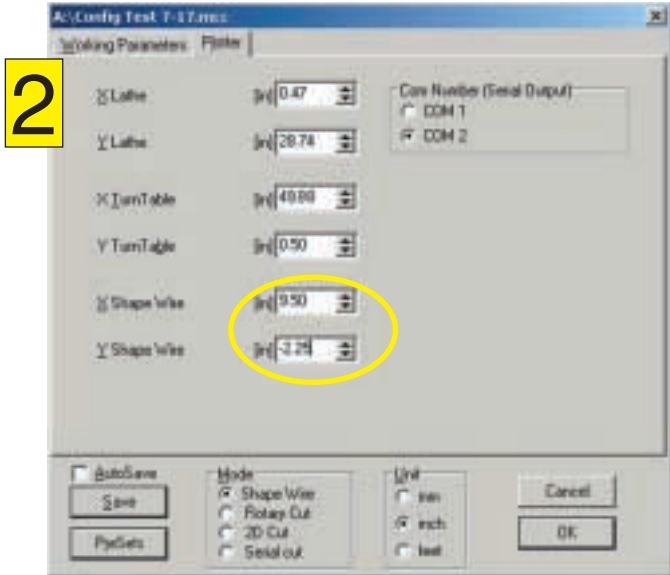
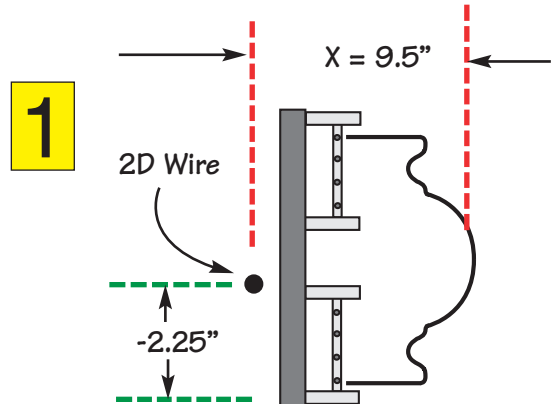
## Lathe Sample Cut

- A. Draw the Shape — Draw a horizontal line 32" long and two vertical "Cut Lines", with a small return at the right. (The return needs to be as short as possible.) The vertical "Cut Lines" tell the software where you want the center of the shape wire to cut. The distance from the return of the cut line to the axis line determines how deep the cut will be. It is helpful to set "Snap to Guidelines". Save as a HPGL file (.PLT).
- B. Open Configuration — Set the Working Parameters as shown in picture "B". You are setting the Diameter, Speed, Heat, Number of Revolutions, Number of Cuts, etc. Save this setting by a name you will recognize. Set Cutting Direction to Right.
- C. Open the Lathe Cut File — Under File (F3), open the "Lathe Cut" file you have created. Tell the program to "Cut". The shape will now start cutting.



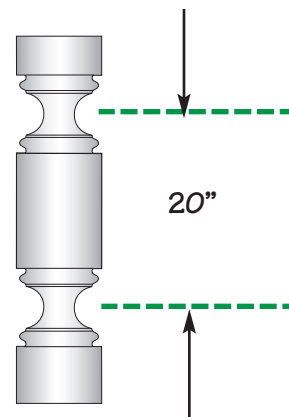
## TurnTable Shape Wire Calibration Settings

1. Determine the distance from the 2D wire to the deepest part of the shape wire. In our example it is 9.5 inches. Set the "X" Shape Wire to 9.5".
2. For the Shape Wire Tool to clear the Turntable, we must set the "Y" Shape Wire to -2.25".  
("-" because it is below the 2D wire.)
3. In the Working Parameters window, set the "Cutting Direction" to Right, and enter all the other information.



In our example cut we are showing two cuts on a 12" cylinder that is 48" high. The two cuts are to be 20" apart at their centers, and each cut will be 4" deep.

