Epilog
Denver Colorado, USA

400 Corporate Circle - Suite M
Golden, CO 80401
Call (303) 277-1188
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Driver Installation:

Attached are instructions for loading the new print drivers. Although the instructions for loading the drivers are included elsewhere in this manual, we thought that with the new releases of Windows and CorelDRAW that it would make your life easier if you had some quick and easy guidelines to get you started. Please follow these simple instructions for a trouble free installation. If you have any questions, please feel free to call us.

If you are using Windows 3.1 or 3.1.1

1) Remove all old Summit drivers either from Control Panel or from File Manager. If no old drivers exist skip to step 4.
2) Exit Windows
3) Restart Windows
4) Install the Epilog Summit Driver from the Control Panel. Do not go into Setup at this time.
5) Exit Windows
6) Restart Windows. You can now go into Setup for the Summit Driver.
7) Install the Epilog Stamp Driver from the Control Panel. Do not go into Setup at this time.
8) Exit Windows.
9) Restart Windows. You can now go into Setup for the Stamp Driver.

If you are using Windows 95

1) From the Start Button go to Settings then to Printers and double click on Add Printer. Follow the normal course of events for adding a printer. In Windows 95 you can add either the Summit driver or the Stamp driver or both in the same session without exiting Windows.

If you follow these simple instructions you will not have any problems installing the drivers and you will be able to switch back and forth between the two new drivers at will.

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Owner's Manual for EPILOG Summit Model 2000/25A Laser Engraver

Revision D - March 20, 1996

Table Of Contents

SECTION ONE

UNPACKING YOUR MACHINE

Unpacking

To unpack your machine, cut the black straps on the outside of the container. Lift the box clear. The engraver is bolted down to the pallet. Remove the four hold down bolts inside the base on the 2 X 2 cleats, then remove the cleats. Remove the accessories kit and lift the machine off the pallet. It weighs about 150 pounds. There is a package of leveling screws in the accessories kit (or casters if you ordered them), which should be installed now in each of the four corners of the machine. Have a friend help tip the machine back and install the two front feet (casters), then repeat this procedure for the back feet (casters). Put a block under the raised edge of the machine while you are installing the casters so that the machine does not accidentally come down on your hands.

ACCESSORY KIT

Your Accessory Kit Should Have:

1 Power Cord

1 Owner's Manual

1 Printer Cable

1 Focus Gauges

1 Floppy Disk

1 Sample Pack of Engraving Materials

1 Acetone(Used for cleaning lenses & mirrors)

Sold and Shipped separately:

1 Exhaust Fan

SECTION TWO

SITE REQUIREMENTS

ELECTRICAL

The Epilog Summit requires a single 115 Volt, 15 Amp(optional 240 Volt, 15 Amp) outlet. A dedicated circuit is desirable but is not required. We often plug the engraver, computer and scanner into a six outlet power strip that is then plugged into the wall outlet. You should always insure that the six outlet strip you are using incorporates a surge protector in its circuitry to protect your equipment.

SMOKE VENTILATION

The engraving process produces smoke and particulates that must be removed. There is a separate exhaust blower sold as an option to exhaust the smoke and particles to the outside. This connects to a port on the rear of the machine, using standard four inch ducts. The exhaust hose must vent to the outside of your building, usually through an existing vent through the roof or wall. More information is provided in the Installation & Connections section of this manual.

SECTION THREE

GETTING STARTED

INTRODUCTION

Your EPILOG SUMMIT laser engraver has been designed to emulate a laser printer. This design allows you to work with many standard desktop publishing systems, and lets you "Print" directly to the engraver as if you were printing to a paper printer. The engraver works in the Windows environment of IBM compatible computers. All of the software and all of the computer hardware required to operate the engraver are commercially available at your local computer store and are discussed in detail below. There are no conversion boards or proprietary equipment required to operate the engraver.

RECOMMEND COMPUTER

Pentium Microprocessor (50Mhz minimum)
16 MB RAM
One 3.5 inch 1.44MB floppy
800 MB Hard Drive(minimum)
1024 x 768 Super VGA Color Monitor
Quad Speed CD ROM Drive
Mouse

The above computer configuration is a standard setup for a computer that can easily be purchased as a pre-packaged system at your local computer store or through the better mail order computer suppliers. The Summit laser engraver requires a computer with Microsoft Windows version 3.1, version 3.11 or Windows 95.

There are a couple of things that we have found to be important when buying or upgrading your computer system.

First, the faster your computer is, the faster the process of setting up your artwork will be. Please buy the best system that your budget will allow. Generally, the best value is to buy the system that is one performance level down from the best available. For example, as of today a 133 Mhz Pentium is the fastest general purpose system available and commands a premium price. All the major suppliers offer 100 Mhz systems that offer most of the performance of the top system at more reasonable prices.

Secondly, hard disk drive capacity is one of those things you can never have too much of. Depending on how you manage your computer files, you will need at least 500 MB of disk space, and it is common for users to have 1500 MB or more of disk space.

File sizes have grown to the point where it isn't cost effective to backup designs on floppy disks. If your budget will allow it consider the purchase of a tape backup. A tape backup will allow you to save your work directories in a safe place so they can be restored in the unfortunate event of a computer failure. A disk problem can cause you to lose everything you have on the disk.

Thirdly, a color monitor is indispensable when doing graphics on the computer. Most systems come with a 14 inch monitor. You will find that a high resolution 17 inch color monitor is easier on your eyes when sitting in front of the computer all day.

SCANNER

We recommend a flat bed scanner with a minimum resolution of 300 dots per inch(DPI). Hand scanners usually do not provide adequate scanning capabilities for use with the laser engraver. We currently use a Hewlett-Packard scanner, which is a true 400 DPI scanner with software enhanced resolution of 1200 DPI. There are of course many other scanners on the market that are suitable for this application. Also, a color scanner is not necessary unless you are going to use it for other applications such as sublimation.

