



OWNER'S MANUAL FOR EPILOG FiberMark - MODEL 8000

This manual can also be found in electronic format on the
Drivers and Documentation
disk that came with your laser system.

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Contents at a Glance

Introduction.....	vii
Epilog Laser Setup	1
Section 1: Safety	3
Section 2: Dos and Don'ts	13
Section 3: Getting Started	15
Section 4: Connecting the Laser to Your Computer.....	21
Section 5: Installing the Epilog Dashboard Print Driver - Windows XP or 2000	23
Section 6: Quick Start & Easy Setup	51
Basic Operations.....	61
Section 7: Using the Epilog Dashboard Print Driver.....	63
Section 8: Using the Front Control Panel	117
Section 9: Standard & Optional Machine Features.....	129
Section 10: Speed, Power, Frequency and Focus Recommendations	159
Section 11: Engraving Machine Calibration & Maintenance	172
Technical Support, Troubleshooting, Specifications & Firmware Upgrade	179
Section 12: In Case of Difficulty	181
Section 13: Specifications.....	187
Section 14: Upgrading the Operational Firmware.....	193
APPENDIX A WARRANTY STATEMENT.....	201
APPENDIX B PRINTING FROM AUTOCAD	203
APPENDIX C Windows VISTA - Driver Installation Instructions	207
INDEX	233

Table of Contents

Introduction.....	vii
How to Use This Owner's Manual	vii
Epilog Laser Setup	1
Section 1: Safety	3
Laser Safety	3
Electrical Safety	5
Emergency Stop Button	6
Fire Safety	7
Safety Features and Regulatory Compliance	8
Section 2: Dos and Don'ts	13
DON'T!	13
DO	14
Section 3: Getting Started	15
Setting Up Your Laser System	15
Connecting the Exhaust	16
Connecting Electrical Power.....	17
Laser Cooling Requirements and Operating Temperatures.....	19
Section 4: Connecting the Laser to Your Computer.....	21
Connecting the Laser to Your Computer	21
USB Port	22
Ethernet Port	22
Section 5: Installing the Epilog Dashboard Print Driver - Windows XP or 2000	23
Installing the Dashboard Driver Using a USB Connection and Cable	24
Installing the Dashboard Driver Using an Ethernet Connection and a Crossover Cable	32
Section 6: Quick Start & Easy Setup	51
Artwork Setup	52
Job Setup	55

Table of Contents

Basic Operations.....	61
Section 7: Using the Epilog Dashboard.....	63
General Tab.....	66
Color Mapping Tab.....	98
Advanced Tab.....	108
Additional Dashboard Driver Features.....	114
Changing Dashboard Driver Defaults.....	116
Section 8: Using the Front Control Panel.....	117
Keyboard Commands.....	117
Loading Your Work.....	127
Operation.....	127
Job Storage.....	128
Section 9: Standard & Optional Machine Features.....	129
Integrated Air Curtain.....	130
Air Curtain Pump.....	130
Integrated Vacuum Table.....	131
Fold-down Front Loading Door.....	132
Red Dot Pointer.....	133
Internal Viewing Light.....	133
Top Access Door - Viewing Window.....	134
Rotary Attachments.....	135
Standard Rotary Attachment.....	137
3-Jaw Chuck Style Rotary Attachment.....	144
Additional Lenses.....	156
Section 10: Speed, Power, Frequency and Focus Recommendations.....	159
Speed.....	159
Power.....	160
Frequency.....	160
Recommendations.....	162
General Metal Engraving / Base Settings.....	163
10 Watt FiberMark.....	168
20 Watt FiberMark.....	169
30 Watt FiberMark.....	170
50 Watt FiberMark.....	171

Table of Contents

Section 11: Engraving Machine Calibration & Maintenance	172
Laser Source.....	178
Technical Support, Troubleshooting, Specifications & Firmware Upgrade	179
Section 12: In Case of Difficulty	181
Contacting Technical Support.....	181
Avoiding Common Print Problems.....	182
Section 13: Specifications.....	187
FiberMark Specifications.....	187
Compatibility	188
Recommended PC.....	188
Other Computer Hardware Recommendations	190
Federal Communications Commission (FCC) Notice	191
Section 14: Upgrading the Operational Firmware	193
Upgrading Your Firmware.....	193
Installing New Firmware onto Your Computer	194
Transferring New Firmware from Your Computer to Your Laser	196
APPENDIX A WARRANTY STATEMENT.....	201
APPENDIX B PRINTING FROM AUTOCAD	203
APPENDIX C Windows VISTA - Driver Installation Instructions	207
Windows Vista Dashboard Driver Installation for USB Connection	207
Windows Vista Dashboard driver installation for Ethernet connection	211
Installing the Dashboard Driver when the AutoRun Feature Does Not Start when using Windows XP or 2000.....	228
Installing the Dashboard driver when the AutoRun feature Does Not Start when using Windows Vista.....	230
INDEX	233

Introduction

How to Use This Owner's Manual

Thank you for purchasing an Epilog FiberMark 8000 Laser System. Your Epilog system has been designed to be easy to operate, but you will utilize it to its fullest potential by taking some time to read this owner's manual prior to use. You will be ready to use the Epilog laser system as soon as you read the first six sections. Then you can refer to topics in the remaining sections, as you work.

Structure of the Manual

Part I: Epilog FiberMark Setup

Sections 1 through 6 explain how to uncrate and set up your Epilog system, important safety information you need to know before you use it, the Do's and Don'ts of operating the laser, configuring your computer to run the Epilog Dashboard print driver, configuring CorelDraw, and a brief user's guide to running your first job.

Part II: Epilog FiberMark Basic Operations

Sections 7 through 11 explain Using the Epilog Print Driver, basic Epilog laser operations and maintenance, machine features, speed and power recommendations, and material suppliers.

Part III: Troubleshooting, Service and Specifications

Sections 12 through 14 assist with problem troubleshooting; service information, system specifications, and firmware upgrade instructions.

APPENDIX A

Epilog Warranty Information.

APPENDIX B

Printing from AutoCAD.

INDEX

Introduction

Icons Used in this Manual

Look for these symbols to help you find valuable information throughout the text:



Sometimes the right perspective on a procedure is essential to success. This icon flags a Quick Note regarding the task at hand.



This Icon signifies places to look for additional information to assist with the topic currently being discussed.



This Icon highlights current contact information for receiving help.



This Icon signifies advice you can try out with your machine right away.



This Icon signifies advice you can try that will save you significant time.

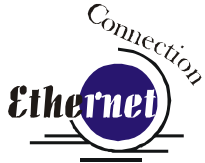


Running into trouble can be detrimental to your success so we've marked Warnings and Cautions with this Icon.

Introduction



Indicates pages including information regarding connecting your laser system to your computer using an USB connection.



Indicates pages including information regarding connecting your laser system to your computer using an Ethernet connection.



Indicates the potential for fire danger when operating the laser.

Introduction

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Manual

Epilog Laser Setup

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Section 1: Safety

In This Section

- Laser Safety
 - Electrical Safety
 - Fire Safety
 - Safety Features And Regulatory Compliance
-

Laser Safety

The Epilog Model 8000 Laser System is a Class 2 laser product, as defined in International Standard IEC 60825-1.

The Epilog Model 8000 complies with 21 CFR 1040.10 and 1040.11, the Federal Performance Standards for Light-Emitting Products, except for deviations pursuant to Laser Notice No. 50, dated July 16, 2001. The Center for Devices and Radiological Health, of the US FDA, issued Laser Notice No. 50 to permit manufacturers to classify and manufacture their products in accordance with the International Standard.

The laser beam produced by the FiberMark laser can cause severe damage to the eye or skin if direct contact is made with the beam.



NEVER OPERATE THE MACHINE WITH ANY DOOR OPEN OR WITH ANY COVER REMOVED!



To prevent direct contact with the laser beam it is fully contained in the laser cabinet. The laser cabinet has safety interlocks that turn the laser off if either the front door or top window is opened during operation. The green window in the top access door is made of a special acrylic that is designed to block the infrared wavelength of light that is produced by the laser. It is common to see bright reflections coming from the marking surface when viewing through the green window as the machine operates. The reflections are normal and it is not harmful to view the machine in action through the green window, but because the reflections can be very bright it is recommended that viewing be limited while the machine is operating.

Section 1: Safety

No special precautions are necessary to operate the laser safely. However, the visible output beam of the Laser Diode Pointer (Red Dot Pointer) is accessible to the operator. While the Red Dot Pointer employs the same technology as the familiar laser pen-pointers, like them, it is potentially hazardous if its beam is directed into the eye. We have made every effort to make the Laser Diode Pointer (Red Dot Pointer) as safe as possible. Its beam path is located well inside the cabinet, and under normal conditions, no hazardous levels of laser radiation can escape.

The operator of the Epilog Model 8000 should observe the following general precautions:



- **DO NOT** disassemble the machine or remove any of its protective covers while the unit is plugged in.
- **DO NOT** attempt to defeat the door interlocks.
- **DO NOT** operate the machine with any door open or cover removed.
- **DO NOT** view directly into the beam of the Laser Diode Pointer (Red Dot Pointer).
- **DO NOT** operate the Laser Diode Pointer (Red Dot Pointer) without the machine's focus lens in place. If the unfocused beam strikes a reflective surface, it could be directed out of the cabinet.



Caution – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

* * *

The standard reference for laser safety is the American Standard for the Safe Use of Lasers, Z136.1-2000, developed by the American National Standards Institute (ANSI). This reference is the basis for many of the federal regulations for laser and laser system manufacturers, and for the Occupational Safety and Health Administration (OSHA) laser safety guidelines. It contains detailed information concerning proper installation and use of laser systems.

While the ANSI standard itself does not have the force of law, its recommendations, including warning signage, training, and the designation of a laser safety officer, may be compulsory under local workplace regulations when operating laser systems above Class I. It is the operator's responsibility to ensure that the installation and operation of the Epilog Model 8000 Laser System is performed in accordance with all applicable laws.

Section 1: Safety

Copies of ANSI Standard Z136.1-2000 are available from Epilog Corporation or from:



Laser Institute of America
12424 Research Parkway, Suite 125
Orlando, FL 32826
(407) 380-1553

Electrical Safety

The AC input power to the Epilog Model 8000 Laser System is potentially lethal and is fully contained within the cabinet.



- **DO NOT** open any of the machine's access panels while the unit is plugged in. Opening a panel may expose the operator to the unit's AC input power.
- **DO NOT** make or break any electrical connections to the system while the unit is turned on.

Section 1: Safety

Emergency Stop Button



The Emergency Stop Button is a safety feature designed to immediately stop the laser from firing and stop the motion control system from moving should an emergency occur. By depressing the Emergency Stop button the electrical circuits leading to the laser source and the main power supply are opened and all system functions, except the cooling fans, come to an immediate stop.

Emergency Stop
Button



In order to restore the laser system to its standard operating mode after activating the Emergency Stop button, follow these instructions:

1. Press the main power switch to the off position
2. Reset the Emergency Stop button by twisting it in a clockwise direction to spring it back into its active position. This step is important as the laser system will not function if the Emergency Stop button remains in its recessed position.
3. Power up the system using the main power switch.

Section 1: Safety

Fire Safety

Laser systems can represent a significant fire hazard. Some engraving materials are inherently combustible (including some metals and coatings) and can ignite without warning. Should the work piece actually ignite into flames, the fire must be extinguished by the operator at once!

- **DO NOT** operate the machine in the presence of unnecessary combustible materials, explosives, or volatile solvents such as acetone, alcohol, or gasoline.
- **DO NOT** let the machine operate unattended.
- **ALWAYS** keep a properly maintained and inspected fire extinguisher on hand. Epilog recommends a carbon dioxide (CO₂) or Halon® fire extinguisher. We do not recommend dry-chemical fire extinguishers, because they discharge a corrosive powder which will severely damage the machine's electrical and mechanical components.



Section 1: Safety

Safety Features and Regulatory Compliance

Epilog has incorporated specific safety features into the Model 8000 Laser System in order to meet the requirements of 21 CFR 1040 and the International Standard IEC 60825-1. These safety features include:

- A safety enclosure (cabinet), which fully encloses the engraving laser and its beam path.
- Dual redundant interlock systems that turn off the engraving laser when the window is opened.
- A visible emission indication when the Laser Diode Pointer (Red Dot Pointer) is operating. There is an LED indicator on the machine's front panel.



Warning!

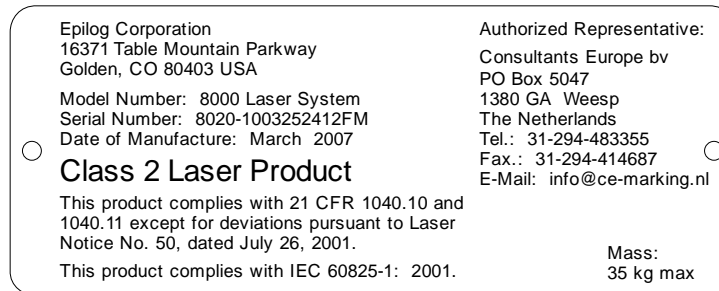


Epilog Laser systems and products are not designed, manufactured, tested, authorized, or intended to be used in any medical, surgical, non-medical or any similar or related procedure or process that would allow the laser beam to come into contact with living tissue or organisms of any kind.

Section 1: Safety

21 CFR 1040 and IEC 60825-1 require that certification, identification, and warning labels be placed on laser products. Reproductions of labels on the Epilog Model 8000 Laser System follow, with their locations specified:

4. **Certification/Identification Label.** This engraved plate is located on the rear of the machine's cabinet. The example shown is for the Model 8000/20 product having a 24 inch by 12 inch engraving area.

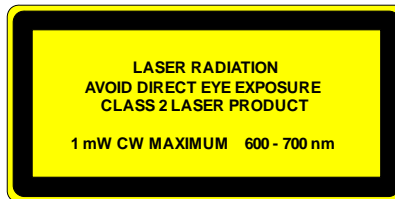


Section 1: Safety

5. Warning Label. This label is located on the rear of the machine's cabinet, below the Certification/Identification Label above.

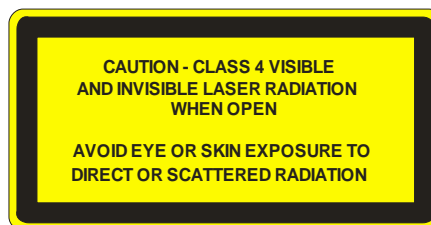


6. Explanatory Label. This label identifies the classification of the Model 8000 in accordance with IEC 60825-1. It is located on the rear of the machine's cabinet, beside the Warning Label above.



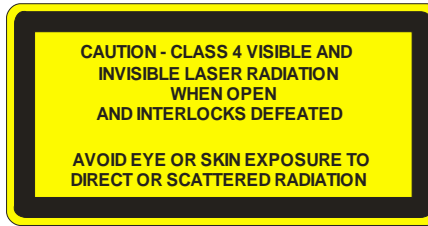
7. Non-interlocked Protective Housing Safety Labels (4).

Two of these labels are located on the rear of the machine; beside the edges of each of the cabinet's end covers. The other two labels are located on the cabinet walls under the covers, so that they are visible when the covers have been removed.



8. Defeatably-interlocked Protective Housing Safety Label. This label is located on the machine's cabinet door, in the upper left-hand corner.

Section 1: Safety



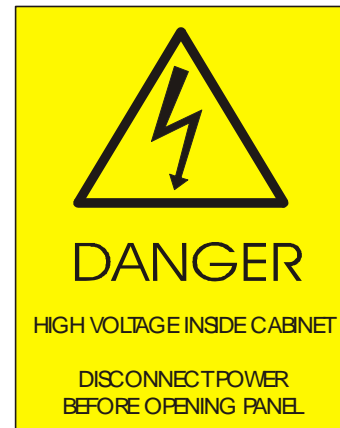
9. Aperture Safety Label.

This label is located on the steering-mirror cover inside the machine's cabinet, beside the aperture where the laser beams enter the cabinet.

AVOID EXPOSURE - Visible and invisible laser radiation is emitted from this aperture

10. Electrical Safety Label.

This label is located on the access panel on the rear of the machine's cabinet.



11. Fire Safety Label.

This label is located on the machine's cabinet door, in the upper right-hand corner.



Section 1: Safety

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Section 2: Dos and Don'ts

In This Section

- Operating Dos and Don'ts
-

DON'T!



NEVER operate the machine without a properly operating vent to the outside! Most material will only produce an irritating smoke when engraved. Some materials, including but not limited to paint, varnish, and plastics, produce compounds that can be harmful if concentrated. A properly installed vent is the only way to ensure that problems do not occur.



NEVER engrave or cut any material containing PVC or vinyl. When engraved, a corrosive agent is produced that will destroy your machine. ***Your warranty will be void if your machine is damaged by corrosion from engraving, marking or cutting PVC or Vinyl.***

NEVER allow your machine to operate unattended. There is a significant risk of fire if the machine is set improperly, if the material being processed is flammable, or if the machine should experience a mechanical or electrical failure while operating.

NEVER allow the machine to operate in Vector mode unattended. Because vector mode moves relatively slowly compared to raster engraving, a tremendous amount of heat is applied to the material being processed. This buildup of heat can cause significant fire risk and the machine should always be monitored.

NEVER operate with any of the covers or enclosures open or removed, and never modify the enclosure. The laser beam is invisible!

Section 2: Dos and Don'ts

DO



Please allow a few minutes a week for cleaning your machine. Just a small amount of effort at the end of the week will pay off with years of trouble free operation of your machine.



See Section 11: Engraving Machine Calibration and Maintenance of this manual for specifics.

Section 3: Getting Started

In This Section

- Setting Up Your Laser System
 - Connecting The Exhaust
 - Connecting The Electrical Power
 - Laser Cooling Requirements And Operating Temperatures
-

Setting Up Your Laser System

Setting up your Epilog Laser System is easy to do! If you've ever installed a paper printer on your computer, this is almost that easy. You will need to do the following to use your machine:

- Remove it from the crate
- Connect the exhaust system
- Connect electrical power
- Connect the laser to your computer using a USB or Ethernet cable
- Install the Epilog Dashboard print driver onto your computer

You may need a contractor to install the exhaust. This must be done ***PRIOR*** to installation of the laser system.



Time Saver: PLEASE do not throw away the box that your laser came in. You may need it if you ever plan on shipping the machine. This will save considerable time trying to repackage the machine for routing to different locations.

Section 3: Getting Started

Connecting the Exhaust



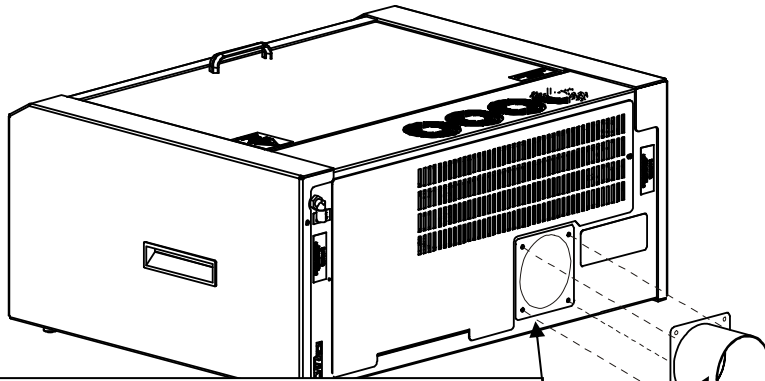
It is mandatory that an exhaust blower is hooked up and operating whenever your laser system is running a job. The exhaust blower removes the dust, debris and smell from the engraving cavity and exhausts it to the outside of the building. You should never operate your laser system without a properly working exhaust. Prior to the installation of the laser system, a contractor should install the exhaust system. The blower should be mounted outside your building for noise considerations. The blower should not be more than twenty feet (6 meters) from the laser. You should provide a rigid, smooth duct (either PVC or galvanized sheet metal will do) from the blower to the vicinity of the laser. All Epilog model 8000 laser systems require an exhaust fan that is rated at a minimum of 400 CFM at 6" of static pressure 680 M³/hr. at 150 mm of static pressure.



Note: Remember to put the blower switch for the laser system in an obvious and accessible place so it can be routinely switched on prior to using the engraver. Please connect the exhaust blower to the laser as shown below and on the following pages.

Section 3: Getting Started

Epilog Exhaust Blower Connections



Mounting Screws (4 each) - remove from chassis before installing exhaust port.

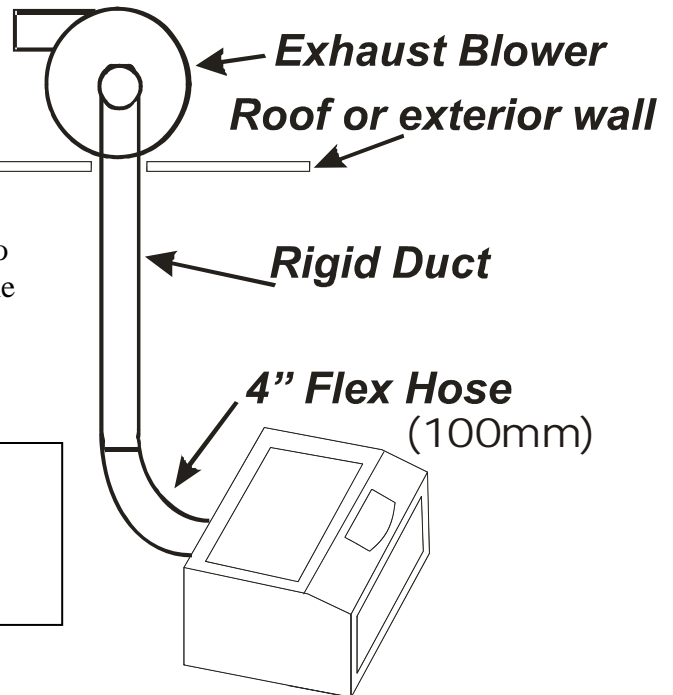
Exhaust Port (from accessories box)

As part of the unpacking process you will find a 4" (100mm) exhaust port in the accessories kit. This part needs to be attached to the rear of the FiberMark chassis before connecting the Exhaust blower to the FiberMark.

The mounting screws for the exhaust port are in the mounting holes in the chassis. Remove these four screws, align the exhaust port to the mounting holes and secure the exhaust port with the four screws.

- Slip the 4" (100 mm) flex hose over the port, and secure with a hose clamp.
- Connect the other end of the flex hose to the rigid duct.
- Use another piece of flex hose to connect from the rigid duct to the exhaust blower.

Check your exhaust system for leaks. Most small leaks can be remedied with duct tape. Do not operate your laser with inadequate or leaking exhaust.



Section 3: Getting Started

Connecting Electrical Power

What voltage should be supplied to operate the FiberMark?

All Epilog laser systems have an auto-switching power supply that detects the incoming voltage and automatically switches itself to operate properly at any single-phase voltage between 100 and 240 VAC. The power supply will also automatically compensate for either 50 or 60 Hz. Epilog supplies the appropriate power cord for all of our equipment. The electrical cord is found in the accessory package with your machine. The power cord for the laser plugs into the power receptacle located on the left side of the machine in the rear corner. It is recommended that a dedicated 15 amp circuit be used if available, but it is not required.



Section 3: Getting Started

Laser Cooling Requirements and Operating Temperatures

Your Epilog laser system uses an air-cooled laser. Laser technology is such that the laser generates excess heat and the must be cooled in order for it to operate correctly. There are cooling fans located on the top of the system and cooling vents that are located along the back of the system. The fans and vents should always be clear of restrictions and should never be covered.



Warning: The cooling fans and vents should never be covered or blocked in any way. Lasers that overheat will not operate properly and may begin to produce erratic laser output or possibly complete failure.

Use compressed air to remove any dust buildup on the fans or the laser cooling fins.

Cooling Fans – Do Not Cover

Cooling Vents – Do Not Block.



Ambient air temperature where the laser system is operating should not exceed 90 degrees F (32 C). Operating in an environment where the ambient air temperature is above 90 degrees F (32 C) will void the Epilog warranty.

Section 3: Getting Started

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Section 4: Connecting the Laser to Your Computer

In This Section

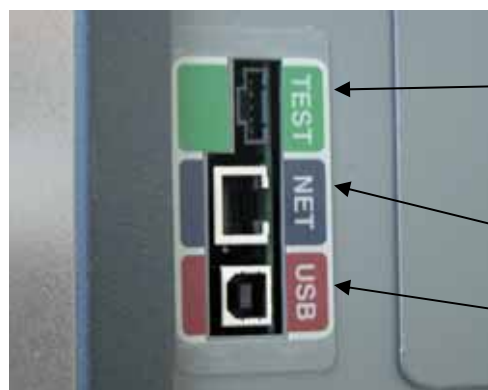
- Connecting the Laser to Your Computer
 - USB Port
 - Ethernet Port
-

Connecting the Laser to Your Computer

Epilog laser systems are designed to be used with Microsoft Windows XP, 2000 or the 32 bit version of Vista operating systems. There are two different methods of connecting the laser to your computer. You can connect to your computer with either an Ethernet cable or a USB cable. ***Choose either the USB or Ethernet cable – but do not plug both cables into the laser at the same time!*** Many users, especially those that do not have a lot of experience installing printers or other devices to their computers, find the USB cable is the easier method of connection. If your laser is going to be a long distance from your computer, you will be better off using the Ethernet cable. If you are using the USB port, make sure the laser system is turned off before connecting the USB cable from your computer (it doesn't matter if the computer is on or off). For your convenience, Epilog includes both an Ethernet crossover cable and a USB cable in the Accessories kit.



This drawing shows the data port connections that are located on the back of the laser system.



TEST Port (not intended for consumer use).

Ethernet Port

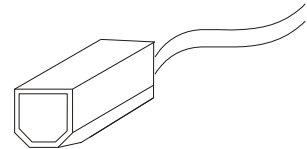
USB Port

Section 4: Connecting the Laser to Your Computer

USB Port



A USB cable is also included in the accessory kit. The USB port is located on the right side of the machine, near the rear. USB cables have different connectors on each end. Turn the laser *Off*, then connect this end to the laser and connect the other end into any available USB port at the back of your computer. After connecting the USB cable, turn the laser back on.



Connect to laser

Ethernet Port



The Ethernet Port is a standard 10BaseT connection. A crossover cable (included in the accessories kit) plugs into the Ethernet port. The Ethernet port is located on the right side of the machine, near the rear. Your Epilog laser has all of the versatility of a Network capable peripheral. As such, there are many different ways that the laser can be connected to a computer or a network. A direct connection using a crossover cable is the only method that will be described. The crossover cable is identical at both ends. Plug the cable into the Ethernet port on the laser and then plug the other end into the Ethernet port on the back of your computer.

Note: When you turn the laser back on after connecting the USB cable, you should see a little window show up on the lower right of your computer monitor stating that it has “*Found New Hardware*”. Depending on the age of your computer, there is a possibility that you will see a second window with a warning “*!Found New Hardware: A problem occurred during new hardware installation. Your new hardware may not work properly.*” If this second message appears, you must turn off the laser (but not your computer) then turn it back on again. Simply turning the laser off and back on again will now allow your computer to talk to your laser.



Section 5: Installing the Epilog Dashboard Print Driver - Windows XP or 2000

In This Section

- This section applies to Windows XP/2000 only. Installation instructions for Windows Vista are found in **Appendix C – Additional Dashboard Print Driver Instructions**, of this manual
 - Installing the Dashboard Print Driver Using an USB Connection
 - Installing the Dashboard Print Driver Using an Ethernet Connection and a Crossover Cable
-

The Epilog Dashboard is the print driver that allows your computer to talk to your Epilog laser system when either the USB or Ethernet Crossover cables are connected. ***The Dashboard is designed for use with Windows XP, Windows 2000 and the 32 bit version of Windows Vista (32 bit is the standard version).*** The driver is included in the accessories kit on a CD-ROM or on our web site - www.epiloglaser.com. You will need to install the Dashboard by following the procedures on the following pages.



There are two ways of installing the Epilog Dashboard. Both methods are very similar, and your computer configuration will determine which method to use.

1. The first method is using the USB connection. This is very straight forward and easy to accomplish.
2. The second method is using the Ethernet connection. This process is very similar to the USB installation, but there are a couple of important additional steps.

Instructions for installing the Dashboard using the Windows Vista operating system are included in the appendix.



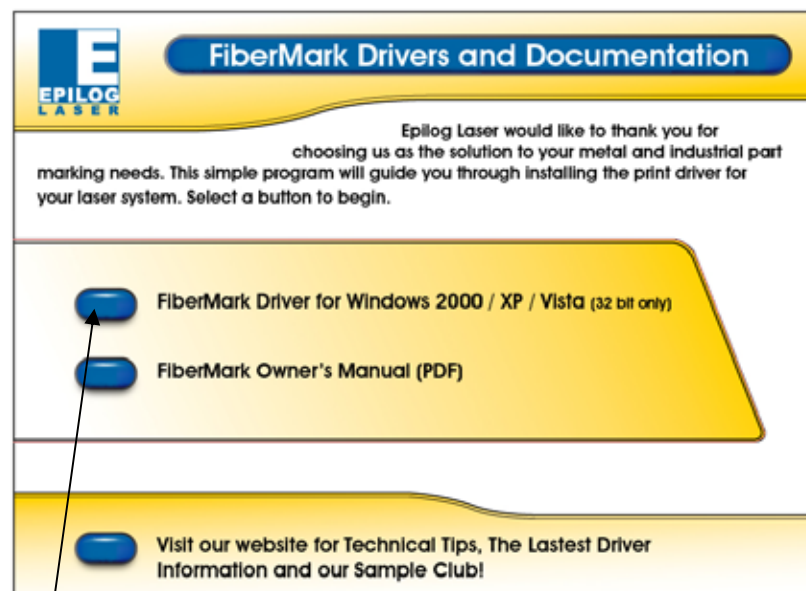
The FiberMark driver will be identified as the “Epilog Fiber Laser Win32” when it is installed onto your computer.

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000

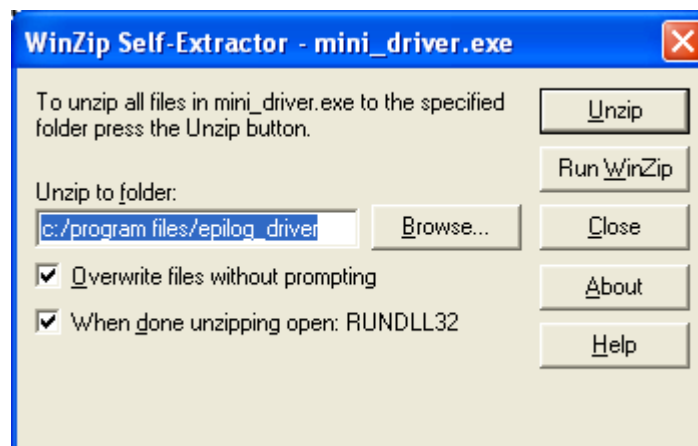
Installing the Dashboard Driver Using a USB Connection and Cable



1. Insert the Epilog Laser CD into your computer's CD player. It should Auto-Start and the following window should appear:



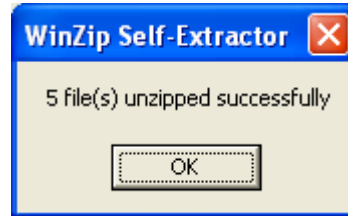
2. Click the **FiberMark Driver** button and the following window will appear:



Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000



3. Click on the Unzip button. It will take just a few seconds for the following window to appear:

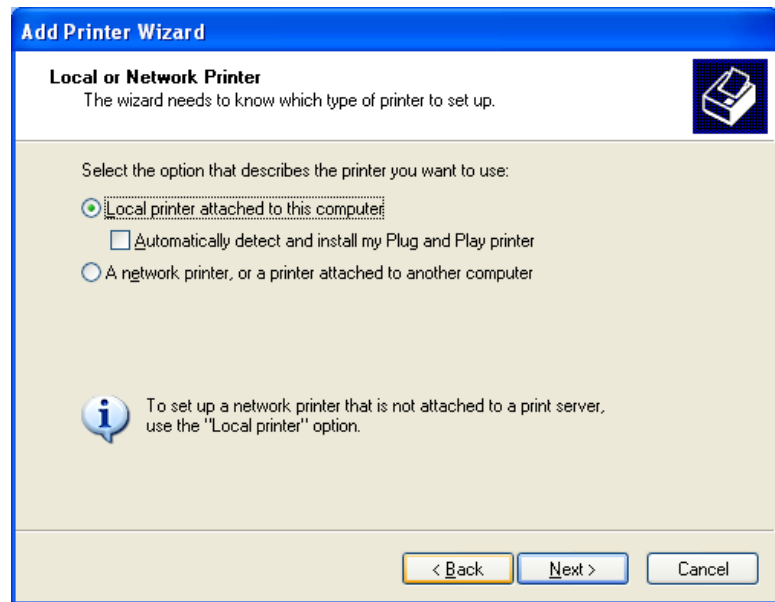


4. Click on OK and the following window appears:

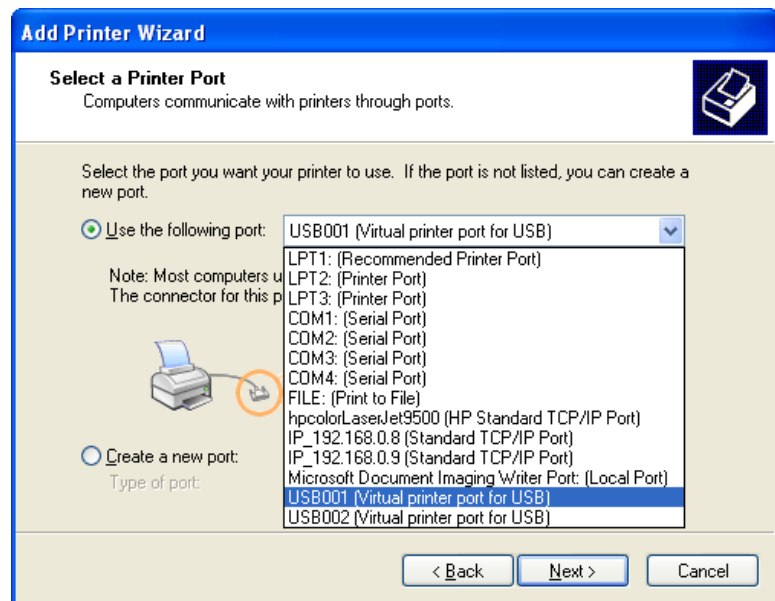


Click the *Next >* button to continue

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000

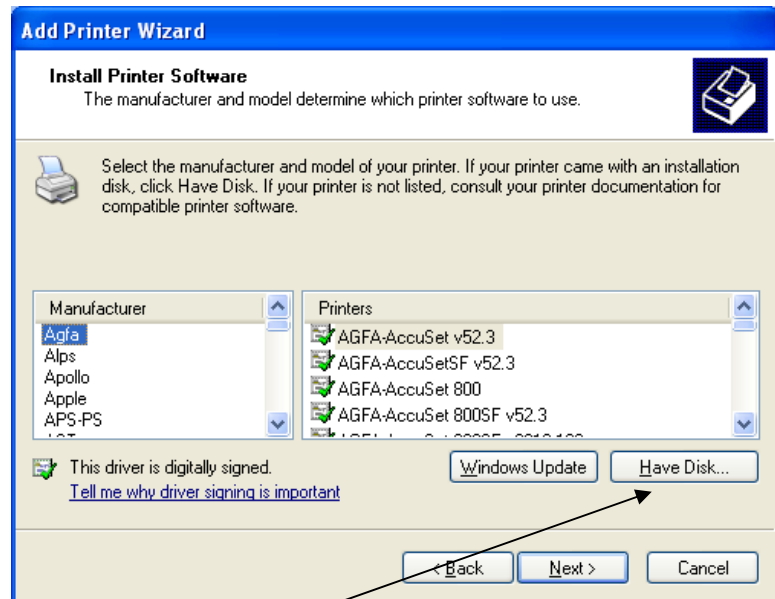


Select Local printer attached to this computer
Deselect Automatically Detect and Install
Click the Next> button to continue.

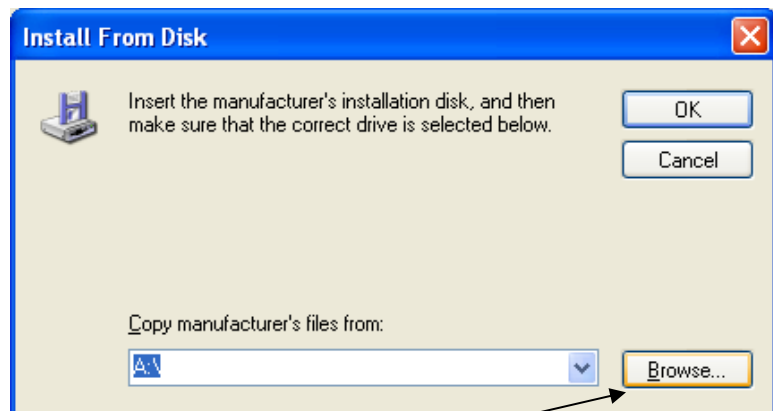


Select one of the USB (USB001 or USB002) ports and then Click on *Next* > to continue.

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000

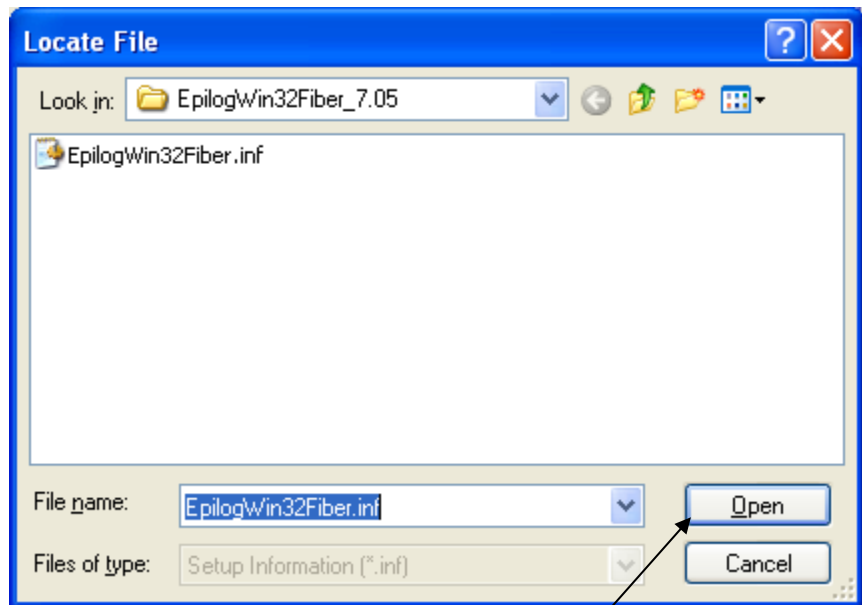


Click the **Have Disk** button. The following window appears:

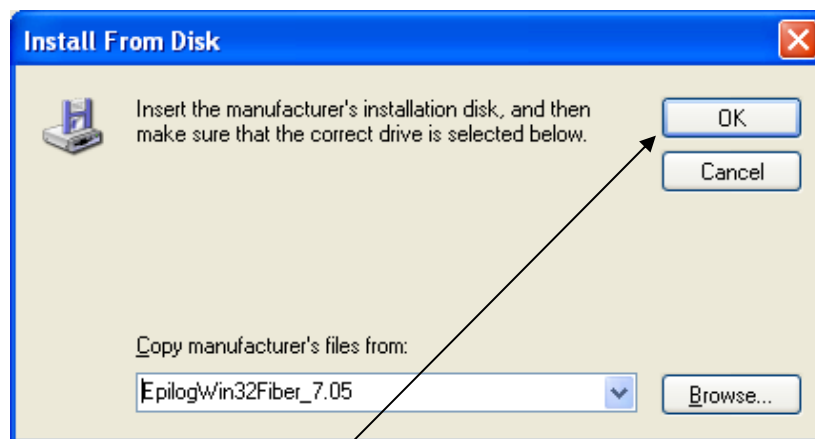


Click the **Browse...** button.

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000

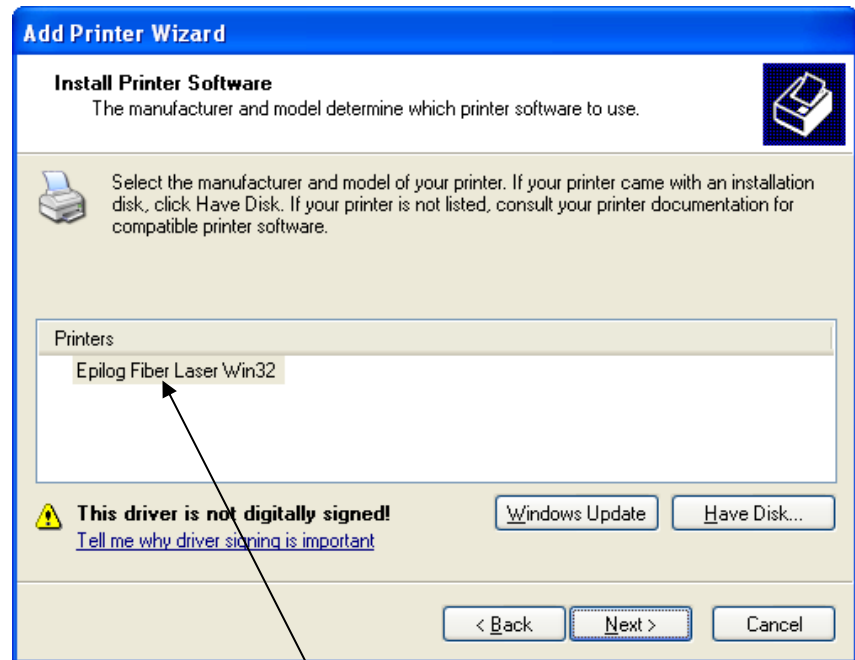


Click on the *EpilogWin32Fiber.inf* file then click on the *Open* button.

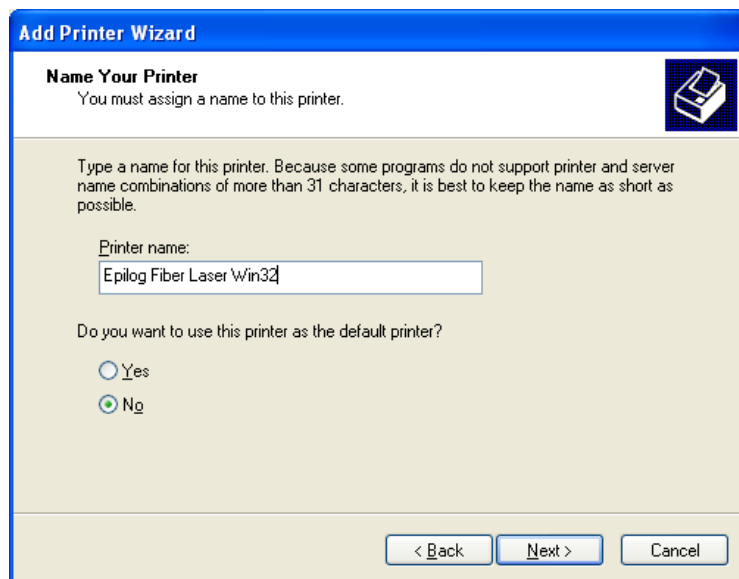


Click on the *OK* button.

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000

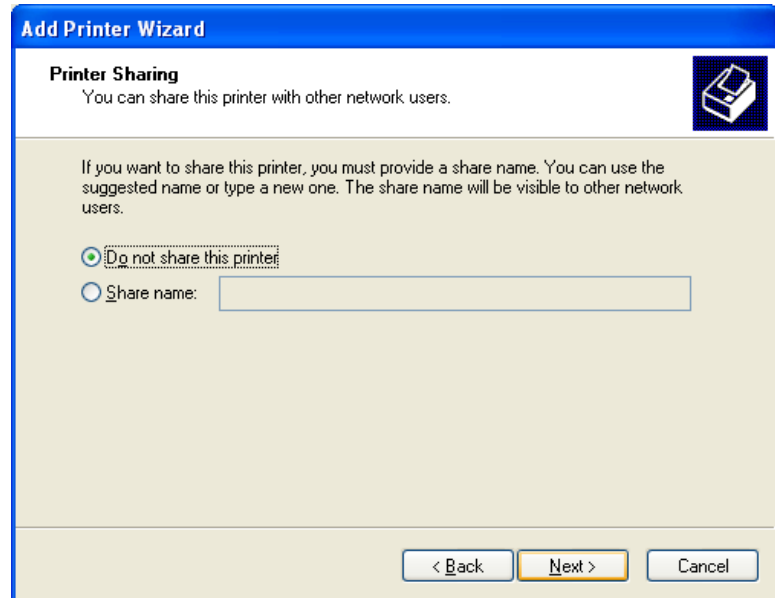


Select the **Epilog Engraver Win32** driver and then click on the *Next*> button.



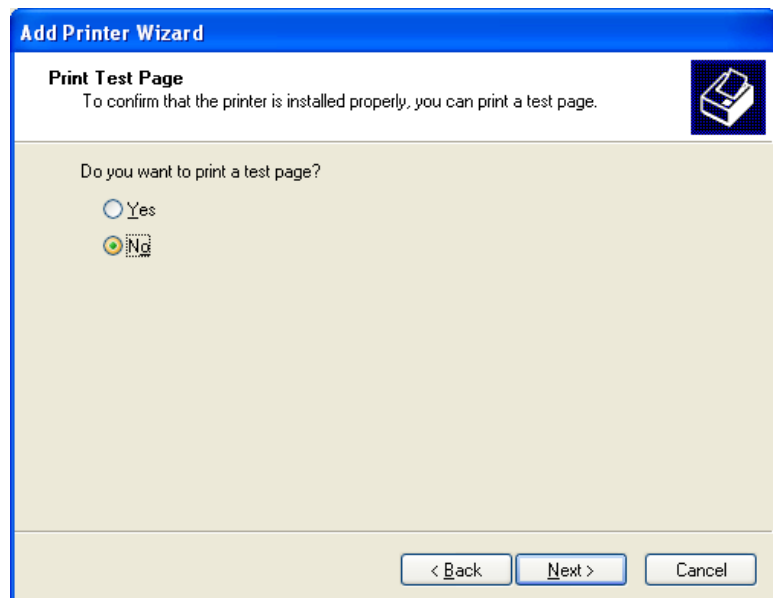
Name your printer and determine if you want the laser to be the default printer. You probably do if the laser is the only printer connected to your computer. Click the *Next*> button to continue.

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000

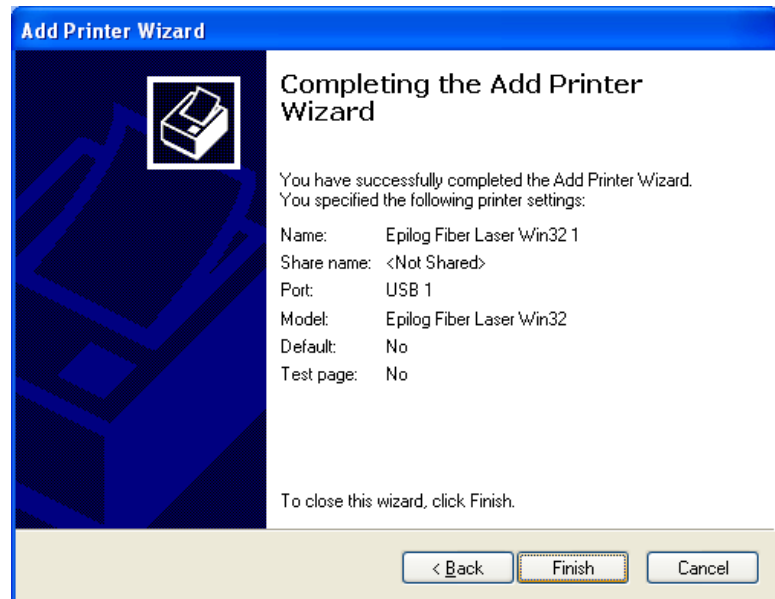


Select Do not share this printer, then click on the *Next*> button to continue.

Select *No*.
Click on the *Next*>
button



Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000



Click on the *Finish* button.



Click on the *Continue Anyway* button. While the Dashboard print driver has not been tested by Microsoft, it will not destabilize your computer.

That's it! You're now ready to print to your laser system!

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000

Installing the Dashboard Driver Using an Ethernet Connection and a Crossover Cable



(Skip this part if you are using a USB cable described in the previous section.)

There are three easy steps involved in setting up the laser and computer system to operate through an Ethernet connection:

1. Setting the IP Address from the laser keyboard.
2. Setting up the IP Address in the computers TCP/IP.
3. Dashboard Print Driver Installation



Note: The following instructions work only for a direct connection from the computer to the Epilog laser using a Crossover cable. This procedure does not work with a hub or a server. For Ethernet connections that require a hub, server, or multiple machines/computers, please consult with your network administrator.

Hardware Requirements

- A 10Base-T or 10/100Base T Ethernet network card installed in your computer. All brand name computers that have been built in the last couple of years should have come standard with an Ethernet card installed.
- A crossover cable connecting your computer to the laser (included in your accessories kit).



Please Note! - The crossover cable looks almost exactly like a standard straight-through network cable, but they have different purposes for making network connections. Normally, the crossover cable should only be used when connecting the Epilog laser directly to your computer. Ask your network administrator for assistance if you are unsure of which type of cable you have. It is a good idea to place a tag or label on the cable indicating if it is a crossover cable or standard (CAT5) straight-through cable.

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000



Step 1: Setting the Ethernet IP Address on the Laser

Be sure all packaging materials have been removed then plug the power cord into the laser system and turn the machine "ON". The laser will boot up, beep, and the carriage will find its home position.

Although it may seem intimidating if this is your first experience setting up Ethernet connections, it's really quite simple to accomplish. If you have problems, don't panic! You cannot do anything wrong that starting over will not fix!



There are three network protocols that will need to be set. They are set in the following order.

1. IP ADDRESS
2. SUBNET MASK
3. GATEWAY



The FiberMark control panel serves two functions. It acts as the main control panel for all of the common laser functions and it is also used to program some of the setup functions of the laser system. In standard working mode the keys correspond to the descriptive text below the key. In programming mode, the keys correspond to the numbers printed on the keys. The numbers are activated only when the machine is in its programming mode that is described below. The diagram below shows the front control panel.



Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000



IP ADDRESS

In order to program the laser system with the appropriate IP Address, you will need to activate the programming mode through the sequence of steps described below.



4. To go into program mode and set the IP Address, press the **GO** and **POINTER** buttons simultaneously on the control panel. You will see “**FUNCTIONS MENU**” displayed on the control panel LCD screen. You are now in programming mode and the numbers on the keys have been activated.
5. Press the **GO** button. - “**SERIAL #**” will appear on the screen. This is a factory set number and corresponds to the serial number of the laser system. You should not change this serial number!
6. Press the **GO** button again. - “**IP ADDRESS**” will appear on the screen.
7. Press the **GO** button again. - The factory set IP address will appear on the screen. It will look something like this: “192.168.003.004”, with a flashing box over the 1 in 192.



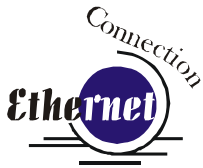
Note – This procedure uses 192.168.003.004 as the sample IP Address. Machines leaving the Epilog factory have this IP Address preset so you do not have to change anything unless you want to use a different address.