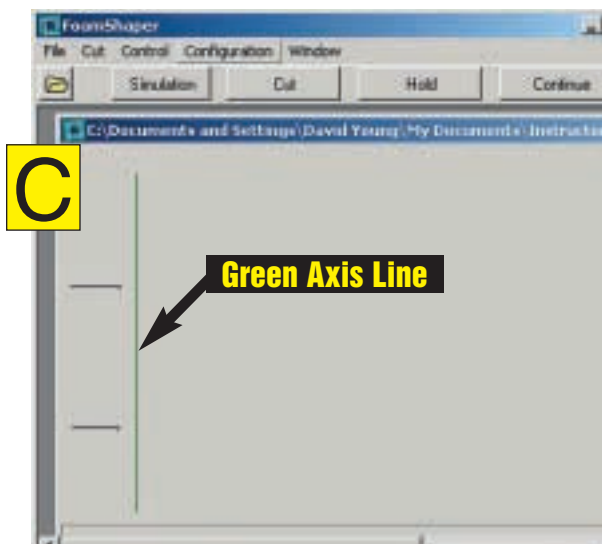
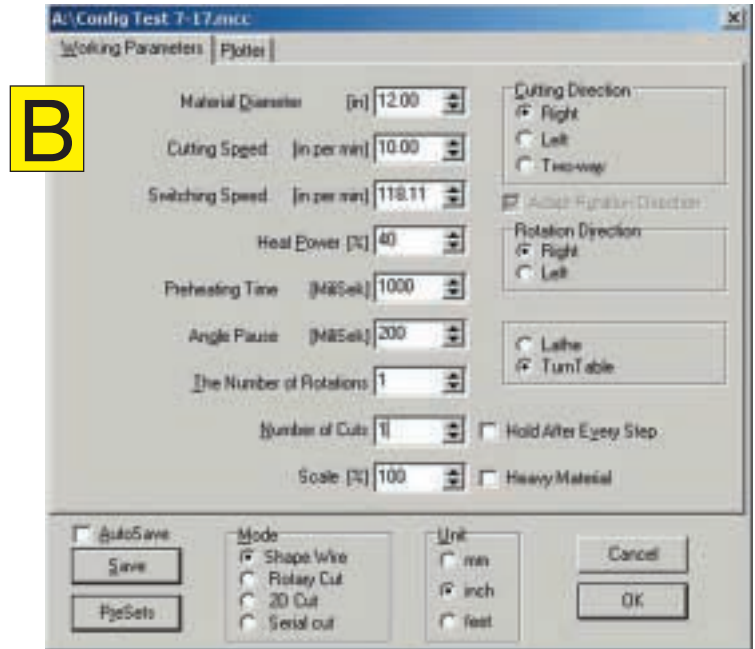
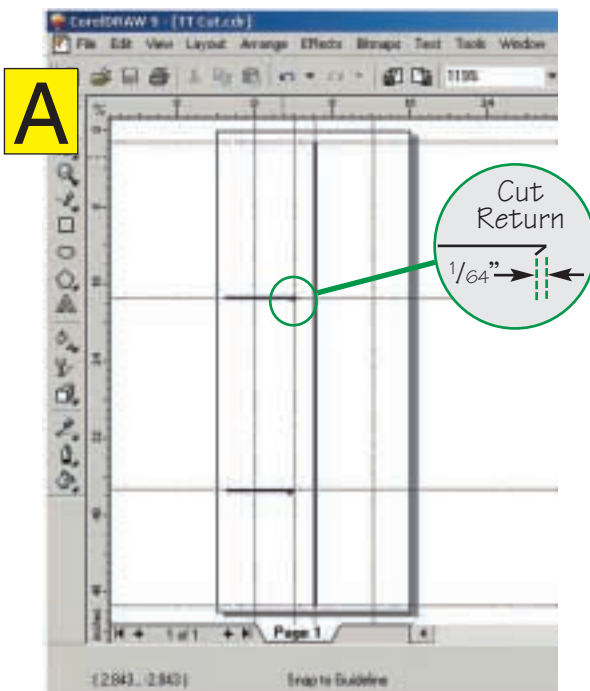
The software has a 5.5" default on the height of the first cut from the bottom i.e. If the art shows the first cut at 12", the actual cut will be at 12' + 5.5", or 17.5 inches. If the first cut needs to be lower, the artwork should be modified.