SOFTWARE

MS-DOS - Current Version

WINDOWS - Current Version

CorelDRAW! - Version 3.0, Version 5.0 or Version 6.0 (4.0 is not supported) Version 6.0 can be used only with Windows 95. The early releases of Version 6.0(prior to build number 169) do not support vector cutting. Contact Corel Corp. to obtain a recent release of Version 6.0.

NOTE: The first release of a new version of CorelDRAW typically is not fully featured. The full complement of output options is normally not available for three or four months.

Normally when you buy a computer system MS-DOS and Windows will already be installed on the hard drive ready to run. You will need only to purchase CorelDRAW!. The current version of CorelDRAW is 6.0. The earlier versions are still available at a substantial discount. For basic engraving Corel 3.0 does a good job. For Rubber Stamps we recommend Corel 5.0. Other good graphics packages are available, and most of the popular programs have been tested and found to be compatible. Epilog cannot test every available package however, and compatibility cannot be assured. We have found CorelDRAW! to be the most productive and easiest to learn.

SECTION FOUR

HARDWARE INSTALLATION & CONNECTIONS

The SUMMIT laser engraver is shipped fully assembled and ready to operate. There are three connections that you need to make before you can begin engraving.

1) POWER:

The laser and all the internal electronics operate on a combined power system, which only requires a single power cord. Plug the power cord into the engraver, but do not turn the engraver on until you have installed the printer cord and vent hose.

Your engraver has been factory wired for 115 or 220 volt ac service. All U.S. shipments will be factory wired for 115 volt service. All shipments outside of the U.S. will be custom wired for the standard operating voltage of the destination country. Do not attempt to operate the machine on the wrong voltage! If in doubt as to whether your machine is factory wired for 110 or 220 Volt operation check the label on the back of the engraver.

2) PRINTER CABLE

Your Epilog engraver connects to your computer just like a laser printer. Connect the parallel printer cable (shipped with your engraver) first to the engraver and then to the parallel port at the back of your computer. **ALWAYS** turn your computer and engraver off before making any connections. If you wish to attach a Laserjet compatible printer and the engraver to the same computer (good for proofing designs), Epilog recommends having your computer dealer install a second printer port (LPT2). The selection of printer or engraver is done with your mouse by clicking on 'Control Panel' and selecting the printer or engraver port. Do not use a mechanical switch box between your computer and your engraver. Electrical surges can destroy the electronics in your computer and in your engraver. Electronic switch boxes are acceptable if you need to use multiple printers from a single printer port. Do not repeatedly unplug and plug the printer cable from your engraver. This can also cause damage to the electronics in your computer and your engraver.

3) EXHAUST VENT

Your Epilog engraver requires a ventilator to pull smoke and particulates out of the engraving cabinet. Do not operate your engraver without adequate exhaust ventilation! The ventilator outlet, which is located on the rear of the machine, must be vented to the center ***INTAKE*** of the exhaust blower and the outlet of the exhaust blower must go to the vent leading out of your building. These vents are intended to accept standard four inch duct. The flexible hose should connect to a rigid vent that goes through either an exterior wall or the roof. The vent hose should be routed away from areas where it would be likely to be damaged or restricted by furniture or other equipment. Epilog also discourages trying to "patch in" to a vent that is in use by some other appliance. Differences in exhaust pressure may produce unexpected and unpleasant results, such as failure to properly vent the contaminants to the outside.

The vent should be free of obstructions. When engraving on wood the smoke should curve sharply away from the focus lens. If the smoke rises up to the lens without being pulled away the vent is too restrictive. You will need to reduce back pressure by shortening or straightening the vent tubes.

WARNING!!!!

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, composition board 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.

SECTION FIVE

SOFTWARE INSTALLATION

A) INSTALLING THE EPILOG SUMMIT PRINT DRIVER
B) ACCESSING THE SUMMIT PRINT DRIVER
C) USING THE EPILOG SUMMIT PRINT DRIVER

A) INSTALLING THE EPILOG SUMMIT PRINT DRIVER

The Epilog Summit comes with a custom print driver that allows you to engrave directly from CorelDRAW. Included in the accessories kit is a 3.5 inch diskette labeled EPILOG SUMMIT PRINT DRIVER. With the computer turned on and Windows open, insert the diskette into your 3.5 inch disk drive to install this custom print driver.

FOR WINDOWS 3.1 or 3.11

Starting from Program Manager, perform the following steps to install the Epilog Summit Print Driver.

1) Double click on the Control Panel icon which is usually found in the MAIN window.

2) Double click on the Printers icon.

3) From the Printers window single click on the "ADD" button, then highlight the first line under List Of Printers, "Install Unlisted or Updated Printer".

4) Single click on the "Install" button.

5) From the Install Printer window type in the correct drive designator - probably B:\ for the 3.5" drive - then click Okay.

6) From the Add Unlisted or Updated Printer window you should see EPILOG SUMMIT highlighted under List of Printers. Click Okay.

7) You should now be back at the Printers window with EPILOG SUMMIT on LPT1 highlighted under List of Printers. Depending on the configuration of your computer, you may find that the EPILOG SUMMIT driver is installed on LPT2 or LPT3.

8) Set the EPILOG SUMMIT as the Default Printer.

9) Click on Setup to view the different options. This is where all of the computer controls for your laser engraver are located. Once you are familiar with the choices in the Setup window click on Okay to return to the Printers window. Click on Close to exit the Printers window and save your choices.

Your custom driver is now installed and ready to use. When you are ready to engrave from CorelDRAW, just "Print" to the EPILOG SUMMIT printer.

* NOTE

We have found that the engraver works better when the print priority is set to HIGH in the Print Manager. Go into the Print Manager icon and select Options (then Background Printing in Windows 3.1.1) and select High Priority. If The SUMMIT is your only printer, you will also get better performance if you disable print manager. There is a check box for this in the "PRINTERS" menu.

