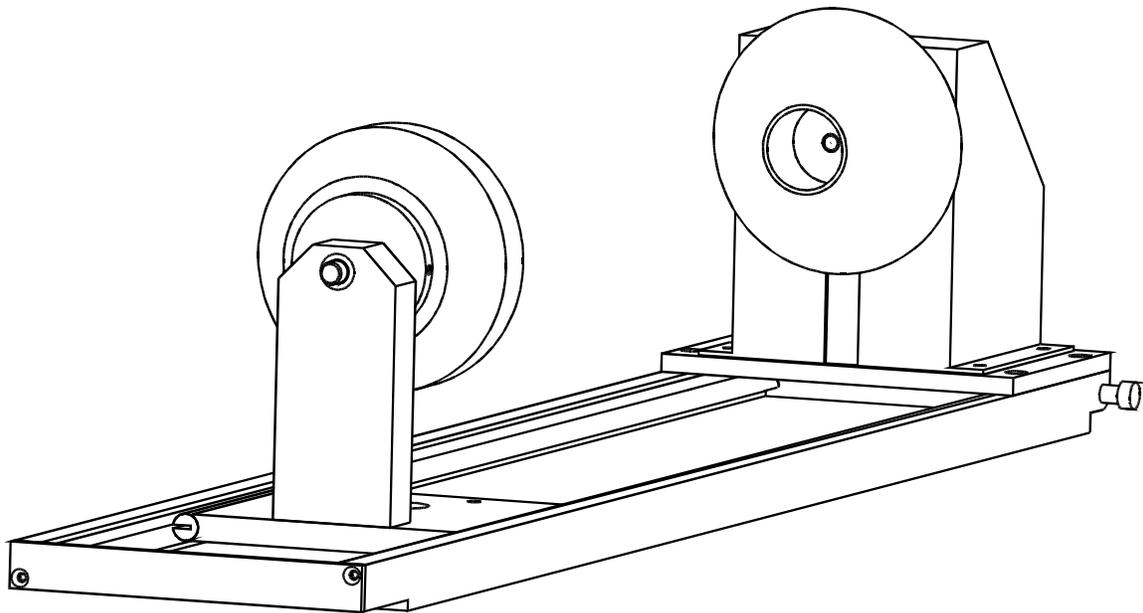


Rotary Fixture

M/V/X CLASS LASER SYSTEMS



Installation and Operation Instructions

02/01/2000

Introduction

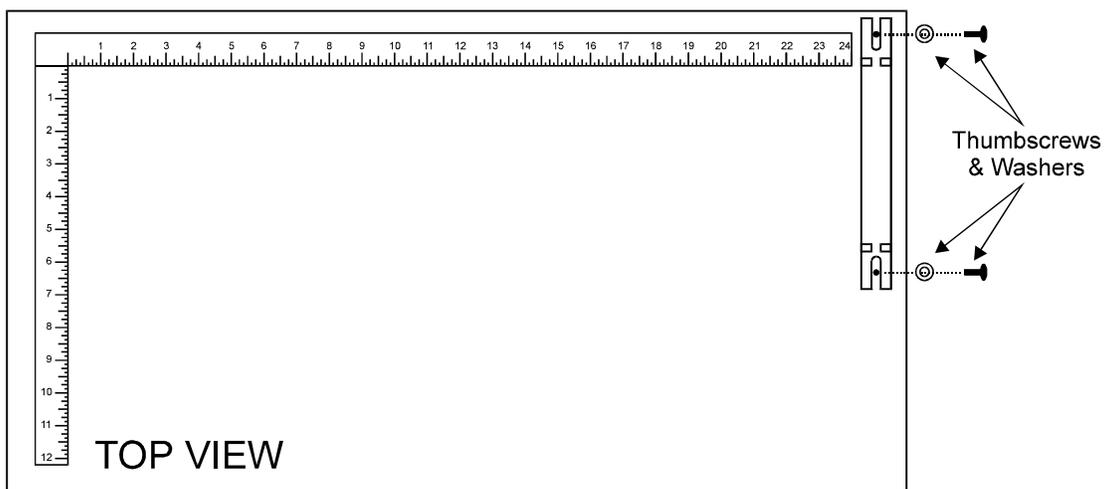
The Rotary Fixture controls in the Printer Driver are used along with the optional Rotary Fixture to engrave onto round or cylindrical objects. Before attempting to use this option, you **MUST** completely understand how the laser system operates. Please make sure that you have read and understood the Operation Manual before continuing.