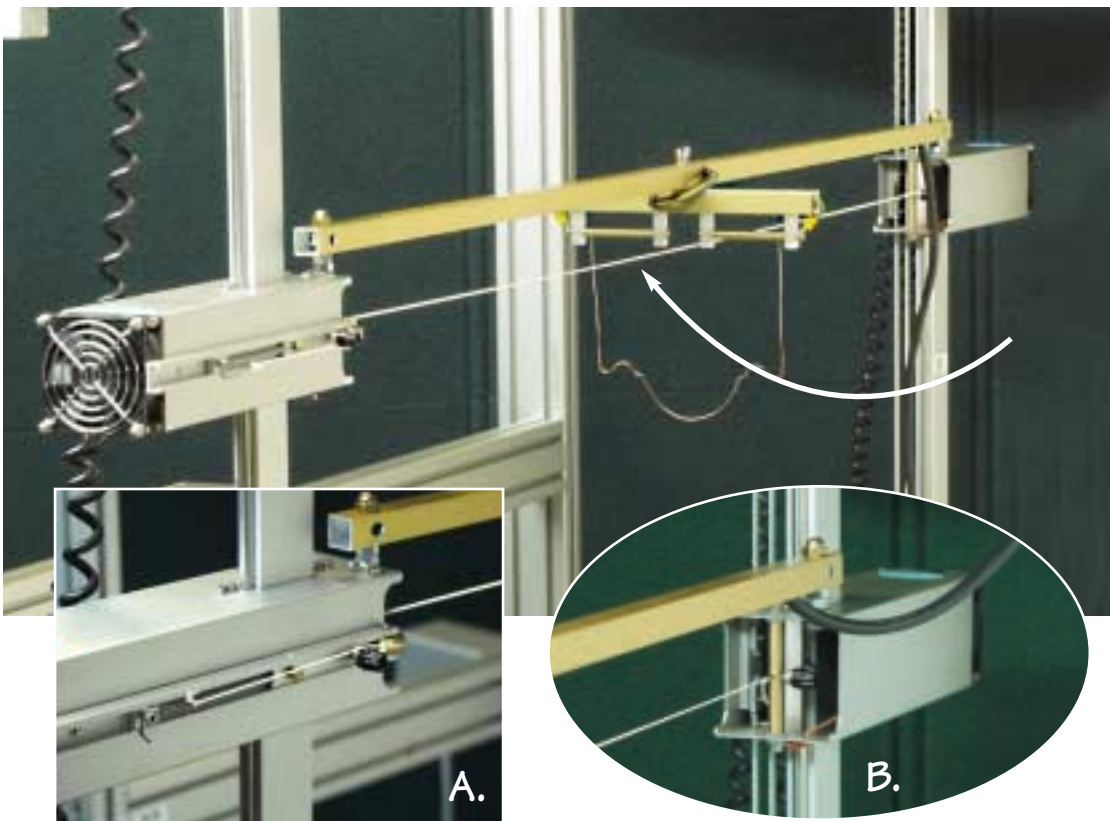


## TurnTable Sample Cut

- Draw the Shape — Draw a vertical line 48" high and two horizontal "Cut Lines" with a small return at the right. (The return needs to be as short as possible.) The distance from the return of the cut line to the axis line determines how deep the cut will be. It is helpful to set "Snap to Guidelines". Save as a HPGL file (.PLT).
- Open Configuration — Set the Working Parameters as shown in picture "B". You are setting the Diameter, Speed, Heat, Number of Revolutions, Number of Cuts. etc. Set "Cutting Direction" to "Right". Save this setting by a name you will recognize. We called ours "TT Cut".
- Open the TT Cut File — Under File (F3), open the "TT Cut" file you have created. Tell the program to "Cut". The column will now start cutting.

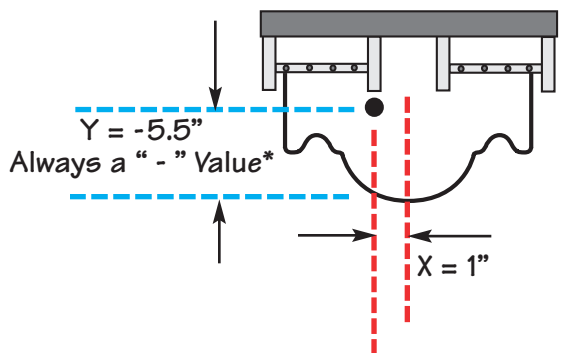


## Shape Wire Calibration

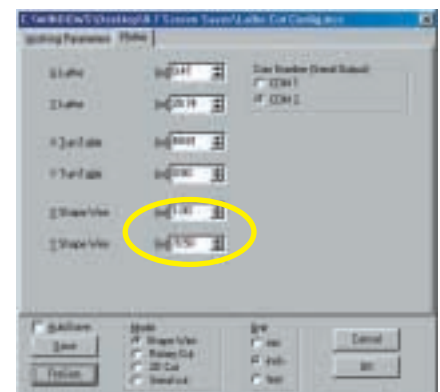
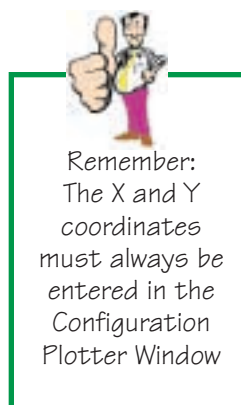


An easy visual aid for calibrating the Shape Wire Bar is the Elastic Guide String. Insert the pin end of the Guide String in the brass post just like the normal cutting wire (Inset B). Wrap the other end through the brass guides and hook the end on anything convenient (Inset A).

If you prefer, you may use the normal cutting wire instead of the Elastic String Guide. We find the string guide is easy to see for calibration and easy to attach and remove.

