

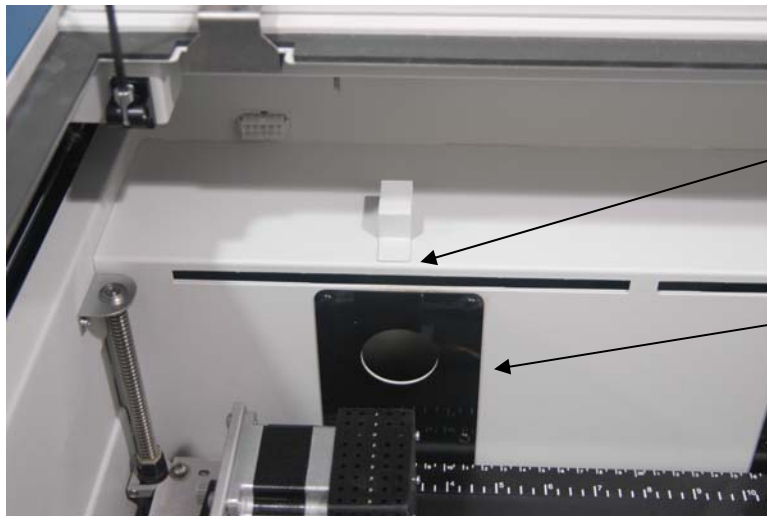
# Zing 24 Rotary Attachment

The optional Rotary Attachment allows you to mark, engrave or cut cylindrical objects. The Rotary Attachment works in both raster and vector modes.

## Machine Preparation

If you already have a Zing laser system and have just received your rotary attachment, there is a bracket that needs to be installed before using the attachment. This bracket is supplied with the rotary attachment and is used to route the connector cable that leads from the rotary attachment to be connected at the machine.

The bracket does not need tools to install. Adhesive is used to bind it to the chassis. To install the bracket, remove the protective plastic from the adhesive and press the bracket into place at the location shown in the photo below.



Attach the bracket so the front edge is almost to the bend in the plenum. The bracket should be centered above the black exhaust port.

## Firmware Preparation

Your Zing 24 laser system needs firmware version 1.0.0.6 or higher to operate the rotary attachment. To determine what version of firmware is installed into your machine, turn on your machine and watch the display as the machine goes through its initialization sequence. At the end of the sequence the display will show you the firmware version. If your machine has a lower version number of firmware you will need to upgrade your firmware by accessing the Epilog web site at [www.epiloglaser.com/downloads](http://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

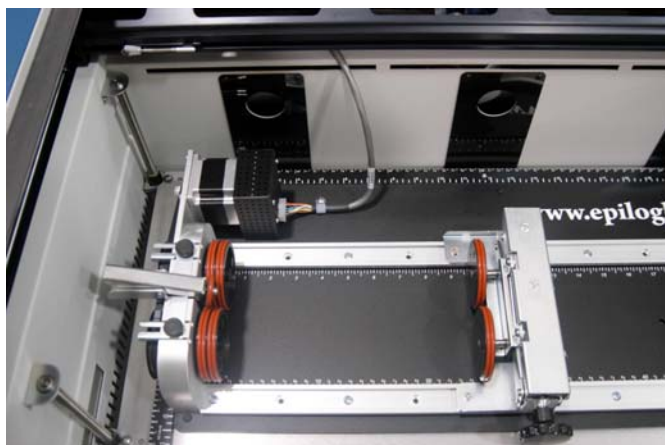
Lower the engraving table to its lowest point.

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

Manually move the X-beam towards the front of the machine. This provides better access for plugging in the rotary attachment.