Two attachments are included with the fixture, a cone shaped disk attached to the motorized end of the fixture and an inverted cone disk attached to the adjustable end of the fixture. These attachments are designed to hold wine glasses, mugs, cups, etc. To make it easier to understand, we will illustrate a step by step procedure to engrave an image on a glass.

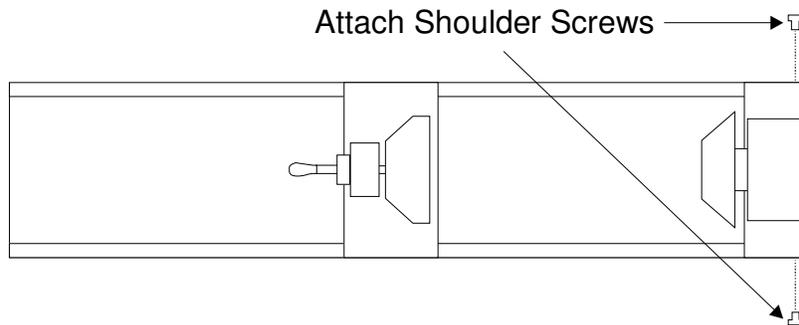
NOTE: These instructions apply to many different models even if your system has a smaller or larger field size.

First Time Installation

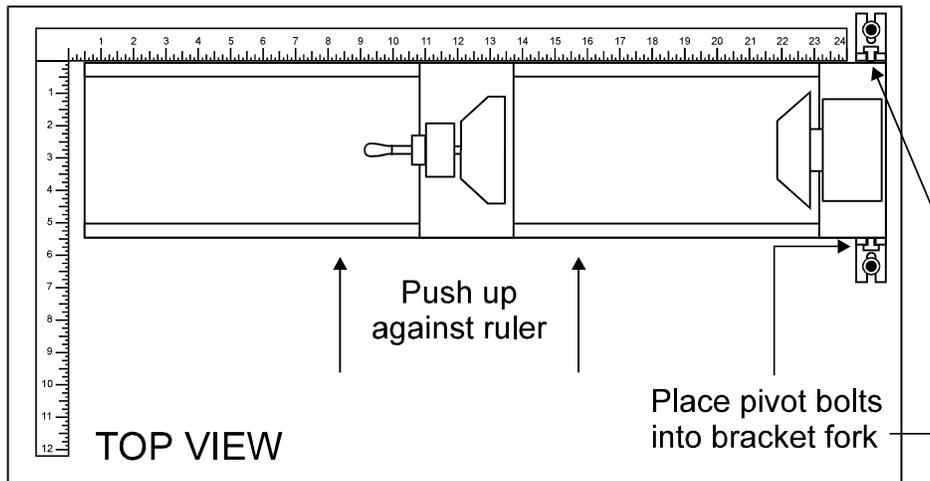
1. Turn the laser system **ON**.
2. If your laser system has the Auto Focus Option and it is turned **ON**, you **MUST** now turn it **OFF** at this time. This option was **NOT** designed or intended to be used with the Rotary Fixture installed.
3. Remove any materials that may be underneath the table and lower the table **ALL THE WAY** down to the bottom or at least far enough down so that the Focus Carriage will clear the top of the Rotary Fixture when it is installed on the table. Now, turn the laser system **OFF**.
4. Place the bracket on the table. Insert the thumbscrews and washers into the screw holes but do not tighten down completely. Leave the thumbscrews loose enough so that the bracket can slide around.



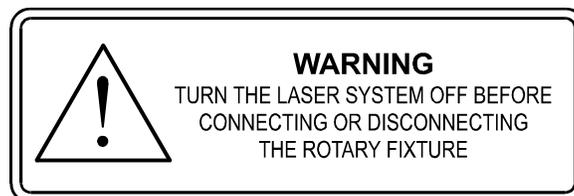
5. Place the Rotary Fixture on a flat surface. Using an Allen wrench, attach the two(2) socket head shoulder screws to the side of the base plate.