* NOTE

There is the possibility that during the installation of the EPILOG SUMMIT print driver your computer gives you the error message "Cannot Find Unidrv.dll". If this happens you will need to load this file from the Summit diskette. Just copy this file to your Windows System Sub-directory on your hard drive. On many computers this file is normally installed when Windows is installed, or it can also be found on your Windows diskettes.

FOR WINDOWS 95

1) Click on the "START" button at the bottom left of your screen.

2) Run the mouse up until "SETTINGS" is selected. You do not have to click the mouse. There should be a menu that pops up with three or four choices.

3) Click on "PRINTERS".

4) Double Click on the "ADD PRINTER" icon.

5) Windows 95 may ask a few questions about networks if your computer is on a network. Click on "NEXT" until you see a list of printers. Click on "HAVE DISK", and follow the instructions. You will be asked some more questions. All of the defaults for the questions are correct except the last, which concerns printing of a test page. Please be sure to click "NO".

B) ACCESSING THE SUMMIT PRINT DRIVER

WINDOWS 3.1 or 3.11

1) CorelDRAW 3.0

The Epilog Summit Print Driver is accessed from the Control Panel in the Program Manager. From Control Panel, double click on the Printers icon then select the Epilog Summit on LPT1 as your default printer. Now click on Setup and the Epilog Summit Print Driver window will pop up. At this point you can make all necessary changes and then click on Okay. You will now need to return to CorelDRAW to initiate the print sequence.

CorelDRAW 5.0

CorelDRAW 5.0 allows you to access the Epilog Summit Print Driver from either the Control Panel or directly from the Print command in CorelDRAW. Select the Epilog Summit as your printer, then click on Setup to access the Epilog Summit Print Driver. At this point you can make all necessary changes and then click on Okay. Click on Okay in the CorelDRAW print window and the printing process will begin.

WINDOWS 95

CORELDRAW 3.0

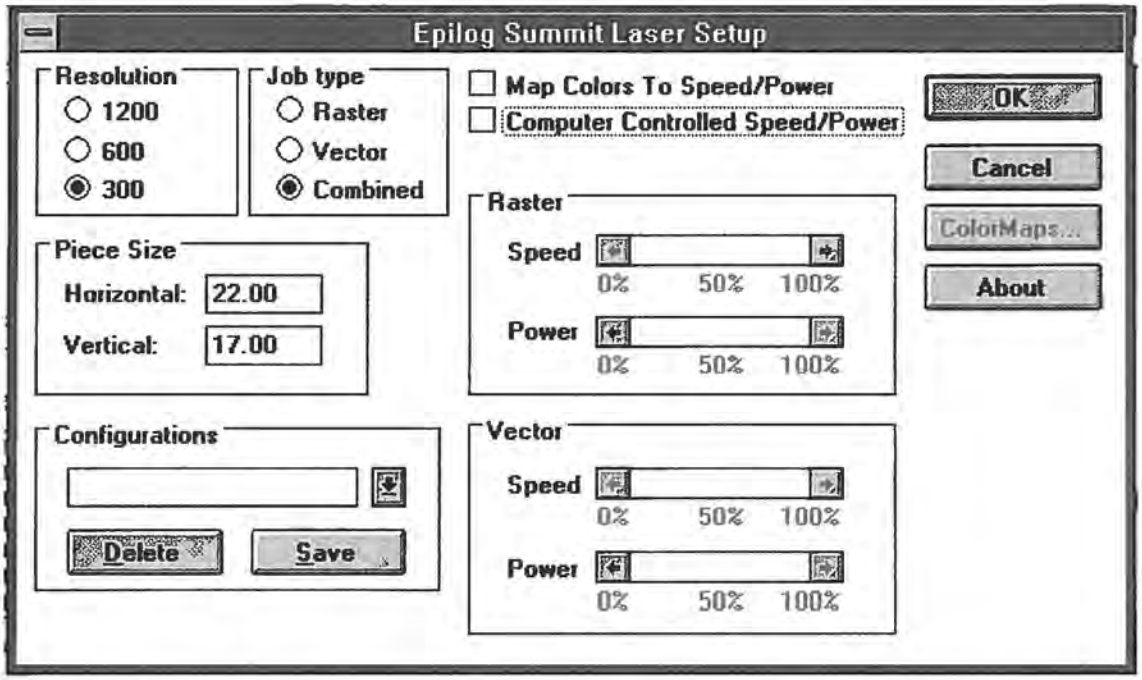
Click on "START". Run the mouse up to "SETTINGS", and wait for the pop out menu. Click on "PRINTERS". Click on the SUMMIT printer icon so it is highlighted. Go up to "FILE" in the upper left of the printers box, and click. A menu will drop down. Click on "SET AS DEFAULT". This will make the Epilog driver active. Go back up to the "FILE" in the corner and click again. Check to make sure that "SET AS DEFAULT" has a check next to it, and then click on "PROPERTIES". Across the top of the menu that pops up, click on "DETAILS". On the next menu, towards the bottom left click on "SETUP". This will put up the Epilog panel.

CORELDRAW 5.0 or 6.0

These versions allow you to access the printer driver directly. All you need to do is select the Epilog Summit as your active printer, and then click on setup.

C) USING THE EPILOG SUMMIT PRINT DRIVER

The Epilog Summit print driver allows you to control the various laser functions from your computer. The Print Driver Setup window is shown below.



1) RESOLUTION

Resolution determines how many cuts or lines per inch the machine will engrave. You have the choice of 300, 600 or 1200. More lines per inch produce better quality at the expense of engraving time.

300 DPI is used when you are looking for good quality engraving that takes as little time as possible.

600 DPI is used when you are looking for very fine detail or exceptional quality from your engraving. This setting can take up to twice as long as 300. You will normally find that you can run the machine faster at 600 to produce a similar depth compared to 300, but there will still be a time penalty.

