

Fusion Rotary Attachment

The optional Rotary Attachment allows you to mark and engrave on cylindrical objects.

Firmware Preparation

Make sure your Fusion firmware is version 1.0.0.7 or higher to operate the rotary attachment. The firmware version is one of the menu items under the Config menu items on the Fusion keypad. To upgrade your firmware go to the Epilog web site at www.epiloglaser.com/downloads under the Tech Support tab. Instructions on how to download and then upgrade the firmware can be found on the download page as well as in your owner's manual.

Rotary Attachment Installation

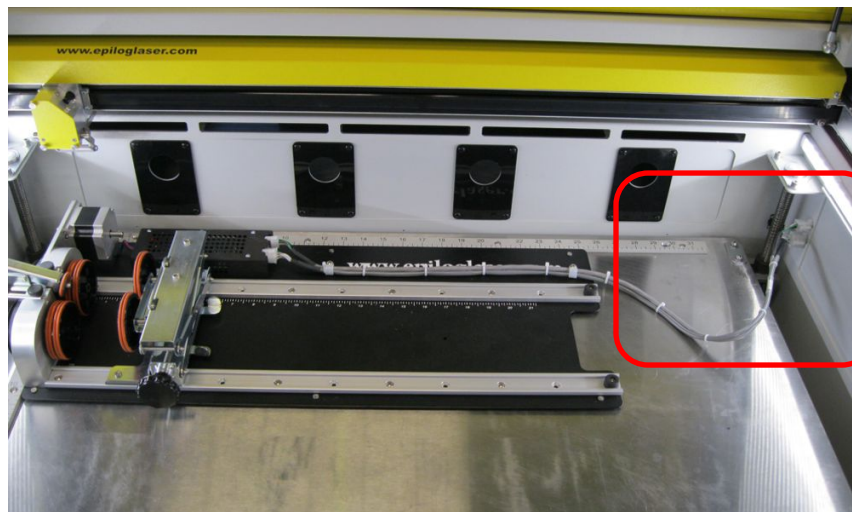
Lower the engraving table far enough so the rotary attachment will not interfere with the lens carriage.



Turn off the power to the engraver. It's important that the laser system is turned off before installing (or removing) the rotary attachment.

Place the rotary attachment in the upper left corner of the table so that the baseplate is positioned against the sides of the left and top rulers. The rotary rests on the table against the rulers and does not need to be locked in place.

With the Fusion powered off, mate both cable connectors to the connectors located at the right side of the cabinet as shown below.



Once the rotary attachment cables are connected you can power-up the laser system. The Fusion senses that the Rotary has been installed. During machine initialization the lens carriage will find its new Home position over the center of the rotary attachment as shown below.

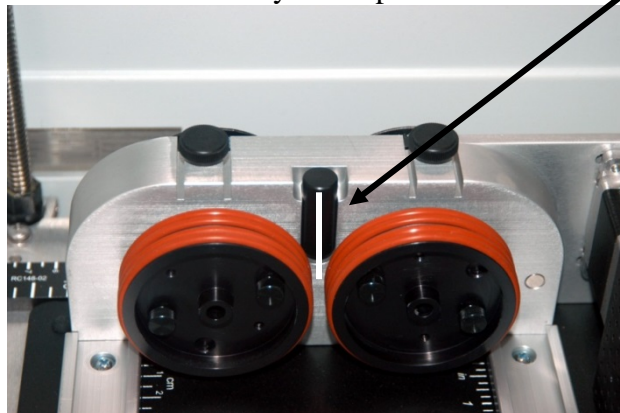


Setting Home (First time use only).

New installations may need to establish the Rotary Home Position.

Install the rotary and power up the system. The X-beam will go through its standard power up sequence and will come to rest over the rotary.

Turn on the red dot pointer (you may need to raise the table to focus the red dot pointer). The red dot will show you the location of your Home position. For proper operation, the Home position should be at the front edge of the black bumper as shown below. If your red dot is not at this location, you will need to adjust the X and Y axis settings to establish the correct rotary home position.