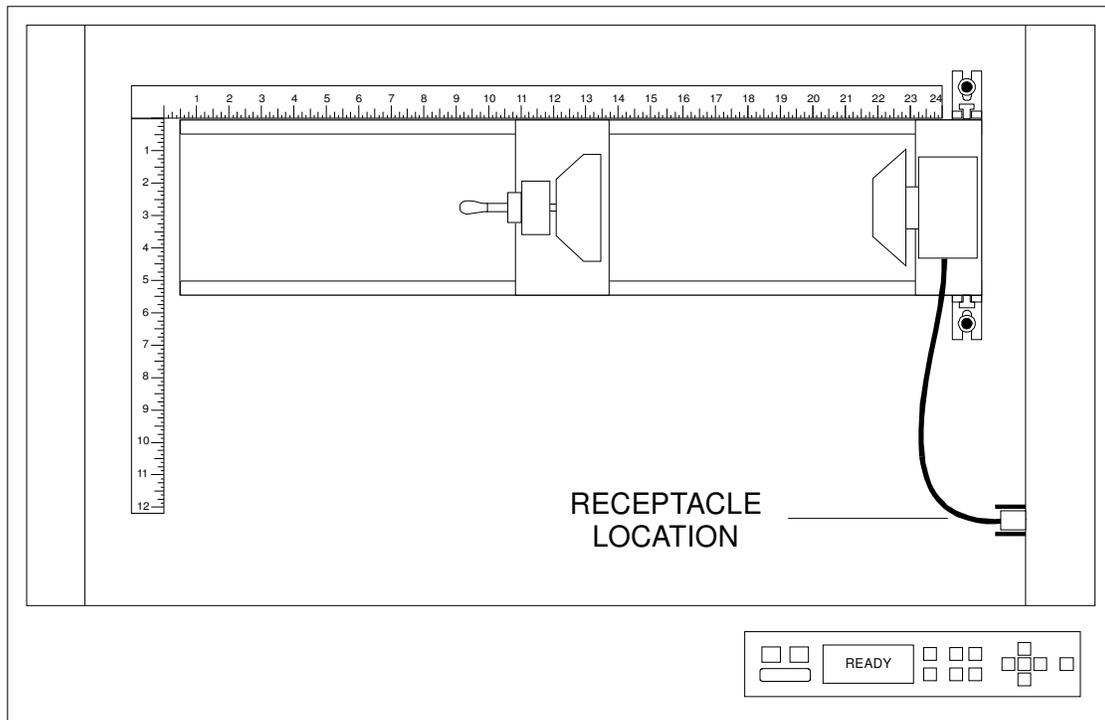


6. Place the Rotary Fixture on top of the bracket so that its pivot bolts set into the forks in the bracket. Gently push the fixture flat up against the top ruler. **NOW**, tighten down the thumbscrews.



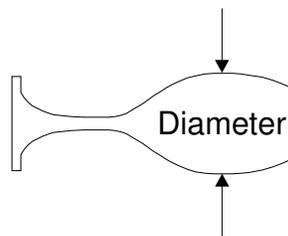
7. With the power to the system still **OFF**, connect the 9-pin Rotary Fixture control cable to the receptacle on the laser engraving system.