1200 DPI is usually saved for special situations. The Summit does not have a lens that can focus the beam to a spot small enough to support "TRUE" 1200 DPI engraving. This resolution is normally used for engraving on extremely hard surfaces, where the close line spacing allows for depth that can't be achieved simply by slowing the machine down at a lower resolution.

NOTE: The engraver has a standard and a high resolution lens. Please remember to use the right lens for the resolution you have selected. See section six "OPTICS" for how to select lenses.

2) JOB TYPE

Job type allows you to designate whether you want to engrave in Raster Mode, cut in Vector mode or Combine the two functions.

RASTER

Raster mode is normally used for engraving graphic images from CorelDRAW. These images can include scanned images, CorelDRAW clipart, text, photos, imported graphics from other software packages, etc. Raster engraving is engraving that starts from the upper left hand corner and scans back and forth, left to right, then top to bottom, one line at a time until the image is completed. The Epilog Summit laser engraver only scans back and forth where there is an image to be engraved. It does not scan the entire area of the work piece size and skips horizontal white space entirely.

Only the Raster Speed and Raster Power bars will be enabled when you have selected Raster under Job Type. Set the Speed

and Power bars to the appropriate settings for the material that you are engraving. Guidelines for recommended speeds and powers are given in section six of this manual.

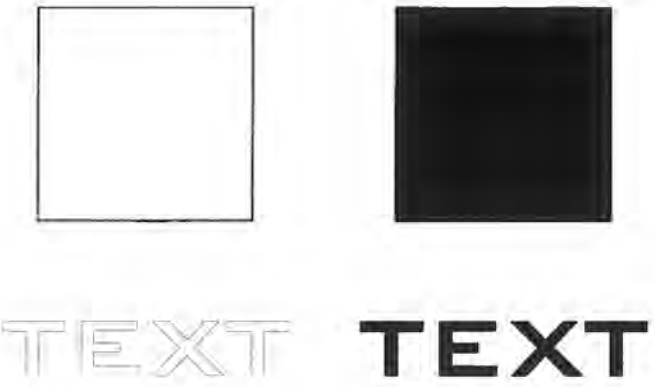
VECTOR

Vector mode is normally used to cut, or profile an outline, or make a thin line drawing. You can use vector mode to cut through 1/8 inch to 1/4 inch acrylic or wood, various thicknesses of mat board, plastic, cork, paper, etc.

Only the Vector Speed and Vector Power bars will be enabled when you have selected Vector under Job Type. Set the Speed and Power bars to the appropriate settings for the material that you are cutting.

When cutting in vector mode, outlines or line widths of .007 inches or below are interpreted as vector lines. It is important that any object that you want to vector, such as a box, does not have a fill. The Summit laser engraver will interpret the fill as a series of vector lines and will try to vector the fill instead of only engraving the

outline. The examples below show correct and incorrect images for vector cutting.



CORRECT INCORRECT

IMPORTANT! If you are using CorelDRAW version 5.0 you will not be able to vector text outlines until you have first converted the text objects to curves. The Convert To Curves command can be found under the Arrange menu bar.

NOTE: Vector mode is not available when using the Rotary Glass Attachment.

NOTE: TIFF(scanned) images cannot be interpreted as vectors without conversion into a vector(HPGL) format.

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 the laser will engrave the Raster portion of the job first then perform the Vector portion second after all of the Raster engraving is finished.

Both the Raster Speed/Raster Power and Vector Speed/Vector Power bars will be enabled when you have selected Combined under Job Type. Set the Speed and Power bars for both Raster and Vector to the appropriate settings for the material that you are engraving.

IMPORTANT! There are a couple of important aspects of Combined mode that you need to be aware of!

If you are using a CorelDRAW clipart file, or any other graphic image that has an outline of .007 inches or less, that outline will be interpreted as a vector line, not as part of the raster image. This has serious consequences because many of the more complex objects in CorelDRAW have hidden lines of .007 inches or below that will be vector cut when you are in Combined mode. ***Experiment first!***

If you are using CorelDRAW version 3.0 you will not be able to combine scanned images with vector cutting mode. CorelDRAW 3.0 prevents this combination of events and it cannot be changed. CorelDRAW versions 5.0 and 6.0 do not have this restriction.

3) PIECE SIZE

The piece size must match the layout size of your drawing package. If your drawing package (CorelDRAW) is set to 5x7, then the piece size must also be set to 5x7. If the settings are different, the engraving will not be in the correct position. For doing matrix (multiple plates) engraving, make the piece size and the drawing large enough to accommodate all the plates in the matrix. Again, please be sure that they are set to the same size or the engraving won't be in the correct position.

4) CONFIGURATIONS

The Configurations box allows you to save all of the different settings in the Epilog Summit Laser Setup window as a custom setup. First, select the desired settings for a particular job in the Epilog Summit Laser Setup window. Next, to save these settings and identify them with a name, click the cursor in the Configurations box and type in your custom name of up to 18 characters long(spaces are allowed). When you click the SAVE button this custom setup will be saved. When you are in the Epilog Summit Laser Setup window you can click on the Configurations down arrow to retrieve your different custom job setups.

For ease of use you can assign either generic job names such as Walnut, Acrylic, Red Plastic, etc. or you can assign

specific job titles for frequent jobs that you do over and over again. If you do assign specific job titles for frequent jobs it is a good idea to assign the .CDR file name that it is associated with.