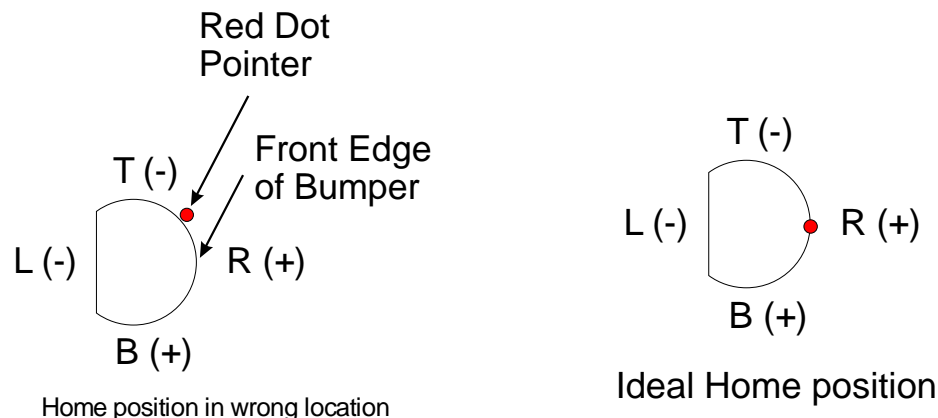


To establish the Rotary Home setting at the front of the black bumper we will use the red dot pointer to show us where our Home position is and then how far we need to adjust our settings.

- 1) Turn on the red dot pointer from the Fusion keypad.
- 2) Go to Jog on the Fusion keyboard.
- 3) Use the Joystick to move the carriage so that the red dot pointer is at the front edge of the black bumper.
- 4) The LCD on the keypad shows a digital readout of the location of the red dot pointer. The number displayed on the left is the X-Axis, the number on the right is the Y-axis. Write down these two numbers including the plus or minus sign associated with each.
- 5) Go to Config on the Fusion keypad.
- 6) Tilt the Joystick down to scroll to the X Rotary Home menu. New installations will show a value of 0.000.
- 7) Center-Click the Joystick. A flashing cursor will appear below the number displayed. Tilt the Joystick up or down to increment or decrement the number so that it matches the number you recorded above for the red dot pointer X-axis value.
- 8) Press the Go button.
- 9) Use the Joystick to scroll down to the Y Rotary Home menu. New installations will show a value of 0.000.
- 10) Center-Click the Joystick. A flashing cursor will appear below the number displayed. Tilt the Joystick to increment or decrement the number so that it matches the number you recorded above for the red dot pointer Y-axis value.
- 11) Press the Go button.
- 12) Use the Joystick to scroll back up to the Restore XY Home menu item.
- 13) Center-Click to save the new X and Y values. The carriage will now move back and to the left to establish a new Home position. Your red dot pointer should now be located at the front center of the black bumper.

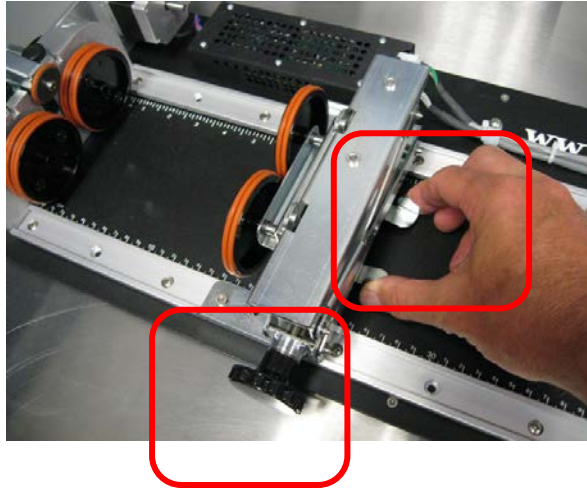
Once you have set and saved the X and Y rotary Home position you should not have to set it again.

The procedure above walks you through the steps required to permanently adjust your initial Home position (left image below) to its ideal location (right image below).



Rotary Setup

The wheels on the left are the drive wheels which spin the cylinder. The wheels on the right are for support. The right side wheels are mounted on a scissor jack so they can be raised or lowered to level the top surface of your cylinder with the X-beam. The scissor jack can be moved left and right to accommodate cylinders of different lengths.