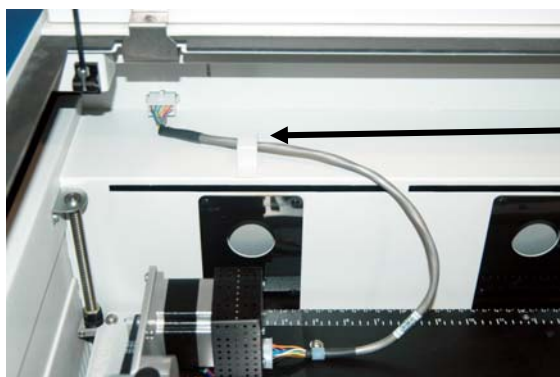
Place the rotary attachment with the motor end of the attachment in the upper left corner of the table. The rotary base plate should be positioned against the left side ruler and the top side ruler. The rotary rests on the table against the rulers and does not need to be locked in place.

Insure the rotary base plate is not resting on top of the rulers.



This photo shows the rotary in place.

Route the connector cable as shown below. This routing prevents the cable from being pinched by the X-Beam when it travels to the back of the machine during the initialization sequence at power-up.



Route the cable through the bracket.

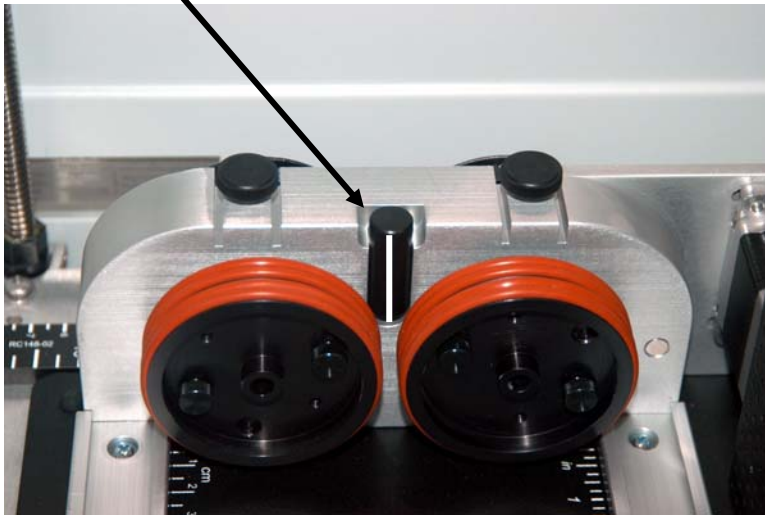
Once your rotary is connected you can power-up the laser system.

## Setting Home (First time use only).

New installations will need to set 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 middle 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.

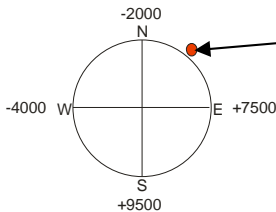


There is an adjustable numerical setting for both the X and Y axes that allow you to adjust your red dot pointer so it is calibrated to the edge of the bumper. To change the Rotary Home settings follow the instructions below:

- Press the Config button on your Zing keyboard.
- Use the left or right cursor arrows to scroll to X R Home to change the x-axis (Y R Home for the Y-axis)
- Use the Up or Down cursor buttons to adjust the numerical setting.
- After adjusting the setting, press the Go button to save the new setting.
- Press the Reset button to move the carriage to its new position.
- Repeat these steps to fine tune your position.

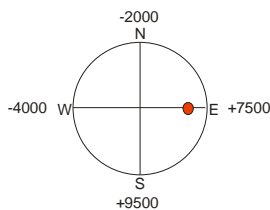
Once you have set and saved the X and Y rotary Home position you will not have to set it again.

We have found the following diagram along with the red dot pointer is helpful in visualizing how to set the Home position. The drawing represents the black bumper. The standard rotary Home position is at the East (E) edge of the bumper. The numbers represent the total range available for adjustment, although the available adjustment is far greater than what is necessary to set the red dot at the East edge of the bumper. The larger numbers are used for very specialized applications where an entirely different Home setting is desirable.