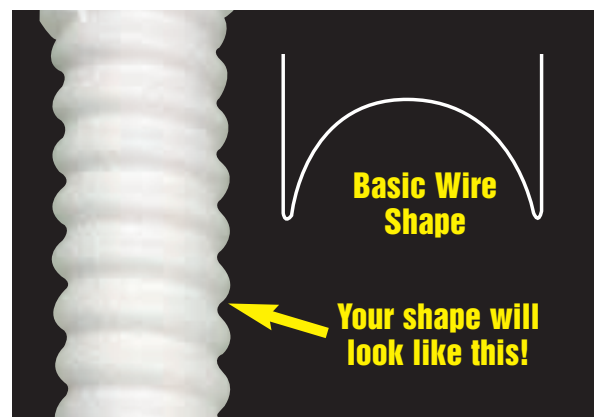
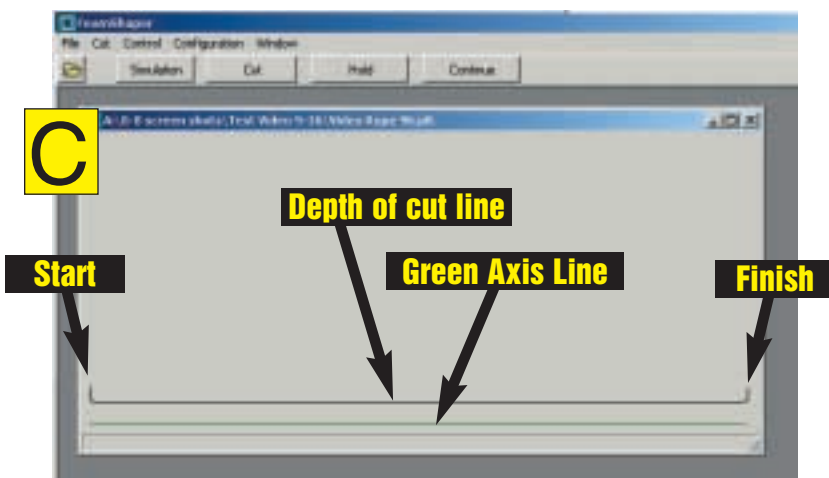
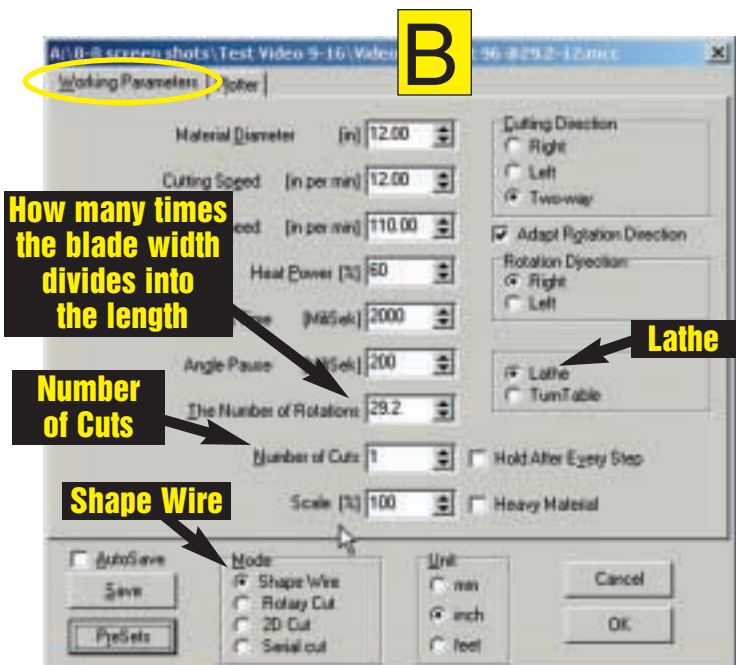
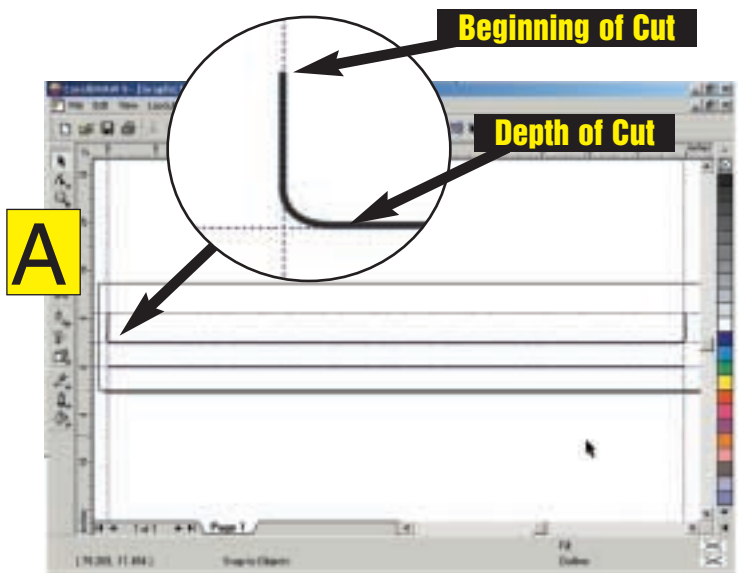