8. To change the IP Address, follow these instructions:
 - a) If you want to change the 1 in 192 to any other number, simply press the number key for that number. For example, if you want to change the 1 (in 192) to a 4, press the “**4**” (**Power**) key. After pressing this key the 1 will change to a 4 and the cursor box will advance to the next number (in this case, the number 9).
 - b) 5.2 At this point, press the appropriate key for the second number (if you want to keep the 9 a 9, you still must press the “**9**” (Pointer) key.
 - c) 5.3 Finally, press the appropriate key for the third number.
 - d) After pressing the key for the third number the flashing cursor box will go back to the first number – it WILL NOT shift to the next set of three numerals. If you want to move to the next group of three numbers simply press the **GO** button. Pressing **GO** will cause the flashing cursor box to shift right to the next set of three numbers. Repeat this process to change any of the numbers.



Note: There is no way to simply scroll through the IP Address numbers and skip over single numbers you do not want to change. You can skip groups of three by pressing “Go”, but skipping single numbers cannot be done. There is

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000



also no way to move the flashing cursor box backwards. The cursor scrolls through each three number group continuously until you press the “Go” button, where it will then go to the next three number groups.

- e) Repeat this process for all of the number groups to get the IP Address you need.
9. After all the IP address numbers have either been changed or verified as the ones you need, press GO again – this will move you to the next screen which is the “SUBNET MASK” screen.

Subnet Mask

1. Press **GO** again to see the “SUBNET MASK” settings. Use the same process of number selection using the keypads to select the appropriate number for the “SUBNET MASK”

Note: If you are using the cross-over cable provided by Epilog, make sure the “SUBNET MASK” is set to:

“255.255.255.0”

2. After you have set the “SUBNET MASK”, Press **GO** again.

GATEWAY

1. You will now see “GATEWAY”, Press **GO** again.
2. The **GATEWAY** setting can be set using the same process of number selection using the key pads to select the appropriate numbers for “GATEWAY”.



Note: The GATEWAY address is not important if you are using the provided cross over cable. If you are running your laser through a network, you will need to set the laser GATEWAY numbers to correspond to your network.

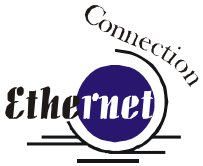
At the end of the programming process, the laser will prompt you to either SAVE or NO (Not Save) the numbers you have applied. The Screen will look like:
Save – GO, No- STOP

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000

Press the **GO** button to save the changes you made to the network settings. Press the **STOP** button if you do not want to save the changes and you want to return to the factory default.

If at any time in the programming process you want to stop or restart, press the **STOP** button. This will take you out of the programming functions. If you want to restart the programming process, simultaneously press **GO** and **POINTER** to get back to the start of the Function Menu.

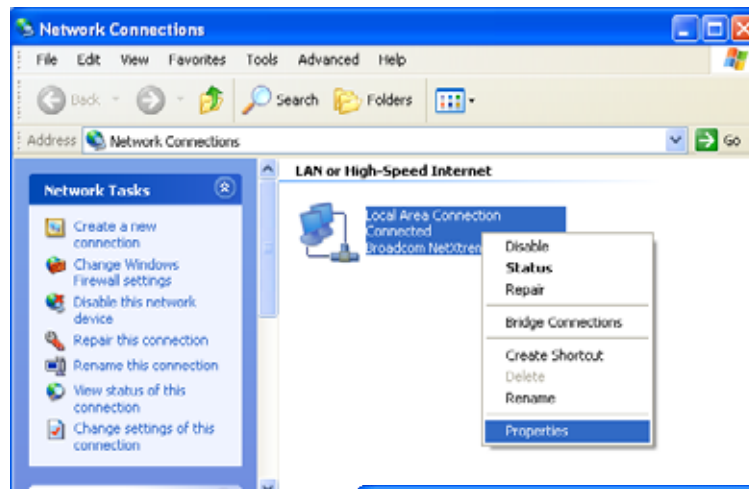
Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000



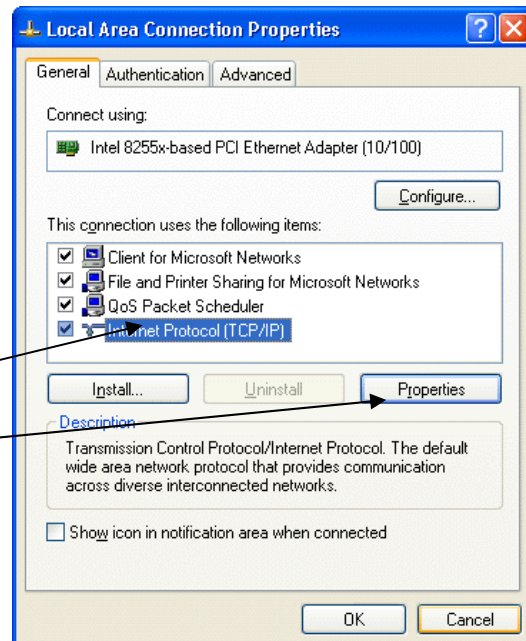
Step 2: Setting up the Computer's TCP/IP Address

Once you have set the Network settings on the laser, you will need to set the TCP/IP at your computer.

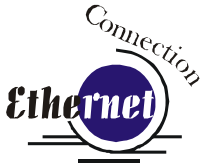
1. From the Start menu at the bottom of your computer monitor screen select *Start / Control Panel / Network Connections*. Right click on the *Local Area Connection* icon, and then select *Properties*.



2. Highlight the *Internet Protocol (TCP/IP)* option.
3. Then click on *Properties*.



Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000

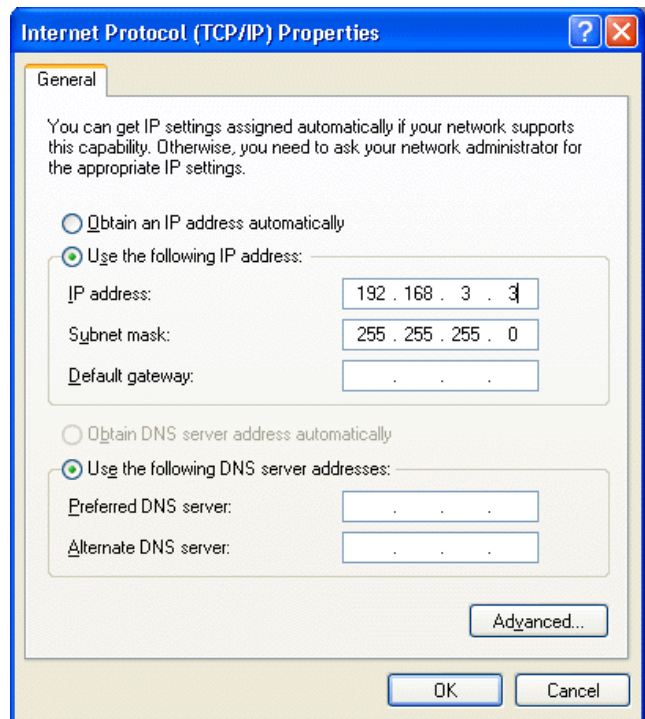


- The window below will appear. Select Use the following IP address radio button.
- Type in the following (leave everything else blank on this page)

IP Address 192 168 3 **3**
Subnet Mask 255 255 255 0
Default Gateway Leave blank

This number is not an error -- the last digit of the IP address in this window only must be different than the IP address set in the Epilog FiberMark.

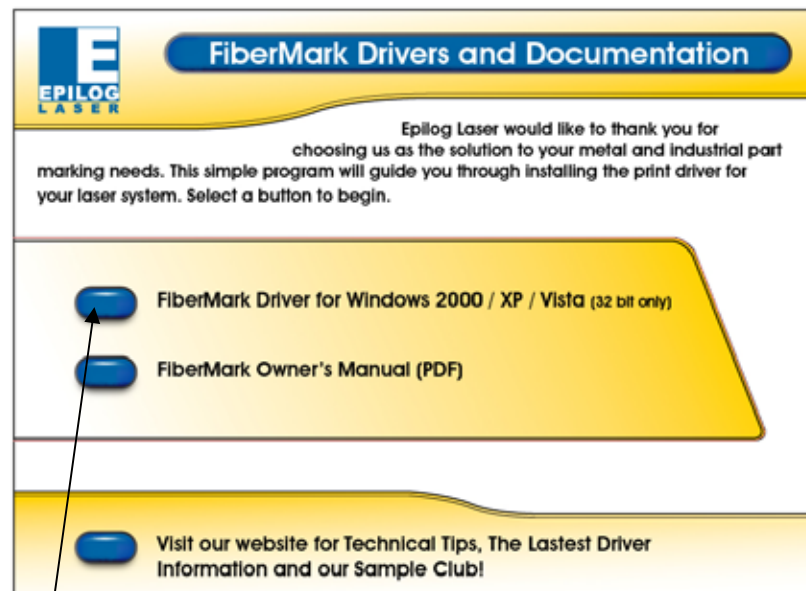
- Click the **OK** button in this window and then click on the **Close** button in the next window.
- Your computer is now set to print through a crossover cable to the Ethernet port on the laser.



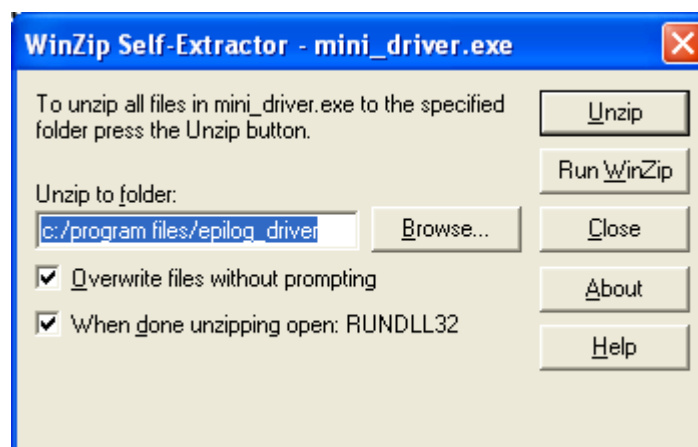
Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000

Step 3: Installing the Dashboard Driver for an Ethernet Connection:

1. Insert the Epilog Laser CD into your computer's CD player. It should Auto-Start and the following window should appear (refer to Appendix C if the AutoRun feature does not bring up the following screen):



2. Click the **FiberMark Driver** button and the following window will appear:

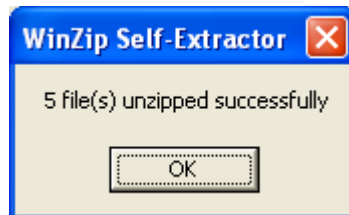


Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000



NOTE - When you Unzip the driver files they will be unzipped into the c:/Epilog_Driver directory. Do not move them from this directory. The installation process looks for them in this directory later on in the process.

3. Click on the Unzip button. It will take just a few seconds for the following window to appear:

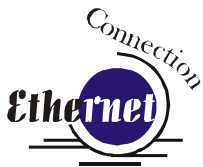


4. Click on OK and the following window appears:

Click *Next* > to continue.



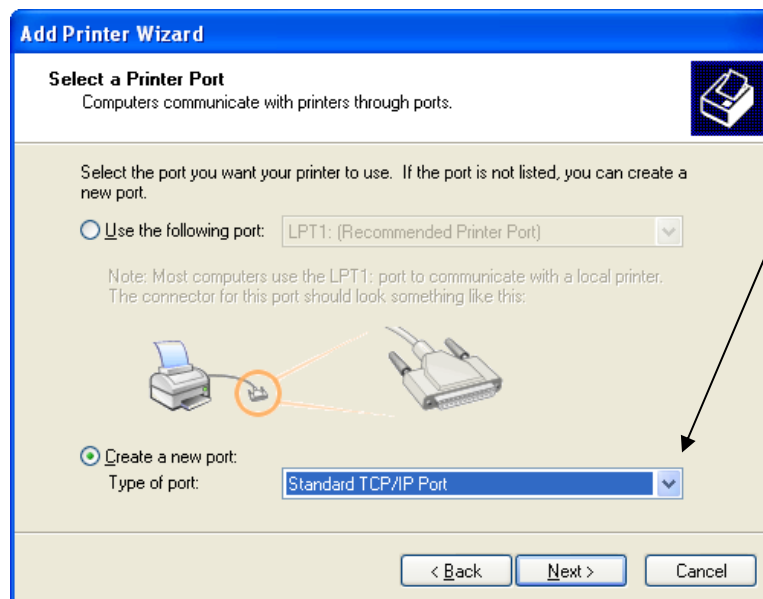
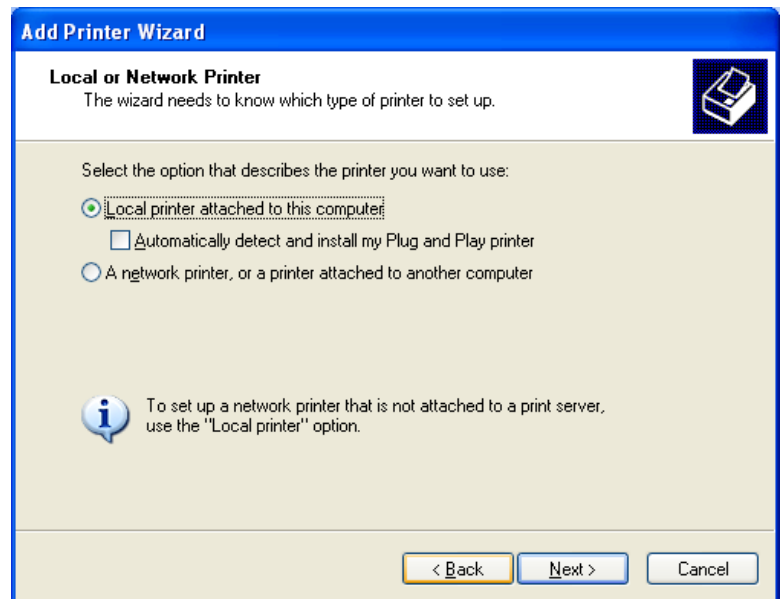
Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000



Select *Local printer attached to this computer*

Deselect *Automatically Detect and Install*

Click the *Next>* button to continue.

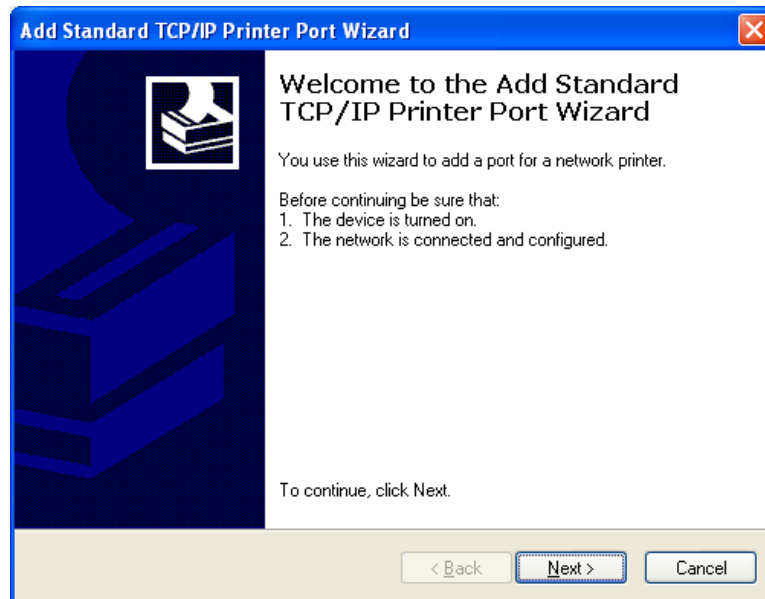
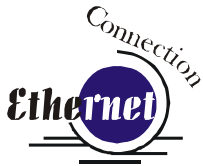


Click on *Select a New Port:*

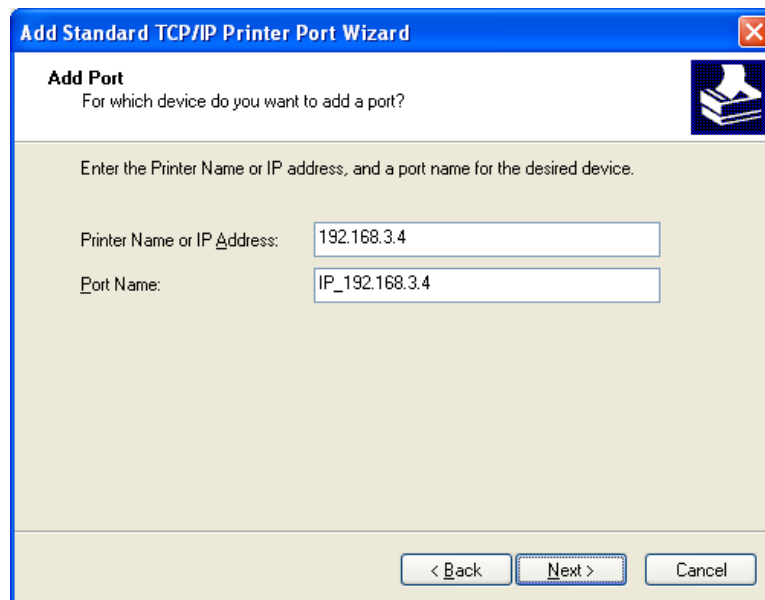
Use the scroll button to select *TCP/IP Port.*

Click *Next>* to continue.

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000

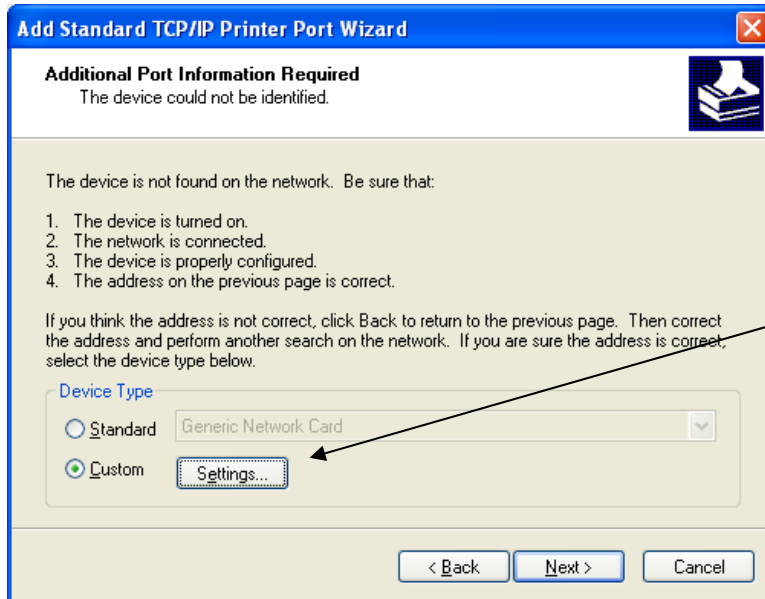
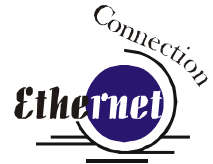


Click *Next*> to Continue.

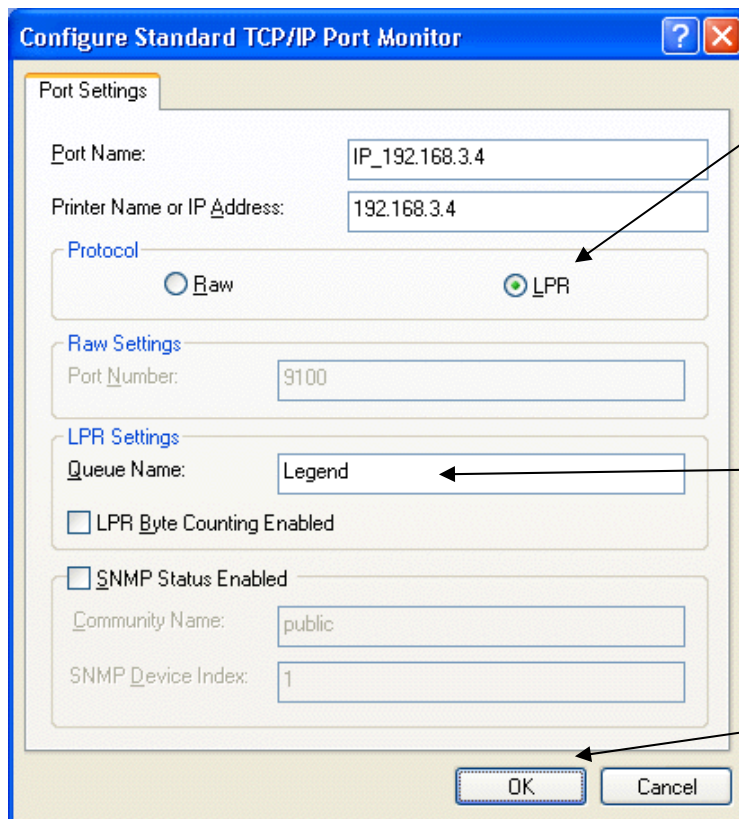


Enter the same IP Address that you set in the control panel (on page 27 and 28). It's important that you use the same address in both places, but the format of the numbers looks a little different. In the control panel the IP Address will look like this: 192.168.003.004. When you enter the IP Address in this window, you do not need the zeros, and the address will look like this: 192.168.3.4.

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000



Click *Custom*, and then *Settings*.

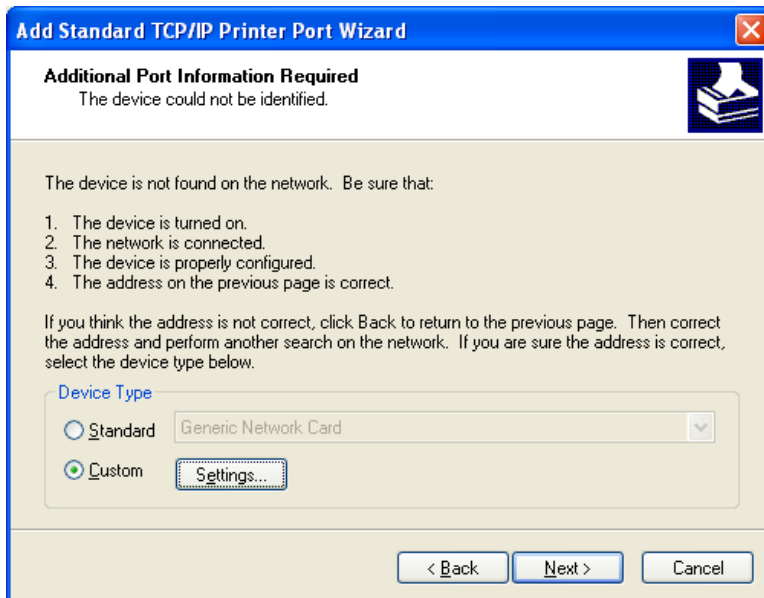
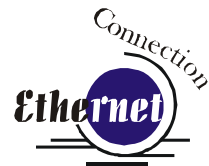


Set Protocol to *LPR*. This is a very important step. Your download time will be greatly increased if LPR is not selected.

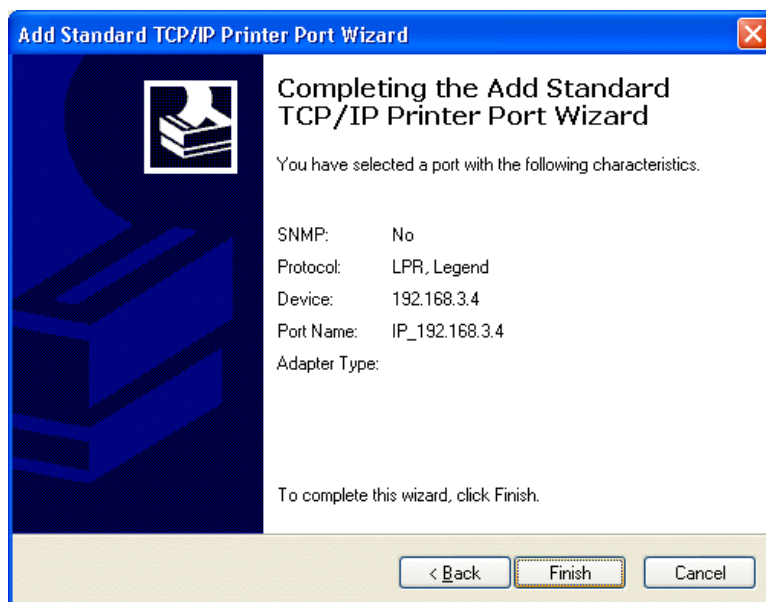
Type *Legend* in the Queue Name box.

Click OK to continue.

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000

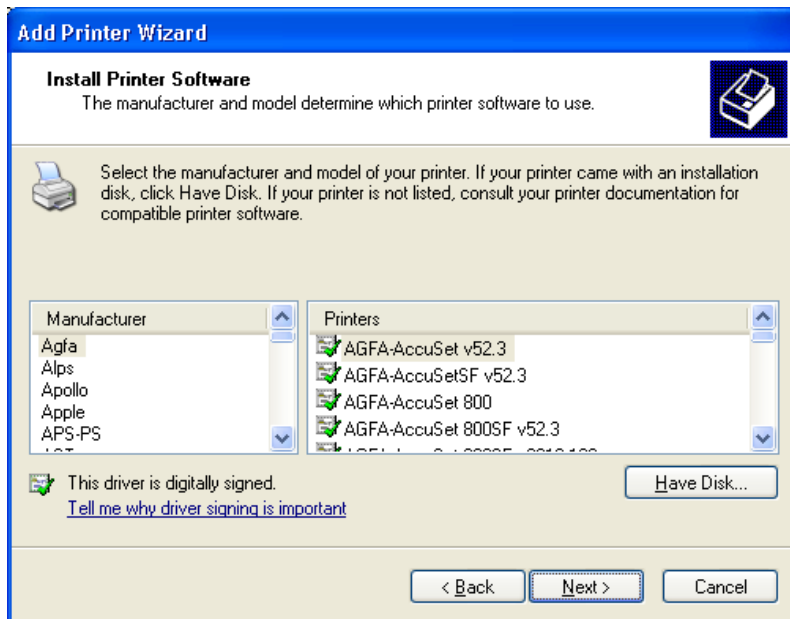
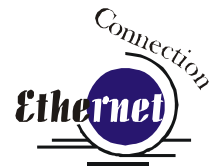


Click *Next*> to continue.

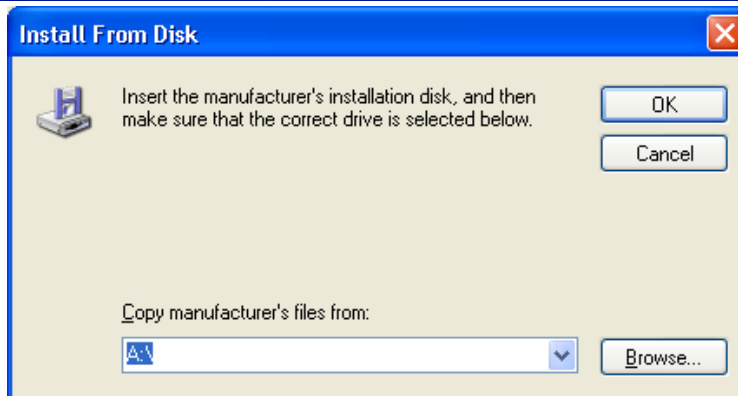


Click *Finish* to continue.

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000

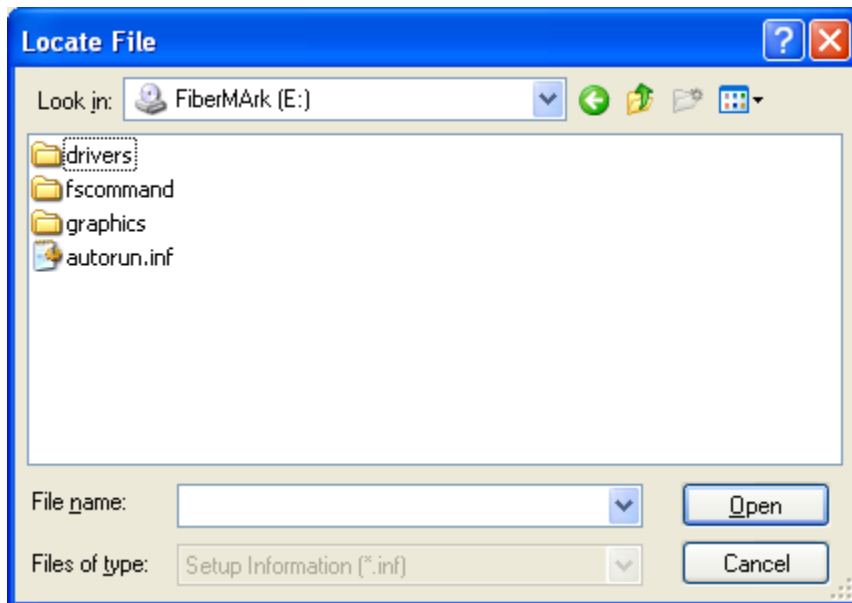
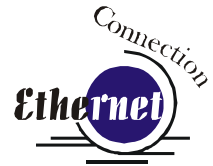


Click *Have Disk...*



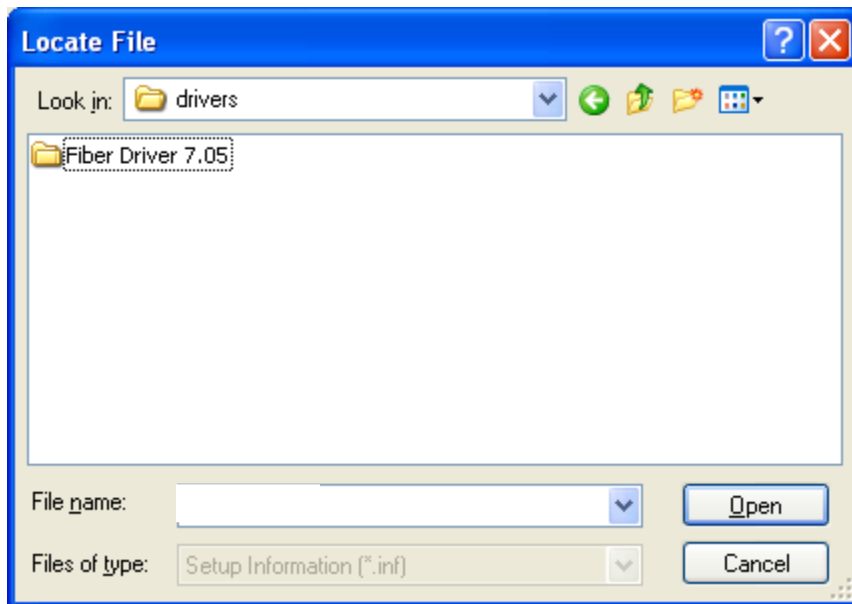
Make sure the Epilog CD-ROM is in the computer's drive and click **Browse...** Select the CD-ROM Drive from the drives listed.

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000



Select *Drivers*

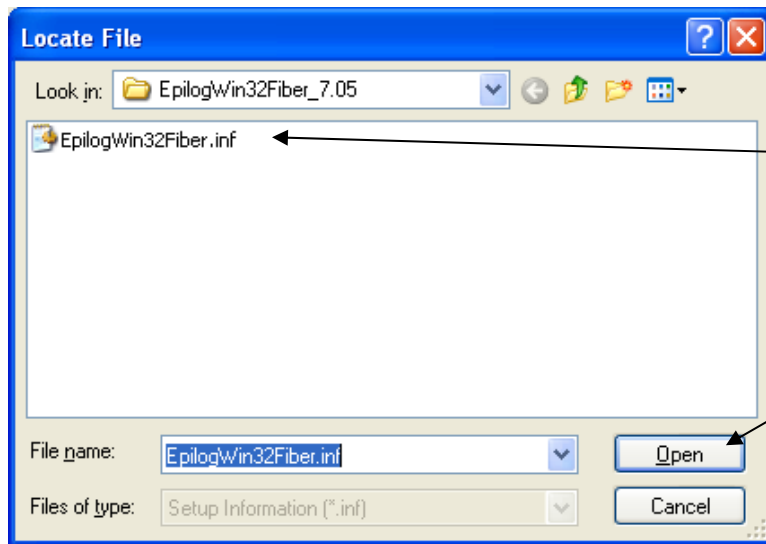
Select *Open* to
continue



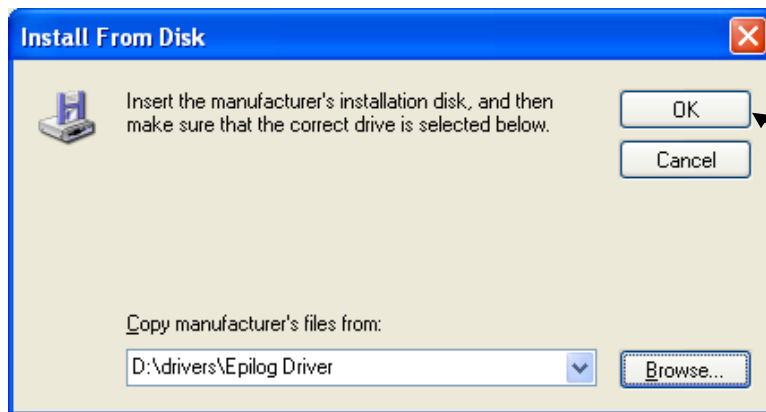
Select Fiber Driver
X.XX

Select *Open* to
continue

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000

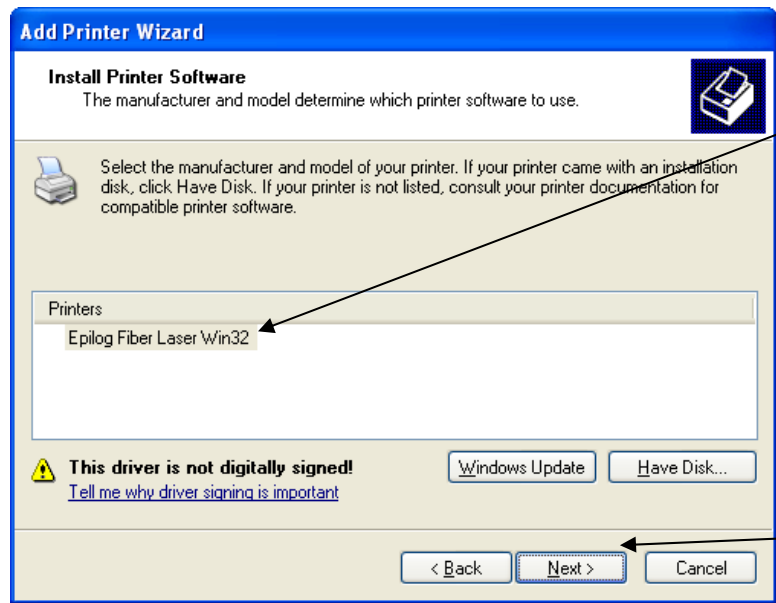
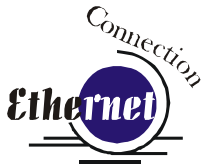


Select **EpilogWin32Fiber.inf**, and then select **Open** to continue.



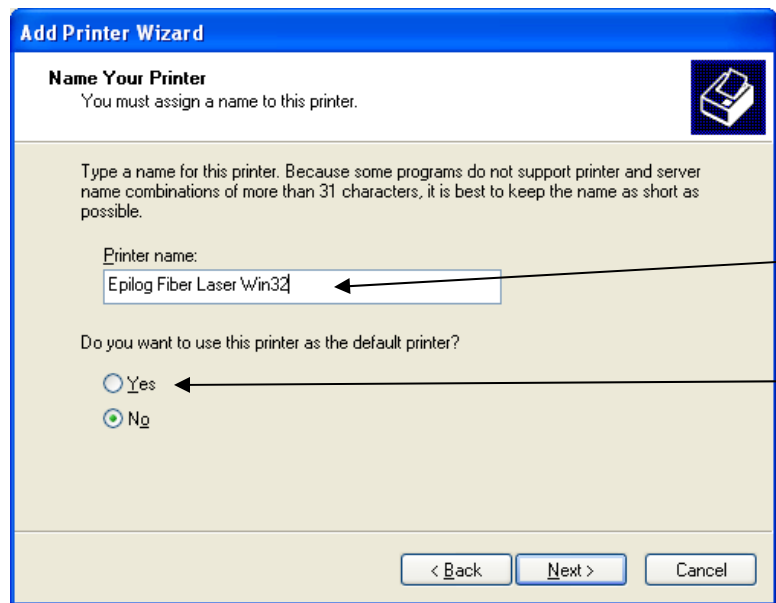
Click **OK** to continue.

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000



Select *Epilog Fiber Laser Win32*.

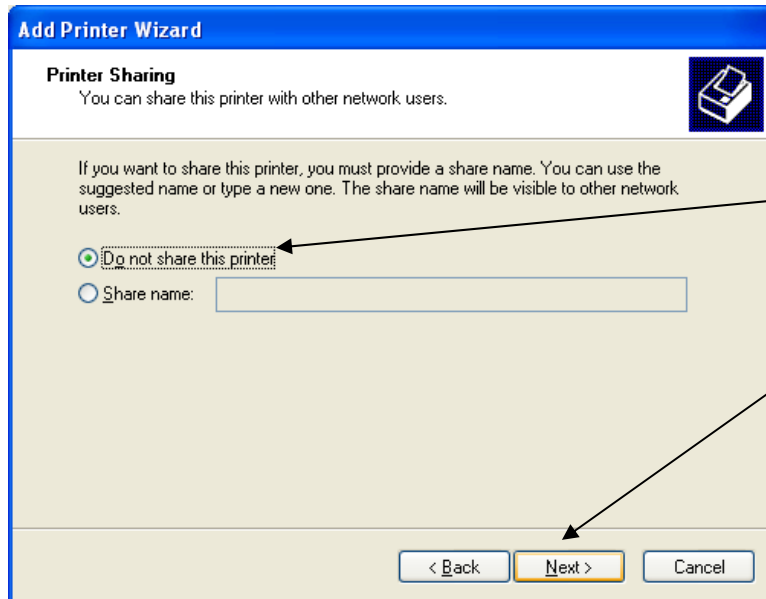
Click *Next*> to continue.



Name your printer and determine if you want the laser to be the default printer.

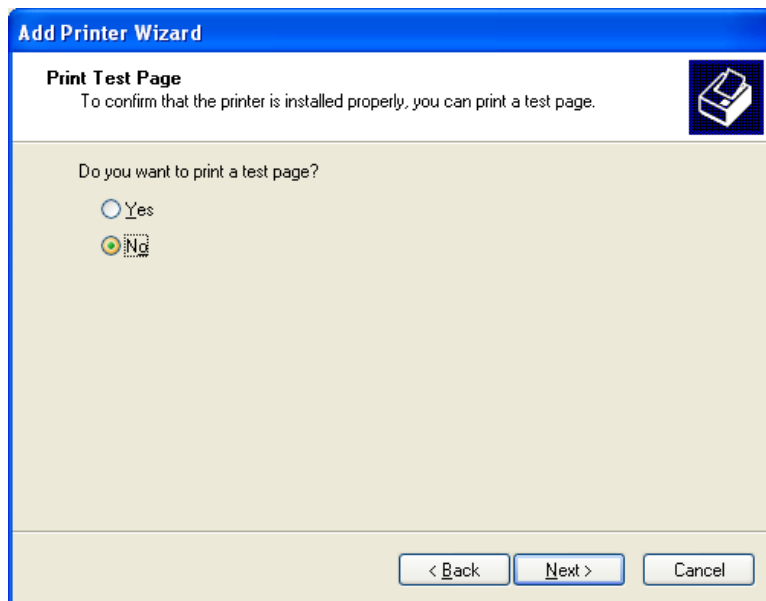
Click *Next*> to continue.

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000



Select *Do not share this printer*.

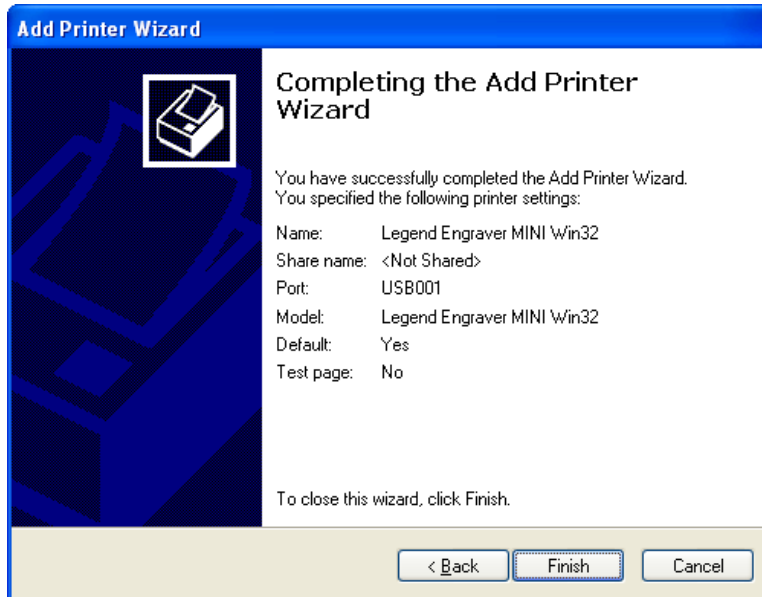
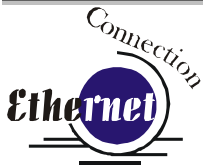
Click *Next >* to continue.



Select *No*

Click on the *Next >* button.

Section 5: Installing the Epilog Dashboard Print Driver- Windows XP or 2000



Click on the *Finish* button



Click on the *Continue Anyway* button. While the print driver has not been tested by Microsoft, it will not destabilize your computer.

That's it! You're now ready to print to your FiberMark laser system!

Section 6: Quick Start & Easy Setup

In This Section

- Artwork Setup
 - Job Setup
-

Your Epilog laser system is ready to use once you have followed the steps in Sections 1 – 5. To get started quickly and run a sample piece of material on your new laser, the following is a very quick setup guide to describe the general steps for running a first job. A detailed set of instructions for each step of the process follows this quick setup guide:



1. Set up a simple piece of artwork in your software program (e.g. CorelDraw).
2. Turn on the power to your laser and wait for a “Beep” to note the machine is initialized.
3. Turn on your exhaust.
4. Place your sample material on the table in the upper left corner (make sure the table is low enough to accommodate the material).
5. Focus
6. Close the door.
7. From CorelDraw click on the **File** pull down menu to print.
8. Select **Print**. Make sure your Printer Destination is the “Epilog Fiber Laser Win32” and
9. Click **Properties** to go to the Dashboard print driver to set the Speed, Power, etc., for the material you are using,



More information on settings for the Dashboard are included in “Section 7: Using the Epilog Dashboard Print Driver” of this manual.

10. Click **OK** to exit out of the Dashboard print driver with the settings in place.
11. Click **Print** to print the page to your laser.
12. The job you sent over most recently is shown in the LCD display.
13. To run that job, just press the **GO**.

Section 6: Quick Start & Easy Setup

14. To run a previous job, press the **JOBS** button on the keypad and then scroll through the sent jobs by pressing either of the **UP** arrow keys or either of the **Down** Arrow keys. The corresponding job names will be displayed in the LCD Display Panel. If more than one job of the same name is sent over, it is numbered after the word Job.
15. Press **GO** when the job to be run is displayed in the LCD Display Panel.

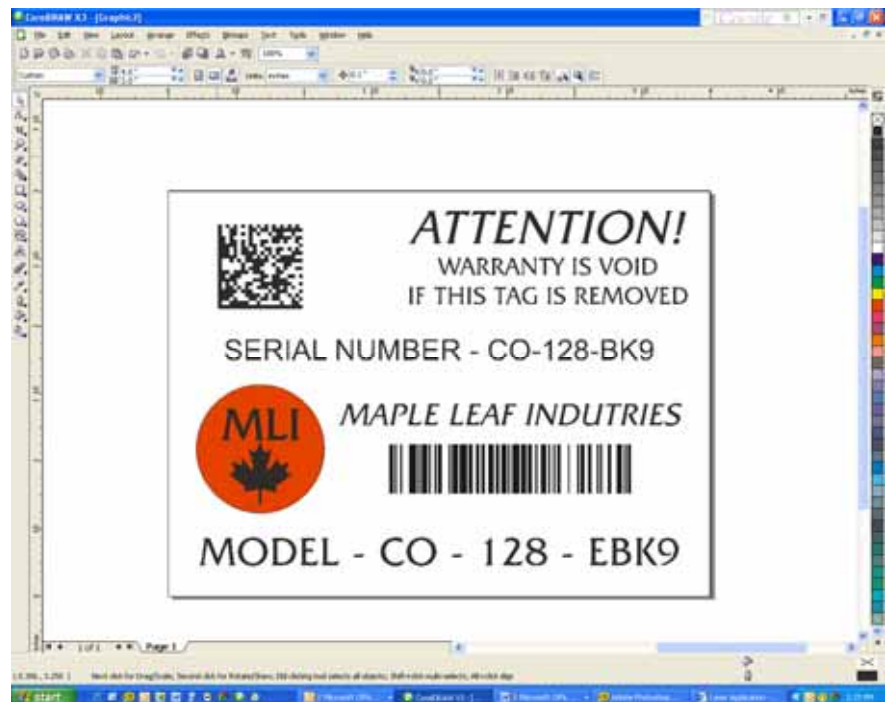
Artwork Setup

Create your job in the graphics software of your choice, (for example – CorelDraw). There are three different modes of operation for the laser and the way you setup your artwork will determine if you raster engrave or vector mark.

Raster engraving can best be described as very high resolution dot matrix "printing" with a laser. Raster engraving is used to create highly detailed graphic images. The laser head scans back and forth, left to right, engraving a series of dots one line at a time. As the laser head moves down line by line, the dot pattern forms the image that was printed from your computer. You can raster engrave scanned images, text, clipart, photographs, or line drawings.

This artwork is a good representation of a raster file. Data Matrix codes, bar codes, text and graphics can all be engraved with your laser system.

Virtually any image you create or import onto your computer screen can be engraved.



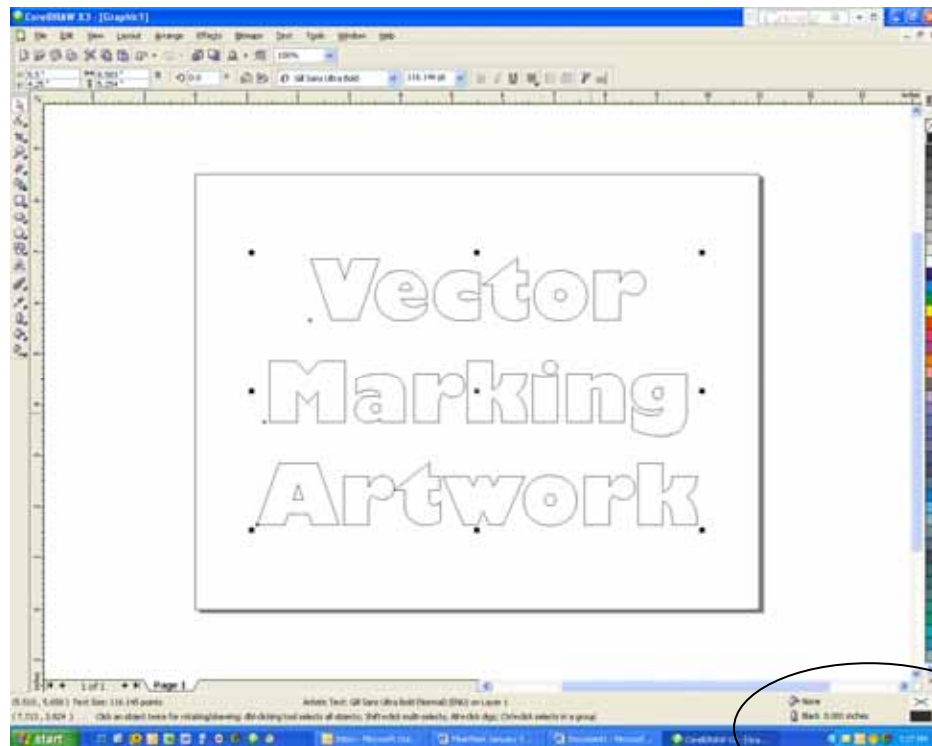
Section 6: Quick Start & Easy Setup

Vector Marking is a continuous path that follows the outline or profile of an image. Using Vector mode with the FiberMark laser is restricted to vector marking only and is not intended for cutting entirely through metal materials.

You can vector mark with the laser by setting objects and text to be unfilled and drawn with a 0.001-inch (0.025mm) outline. The thin outline will produce a vector profile instead of the raster type mark that is commonly used when engraving.



This sample shows the results of Vector marking.



This image is a good representation of a vector file. There is no fill in the letters and the outline is .001 inch (0.025mm).

Section 6: Quick Start & Easy Setup



Note: Many people use the Combined mode when raster engraving and vector marking in a single job setup. If your Raster artwork contains thin lines between .001 and .007 inches and you are using Combined mode, those thin lines will all be vector marked. This can be disconcerting when it happens. The most common setup where this occurs is when you have a clipart image that contains hidden lines that are sent to the laser using Combined mode. The artwork shown below is a good example of a piece of clipart as it appears on the screen (top) and the hidden lines (bottom) that will vector mark if you are in Combined or Vector mode. If you only want to Raster engrave, make sure you select Raster mode in the Epilog Dashboard print driver.



For more information on Vector marking read “Section 7, Using the Epilog Dashboard print driver” of this manual.

In CorelDraw you can view just the lines (bottom view) by clicking on the View button in the menu bar and selecting Simple Wire frame.

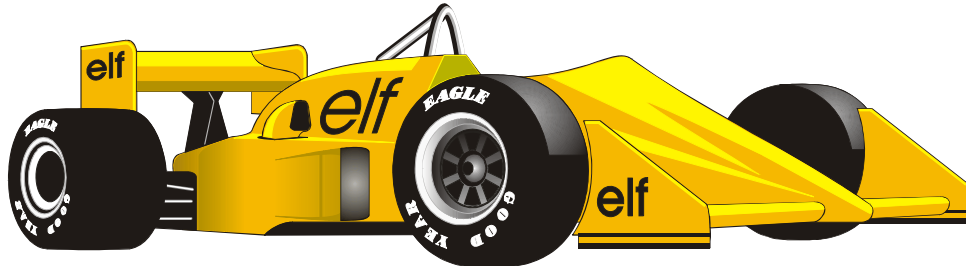
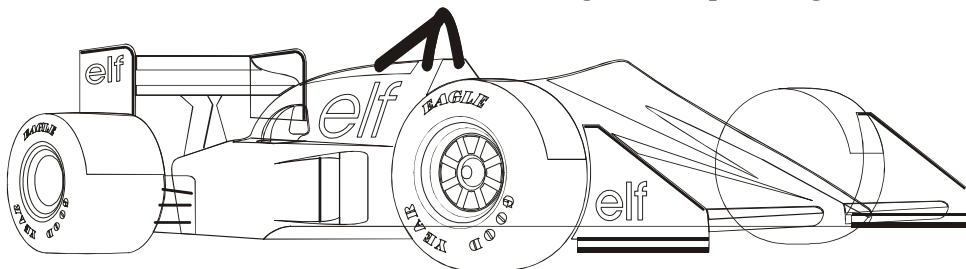


Figure 1: Clipart Image w/Hidden Lines



The upper image is a complex piece of clipart. The lower image shows all of the hidden lines that are in this piece of clipart. If this clipart image is run in COMBINED mode it would first raster most of the car then vector mark all but the thickest lines.

Section 6: Quick Start & Easy Setup

Job Setup

Your Epilog laser system has a prime reference point that is in the upper-left corner of the laser table. This is the 0,0 (zero, zero), or “Home” position. All artwork and material placement is referenced from here. Keep this 0,0 point in mind when measuring and setting up your work.