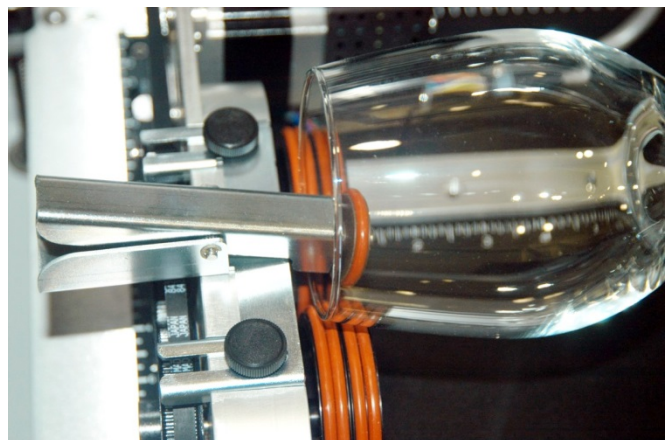
Squeeze the tabs to move the scissor jack left and right.

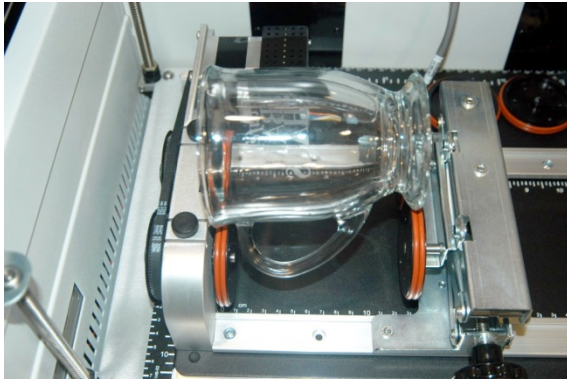
Rotate the knob to lift or lower the scissor jack.

In most cases you will want to load your cylinder with the larger diameter on the left (drive wheel side). The scissor jack is used to elevate the right side of your cylinder so that the top surface is horizontal (see the flashlight on following pages). Load your cylinder onto the rotary attachment so that it is just touching the black bumper. Using the clamp to hold the glass in place is optional. Some odd shaped glasses rotate better if they are clamped to the drive wheels, but most glasses and other cylindrical objects do not require clamping.

This photo shows the clamp holding a glass against the drive wheels. Use the thumbscrews to adjust the clamp in and out.

Many glass types do not need the clamp and removing it makes loading/unloading very easy.

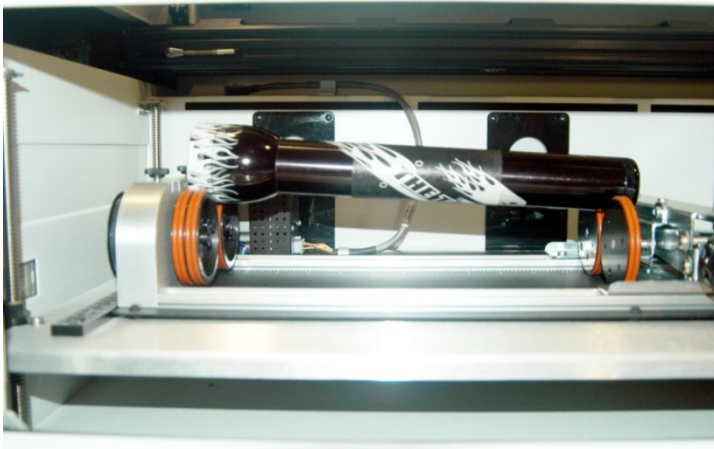
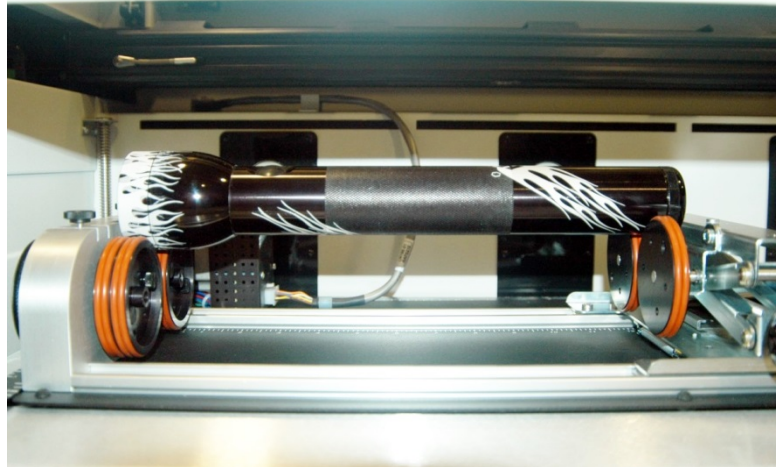




The glass in this photo does not require the use of the clamp. In fact, most standard cylindrical shapes do not need the clamp. The clamp is used mostly for hard to rotate cylinders or very lightweight objects that need more than just gravity to hold them in place.