Lathe Cut Calibration Example

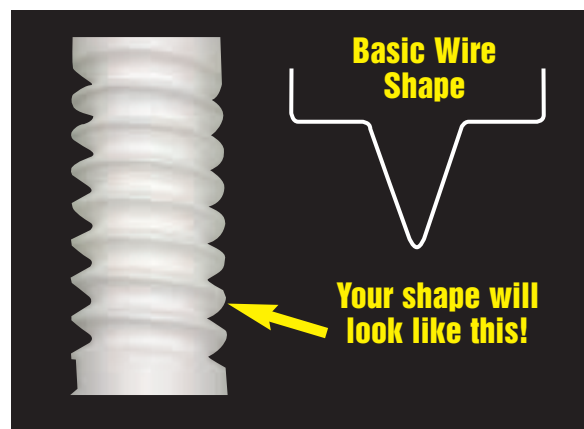
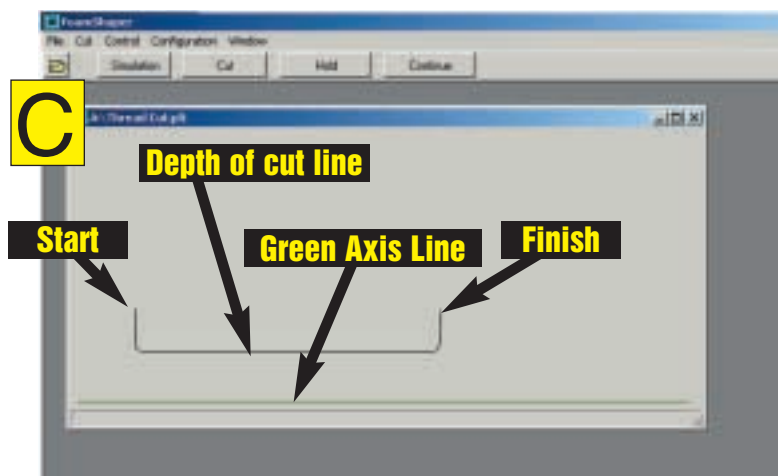
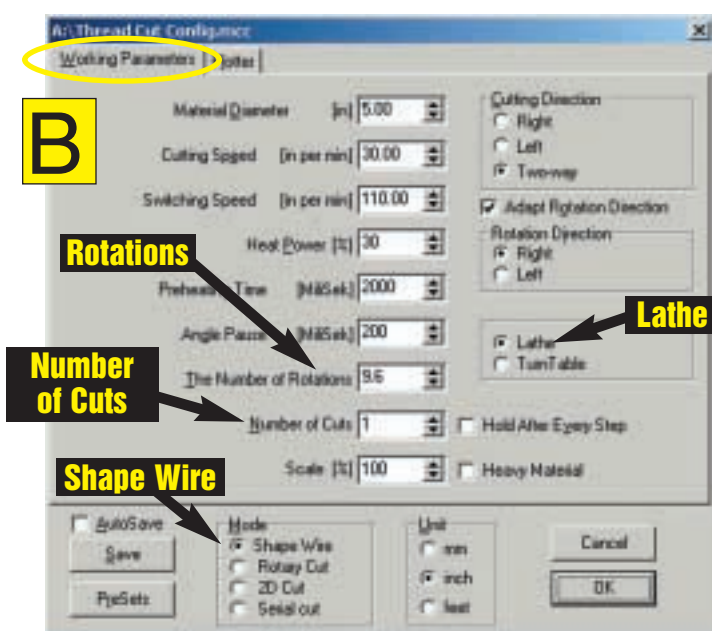
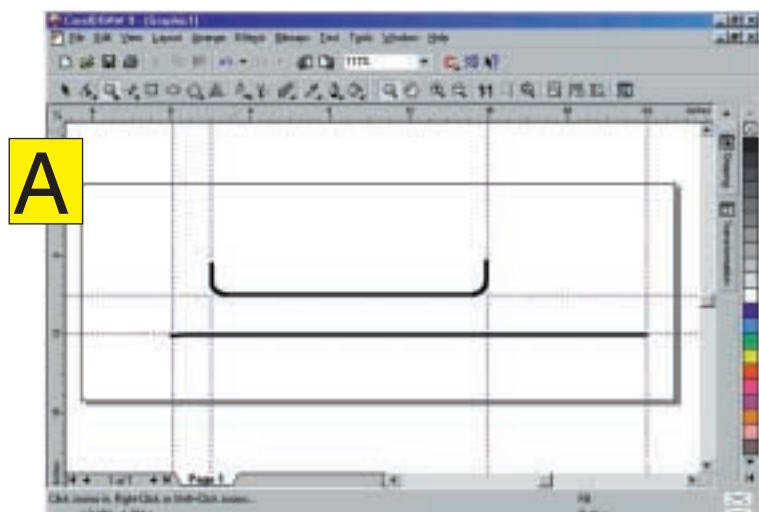




- A. Draw the Shape — Draw an axis line the length of the foam blank. In our example we are using a blank 96" long with a 12" diameter. Next draw a line and place it where you want the cut to start and finish (In and Out). The horizontal part of the line that is closest to the axis line will determine how deep the cut will be. Save as a HPGL file (.plt).
- B. Open Configuration — Set the Working Parameter as shown in picture "B". You are setting the type of cut (Shape Wire/Lathe), speed, heat power, etc. The actual blade width was 3.29". We divide this into 96". 29.2 is the setting we will use. Slight adjustments may be necessary. Test your cut on a small piece of scrap foam before doing your final cut. Save this file by a name you will recognize.
- C. Open the Rope File — Open, under File (F3), the "rope cut" you have created. Tell it to "Cut". The rope shape will now start cutting.