Artwork Orientation

Landscape or Portrait – You can engrave using either landscape or portrait modes. Depending on the artwork, you can increase your efficiency and decrease the time it takes to engrave an image by changing the orientation of your file. Many users set up their artwork in portrait mode and then rotate the artwork 90 degrees if they are going to print from landscape mode.

The drawings below show the same job in portrait mode (left) and landscape mode (right). The portrait mode will engrave in less time because there is a large amount of white space between the lines of text that the laser will automatically skip through. Engraving the same job in landscape mode eliminates the lasers ability to skip through white space, resulting in a longer engraving time. Experiment with the artwork that you use. It will quickly become second nature which mode works best for different types of artwork.



Portrait Mode



Landscape Mode

Section 6: Quick Start & Easy Setup

Piece and Page Size

Many users like to create their artwork on a page size in Corel that matches the size of the piece that is to be lasered. Compensating for beveled edges or placing an image in an exact location is easy when there is a one-for-one relationship between the material and the page size of the artwork. If this method works for you, remember that you must also set the Piece Size dimensions in the Dashboard print driver to match the page size you have set in your graphics software.

On the other hand, many users do not want to change the Piece Size dimensions in the print driver every time they print something new. They prefer to use a page size that matches the table size (24 x 12 (610 x 305 mm)) and place their artwork into the upper left corner of the page. Both methods are effective and it is a matter of personal preference which method is used.

Place the material to be engraved on the engraving table in the upper left hand corner, pressing the material firmly against the metal rulers along the top and left edges.

Most material does not need to be held or clamped in place. Simply setting your material on the table and letting gravity hold it in place is enough. If you are using a material that is likely to move during operation or is very thin, you can hold it in place using the Epilog Integrated Vacuum Table. Simply place your material on the table flush against the upper and left hand rulers. Then cover any remaining holes in the metal table. For sheet stock this will create a vacuum and hold the piece of material in place. The material can also be held with a variety of materials such as masking tape, modeling clay, magnets, etc. Creating jigs is also an excellent method of holding materials that are high volume, or high value. Engraving or cutting a jig to match an unusual shape is very easy to do.

Focus on your material

In order to mark a crisp clean image, your material must be the correct distance from the bottom of the focus lens. Setting the distance from the bottom of the focus lens to the top of your material is the process of focusing, and is accomplished by placing your material on the table and moving the table up or down until the material is the correct distance from the focus lens.

Focus: The photo below shows the “V” shaped focus gauge that is used to determine the correct distance from the focus lens to the top of your material. This gauge is included in your Accessories Kit that comes with your system.

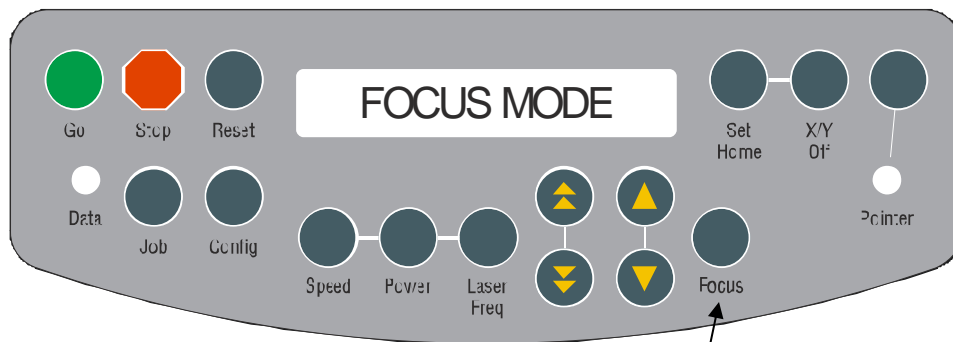
Section 6: Quick Start & Easy Setup



Focus Gauge



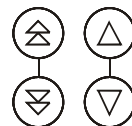
Focus Gauge on carriage



To focus, place the focus gauge on the carriage (see photo above). Press the Focus key on the front panel and use the up and down cursor buttons on the front control panel to move the table until your material just touches the bottom of the gauge.

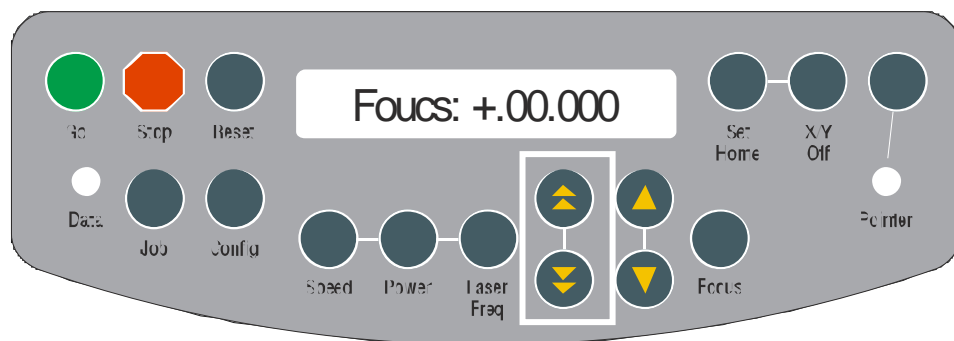
There are two sets of cursor buttons that control the up and down movement of the table:

- The double triangle cursor buttons control the coarse speed of the table and move the table up and down quickly in large increments.
- The single triangle cursor buttons control the fine speed of the table and move the table up and down slowly in very small increments.



Section 6: Quick Start & Easy Setup

Numeric Display: When the Focus button is depressed a numeric readout is displayed. Wherever the table is when the machine is initially powered-up is the 00.000 (Z-axis) position. Once the table is moved, the readout will display how far the table has moved up or down. Once you move the table up or down to the position you want, you can zero out the numeric display by pressing both double triangle cursor keys simultaneously. This feature is very helpful when very precise focus is important, and when Auto-Focus is used in Color Mapping mode.



Once the focus position has been established, remove the gauge and press the Reset button to return the carriage to its “Park” position before starting your job.



When the **Focus** button is pressed, the carriage will move forward and to the right several inches (~ 50 mm) from its “Park” position in the upper-left corner. If the table is too high, the carriage may collide with your material. To prevent the carriage from colliding with your material, you can do one of two things:

1. Press the **Stop** button first before pressing the Focus button. Pressing the Stop button immediately before pressing the Focus button prevents the carriage from moving from its “Park” position, allowing you to lower the table with your material in place.
2. Remove your material, press the Focus button and use the Down button to lower the table.

Once you have focused, pressing the **Reset** button will move the carriage back to its “Park” position, or you can begin engraving from the manual focus position. Neither position will affect the start position of your job.

Focus Anywhere on the Table: If you wish to focus at a point on the table other than in the upper left corner you can do so by disabling the axes and moving the carriage by hand to the location where you would like to focus. To do this, use the following key sequence:

Section 6: Quick Start & Easy Setup

Press the *X/Y Off* key, then the *Go* key. This disables the axes and you can now move the carriage by hand to any point on the table (this also works when using the Rotary Attachment). Press the Up or Down cursor keys on the keyboard to move the table up or down to set the proper focus height. After you have focused, press the *Reset* key to send the carriage back to its Park position.

Be careful to avoid touching the optics when you are moving the carriage by hand!

Section 6: Quick Start & Easy Setup

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Manual

Basic Operations

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Section 7: Using the Epilog Dashboard

In This Section

- General Tab
 - Advanced Tab
 - Color Mapping Tab
 - Additional Dashboard Features
 - Changing Dashboard Defaults
-

The Epilog Dashboard is the print driver that allows you to set laser functions from your computer and is the link that prints your data or images from your computer to your laser system. Because the Dashboard is a print driver the terms Dashboard and print driver may be used interchangeably throughout this manual.

The Dashboard is shown below and can be installed from the driver CD that came in your accessories kit. It can also be downloaded from the Epilog web site – www.epiloglaser.com. If you are just getting started and are in a hurry to engrave a job, you can do so by setting just a couple of parameters in the Dashboard without having a detailed understanding of what different choices are available to you.

To get started with a simple engraving job, type your name in CorelDraw, press the Ctrl and P keys to print, select the Dashboard print driver and go into Properties. Set the following parameters:

- Job Type: **Raster**
- Print Quality: **600 DPI**
- Piece Size: Match to your page size in CorelDraw.
- Use the *Speed and Power recommendations found in Section 10* of this manual for the material you are using.
- Select **OK** in the Epilog Dashboard
- Select **Print**. You have sent the file to the laser system and are now ready to engrave your name.



Section 7: Using the Epilog Dashboard

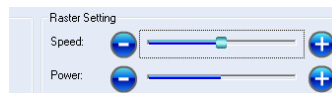


Now that you have printed a simple job, you are ready to gain a better understanding of the different printing options available from the Dashboard. Most marking jobs can be accomplished by using only the General tab. Advanced features for more complex jobs can be found under the Advanced and Color Mapping tabs.



Note! – When using the slider bars, there are several different ways to get the desired setting. These different methods all follow standard Windows protocol, so they will work in other Windows software applications too!

You can move the settings in increments of one by using the + and – icons.

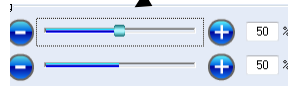


You can move the slider in increments of ten by clicking close to, but not on, the slider. Holding down the Alt key on your computer keyboard while clicking close to the slider will bring up the dotted box outlining the slider and will allow a little better control of moving in increments of ten. Clicking directly on the slider control (the little box in the center) will also bring up the dashed outline.

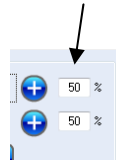


Section 7: Using the Epilog Dashboard

You can move the little slider box by clicking down and then moving to the desired number before releasing your mouse.



You can type the setting into the number box.



The following sections provide detailed explanations of the different features in the Print Driver. Most marking jobs can be accomplished by using only the General tab of the Dashboard print driver. Advanced features for more complex jobs can be found under the Advanced tab.

Section 7: Using the Epilog Dashboard

General Tab

Job Type



One of the first things new users want to know is how the laser system knows when to raster engrave and when to vector mark. The decision is based on several variables:

1. Line weight (or Stroke) as defined in your graphic image from Corel, Illustrator, etc. The line weight of your object will determine if it will raster or vector mark.
2. The Resolution as set in the DashBoard driver will also have an effect on which lines will raster engrave and which will vector mark.
3. The Job Type as set in the DashBoard driver - Raster, Vector or Combined.

The tables on the following pages show how the line weight from your graphics program and the Resolution setting from the DashBoard affect which lines will engrave and which will vector mark. Getting used to how this works will be obvious after just a couple of jobs.

The FiberMark laser system will mark / engrave in three modes: raster, vector and / or combined.

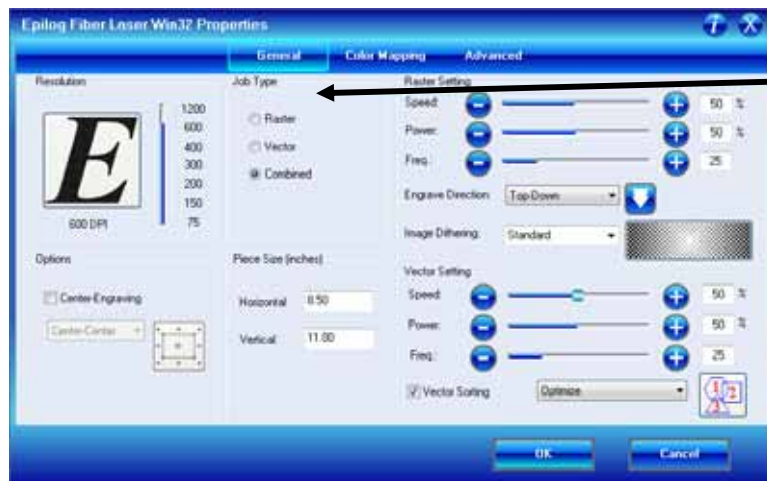
Raster Mode - Similar to a paper printer where the lens assembly moves left and right in the x-dimension while moving toward the front or back of the system in the y-dimension. Most marking applications will employ raster marking.

Vector Mode - Similar to a plotter, where the lens assembly will trace defined line segments.

Combined Mode – By properly setting up your artwork you can both raster mark and vector mark from this mode.

The following pages will describe how to set up your artwork so you can easily predict what your output will be.

Section 7: Using the Epilog Dashboard



The Job Type: menu allows you to specify Raster, Vector, or Combined. This setting works in conjunction with the way your artwork is setup to produce a raster engraving, a vector profile, or a combination of the two modes in a single job.

Raster

Raster mode is used for marking or engraving materials. Typical uses would be reproducing clipart, scanned images, photos, text and graphic images. The Raster Speed and Raster Power boxes will be enabled when you have selected **Raster** under **Job Type**. Set the Speed and Power boxes to the appropriate settings for the material that you are engraving. For speed and power guidelines, see the **Speed and Power Recommendations** section of this manual.

Note – Very thin lines will not raster engrave, and the definition of “thin” varies depending on the Resolution being used. The following table shows which line weights will raster at different resolutions when in Raster or Combined mode.

Example: The rectangle below has a line weight of 0.003 inch. It will not raster engrave at any resolution (see following chart). If you send just this box to the laser in **Raster** mode and try to run the job, the laser will beep once and be finished because the line is too small to be recognized as an engraving line.



Line weight = 0.003 inch.

Section 7: Using the Epilog Dashboard

Engraving Line Weights

Line weights that will engrave at different resolutions (DPI) when in Raster or Combined mode.

	Resolution						
		150	200	300	400	600	1200
Line Weight (inches)	.001	No	No	No	No	No	No
	.002	No	No	No	No	No	No
	.003	No	No	No	No	No	No
	.004	No	No	No	No	No	No
	.005	No	No	No	Yes	Yes	Yes
	.006	No	No	No	Yes	Yes	Yes
	.007	No	No	Yes	Yes	Yes	Yes
	.008	No	No	Yes	Yes	Yes	Yes

Section 7: Using the Epilog Dashboard

Vector

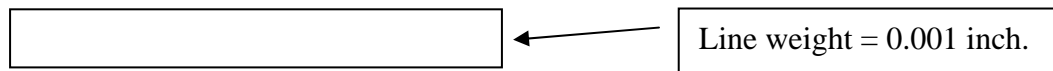
Vector mode is used to mark or make a thin line drawing. The Vector Speed, Power and Frequency bars will be enabled when you have selected **Vector** under **Job Type**.

Note - Artwork, such as scanned images, photos, JPEGs, etc. will not vector mark because they do not contain thin lines of any kind.

Note: When you are marking in Vector or Combined mode be aware that your best results are typically produced at slower speeds. The highest speeds are specifically designed for draft mode or less demanding applications where speed is much more important than quality.

Note - Very thin lines are used to define Vector marking and the definition of “thin” varies depending on the Resolution being used. The following table shows which **line** weights will vector mark at different resolutions when in Vector or Combined mode. As a general rule, most users set their vector line weights to .001 inch.

Example: The rectangle below has a line weight of 0.001 inch. It will vector at any resolution (see following chart).



Section 7: Using the Epilog Dashboard

Vector Line Weights

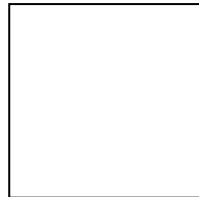
Line weights that will vector at different resolutions (DPI) when in Vector or Combined mode.

	Resolution						
		150	200	300	400	600	1200
Line Weight (inches)	.001	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
	.002	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
	.003	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
	.004	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
	.005	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	No	No	No
	.006	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	No	No	No
	.007	<i>Yes</i>	<i>Yes</i>	No	No	No	No
	.008	<i>Yes</i>	<i>Yes</i>	No	No	No	No

For ease of use, we recommend that you set your vector lines to 0.001 or 0.003 inches. These line weights are the most commonly used in most software applications and as you gain experience, setting them will become second nature. As you can see from the table above, these line weights will vector at all resolutions.

Section 7: Using the Epilog Dashboard

When using vector mode, it is necessary to design your job to give the intended result. Objects and text should be unfilled and drawn with the thinnest possible outline (other than zero), as shown below. A .001 inch (.025 mm) is recommended.



VECTOR

CORRECT Vector setup



VECTOR

INCORRECT Vector setup

Combined

“Combined” mode is used when you want to incorporate both Raster and Vector functions in the same job setup. When you are in Combined mode, all Raster operations will be performed first, with the Vector operations second.



Note on Vectors: If you are in Vector or Combined mode, all thin lines between .001 (0.025mm) and .007 inch (.175 mm) will be vector marked! This can be disconcerting, because even if the lines are not visible in your artwork they will still vector mark. Usually, this happens when incorporating a clipart image that has hidden lines that are not readily apparent. Please refer to Section 6 for an illustrated explanation of how this can affect your work.

Resolution



Print quality is commonly referred to as **Resolution**, and is one of the variables that determine image quality when engraving in raster mode. Resolution is expressed in dots per inch and is determined by the number of lines or dots that are engraved for every inch of movement. Each horizontal line is referred to as a raster line. The higher resolution setting, the finer the detail that can be achieved. Epilog laser systems can engrave at resolutions ranging from 75 to 1200 DPI. Keep in mind that engraving resolution is only one factor in determining image quality. The quality of the artwork being sent to the laser can have a bigger influence on the look of the final product than the resolution. If low quality artwork is sent to the laser system, even the highest resolution will not improve it. Also keep in mind that image quality is subjective. 300 DPI may be just fine

Section 7: Using the Epilog Dashboard

for some images and some customers, while 600 DPI is the absolute minimum for others.



Resolution (Print Quality) is set in the print driver prior to sending the job to the laser.

Higher resolution produces better image quality.



Speed and Power settings are dependent on resolution setting. For example, there is greater overlap of each raster line at 600 DPI than there is at 300 DPI. The additional overlap at 600 DPI has the effect of lasering over more of each line twice. Using higher resolutions will generally produce darker marks.

Resolution Settings

Uses for different resolution settings:

75 - 150 - 200 DPI

These resolution values are used for non-production purposes where you want to experiment with image location, or if you want to quickly produce a rough draft.

300 DPI

This resolution can be good for production work where image quality needs to be good, but not great. Attempting to produce fine detail with 300 DPI is not recommended.

400 DPI

This resolution value is good for many applications. It combines very good image quality with fast engraving times.

Section 7: Using the Epilog Dashboard

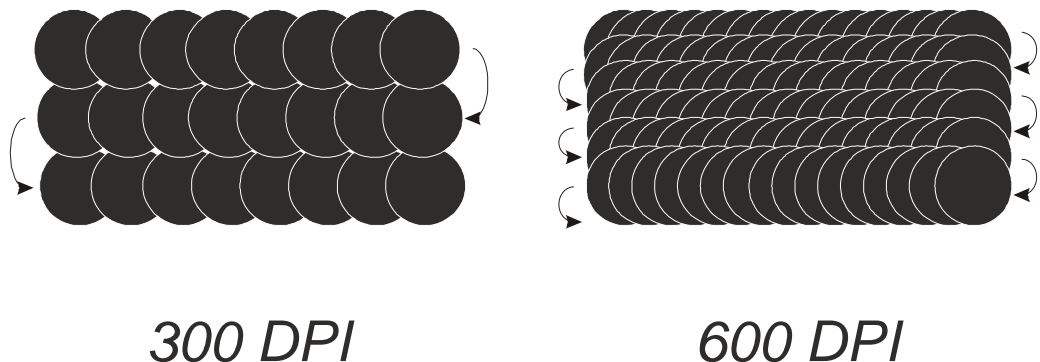
600 DPI

When really fine detail or overall excellent results are required, most users choose 600 DPI.

1200 DPI

This resolution is used for projects that require the best engraving quality possible, although it's seldom used because under normal circumstances most people cannot visually discern the difference between 1200 and 600 DPI. There are some users that appreciate this high level of quality and are willing to take twice as long to produce an image at 1200 DPI as it would take them at 600 DPI.

The diagram below shows the concept of raster lines and dots per inch (DPI). The arrows show the change in direction of the carriage between raster lines. The difference in dot density between 300 DPI and 600 DPI resolutions is shown.



Helpful Hints

1. There are four times as many dots engraved at 600 DPI than there are at 300 DPI - twice as many horizontally and twice as many vertically.
2. The gap between the dots is greatly reduced at 600 DPI. At 300 DPI the lesser overlap is responsible for the jagged edges that are visible when engraving at lower resolutions. It's important to remember that while resolution plays a part in producing good image quality, the artwork that is sent to be engraved is just as important. If the artwork that is sent to the laser is poor quality, trying to engrave it at 600 DPI will not improve it. It's always best to start with high resolution images. Poor artwork will probably always look poor at any resolution, while good artwork will look good at any resolution.



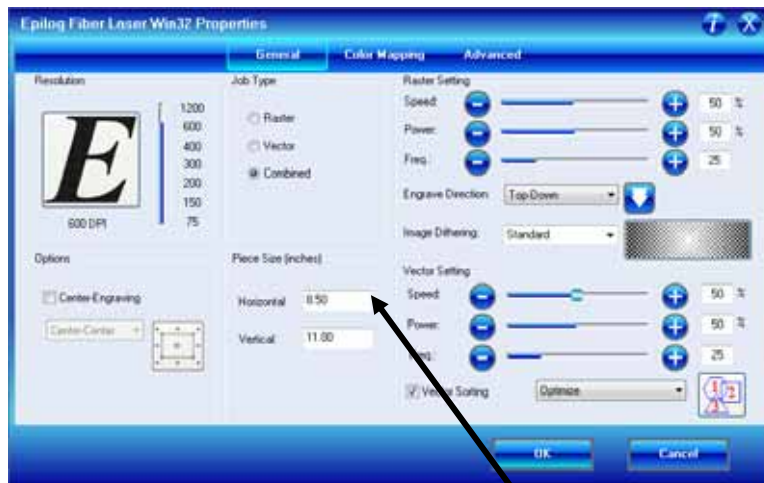
Section 7: Using the Epilog Dashboard

Piece Size

Many users like to create their artwork on a page size in CorelDraw or other software program that matches the size of the piece that is to be lasered. Compensating for beveled edges or placing an image in an exact location is easy when there is a one-for-one relationship between the material and the page size of the artwork. If this method works for you, set the Piece Size dimensions to match the page size you have set in your graphics software.

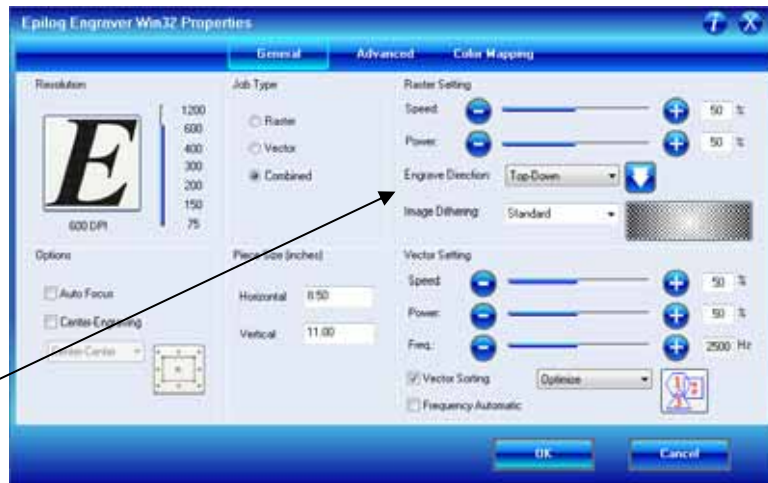
On the other hand, many users do not want to change the Piece Size dimensions every time they print something new. They prefer to use a page size that matches the table size (24" x 12" for example) and place their artwork into the upper left corner of the page.

Both methods are effective and it is a matter of personal preference which method is used.



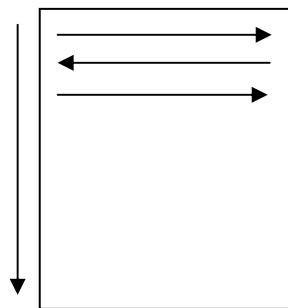
Set the ***Piece Size*** in the driver to match the page size from your Corel file.

Section 7: Using the Epilog Dashboard

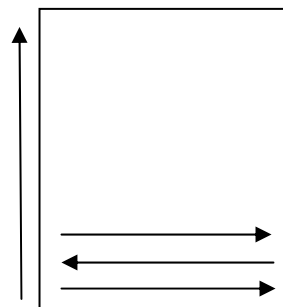


Engrave Direction

This feature applies to Raster engraving only and allows you to engrave your project either from the top down, or the bottom up. This is very helpful for some materials like plastic or rubber stamps. In standard top-down engraving there can be a large amount of engraving debris generated. As the debris moves towards the exhaust plenum, some of it collects in the area that has just been engraved. Bottom-Up engraving prevents the debris from collecting in the freshly engraved spaces.



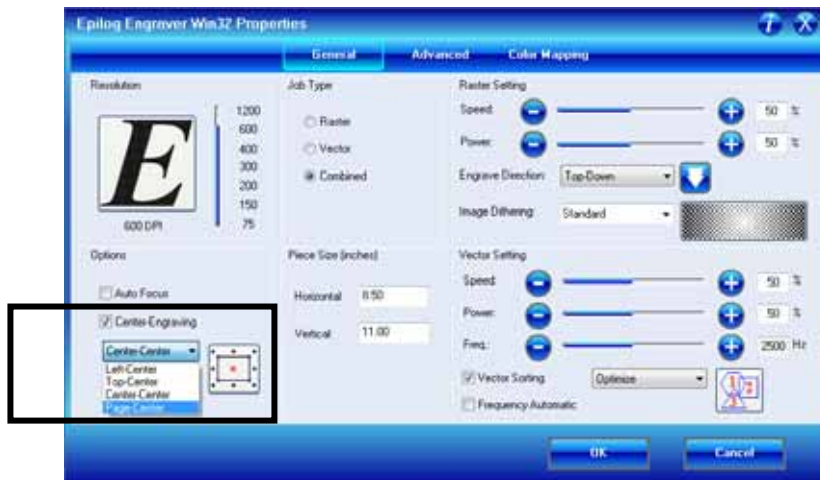
Top-down engraving starts from the top and works its way down.




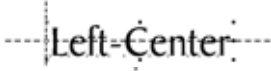
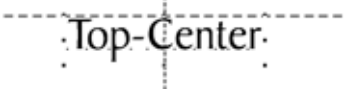

Bottom-Up engraving starts from the bottom and works its way up.

Section 7: Using the Epilog Dashboard

Center Engraving



The Center Engraving Option allows you to define the center of your artwork as the primary reference point (Home position) of your marking. The Center Engraving Option has been designed to be used in conjunction with the Set Home feature of the laser. This differs from standard printing where the upper left corner of the page and the upper left corner of the laser table define your primary reference point. There are four options for centering your artwork:

1. 
2. 
3. 
4. Page-Center 

Section 7: Using the Epilog Dashboard

Center-Center

It's important to think about setting up your artwork for Center-Center differently than you think about most jobs. Setup for most jobs that do not use the Center-Center feature begin with a determination of page size with the idea that the page size in your graphics package will match the actual size of your work piece. Additionally, the upper-left corner of the laser table is referenced to the upper-left corner of the page size you have set up in your graphics package. This makes it easy to visualize how your artwork will look on the work piece when it is finished. Think of this method as the "Upper-left justified" method.

When using Center-Center, the overall size of your work piece and the upper-left corner reference point are not very important. Here, the important starting points are the size of your artwork and the available space for it on your work piece. With Center-Center, you're interested in positioning the center of your artwork to a specific point on your work piece, no matter where your work piece is on the laser table. When using Center-Center you can place your artwork on almost any size of page and almost anywhere on that page. The detailed examples on the next few pages show how easy it is to think differently about Center-Center jobs.

As you read these instructions you will find that there are four easy steps to using Center-Center.

1. Measure the size of the area that you have available on your work piece.
2. In your software package, size your artwork so that it will fit into that available space.
3. Move your carriage by hand (using the red dot pointer as your visual indicator) to locate the center of your work piece.
4. Print using the Center-Center option in the Dashboard.



Words of caution:

Whatever size page you use in your graphics package should also be used when setting the Page Size in the Dashboard.

There are some limits to the maximum size page you can use and the placement of your artwork on the page. If you have a mismatch with your artwork placement and your page size you will see a "**Position Error**" on the keyboard at the laser. You will need to adjust your page size and/or artwork placement and print the job over again if this happens.

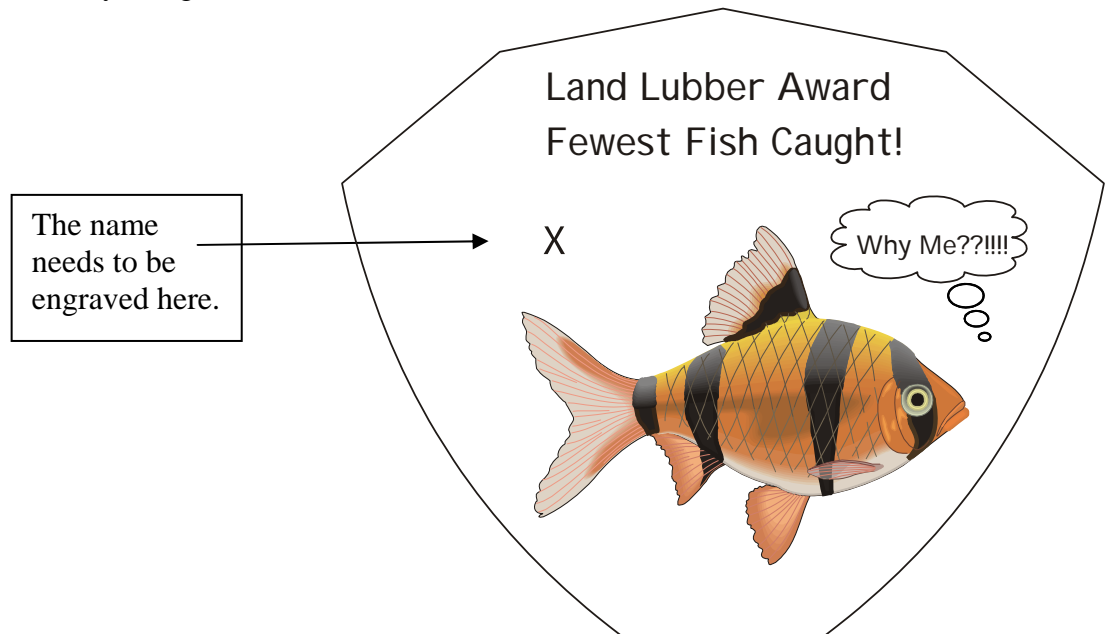
1. If your page size in your graphics program is gigantic in relation to your artwork size, you may need to reduce the size of your page. There is no

Section 7: Using the Epilog Dashboard

- formula for what page size will not work, but normally the only time a job will not print is if the page size is way out of proportion to your image size.
2. Also, don't place your artwork too close to the lower-right corner of your graphics page. If your artwork is too close to the lower-right edge of your page – and the page size is too big – you may need to adjust where you place your artwork.

The Center-Center concept is best illustrated with an example:

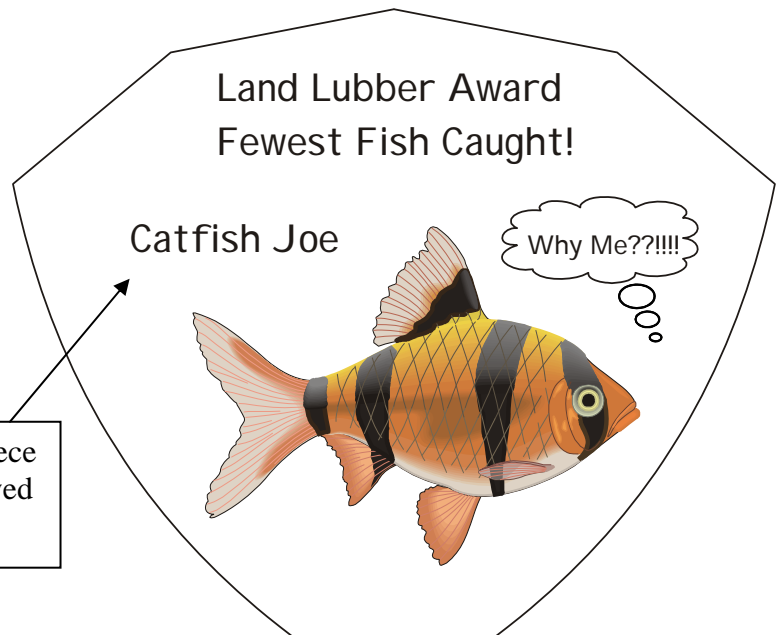
Example #1: Let's say a customer brings you an odd shaped piece that already has artwork on it and he wants to have a name engraved to finish the piece. Because of the shape of the piece, the location of the engraved name is not easily defined by using traditional X-Y coordinates.



Section 7: Using the Epilog Dashboard

1. To make engraving the name simple, use the Center-Center feature in the driver to quickly and accurately place a name

Finished piece with engraved name.



2. To set up your artwork, first measure how much engraving space is available on the work piece.

- a) Measure the area (defined by the box) so you know how much area is available for engraving. In our example the box measures 2 inches x .4 inches (51 mm x 10 mm).

- b) Don't worry about the size of the whole piece. It's not as important for Center-Center work.



3. Open a page in Corel. The page size is not very important for using the Center-Center feature, so the page can be almost any size.



Note: If you are using a large page size, place your artwork towards the upper left corner of the page.

Section 7: Using the Epilog Dashboard



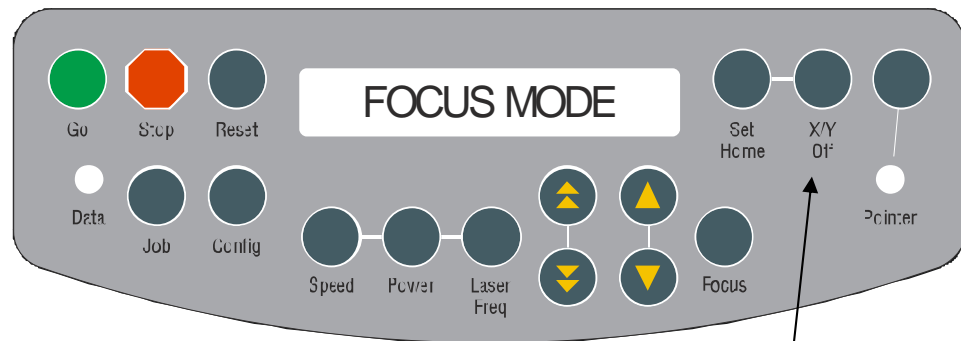
In this example we're going to use a small page that is 4" x 4" (102 x 102 mm). Create your artwork so that it is sized to fit into the available engraving area. In this example, we sized the text to fit within the available engraving area. 18 point text fits nicely into our box. Notice that the exact location of where you place the artwork is not important. At this point your artwork is ready.

Hint: Remove the box, or print *Selected Only* when you print to the laser. The box is used only to define the available engraving area and you do not want to print it with the text.

Section 7: Using the Epilog Dashboard

After your artwork is ready, the next step is to set up the laser before printing.

Place the work piece in the machine and activate the Red Dot Pointer. We want to set a new Home position by moving the carriage by hand so the Red Dot Pointer is at the center of where you want to engrave. To move the carriage by hand and set a new Home position, use the following instructions referring to the laser keypad shown below.



1. Press the **X/Y OFF** key on the keyboard of the laser system
2. Press the **GO** key on the keyboard
3. Move the carriage by hand so that the Red Dot Pointer is at the center of the available engraving area.
4. Once the red dot is where you want it, press the **SET HOME** key
5. Press the **RESET** key

The machine is now ready.

1. From CorelDraw select **File | Print** to prepare the job for printing.
2. Select **Preferences** to establish the laser parameters.
3. Click on the **Center-Center** selection and then set all other laser parameters as you normally would.
4. Make sure to set the page size in the driver to match the page size in Corel.
5. Print the job to the laser.

Section 7: Using the Epilog Dashboard

Additional information about using the Center-Center feature:

The Center-Center feature is designed to be used in conjunction with the Set Home feature of the laser system. If you do not use the Set Home feature to create a new Home Position at the machine, the Center-Center feature will produce a “Position Error” at the keyboard when you attempt to run the job.

When a Center-Center job has been sent to the laser, the Keyboard will indicate that it is a Center-Center job by displaying an asterisk (*) at the end of the job name as it is displayed on the LCD.



Job: 1.SampleFile.CDR *

Where you place your work in the machine is not very important when using the Center-Center feature. Your new Home position defines where the engraving will take place, but you can get a “Position Error” if your artwork is going to go outside of your available work space.

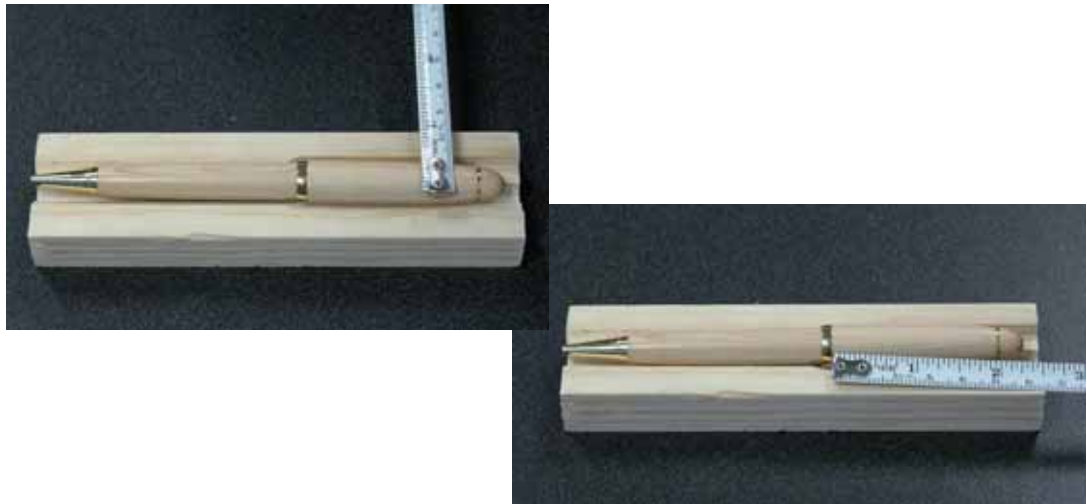
Where you place your artwork on the Corel page is not too important. The size of your graphic just has to be sized so that it fits within the area available for engraving on your work piece.

Section 7: Using the Epilog Dashboard

Example #2: Laser engravable pens:

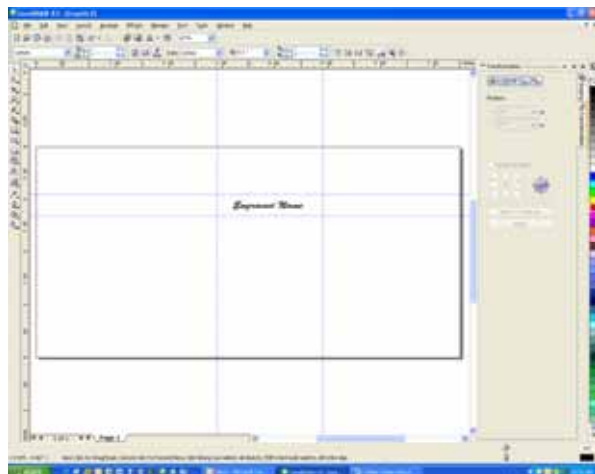
The Center-Center feature makes locating the name on a laser engravable pen very easy to do.

1. First, measure the available engraving area on the barrel of the pen. For our example the engraving area is 2" x .375" (49 x 9.5 mm).



2. In Corel, create an area that is the same size as the available engraving area on the pen. There are several different ways that you can establish the engraving area in Corel:
 - a) draw a box to represent the engraving area
 - b) create a page that matches the engraving area
 - c) use guidelines to represent the engraving area– this is shown in our example.

3. Size the text or image so that it fits nicely within the engraving area.



Section 7: Using the Epilog Dashboard

4. Place the work piece in the machine and activate the Red Dot Pointer. We want to set a new Home position by moving the carriage by hand so the Red Dot Pointer is at the center of where you want to engrave. To move the carriage by hand and set a new Home position, use the following instructions:
 - a) Press the “X/Y Off” key on the keyboard of the laser system
 - b) Press the “Go” key on the keyboard
 - c) Move the carriage by hand so that the Red Dot Pointer is at the center of the available engraving area.
 - d) Once the red dot is where you want it, press the “Set Home” key
 - e) Press the “Reset” key



Position the Red Dot over the center of the area to be engraved.

The machine is now ready.

5. Print using the Center-Center option in the Dashboard.

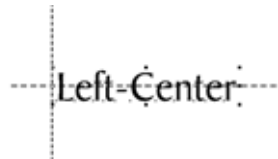


Section 7: Using the Epilog Dashboard

Left-Center or Top-Center

Left-Center and Top-Center are used when you want to use a different starting reference point than the center of the object to start your engraving. These two options are most commonly used in situations when you can easily identify the location in one axis.

Left-Center uses the left and center location as its starting reference point.



Top-Center uses the top and center location of the object as its starting reference point.



In the example below we use both the Left-Center and the Top-Center features to accurately mark text to the right and bottom of a pre-drilled hole. Being able to move the carriage by hand and use the center-left and center-top features saved us the trouble of trying to find an accurate X-Y coordinate for the pre-drilled hole.

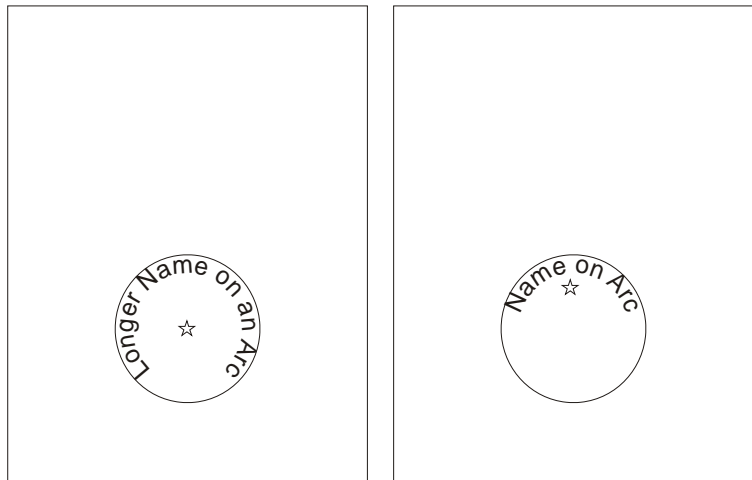


Section 7: Using the Epilog Dashboard

Page-Center

The use of Page-Center option is a difficult concept to explain, but it's a feature that professional engravers are eager to use. The best way to explain it is to first compare it to one of the other centering options – Center-Center engraving. Page-Center engraving is used most often when engraving text on an arc. Medallions are a good example. Many people want to engrave text – different names, for instance – across the top of the medallion. The difficulty of doing this is that each name is a different length, which means that the center of each name is in a different location. Many users want to use the Center-Center option, but they quickly find that each name is in a slightly different position on the arc. The following diagram shows that if you use Center-Center engraving the center of each name is at a different location (the center of the names is indicated by the star in the diagram).

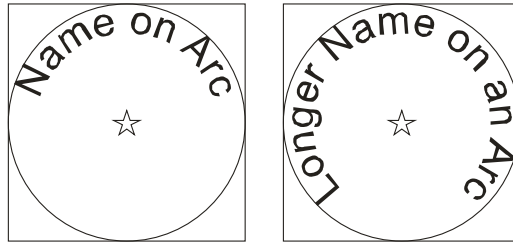
The problem of using Center-Center is that you have to figure out the precise location of each star (Center-Center of each name) to get the name on the arc correctly. Obviously, this would be difficult to do.



So, instead of using the center of our artwork as our reference point, we'll use the center of our page as our reference point. We'll find that using the exact same artwork we're able to perfectly position the names on the arc. In Page-Center mode we set up a page size that corresponds to our medallion size, and then all we have to do is use our red dot pointer to find the center of the medallion and set this as our new Home position.

For the following example we used a three inch (76 mm) page size to match the three inch medallion size. Use your red dot pointer to find the center of the medallion and then print to a 3" x 3" (76 x 76 mm) page using the Page-Center mode. You'll find that every name will be precisely placed on the arc because the center (indicated by the star) has not changed position.

Section 7: Using the Epilog Dashboard

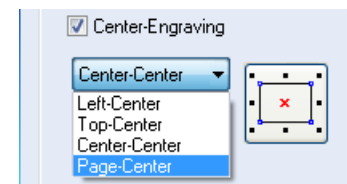


The important thing to remember is that for this type of project you want to use the center of the page as your reference point (Page-Center mode). In most other centering applications you use the center of the artwork as your reference point (Center-Center mode).

Once users understand how to use Page-Center mode, they are still faced with finding the exact center of the medallion (or circle) with the red dot pointer. Admittedly, this can be difficult to do, especially if the circle is large. Most users create a simple template to place over the medallion to find the center. To create a template, measure the diameter of the medallion you are engraving. In your graphics package, create a circle of the same diameter and place a crosshair or an “x” in the middle of the circle. Use raster mode to mark the crosshair or “x” and vector mode to cut out the circle. Place this template on top of the medallion and move your red dot pointer until it is at the intersection of the crosshair or “x”. Set this as your Home position using the front keyboard on the machine and then Print using Page-Center mode. You can use almost anything to make a simple template. Many users use scrap plastic and in addition to the “x” they engrave the size of the circle on it so they can easily keep track of the different sizes of each template.

To review:

1. Make sure your page size is the same as your medallion (or circle) size.
2. Create a template to find the center of your circle. Place the template on top of your medallion and use the red dot pointer to pinpoint the “x”.
3. Set a new Home position using the “Set Home” button on the keyboard.
4. Print using the Page-Center option in the driver.
5. Make sure your Piece size in the Dashboard is the same as your page size in Corel!



Section 7: Using the Epilog Dashboard

Raster Settings



Speed

The Speed setting determines the travel speed of the carriage in Raster mode and is adjustable in the Dashboard print driver in 1% increments from 1 to 100%. Slower speeds will typically produce a darker mark. Speed settings are heavily dependent on the material being engraved. Slower speed settings will produce greater depth of engraving. Please refer to the *Speed & Power Recommendations in Section 10* of this manual.



An important note: Speed, Power and Frequency settings can sometimes be confusing because not all materials that *can* be marked at the highest speeds and powers *should* be marked at the highest speed or power. Many users feel that if a mark *can* be made at high speed, it's just a matter of adjusting the power to produce an acceptable mark. Unfortunately, for some materials, this isn't always the case. For some materials, the length of time the laser reacts with the material is much more important to producing a good mark than the raw speed of the system or the amount of laser power that is output by the laser.

Power

The Power setting determines the amount of laser energy that is delivered to the piece being engraved and is adjustable in the Dashboard print driver in 1% increments from 1 to 100%. For most applications using a higher power setting produces a darker mark. Please refer to the *Speed & Power Recommendations in Section 10* of this manual.



Section 7: Using the Epilog Dashboard

Frequency (kHz)

Frequency refers to the pulsing frequency as well as the average output power per pulse of the laser. While the average output power in a given period of time remains constant, the frequency allows you to adjust the power of each pulse. Each pulse at a low frequency setting will have a greater peak output than the same pulse at a high frequency setting.

Frequency is a useful setting mostly because it tends to greatly increase the peak power output of the laser at low frequencies. This allows you to mark materials that would otherwise require a more powerful laser to mark.

The frequency adjustment range is determined by the power of your laser, with the different frequency range of different wattage lasers listed below:

<u>Laser Wattage</u>	<u>Frequency Range</u>
10 & 20 watt	20kHz – 80 kHz
30 watt	30kHz – 80 kHz
50 watt	50kHz – 100 kHz

The Frequency slider bar in the driver shows the relative frequency that is being output by the laser and is adjustable in increments of 1 from 1 to 100. The frequency (kHz) associated with the number in the slider bar is shown for the different wattage lasers in the following graphs:

Section 7: Using the Epilog Dashboard

10 & 20 Watt Laser

Frequency (kHz)	21	23	26	29	32	35	38	41	44	47	50	53	56	59	62	65	68	71	74	77	80
Slider Number (shown in increments of 5).	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

30 Watt Laser

Frequency (kHz)	31	33	35	38	40	43	45	48	50	53	55	58	60	63	65	68	70	73	75	78	80
Slider Number (shown in increments of 5).	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

50 Watt Laser

Frequency (kHz)	51	53	55	58	60	63	65	68	70	73	75	78	80	83	85	88	90	93	95	98	100
Slider Number (shown in increments of 5).	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

Most materials do not need a specific frequency so we use a relative slider bar that can provide rough estimates of low, medium and high frequency settings.

Frequency can be controlled either from your computer or from the control panel on the engraver. Frequency affects to the amount of power that is output with each pulse of the laser. Low Frequency settings (~ 20 and below) will provide higher bursts of power at a low pulse rate, while higher Frequency settings (above 60 kHz) will produce slightly lower bursts of power, but at greater frequency. On most materials, lower frequency settings will produce darker marks. Most plastics use high frequency settings. Please refer to the *Speed & Power Recommendations in Section 10* of this manual.

Section 7: Using the Epilog Dashboard

Dithering

Dithering defines how the dot patterns will be engraved in raster images that contain grayscales, blends, or color. The Dashboard offers six different dithering patterns to enhance your engraving projects. The default mode is Standard. This mode can be used for all images including photographs. Dithering is used only for Raster engraving and has no effect on vector marked lines.



The dropdown list of dithering patterns is easier to think about if you separate the six options into two categories that we will refer to as Clipart and Photograph:

Clipart Modes – **Standard**, **Brighten** and **Low Res** modes are typically used for clipart images or anything that has been created using a software application like Corel. Standard mode is the default mode and is by far the most commonly used. It produces a very structured pattern to the dot patterns being engraved. Brighten and Low Res decrease the number of dots in the engraving pattern and can be used effectively to remove the washed out appearance of some images (including photographs).

Photograph Modes – **Floyd Steinberg**, **Jarvis** and **Stucki** modes are designed to modify an image by replacing the very structured dot patterns with a more random dot pattern. Engraving in one of these modes can make a photograph engraved on marble or anodized aluminum look more appealing than using an unmodified image. These modes can also be used for special effects of clipart images.

Section 7: Using the Epilog Dashboard

Experiment with the different dithering patterns to determine which effect is most pleasing. It is not mandatory that you use the clipart modes with only clipart images or photograph modes with all photographs. Many users prefer one of the photograph modes for many clipart images, and one of the clipart modes for photographs. The choice is entirely up to you!

We have included some sample photographs on the Epilog driver disk for you to experiment with. Use these photographs to engrave on different materials using the different dithering options so you can get a feel for how each dithering pattern affects the image and the material.

What is Dithering? - The best way to show dithering is with an example. In the example below, we engraved the exact same photo in Standard mode and Stucki mode. Both photos were engraved at 300 DPI. As you can see, the photos look dramatically different. As you can also see, the Standard mode shows a very structured pattern, while the Stucki pattern shows a much more random pattern that is much more pleasing to the eye.



300 DPI using Standard mode



300 DPI using Stucki mode

Section 7: Using the Epilog Dashboard



300 DPI using Standard mode



300 DPI using Stucki mode

Clipart Modes:

Standard - This mode is the default mode and will be used for most engraving jobs that include text and clipart at 600 DPI.

Brighten – Many users find this mode good for engraving photographs onto wood or marble at 600 DPI.