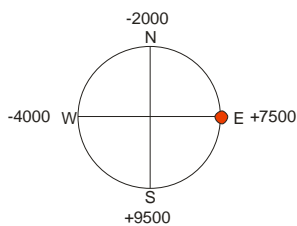
For the following example, we're going to assume that when we first install the rotary and turn on our red dot pointer, it's located at in the following position on the black bumper:

We need to move the red dot a little South (S) and a little East (E). We'll adjust the Y-axis first. We need to move the red dot to the South (towards +9500). Press the Config button, and then the left or right cursor buttons until you get to the Y R Home: menu item. We need to increase this number, but not by much, so we'll press the Up cursor button to increase the number to +0150. Next press Go, and then Reset. The red dot will move to its new Y Home position:



We've now moved the red dot in the South direction. Next, we want to move it east.

Set the X-axis by moving the red dot to the East (towards +7500), Press the Config button, and then the left or right cursor buttons until you get to the X R Home: menu item. Press the UP cursor button to increase the number to +0270. Press Go, and then Reset. The red dot will move to its new X Home position:



On new installation we have found that the following settings are a good place to start for getting the red dot close to the East edge:

X R Home: +0150

Y R Home: +0270

Each numerical increment is a 1/2 step, so a full step is an increment of 2. Each full step is 0.001inch (0.025 mm).

## Rotary Setup

The rotary attachment works in either raster or vector mode, and the setup is the same for both modes. Set your cylinder on the wheels as shown in the photo below.

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 also be moved left and right to accommodate cylinders of different lengths up to 22 inches (559 mm).

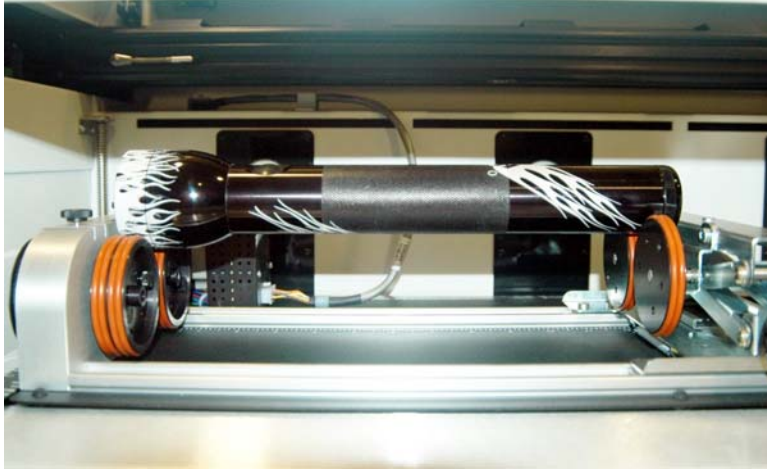
In most cases you will want to load your cylinder with the larger diameter on the left (drive wheel side). The scissor jack is used to elevate the right side of your cylinder so that the top surface is horizontal (see the flashlight on following pages). Insure your cylinder is positioned so that the left end is close to, but not 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.

The clamp is holding a glass against the drive wheels.



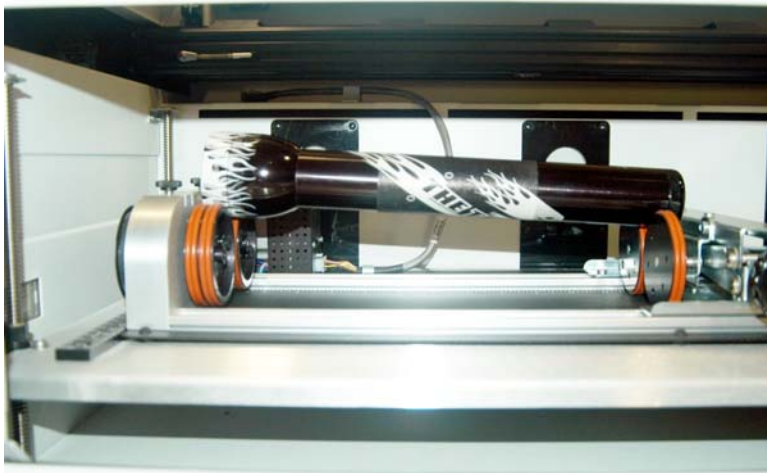
The glass in the photo does not require the use of the clamp. In fact, most standard cylindrical shapes do not need the clamp. The clamp is used mostly for hard to rotate cylinders or very light weight objects that need more than just gravity to hold in place.