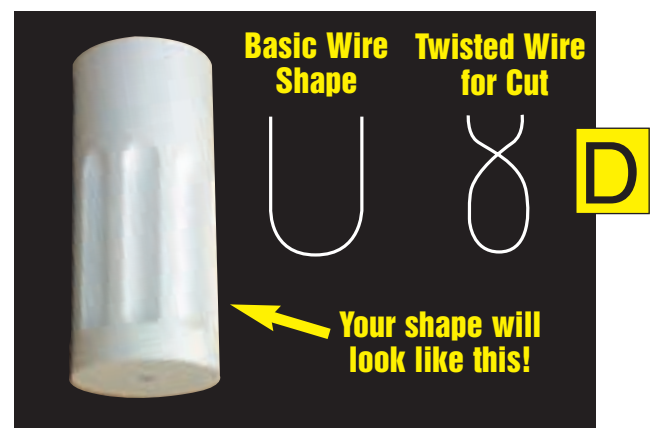
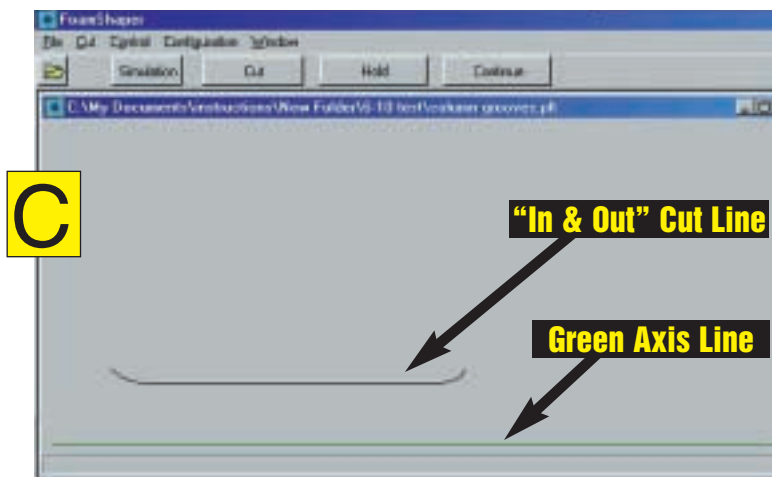
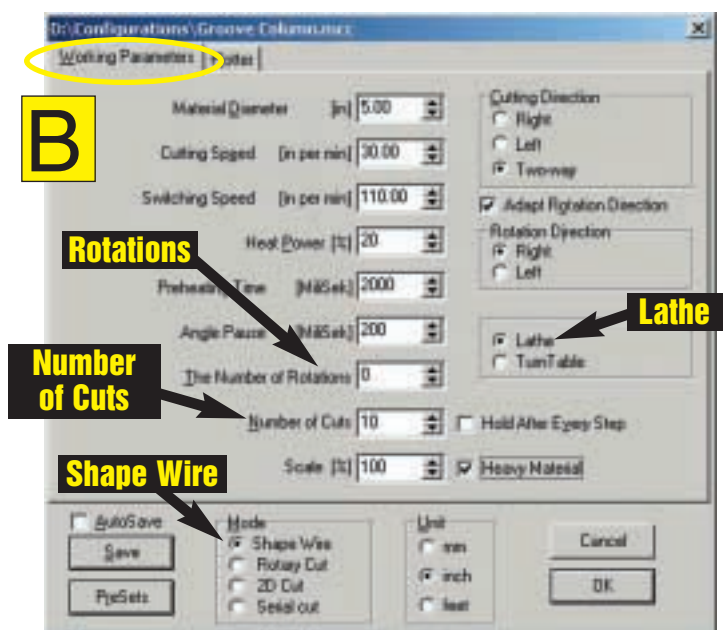
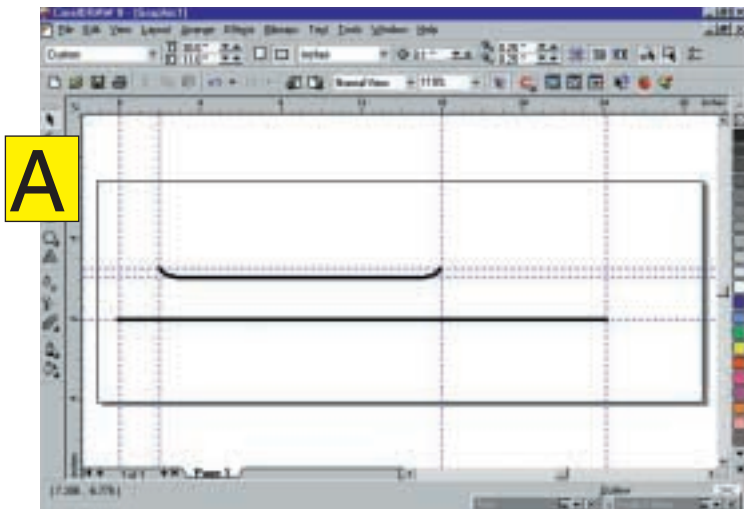


- A. Draw the Shape — Draw an axis line the length of the foam blank. In our example we are using a blank 24" long with a 5" diameter. Next draw a line and place it where you want the cut to start and finish (In and Out). The horizontal part of the line that is closest to the axis line will determine how deep the cut will be. Save as a HPGL file (.plt).
- B. Open Configuration — Set the Working Parameter as shown in picture "B". You are setting the type of cut (Shape Wire/Lathe), speed, heat power, etc. The actual blade width at the depth we wanted the thread cut was 1.25". We divide this into 12" (the length of the thread cut). 9.2 is the setting we will use. Slight adjustments may be necessary. Test your cut on a small piece of scrap foam before doing your final cut. Save this file by a name you will recognize.
- C. Open the Rope File — Open, under File (F3), the "rope cut" you have created. Tell it to "Cut". The rope shape will now start cutting.