Low Res - Adds an artistic half-tone type look to the engraving.

Photograph Modes:

Floyd-Steinberg – Produces an almost wave-like pattern to an image. This works well for some photos containing a great deal of detail. Photos with more monotone swatches of color may not be as pleasing as Jarvis or Stucki modes.

Jarvis – Many users find this mode good for engraving photographs at 300 DPI. This mode produces a very nice looking pattern on almost all photos.

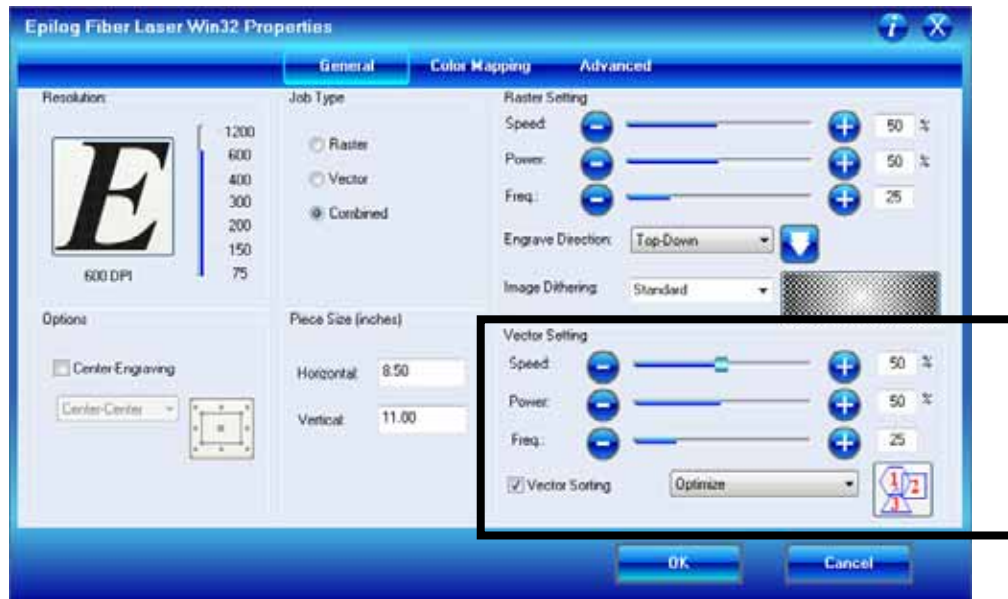
Stucki - This mode produces results that are only marginally different than the Jarvis dithering pattern. It is also very good for engraving photographs at 300 DPI. The differences between Jarvis and Stucki are very subtle.

Dithering is a great way to enhance your engraved products, but it can be frustrating sometimes because the look that is achieved will be different from one

Section 7: Using the Epilog Dashboard

material to the next. A graphic image that looks good on wood may not look as good on plastic. Give yourself some time to experiment with the different dithering patterns. It's easy to do and once you have a feel for it, you will be able to use it with confidence!

Vector Settings



Speed



The Speed setting determines the travel speed of the carriage in Vector mode and is adjustable in the Dashboard print driver in 1% increments from 1 to 100%. The slower the speed, the darker the line. Slower speed settings will produce better edge quality. Please refer to the *Speed & Power Recommendations in Section 10 of this manual.*

Power

The Power setting determines the amount of laser energy that is delivered to the piece being marked and is adjustable in the Dashboard print driver in 1% increments from 1 to 100%. The higher the power, the darker the mark. Please refer to the *Speed & Power Recommendations in Section 10 of this manual.*

Frequency (kHz)

Frequency refers to the pulsing frequency as well as the average output power per pulse of the laser. While the average output power in a given period of time remains constant, the frequency allows you to adjust the power of each pulse.

Section 7: Using the Epilog Dashboard

Each pulse at a low frequency setting will have a greater peak output than the same pulse at a high frequency setting.

Frequency is a useful setting mostly because it tends to greatly increase the peak power output of the laser at low frequencies. This allows you to mark materials that would otherwise require a more powerful laser to mark.

The frequency adjustment range is determined by the power of your laser, with the different frequency range of different wattage lasers listed below:

<u>Laser Wattage</u>	<u>Frequency Range</u>
10 & 20 watt	20kHz – 80 kHz
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Section 7: Using the Epilog Dashboard

The Frequency slider bar in the driver shows the relative frequency that is being output by the laser and is adjustable in increments of 1 from 1 to 100. The frequency (kHz) associated with the number in the slider bar is shown for the different wattage lasers in the following graphs:

10 & 20 Watt Lasers

Frequency (kHz)	21	23	26	29	32	35	38	41	44	47	50	53	56	59	62	65	68	71	74	77	80
Slider Number (shown in increments of 5).	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

30 Watt Laser

Frequency (kHz)	31	33	35	38	40	43	45	48	50	53	55	58	60	63	65	68	70	73	75	78	80
Slider Number (shown in increments of 5).	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

50 Watt Laser

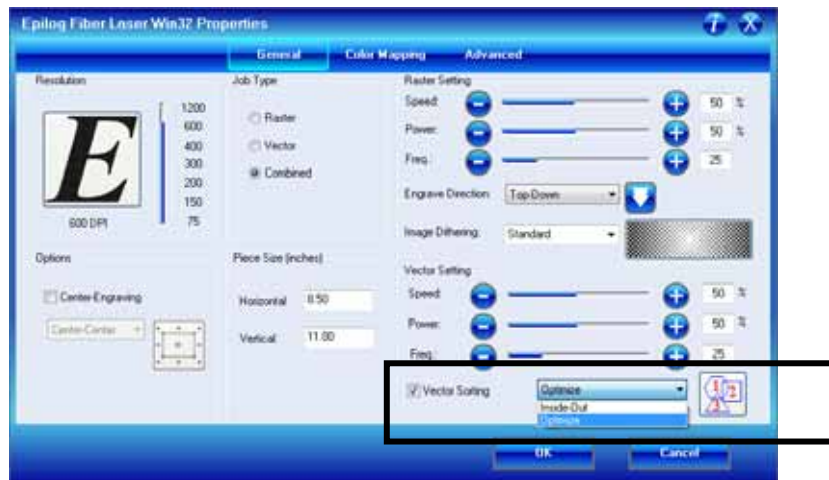
Frequency (kHz)	51	53	55	58	60	63	65	68	70	73	75	78	80	83	85	88	90	93	95	98	100
Slider Number (shown in increments of 5).	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

Most materials do not need a specific frequency so we use a relative slider bar that can provides rough estimates of low, medium and high frequency settings.

Frequency can be controlled either from your computer or from the control panel on the engraver. Frequency affects to the amount of power that is output with each pulse of the laser. Low Frequency settings (~ 20 and below) will provide higher bursts of power at a low pulse rate, while higher Frequency settings (above 60 kHz) will produce slightly lower bursts of power, but at greater frequency. On most materials, lower frequency settings will produce darker

Section 7: Using the Epilog Dashboard

marks. Most plastics use high frequency settings. Please refer to the *Speed & Power Recommendations in Section 10* of this manual.



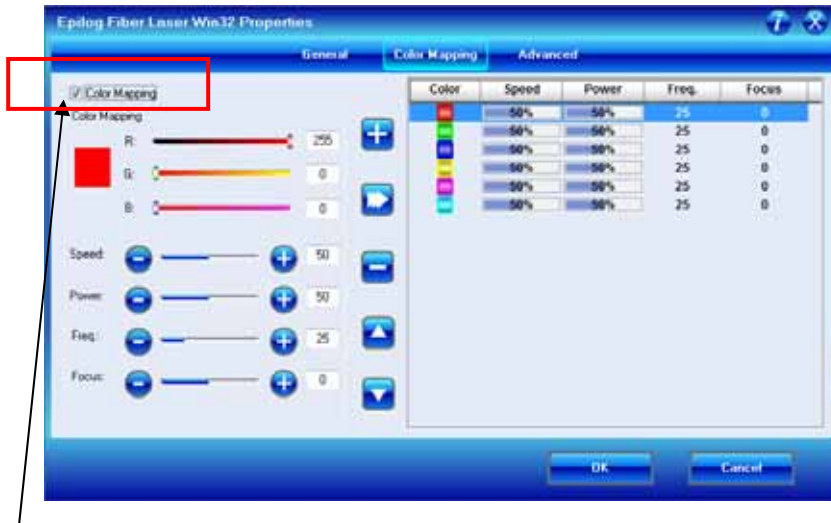
Vector Sorting

A checkmark in the vector sorting box will order the sequence of vector marks. If sorting is enabled, you have two choices of how the vector lines will be sorted: Optimize and Inside-Out. In Optimize mode, vectors will be marked in the most efficient manner, and will generally vector the next closest line to the one just finished. This is by far the most preferred method as it saves the most time, is the most predictable and will create a continuous line path out lines that look connected, but are actually discrete line segments in the artwork. The continuous path of discrete lines is most often found in AutoCAD or other CAD programs.

Inside-Out mode will vector from the inside object first to the outside objects last. As an example, if you have a small circle surrounded by a large circle, the small circle will mark first. If sorting is not checked, the vectors will mark in the order in which they are presented, which with most software applications will mean in the order they were drawn.

Section 7: Using the Epilog Dashboard

Color Mapping Tab



The Color Mapping feature is an advanced feature that must be checked to activate. Color Mapping is designed to be used in either Raster mode or Vector mode, but not in Combined mode. While Color mapping is a very powerful tool, most users use it for two main reasons:

1. Using color to define different levels of focus. Many objects need to be marked at different locations that are at different relative heights. Using color mapping to change the focus in a single job setup is a convenient way to make marking complex parts simple.
2. Using different colors allows users the ability to sequence the order that objects will be marked.







Color Mapping accomplishes these two tasks by assigning different attributes to the different colors in your artwork. The functions that can be controlled by color are: Speed, Power, Frequency, and Focus.

Color Mapping can be used in Raster mode or Vector mode. To understand Color Mapping, we will create a couple of examples that show the common uses for Color Mapping, but first a quick note about the use of colors.

Section 7: Using the Epilog Dashboard



A Note About Colors! It's best to use one of the six basic colors (red, green, blue, cyan, yellow, magenta) when color mapping, because the values in Color Mapping **MUST** match exactly the colors that are used in your graphics package. The RGB color scheme uses numbers to define all colors and the six basic colors have the following numerical definitions:

<u>Color</u>	<u>Red Color Value</u>	<u>Green Color Value</u>	<u>Blue Color Value</u>
Red 	255	0	0
Green 	0	255	0
Blue 	0	0	255
Cyan 	0	255	255
Yellow 	255	255	0
Magenta 	255	0	255

The six basic colors are easiest to use because they only use combinations of 255 and 0 (255 is the highest number value and 0 is the lowest in the RGB color scheme). Because all graphics packages use the six basic colors, this is easy to do.

Your drawing program may use a CMYK palette to define colors. The Epilog Color Map driver will automatically convert the six primary colors to RGB values. If you want to use a CMYK color other than the six primary colors, you will need to determine what the equivalent RGB color value is and convert that color manually.

The Epilog Dashboard loads the six primary colors as presets for your convenience. Any color can be added or deleted to meet your needs.

Section 7: Using the Epilog Dashboard

Color Mapping allows you to control the following six laser functions for each color in the Map List:

Color – Select the color you want to use or modify.

Speed – Sets speed for all objects of the color.

Power – Sets power for all objects of the color.

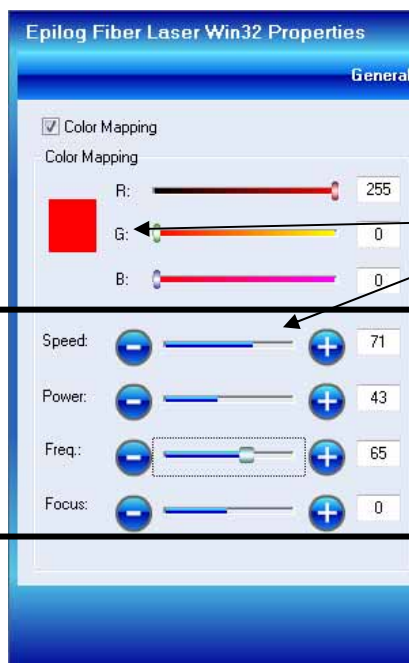
Freq. - Sets Frequency for all objects of that color. The Frequency setting can only be changed in increments of 5 and the number showing on the slider bar is a relative number that is determined by the wattage laser in your system.

Focus – Each increment of one will change the table height by 0.001 inch (0.0254 mm). A minus sign in front of the number, -.250 for example, will move the table up closer to the X-beam by 0.250 inch (approx. 6 mm).

Section 7: Using the Epilog Dashboard

Using Color Mapping

Setting up colors to be mapped is a very easy process. The color mapping tab is separated into three functions:



The left side of the Color Mapping tab is used for two purposes:

1. Creating new colors. Use the slider bars to create any RGB color.
2. Defining the values we want to set for the color that has been selected from the right side of this tab. Defining the values on the left side of the tab does not actually change the values. That is done with the buttons in the middle of the tab.

In this example we have defined the values for this color to be 71 for Speed, 43 for Power, 65 for Freq., and Focus at 0.

Another way to think about the settings in this example is that the selected color will be a vector only job, running at 71% Speed, 43% Power, 65 kHz Freq. and Focus is not offset either up or down.

Section 7: Using the Epilog Dashboard

Once the values have been defined on the left side of the tab, you will want to change them by pressing the Modify button.



After pressing the Modify button, the selected color values will be changed and displayed on the right side of the tab.

Color	Speed	Power	Freq.	Focus
Red	21%	43%	65	0
Green	50%	50%	25	0
Blue	50%	50%	25	0
Yellow	50%	50%	25	0
Magenta	50%	50%	25	0
Cyan	50%	50%	25	0

The other buttons in the middle of the color mapping tab are defined here:



Add a custom color.

Delete a color.

Scroll buttons. These buttons move the selected color up or down in the table. This is important because Color Mapping always starts at the top color and works its way down. This is explained in more detail on the next pages.

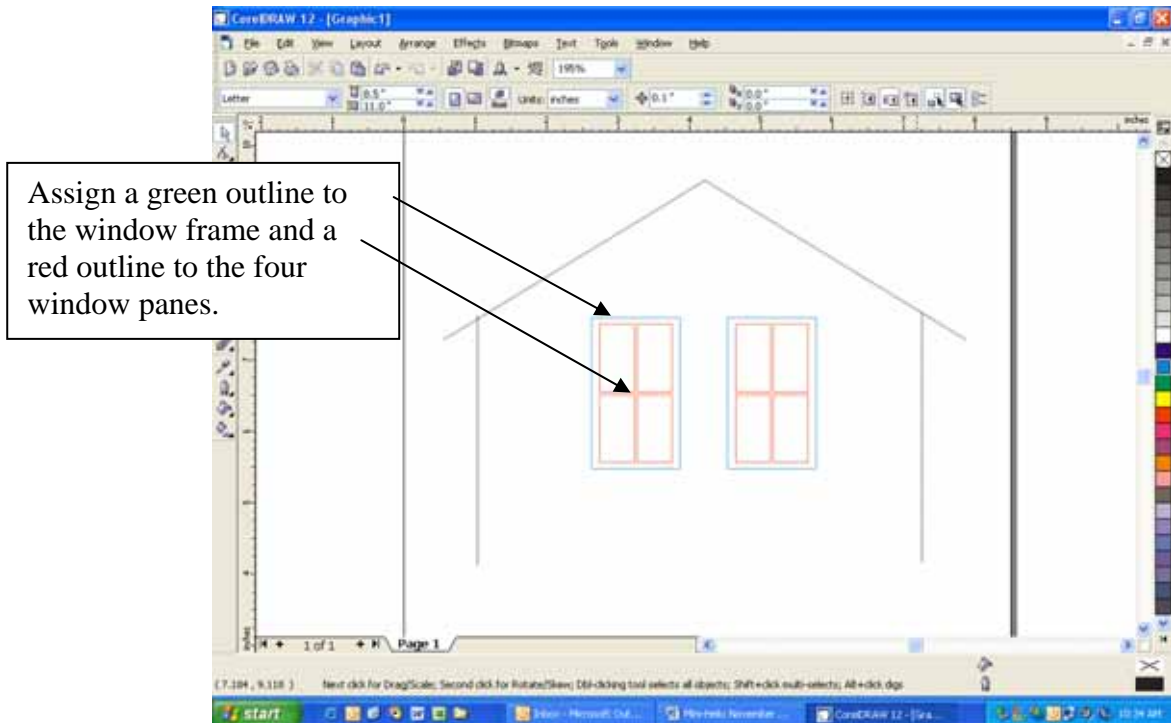
Section 7: Using the Epilog Dashboard

Vector Color Mapping

Usually, when using Color Mapping in Vector mode, users want to produce a different look on two separate areas of a single piece of material in a single job setup. To achieve a different look for each mark the marking processes require different speed and power setups, so this is a perfect job for Color Mapping.

The following screen shows a simple architectural drawing. The drawing is set up so that when we use Color Mapping, we will assign one Speed and Power setting to first mark the window frames using the color green set at one Speed and Power, then mark the window panes using the color red with a different speed and power setting.

The outside frame of the house will not be Color Mapped; however, it, and any other lines that might be in the drawing will be marked at the Speed and Power settings for Vector mode found in the General Tab of the Dashboard.



Section 7: Using the Epilog Dashboard

Once your vector outlines are set up in your artwork, Select **File/Print** and go to the Color Mapping tab in the *Epilog* Dashboard.



Make sure Color Mapping is checked so we can set up our color mapping scheme.

In our example we want to mark the green window frames first, so green must be the first color at the top of the list. Normally the color green is the second color down in the list. In order to move it we just select it and use the Up cursor arrow to move it up one position.



Note – It's important to know that the values do not move with the colors. You must move the colors first, and then change the values.

We now have green at the top and red is the second color down. This is the order that the colors will be processed. You do not need to delete the other colors unless you want to. If there are no objects in your artwork that match the remaining colors, they will be ignored.

Section 7: Using the Epilog Dashboard

We will set the green color at a higher speed and lower power than the red color. This will allow us to raster the green and vector the red. For illustration purposes we deleted the other colors so it will be easier to read the values we have set for the colors we are going to use.



Color Mapping Sequence - When color mapping is used, it *always* vectors in sequence starting from the top color in the Map List and working down. In our example red will vector first and green second.

Non-Mapped colors will be vectored at the Speed and Power settings from the Vector Settings in the General tab. The image below shows that non-mapped colors will be vectored at 50% Speed, 50% Power and 25 Freq.

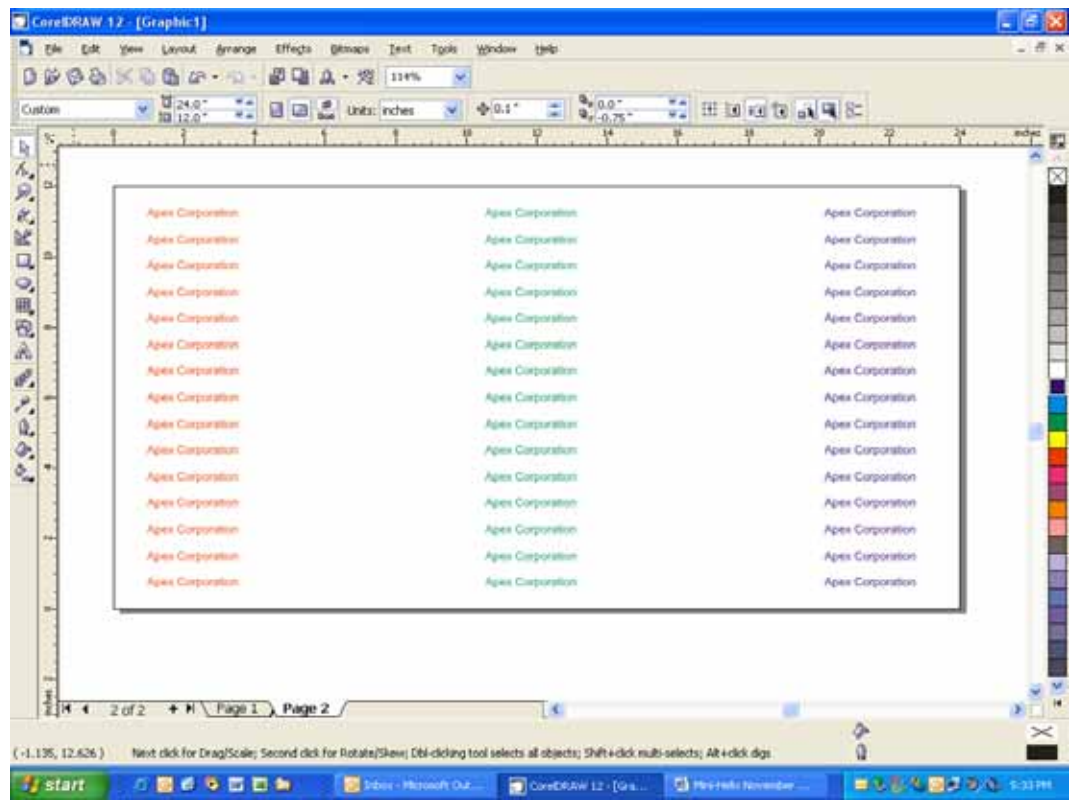


Section 7: Using the Epilog Dashboard

Raster Color Mapping

Raster Color Mapping usually has a different purpose than Vector Color Mapping although the process for setting up colors to be mapped is the same. In Raster Color Mapping mode most users want to reduce the amount of time it takes to engrave a job that uses most of the table but has very little actual engraving. Saving time is accomplished by setting the different colors to all engrave at the same speed and power.

In the following example we show a standard setup where Raster Color Mapping will reduce the time it takes to engrave the entire table (let's pretend we're engraving a large number of pens). In non-Color Mapping mode, the laser carriage would need to travel the full width of the table to engrave just one row of pens. This is wasteful because the laser beam is not firing most of the time that the carriage is moving. Raster Color Mapping will allow us to decrease the amount of time it takes to engrave a full bed of pens by engraving in columns instead of rows.



Section 7: Using the Epilog Dashboard

For the above example we've assigned all of the names in the first column the color red, the second column the color green, and the third column, blue. In the Dashboard you will follow the same process that was used in Vector Color Mapping for setting up the Raster Color Mapping colors, but for this example we will assign all colors the same speed and power (see following diagram).



We want all three of the pens to engrave at the same depth, so we have set the Speed, Power, Freq., and Focus settings the same. The engraver will engrave the red column first, the green second and the blue third.

When you run this Raster Color Mapping job, the laser beam will be on most of the time that the carriage is moving so the total amount of time to engrave the pens will be decreased.

Color Mapping is most efficient as a time saver whenever there is a large amount of white space between engraving objects.



Note: There's one important distinction to recognize about how colors are raster engraved in standard engraving mode vs. Color Mapping mode:

- In standard engraving mode different colors are interpreted as different shades of gray that will produce different fill patterns when engraved.
- In Raster Color Mapping mode all of the different colors are engraved as if they have a black fill. There is no way for a color to produce both a fill pattern and be color mapped at the same time.

Section 7: Using the Epilog Dashboard

Combined Mode – Color Mapping in combined mode requires a little more planning than Raster only or Vector only modes. Below are the sequencing considerations you will need to account for when using combined mode:

1. Any object that is color mapped will be raster engraved first in the color order from the right side of the tab. Any other raster objects that are not color mapped will then be raster engraved using the Raster settings found in the General Tab of the Dashboard.
2. After all of the raster objects have all been engraved, the vector objects will be vectored in the color order from the right side of the tab. Any other vector objects that are not color mapped will then be vectored using the Vector Settings found in the General Tab of the Dashboard.

Advanced Tab

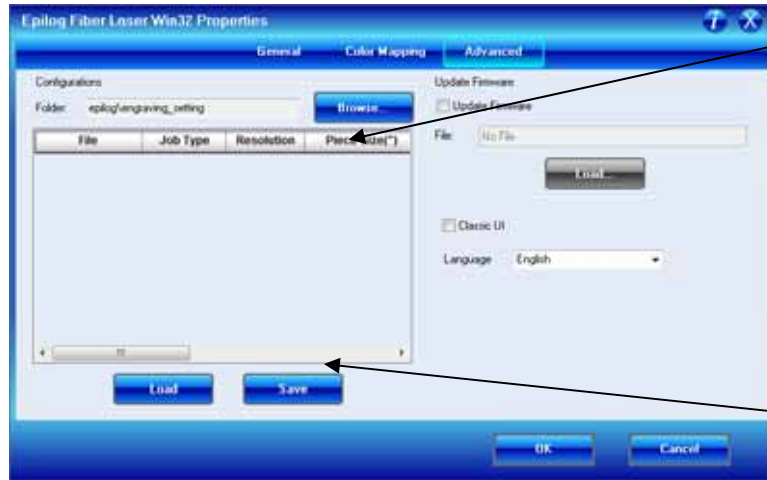
The Advanced tab provides more options for controlling your laser system.

Configurations



The “Configurations” feature is a comprehensive data management tool that is used to save all of your Dashboard settings for individual jobs. Saving the Dashboard settings as a database file allows you to retrieve the job parameters at a later time. This saves you the trouble of trying to remember what speed and power and other settings you used on a job you did three months ago. All of your settings can all be stored as a permanent record!

Section 7: Using the Epilog Dashboard

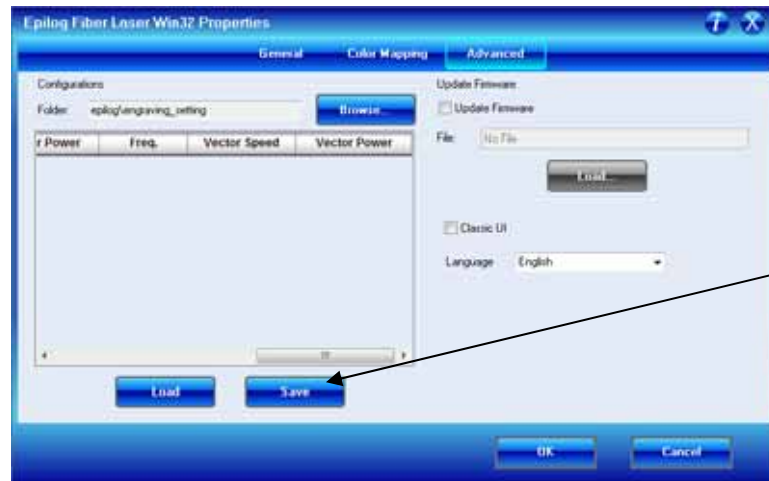


The columns in the configurations settings follow standard Windows protocol and can be sized to suit your needs. There are nine columns that can be viewed by using the slider bar.

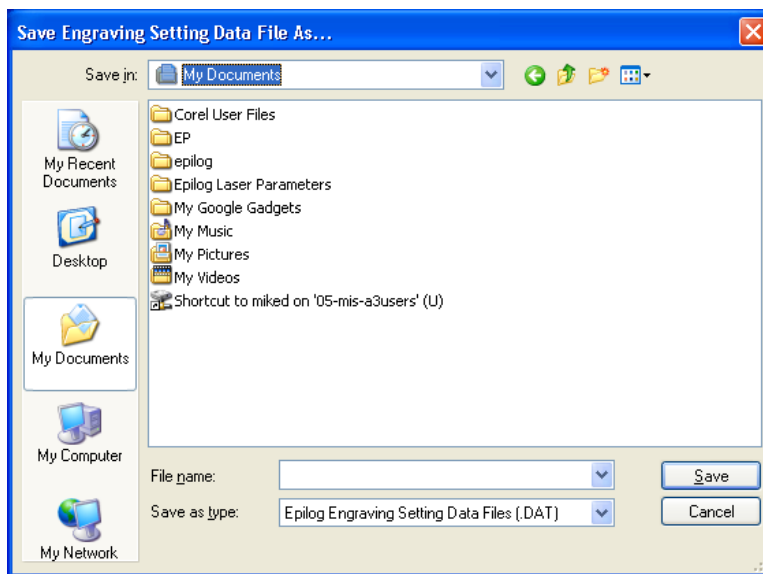
To establish a configuration file, first set all of the desired settings (Speed, Power, Piece Size, Color Mapping values, etc. for a particular job.



Section 7: Using the Epilog Dashboard



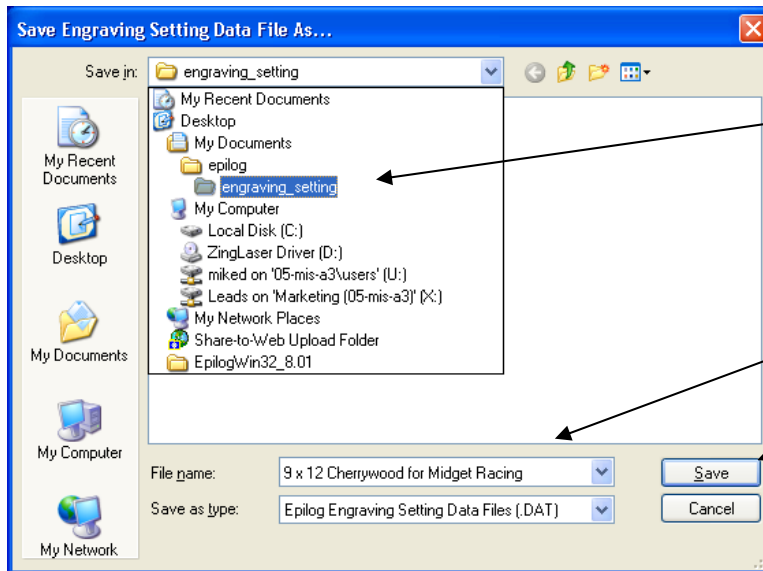
To save the settings you have established, go to the Advanced tab and click on **Save**.



The Dashboard uses standard Windows protocol to save the configuration files.

When you installed the Epilog Dashboard driver there was a dedicated configurations folder created where you will need to save the configurations.

Section 7: Using the Epilog Dashboard



The path for the Configurations folder is shown here:
My Documents
/Epilog/engraving_setting.

Give your file a name and then click on Save. You now have a custom Configuration file that can be used the next time you need to run this job or material.



HINT! Many users find it helpful to save the configurations with a name that associates the configurations with one of two things:

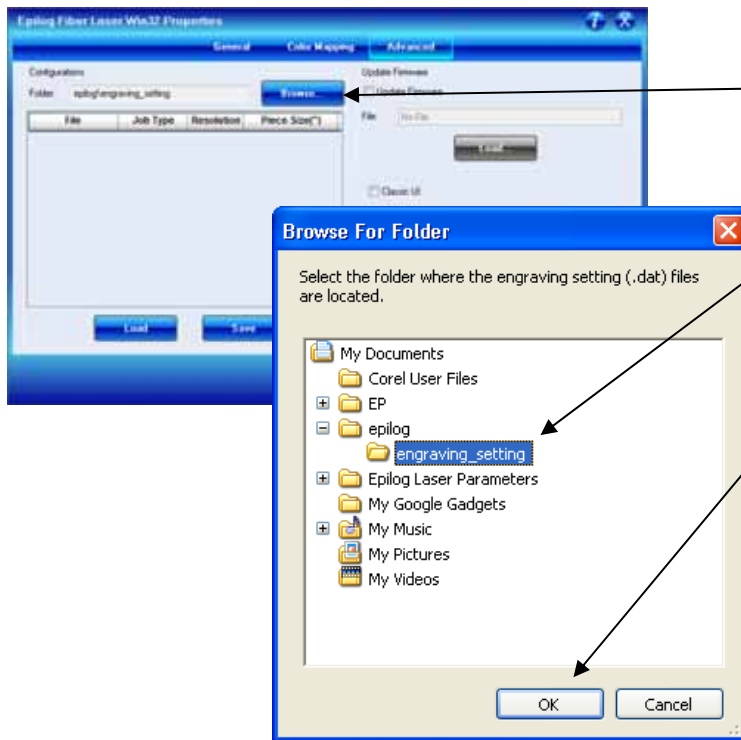
1. The customer. For example, ARC AeroSpace Serial tag 04.dat
2. The material size and type. For example, 5 x 3 Stainless.dat

Notes on Saving Configuration Settings:

If you would like to expand your folder options it is best to make changes from Windows Explorer (My Computer). You can create as many folders under the “engraving_setting” folder as you wish and structure your saved configuration files in a way that best suits your needs.

Section 7: Using the Epilog Dashboard

Loading Configuration Files



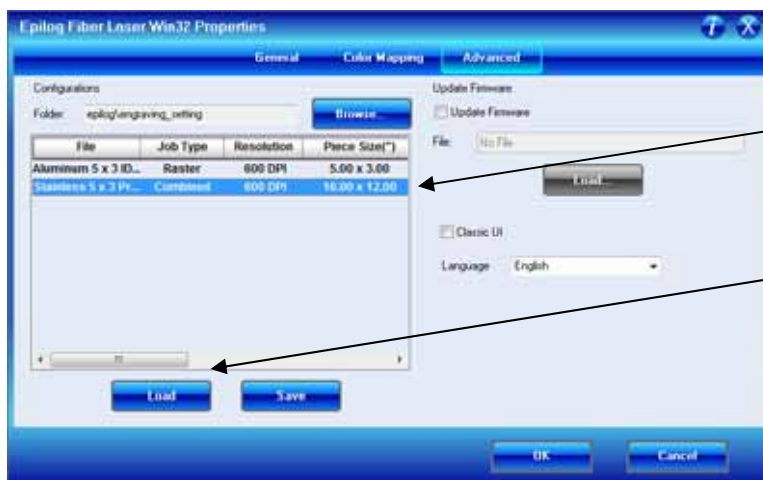
To load a configuration file, click on the Browse... button.

The Browse for Folder window will open. Select the epilog/engraving_setting folder.

Click Okay.

After selecting your folder all of the configuration files will now show in the Dashboard.

Note – The individual files will not appear in the Browse for Folder window. They only appear in the Configurations window after the folder has been selected.

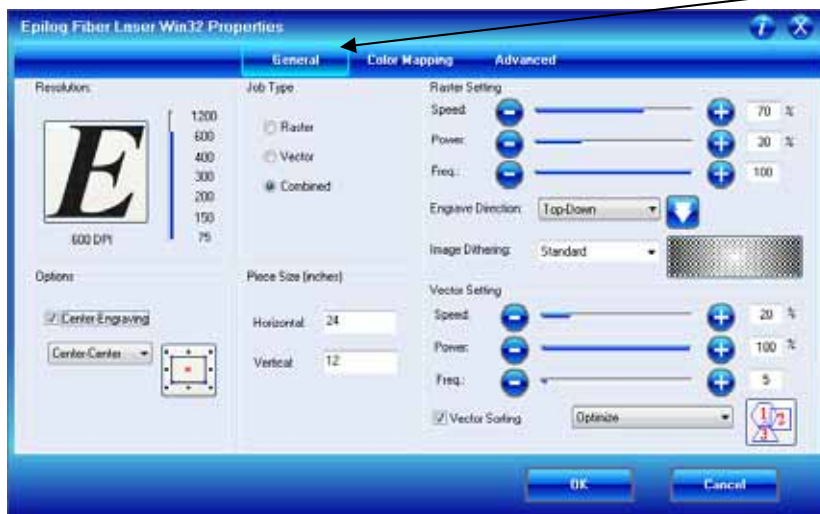


Highlight the configuration file that you want to use.

Then, click on the Load button.

You **MUST** click on the Load button. Double clicking on the selected file will not load the settings.

Section 7: Using the Epilog Dashboard

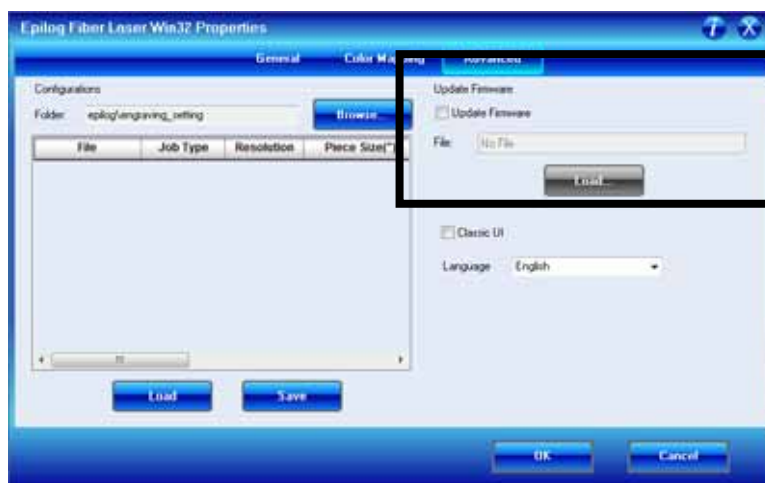


Click on the General tab to see the settings that the loaded file brings up.

Upgrade Firmware



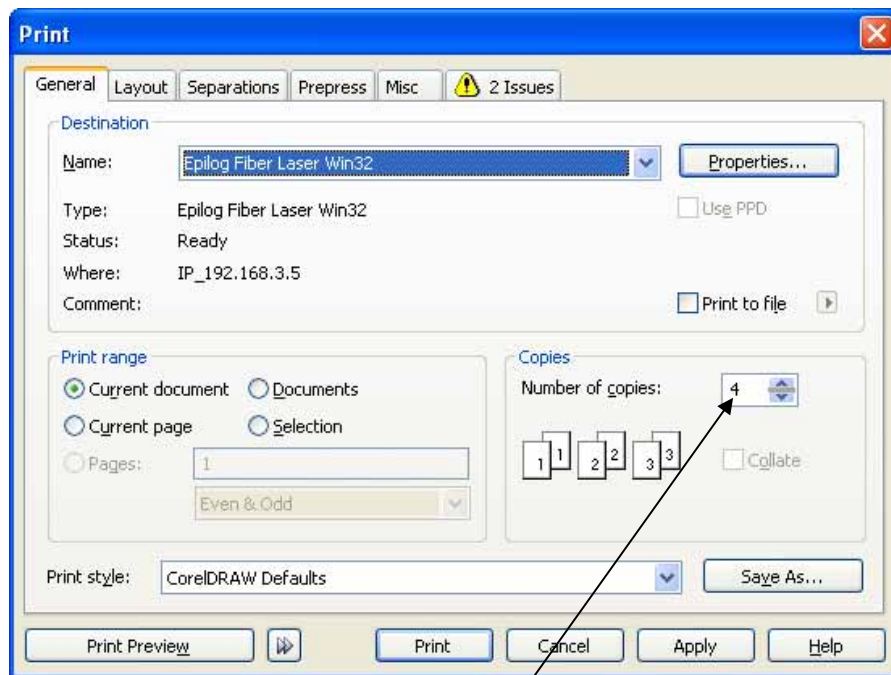
Please see *Upgrading the Operational Firmware* section of this manual for detailed instructions on using this feature of the Dashboard.



Section 7: Using the Epilog Dashboard

Additional Dashboard Driver Features

Multiple Passes

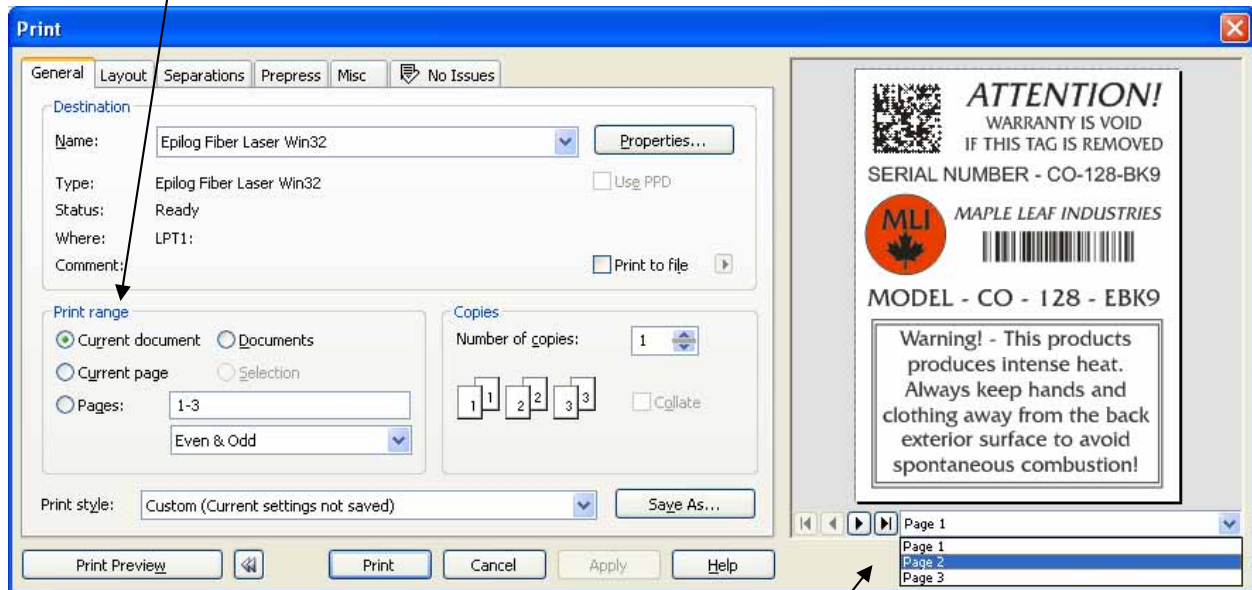


You can automatically engrave or vector a job multiple times by setting the Number of Copies to the number of passes that you want to make. When each pass is finished the laser will automatically start another pass until all passes are complete.

Section 7: Using the Epilog Dashboard

Multiple Pages

CorelDraw allows you to set up and print multiple pages. The screen shot below shows the Corel print window that is set up to print all three pages of a three page document. You can print all of the pages, or you can specify which ones you want to print by adjusting the settings in the Print range box.



You can view the different pages in the Print Preview screen.

When a multiple page job is printed to the laser, the job will be displayed on the LCD as Job:3.Page 3. Note that the last page of the job (in this case there were three pages) is what is shown on the LCD – not the first page! For this print job you will see as you scroll through the jobs on the LCD that the second page is displayed as Job:2.Page 2, and that the first page is displayed as Job:1. File Name (where the file name is the name of the file as it was saved in Corel).

Section 7: Using the Epilog Dashboard

The list below shows the file names a little more clearly:

Job:1. File Name

Job:2. Page 2

Job:3. Page 3 – This file shows on the LCD when the file is received at the laser.

If you already have jobs in the laser system, the naming structure will change. The Job number will pick up the first available number. For instance, if you have two jobs already in the laser system and then print a multi-page job of five pages, the file names for those five pages will be:

Job:3. File Name

Job:4. Page 2

Job:5. Page 3

Job:6. Page 4

Job:7. Page 5 – This is the job that will show after the entire file has been received.

If you start engraving the jobs and become uncertain about which pages are which, you can refer back to your print preview screen and the Page number in the laser will correspond to the page number in the print preview (see the screen shot on previous page).

Changing Dashboard Driver Defaults

All of the Dashboard driver default settings can be modified to suit your engraving needs.

1. Go to Start | Control Panel | Printers
2. Right mouse click on the Fiber Laser Win32
3. Click on Properties
4. Click on Printing Preferences
5. Change any of the settings. These changes will become the default settings for your Dashboard print driver.
6. Click Okay and close out all open windows.

Section 8: Using the Front Control Panel

In This Section

- Keyboard Commands
 - Loading Your Work
 - Operation
 - Job Storage
-

As you start using your Epilog laser system, you will notice that the Keyboard Commands are helpful tools for operating your laser system. The keyboard commands make the laser system extremely user friendly. The functions of each control panel key and other operations are described herein.

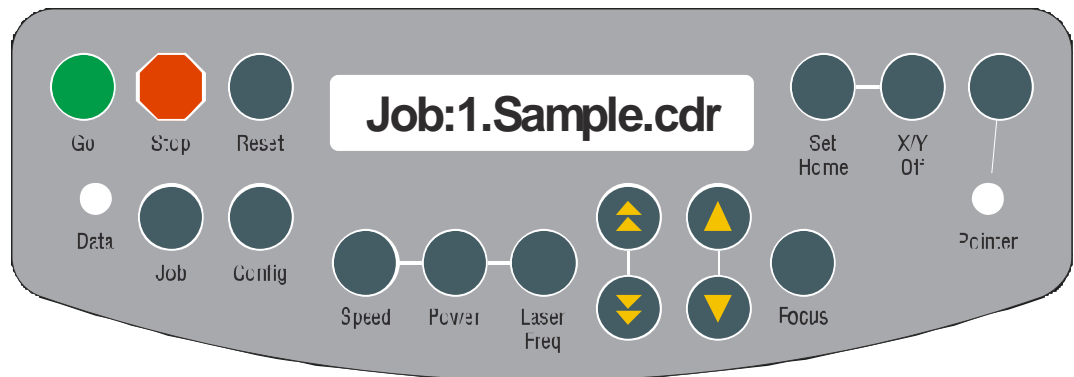
Keyboard Commands



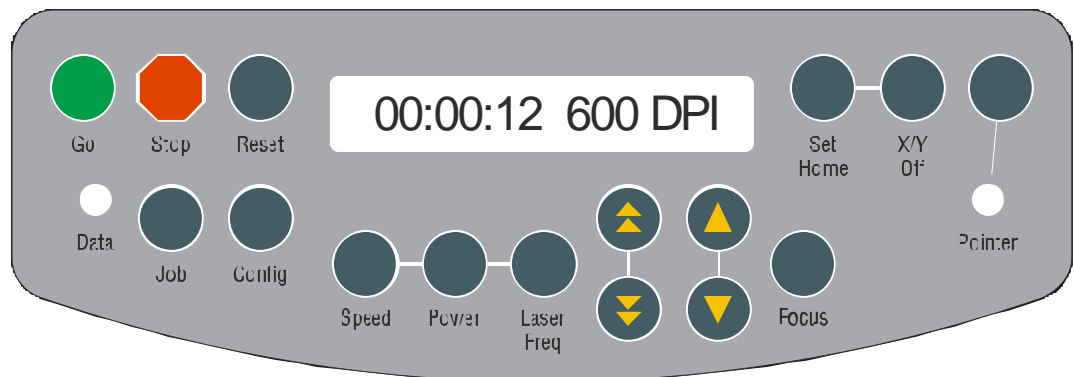
The keyboard is located at the front center of the laser system as illustrated above. All of the keys have specific purposes, but using the laser can be as easy as pressing the “Go” button once a job has been sent to the laser.

Section 8: Using the Front Control Panel

The diagram below shows the control panel that has a job in queue and is ready to start engraving. At this point, simply pressing the “Go” button will start the engraving job. Notice that the name of the job is the same as the file name from CorelDraw.



Once the job starts, the display changes to show a job timer and the engraving resolution. The timer is a useful production tool that displays the elapsed time of job as it runs.



Section 8: Using the Front Control Panel

DATA

This green indicator light flashes as data is being received at the laser system. For normal jobs, the DATA light will be illuminated for only a few seconds. Once the data has been received at the laser system the DATA light turns off.

GO

This key is used to start a job. Once the desired job is selected, pressing the **GO** button will start the job. If a job is paused (**STOP** button) it can be resumed by pressing the **GO** button. The **GO** button is also used to repeat a job – simply select the job you want to run on the display panel and press **GO**.

STOP

Pressing the **STOP** button will immediately stop the laser from firing. If the **STOP** button is pressed while in raster mode the lens carriage will stop at the end of the engraving line that is in process. If the **STOP** button is pressed while in vector mode the lens carriage will stop at the end of a line segment or at the next line node location. Once the lens carriage has stopped, you can open the door to examine the engraving. By closing the door and pressing the **GO** button, the job will commence where the carriage stopped. If the item being engraved is not moved the engraving registration will not be affected.



Note: Opening the front door or the top window on the laser cabinet during marking will immediately stop the laser from firing; however the lens carriage will continue to move. At this point, simply by closing the door or window will not prompt the laser to fire again. You must press Stop and then Go to resume laser firing. It is important to STOP the job before you open the door to ensure the engraving is completed.

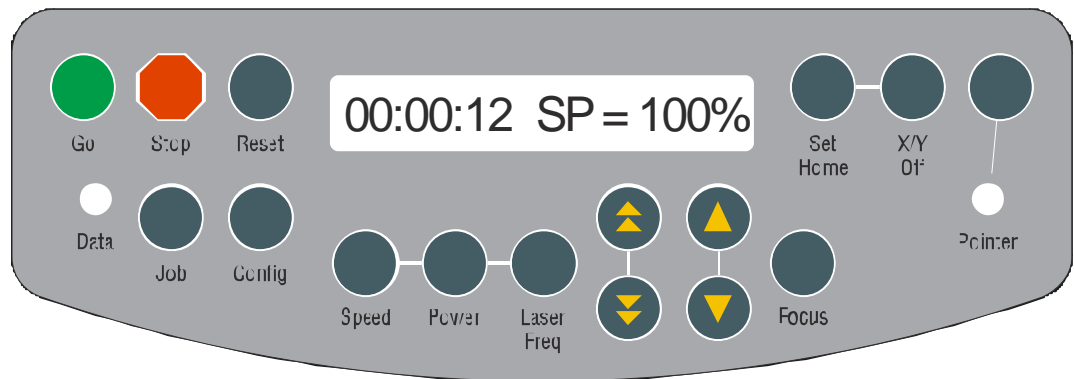
RESET

This button is used to reset the carriage to home position after you have stopped a job in progress. **RESET** does not erase the job from the laser systems memory; rather it will stop the engraving job in process and send the carriage back to the home position. The **STOP** button should always be pressed before pressing the **RESET** button.

Section 8: Using the Front Control Panel

SPEED

During an engraving job, or when the laser is idle at Home Position, the Speed of the job can be viewed on the control panel by pressing the ***SPEED*** button. In Raster mode you can change the speed on the fly. Speed can only be changed on the fly in Raster Mode. You cannot change the Speed on the fly during Vector marking.



Pressing the ***SPEED*** button while engraving will change the display to show the amount of time the job has been running (00:00:12 on the left side of the display above) and the ***SPEED*** setting of the job while it is running (SP = 100% on the right side of the display above). Pressing the ***UP*** or the ***DOWN*** buttons will increase or decrease the speed of the carriage. Normally you will need to increase or decrease the Speed by 20% or more before you start to notice a visible change in the speed. Changing the Speed on the fly is a useful way to experiment to get just the right Speed setting for a material that you are not used to engraving.

The ability to change the Speed setting on the fly from the front control panel in Raster mode is disabled when the Color Mapping box in the Dashboard print driver is checked!

You cannot change Speed on the fly in Vector or Combined mode.

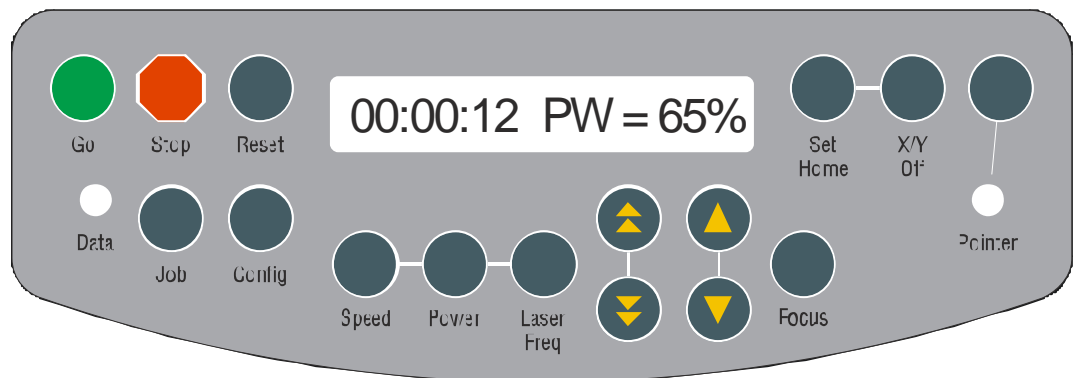
You can also change the Raster Speed from the laser system when it is in idle mode. To do this, press the ***SPEED*** button, and then press either of the ***UP*** or ***DOWN*** buttons to change the Speed. Press ***GO*** and the job will run at the changed Speed setting, not the setting that was sent from the computer.