Use the scissor jack to raise the right side of the cylinder so that the engraving/cutting surface is horizontal.

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



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

The photo above 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.

## 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.

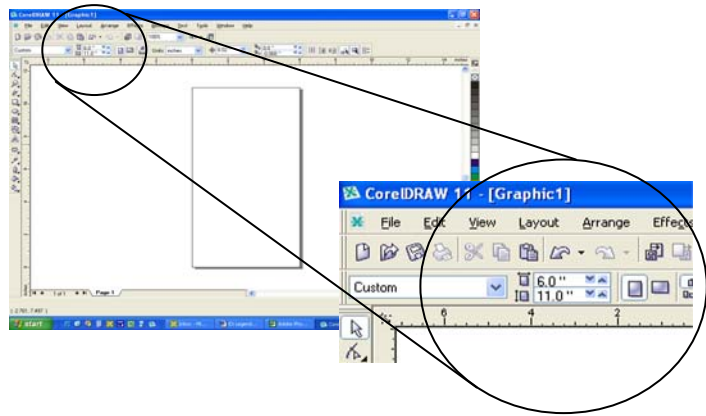


For the width (x-direction) of your page, lay the glass flat and orient it as it will be oriented on the rotary attachment. For this glass, the width of the page will be six inches (152 mm).

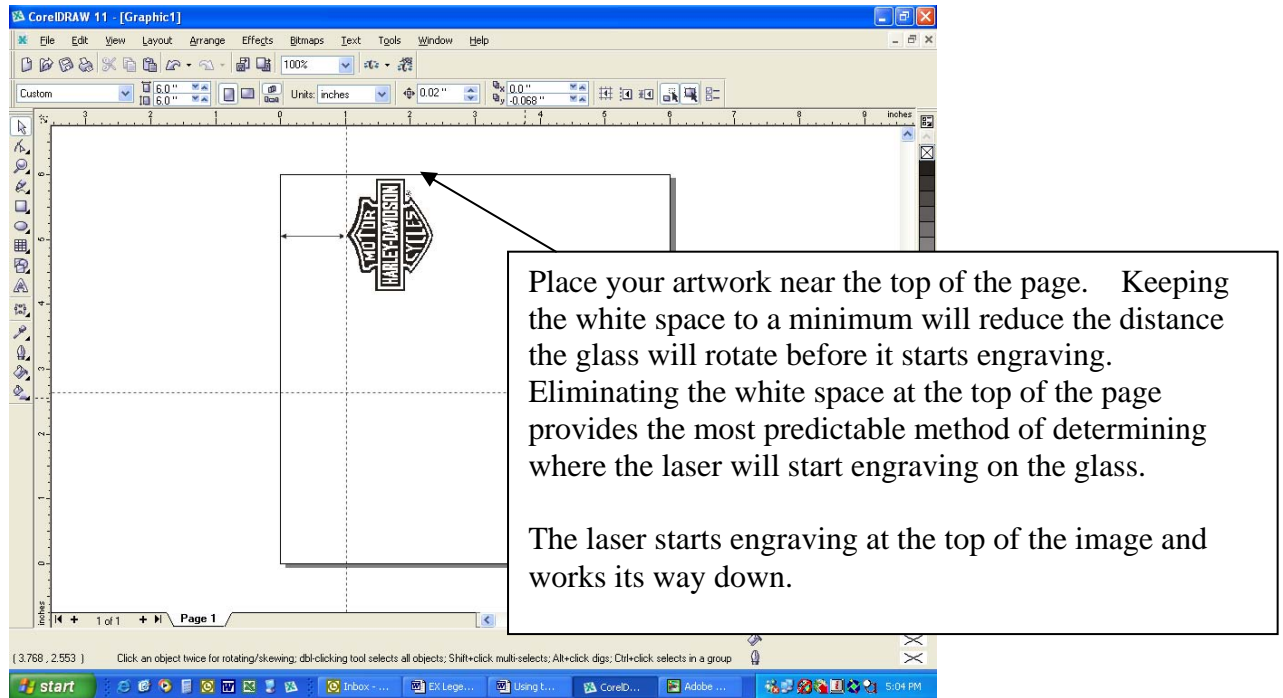