Use the scissor jack to raise the right side of the cylinder so that the engraving/cutting surface is horizontal. The instructions on the next page show how to use the jack in conjunction with the focus tool.

Correct Setup – The flashlight is horizontal to the X-Beam.



This photo shows the same flashlight at a severe angle to horizontal. If your cylinder is not horizontal to the X-beam the laser will lose focus as the carriage head moves across the flashlight. This causes the engraving quality on the right hand side to suffer dramatically.

Incorrect Setup – The flashlight is not horizontal. Raise the right side of the flashlight by turning the jack screw.

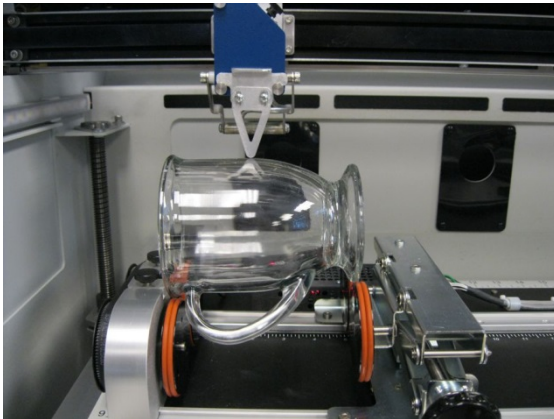
Setting Focus with the Rotary Attachment

Focus – With your cylinder in place on the rotary attachment, place the focus gage on the lens carriage and then scroll to Focus mode on the Fusion keyboard. Double-center-click the Joystick to bring up the Focus submenu:



The submenu shows that a down tilt of the Joystick will “Moveout” the X-beam. The Moveout command will move the lens carriage back from Home so that the focus gauge is centered over the cylinder.

In addition to moving the lens carriage back the Moveout command also disables the X-motor. This allows you to move the carriage by hand in the X-axis (left to right). The Moveout function allows you to easily focus along the entire length of your cylinder. By moving the lens carriage back and forth and adjusting the scissor jack you are able to focus along the entire length of your cylinder. The following photo shows a typical setup for focusing on a mug with a handle. Notice that we used the scissor jack to raise the right end of the glass.

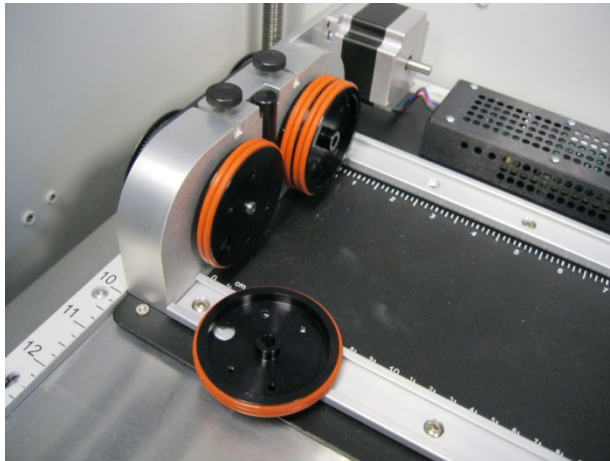


When you are finished focusing press the Reset button on the Keypad.

Pressing Reset will send the lens carriage back to its standard Home position at the front of the black bumper. You are now ready to start the job.