## Cutting a Column Groove (Lathe Cut Shape) —

- Draw the Shape — In a graphics program draw an axis line the length of the foam blank. In our example we were using a blank 24" long with a 5" diameter. Draw a line and place it where you want the cut to start and finish (In and Out). Where you want the bottom of the cut to be, place the "In and Out" line. Save as a HPGL file (.plt).
- Open Configuration — Set the Working Parameter as shown in picture "B". You are setting the type of cut (Lathe), speed, heat power, angle pause. etc. Save this setting by a name you will recognize. What this means is: The blank will not rotate but it will make 10 cuts or steps on the X axis.
- Open the Column Groove File — Open, under File (F3), the "Column Grooves" you have created. Tell it to "Cut". The Column will now start cutting. The shape will rotate 10 times and it will make 10 cuts on the X axis. 5 in each direction.
- Bend the Wire 90° — When the wire is installed it is 90° to where it needs to be. Carefully hold each side of the wire and bend it 90° clockwise. Now when the wire moves along the foam it will remove a wide gap.

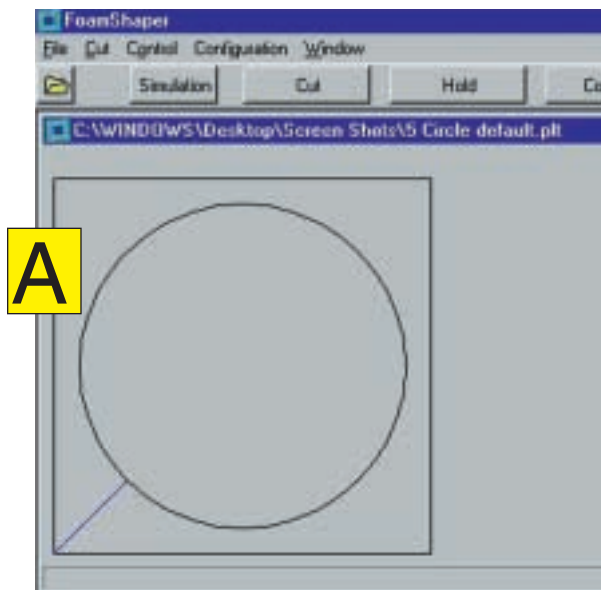


You can change the frame around an object —

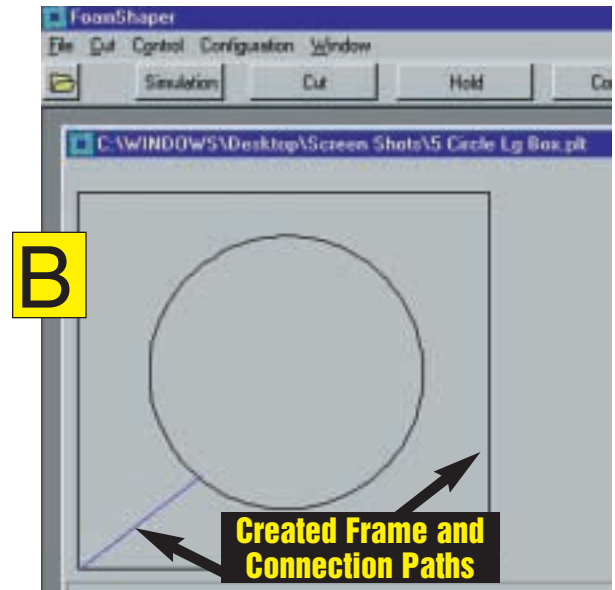
Normal Default — Items A & C are the default settings. This sets the frame size, entry point, connection points and exit point.

Option 1 — Item B. If you draw your own frame, a rectangle or any shape, around the object to be cut, the program will not add its own frame, but use your frame.

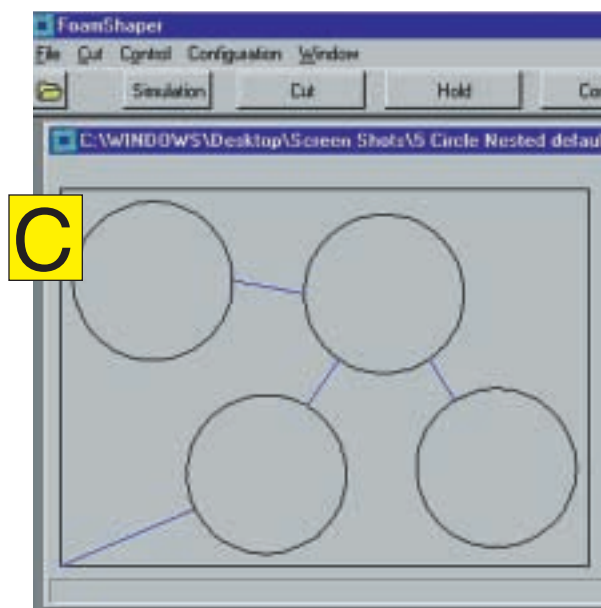
Option 2 — Item D. If you wish, you may draw your own frame as well as the lines joining the different elements.