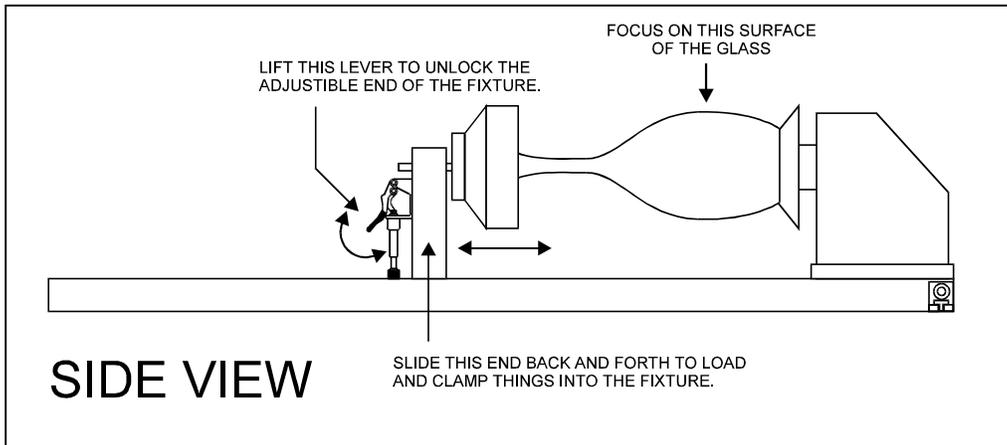


Installed Rotary Fixture

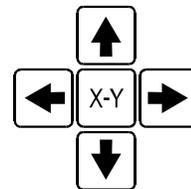
- Before loading the glass into the fixture, measure the diameter of the glass in the area where the engraving is to be located by using a caliper or similar measuring device. Either remember this number or write it down.



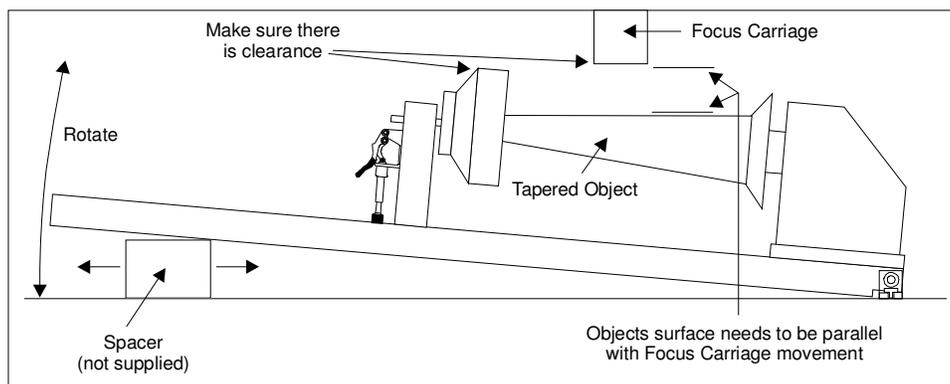
- Place the open end of the glass on the right side of the Rotary Fixture. Lift the lever on the adjustable end of the fixture and slide it up against the other end of the glass so the glass rests firmly centered inside of the inverted cone. Push the adjustable end of the fixture to the right, firmly against the bottom of the glass. Do not to apply too much pressure, especially with glass. You only need enough pressure to prevent the object from slipping on the cone while it rotates. Lower the lever on the adjustable end of the fixture to lock it in place.



10. You must now focus on the glass. Turn **ON** the laser system and wait for the display to show “READY”. Press the “Z” button on the control panel and notice that the motion system will align to the centerline of the Rotary Fixture automatically. You will also notice that the left and right arrow buttons will cause the Focus Carriage to move left and right respectively. This control is the same as when engraving a flat object on the table. However, the up arrow now causes the fixture to rotate the glass towards the front of the machine and the down arrow causes it to rotate towards the rear of the machine. What the Rotary Fixture actually does is remove the normal up and down Y-axis movement and replace it with a rotational movement. So instead of the system engraving down the flat page of a graphic, it takes that flat graphic and wraps it around the cylindrical object. Now, using the Focus Tool method, focus on the glass. After focusing is complete, press the “Z” button again and the arm will move back into its home position.



11. If engraving a tapered object, the Rotary Fixture can be rotated to maintain proper focus. To do this, lift the left end of the fixture and place some sort of spacer underneath the fixture to prop it up. Slide the spacer left and right until the surface of the object is parallel to the Focus Carriage. Be careful not to raise the Rotary Fixture too high, otherwise parts of it might interfere with the Focus Carriage. **NOTE:** If you operate the fixture in this manner, you might need to taper your graphic in your software so that it matches the taper angle of your object. Otherwise, your graphic might appear to be tapered when it is engraved.