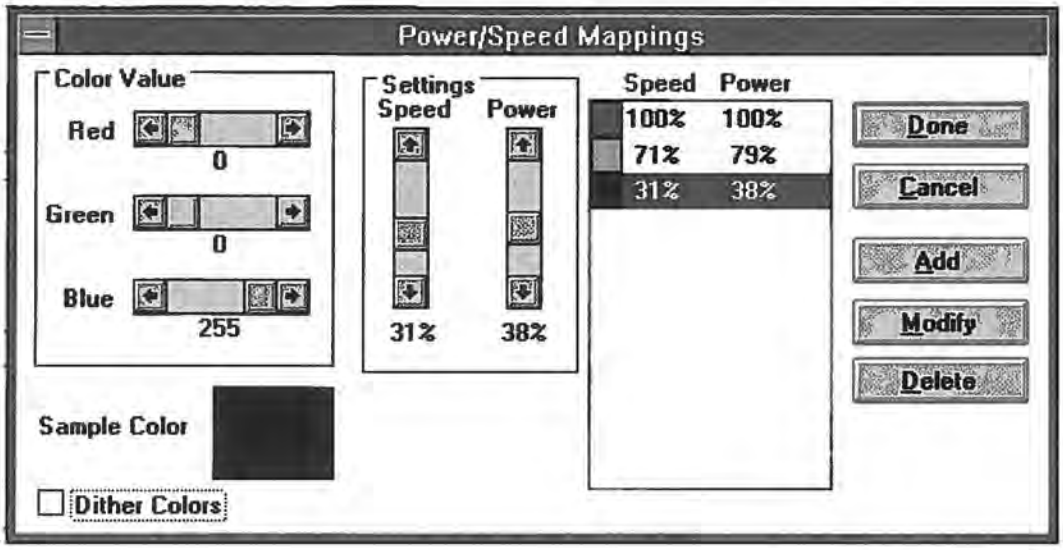
5) COMPUTER CONTROLLED SPEED/POWER

When this box has an X in it the Speed and Power are controlled from the computer. The engraver will disregard any attempt to alter speed or power from the control panel on the engraver. The settings for raster and vector are independent, and are made using the four slide controls. If this box is empty, the engraver will use the settings on the control panel of the engraver, and they can be altered at any time.

6) MAP COLORS TO SPEED/POWER

The Summit also has the capability to assign different power and speed settings to objects in a design. This is useful in a variety of ways. You can program the machine to engrave an area deeper than surrounding areas for emphasis. You can also program the machine to columnize your engraving jobs to cut down on engraving time. The feature also allows you to control the sequence or order of engraving. Make sure that the MAP COLORS TO SPEED/POWER box has an X in it,

and then click on the COLOR MAPS... button. You should see a screen like this:



1) COLOR VALUE

This is how you define a color. The description uses an RGB (Red Green Blue) value to define a color. Use the slide bars to produce the color you want. A value of 255 Blue with 0 Green and 0 Red is shown. This is plain old blue. Each combination of the three color values is unique and can be used to set a power and speed value. The colors will engrave in the sequence shown in the box on the right.

2) SETTINGS

Here you set the speed and power values for the color you have created. Adjust the sliders to the values that you want and click on the ADD button. You should see the color you entered with the speed and power show up in the list of

colors on the right. Please be careful not to add the same color to the list twice. Each setting must have a different color. If you want to change the speed and power for a color that is already in the list, just click on the entry you want to change. Now move the speed and power controls to the new values and click on the MODIFY button. If you have made a mistake, click on the entry you want to remove and then click on the DELETE button.

3) DITHER COLORS

If you have a X in this box, the colors will be given a texture. If the box is empty, the colors will engrave out as a smooth solid.

When you are finished, click on the DONE button and you will go back to the previous screen. If you don't want the changes you have made to stick, click on the CANCEL button and everything you have done will be forgotten.

You will need to be sure that your drawing program uses an RGB model for colors. CorelDRAW and most other drawing programs have several color methods, and you will need to make sure you always use RGB. With Corel, when you assign a color using the fill tool, you will see a field with CMYK and a scroll button. Click on the button and select RGB. Then you will see a Red, Green and Blue control buttons that match those in the Print driver. If you fill an object with

a color that is defined in the color maps, the speed and power for that color will be used.

Note Corel 3.0 uses the RGB color scheme, but uses a modified numbering system that only goes from 0 to 100 instead of 0 to 255. Use the six primary colors (red, green, blue, cyan, magenta and yellow) for your color mapping requirements when using Corel 3.0.

ENGRAVING MACHINE OPERATION

Operation

Ensure that you have:

1) Connected the vent outlet to a duct that goes outside of your building.

2) Plugged your engraver and exhaust fan into an AC outlet.

3) Connected your engraver to your computer printer port.

4) Configured your computer with CorelDRAW or other graphics software.

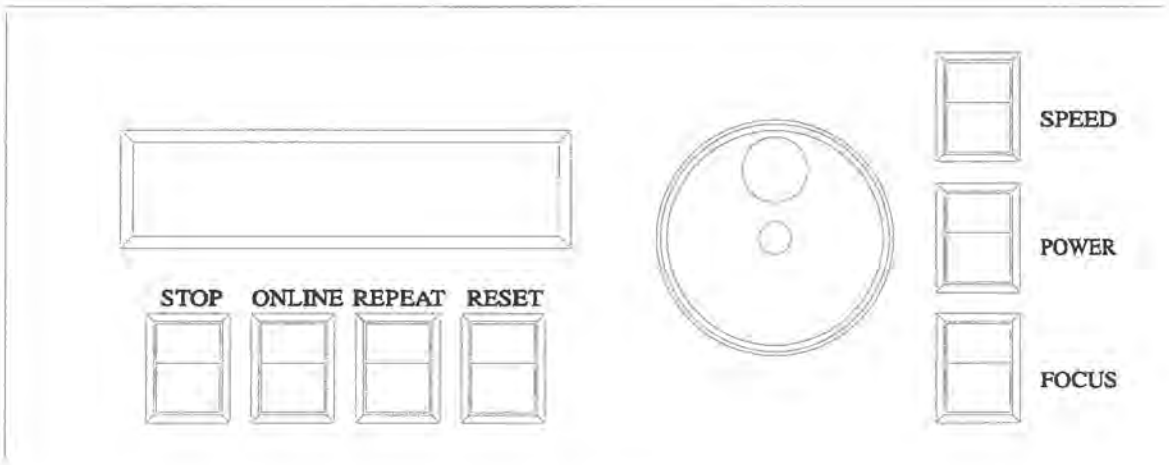
5) Installed the EPILOG SUMMIT PRINT DRIVER.