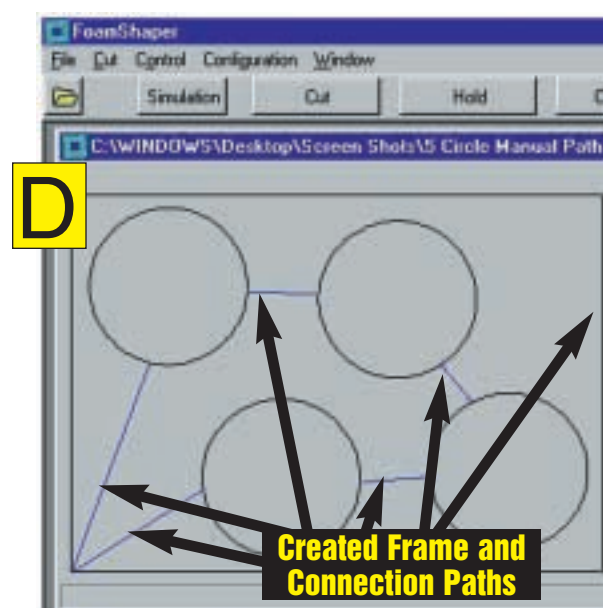
**Default Frame and Connection Paths**



**Created Frame and Connection Paths**



**Default Frame and Connection Paths**



**Created Frame and Connection Paths**



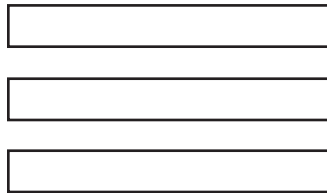
When grouping objects for multiple cuts, and you are deciding where the cut should start, several guidelines should be followed:

1. When opening a new graphic in Corel Draw, activate “Snap to Objects”
2. If you are using a shape tool (box, circle, star, etc.) always “Convert to Curves” before Exporting as an HPLG (.plt) file.

The following illustrations should give you a general guideline for modifying the way FoamShaper starts and cuts between objects.

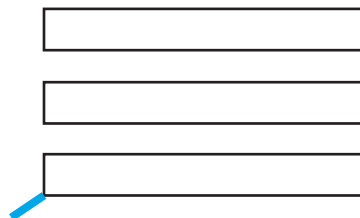
## Original Corel Drawing

1. If you draw only the objects to be cut, FoamShaper will automatically add a box around the objects.

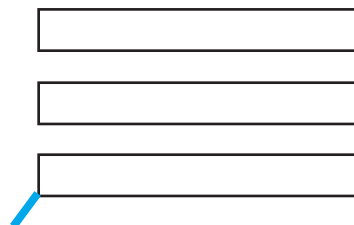


2. If you draw the objects to be cut and draw your own starting line, FoamShaper will not add a box around the objects.

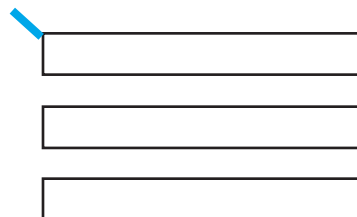
**Remember: Set “Snap to Objects” and “Convert to Curves”.**



3. In Corel, you may draw the lines joining the objects as well as the starting point. FoamShaper will now accept your lines and will not draw any of its own.



4. You may also establish a starting point in any one of the four “file” corners. Foamshaper will accept your starting point and not draw any of its own.



## The Way FoamShaper Interprets the Drawing

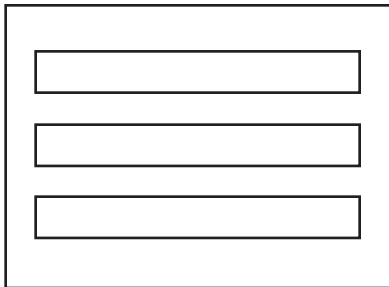




*(Grouping Objects, Continued)*

**5.** You may also draw your own box around the objects. FoamShaper will not draw its own box.

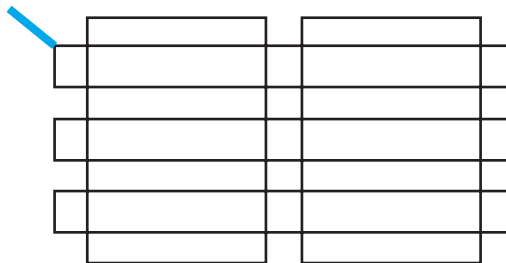
## Original Corel Drawing



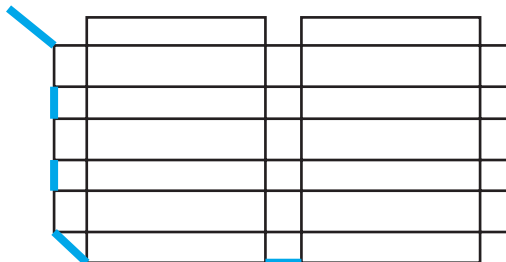
## The Way FoamShaper Interprets the Drawing



**6.** If you draw the objects and starting line only, FoamShaper will establish its own sequence of cutting.



7. If you draw objects, starting line and the lines joining the objects, FoamShaper will cut cut in the order and sequence you decided.



## Rule of Thumb —

Your line of Exit is always the same as your line of Entry.

*Just a Note:*

Even though these illustrations are of rectangles for cutting slabs of foam, they could just as easily have been of profiles as in the illustration on the right.