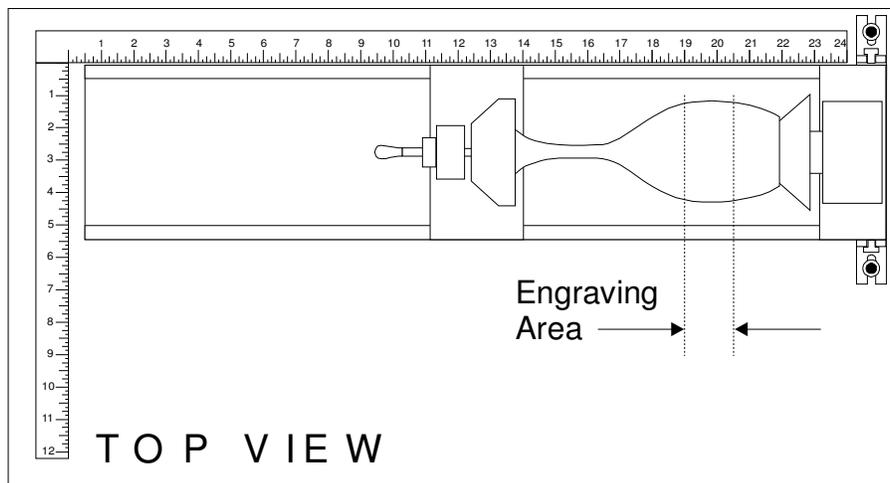
Determining Graphic Placement

We now need to determine where we want the engraving to appear on the glass. You can use the top ruler as a visual aid in referencing the engraving area of the glass or you can use the Red Diode Laser and the X-Y coordinate system to precisely place the graphic in your graphics program. To be more precise, we will use the Red Diode Laser Pointer.

To activate the Red Diode Laser Pointer, press the X-Y button while either in the "READY", "MAIN", or "FILE DISPLAY" menu. The following submenu will appear:

```
ORG 24.000X 12.000Y
POS 00.000X 00.000Y
■ SET NEW ORIGIN
RE-HOME X-Y
```

Using the Motion Control buttons, position the Focus Carriage above the glass and observe the Red Diode Lasers position. Stop movement where you would like the top of the graphic (the right dotted line in the engraving area) to begin. Look at the coordinate display and read the "POS" "X" position. Retain this number in memory or write it down. Ignore the "Y" position. Now, position the red dot at the lowest point (the left dotted line in the engraving area) on the glass where you would like the engraving to end. Remember this "POS" "X" coordinate or write it down.

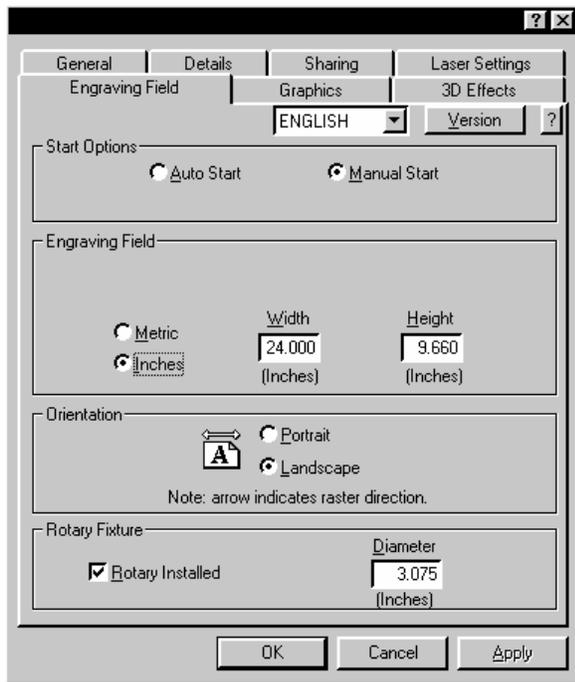


In this example our upper limit is about 20500X and the lower limit is 19000X. This translates to 20.5 inches and 19.0 inches respectively because the coordinates are in 1/1000 inch units.

We have now set up the glass to be engraved. Close all doors of the laser system, go to your computer, and open your graphics software.