Now it's finally time to turn your engraver on. Flip the power switch to the ON (1) position. The machine performs some internal testing for about 45 seconds. You should then see the carriage slowly moving up then to the left corner to find home position. Once home position has been determined the carriage will quickly move down and to the right, and the display will briefly show the Summit Software version then become active. The display will read:

OFFLINE

SPD=50% PWR=100%

A) KEYBOARD COMMANDS



STOP

This key will stop the carriage, and turn off the laser. When you press the stop key the carriage will not automatically return to home position. Once the engraver has stopped, you can open the door to examine your engraving. By closing the door and pressing the ONLINE button, the engraver will start engraving at the point where it stopped. As long as you did not disturb the workpiece, the engraver will continue engraving without loss of registration.

CAUTION: If you have stopped the engraver and opened the door to examine your work, it is important to close the door before you depress the Online button to continue engraving. If you do not close the door first, the carriage will move, but the laser will not fire.

ONLINE

This key enables the engraver to start engraving. Pressing the key will toggle the display between ONLINE and OFFLINE. When OFFLINE the machine is in the disabled state and will not accept a design from the computer. When ONLINE, the machine should be loaded with the item to be engraved and the door should be closed. When the engraver is Online and a design is received from the computer the engraver will automatically begin engraving. **Do not send a new design while the machine is engraving; if you do, your computer will display an error message and you may have other difficulties.**

REPEAT

This key instructs the engraver to repeat the last design. If the repeat key is pressed, the display will display REPEAT and the machine will immediately begin engraving the previous design. The repeat key will display an error if no design has been sent by the computer. The repeat function is cleared at the end of each design, and is reactivated by pressing the key.

RESET

This key is used to terminate a job in process or to clear an error. To avoid accidental resets, the machine must first be Stopped or taken Offline. If the machine is engraving the Reset key has no effect. Reset does not erase a design from memory. Resetting the engraver will send the carriage back to home position and allow you to repeat the same design or begin a new one.

POWER

This key enables you to vary the power output of the laser. The power level is continuously displayed in one percent increments from 0% to 100% on the Liquid Crystal Display. When you press the POWER key the indicator PWR on the display will blink. This indicates the power level can be adjusted. To vary the power output press the POWER key and then dial in the desired power setting using the rotary control knob. You can vary the power output at any time, whether the machine is stopped or engraving. To avoid an accidental change of power during engraving, the POWER key is disabled and the display will stop blinking 10 seconds after the last adjustment. To make additional adjustments, depress the POWER key again and rotate the adjustment knob. The power cannot be adjusted at the engraver if you are in "Computer Controlled Speed/Power" mode in the computer.

SPEED

This key enables you to vary the engraving speed of the laser. Just like the POWER function, SPEED is continuously displayed, can be adjusted at any time and becomes disabled and stops blinking after 10 seconds. The speed cannot be adjusted at the engraver if you are in "Computer Controlled Speed/Power" mode in the computer.

FOCUS

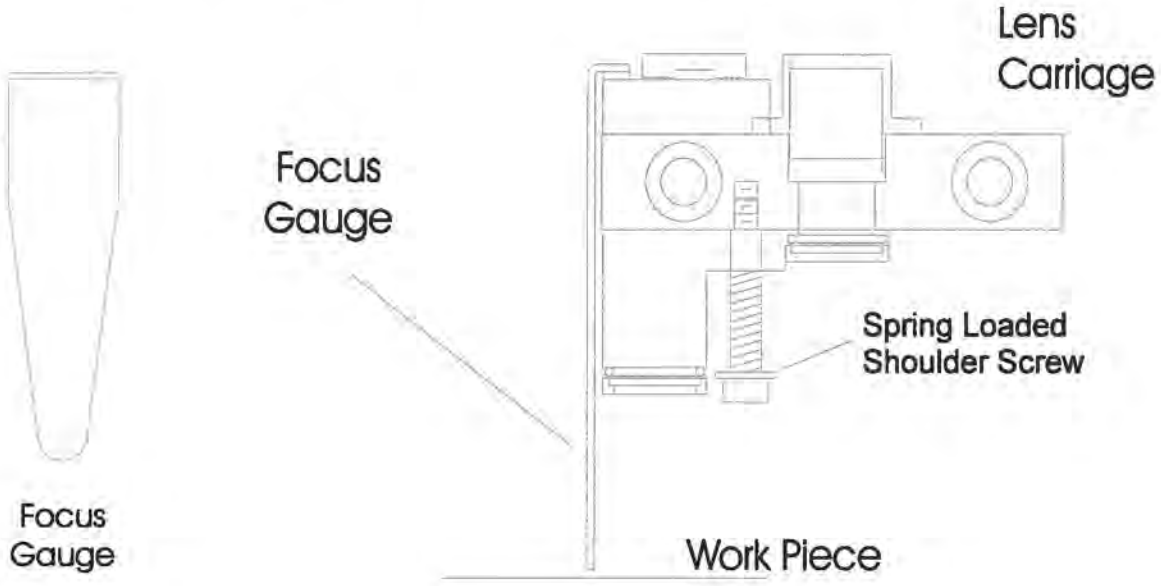
Pressing the Focus key and turning the control knob raises or lowers the engraving table to move your workpiece closer to or further from the fixed focus lens. A metal focus gauge is provided to determine the correct distance from the workpiece to the focus lens.

B) OPTICS

The engraving field of your machine is 17 by 22 inches. The table allows you to engrave work up to 7.5" thick. The home position of the engraving field is at the upper left corner of the table. Place your workpiece in the upper left corner, pressed firmly against the metal stops along the top and left edges. You may need to lower the table first to get your workpiece into the corner. The Summit engraver will engrave from edge to edge of your workpiece but it is always a good idea to keep a 1/4 inch margin between your engraving area and the edges of your material.