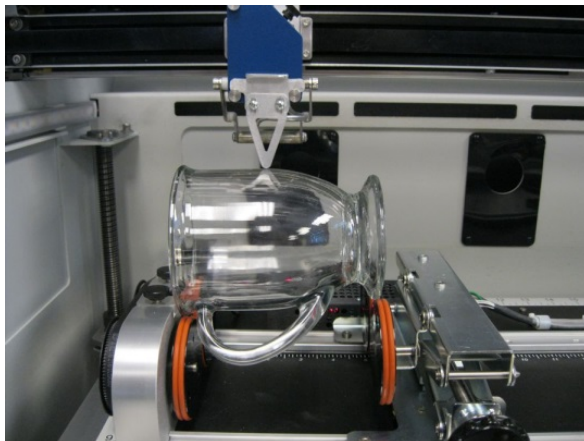
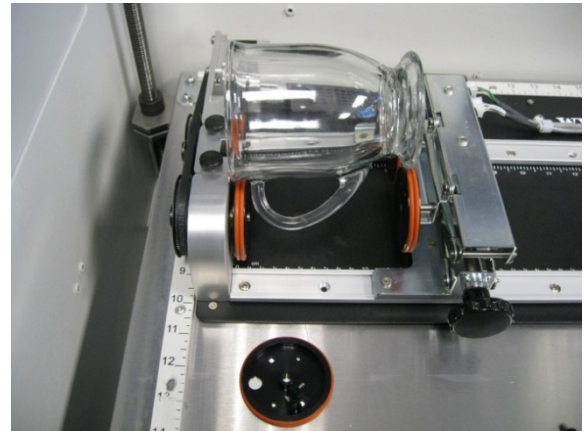
Miscellaneous

The drive wheels are each two-piece assemblies when fully assembled. Removing the front part of the drive wheel enables the user to accommodate a wide variety of mugs with handles. Not all mugs with handles require the front drive wheels to be removed, but for certain types of mugs removing the front wheels adds flexibility to the rotary attachment.



There are two small thumbscrews that attach each front drive wheel to the back driver wheel. Loosen the two small thumbscrews on each wheel to remove the front wheel.

This photo below shows a mug with a handle positioned on the rotary attachment with the removable portion of the drive wheel shown in the foreground.



This photo shows the mug with handle. You can see that the screw-jack was used to raise the right side of the mug so the top surface is parallel to the X-beam. Proper focus can now be achieved along the entire length of the cylinder.

Artwork Layout

Because the Rotary Attachment automatically compensates for the diameter of the glass, artwork setup is relatively easy. The most important thing to remember when working with the rotary is that your artwork needs to be rotated 90 degrees to the way it would normally be setup for flat work. There are several visual tools later in this procedure that will help make artwork setup easy.

Page size is not overly important, but the following descriptions will give you a good starting point. Many people set the page to roughly match the size of the piece to be engraved because this helps to visualize artwork placement.



Note: The artwork in the following examples does not fill up much of the Corel page. You can normally get by with using small pages for most artwork because the entire page is only necessary when you are lasering all the way around the cylinder (360 degrees) and/or if you are lasering from the top to the bottom of the cylinder.

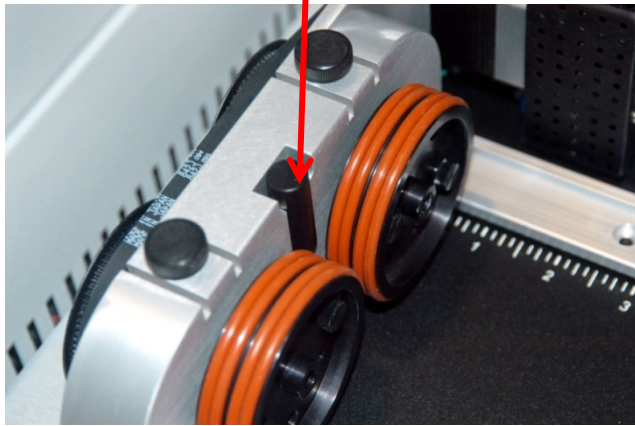
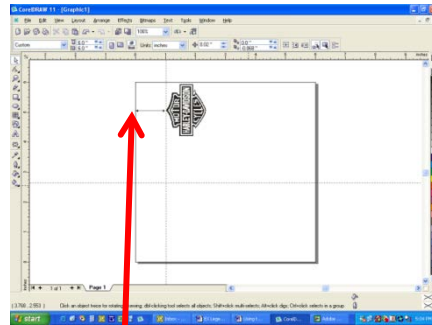


For the width (x-direction) of your page, lay the glass flat and orient it as it will be oriented on the rotary attachment. For this glass, the width of the page will be six inches (152 mm).

For the height (y-direction) of your page, use a flexible tape and measure the circumference of the glass at its largest diameter. For this glass, the height of your page will be 11 inches (279 mm).