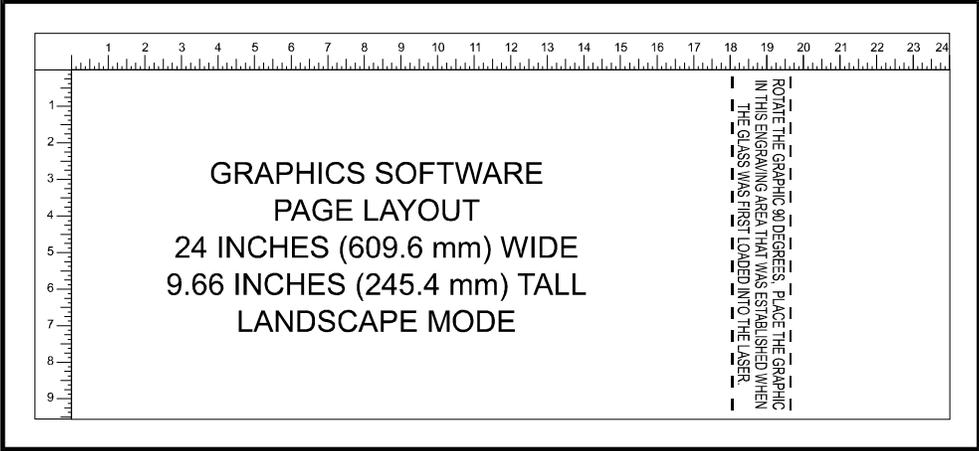
Printer Driver Settings

With your graphics software open, proceed immediately to “Printer Setup” and open the printer driver. In the printer driver, click on the “Engraving Field” tab, is set to page orientation to “Landscape” and the size set to the maximum field size of the laser system. In this example, we will set it to 24 x 12 inches. Then, click on the “Rotary Installed” selection box and type in the diameter of the glass that was measured.



Notice that while typing in the diameter, the size of the height dimension changes automatically. Remember or write down this new page size. In this example, the diameter of the glass is 3.075 inches. After typing in this number, observe that the new page height is now 9.66 inches. Click on “OK” and go back to the graphics software’s page setup and change it to **EXACTLY** match the new page size that the Printer Driver established when the diameter of the object was typed in.

This new vertical page size is now the actual circumference of the object that is going to be engraved. From the top of the page (on screen) to the bottom represents one complete revolution of the Rotary Fixture. For example, if engraving a glass that has a diameter of 3.075 inches (78.1 mm), the driver calculates that the circumference of the glass (and vertical page size) is 9.66 inches (245.4 mm).



Position the graphic, on screen, so that it will fit vertically within the new vertical page height (circumference) and horizontally within the upper and lower engraving limits that we earlier determined with the Red Diode Laser Pointer. If the graphic does not fit within the vertical page size limits, the portion that is outside the page limit will not engrave. Remember, the new page size that the driver calculates from the diameter of the glass is its actual circumference. From the top of the page down to the bottom is one complete revolution of the glass. Since the Rotary Fixture will not turn more than 360 degrees, make sure that the graphic lies between the page limits.

You are now ready to print to the laser system. Make sure that your system is ready to engrave and then begin the process.

Rotary Fixture Removal

Turn the laser system **OFF**. Unplug the fixture's power cable. Remove fixture from laser system by lifting it off the bracket. If you plan on using your fixture daily, you might want to leave the bracket attached to the table so that you can easily load and unload the fixture. If you seldom use the fixture, you might want to remove the bracket from the engraving table because the bracket may interfere with using "Autofocus". If you use "Autofocus" and leave the bracket attached to the table, the thinnest piece of material that you can "Autofocus" on would be the thickness of the bracket because the "Autofocus" sensor can only detect materials taller than the bracket unless the bracket is removed. If you do not use "Autofocus", then you can leave the bracket attached to the table, it is your choice.

The example above is the easiest to comprehend. For you advanced users that want to be able to position your graphic at a precise location, please read the following section **ONLY** after you completely understand how the Rotary Fixture operates and you have practiced using the fixture many times.

Advanced Users