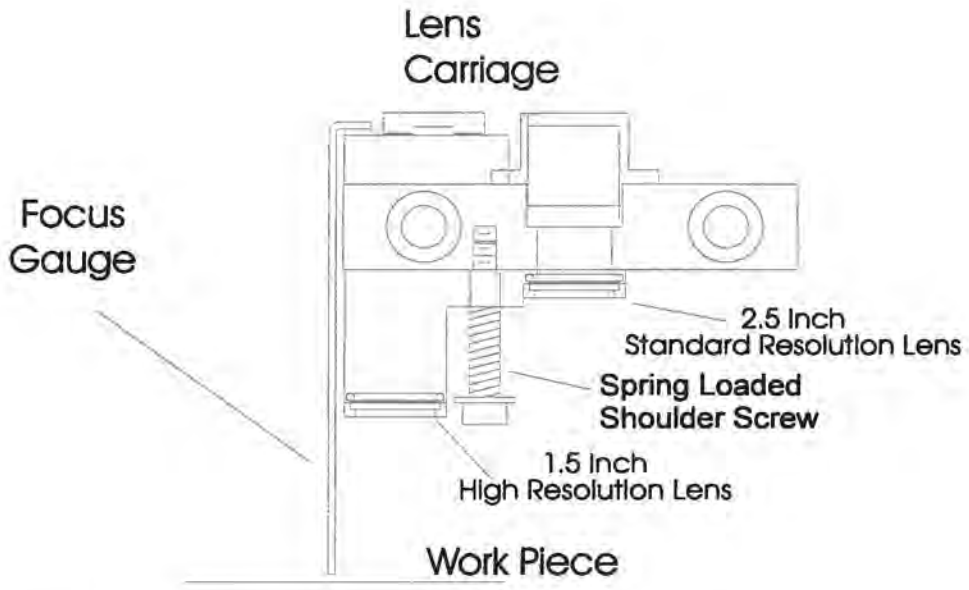
FOCUSING: Lower the table so that the distance from the top of your workpiece to the bottom of the focus lens is about three inches. Attach the focus gauge on the magnetic strip on the front of the carriage. Press the FOCUS key and rotate the control knob to bring the workpiece up to the bottom of the focus gauge. As soon as your workpiece touches the gauge, you are in focus. Remove the gauge from the carriage and you are ready to close the door. Some material such as acrylic may actually produce a more pleasing effect if it is cut slightly out of focus. The results will typically be a little smoother and softer edge definition if the table is set a little lower than the standard two and a half inches. To engrave slightly out of

focus, lower the table one or two clicks from the standard focal point. For exceptionally sharp definition you will want to engrave most material at the proper focus distance.



RESOLUTION: Laser printers typically support a low, medium and high resolution. The engraver supports three resolution modes (300 DPI, 600 DPI and 1200 DPI).

The Epilog Summit has two lenses, a standard 2.5 inch focus lens and a high resolution 1.5 inch focus lens. Both lenses are mounted on the carriage , and are indicated on the diagram below.



The 1.5 inch high resolution lens creates a smaller spot size than the 2.5 inch standard resolution lens. The smaller spot size of the 1.5 inch lens has several characteristics that can be advantageous over the 2.5 inch standard lens. Since the spot size is smaller in the 1.5 inch lens you are packing the same amount of energy into a smaller spot creating a higher power density, thus burning deeper for a given length of time. Also, since the spot is smaller you can achieve better detail, especially when engraving on coated metals.

Since there are two lenses with the Epilog Summit and three resolution settings, you have six engraving resolution modes. The diagram below illustrates the six choices. Try all six options to see the engraving differences.

RESOLUTION SET FROM CONTROL PANEL	LENS SELECTION: 300 DPI LENS	LENS SELECTION: 600 DPI LENS
300 DPI	True 300 DPI Engraving	Not Recommended
600 DPI	Enhanced 600 DPI Engraving	True 600 DPI Engraving
1200 DPI	Not Recommended	Enhanced 1200 DPI Engraving

CHANGING LENSES

The lens assembly is held in place by a spring loaded shoulder screw. There are two lenses in this assembly. The laser beam passes through the lens that is at the back of the lens assembly. This means that when the 1.5 inch lens is at the front of the lens assembly, you are actually engraving with the standard, or 2.5 inch lens and vise versa. Refer to the diagram on previous page for location of lens and screw.

The machine is shipped with the 300 DPI lens in the rear position. The 600 DPI lens is mounted in the longer metal block. This is because the 600 DPI lens has a shorter focal length and must be closer to the work piece when engraving. This also means focusing the 600 DPI lens is more critical than focusing the 300 DPI lens.

To change lenses, pull straight down on the longer(1.5 inch high res. lens) about an 1/8 inch and rotate 180 degrees. The lens will snap into place when it rotates to its nesting position.

C) ENGRAVING

We are now ready to engrave! Load a practice plaque and set the focus. Close the door and press the ONLINE key. The ONLINE status should be displayed. Turn on the exhaust fan. It is a good idea to have the exhaust fan on the same power strip as the engraver. This way you never forget to turn on the exhaust system. Now go into CorelDRAW and set the page size to the dimensions of the work you have loaded. Then enter your name in half inch text anywhere on the page. Once you have the image ready to engrave, Print to the Epilog Summit using the CorelDRAW print commands.

REMEMBER THE STEPS:

1) Insert the item to be engraved
2) Focus
3) Close the door
4) Set Resolution, Speed, Power etc. from the Epilog Summit Laser Setup window
5) Confirm the exhaust is on.
6) Press ONLINE and then "Print" from CorelDRAW

D) ENGRAVING SPEED GUIDELINES

Material hardness, the desired effect and personal taste will by nature require adjustments to the recommendations given below. Depth of cut varies with speed and power. More than one pass can produce exceptional depth (by using the repeat key). Generally, you will want to experiment on a practice piece any time you are not sure what settings to use. Don't be afraid to experiment over the whole range of settings. Many materials will take on a different look with different settings and you may find a setting that looks stunning on you custom material. Remember, the speed and power settings can be changed while engraving so that you can determine a perfect setting for all of your different materials.