You cannot change the Speed setting for Vector mode when the machine is in idle mode from the front control panel.

Section 8: Using the Front Control Panel

POWER

The Power setting of a job can be viewed on the control panel by pressing the **POWER** button while the machine is in at idle or while it is running. In Raster mode you can change the power on the fly. Power can only be changed on the fly in Raster Mode. You cannot change the Power on the fly while in Vector mode.



Pressing the **POWER** button while Raster engraving will change the display to show the amount of time the job has been running (00:00:12 on the left side of the diagram above) and the Power setting of the job while it is running (PW = 65% on the right side of the diagram above). Pressing either of the **UP** or **DOWN** buttons will increase or decrease the power output of the laser when in Raster Mode. Normally you will need to increase or decrease the Power by 10% or more before you start to notice a visible change.

The ability to change the Power setting on the fly from the front control panel in Raster mode is disabled when the Color Mapping box in the Dashboard print driver is checked!

You cannot change the Power setting on the fly in Vector or Combined mode.

You can also change the Raster Power from the laser system when it is in idle mode. To do this, press the **POWER** button, and then press either of the **UP** or **DOWN** buttons to change the Power. Press **GO** and the job will run at the changed Power setting, not the setting that was sent from the computer.

You cannot change the Power setting for Vector operations when the machine is in idle mode from the front control panel.

Section 8: Using the Front Control Panel

X/Y OFF

Pressing the ***X/Y OFF*** button and then pressing the ***GO*** button disables the X and Y motors and allows the operator to move the carriage by hand to any location on the table (*be careful to avoid touching the optics while moving the carriage!*). Moving the carriage by hand allows you to perform several different functions:

1. Manually focus anywhere on the table or optional Rotary Attachment. To manually focus anywhere on the table, disable the axes by pressing the ***X/Y Off*** key, then the ***Go*** key. Move the carriage to the desired focus position. Place the manual focus gauge on the carriage and press the Up or Down cursor keys on the keyboard to move the table up or down until the focus gauge is just touching your work. Your focus is now set to the proper focus height. After you have focused, press the Reset key to send the carriage back to its Park position.
2. Accurately determine X and Y axis location. When you disable the axes and move the carriage by hand, the X and Y axis coordinates will be displayed on the LCD panel. To set the units of measure to inches or mm, press the ***Reset*** and ***X/Y Off*** keys simultaneously. Use the ***Up*** or ***Down*** cursor keys on the front control panel to toggle between inches and mm. Press the ***Go*** key to finalize your selection.
3. Create a new, ***temporary***, home position. Using the red dot pointer helps to locate the precise position where you want your new home position to be. Follow the Set Home instructions (next paragraph) to create a temporary Home.



Note: Remember that creating a new home position will reduce the engraving / marking area. Make sure the image to be engraved / marked will fit within the remaining area of the laser system.

SET HOME

Once you have moved the lens assembly by hand to a temporary home position, pressing the ***SET HOME*** button will set this new position as your new, temporary, home position. This temporary home position now becomes your upper left corner.

The process of setting a temporary home position involves the following steps:

1. Press ***X/Y OFF***
2. Press ***GO*** to disable X and Y axis (Press ***STOP*** to cancel and send the carriage back to its Park position if you change your mind!)

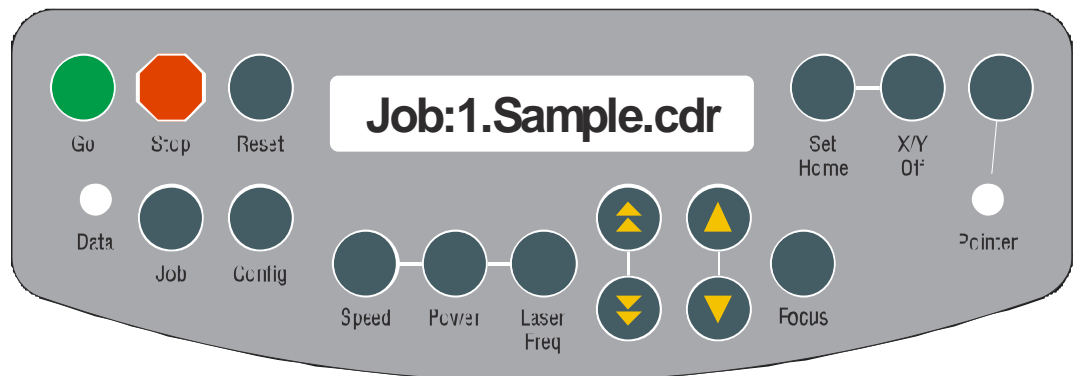
Section 8: Using the Front Control Panel

3. Move the lens assembly by hand to your desired location (remember to turn the Red Diode Pointer on as a visual locator aid)
4. Press **SET HOME** to establish your new home position
5. After you have set home, pressing the **RESET** button will move the carriage to its park position a short distance (approx. 1/2 inch (12 mm)) to the front of where you set home.
6. Once you are finished with your temporary home position, and want to restore the carriage to the upper left corner of the machine, press the **Set Home** key and the **Reset** key simultaneously. Press the **GO** key and the carriage will move back and to the left to its normal upper left corner Park position.

JOB

Pressing the **JOB** button displays the file name of the last job stored in memory. After pressing the **JOB** key, pressing the **UP** or **DOWN** keys allows the operator to scroll through all of the saved jobs that are stored in the laser systems on-board memory.

The **UP** or **DOWN** buttons will loop continuously through all jobs stored in the laser system. Pressing the **GO** button will start the job that is displayed on the control panel.



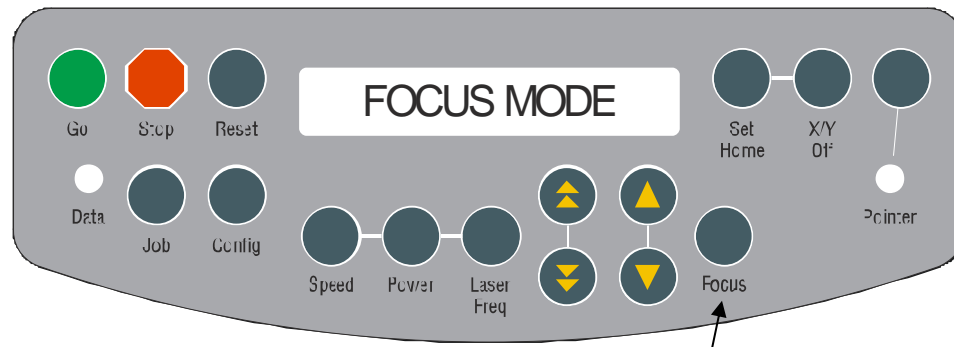
Notice that the Jobs are numbered. If you send the same job more than once, you will still be able to distinguish it from the other jobs with the same name by the job number.



Note: Jobs stored in the laser systems will be erased when the laser system is turned off. Turning off the laser system also serves to clear the laser systems memory if so desired.

Section 8: Using the Front Control Panel

FOCUS



To focus, place the focus gauge on the carriage. Press the Focus key on the front panel and use the up and down cursor buttons on the front control panel to move the table up until your material just touches the bottom of the focus gauge.

There are two sets of cursor buttons that control the up and down movement of the table:

1. The double triangle cursor buttons control the coarse speed of the table and move the table up and down quickly in large increments of about .030 to .050 inches (.75 to 1.2 mm)
2. The single triangle cursor buttons control the fine speed of the table and move the table up and down slowly in small increments of between .001 and .003 inches (.2 to .8 mm)

Once the focus position has been established, remove the gauge and press the Reset button to return the carriage to its “Park” position before starting your job.



When the **Focus** button is pressed, the carriage will move forward and to the right several inches (~ 50 mm) from its “Park” position in the upper-left corner. If the table is too high, the carriage may collide with your material. To prevent the carriage from colliding with your material, you can do one of two things:

1. Press the Stop button first before pressing the Focus button. Pressing the Stop button immediately before pressing the Focus button prevents the carriage from

Section 8: Using the Front Control Panel

moving from its “Park” position, allowing you to lower the table with your material in place.

2. Remove your material, press the Focus button and use the Down button to lower the table.

Once you have focused, pressing the **Reset** button will move the carriage back to its “Park” position, or you can begin engraving from the manual focus position. Neither position will affect the start position of your job.

In general, material being marked with the FiberMark laser needs to be flat and the amount of taper that can be accommodated is small.

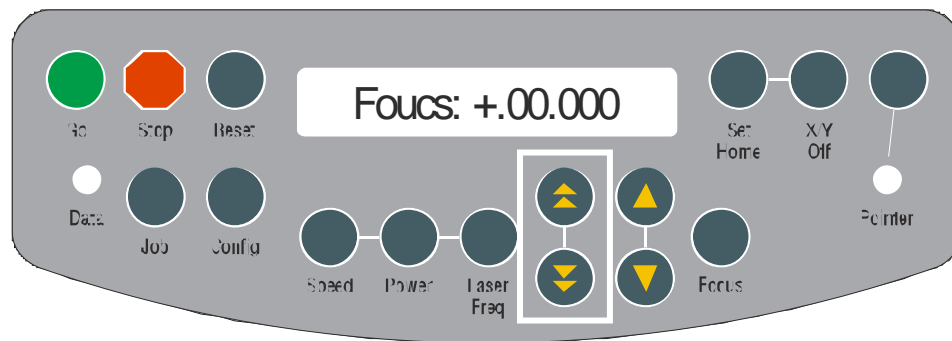
The ability to change Focus on the fly from the front control panel is disabled when the Color Mapping box in the Dashboard print driver is checked!

Focus Anywhere on the Table: If you wish to focus at a point on the table other than in the upper left corner you can do so by disabling the axes and moving the carriage by hand to the location where you would like to focus. To do this, use the following key sequence:

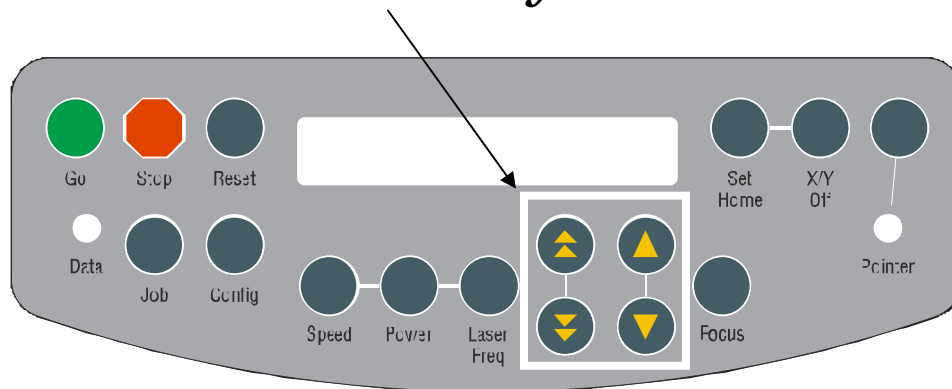
Press the **X/Y Off** key, then the **Go** key. This disables the axes and you can now move the carriage by hand to any point on the table (this also works when using the Rotary Attachment). Press either of the **Up** or **Down** buttons on the keyboard to move the table up or down to set the proper focus height. After you have focused, press the **Reset** key to send the carriage back to its Park position. Be careful to avoid touching the optics when you are moving the carriage by hand!

Numeric Display: When the Focus button is depressed a numeric readout is displayed. Wherever the table is when the machine is initially powered-up is the 00.000 (Z-axis) position. Once the table is moved, the readout will display how far the table has moved up or down. Once you move the table up or down to the position you want, you can zero out the numeric display by pressing both double triangle cursor keys simultaneously. This feature is very helpful when very precise focus is important, and when Auto-Focus is used in Color Mapping mode.

Section 8: Using the Front Control Panel



***UP & DOWN* Cursor Keys**

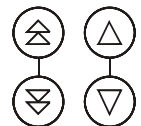


The **UP** and **DOWN** cursor buttons serve four functions:

1. Focus Adjustment
2. Job Selection
3. Speed and Power Adjustment from the machine
4. Navigate through the menus on the keyboard

There are two sets of cursor buttons:

1. The double triangle cursor buttons provide control in coarse steps and moves quickly in large increments.
2. The single triangle cursor buttons provide control in fine steps and moves slowly in very small increments.

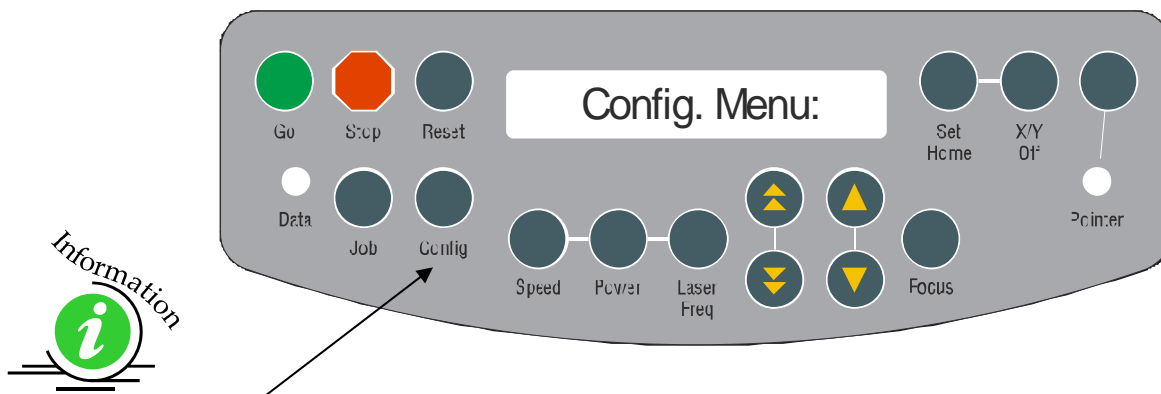


Section 8: Using the Front Control Panel

POINTER

The ***POINTER*** button is a toggle switch that turns the laser systems Red Dot Pointer on and off. When the Red Dot Pointer is on, the green indicator light directly below the ***POINTER*** button will be illuminated.

Config



The Config button brings up the factory settings that normally only need to be set once to calibrate your laser system. These settings are described in detail in Section 12 of this manual “*Engraving Machine Calibration and Maintenance*”.

Loading Your Work

The home position of the engraving field is at the upper left corner of the table. Place your work piece in the upper left corner, pressed firmly against the metal rulers along the top and left edges.

Operation

When you first receive your laser, load a practice piece, set the focus and close the door. Turn on the exhaust fan. Now go into your drawing program (CorelDraw, etc.) and set the page size to the dimensions of the practice piece you have loaded. Then enter your name in half-inch (10 mm) text anywhere on the page. Once you have the

Section 8: Using the Front Control Panel

image ready to engrave, print to the machine through the Epilog Dashboard print driver using the standard print command.

Remember these steps:

1. Insert the item to be engraved.
2. Focus
3. Close the door.
4. Confirm the exhaust is on.
5. Press **JOBS** on the Display Panel.
6. Press the **UP** or **DOWN** cursor keys to scroll through the jobs that are in the FiberMark print queue.
7. Press **GO** to run the job that is displayed in the LCD.

Job Storage

The laser has the capability to store multiple jobs in temporary memory. The machine will save any and all jobs sent until all of the available 64 MB of memory is full. At that point, the oldest job will be deleted automatically to make room for new jobs.



Note: *Jobs stored in the laser systems will be erased when the laser system is turned off. Turning off the laser system also serves to clear the laser systems memory if so desired.*

Section 9: Standard & Optional Machine Features

In This Section

Standard Features

- Integrated Air Curtain
- Air Curtain Pump
- Integrated Vacuum Table
- Fold-down Front Loading Door
- Internal Viewing Light
- Red Dot Pointer

Optional Feature

- Rotary Attachments
 - Additional Focal Length Lenses – 1.5” and 5.0 inch
-

The laser system is very versatile and has many standard features that are very useful for making engraving applications easier to perform! Features that are either included with the system or sold separately make the Epilog a high performance tool. Following is information regarding operation of these features.

Standard Features included with the Epilog FiberMark system:

- Integrated Air Curtain (Pump is optional)
- Integrated Vacuum Table
- Fold-down Front Loading Door
- Internal Viewing Light
- Red Dot Pointer

Optional Features that can be purchased with the Epilog FiberMark system include:

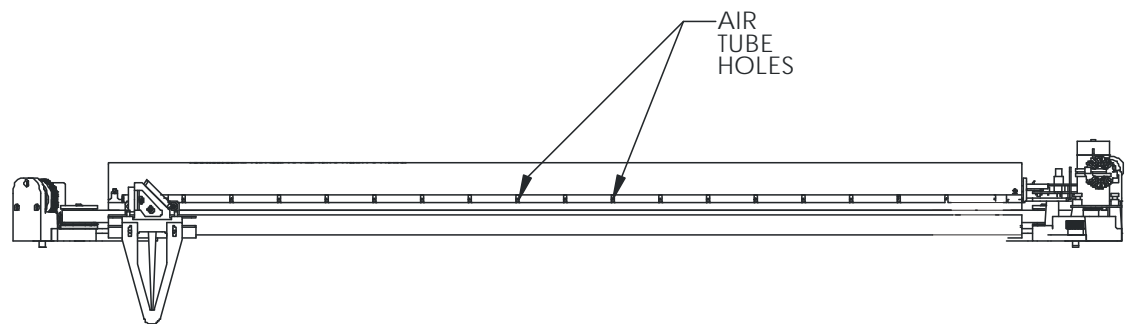
- Standard Rotary Attachment
- 3-Jaw Chuck Style Rotary Attachment
- Air Curtain Pump
- 1.5 inch and 5.0 inch lenses

These optional items can be purchased with your original order or at any time after the purchase of your laser system.

Section 9: Standard & Optional Machine Features

Integrated Air Curtain

The integrated air curtain consists of a perforated tube that is mounted to the X-beam. A continuous stream of air is pumped into the tube and exits the perforations. The perforations direct the air towards the work surface at an angle that pushes the air down and towards the front of the machine. The air curtain is designed to move engraving debris or combustible gases generated from engraving away from the mechanical components of the machine. You should always use the air curtain any time the laser is operating.



You can use clean, dry shop air or the Air Curtain Pump included with your FiberMark System. There is a ¼ inch (6 mm) air receptacle at the back of the machine on the side where the light switch is located.

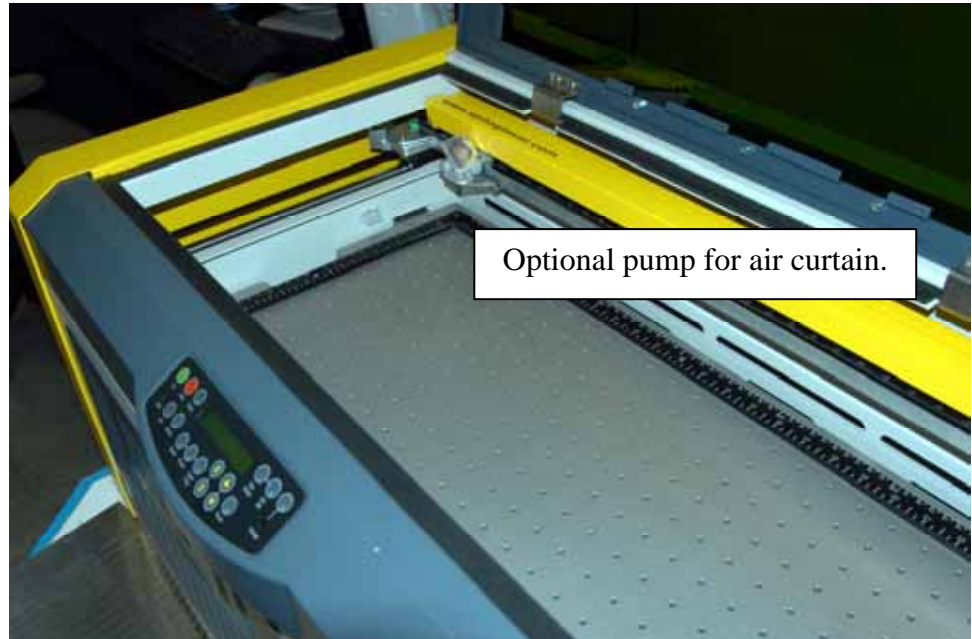
Air Curtain Pump

The Air Assist pump attaches to the back of the FiberMark using a ¼" flexible hose. This is a standard accessory that ships with all FiberMark Laser Systems.



Section 9: Standard & Optional Machine Features

Integrated Vacuum Table



The unique design of your FiberMark laser system incorporates several valuable features into the engraving table. The exhaust system is designed so that it evacuates from both the top and the bottom of the table. The exhaust pulls air through the small holes in the table to form enough of a vacuum that it will flatten slightly warped sheet stock.

As long as the exhaust is operating and the table is no more than one inch (25.4 mm) below its highest point, the vacuum table will work.

If you have a piece of sheet stock that does not flatten out because it is not covering enough of the vacuum holes, you can use any material (including paper) to cover the exposed holes in the table. Simply blocking the majority of the vacuum holes will be enough to flatten most sheet stock.

The vacuum table is not designed to flatten severely warped or bent materials.

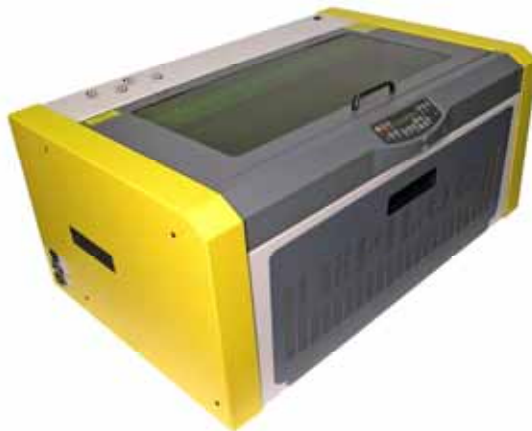
Section 9: Standard & Optional Machine Features

Fold-down Front Loading Door

The FiberMark system has an interlocked front door that folds down and allows access to the front of the machine. This fold-down door makes inserting and removing parts pallets quick and easy and is much easier than loading pallets through the top window. Pull on the door handle to open the door.



- **DO NOT** attempt to defeat the door interlocks.
- **DO NOT** operate the machine with the door open.



Section 9: Standard & Optional Machine Features

Red Dot Pointer

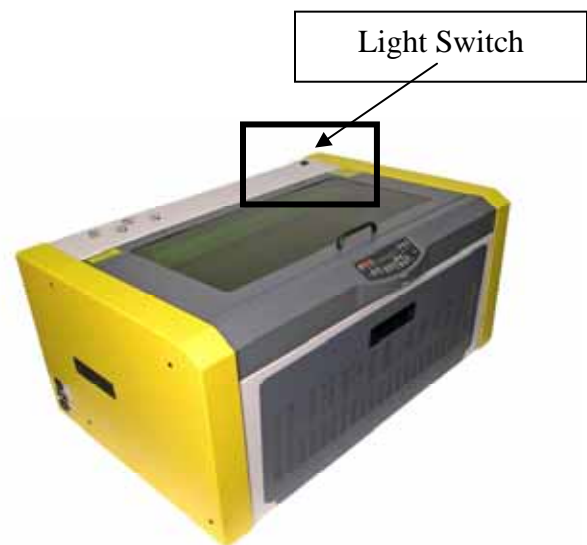
The Pointer setting allows for manually turning **ON** or **OFF** the Laser Diode Pointer (Red Dot Pointer). This visible red beam is much like a hand held laser pointer, and has a bright red beam. This beam allows the operator to visually note where the laser is marking. While this device employs the same technology as the familiar laser pen-pointers, like them it is potentially hazardous if its beam is directed into the eye. When the Pointer is turned on, **DO NOT** place your head inside the engraving area, as you may look into the beam. For additional information, read **Section 1: Safety** of this manual. Use the diode pointer in conjunction with the Move X/Move Y coordinates to locate a given position on the engraving table.



The Red Dot Pointer automatically turns off when the doors are closed and a job is running.

Internal Viewing Light

The inside of the cabinet is equipped with a viewing light that enhances your ability to see inside the machine when the top access window is closed. The switch for the light bank is located on top of the machine at the back-right corner.



Section 9: Standard & Optional Machine Features

Top Access Door - Viewing Window

The green viewing window in the top access door is an acrylic sheet that is specially designed to block infrared light between 830 nm and 1700 nm (the fiber laser produces a wavelength of 1062 nm).



While the window will block the light produced by the fiber laser source, viewing the engraving process should be limited because the reflected visible light produced by the metal while it is being engraved is quite bright.



**NOTE: NEVER operate the FiberMark laser system with the doors open.
NEVER attempt to defeat the window or door interlocks.**

Cleaning the Viewing Window - Special care should be taken when cleaning the viewing window. Use only a soft cloth and a mild glass cleaner to clean the window. Do not use paper towels or other coarse materials to clean the window. The window is susceptible to scratching if not properly cleaned. Damage to the window from cleaning is not covered under the warranty.

Section 9: Standard & Optional Machine Features

Rotary Attachments

The optional Rotary Attachments allow you to raster or vector mark cylindrical objects. The rotary attachments work in both raster and vector modes. There are two types of rotary attachments available for the FiberMark System; the Standard Rotary Attachment and the 3-Jaw Chuck Style Rotary Attachment. The Standard rotary is used for general cylindrical marking applications while the 3-Jaw Chuck is preferred for precision marking applications. Instructions for installation, artwork setup and operation for both styles are included below respectively.

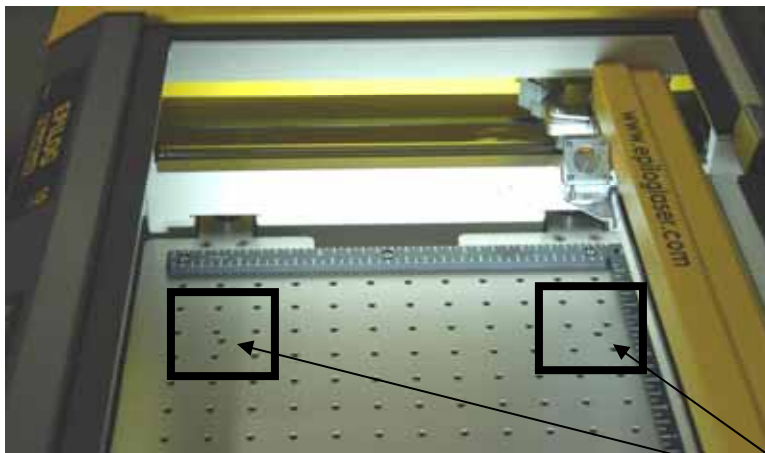
Installation

1. Lower the engraving table to its lowest point.
2. **Turn off the power to the engraver.**



Important! It's important that you power down the machine before inserting the rotary connector at the table. The rotary attachment cannot be plugged into the machine while it is powered on without damaging the electronics of the laser system.

3. Insert the Rotary Attachment into the offset locating holes

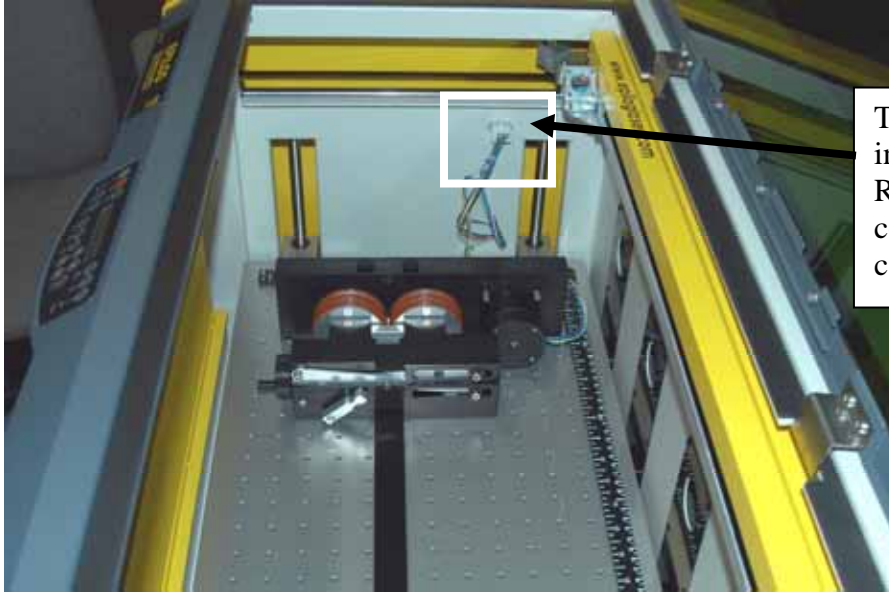


There are three pins in the bottom of the rotary attachment that mate to three offset holes in the table. It is important to place the rotary in the offset locating holes so that Home position is properly maintained.

The photo at left shows the approximate location of two of the offset locating holes.

Section 9: Standard & Optional Machine Features

4. **With the machine off**, insert the connector from the Rotary Attachment to the mating connector on the inside of the cabinet.



Turn off power to the machine and insert the connector from the Rotary Attachment to the mating connector on the inside of the cabinet.

The photo above shows the Standard Rotary Attachment installed in the machine. These installation instructions are for both the Standard and e-Jaw Chuck Style Rotary Attachments.

5. The rotary attachment is now installed! Turn the power on.
6. The engraver knows that the rotary attachment is installed and changes its home position to a point directly above the center point of the drive wheels on the attachment.

Section 9: Standard & Optional Machine Features

Standard Rotary Attachment

Install the standard rotary attachment as instructed above, and then follow these instructions to easily setup your artwork.

Standard Rotary Artwork Setup

The rotary attachment works in either raster or vector mode, and the setup is the same for both. The part to be engraved should rest between the two sets of wheels. The wheels on the left are the driving wheels, which spin the cylinder to be engraved. The wheels on the right are idler wheels for support. They can be raised or lowered to level the work surface to be engraved. They can also be moved from left to right to adjust for the length of the part being engraved. The top of the part being engraved must be level for the part to engrave correctly.

Load your part with the smaller diameter on the right side. Use the elevator to elevate your work so that it is horizontal. Ensure the part is positioned so that the left end is close to, but not touching the black bumper.



Rotate the elevator knob on the rotary attachment to raise the right side of the object being engraved so that the surface to be engraved is horizontal.

The location (left to right) of where the elevator supports the cylinder is not overly important. The elevator uses a set of idler wheels and as long as the cylinder is supported and rotates freely, the cylinder will engrave properly.

Section 9: Standard & Optional Machine Features

The photo below shows a typical setup for a cylindrical object. The larger diameter is on the left side of the rotary attachment and the right side of the flashlight has been elevated so that it is resting horizontally and the flashlight is level.



Correct Setup with flashlight level.

The photo below shows the same flashlight at a severe angle to horizontal. If the flashlight (or other cylindrical object) is not horizontal the laser beam will lose focus as the carriage head moves across the flashlight, causing the engraving quality on the right hand side to suffer dramatically.

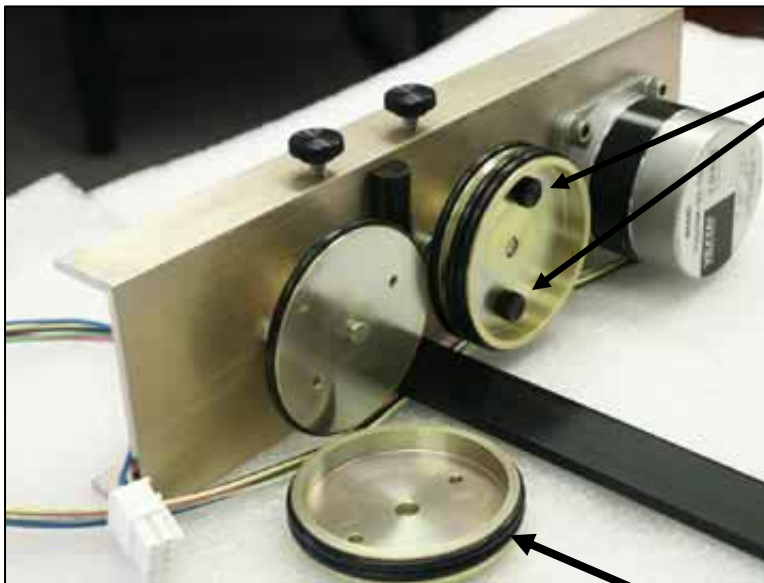


Incorrect Setup. Flashlight is not level.

Section 9: Standard & Optional Machine Features

Drive Wheels

The drive wheels are each two piece assemblies. Removing the front part of the drive wheels enables the user to accommodate a wider variety of cylindrical objects; especially those items that have something like a handle on a mug or a cup).



Loosen the two small thumb screws on each wheel to remove the front wheel.

Front drive wheel removed.

Artwork Layout

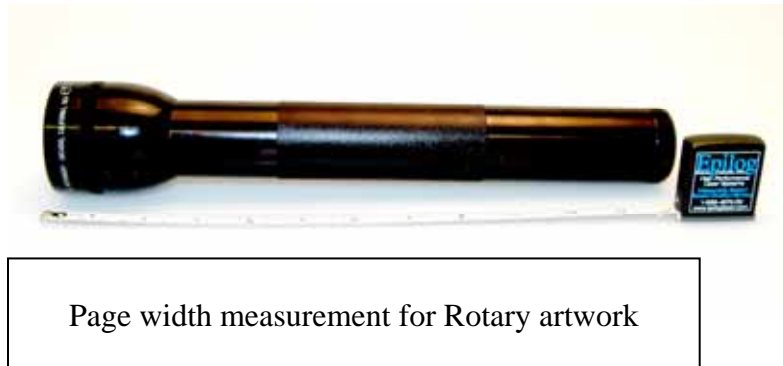
Because the Rotary Attachment automatically compensates for the diameter of the cylinder, artwork setup is relatively easy. The most important thing to remember when working with the rotary is that your artwork needs to be rotated 90 degrees to the way it would normally be setup for flat work. There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

Section 9: Standard & Optional Machine Features



Note: The artwork in the following examples does not fill up much of the Corel page that you are printing from. 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 cylinder flat and orient it in the way that it will rest on the rotary attachment in the machine. For this cylinder the width of the page will be 11 inches (279 mm).

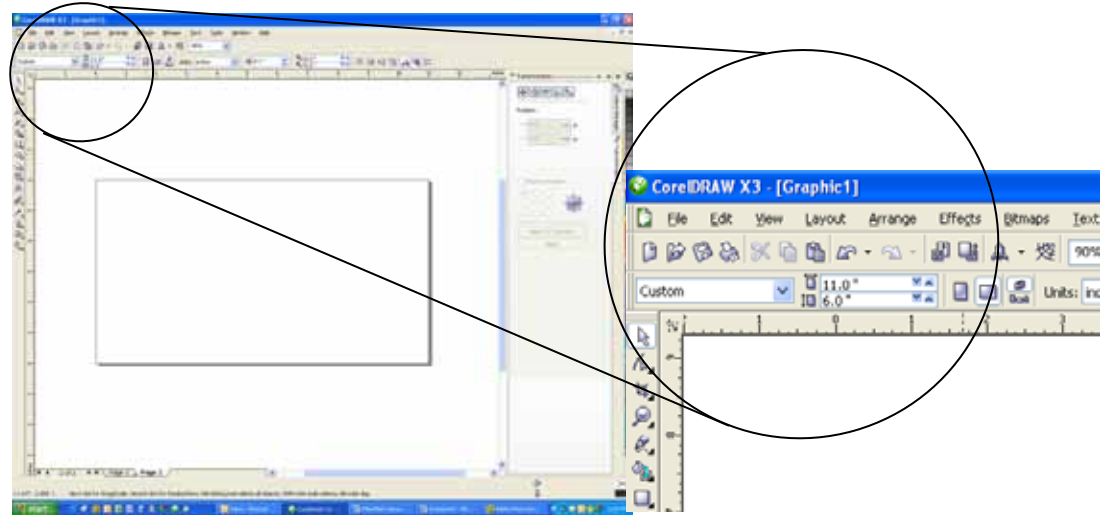


For the height (y-direction) of your page, use a flexible tape and measure the circumference of the cylinder.

For this flashlight, the height of your page will be 6 inches (152 mm).

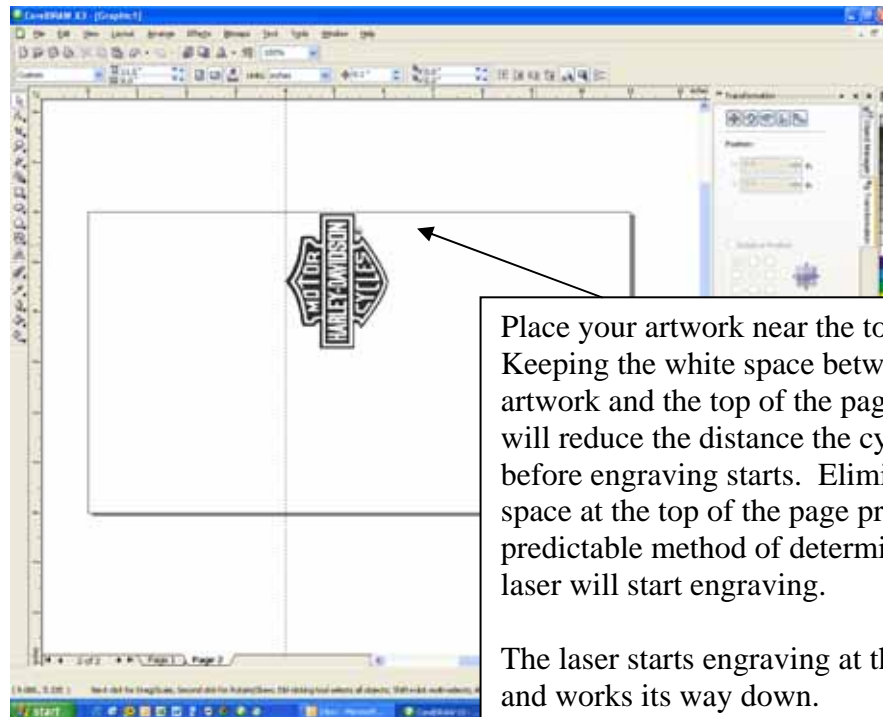
Section 9: Standard & Optional Machine Features

For the above flashlight, set up your page size to 11 x 6 inches (152 x 279 mm).



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

Section 9: Standard & Optional Machine Features



Place your artwork near the top of the page. Keeping the white space between the top of your artwork and the top of the page to a minimum will reduce the distance the cylinder will rotate before engraving starts. Eliminating the white space at the top of the page provides the most predictable method of determining where the laser will start engraving.

The laser starts engraving at the top of the image and works its way down.

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

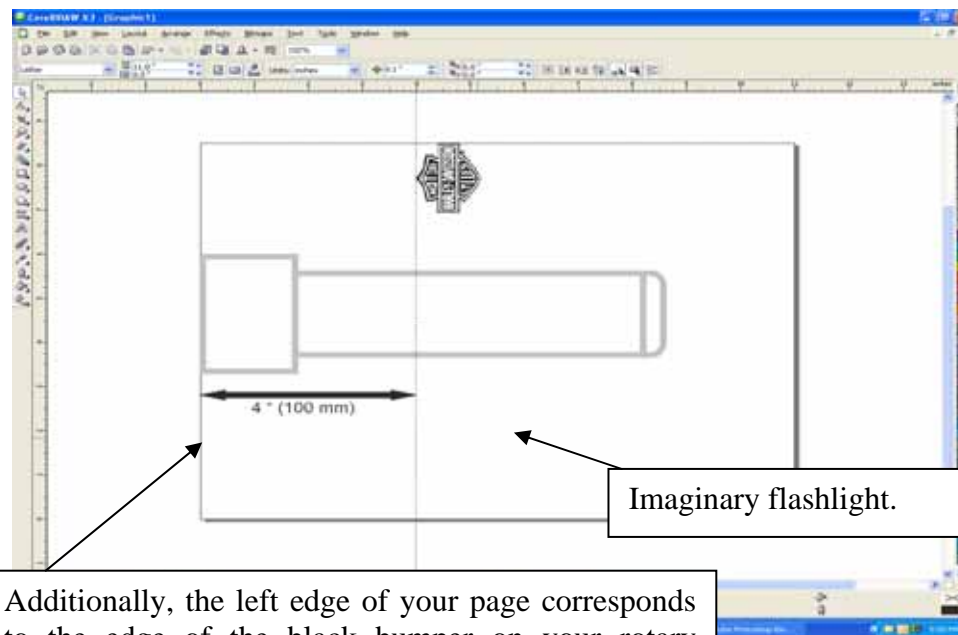


Set your cylinder on the rotary attachment so that it is close to this bumper but not touching it. The cylinder may not be able to rotate freely if it is rubbing against the bumper

Because 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.

Section 9: Standard & Optional Machine Features

Another useful idea is to imagine the shape of your cylinder as it rests on the Rotary Attachment (see a photo of the flashlight on the rotary in the machine on the next page). In this example we are going to imagine engraving a logo onto a flashlight. When you're setting up the artwork it's not important that the imaginary cylinder be at the top of the page, it's only important to imagine the left-to-right orientation of the cylinder (notice that the head of our imaginary flashlight is at the left of the page). This process helps to visually orient how your artwork will be engraved onto the flashlight.



Additionally, the left edge of your page corresponds to the edge of the black bumper on your rotary attachment (see photo on prior page). Use the distance from the left edge of the page to determine how far down from the top of the flashlight your artwork will engrave. In this example you can see that the top of the logo will engrave 4" (100 mm) over from the left edge of the flashlight.

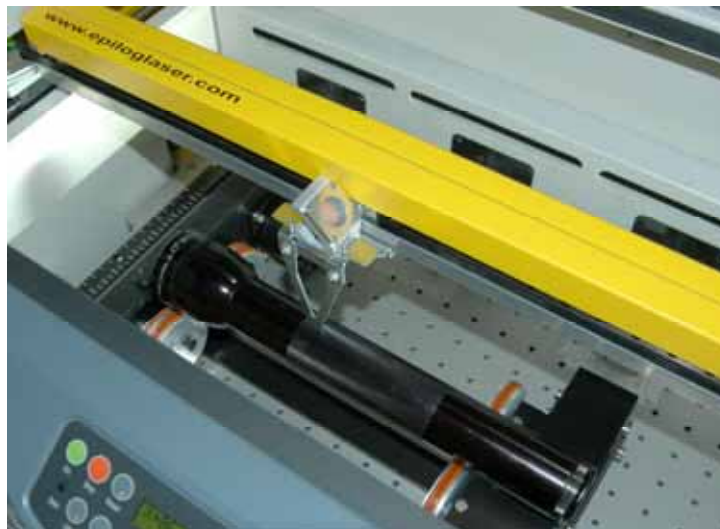
Section 9: Standard & Optional Machine Features

Focus with the Rotary



Note: Make sure the table is set to its lowest position before loading the Rotary Attachment into the machine.

Focus – With the cylindrical object in place, attach the focus gauge to the lens assembly. Disable the axes by pressing the ***X/Y Off*** key, then the ***Go*** key. This allows you to move the carriage to any point on your cylinder. Press the ***Up*** or ***Down*** cursor keys on the keyboard to move the table up or down until your cylinder just contacts the focus gauge. Move the focus gauge to more than one point on the cylinder to make sure the cylinder is level. If focus is not the same at all locations, use the elevator on the rotary attachment to level the cylinder. Your focus should now be set to the proper height. After focusing, press the ***Reset*** key to send the carriage back to the rotary Park position.



This photo shows focusing on a flashlight with the Standard Rotary Attachment installed.

Section 9: Standard & Optional Machine Features

3-Jaw Chuck Style Rotary Attachment

There are two different methods used for setting up the 3-Jaw chuck rotary attachment. The two methods are based on cylinder size:

- Method 1) is used for cylinders that are from 0.050" (12.7 mm) to approximately 3" (76.2 mm) in diameter.
- Method 2) is used for cylinders that are from 0.050" (12.7 mm) to approximately .125" (3 mm) in diameter.

Instructions for installation, focusing, and setting x-home position apply to both methods. Instructions for Artwork Setup is different for each and explained later in this section respectively.



Important notes about the 3-Jaw chuck:

- The 3-Jaw chuck only operates at 600 or 1200 DPI.
- There are speed limitations that will cause erratic engraving. Use the lower speed ranges (from 1% to about 50%). Your Power setting will then be adjusted according to the speed.
- The 3-Jaw chuck was originally designed to be used with cylinders that range in size from 0.50" (12.7 mm) to approximately 3" (76.2 mm) in diameter. However, cylinders that are smaller than .5" (12.7 mm) can be processed using an alternative process described at the end of this document.

Installation

Install the 3-Jaw Chuck Rotary following the instructions for Rotary Attachment Installation included above.

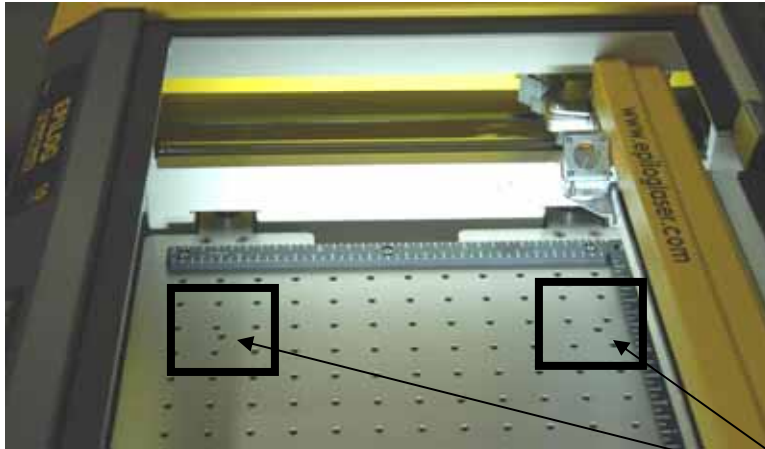
1. Lower the engraving table to its lowest point.
2. **Turn off the power to the engraver.** Make sure to turn **off** the power to the laser system.



Important! It's important that you power down the machine before inserting the rotary connector at the table. The rotary attachment cannot be plugged into the machine while it is powered on without damaging the electronics of the laser system.

Section 9: Standard & Optional Machine Features

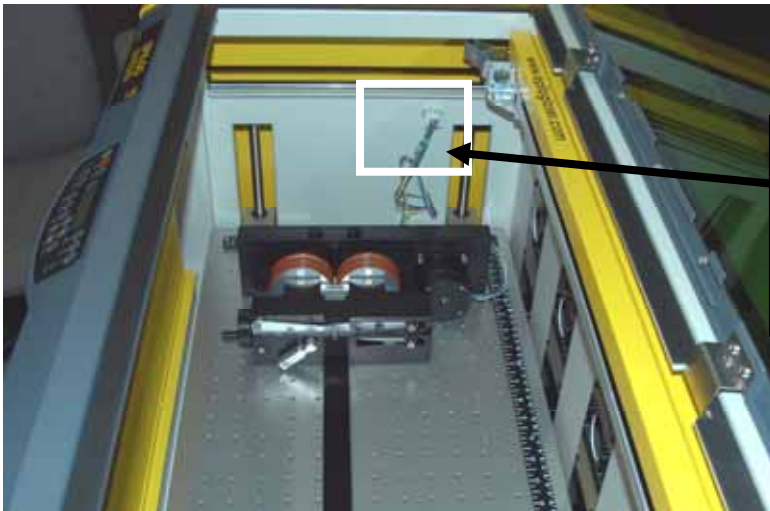
3. Insert the Rotary Attachment into the offset locating holes



There are three pins in the bottom of the rotary attachment that mate to three offset holes in the table. It is important to place the rotary in the offset locating holes so that Home position is properly maintained.

The photo at left shows the approximate location of two of the offset locating holes.

4. **With the machine off**, insert the connector from the Rotary Attachment to the mating connector on the inside of the cabinet.



Turn off power to the machine and insert the connector from the Rotary Attachment to the mating connector on the inside of the cabinet.

The photo above shows the Standard Rotary Attachment installed in the machine. These installation instructions are for both the Standard and e-Jaw Chuck Style Rotary Attachments.

5. The rotary attachment is now installed! Turn the power on.
6. The engraver knows that the rotary attachment is installed and changes its home position to a point directly above the left-center point of the rotary attachment.

Section 9: Standard & Optional Machine Features

Set the Rotary Numeric Display Units

With the machine on you will see numbers displayed on the rotary attachment display panel. The numeric display on the rotary attachment is used to set the diameter of the cylinder you're engraving. The display can show numbers in either inches or millimeters. There is not an indicator telling you if the units are in inches or mm. The only indicator is if there is a decimal point showing on the display. A decimal point indicates it is displaying in millimeters. No decimal place indicates it is displaying in inches.

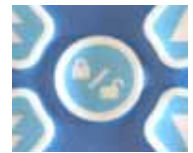


Inches: There is no decimal point displayed when the rotary units are set to inches. This display shows the number 1220 which is 1.220 inches.

Millimeters: Notice the decimal mark is displayed when the rotary units are set to millimeters. This display shows the number 35.50 which is 35.50 mm.

To toggle between inches and millimeters, press down and hold the Lock/Unlock key for several seconds until you see the display change.

Once the display is set to the units you want, the rotary will default to those units every time it is powered up.



The numeric display on the rotary attachment is used to set the diameter of the cylinder you're engraving. Pressing any of the cursor keys on the keypad will increase or decrease the diameter setting. The single triangles will increment in small units and the double-triangles will increment in larger units.

Section 9: Standard & Optional Machine Features

Measure your Cylinder

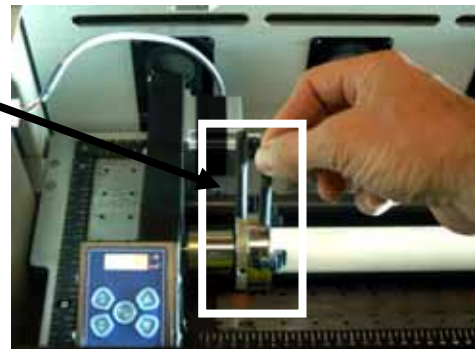
Measure your cylinder and input the diameter into the rotary keypad. The diameter of this cylinder is 1.220 inches (31 mm).



Insert your Cylinder

Insert the cylinder into the 3-jaw chuck and tighten the chuck so the cylinder is held firmly in place.

You will almost always need to use the two tightening pins that are provided with the rotary in order to clamp the cylinder tightly into place.



When you are setting up your cylinder you may need to rotate it when it is being clamped. To deactivate the motor and spin the chuck freely by hand, **briefly** press the Lock/Unlock key on the rotary keypad.



You will see the light indicator switch from Lock to Unlock on the right side of the numeric display.

Section 9: Standard & Optional Machine Features



Note: Do not press and hold the Lock/Unlock key to disable the motor. Just press it briefly. This key has two functions and if you press and hold the Lock/Unlock key it will toggle the units between inches and mm.

With the rotary installed, the diameter set, and the cylinder held tightly in place, you are ready to set up your artwork.