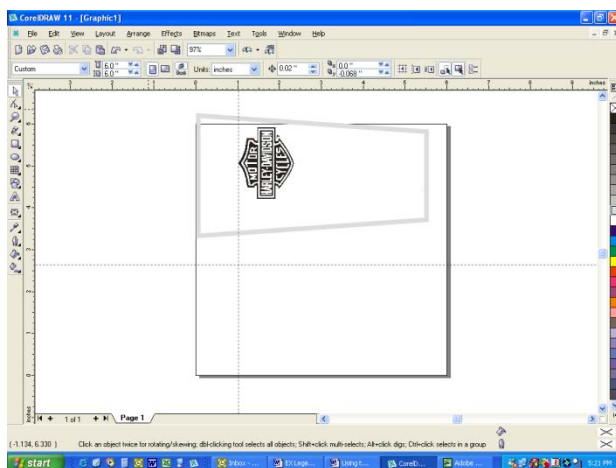


Place your artwork close to the top edge of the page. When the job starts, the first part of the process is for the cylinder to rotate through any white space that is between the top of your page and the top of your artwork. Once it has rotated through the white space it will begin to laser your artwork.



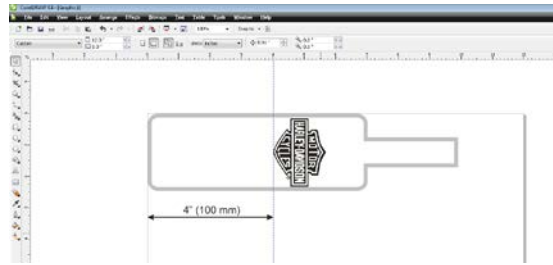
The edge of the black bumper on your rotary attachment corresponds to the left edge of your page in CorelDraw.

Set your cylinder on the rotary attachment so that it just touches the black bumper.



The “top” of a cylinder can be at either end of the rotary attachment. It is useful to visualize the orientation of the cylinder when it is being engraved.

In the example below, the bottom of the logo will engrave 4” (100 mm) up from the bottom of the bottle.



Stretching or shrinking your artwork for objects with multiple circumferences.

The instructions below show you how to shrink or expand your artwork to accommodate a cylinder where the area being engraved is a different circumference than the circumference at the drive wheels. The rotary attachment works with the assumption that the cylinder is the same circumference from end to end and that your artwork doesn't need to be stretched. But some cylinders have a big difference in circumference from the middle to the end that affects how the engraved image looks. It is sometimes necessary to stretch or shrink your artwork so it looks proportional on odd shaped items. The photo below shows a glass that fits this category.



This glass has a circumference of 4 inches (100 mm) at the ends and a circumference of 3.2 inches (81 mm) in the middle where we want to engrave.

Most artwork will look acceptable on this glass without stretching or shrinking, but because the middle of the glass is a smaller diameter than the ends, some artwork will look compressed (more as an oval than a circle), so we'll want to adjust the artwork before engraving.

To determine how much to adjust your artwork, we'll need to do a simple calculation that tells us the percentage of stretch or shrinkage we need to perform. You can use either the diameter or the circumference to make the calculation; just don't mix the two.

Determining whether you use diameter or circumference is a matter of which one is easier to measure. If you want to measure circumference, use a flexible ruler and wrap it around the glass. To calculate circumference, measure the diameter and multiply by Pi (3.1416):

$$\text{Circumference} = \text{Diameter} \times 3.1416.$$

For objects with a larger middle section – shrink artwork:

Divide the drive wheel side by the middle diameter and multiply by 100 to calculate the percentage of adjustment. For our example the calculation is:

$$\frac{3''}{4.2''} = .715 \times 100 = 71.5\%$$

Because our calculation percentage is less than 100, we need to shrink the artwork to 71.5% of its original size.

Adjust the size of your artwork in one axis only.

For objects with a smaller middle section – expand artwork:

Divide the drive wheel side by the middle diameter and multiply by 100 to calculate the percentage of adjustment. For our example the calculation is:

$$\frac{3.5''}{2.7''} = 1.296 \times 100 = 129.6\%$$

Because our calculation percentage is greater than 100, we need to expand the artwork to 129.6% of its original size.

Adjust the size of your artwork in one axis only.

Other considerations:

In these two examples you'll notice that the "middle" varies depending on where you measure. Because of this, you'll never be able to get every piece of artwork perfectly sized. Depending on how much room the artwork takes up, you may want to experiment with the expansion or shrinkage of your artwork to fit your particular glass shape.

Rotary Removal



- 1) *Turn off the power before removing the rotary attachment*
- 2) Unplug and remove the rotary attachment