For the height (y-direction) of your page, use a flexible tape and measure the circumference of the glass at its largest diameter. For this glass, the height of your page will be 11 inches (279 mm).

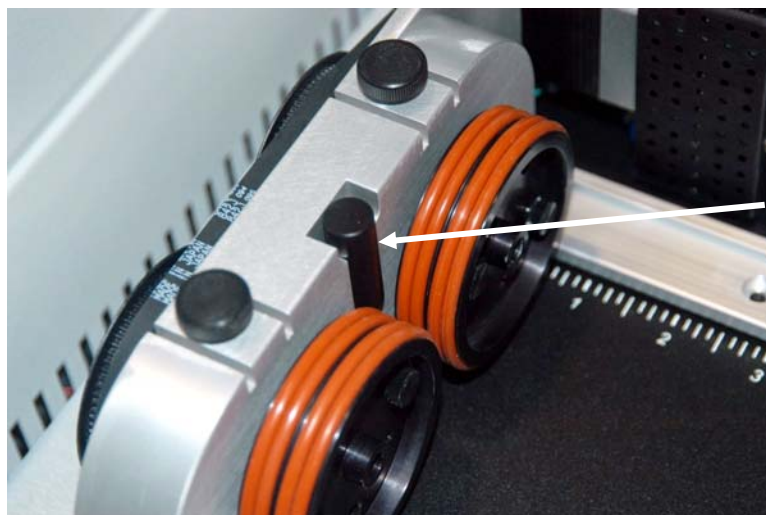
For the glass used in the prior picture, set up your page size to 6 x 11 inches (152 x 279 mm).



Place your artwork close to the top edge of the page layout. 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.



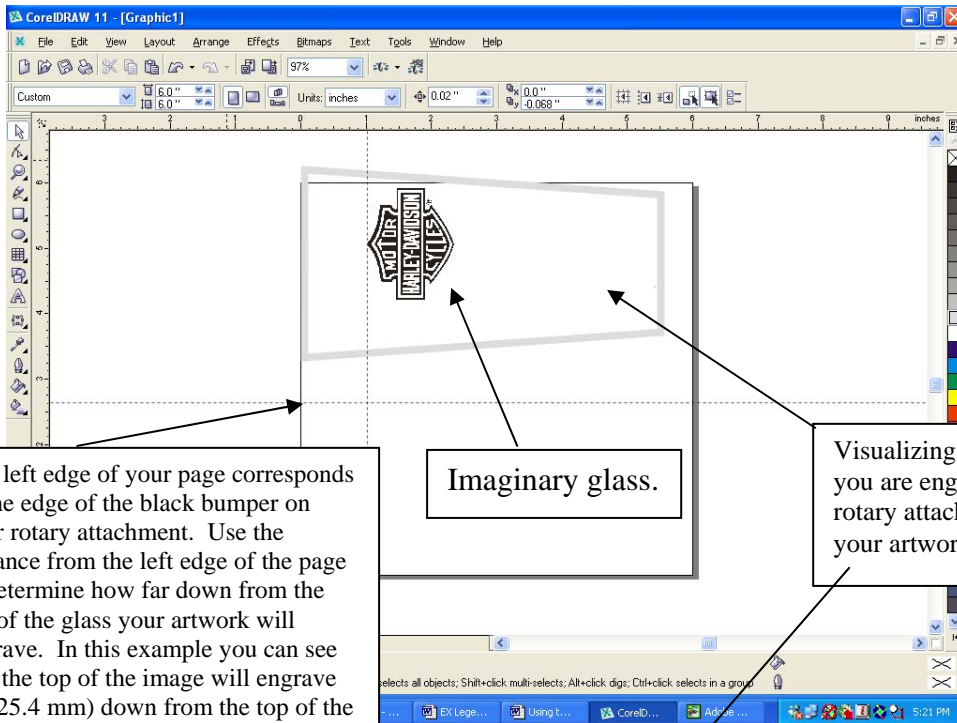
The edge of the black bumper on your rotary attachment corresponds to the left edge of your page in CorelDraw.