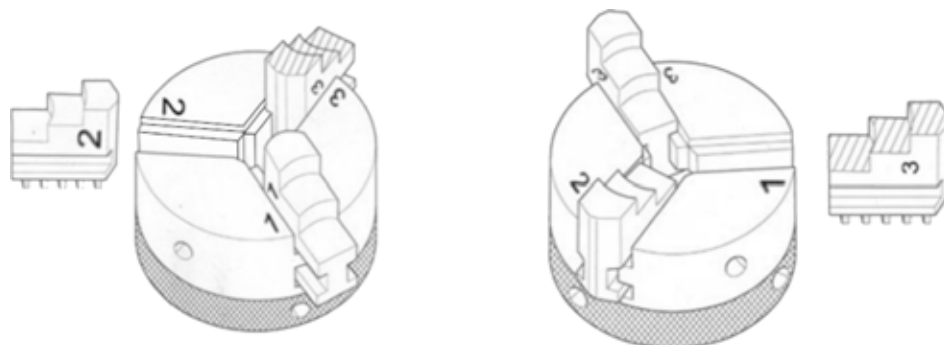
Placing the Jaws in the Chuck

The following instructions show how the jaws are placed in the chuck.

Pay particular attention to aligning the numbers as shown on the following diagram when inserting the jaws! Failure to align the correct jaw in the correct slot will result in uneven spacing of the jaws when they are tightened.

This image also shows that the jaws can be turned around to accommodate larger cylinders by reversing the jaw orientation. The right side shows how to align the jaws for a larger diameter configuration.

In order to allow for wide-radius turning, the chuck jaws can be flipped in their slots. There is a stamped number on each side of the individual jaws. For wide-radius turning, simply remove jaw 1, flip it, and reinsert it into slot 3. Then remove jaw 2 flip it and return it to slot 2. Finally, remove jaw 3, flip it, and then insert it into slot 1. Though slots for jaws 1 and 3 must be switched for wide-radius turning, jaw 2 always mates with slot 2 regardless of jaw orientation. In both cases the jaws must be mounted on the cam in ascending order to catch the spiral cam gear as it rotates – jaw 1 first, then jaw 2, and lastly jaw 3.

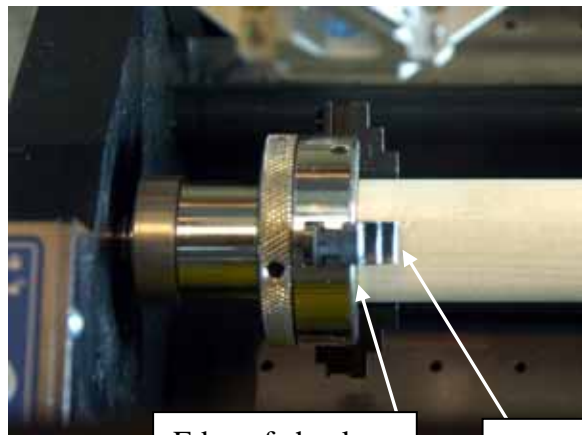


Section 9: Standard & Optional Machine Features

Set X-Home Position

Once your artwork is ready you will need to set the X-Home position on the rotary. Turn on the Red Dot Pointer. Press the X/Y Off button on the laser keyboard, then press the Go button. You can now move the carriage by hand to either the edge of the chuck or the edge of the jaw. Set one of these two points as your new Home position by pressing the Set Home button on the laser keyboard. This position will correspond to the left-hand side of your page in Corel.

The X-Home position is highly variable and can be set anywhere you want it to be. Most users prefer the edge of the chuck or the edge of the jaws.



Edge of chuck.

Edge of jaw.

The edge you choose as your X-Home position defines where the left edge of your page is in your graphics software.

Set Focus

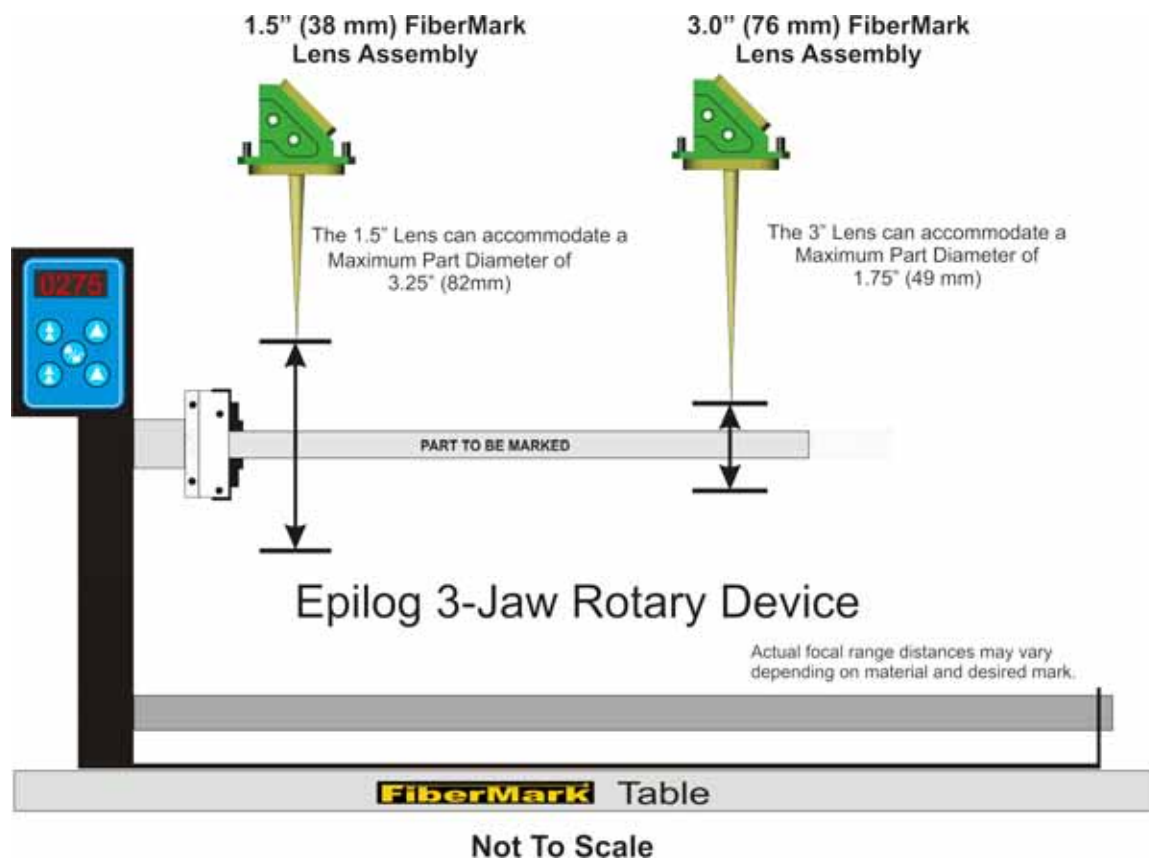


The last task to perform before printing the job is to set focus. Press the Focus button, and then attach the manual focus gage to the carriage. Use the Up and Down cursors to raise or lower the table. For additional information, read ***Focus with the Rotary Attachment*** described above in the Standard Rotary Attachment instructions section of this manual.

Printing is straight-forward and identical to printing non-rotary jobs.

Section 9: Standard & Optional Machine Features

The 3-jaw chuck rotary can be used with the standard 3" lens. The optional 1.5" lens can be used to accommodate larger diameter pieces. The illustration below shows the maximum part size that can be used with each lens.



Section 9: Standard & Optional Machine Features

Artwork Setup

There are two different methods used for setting up the 3-Jaw chuck rotary attachment. The 3-Jaw chuck was originally designed to be used with cylinders that range in size from 0.50" (12.7 mm) to approximately 3" (76.2 mm) in diameter. Artwork setup for this size is explained in Method 1 below. However, cylinders that are smaller than 0.5" (12.7 mm) can be processed using an alternative process described in Method 2.

The two methods are based on cylinder size:

- Method 1) is used for cylinders that are 0.5" or larger in diameter (12.7 mm) to approximately 3" (76.2 mm) in diameter.
- Method 2) is used for cylinders that are less than 0.5" or smaller in diameter (12.7 mm) to approximately .125" (3 mm) in diameter.

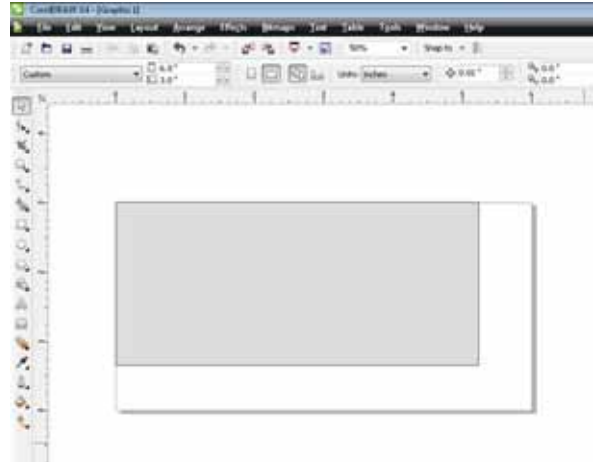
Method 1) – 0.50" (12.7 mm) to 3" (76.2 mm) Artwork Setup

You will need to set up a custom page size in your engraving software that will accommodate the length and circumference of your cylinder. To set up your page in Corel, measure the length of the cylinder you are engraving. Use this as the minimum size of the horizontal dimension of your page. Measure the diameter of the cylinder and multiply this number by Pi (3.1416) to determine the circumference of the cylinder. Use the circumference as the minimum size of the vertical dimension of your page.

Section 9: Standard & Optional Machine Features

The actual size of the page is not overly important. If you have a cylinder that's 5.23 inches long with a circumference of 2.35 inches, use a page that's slightly larger, say, 6" x 3".

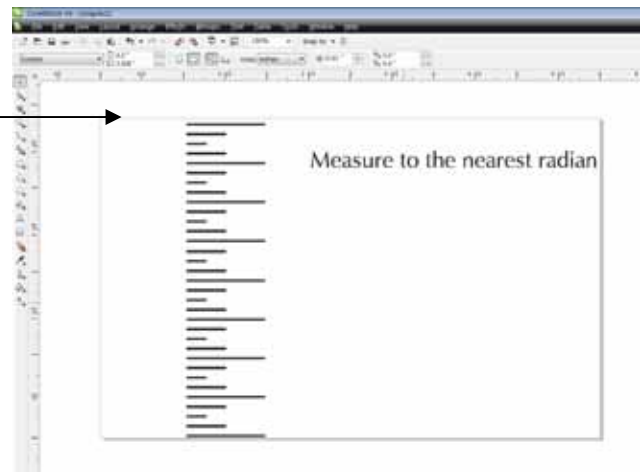
This image shows a page size of 6" x 3". The gray inner rectangle represents the cylinder that is 5.23" x 2.35". Insure your artwork fits within the cylinder size.



Set up your artwork on your custom page. The image below shows that we are going to engrave tick marks all the way around the cylinder with some text that extends to the right.

It's important that you set up your artwork so the top of the artwork is as close to the top of the page as you can comfortably get it.

Any white space between the top of the page and your artwork is considered part of the artwork and your cylinder will rotate that amount until it reaches the first point of engraving.



Once your artwork is set up you can print and run your job.

Section 9: Standard & Optional Machine Features

Method 2) – 0.50” (12.7 mm) to 0.125” (3 mm) diameter

Processing small diameter cylinders involves two significant changes from Method 1).

- Inputting the circumference instead of the diameter of the cylinder onto the rotary keypad
- Stretching the artwork in your graphics package in the vertical dimension only.

For our example we’re going to use the same type of image as we did earlier in these instructions that will engrave all the way around a cylindrical rod. We’re going to use a 0.250” (6.35 mm) rod in this example.

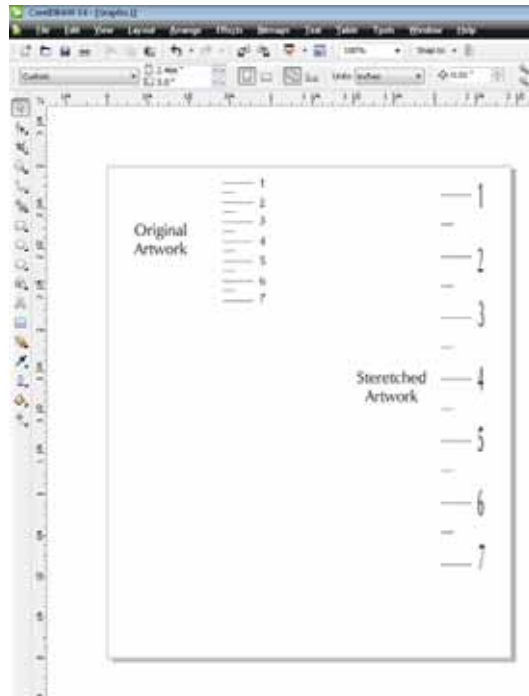
The number we need to insert on the rotary keypad is the circumference of the cylinder. The formula for calculating circumference is $D \times \text{Pi}$, where D is the cylinder diameter and Pi is 3.1416. For our example multiply $0.250 \times 3.1416 = .785$ (19.94 mm). Enter 0785 inches (or its nearest equivalent) into the rotary keypad (remember, the decimal point does not appear in the inches units so we have to use 0785. For millimeters we would insert 19. 94.



Set up your artwork as normal using the circumference of the cylinder as your vertical dimension. Once you have set up your artwork you will need to stretch it. Measure the vertical dimension of your image and multiply that dimension by Pi (3.1416). We had measured .785 for the circumference of the rod. Because we are engraving around the entire circumference of the rod, the vertical height of our artwork before stretching will also be .785.

Section 9: Standard & Optional Machine Features

Multiply $.785 \times 3.1416 = 2.466$. Stretch your artwork so that it has a vertical dimension of 2.466 inches (62.63 mm). You will also need to increase the page size in the vertical dimension to accommodate this larger stretched image.



You're now ready to print to the laser using a cylinder that is smaller than 0.50 inches (12.7 mm). Set your Speed and Power as you normally would, and print to the laser.

Rotary Removal

1. Turn off power to the laser.
2. Open the door.
3. Depress the release tab on the connector and unplug the connector.
4. Remove the rotary attachment.

Section 9: Standard & Optional Machine Features

Additional Lenses

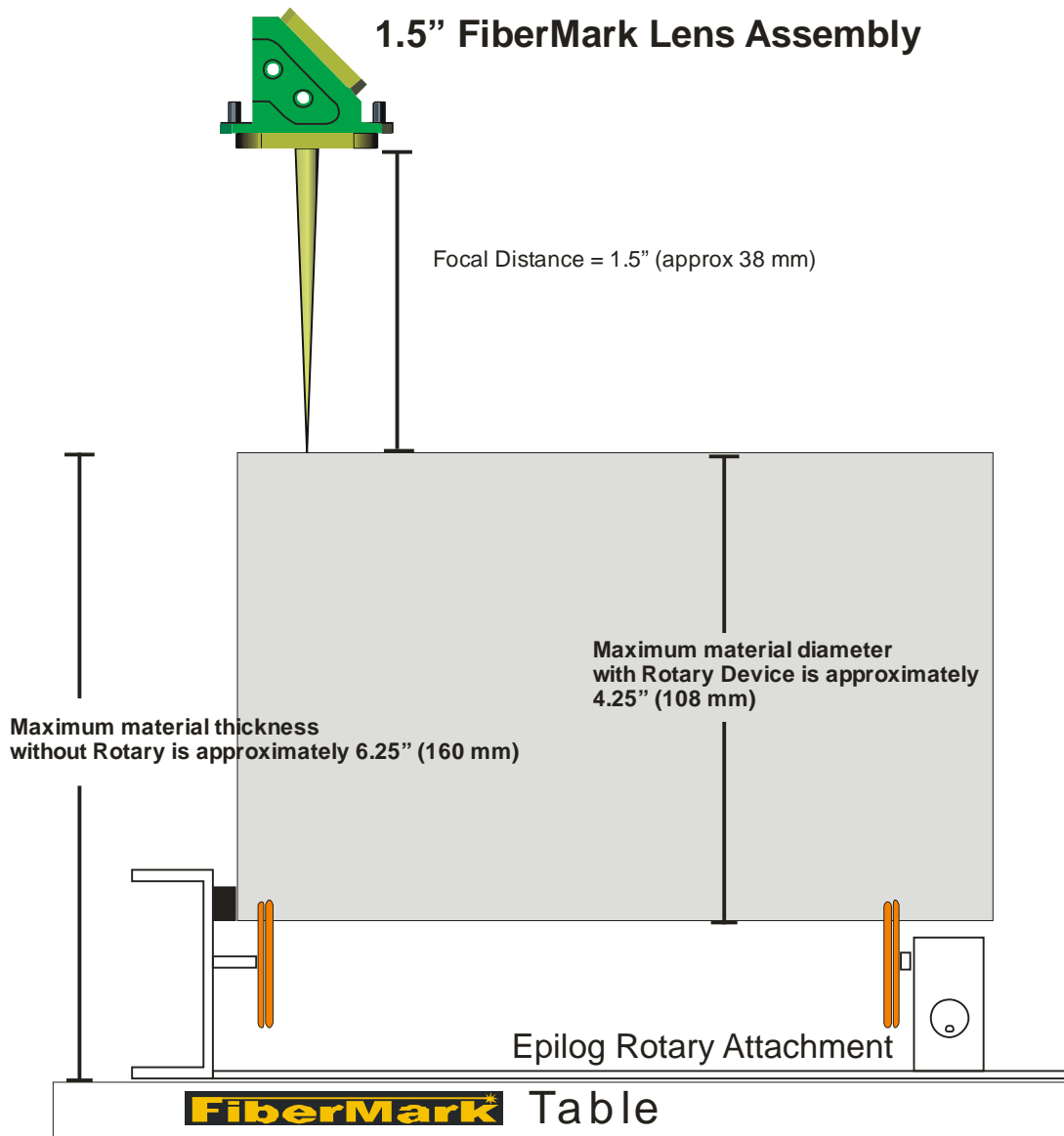
Epilog offers optional 1.5 inch and 5.0 inch lenses for the FiberMark.

The 1.5 inch lens is intended for use with larger diameter objects on the rotary device, or with taller (longer Z dimension) objects. By using the 1.5 inch lens, the maximum diameter that can be marked with the rotary attachment is 4.25 inches (108 mm). The maximum material thickness (Z-height) of a flat object (not using the rotary attachment) is 6.75 inches (172mm).

The 5.0 inch lens is being offered for those products that have a slight curvature or marking area that is not perfectly flat. The 5.0 inch lens produces a slightly longer depth of field which will provide for a more consistent mark over a non-flat surface. The 5.0 inch lens cannot be used with the Rotary Attachment.

Please refer to the attached illustrations, which visually depict the distances for both the 1.5 inch and 5.0 inch lenses.

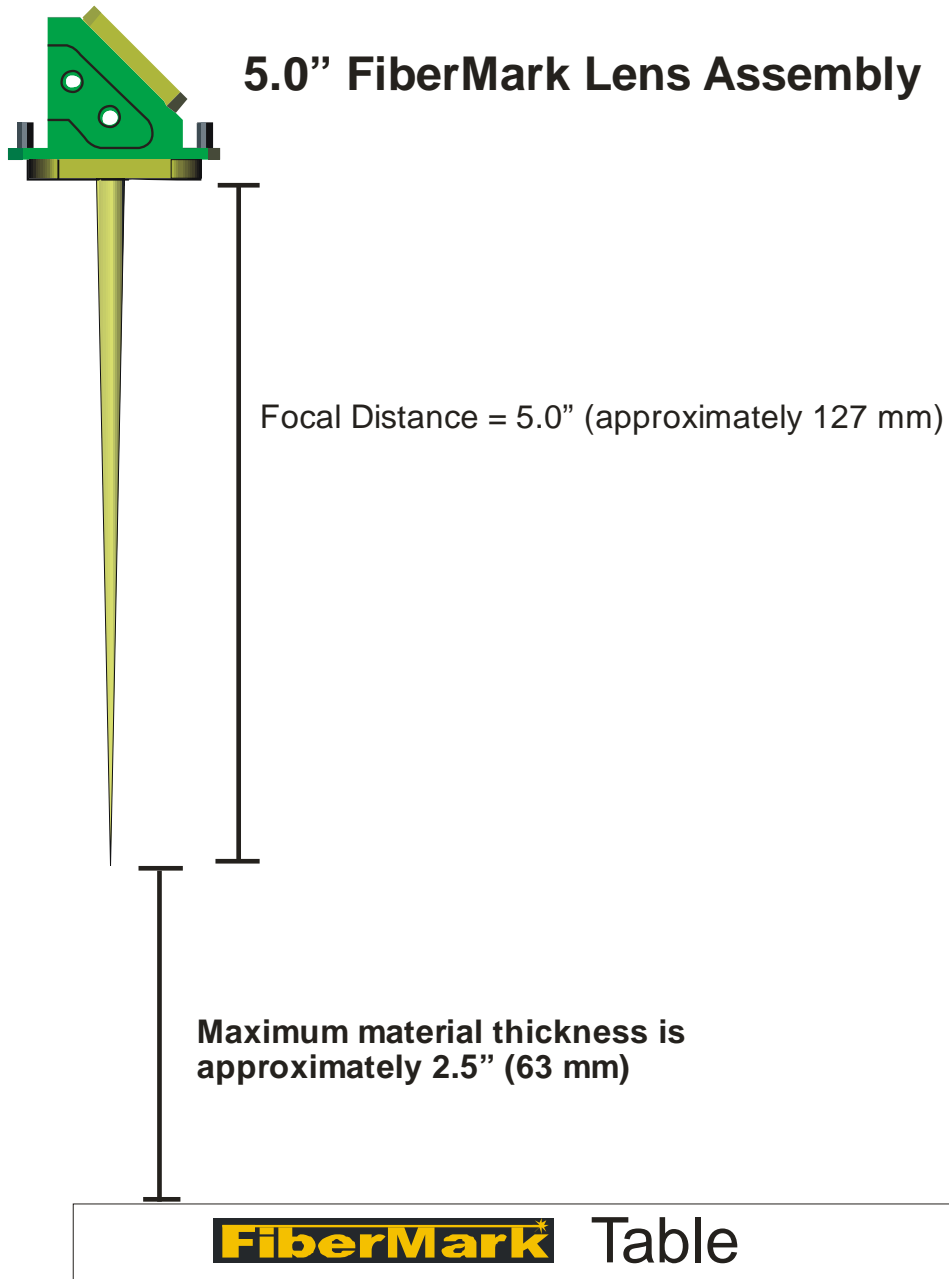
Section 9: Standard & Optional Machine Features



The maximum material thickness may vary depending on the material and desired mark.

Not To Scale

Section 9: Standard & Optional Machine Features



The maximum material thickness may vary depending on the material and desired mark.

Not To Scale

Section 10: Speed, Power, Frequency and Focus Recommendations

In This Section

- Speed
 - Power
 - Frequency
 - Focus
 - Recommendations
-

Speed, Power, Frequency and Focus are used in combination to produce the desired mark on the material being used. Different materials require different combinations and these combinations are listed in the tables later in this section.

Speed and Power are very closely related and making a change to one of them can have the same effect as changing the other one. For instance, increasing the Power can be as effective as lowering the Speed in producing a darker mark.

Frequency is less dependent on Speed and Power and can often be determined independently of those two variables.

Focus can be used to affect the type of mark created. For example, when marking steel in Raster mode, changing the focus is the most important variable in creating an annealed mark.

Speed

Speed settings determine the travel speed of the carriage as it moves back and forth in the X-axis (Raster Mode) and as it profile marks in Vector Mode. Adjustable in 1% increments, the Speed setting can be controlled either from your computer or, in Raster mode only, from the control panel on the engraver. On most ferrous materials

Section 10: Speed, Power, Frequency and Focus Recommendations

slower speeds will produce darker marks. Speed settings are heavily dependent on the type of material being marked and the type of mark that is desired. In Raster mode, optimization software allows the carriage to skip through horizontal white space, increasing laser on-time rates, which further enhances overall throughput.

Power

This is the amount of available laser power that is applied to the material surface. At a given speed, higher power will usually produce a darker mark on most materials. Adjustable in 1% increments, the power can be controlled either from your computer or, in Raster mode only, from the control panel on the engraver.

Frequency

Frequency refers to the pulsing of the laser. The frequency adjustment range is determined by the power of your laser. The frequency range of different wattage lasers are listed below:

<u>Laser Wattage</u>	<u>Frequency Range</u>
10 & 20 watt	20kHz – 80 kHz
30 watt	30kHz – 80 kHz
50 watt	50kHz – 100 kHz

The Frequency slider bar in the driver shows the relative frequency that is being output by the laser and is adjustable from 1 to 100. The frequency (kHz) associated with the number in the slider bar is shown for different wattage lasers in the following graphs:

Section 10: Speed, Power, Frequency and Focus Recommendations

10 & 20 Watt Laser

Frequency (kHz)	21	23	26	29	32	35	38	41	44	47	50	53	56	59	62	65	68	71	74	77	80
Slider Number	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

30 Watt Laser

Frequency (kHz)	31	33	35	38	40	43	45	48	50	53	55	58	60	63	65	68	70	73	75	78	80
Slider Number	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

50 Watt Laser

Frequency (kHz)	51	53	55	58	60	63	65	68	70	73	75	78	80	83	85	88	90	93	95	98	100
Slider Number	1	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100

Most materials do not need a specific frequency so we use a relative slider bar that can provide close estimates of low, medium and high frequency settings.

Frequency can be controlled either from your computer or from the control panel on the engraver. Frequency affects to the amount of power that is output with each pulse of the laser. Low Frequency settings (~ 20 and below) will provide higher bursts of power at a low pulse rate, while higher Frequency settings (above 60 kHz) will produce slightly lower bursts of power, but at greater frequency. On most materials, lower frequency settings will produce darker marks. Most plastics use high frequency settings.

Section 10: Speed, Power, Frequency and Focus Recommendations

Recommendations

The Epilog FiberMark guidelines for Speed, Power and Frequency are included on the following pages. Please remember that these are only guidelines. Brightness or darkness of a mark is a matter of personal preference and can be very dependent of the type of material being marked. As such, there is no “correct” setting. Working with the four different settings becomes fairly intuitive in a very short period of time for most users. If you have a material that is not listed, try to compare it to similar materials listed and use those settings as your starting point.

If you do not achieve the results you are looking for with the recommended settings, try resending the job and start by changing only one variable at a time. Changing only one variable at a time will help to determine the correct setting for your material. In Raster mode you can change each of the variables “on the fly” while the machine is in motion. Being able to change the settings on the fly allows you to view the changes on the material as it is being marked. Due to the small increments of change that can be made to each variable, do not be surprised if the change does not become visible until the variable has been adjusted by units of 10 or more.

Because there are many factors that influence the time it takes to mark a given image, the Speed settings were designed to be reference numbers only. The Speed setting scale of 1% to 100% is not linear – i.e. 100% speed will not be twice as fast as 50% speed. This non-linear scale is very useful in compensating for the different factors that affect engraving time, but using speed to predict a jobs engraving time is not practical.

The Power settings are linear – i.e. 50% power is half as much as 100% power.



An important note: Laser settings can sometimes be confusing because many materials can be marked over such a broad range of settings. If you have difficulty in finding the correct setting you can send a sample to the Epilog Laser Applications lab. We will determine if the material can be marked and provide appropriate setting for your laser.

Section 10: Speed, Power, Frequency and Focus Recommendations

General Metal Engraving / Base Settings

In the world of metals the grade, type, hardness and chemical composition are endless. Metal alloys are engineered for specific applications and have their own strengths and weaknesses. With such an unlimited selection, we've yet come across a metal which proved to be incompatible with the FiberMark.

Metals can be engraved at just about any settings. Of course there are many variables to consider for metal engraving. The lasers wattage, hardness of metal, desired mark (etch, polish, anneal) and the required time/contrast/depth will have to be considered when deciding on the final settings.

Below are general guidelines for most common metals. Settings will have to be adjusted based on wattage. Less speed, lower frequency for lower wattage Fibers. Less power, higher frequency for higher wattage Fibers.

Etching of "Metals"

- 8 - 30% Speed
- 100% Power
- 1 - 10% Frequency
- -.020" to +.020" Focus
- 400 – 600 DPI

Like our CO2 counterparts, the slower the speed setting, the deeper the etching. However, many metal applications have and can be processed at higher speed settings in the range of 50-100%. Again, consider the marking requirements and if the only stipulation is permanency, you'll find the FiberMark can engrave a broad range of metals at higher speeds, regardless of laser wattage. Don't be afraid to turn up the juice!

Section 10: Speed, Power, Frequency and Focus Recommendations

Polishing of Steel Alloys

- 50 - 80% Speed
- 30 - 50% Power
- 70 - 100% Frequency
- 0 Focus
- 600 DPI

Some steel alloys are easier to polish than others. For best results, clean off the surface with alcohol prior to processing. Any leftover grease, oils or residue can affect how well the polished mark turns out. Polishing the metal where the final marks result in a bright white engraving requires finer tuning of settings, more so than the etched or annealed marks. Determine a base speed and frequency setting and adjust the power in small increments/decrements. If you are unable to get a white bright mark, increase the frequency setting and try again by adjusting only the power.

Annealing of Steel Alloys

- 6 - 12% Speed
- 100% Power
- 1% Frequency
- 600 or 1200 DPI

To achieve an annealed mark, the focal point should be significantly away from zero. The unfocused, broader beam provides the heat to change the surface color without actually penetrating the metal. The focal point can be either closer to or away from zero. Focusing away from the material should be in the range of $-.060''$ to $-.090''$. Focusing closer to the material is generally in the range of $+.070''$ to $+.110''$.

Both focusing methods will result in a dark black annealing of the metal. Focusing up typically results in a slight indentation of the metal.

Multiple passes can darken the mark even more (no data to confirm whether multiple passes offer more permanency).

Section 10: Speed, Power, Frequency and Focus Recommendations

Aluminum Alloys

- 15 - 40% Speed
- 100% Power
- 1-10% Frequency
- -.010" to +.010" Focus
- 400 - 600 DPI

Engraving aluminum will result in various shades of gray, not black. Fine tuning the settings can provide a bit more contrast but the range of applicable marks isn't as broad as steel.

If the application calls for a black etch, consider using an oxidizer if the aluminum has a protective coating (urethane, clear coat, clear anodized). Deep metal engraving on aluminum can be done in just a few passes, consider deep engraving and using a black epoxy/color fill.

Although the marks on aluminum aren't as black as the ones we're capable of producing on steel, we have no difficulty getting 2D, UID barcodes to scan and verify.

Titanium (Ti)

Titanium and Ti alloys are highly amenable to marking at this wavelength. Similar to aluminum, a black mark from the etching process is difficult to achieve. Various shades of gray can be made, from very dark gray to light grey.

Annealed marks can also be made on titanium materials using the same processing parameter described for stainless steel. Depending on the Ti alloy, marks of various colors can be achieved by changing the frequency values for 1% up to 100%. It is common to see red, blue, green, orange, yellows and purple marks, depending on the frequency selected.

Section 10: Speed, Power, Frequency and Focus Recommendations

Plated Metals

Metals are often plated to assist with conductivity, to provide a protective coating against rust and elements and for aesthetic purposes. Plating thickness will depend on application and purpose. Most of the plated metals processed thru the applications lab are electronic components (to enhance conductivity) and various fittings (protection against environment & rust). The typical plating thickness varies from .001” up to .005”.

Our recommended settings for general metal engraving works well for ablating thru the plating; exposing the base metal. Ablating the plating will also provide high contrast. Using an oxidizer will enhance the look.

Our recommended settings for polishing of metals are a good starting point where ablating thru the plating isn't an option. This is likely the most common plated metal application as exposing the raw metal underneath will break continuity and / or expose the bare metal to rust and other elements. Note that the contrast of polishing of plated metals won't be as consistent or contrasting as a direct ablation. Multiple passes will help and end results will vary based on the metal used for plating, thickness of plating & size of mark.

Our recommended settings for annealing will often work for plated metals where the plating has a thicker wall and material used has high levels of carbon or metal oxides.

- 600 or 1200 DPI works well.

Powder Coated Metals

- 20 - 40% Speed
- 80 - 100% Power
- 1 - 20% Frequency
- Up or down .030” to .050” focus
- 600 DPI

2-3 passes (one pass to ablate the powder coating, 2nd or 3rd pass to polish up the metal underneath).

A little less power, higher frequency and less focus adjustment will be required for the 2nd or 3rd pass, depending on the base metal. The idea is to ablate then polish.

Section 10: Speed, Power, Frequency and Focus Recommendations

An alternative to running two or more passes is to run one pass and then use a common cleaner such as Simple Green or a citric-based cleaner with short, stiff bristle brush to scrub out the residual material remaining in the mark area. If using this technique, it may be necessary to raise or lower the marking table from around 0.07” to 0.10”.

Anodized Aluminum

- 20 - 40% Speed
- 80 - 100% Power
- 1 - 15% Frequency
- Up or down .030” to .050” focus
- 600 DPI

The contrast / brightness of mark achievable on the FiberMark are excellent and are often times much brighter than those done on a CO2 laser. The key is to broaden the beam by changing the focal setting by 30-50mils. This prevents the beam from ablating the anodized coating and penetrating the metal (results in dull white/gray marks). Lower frequency and higher power settings help offset the change in focal point.

Different grades of anodized & core aluminum alloy will affect how the final marks look. Finding the right printing parameters is key in achieving a highly contrasting mark.

Precious Metals

Any rare metal alloy is deemed precious. As mentioned earlier, we’ve yet come across a metal which could not be marked. This includes the rare “Grammium”, metal alloy used in casting a Grammy award. Regardless of rarity or value, the FiberMark can mark it. Depending on the marking requirements, use one of the above settings to get started.

Section 10: Speed, Power, Frequency and Focus Recommendations

10 Watt FiberMark

Marking/Etching				
	SPEED	POWER	FREQUENCY	FOCUS
Anodized Aluminum	10-25%	100%	30-70%	-0.03 to +0.03
Stainless Steel	5 -15%	100%	1-10%	-0.01 to +0.01
Brass	5-15%	100%	1-10%	0.00
Laserable Plastic	30-40%	40%-100%	50-100%	-0.02 to +0.02
Bare Aluminum	5-12%	100%	1-20%	-0.01 to +0.01
Titanium	5-15%	100%	1-10%	-0.02 to +0.02
Annealing				
	SPEED	POWER	FREQUENCY	FOCUS
Stainless Steel	3-5%	100%	1-5%	-0.08 to -0.1 +0.05 to +0.08
Titanium	3-5%	100%	1-100%	-0.08 to -0.1 +0.05 to +0.08



Notes on Annealing: Producing an annealed mark is very dependent on the material being out of focus. Run the laser at slow speed and full power then adjust the focus while the machine is running until you achieve the annealed mark you need.

Notes on settings: Don't be afraid to experiment with Speed, Power and Frequency settings. Many materials can be marked over the entire range of settings! Start with the recommended settings and change one variable at a time to produce a mark that best suits your needs. Most users start with the highest speed setting listed and work their way faster or slower.

Section 10: Speed, Power, Frequency and Focus Recommendations

20 Watt FiberMark

Marking/Etching				
	SPEED	POWER	FREQUENCY	FOCUS
Anodized Aluminum	20-50%	70-100%	50-100%	-0.03 to +0.03
Stainless Steel	10-30%	100%	1-35%	-0.01 to +0.01
Brass	5-30%	100%	1-20%	0.00
Laserable Plastic	40-70%	50%-70%	50-100%	-0.02 to +0.02
Bare Aluminum	5-25%	100%	1-20%	-0.01 to +0.01
Titanium	10-20%	100%	1-10%	-0.02 to +0.02
Annealing				
	SPEED	POWER	FREQUENCY	FOCUS
Stainless Steel	5-10%	100%	1-5%	-0.08 to -0.1 +0.05 to +0.08
Titanium	5-10%	100%	1-100%	-0.08 to -0.1 +0.05 to +0.08



Notes on Annealing: Producing an annealed mark is very dependent on the material being out of focus. Run the laser at slow speed and full power then adjust the focus while the machine is running until you achieve the annealed mark you need.

Notes on settings: Don't be afraid to experiment with Speed, Power and Frequency settings. Many materials can be marked over the entire range of settings! Start with the recommended settings and change one variable at a time to produce a mark that best suits your needs. Most users start with the highest speed setting listed and work their way faster or slower.

Section 10: Speed, Power, Frequency and Focus Recommendations

30 Watt FiberMark

Marking/Etching				
	SPEED	POWER	FREQUENCY	FOCUS
Anodized Aluminum	40-70%	50-100%	50-100%	-0.03 to +0.03
Stainless Steel	10-50%	100%	1-20%	-0.01 to +0.01
Brass	10-60%	100%	1-5%	0.00
Laserable Plastic	40-100%	50-100%	50-100%	-0.02 to +0.02
Bare Aluminum	5-35%	100%	1-20%	-0.01 to +0.01
Titanium	10-40%	100%	1-10%	-0.02 to +0.02
	SPEED	POWER	FREQUENCY	FOCUS
Stainless Steel	7-12%	100%	1-5%	-0.08 to -0.1 +0.05 to +0.08
Titanium	7-12%	100%	1 – 100%	-0.08 to -0.1 +0.05 to +0.08



Notes on Annealing: Producing an annealed mark is very dependent on the material being out of focus. Run the laser at slow speed and full power then adjust the focus while the machine is running until you achieve the annealed mark you need.

Notes on settings: Don't be afraid to experiment with Speed, Power and Frequency settings. Many materials can be marked over the entire range of settings! Start with the recommended settings and change one variable at a time to produce a mark that best suits your needs. Most users start with the highest speed setting listed and work their way faster or slower.

Section 10: Speed, Power, Frequency and Focus Recommendations

50 Watt FiberMark

Marking/Etching				
	SPEED	POWER	FREQUENCY	FOCUS
Anodized Aluminum	40-80%	50-100%	50-100%	-0.03 to +0.03
Stainless Steel	15-60%	100%	1-20%	-0.01 to +0.01
Brass	15-60%	100%	1-10%	0.00
Laserable Plastic	50-100%	40 -80%	50-100%	-0.02 to +0.02
Bare Aluminum	5-50%	100%	1-20%	-0.01 to +0.01
Titanium	15-60%	100%	1-15%	-0.02 to +0.02
Annealing				
	SPEED	POWER	FREQUENCY	FOCUS
Stainless Steel	12-17%	100%	1-10%	-0.08 to -0.1 +0.05 to +0.08
Titanium	12-17%	100%	1-100%	-0.08 to -0.1 +0.05 to +0.08



Notes on Annealing: Producing an annealed mark is very dependent on the material being out of focus. Run the laser at slow speed and full power then adjust the focus while the machine is running until you achieve the annealed mark you need.

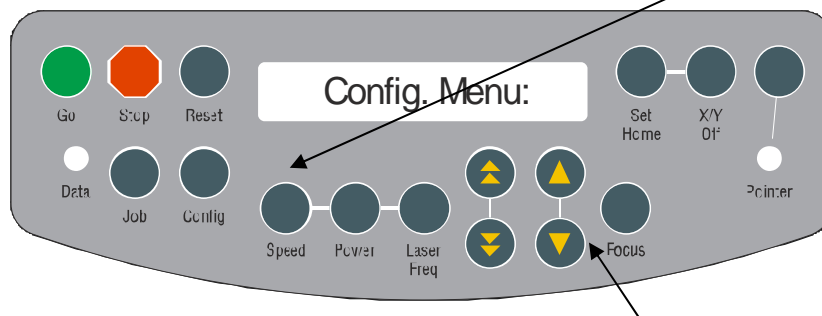
Notes on settings: Don't be afraid to experiment with Speed, Power and Frequency settings. Many materials can be marked over the entire range of settings! Start with the recommended settings and change one variable at a time to produce a mark that best suits your needs. Most users start with the highest speed setting listed and work their way faster or slower.

Section 11: Engraving Machine Calibration & Maintenance

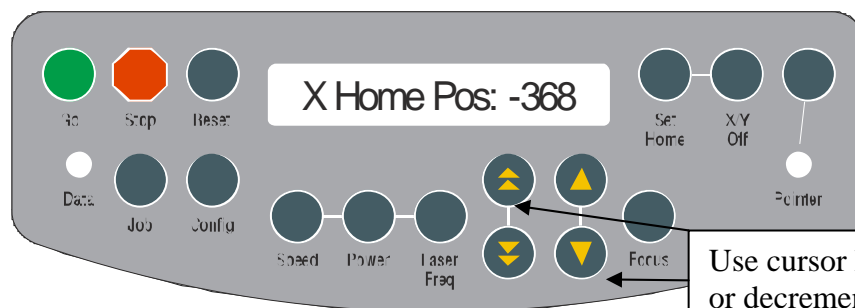
In This Section

- Calibration Settings
- Cleaning - Important!
- Laser Source

There are a number of factory settings that normally only need to be set once at the factory to calibrate the system. All of the calibration settings are accessed from the Config key on the front control panel.



To scroll through the Config Menu use the single triangle cursor keys.



Section 11: Engraving Machine Calibration & Maintenance

Once you have scrolled to the menu item you want to adjust, change the numerical setting by using either set of cursor keys. The single cursor keys will increment or decrement a single unit each time it is depressed. The double triangle cursor keys will increment or decrement at a much higher rate of speed.

The numerical range of adjustment is also shown in the table below. Each single digit change is equal to .001 inch (0.025 mm) (except the Laser Match value, which is in pixels). For example, changing the X-Home position from a value of -350 to -395 would move the X-Home position 0.045 inches (1.1 mm) to the right.

<u>Calibration Setting</u>	<u>Range</u>
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X - Home Position Range: -600 to 0

Increasing this value will move X-Home to the left.

Y - Home Position Range: -600 to +200

Increasing this value will move Y-Home up.

X - Rotary Home Position Range: -3000 to +600

Increasing this value will move the X-Rotary home to the left.

Y - Rotary Home Position Range: -1200 to +1200

Increasing this value will move the Y-Rotary Home up.

Laser Match Range: -20 to +20

Establishes the left to right alignment of alternating raster lines.

Sys Units Range: Inch or MM

Sets to units of measure for the system.

Section 11: Engraving Machine Calibration & Maintenance

Changing calibration settings:

- Access the setting you want to change.
- Increase or decrease the numerical value using the *Up* or *Down* cursor keys. To speed the process of changing a number, apply constant pressure to the double triangle keys.
- Press the **Go** button when you have changed the setting you want. The setting is now saved.
- If you want to just see what the setting is, but do not want to change it, press the **Stop** button after you have viewed the calibration setting.

Calibration Settings - Key Combinations

There are a number of factory settings that normally only need to be set once at the factory to calibrate the system. All of the calibration settings can be accessed using a two key combination of the above keyboard buttons.

<u>CALIBRATION SETTING</u>	<u>KEY COMBINATION</u>	<u>RANGE</u>
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<u>Auto Delete</u>	<u>Reset + Job</u>	<u>Range: Yes or No</u>
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Automatically deletes every job after it has finished running or if the job is stopped and Reset. The factory default is No.

<u>Laser Pwr:</u>	<u>Reset + Power</u>	<u>Range: 10, 20, 30, or 50 Watts</u>
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Sets the system to match the wattage of the laser source. This setting is important because if it is does not match the laser source the system will potentially act erratic.

Section 11: Engraving Machine Calibration & Maintenance

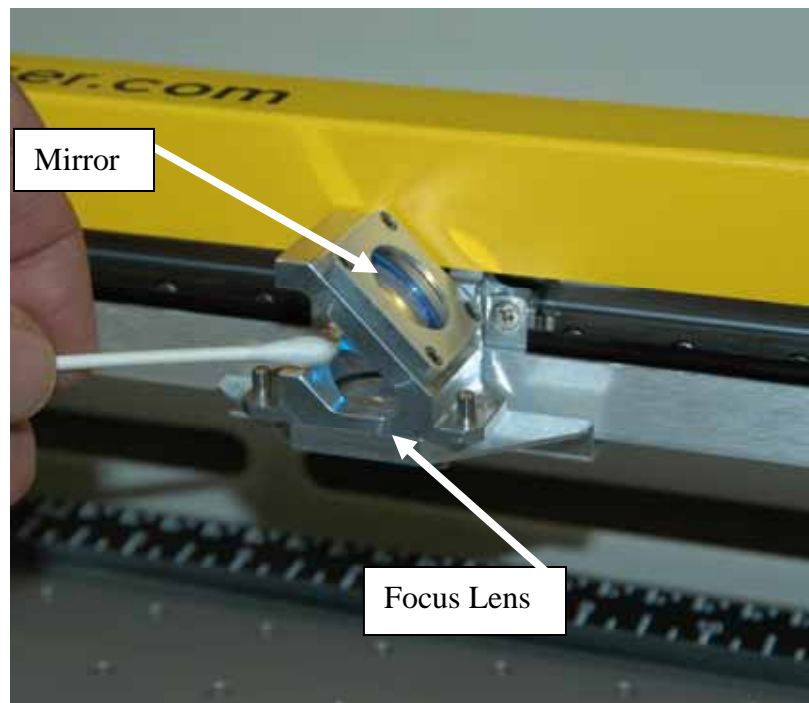
Cleaning - Important!

The single most important thing that you can do to keep your laser working as if it were new is to keep it clean! Five minutes once a day will keep the residue and debris from building up and causing problems. There is almost no maintenance required for your laser if you KEEP IT CLEAN☺!

Cleaning the Optics

About once a week, or if you notice the optics are dirty, you will need to clean the optics (mirrors and lenses) of your laser. If dust, debris, fine powder, or other contaminants are allowed to accumulate too heavily, they will reduce the available laser power and may cause damage to the optics.

The two optical components most likely to require cleaning are the focus lens and the mirror directly above it. The lens and mirror are a single assembly, and can be removed from the machine for cleaning, but it is generally not recommended.



To clean the focus lens and the mirror that is directly above it, use a cotton swab that has been moistened with the Optics Cleaning Fluid that is supplied as part of your accessory kit. ***Gently*** swab the optics to remove dust and debris.

Clean both sides of the mirror and both the top and bottom of the Focus Lens.

Section 11: Engraving Machine Calibration & Maintenance

To clean the optics use a high-quality cotton swab moistened with the optics cleaner supplied in the accessory kit. Please read the label on the bottle carefully. Rubbing alcohol should be used only to remove fingerprints. If you run out of the cleaner supplied by Epilog, acetone can be used as a temporary measure, but should not be used for regular cleaning as it contains impurities which can contaminate the optics. If you run out of optics cleaner, pure ethyl (grain) alcohol such "Golden Grain" and "Everclear" are highly recommended because of their pure nature and because they are readily available at most liquor stores.

Wet the swab thoroughly with the solvent, and then blot it against a piece of cotton so that it is no longer soaking-wet. Then daub the optic gently, rotating the swab after each daub to expose clean cotton to the surface, until the optic is free of visible contamination. At that point, prepare a fresh swab and clean the surface with a gentle zigzag motion across it. Avoid any hard "scrubbing" of the surface, especially while there are visible particles on it, and try not to use repetitive circular motions. When you are done, be careful to remove any cotton threads that may have snagged on the mountings. Allow the optics to dry before you operate your engraver.

In addition to the focus lens and the mirror directly above it, there is a mirror located on the left side of the machine that is mounted to the X-beam.

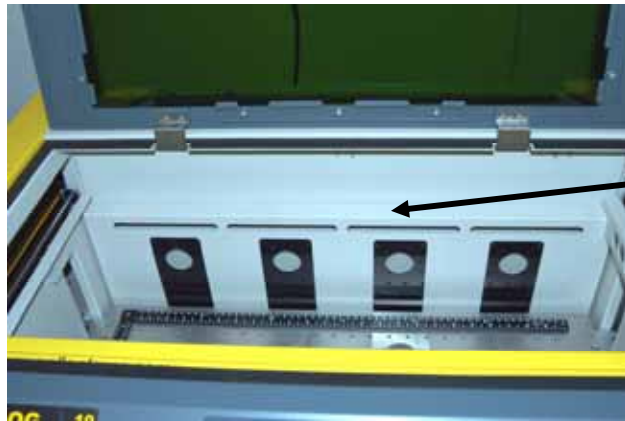
This mirror is very well protected and should not need regular cleaning. It can be accessed with a cotton swab if it does need cleaning. The photo at right shows where this mirror is located in relation to the X-beam and carriage.



Section 11: Engraving Machine Calibration & Maintenance

Cleaning the Exhaust

Make sure the exhaust blower you are using receives proper maintenance. Periodically clean the exhaust blower and duct system to remove built-up debris. If you detect odor while engraving, or if there is smoke in the cabinet, inspect the exhaust system. Check for loose or broken pipe/hose connections or obstructions. The photos below show where to clean the duct work of your machine. You should also occasionally check your exhaust blower and the duct work that is connected to it.



Clean the plenum vents from the inside of the machine. It is best to use a flexible plastic or wire brush that can access the inside of the vent.



Periodically remove the duct from the back of the machine and clean the exhaust port.

Periodically inspect and clean your exhaust fan and the duct work connected to it.

Section 11: Engraving Machine Calibration & Maintenance

Cleaning the Viewing Window

Special care should be taken when cleaning the green viewing window. Use only a soft cloth and a mild glass cleaner to clean the window. Do not use paper towels or other coarse materials to clean the window. The window is susceptible to scratching if not properly cleaned. Damage to the window from cleaning is not covered under the warranty.



Laser Source

The laser source used in your system has a maximum service life, but there is very little maintenance that is required. At some point in the life of the laser you will need to replace it for electrical repair or mechanical repair. Replacing the laser source is common practice and Epilog has made the process of changing the laser source extremely easy for users to perform with a minimum amount of effort. The laser source can be refurbished and is available on an exchange basis by contacting Epilog technical support.



Manual

***Technical Support,
Troubleshooting,
Specifications &
Firmware Upgrade***

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Section 12: In Case of Difficulty

In This Section

- Contacting Technical Support
 - Avoiding Common Print Problems
-

Contacting Technical Support

The technical support department at Epilog is available to assist with solving problems you may encounter using your Epilog. Please review first the common problems and solutions as noted below, then if you are still in need of assistance you may contact Epilog's technical support department at the number or website listed below. Technical support is available in Golden, Colorado USA during the hours of 6 a.m. and 6 p.m. Mountain Time.



Technical Support Direct Line: 1 (303) 215-9171

Email – tech@epiloglaser.com

Technical Support online:

www.epiloglaser.com/service.htm

What to do prior to contacting Epilog Technical Support:

1. Have the machine serial number available
2. Have time to work on machine. Many issues will require troubleshooting
3. Clean your machine (especially the optics), this will solve many issues

The machine serial number can be found on the Certification/Identification Label. This engraved plate is located on the back of the machine's cabinet. An ID label is shown on next page.

Section 12: In Case of Difficulty

Serial Number

Epilog Corporation
16371 Table Mountain Parkway
Golden, CO 80403 USA

Model Number: 8000 Laser System
Serial Number: 8020-0700012412FM
Date of Manufacture: March 2007

Class 3R Laser Product

This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated July 26, 2001.

This product complies with IEC 60825-1: 2001.

Authorized Representative:

Consultants Europe bv
PO Box 5047
1380 GA Weesp
The Netherlands

Tel.: 31-294-483355
Fax.: 31-294-414687

E-Mail: info@ce-marking.nl

Mass:
35 kg max

Avoiding Common Print Problems

Printing problems are normally related to stopping, resetting or trying to repeat a job before the computer has been allowed enough time to transmit the entire job. If you do interrupt a job while it is being transmitted (printed) to the engraver, there is a good chance that the remaining data is still somewhere between the computer and the engraver, unless you take precautions to clear the print queue. To avoid most common print problems, ALWAYS double click on the Epilog printer icon (under settings, printers) to check for partial jobs, if you interrupt a job in progress. They can then be canceled or deleted from the computer. It is always a good idea to reboot the laser before starting another print job if you have had print spooling problems.

Problem: Engraver will not vector.

Solution:

1. Please verify that the print driver is set to “**Vector**” or “**Combined**”.
2. Verify that the lines that you want to vector are set to .001 inch (0.025 mm).
3. Scanned images will not vector.
4. Filled or solid images will not vector (outlines only).



Problem: Engraving appears weak.

Solution:

1. All mirrors and lenses need to be cleaned and inspected for damage. See **Section 12: Engraving Machine Calibration and Maintenance** of this manual for cleaning instructions.
If you are unsure of the location of all of the mirrors on your engraver, please contact Technical Support at (303) 215-9171.
2. Verify that the lens is in correct focus.
3. Verify correct Speed, Power and Frequency settings for the type of material that you are engraving.



Section 12: In Case of Difficulty

Problem: No laser beam but the engraver appears to be running normally.

Solution:

1. Verify focus is set properly.
2. Verify power and speed settings are appropriate.
3. Verify both the top and front doors are closed tightly.

Problem: Inadequate Exhaust.

Solution:

4. The closer the blower is to the machine the better exhaust you will receive.
5. Clean your exhaust system on a regular basis including engraver and blower. Use a bottlebrush and a vacuum on the areas where the exhaust buildup accumulates.

Problem: Engraver will not power up. Nothing transpires when engraver is turned on.

Solution:

1. Verify there is power being supplied to the engraver, that your outlet is in good working condition and that the engraver is actually plugged in.
2. Check to make sure the carriage can be moved freely with the power off. If the engraver can't find the home position, it will not power up properly.

Problem: Poor engraving quality.

Solution:

1. If you feel you are not getting the quality you once were, this is probably a maintenance issue. See the maintenance section of the manual (**Section 11**) for instructions on cleaning the optics. If you are not sure of the location of all of your mirrors, contact Epilog technical support at Technical Support at 1 (303) 215-9171.
2. If you are experiencing a blurry or erratic image, check to make sure you are in focus and all optics are clean.
3. If you are experiencing a double image problem or any other quality issue, it is best to run a sample of what the machine is doing and send it to:



Technical Support Department
Epilog Laser Corporation
16371 Table Mountain Parkway
Golden, CO 80403; USA
Phone: (303) 215-9171
Fax: (303) 277-9669
Email: tech@epiloglaser.com

Section 12: In Case of Difficulty

4. Please include a letter stating the configuration of your machine along with speed and power settings of the sample you ran and any other pertinent information.

Problem: Image at the wrong location on the work piece.

Solution:

1. Verify that the page size in your drawing program does not exceed the maximum engravable area of the machine.
2. Verify that the page size in drawing program matches the piece size in the Dashboard print driver.
3. Print Setup. If you have a page size of 2"x 3" (50 mm x 75 mm) and a Piece Size in Print Setup of 24 X 12", then it will place the 2 X 3" (50 mm x 75 mm) in the center of the 24 X 12" area.
4. If you see that the image is constantly off in one direction, you may need to calibrate the "home position" of the machine. This procedure is explained in the "Engraving Machine Calibration and Maintenance" section of this manual. Please call Epilog technical support if this does not rectify the problem.



Problem: Cooling Fan Malfunction.

Solution:

5. Verify that there is nothing obstructing the rotation of the fan(s).
6. Verify the fan is clean. Using a vacuum should clean the fan adequately.
7. Verify the connector is still connected.
8. If necessary, contact Epilog Technical Support for assistance.

Problem: Table will not move.

Solution:

1. Verify that there is nothing obstructing the travel of the table.
2. If you are still experiencing problems, contact Epilog Technical Support.

Problem: Position Error displayed on LCD front console.

Solution:

- If you receive a Position Error on your display, the engraver is informing you that it has lost its correct positioning. Power off engraver and verify there is nothing obstructing the travel of the carriage both left-to-right and front-to-back. With the engraver shut off, move the carriage with your hand in all directions. The carriage should travel quite freely. With the engraver on, the carriage should resist you trying to move it. It will still move if you force it (please do not) but it will resist. Turn the engraver back on. Notify Technical Support if you are in need of further assistance.

Section 12: In Case of Difficulty

Problem: Extreme right side of graphic is missing.

Solution:

- Check the printer driver by going into “Printer Setup”.
- Make sure you have the Epilog Dashboard print driver selected.

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Section 13: Specifications

In This Section

- Epilog FiberMark Specifications
 - Compatibility
 - Recommended PC
 - Other Computer Hardware Recommendations
 - Federal Communications Commission (FCC) Notice
-

FiberMark Specifications

Maximum Engraving Area	24" x 12" (457 x 305 mm)
Maximum Material Thickness	5" (152 mm)
Laser Control Display Panel	Displays stored file names, speed, power, runtime and more.
Intelligent Memory Buffer	Store unlimited files up to 64 MB. Rolling buffer allows files of any size (64 MB and larger) to be engraved.
Operating Modes	Optimized raster engraving, vector marking, or combined Raster/Vector mode.
Motion Control	High speed, continuous loop, DC servomotors using linear encoding technology for precise positioning.
Laser Source	State-of-the-art, digitally controlled, pulsed, air-cooled Ytterbium fiber laser sources are fully modular, permanently aligned, and field replaceable/upgradeable.
Bearings	Ground and polished stainless steel NeverWear™ bearing system.
Belts	Advanced B-style Kevlar precision drive belts.
Resolution	User controlled choice of 75, 150, 200, 300, 400, 600, or 1200 dpi.
Speed/Power/Freq/Focus	Computer controlled Speed, Power, Frequency and Focus. Color mapping links Speed, Power, Frequency and Focus to any RGB color.
Print Interface	10 Base T Ethernet or USB 1.0 connections. Compatible with 32 bit Windows XP/2000/Vista.
Standard Features	Red Dot Pointer, Air Curtain (pump optional), 3" focus lens, relocatable home, flash upgrade electronics, integrated vacuum table.
Size/Weight	27.5" wide x 23" deep x 12.5" high (699 x 584 x 318 mm) 90 lbs (41 kg)
Electrical Requirements	Auto-switching power supply accommodates 100 to 240 VACS, 50 or 60 Hz, single phase, 15 amps AC.
Ventilation	External exhaust to the outside required. Output diameter at machine is 4" (100 mm).
Safety	CDRH Class 2
Max Ambient Room Air	90 degrees F (32 C) Max Temperature

Specifications subject to change without notice.

Section 13: Specifications

Compatibility

The Epilog FiberMark has been designed as an “open architecture” product. The laser will work with many popular Windows based graphics, engineering and specialty software products. To benefit from all the functionality that was built into the laser, a Windows 32 bit based PC and 32 bit operating system is required. The Dashboard print driver that is shipped with the laser offers a host of unique features, and only works with Windows based operating systems.

Recommended PC

For Optimum Computer Performance

Investing in a new computer is a great way to make sure you’re getting the most out of your new laser equipment. Why? Because today’s software (CorelDraw for instance) requires a lot of computer processing speed and memory to function properly. A good computer won’t make a big difference in how your laser runs, but when compared to a slow computer it will save untold amounts of time and frustration setting up the artwork that you “print” to the laser. Many users do not purchase new computers for use with their new laser because their current computers are perfectly adequate. There’s no magical cut-off that makes a computer too slow. If you’re comfortable with the performance and speed of your current computer, there’s probably no reason to purchase another one. The following recommendations are just advice to consider if a new computer is necessary.

A new computer doesn’t have to be expensive to work great! Even many of today’s lower cost computers work great for laser applications. As long as you don’t buy the cheapest computer you can find you should be fine.

Read these recommendations and consider spending just a few dollars more for those components that will save you time and frustration.

Operating System

Any Windows XP, 2000, or Vista operating system is recommended. All new Epilog lasers are designed to work with all the different 32 bit versions of XP, 2000, and Vista.

RAM – Random Access Memory

1 GB is the minimum that is recommended. RAM is kind of like short-term memory. It’s fast and readily available for the computer to access and makes time consuming

Section 13: Specifications

tasks go much quicker if you have lots of it. Having more than 1 GB of RAM is nice if you demand a lot from your computer.

DVD (optical drive)

All computers come with some sort of CD-ROM/DVD drive. Consider a DVD drive with Read/Write capability. Many graphic files are very large and may not fit on some portable media. Being able to copy a file to a DVD is a big advantage for filing purposes and moving the file from one computer to another. Optical drives are an indispensable tool and many software applications now come exclusively on DVD.

Floppy Drive

Usually not necessary.

Processor Speed

A faster processor will allow you to do more tasks in less time. While it's not necessary to purchase the fastest processor available, you'll want adequate speed to operate your graphics program. Processor speeds are always improving, but processor speeds of about 2.0 GHz or faster are a good place to start.

10/100 Network Interface Card (NIC)

All new computers have a 10/100 network connection as standard equipment. As well as allowing multiple computers to be linked together in a network, this technology also allows direct printing from the computer to the laser. Epilog supplies a network Crossover cable with each laser system that allows one computer to print to a single Epilog laser system.

Hard Drive

This is the permanent memory in your computer. Many users feel that you can never have a large enough hard drive, but for most laser applications 80 GB's is going to be adequate for years of storage. Luckily, most computer manufacturers put high capacity drives in new computers these days. When in doubt, buy bigger than you think you might need. It's so in-expensive that it's worth the peace of mind to have it available.

Software

Many users use Corel as their graphics software. Many other Windows software applications can also be used, although all software is different and may not be predictable, user friendly or functional. Additionally, the technical support staff at Epilog may be less familiar with software other than Corel and less able to help with

Section 13: Specifications

questions. Consult with your Epilog distributor on software compatibility issues. Epilog does not guarantee compatibility with any software.

Many laser users find a Raster-to-Vector conversion software package indispensable. Sometimes, users may have this capability if they are using sign graphics software like CadLink. There are also a number of 3rd party Raster-to-Vector conversion packages available in the engraving industry. Corel includes a raster-to-vector conversion program starting in version X3 and it is a very nice conversion program for most users.

Other Computer Hardware Recommendations

Scanner

A flatbed scanner is another indispensable tool for generating custom artwork. Almost any flatbed scanner today is adequate for scanning artwork. Scanner technology has come so far in the last few years that even a \$100 scanner today is as good as a \$1,000 scanner of a few years ago. Hand held “mouse” scanners do not provide the necessary accuracy and should be avoided.

Heavy Duty Surge Protector

The need for a surge protector varies greatly throughout the world. If the laser is operated anywhere that the electrical power is subject to spikes, outages, lighting, fluctuations, etc. a surge protector should be used on both the laser and the computer. A surge protector is a very, very cheap insurance policy against catastrophic electrical damage. A surge protector is designed to be an inexpensive device that absorbs any electrical problems before they can damage the expensive equipment (computer and laser) they are protecting.

Section 13: Specifications

Summary

Computer Recommendations:
Windows 2000, XP or 32 bit Vista
1 GB RAM Minimum
CD-ROM or DVD
2.0 GHz or faster Processor
10/100 Network Interface Card
80 GB Hard Drive - (Minimum)
CorelDraw or other Windows based software

Federal Communications Commission (FCC) Notice



Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy; and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his/her own expense.

Section 13: Specifications

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Section 14: Upgrading the Operational Firmware

In This Section

- Upgrading Your Firmware
 - Installing New Firmware Onto Your Computer
 - Transferring New Firmware From Your Computer To Your Laser System
 - Upgrading The Epilog Dashboard print driver
 - Converting Old .Dat Files To Be Compatible With A New Driver Version:
-

Upgrading Your Firmware

Your laser system is capable of having its operational firmware upgraded. The firmware is the command software in your laser system that controls how your laser system operates (think of firmware as the “brains” of your system). A firmware upgrade reprograms your laser system to take advantage of new capabilities or enhancements to the system.

To accomplish the reprogramming, you just “Print” a special file to your laser system. The process is explained below.

Upgrading your laser is a two-step process:

1. Download the new firmware to your computer and extract (also known as Unzipping or decompressing) it.
2. Transfer the new firmware from your computer to your laser.

Section 14: Upgrading the Operational Firmware

Installing New Firmware onto Your Computer

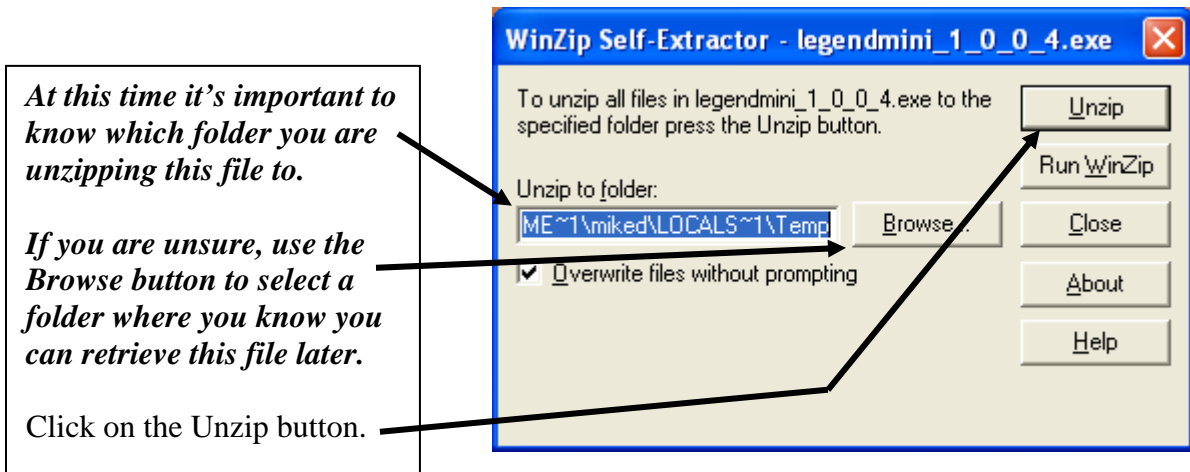
Firmware upgrades are available at any time by downloading the firmware file from the Epilog web site - www.epiloglaser.com under the Technical Support tab. Or, you can contact Epilog Technical Support and they can e-mail the appropriate file to you. (You can also join our Driver Notification mailing list to be automatically notified when new versions of firmware or the driver become available!). The firmware version that your system is currently running is displayed on the LCD panel when you first power up your laser system – it will read Version 1_0_X_X.

Downloading – From the Epilog web site download the new firmware and save. Normally, the default Save location is onto your Desktop folder. Use a thumb drive, flash drive or other portable media to move the downloaded file from one computer to another if you need to.

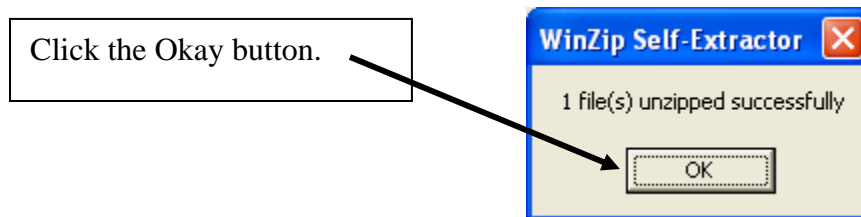
When you download the firmware it comes as a compressed file in the following format: fibermark_1_0_X_X.exe. The X's designate the actual version of the firmware. Once this file is on the computer that is attached to your laser you will need to extract (Unzip or decompress) it so it's in a format that can be transferred to the laser.

Extracting – When you download the firmware file from our web site onto your computer it will normally be saved to your Desktop. When it downloads it will create an icon on your Desktop named fibermark1_0_0_X_X.exe. Double click on the icon to extract it. After double clicking on the icon the following window will appear:

Section 14: Upgrading the Operational Firmware



The following message appears after the file is Unzipped:



Once the file is extracted it changes from an .exe format to a .hex format that will be named fibermark1_0_X_X.hex, (again, the actual number will change depending on revision level). It is the .hex format file that you will use to upgrade your laser.

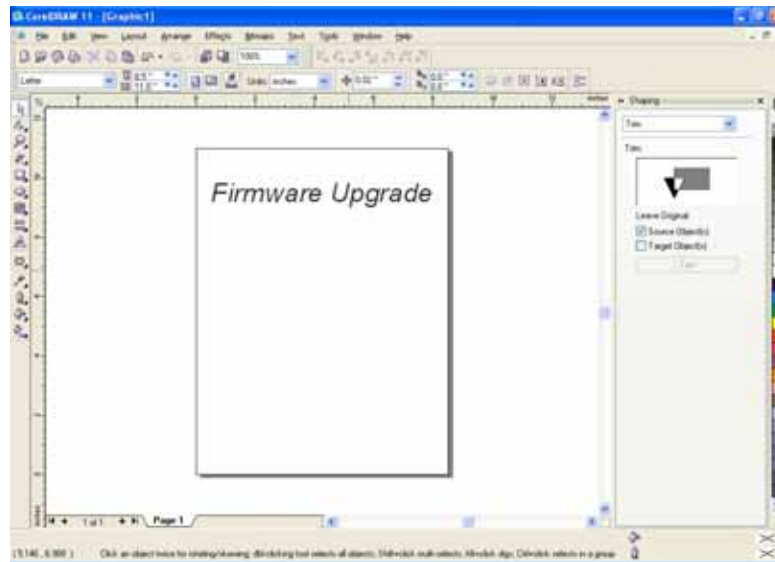
Keep track of the folder where you saved the extracted .hex file. You will need to access this file again in the next step.

Section 14: Upgrading the Operational Firmware

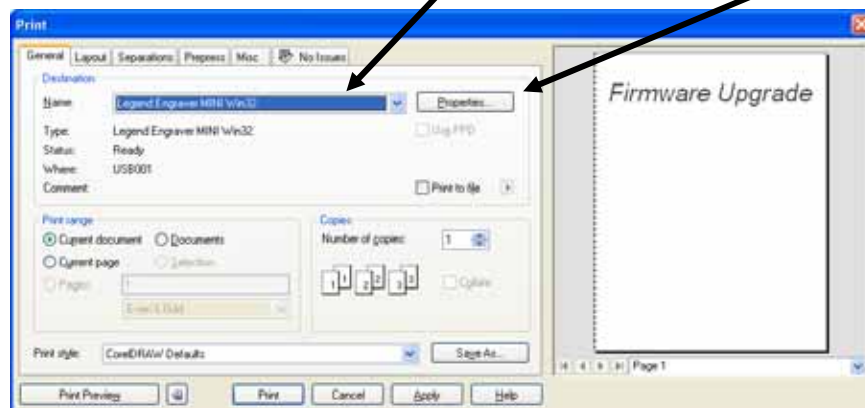
Transferring New Firmware from Your Computer to Your Laser

Use the following procedure to transfer the fibermark.hex file to the laser:

Create a simple drawing in your graphics package. For this example, we've typed in the text "Firmware Upgrade".



The next step is to Print, select the *Dashboard* driver, and click on *Properties*.

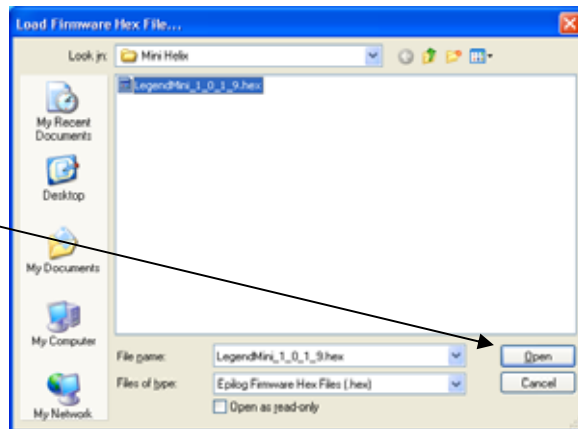


Section 14: Upgrading the Operational Firmware

Go to the Advanced tab, check the Update Firmware box and then click on the Load button.



Go to the folder that contains the unzipped .hex file, select it and then click Open.

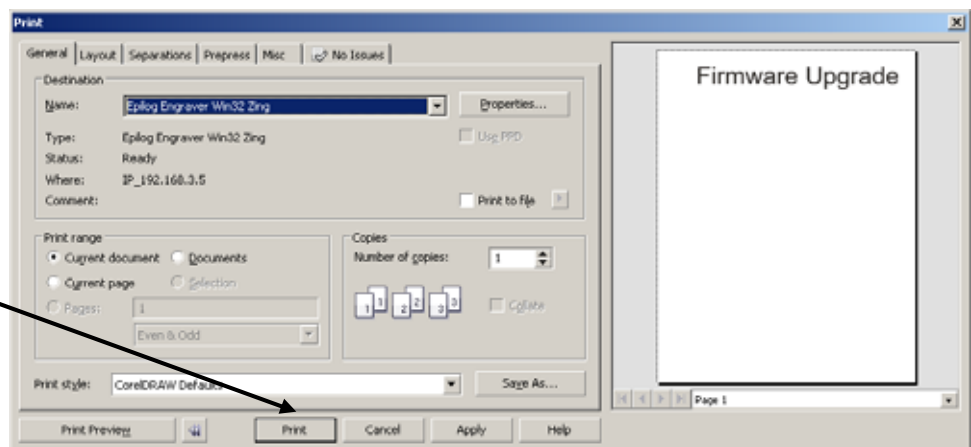


Section 14: Upgrading the Operational Firmware

The .hex file will show in the Update Firmware File box.



Click Okay.



Click Print.

At this point, the .hex file will begin transferring to your laser. The laser knows that it is being upgraded and the graphic that you created will not print, nor will it show up as a Job. Instead, you will see the following messages on the LCD panel on the laser:

“Receiving Data”

“Erasing Flash”

“Programming Flash”

“Finished – Reboot!”

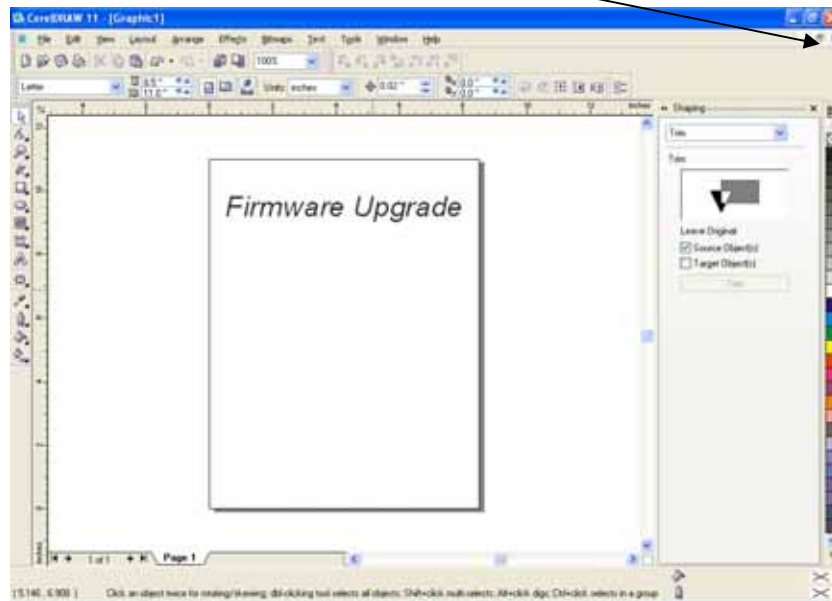
The programming process takes about two minutes to complete.

Section 14: Upgrading the Operational Firmware

DO NOT DISTURB THE LASER DURING THE UPGRADE PROCESS!!!

After you have rebooted your laser, the process is complete and you will see the new version number of firmware on your LCD as the laser powers up.

Close your Corel page and you are ready for you next job!



*Section 14: Upgrading the Operational
Firmware*

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APPENDIX A WARRANTY STATEMENT

Epilog Corporation warrants to the original purchaser of Epilog Model 8000 that this product will be free from defects in material or workmanship when purchased, and under proper, normal use within one (1) year from the original date of purchase.

Epilog will replace or, at its option, repair the defective part(s). Normally, Epilog will supply a replacement part for the customer to replace. Once the replacement has been performed, the replaced part must be returned to Epilog. In the case where repair is required, Epilog requires that the defective part, or machine, be returned to the Epilog factory or other Epilog designated facility. Epilog will be responsible solely for the cost of repairs, including parts and labor, which are made at an authorized Epilog facility. All other costs for replacement or repair, including, but not limited to, packaging and shipping both to and from Epilog, shall be paid by the owner. A “Core” charge may be required by Epilog to insure the return of replacement and repair parts. This warranty excludes any damage from abuse (including, without limitation, incorrect voltages, power surges, fires, improper or insufficient ventilation “acts of God” or other situations out of the control of Epilog), failure to operate in accordance with instructions provided in the Owner’s Manuals for the Epilog models 8000, including specific safety and operational warnings contained therein, cosmetic damage sustained in use, and damage caused by unauthorized modifications of any equipment. All warranties to original purchasers are non-transferable. The registered owner must initiate warranty claims within the warranty period.

THE ABOVE AND FOREGOING IS THE ONLY WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED; INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, THAT ARE MADE BY EPILOG ON MODEL 8000. ANY WARRANTIES IMPLIED BY LAW ARE HEREBY EXPRESSLY DISCLAIMED. No oral or written information or advice given by Epilog, its dealers, its distributors, agents, officers, or employees shall create a warranty or in any way increase the scope of this warranty. Neither Epilog nor anyone else who has been involved in the creation, production, or delivery of the Epilog Model 8000 shall be liable for any direct, indirect, consequential, or incidental damages, including but not limited to damages for loss of business profits, business interruption, loss of business information, adverse health impacts, fire, and the like, arising out of the use or inability to use these products.

Epilog Corporation provides no warranties whatsoever on any software used in connection with Epilog Model 8000.

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APPENDIX B: PRINTING FROM AUTOCAD

In This Section

- Printing from AutoCAD
-

The following include general instructions on Printing from AutoCAD Software.

AutoCAD is a very powerful software tool that is often used in conjunction with the laser for vectoring applications. AutoCAD versions 2004 to the present are compatible with Epilog systems. Older versions are also compatible but use slightly different printing conventions that may or may not affect your output.

Printing/Plotting

Sending jobs from AutoCAD is heavily dependent on the print settings in the AutoCAD print window. ***Previewing*** your image before sending it to the laser is very helpful in preventing print problems.

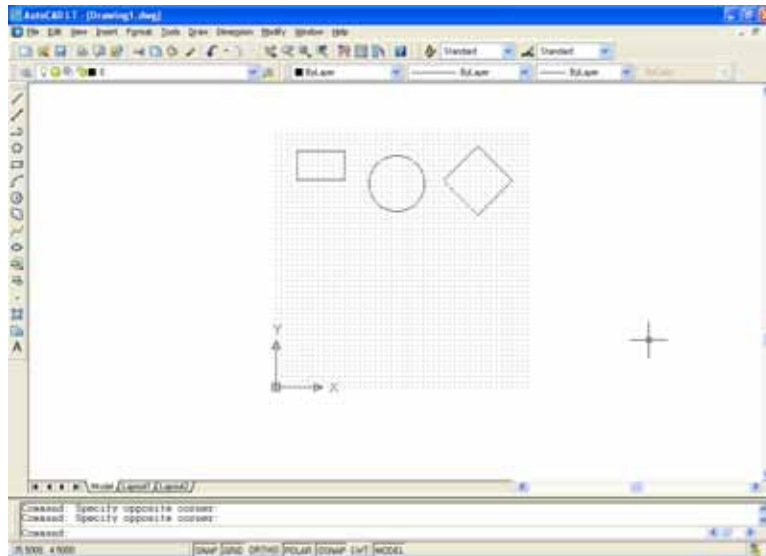
AutoCAD is capable of producing extremely complicated drawings with many layers, colors, etc. Since there is no limit to the level of complexity that an AutoCAD drawing can achieve, users should keep in mind that the laser is a 2D marking machine that usually marks a single piece of material in any given job. While your laser system is capable of handling complex drawings, users may find that eliminating extraneous detail before “Printing/Plotting” may make their laser equipment more productive.

Appendix B Printing from AutoCAD

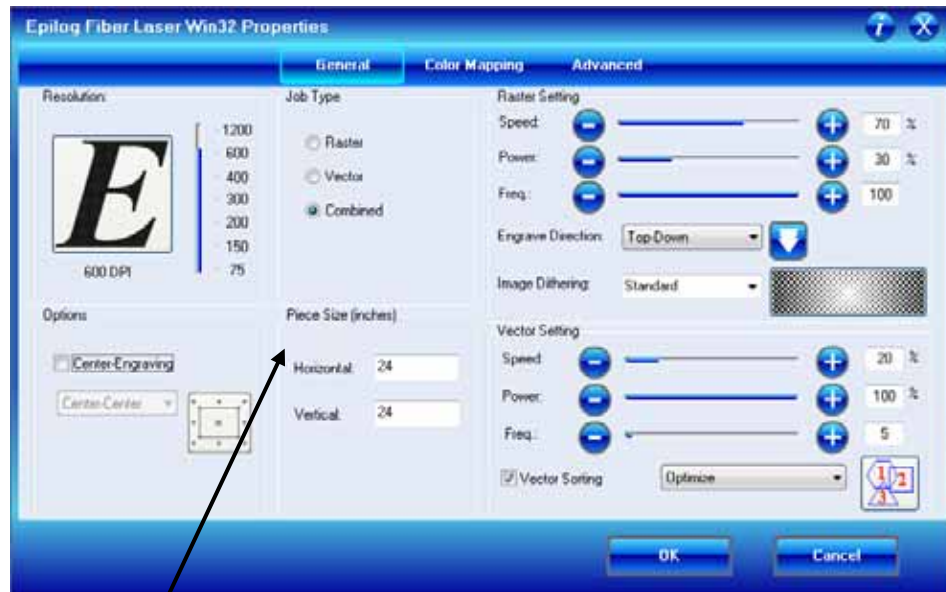
Helpful Hints

When creating artwork in AutoCAD, the first thing you need to do is **set up your AutoCAD page so that it is square**. This prevents the objects from rotating 90 degrees when you print them. The page in the example below is set to 24 x 24 inches 610 x 610 mm).

Place all of your objects in the upper portion of the AutoCAD page (see illustration below). Objects that are in the lower half of the page will not be processed.



Appendix B Printing from AutoCAD

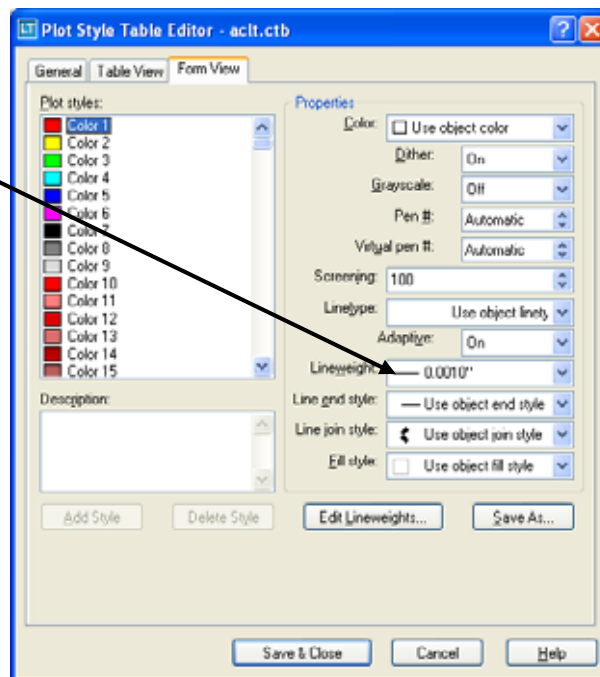


Set the Piece Size so that it is square; just like your Page Size in your AutoCAD file.

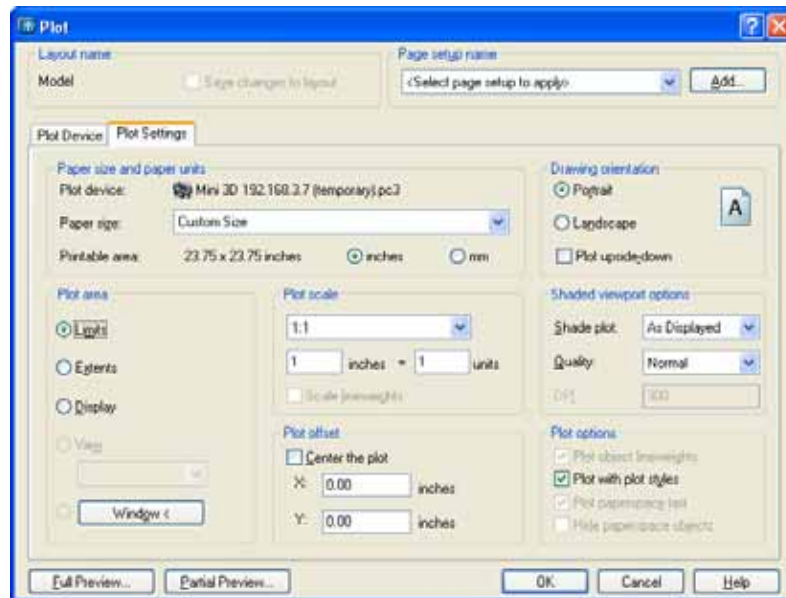
In AutoCAD, set the pen colors that you are using to .001 inch.

The AutoCAD default for all pens is .010 and a line weight this large disables vectoring. If the line weight is not changed to .001 inch, vectoring will not be possible.

When the laser receives a job where the line weights are too large, the laser system will just beep when you attempt to run the job.



Appendix B Printing from AutoCAD



Other useful settings in the AutoCAD print window are:

Set the page orientation to Portrait.

Set Plot area to Limits.

Set Plot Scale to 1:1.

Pen Sizes should be .001 inch (0.0254 mm) for vector marking.

APPENDIX C

Windows VISTA - Driver Installation Instructions

In This Section

- Windows Vista driver installation for USB connection
 - Windows Vista driver installation for Ethernet connection
-

Windows Vista Dashboard Driver Installation for USB

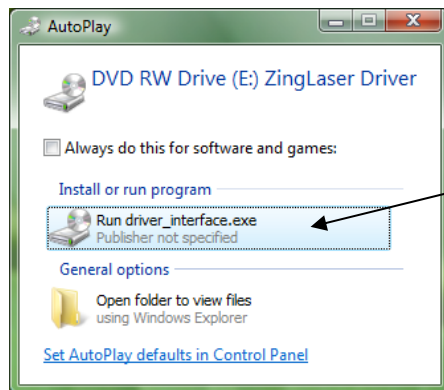


There are a couple of different ways to install the Dashboard print driver when using the USB connection, but we have found the following sequence is very easy for users who are installing a print driver for the first time.

Please read through all of the first five steps before starting the installation process. This is a very easy installation, but it is dependent on following each step in the given order.

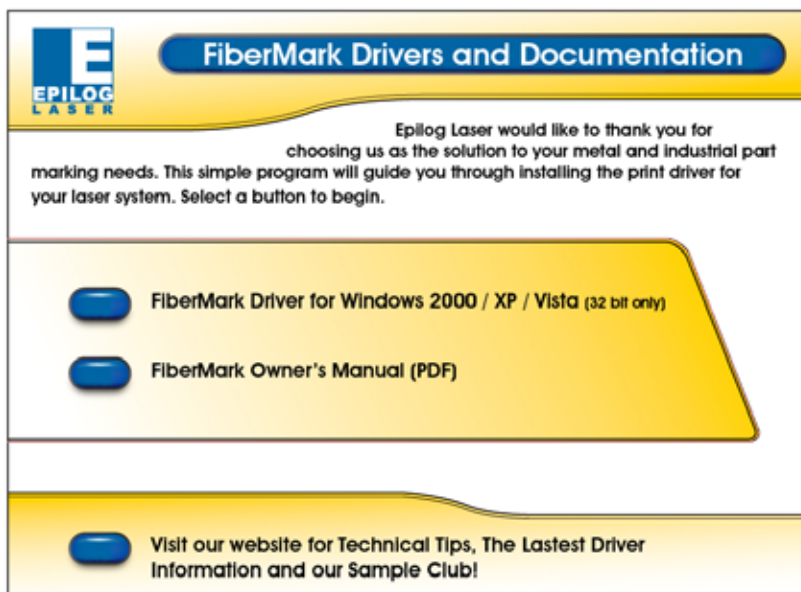
1. Turn off your laser system (keep your computer powered on).
2. Insert the Epilog driver disk into your CD or DVD drive on your computer. The following window will appear:

Appendix C Windows Vista Instructions



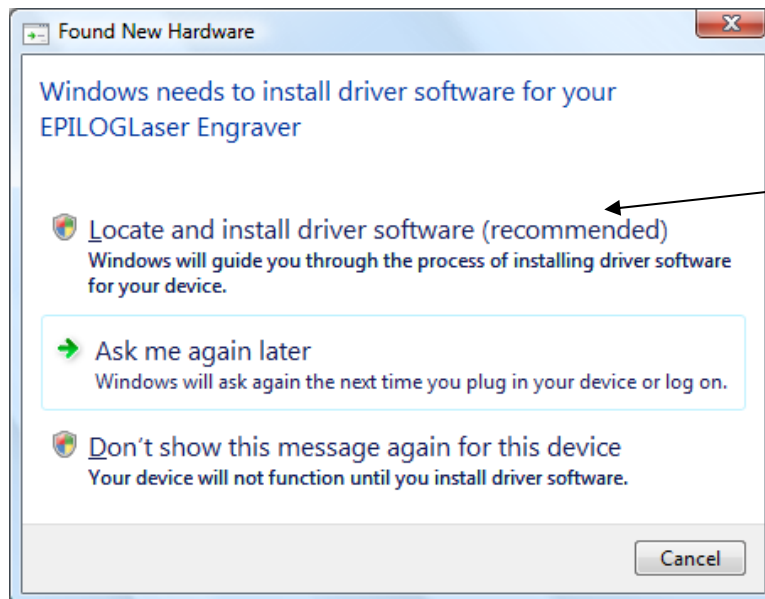
Click on Run driver_interface.exe

3. The Dashboard welcome screen will appear, but we want to close it.



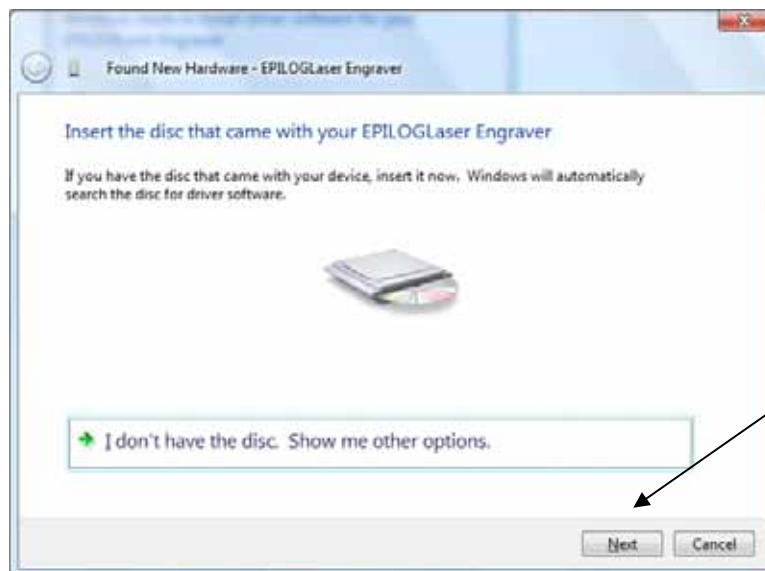
4. Connect the USB cable to both your system and your computer. The USB cable is provided in the Accessories Kit that came with your machine.
5. Turn your laser system on. After a few moments the following window will appear, and you can now proceed with installing the Dashboard.

Appendix C Windows Vista Instructions



Click on “*Locate and install driver software (recommended)*”

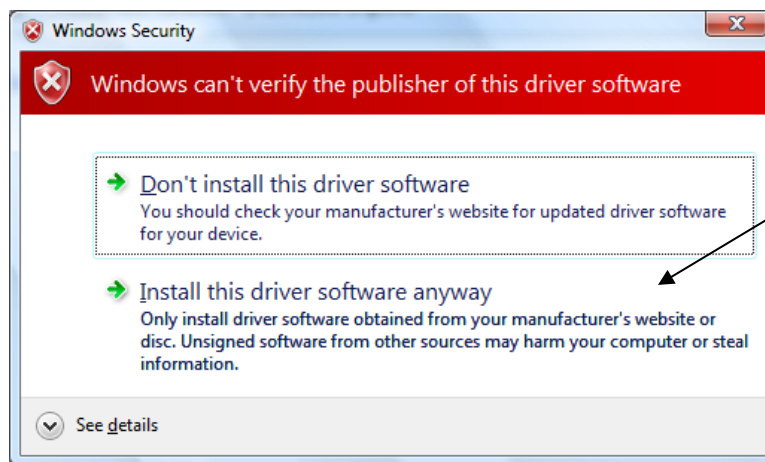
The next window to appear will ask you for permission to continue. Click on the Continue button for the following screen:



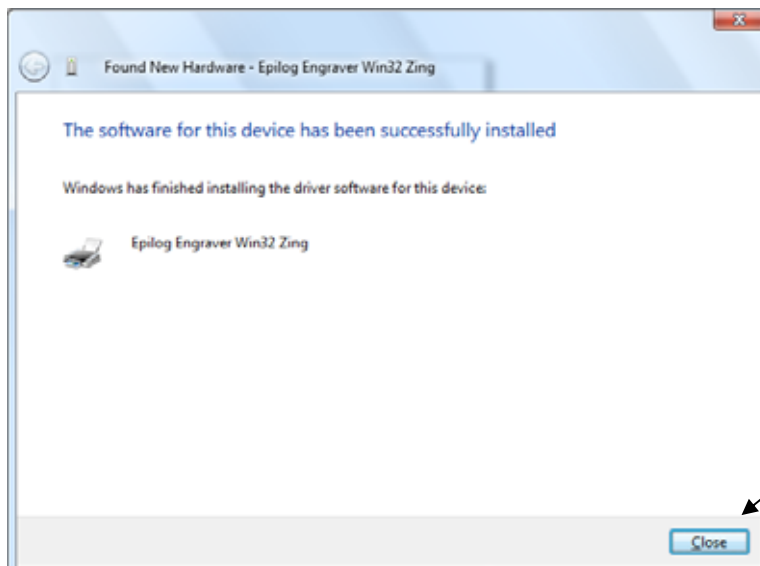
Since the driver disk was inserted at the beginning of this procedure you can just click on the *Next* button to continue.



Appendix C Windows Vista Instructions



Click on *Install this driver software anyway*.



The driver will now be installed by Windows.

There will be a window with a gas gauge showing installation progress. When it disappears, click on the close button.

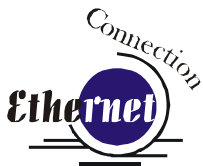
When you close this screen you've finished installing the driver!

You can now print to your new laser!

Appendix C Windows Vista Instructions

Windows Vista **Dashboard driver installation for Ethernet connection**

(Skip this part if you are using a USB cable described in the previous section.)



There are three easy steps involved in setting up the laser and computer system to operate through an Ethernet connection:

1. Setting the Ethernet IP Address on the laser.
2. Setting up the TCP/IP Address in the computer.
3. Dashboard Driver Installation



Note: The following instructions work only for a direct connection from the computer to the Epilog laser using a Crossover cable. This procedure does not work with a hub or a server. For Ethernet connections that require a hub, server, or multiple machines/computers, please consult with your network administrator.

Hardware Requirements

- A 10Base-T or 10/100Base T Ethernet network card installed in your computer. All brand name computers that have been built in the last couple of years should have come standard with an Ethernet card installed.
- A crossover cable connecting your computer to the laser (included in your accessories kit).



Please Note! - The crossover cable looks almost exactly like a standard straight-through network cable, but they have different purposes for making network connections. Normally, the crossover cable should only be used when connecting the Epilog laser directly to your computer. Ask your network administrator for assistance if you are unsure of which type of cable you have. It is a good idea to place a tag or label on the cable indicating if it is a crossover cable or standard (CAT5) straight-through cable.

Appendix C Windows Vista Instructions



Step 1: Setting the Ethernet IP Address on the Laser

In order to set up the laser system with the appropriate IP Address, you will need to set-up the laser through a sequence of steps that are described below.

Although it may seem intimidating if this is your first experience setting up Ethernet connections, it's really quite simple to accomplish. If you have problems, don't panic! You cannot do anything wrong that starting over will not fix!

There are three network protocols that will need to be set. They are set in the following order.

1. IP ADDRESS
2. SUBNET MASK
3. GATEWAY

You will use the FiberMark control panel to set these three protocols. The main control panel on the laser systems is used for all of the common laser functions as explained in later sections of this manual, and it is also used to program some of the setup functions of the laser system including the IP ADDRESS, SUBNET MASK, and the GATEWAY. In order to program these setup functions we have assigned a set of numbers to the keys on the control panel. The following diagram shows which control panel keys are associated with each number needed to set the network protocols.

Appendix C Windows Vista Instructions



IP ADDRESS

1. To set the IP Address press the **GO** and **POINTER** buttons simultaneously. You will see “**FUNCTIONS MENU**” displayed on the control panel LCD screen.
2. Next, press the **GO** button. - “**SERIAL #**” will appear on the screen. This is a factory set number and corresponds to the serial number of the laser system. You should not change this serial number.
3. Press the **GO** button again. - “**IP ADDRESS**” will appear on the screen.
4. Press the **GO** button again. - The factory set IP address will appear on the screen. It will look something like this: “192.168.003.004”, with a flashing box over the 1 in 192.



Note – This procedure uses 192.168.003.004 as the sample IP Address. Machines leaving the Epilog factory have this IP Address preset so you do not have to change anything unless you want to use a different address.

5. If you want to change the IP Address, please follow these instructions:
 - a) If you want to change the 1 in 192 to any other number, simply press the key for that number. For example, if you want to change the 1 (in 192) to a 4, press the **Down cursor** key. After pressing the **Down cursor** key the 1 will change to a 4. When a number key is pressed, the flashing box will automatically shift right to the next number in that three number group.
 - b) At this point, press the appropriate key for the second number (if you want to keep the 9 a 9, you must press the **Config** key).

Appendix C Windows Vista Instructions

- c) Finally, press the appropriate key for the third number.
- d) After pressing the key for the third number the flashing box will go back to the first number – it WILL NOT shift to the next set of three numerals. If you want to move to the next group of three numbers simply press the **GO** button. Pressing **GO** will cause the flashing box to shift right to the next three number group. Repeat this process to change any of the numbers.



Note – There is no way to simply scroll through the IP Address numbers and skip over single numbers you do not want to change. You can skip groups of three by pressing **GO**, but skipping single numbers cannot be done. There is also no way to move the cursor (flashing box) backwards. The cursor scrolls through each three number group continuously until you press the **GO** button, where it will then go to the next three number groups. The following example shows you how to change the number 196 to 195. When you start with the flashing box over the 1, press the **SPEED** button (this keeps the 1 a 1 and allows you to move to the next numeral). The flashing box will shift to the 9, where you will press the “**Config**” button (it will stay a 9 and the flashing box will shift right to the 6). Lastly, we want to change the 6 to a 5. Press the “**Focus**” button. This will change the 6 to a 5 (it will also move the flashing box back to the 1 where you first started). If you now have the number you want to keep (195) and you are ready to move to the next three numeral set, pressing the **GO** button will get you there.

- e) Repeat this process for all of the number groups to get the IP Address you need.
6. After all the IP address numbers have either been changed or verified as the ones you need, press **GO** again – this will bring the **SUBNET MASK** screen.

Subnet Mask



Press **GO** again to see the **SUBNET MASK** settings. Use the same process of number selection using the keypads to select the appropriate number for the **SUBNET MASK**.

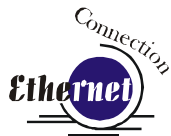
Note: If you are using the cross-over cable provided by Epilog, you can set the “**SUBNET MASK**” to one of two configurations:

Appendix C Windows Vista Instructions

1) “255.255.0.0”

2) “255.255.255.0”

There is no difference between these settings for our application. Because we set the Subnet Mask at the factory, most users leave it as it is and just press “GO” four times to scroll through this settings without making any changes. After you have set the “SUBNET MASK”, Press **GO** again.



GATEWAY

You will now see “GATEWAY”, Press **GO** again.

The **GATEWAY** setting can be set using the same process of number selection using the key pads to select the appropriate numbers for “GATEWAY”.

Note: The GATEWAY address is not important if you are using the provided cross over cable. Press “Go” four times to scroll through this setting.

If you are running your laser through a network, you will need to set the laser GATEWAY numbers to correspond to your network.

At the end of the process to establish your IP Address, the laser will prompt you to either SAVE or NO (Not Save) the numbers you have applied. The Screen will look like: Save – GO, No- STOP

Press the **GO** button to save the changes you made to the network settings. Press the **STOP** button if you do not want to save the changes and you want to return to the factory default.

If at any time in the programming process you want to stop or restart, press the **STOP** button. This will take you out of the programming functions. If you want to restart the programming process, simultaneously press **GO** and **POINTER** to get back to the start of the Function Menu.

Appendix C Windows Vista Instructions



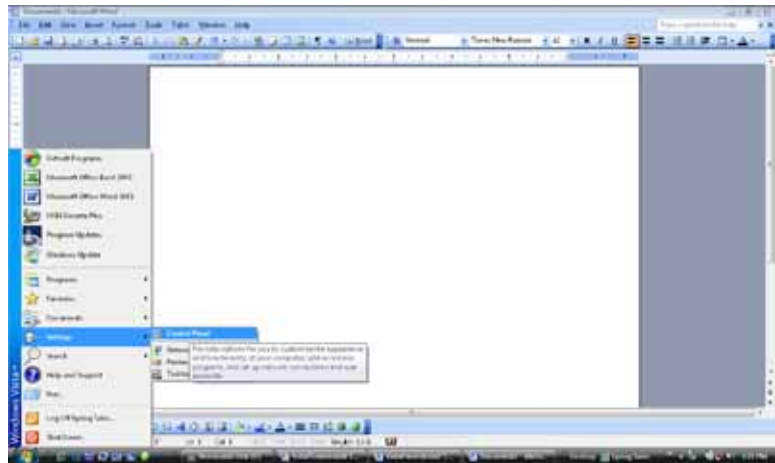
Step 2) - Setting up the TCP/IP Address in the Computer

Once you have set the IP Address at the laser, you will need to set the TCP/IP address on your PC.



Note: There are several different versions of Windows Vista and the Start screen differs from one version to another. Due to the differences, finding the Local Area Connection Properties will vary slightly from one version to the next.

1. From the start menu at the bottom left corner of your PC monitor, select **Start| Settings| Control Panel**

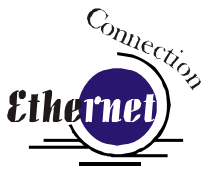


Or...