Set your cylinder on the rotary attachment so that it is close to the black bumper, but not touching it. The cylinder may not be able to rotate freely if it is rubbing against the bumper.



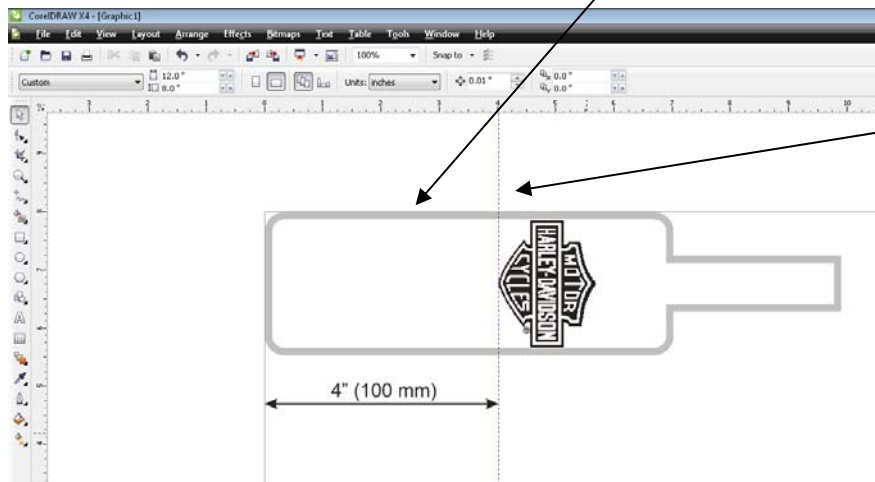
The “top” of a cylinder can be at either end of the rotary attachment. It is useful to visualize the orientation of the cylinder when it’s being engraved.



The left edge of your page corresponds to the edge of the black bumper on your rotary attachment. Use the distance from the left edge of the page to determine how far down from the top of the glass your artwork will engrave. In this example you can see that the top of the image will engrave 1” (25.4 mm) down from the top of the glass.

Imaginary glass.

Visualizing the orientation of the piece you are engraving as it rests on the rotary attachment will help in orienting your artwork.



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

Imaginary bottle.

## Additional Artwork Tips and Tricks

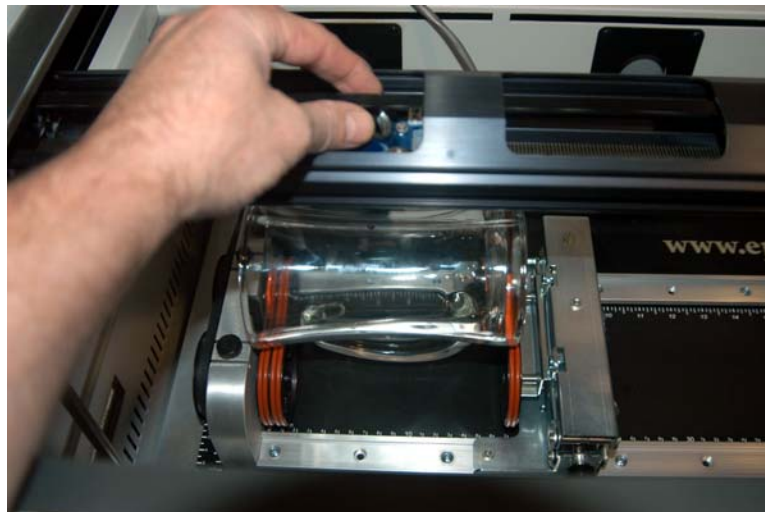
### Creating a new Home position for Center-Center engraving.

Another way to set up your artwork is by using the Center-Center feature in the Epilog Driver. There are detailed instructions in your Owner's Manual that describe how to use Center-Center engraving, but one of the most useful methods for the rotary attachment is described here.

Using the rotary attachment sometimes requires you to think in three dimensions rather than the standard two dimensions normally used for flat work. For some cylindrical jobs it would be convenient to be able to set up your artwork simply by defining the center of the job and working from there, rather than think about it in 3 dimensions.

In the photo below, the glass has a handle and we want to engrave exactly opposite of the handle. Here's how to do it.

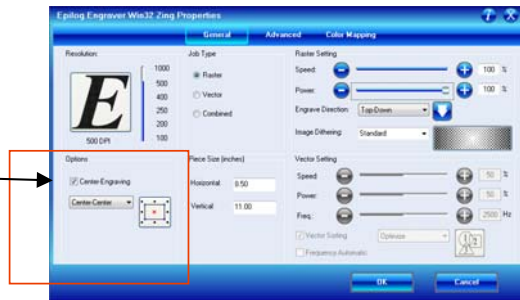
- Press the Pointer button to turn on the red dot pointer.
- Press the X/Y Off button
- At this point in the process we want to move the carriage by hand in the X axis (to our right) and then rotate the glass so the red dot is at the exact center of where we want our artwork to be processed. Only move the carriage in the X-axis. If the X-beam is moved forward or backwards, it will have the effect of displacing our artwork.



- Press the Go button. You now have a new Home position and the laser is set to engrave in the center of our glass.
  - Note – It can be useful to put a black mark on the center of the glass as a reference point so you can easily see it when you place the glass onto the rotary attachment.

- From your software package (Corel, etc) rotate your artwork at 90 degrees as you would for any rotary job. You can place your artwork almost anywhere on the page for Center-Center engraving as long as it's not too close to any of the edges of the page.
- Print and go to the Epilog driver.

Select the Center Engraving option and choose Center-Center. Set your other laser parameters as normal, then click OK.



- Your artwork should be perfectly placed!
- You can continue to use this new Home position or you can set another one using this process.
- There is no reset feature that will send the carriage back to its standard Home position, but there are two ways to accomplish this. To reset the machine to the standard rotary Home position at the edge of the black bumper, you can either turn off the machine and then power it back up, or you can press the X/Y Off button, move the red dot manually to the edge of the black bumper, and then press the Go button.

## 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 or shrunken. But some cylinders have a big difference in circumference from the middle to the ends that it affects how the engraved image looks, so sometimes it's 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.



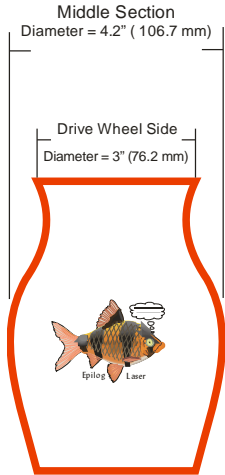
This glass has a circumference of 4 inches (100 mm) at the ends and a circumference of 3.2 inches (81 mm) in the middle, where we want to engrave.

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):  
Circumference = Diameter x 3.1416.