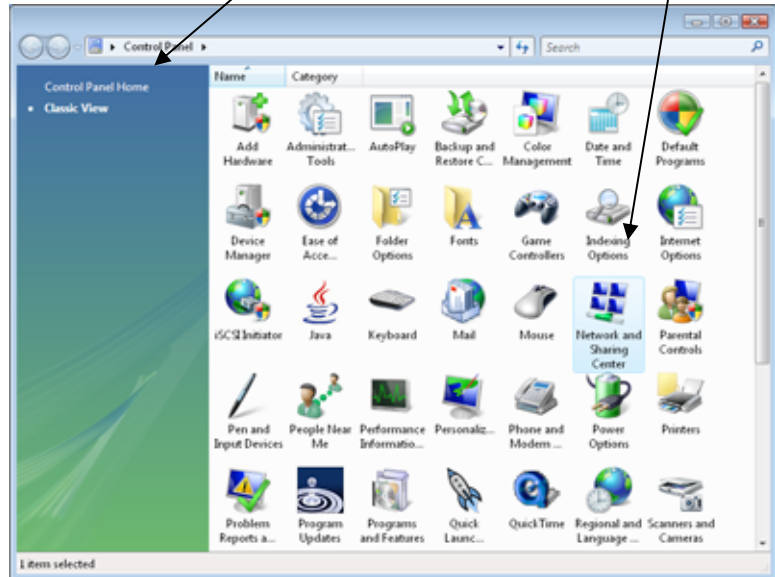
If your Start menu looks like this, click on **Control Panel**.



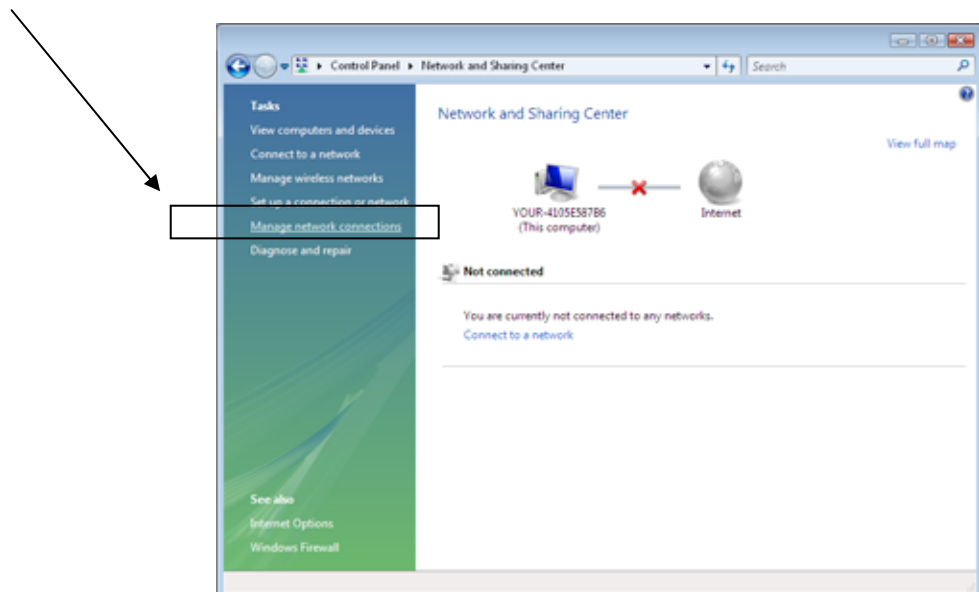
Appendix C Windows Vista Instructions



2. On the left side of the Control Panel, click **Classic View** then click **Network and Sharing Center**



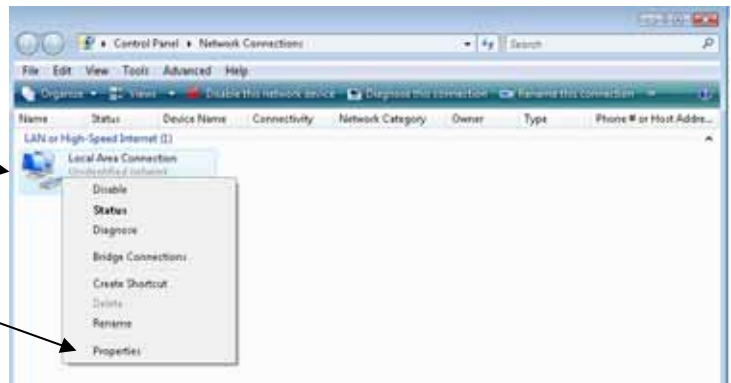
3. On the left side of the screen, click on **Manage network connections**.



Appendix C Windows Vista Instructions

Right mouse click on **Local Area Connection**,

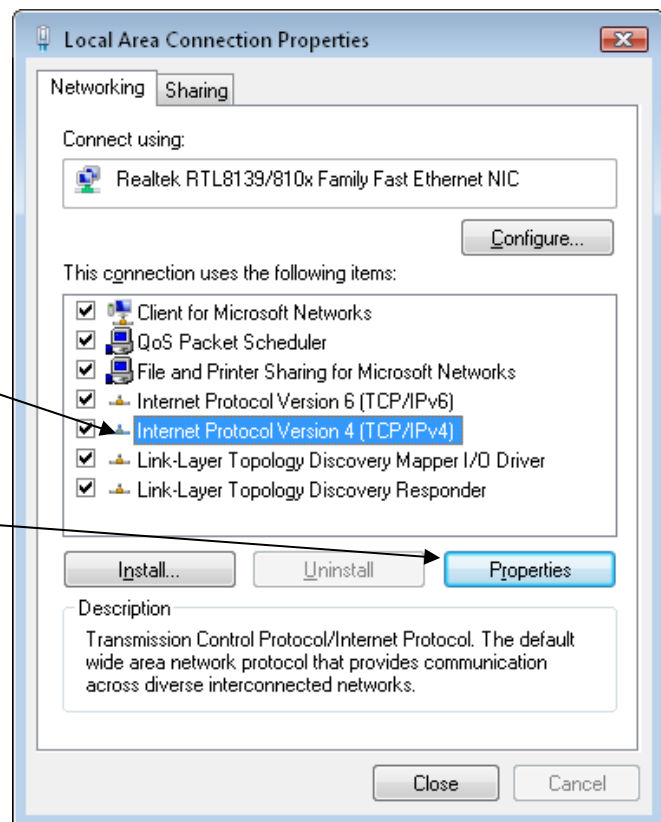
and then click **Properties**



Note: After clicking on **Properties**, Vista will prompt: **Windows needs your permission to continue** (for security purposes). Click **Continue** to accept.

From the list of protocols, highlight **Internet Protocol Version 4 (TCP/IPv4)**.

Then click on **Properties**



Appendix C Windows Vista Instructions



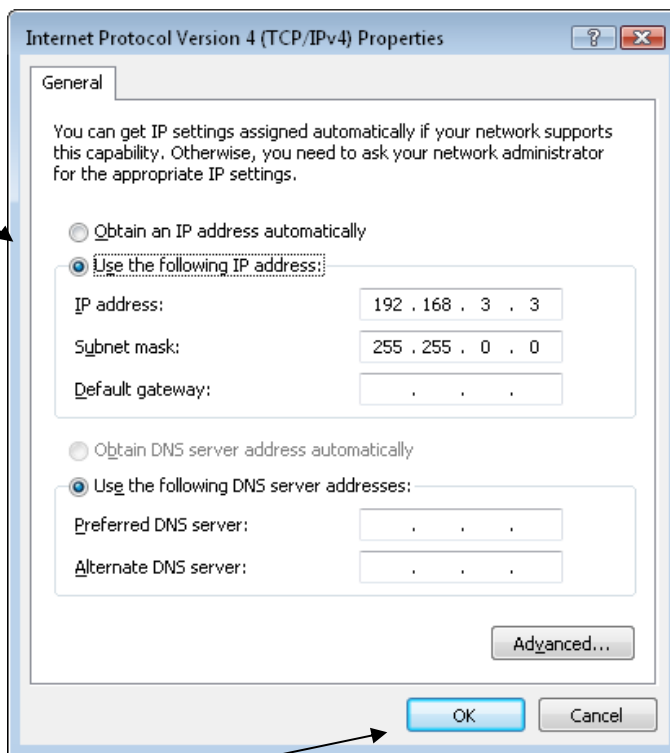
Windows Vista has incorporated the new Internet Protocol called IPv6 in addition to the traditional IPv4 which is what most PCs will use. IPv6 will eventually replace IPv4 but both will be available for years to come. For our purpose, IPv4 is the standard.

Select *Use the following IP address*:

Type in the following (leave everything else blank on this screen)

IP Address: 192.168.3.3
Subnet mask: 255.255.255.0
Default gateway: Leave blank

This number is not an error; the last digit of the IP address in this window only, must be different than the IP address set in the Epilog EXT.



Click the **OK** button in this window and then click on the **close** button in the next window.

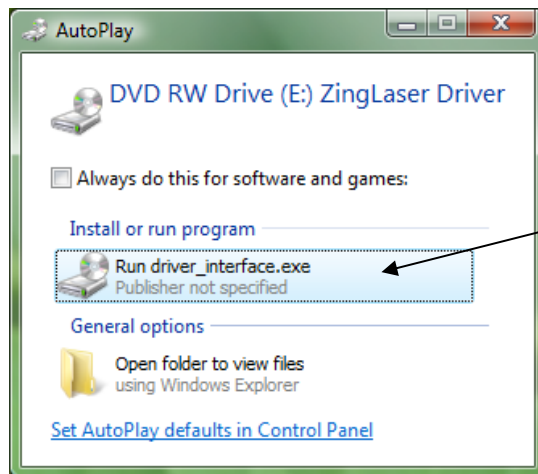
That's it! The IP Address in your computer is set. Your computer will be able to talk to your laser after you install the print driver (which is the next step).

Appendix C Windows Vista Instructions

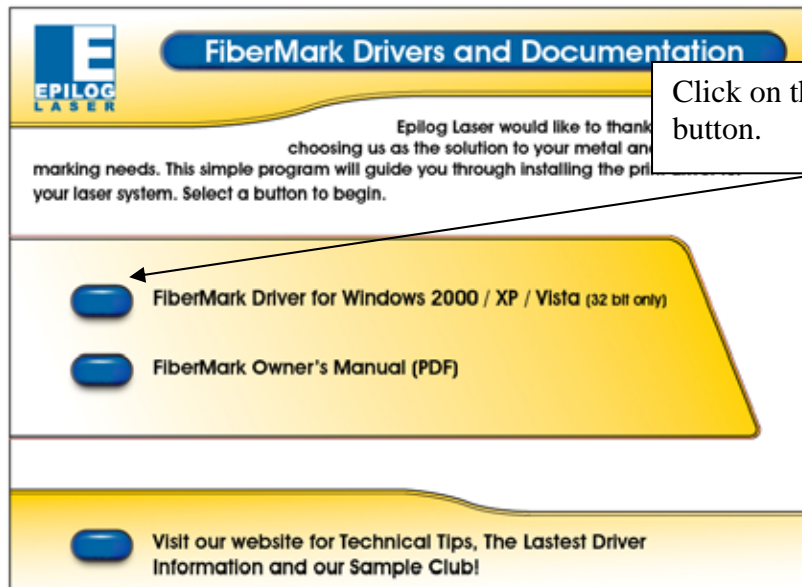
Step 3) – Dashboard Driver Installation



Insert the Epilog Laser CD into your computer's CD player. It should Auto-Start and the window below should appear. (If the AutoRun feature does not bring up the following screen refer to the *Installing the Dashboard Print Driver when the AutoRun Feature Does Not Activate* section of this Appendix C).



Click on Run driver_interface.exe

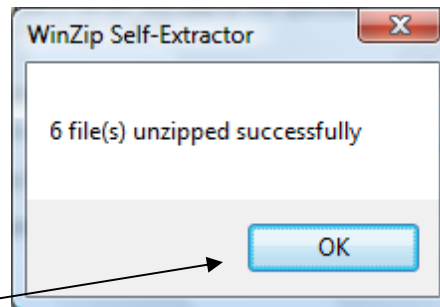
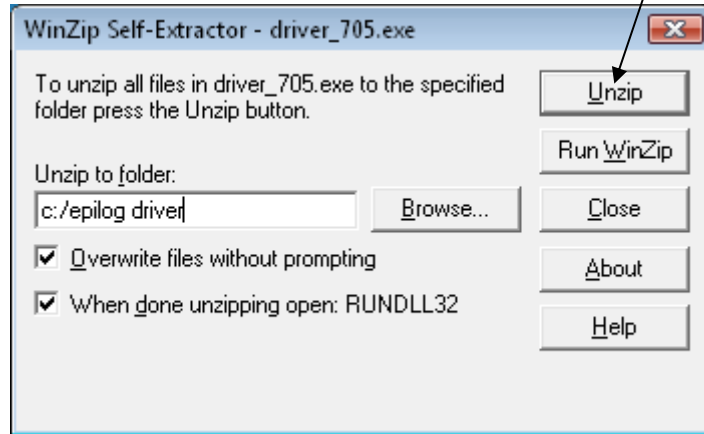


Click on the FiberMark Driver button.



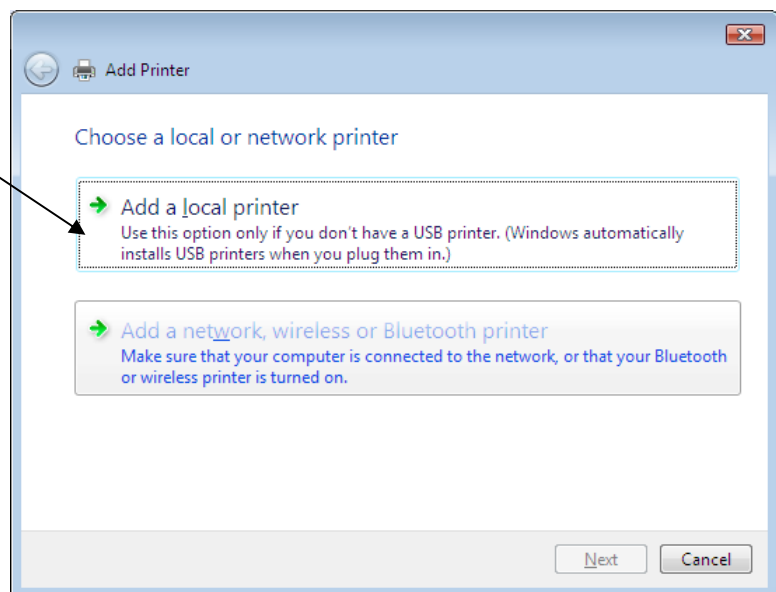
Appendix C Windows Vista Instructions

The following screen will appear. Click on the **Unzip** button.



Click on **OK** to proceed.

Click on **Add a local printer**.



Appendix C Windows Vista Instructions

Select **Create a new port:**

In the drop down menu, select **Standard TCP/IP Port.**

Click **Next>** to continue

The screenshot shows the 'Add Printer' dialog box with the title 'Add Printer'. The main heading is 'Choose a printer port'. Below this, there is a brief explanation: 'A printer port is a type of connection that allows your computer to exchange information with a printer.' There are two radio buttons: 'Use an existing port:' (unselected) and 'Create a new port:' (selected). The 'Use an existing port:' option has a dropdown menu showing 'LPT1: (Printer Port)'. The 'Create a new port:' option has a 'Type of port:' dropdown menu showing 'Standard TCP/IP Port'. Below this dropdown, a list of port types is visible: 'Local Port', 'Microsoft Document Imaging Writer Monitor', and 'Standard TCP/IP Port'. At the bottom right, there are 'Next' and 'Cancel' buttons.

For Device Type: select **TCP/IP Device,**

Type in 192.168.3.4 for the Hostname or IP address.

Click **Next** to continue.

The screenshot shows the 'Add Printer' dialog box with the title 'Add Printer'. The main heading is 'Type a printer hostname or IP address'. There are three input fields: 'Device type:' with a dropdown menu showing 'TCP/IP Device', 'Hostname or IP address:' with a text box containing '192.168.3.4', and 'Port name:' with a text box containing '192.168.3.4'. Below these fields is a checkbox labeled 'Query the printer and automatically select the driver to use'. At the bottom right, there are 'Next' and 'Cancel' buttons.



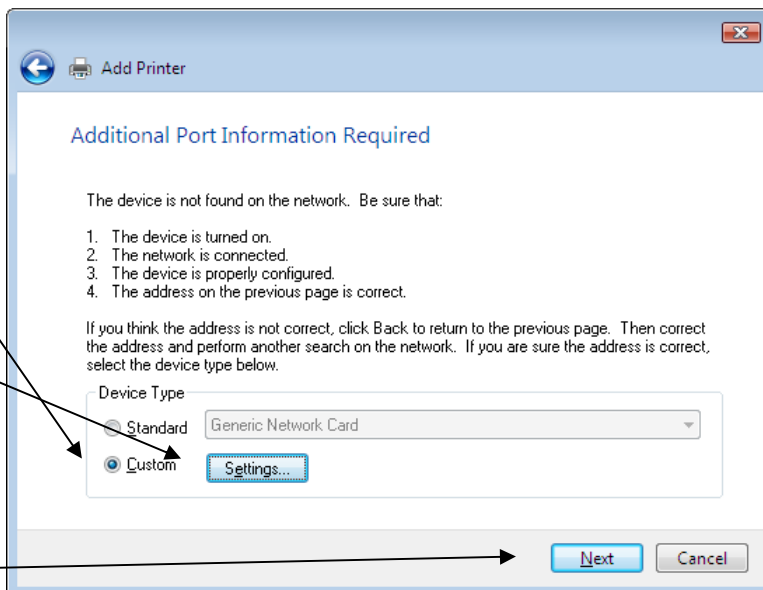
Enter the same IP address that you set in the laser control panel (Step 1 in this procedure). It is important that the IP address you use is the same in both places. The format of the numbers looks a little different. In the control panel of the laser the IP address will look like this: 192.168.003.004. When you enter the IP address in this window, you do not need the zeros, and the address will look like this: 192.168.3.4

Appendix C Windows Vista Instructions

Under Device Type, select **Custom**,

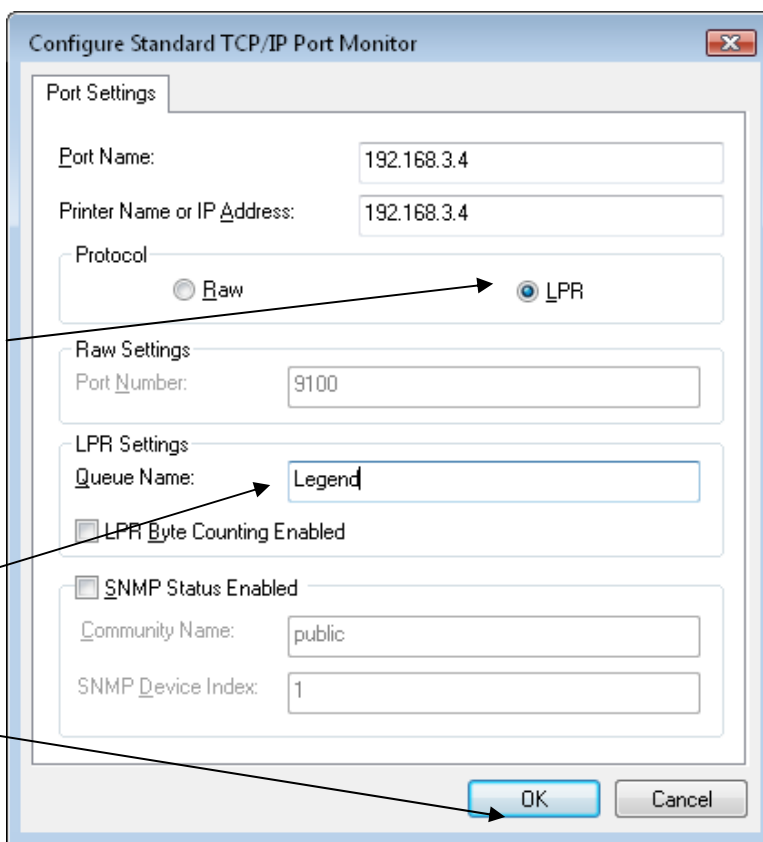
and then click on **Settings**.

Click **Next>** to continue.



Set the Protocol to **LPR**. This is a very important step. Your download time will be greatly increased if LPR is not selected.

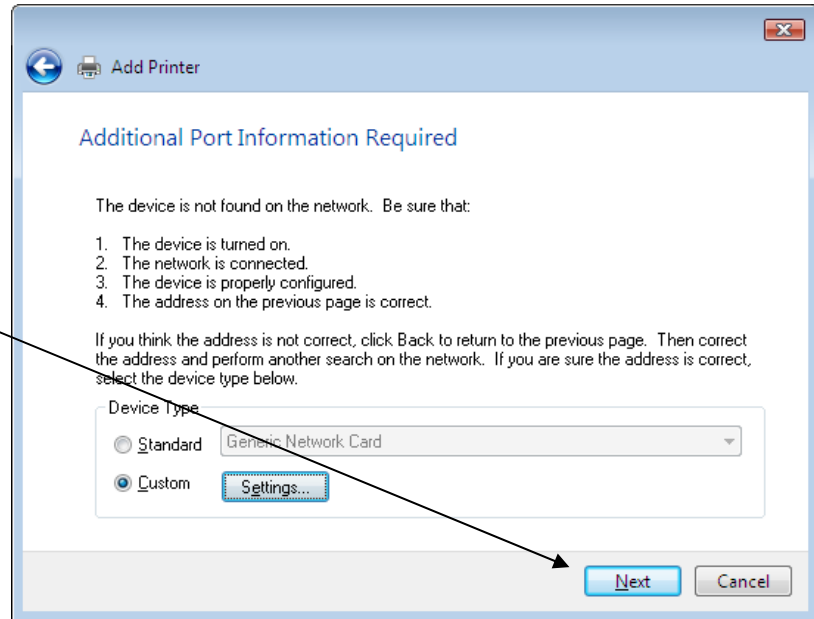
Type **Legend** in the Queue Name box. Then click **OK**.



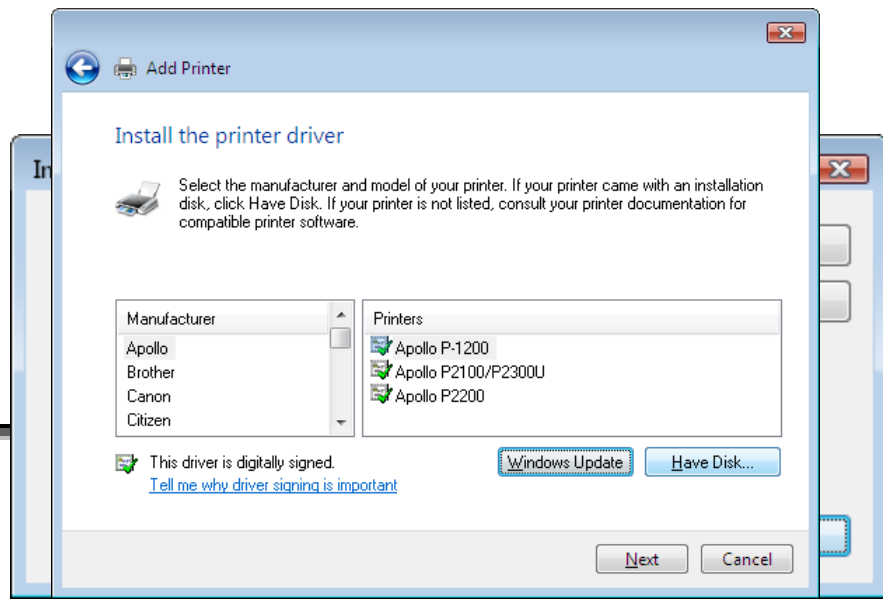
Appendix C Windows Vista Instructions

Clicking **OK** in the previous screen brings you back to the Additional Port Information Required screen.

Click **Next** to continue.



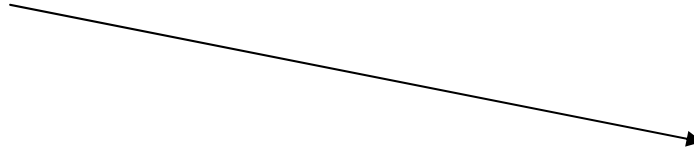
Click **Have Disk...**



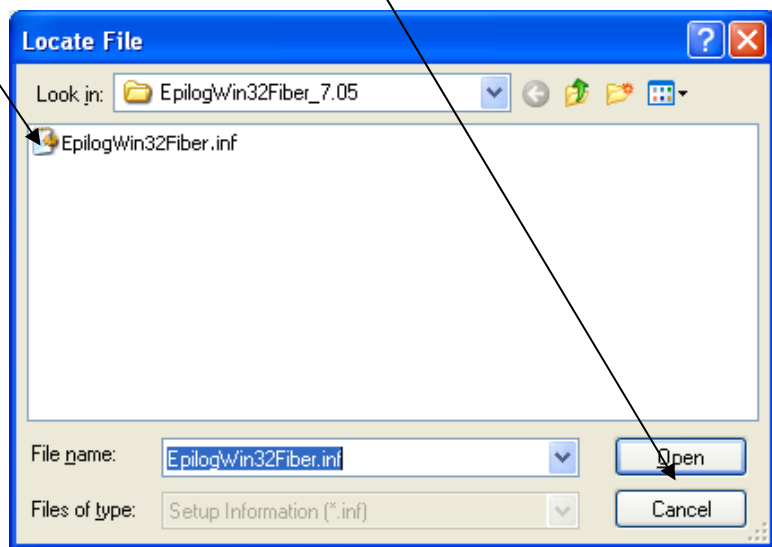
Click **Browse...**

Appendix C Windows Vista Instructions

The following window should appear.

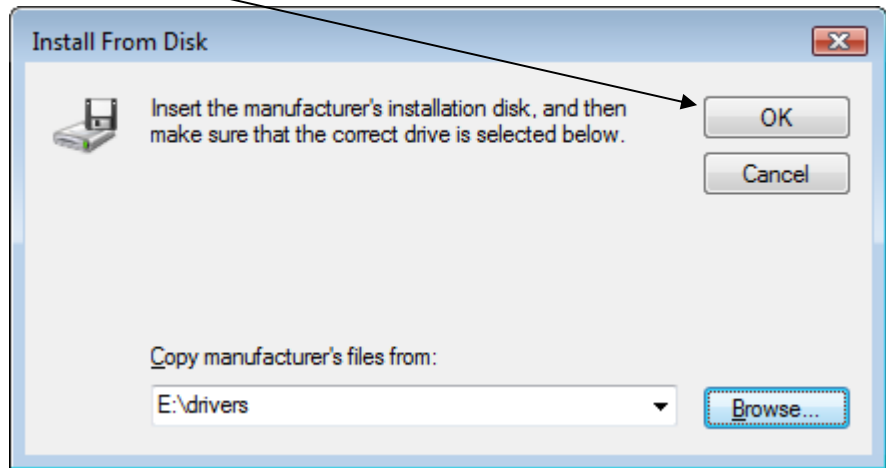


Highlight *EpilogWin32Fiber.inf* and then click *Open* to continue.

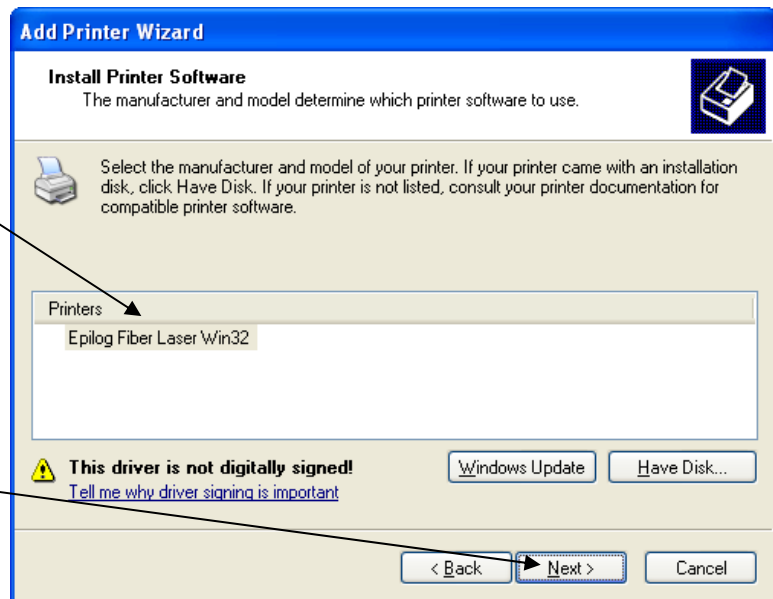


Appendix C Windows Vista Instructions

Click *OK*.



Select Fiber Laser Win32.



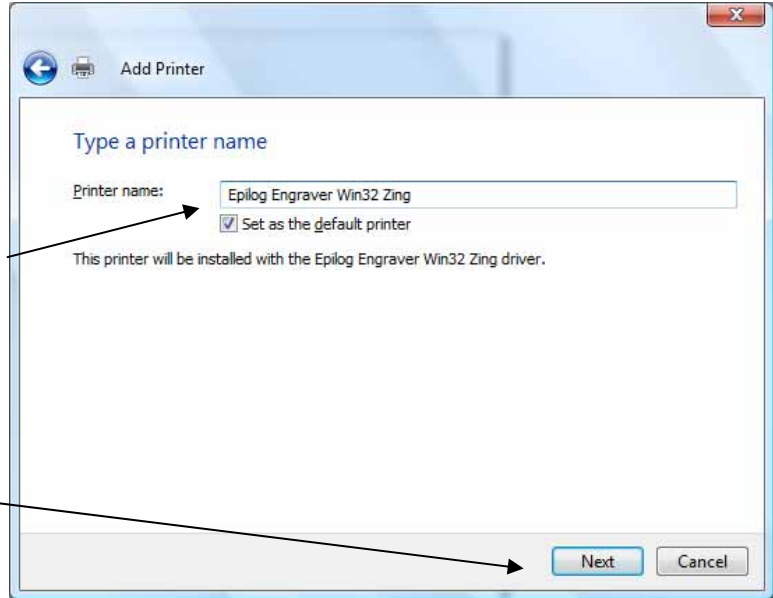
Click *Next>* to continue.

If you are upgrading from an older Epilog driver, you may have several choices in this window. Be sure to select *Epilog Engraver Win32*.

Appendix C Windows Vista Instructions

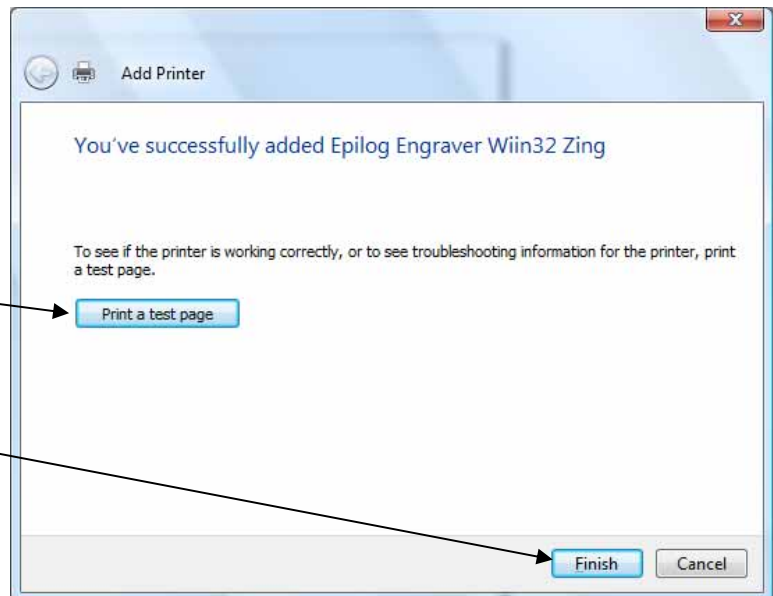
Name your printer and determine if you want the laser to be the default printer.

Click *Next*> to continue.



Do not print a test page.

Click on *Finish*



That's it! You're now ready to print to your new Epilog laser system!

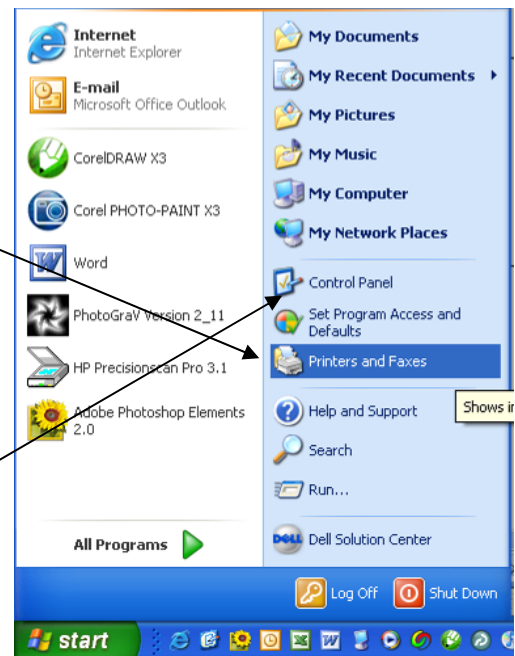
Installing the Dashboard Driver when the AutoRun Feature Does Not Start when using Windows XP or 2000

If you inserted the Epilog CD driver disk and it did not start automatically, you can install the Dashboard manually. The manual process is almost the same as the AutoRun process. The following instructions help get you started and then refer you back to the instructions earlier in the manual.

Click the ***Start*** button at the lower left-hand corner of your PC Screen.

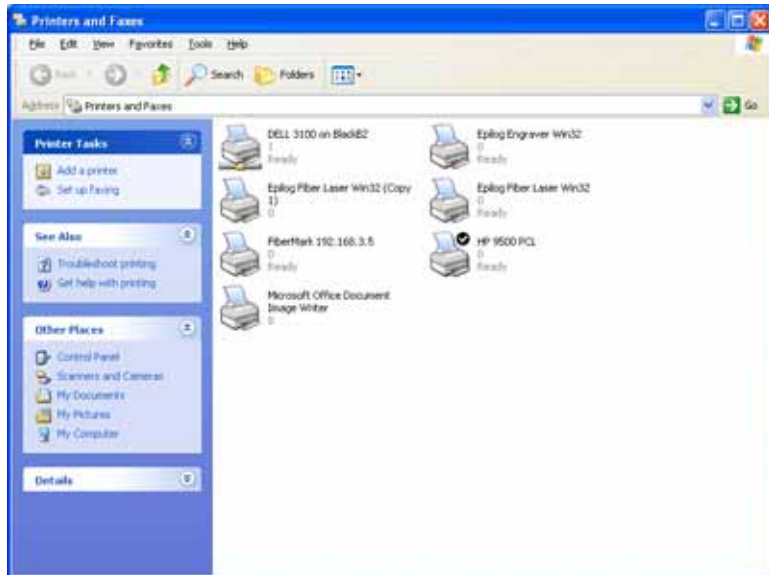
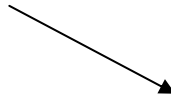
Click ***Printer and Faxes***

If ***Printers and Faxes*** is not displayed on your screen, go to ***Control Panel*** and click on the ***Printers and Faxes*** icon there.

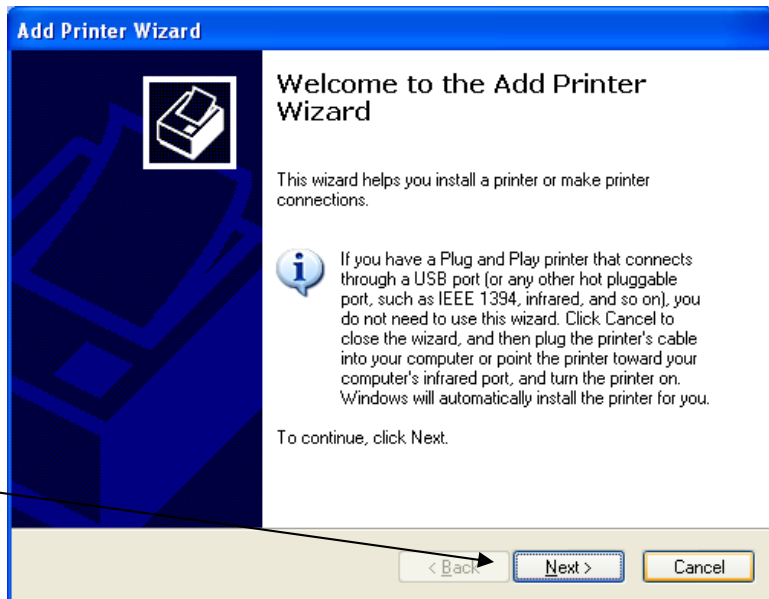


Appendix C Windows Vista Instructions

Click Add a Printer



Click Next



At this point you can follow the instructions earlier in the manual. Follow the screen prompts and navigate to the Epilog CD ROM where the files for the driver

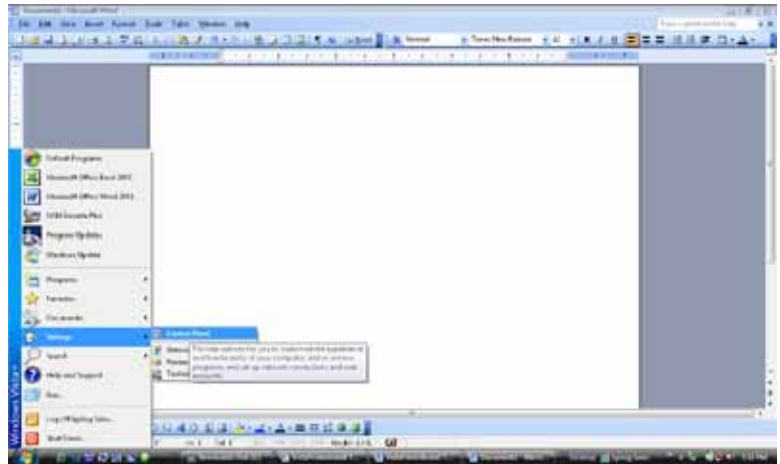
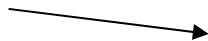
Appendix C Windows Vista Instructions

are located. If you have any trouble, Epilog Technical support is available at 303-215- 9171.

Installing the Dashboard driver when the AutoRun feature Does Not Start when using Windows Vista

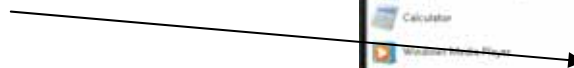
If you inserted the Epilog CD driver disk and it did not start automatically, you can install the Dashboard manually. The manual process is almost the same as the AutoRun process. The following instructions help get you started and then refer you back to the instructions earlier in the manual.

From the start menu at the bottom left corner of your PC monitor, select ***Start/ Settings/ Control Panel***



Or...

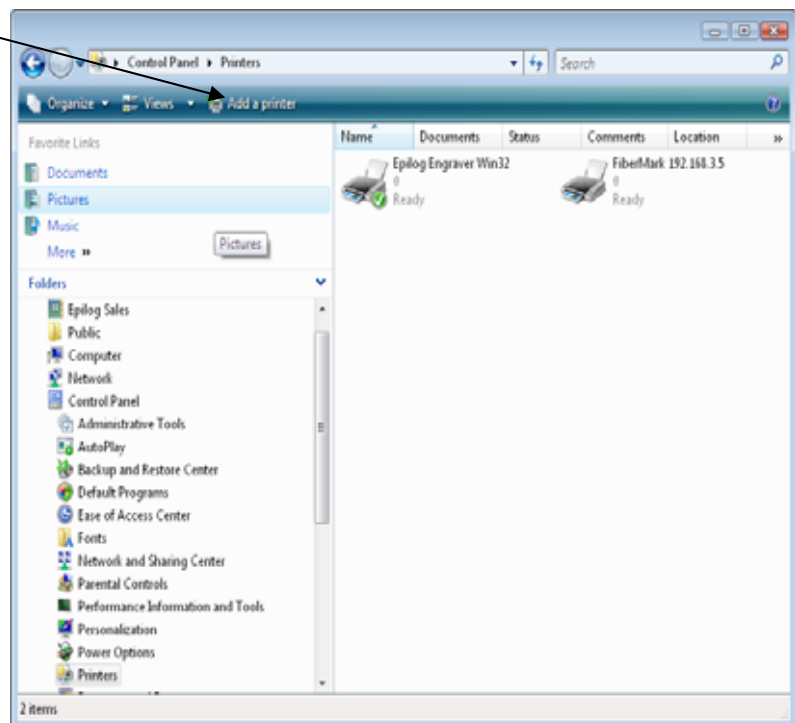
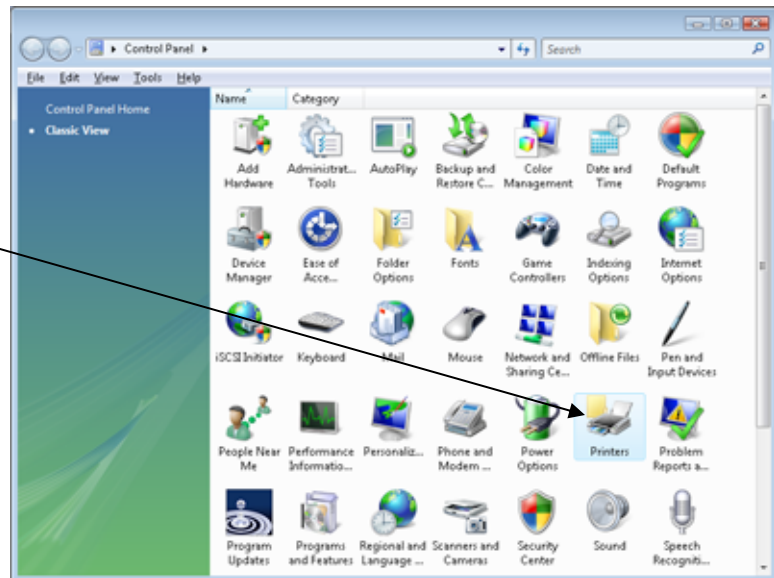
If your Start menu looks like this, click on Control Panel.



Appendix C Windows Vista Instructions

Click on the **Printers** icon .

Click on Add a Printer



After clicking on Add a Printer you can follow the instructions earlier in the manual. Follow the screen prompts and navigate to the Epilog CD ROM where the files for the driver are located. If you have any trouble, Epilog Technical support is available at 303-215- 9171.

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INDEX

2

21 CFR 1040 · 3, 8, 9

A

Accessories Kit · 56, 208
Acrylic · 168, 169, 170, 171
Air-cooled Laser Tubes · 19
Ambient Air Temperature · 19
Anodized Aluminum · 168, 169, 170, 171
ANSI · 4, 5
Aperture Safety Label · 11
Auto Focus · 187
Auto Focus Adjustment · 126

B

Bearings · 187
Blower · 17

C

Calibration Settings
 Auto Focus Adjustment · 126
 Calibration · 14, 172, 173, 174, 182, 184
 Laser Match · 173
 Stamp Match · 173
Center Engraving Option · 76
 Center-Center · 77, 78, 79, 81, 82, 83, 84
 Left-Center · 85
 Top-Center · 85
Center-Center · 77, 78, 79, 81, 82, 83, 84
Cerdec · 168, 169, 170, 171
Certification/Identification Label · 9, 10, 181
Cleaning · 172, 175
Color Mapping · 63, 64, 98, 99, 100, 101, 103, 104, 105,
 106, 107, 108, 109
Compatibility · 188
Control Panel
 Data Light · 119
 JOB Key · 123
 Power Key · 121
 Reset Key · 119

Set Home Key · 122
 Speed Key · 120
 Stop Key · 119
 X/Y Off Key · 122
Control Panel Command Keys
 ENTER/GO · 119
 Reset · 81
 RESET · 119, 123
Control Panel Keys
 Data · 119
 Focus · 124, 127
 Pointer · 34, 36, 127, 213, 215
 Power · 121
 Set Home · 81, 122, 123
 Speed · 120, 214
 Xy Off · 81
 XY OFF · 122
Cooling · 15, 19, 184
Coreldraw · 81, 188, 191
CorelDraw · vii, 51, 52, 63, 74, 118, 127, 142
Crossover Cable · 23

D

Dashboard · 23, 24, 32, 63, 64, 77, 84, 91, 99, 103, 104,
 107, 108, 113, 188, 196, 207, 208, 211, 220, 228, 230
Advanced Tab · 63
Color Mapping · 63, 64, 98, 99, 100, 101, 103, 104,
 105, 106, 107, 108, 109
Configurations · 108
Dithering · 91, 92, 93
 Floyd Steinberg · 91
 Jarvis · 91, 93
 Low Res · 91, 93
 Stucki · 91, 92, 93
Frequency · 69, 98, 100
General Tab · 63, 103, 108
Photograph Mode
 Floyd Steinberg · 91
 Jarvis · 91, 93
 Stucki · 91, 92, 93
Piece Size · 109, 205
Resolution · 67, 69
Upgrade Firmware · 113
Vector Settings · 105, 108
Vector Sorting · 97
Windows Xp/2000 · 23
Data Light · 119
Data Port Connections
 Ethernet 10BaseT · 22

Index

Ethernet Port · ix, 15, 21, 22, 23, 32, 33, 38, 39, 187, 207, 211, 212
Usb Port · 23, 24, 207, 208, 211
USB Port · ix, 15, 21, 22, 26, 32, 187
Defeatably-interlocked Protective Housing Safety Label · 10
Dithering · 91, 92, 93
Do Not · 199
Door Interlocks · 4, 132
Dpi · 92, 93
DPI · 63, 71, 72, 73

E

Electrical · 3, 5, 11, 15, 18, 187
Electrical Safety Label · 11
Epilog CD-ROM · 45
Ethernet · ix, 15, 21, 22, 23, 32, 33, 38, 39, 187, 207, 211, 212
Ethernet 10BaseT · 22
Ethernet Network Port · 22
Exhaust · 16, 127, 183
Exhaust System · 15, 16, 17, 177, 183
Blower · 17
Explanatory Label · 10

F

Federal Performance Standards for Light-Emitting Products · 3
Fire Safety Label · 11
Fire Warning · ix
Firmware · 113, 193, 194, 196
Floyd Steinberg · 91
Focus · 51, 56, 58, 124, 125, 126, 128, 144, 187
Auto Focus · 187
Auto Focus Adjustment · 126
Manual · 51
Frequency · 69, 98, 100

G

Go Button · 119
Go Key · 34, 84, 116, 117, 118, 174

H

Home Position · 55, 76, 81, 82, 84, 120, 173

I

Integrated Vacuum Table · 56, 129
Ip Address · 34, 211, 212, 213, 214, 216, 219
IP Address · 32, 33, 34, 35, 38, 42

J

Jarvis · 91, 93
Jigs · 56
JOB · 123
JOB Button · 123

K

Keyboard
Focus · 51, 56, 58, 124, 125, 126, 128, 144, 187
Go · 34, 117, 118, 174
Red Dot Pointer Indicator · 34, 123, 127, 132, 133, 134, 187
Reset · 58, 125
Stop · 58, 124, 174
Keyboard Commands · 117

L

Labels
Aperture Safety Label · 11
Certification/Identification Label · 9, 10, 181
Defeatably-interlocked Protective Housing Safety Label · 10
Electrical Safety Label · 11
Explanatory Label · 10
Fire Safety Label · 11
Non-interlocked Protective Housing Safety Labels · 10
Warning Label · 10
Laser Diode Pointer · 4, 8, 133
Laser Institute of America · 5
Laser Match · 173
Laser Tube · 172, 178
LCD Display Panel · 52
LCD Service Menu
Laser Match · 173
Left-Center · 85
Lpr · 223
LPR · 43

M

Maintenance
Cleaning Your Machine · 14
Manual Focus · 56, 58, 125

Index

Dashboard Print Driver Mapping · 100, 105

Materials

Acrylic · 168, 169, 170, 171

Anodized Aluminum · 168, 169, 170, 171

PVC · 13, 16

Stainless Steel · 168, 169, 170, 171

Wood · 111

N

Network · 21, 22, 37, 189, 191, 217

Gateway Address · 38

Ip Address · 34, 211, 212, 213, 214, 216, 219

IP Address · 32, 33, 34, 35, 38, 42

Queue Name · 223

Subnet Mask · 38, 214

Network Connections

Crossover Cable · 23

Network Port · 22

Non-interlocked Protective Housing Safety Labels · 10

O

Optics · 175

Options

Air Assist · 129, 187

Auto Focus · 187

Rotary · 129, 130, 135, 137, 139, 144, 155, 156, 173

OSHA · 4

P

P9ower · 162

Photograph Mode

Floyd Steinberg · 91

Jarvis · 91, 93

Stucki · 91, 92, 93

Photos · 67, 69, 92, 93

Pointer · 4, 8, 34, 81, 84, 123, 127, 129, 132, 133, 134, 187, 214

Power · 15, 18, 51, 63, 67, 69, 72, 88, 89, 94, 98, 100, 103, 105, 107, 109, 121, 126, 128, 159, 160, 162, 182, 184, 187

Power Button · 121

Print Driver · vii, 23, 32, 39, 51, 54, 56, 63, 65, 114, 116, 220

Advanced Tab · 108

Dashboard · 23, 24, 32, 63, 64, 77, 84, 91, 99, 103, 104, 107, 108, 113, 188, 196, 207, 208, 211, 220, 228, 230

General Tab · 66

Legend Engraver · 23, 29

Piece Size · 56, 63, 74, 184

Print Quality · 63

Raster Settings · 88

Resolution · 71, 72, 128, 187

Vector Settings · 94

Windows 95/98 · 32

Windows XP/2000 · 187

Protocol · 37, 43, 218, 219, 223

PVC · 13, 16

R

Raster Engraving · 52, 75, 91

Reboot · 198

Red Dot Pointer · 4, 8, 81, 84, 127, 129, 132, 133, 134, 187

Reset · 81

RESET · 119, 123

Reset Button · 119

Reset Key · 58, 84, 125, 174

Resolution · 67, 69, 71, 72, 128, 187

Resolution Settings · 63, 71, 72, 73, 92, 93

Rgb Color · 99

RGB Color · 187

Rotary · 129, 130, 135, 137, 139, 144, 155, 156, 173

S

Safety · 3, 4, 5, 6, 7, 8, 10, 11, 133, 150, 187

ANSI · 4, 5

DO NOT · 4, 5, 7, 132, 133, 199

Dos · 13

Electrical · 3, 5, 6, 11

Federal Performance Standards for Light-Emitting Products · 3

Fire · 3, 7, 11

Halon® fire extinguisher · 7

NEVER · 13

OSHA · 4

Scanned Images · 52, 67, 69

Scanner · 190

Service · vii

SET HOME button · 122

Software · 189, 193, 203

Coreldraw · 81, 188, 191

Specifications · vii, 179, 187

Speed · 51, 63, 67, 69, 72, 88, 90, 94, 97, 98, 100, 103, 105, 107, 109, 120, 126, 128, 159, 162, 182, 187, 189

Speed Button · 120

Stainless Steel · 168, 169, 170, 171

Stamp · 173

Stamp Match · 173

Standard Features

Air Assist · 129, 187

Auto Focus · 187

Auto Focus Adjustment · 126

Integrated Vacuum Table · 56, 129

Task Plate · 131

Stop Button · 119

Index

Stop Key · 58, 124, 174
Stucki · 91, 92, 93
Subnet Mask · 38, 214

T

Table Size · 56, 74
Task Plate · 131
Tcp/Ip Port · 222
TCP/IP Port · 41
Technical Support
 Direct Line · i, 181
 Online · i
Top-Center · 85

U

Upgrade Firmware · 113
Usb · 23, 24, 207, 208, 211
USB · ix, 15, 21, 22, 26, 32, 187
USB Port · 21, 22

V

Vector Cutting · 54, 120, 121
Vinyl · 13
Vista · 23, 188, 191, 207, 211, 216, 218, 219, 230

W

Warning Label · 10
Warnings
 DO NOT · 199
Warranty · vii, 13, 19, 201
Windows
 Vista · 23, 188, 191, 207, 211, 216, 218, 219, 230
Windows 2000 · 4, 5, 21, 23, 187, 188, 191, 228
Windows XP · 21, 23, 187, 188, 228
Wood · 111

X

X/Y OFF Button · 122