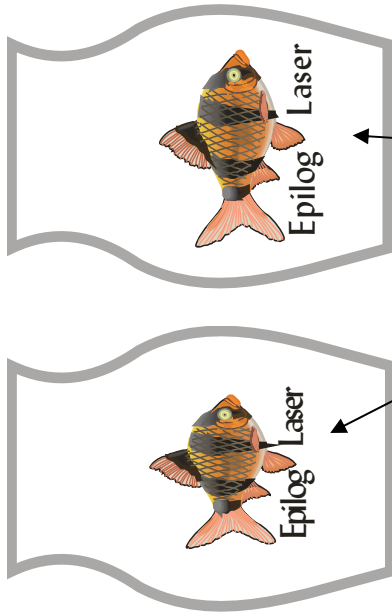
For objects with a larger middle section – shrink artwork:



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:

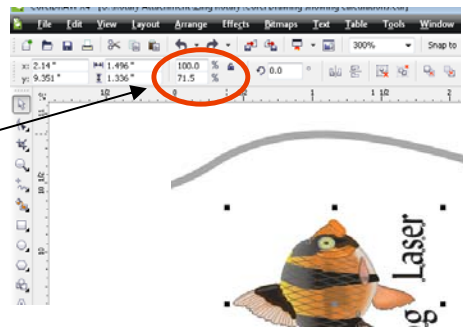
$$\frac{3''}{4.2''} = .715 \times 100 = 71.5\%$$

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



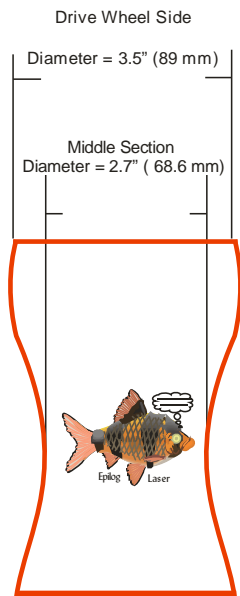
Normally, you would set up your artwork something like the top image. After shrinking the artwork it appears like the bottom image. We're now ready to print. (The grey outline of the glass is for reference purposes to show how the glass will be mounted on the rotary and would not be part of the printed artwork.)

The easiest way to precisely shrink or expand your artwork in Corel is to select the artwork and then type in the amount of adjustment. Notice that you only want to adjust the vertical aspect of your artwork.





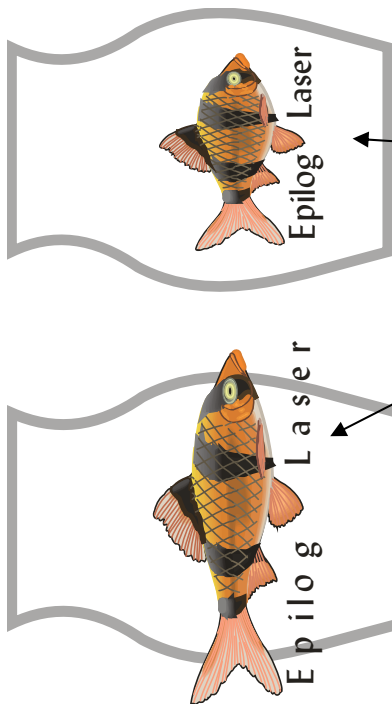
## For objects with a smaller middle section – expand artwork:



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.



Normally, you would set up your artwork something like the top image.

After expanding the artwork it appears like the bottom image. We're now ready to print.

(The grey outline of the glass is for reference purposes to show how the glass will be mounted on the rotary and would not be part of the printed artwork.)

### 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.
- Adjust only the vertical aspect of your artwork.

## *Setting Focus with the Rotary Attachment*

***Focus*** – With your cylinder in place, press the Focus button on the Zing keyboard. The X-beam will move away from its Home position and towards the back of the machine so the focus gauge is directly over your part.

Lower the Focus gauge and focus on your cylinder.

Press Reset and the X-beam will move back to its Home position. You are now ready to start the job.

## *Loading/ Unloading your cylinders*

For some larger cylinders it is desirable to move the X-beam completely out of the way when loading or unloading. To do this, press the Focus button *twice*.

The first time you press the Focus button the X-beam will move away into the focus position. Pressing it a second time will move it back another 2.5 inches (64 mm).

Pressing Reset from either the focus position or the load/unload position will move the X-beam back to its home position at the edge of the black bumper.

## *Rotary Removal*

- 1) Open the door
- 2) Turn off the power to the laser
- 3) Unplug and remove the rotary attachment.