MATERIAL	RESOLUTION	SPEED	POWER
Hard Woods	300	30-40	100
	600	50-60	100

Comments: Try adding sign makers vinyl to highlight areas of your work. It comes in a multitude of colors and can be purchased at any sign makers supply warehouse (listed in the yellow pages). Repeat the job 2,3 or 4 times for deep engraving.

MATERIAL	RESOLUTION	SPEED	POWER
Soft Woods	300	50-70	100
	600	60-80	100

Comments: In some soft woods the grain and pulp of the wood will differ in hardness to create dramatic effects in your engraving. The grain of the wood will stand up higher than the pulp in redwoods to create a very attractive effect.

Anodized	300	70-100	20-40
Aluminum	600	70-100	20-40

Comments: Black anodized aluminum is the best color to laser. When the laser hits it turns the black to white creating a high contrast. Some of the other colors have a more aggressive anodize and it is difficult to completely remove all traces of the anodize, but it creates a nice effect anyway. Experiment to find what looks good to you.

MATERIAL	RESOLUTION	SPEED	POWER
Painted	300	70-100	20-40
Metals	600	70-100	20-40

Comments: There are a wide variety of coated metals on the market today that are great for laser engraving. The best we have found are brass coated steels that have a polished brass coating that shines bright gold when lasered. These can be obtained from many of the large metal suppliers and were created especially for laser engraving. The ease of engraving and the speed which you can engrave this material at makes it one of the most popular materials available.

Acrylic	300	70-100	20-40
	600	70-100	20-40

Comments: Normally, when engraving on acrylic you are looking for the contrast caused by frosting the acrylic. This is accomplished with very little power and usually depth is not required. If you need depth in acrylic it is better to engrave the area with more than one pass at a lower power to avoid charring your workpiece than trying to engrave deeply in one pass. There are two different kinds of acrylic - cast & extruded - the extruded acrylic does not frost when lasered.

MATERIAL	RESOLUTION	SPEED	POWER
Plastics	300	70-100	30-50
	600	70-100	25-40

Comments: Plastics are both a blessing and a curse when it comes to laser engraving. The good news is that there is almost certainly a color combination to suit your needs. The bad news is that there are so many material formulations that it is impossible to know which ones laser well. We have found that most micro thin or foil covered plastics laser very well at either 300 or 600 DPI. It usually does not require a lot of energy to get through these plastics and you can engrave them at a high speed setting.

One technique that works well when engraving plastic is to use the 300 DPI lens in the machine and use 600 DPI resolution from the computer. The 300 DPI Lens produces a larger spot which spreads the laser energy out a little bit, but the 600 DPI resolution maintains very high engraving quality. You can also accomplish the same sort of effect by dropping the focus down one notch. This is called "soft focus" and works well on both plastics and acrylics.

The laminated plastics are a lot more difficult to laser and we do not recommend them for use with the laser. By the time you have applied enough power to penetrate the cap sheet you have melted the plastic.

Reverse engravable plastics are very easy to laser if they have a foil or micro-thin cap. Low power and high speed work well with these. Use a water based acrylic artist paint in a tube to color fill this material from the back.

MATERIAL	RESOLUTION	SPEED	POWER
Melamine &	300	50-70	80-100
Vinyl Plaques	600	70-80	80-100

Comments: Melamine and vinyl are some of the most versatile engraving materials on the market. They come in a wide variety of colors, styles and textures and are relatively inexpensive. They can be engraved at higher speeds than other wood products and are ideal for volume production. The vinyl plaques are easy to color fill with either water based acrylic magic markers or paint. Just fill the engraved areas and let dry for a couple of minutes then clean up with rubbing alcohol.

MATERIAL	RESOLUTION	SPEED	POWER
Glass	300	50-70	60-100
	600	50-70	60-100

Comments: Glass is a very popular laser engraving material. The laser surface etches the glass but does not provide a deep cut. We have found that expensive leaded crystal can crack or break when lasered, so be careful when lasering glass that you are not familiar with. The less expensive glass seems to work very well and colored wine bottles engrave beautifully.

MATERIAL	RESOLUTION	SPEED	POWER
Corian,	300	40-60	100
Avonite	600	50-70	100

Comments: When lasered this material does not provide any contrast but can be easily color filled with a variety of paint types. Some people will cover the material with masking tape and laser through the mask then spray or rub paint into the void. This is a very easy way to color fill clean-up is easy.

MATERIAL	RESOLUTION	SPEED	POWER
Mat board, Paper	300	70-100	40-100
Leather, Cork	600	70-100	40-100

Depending on material thickness these materials can be easily laser engraved without charring or setting on fire. Usually higher speeds and lower power are good settings. Be sure that you are careful with these materials if they are new to you. If you engrave them too slow they can flame up!

ENGRAVING TIME GUIDELINES: There is a considerable difference between typical and maximum engraving time for a given plaque size and speed. In the example below, the reasons for the difference are shown.

AWARD

JOHN SMITH

The design on the right will engrave in about one third of the time required for the design on left, even though the text and the number of characters are identical. The difference is the border. Engraving time depends on how much of the plaque's surface the laser must "scan". A border requires the laser to scan virtually the entire surface of the plaque. The design on the right has no border, and the laser only has to go over the lettering. Even the area between the top and bottom lines of text is skipped, greatly reducing the required engraving time. The

machine will be more efficient if your designs allow the laser to work with a logo and text, as opposed to having to work strictly in terms of the number of square inches on the item to be engraved (which is the case with a border).

SPECIAL EFFECTS: Fill patterns can be used to produce a textured surface. A solid black fill will produce the maximum depth. "Grey" fills will produce areas of reduced depth, which can be controlled by the relative dark or light level of the fill. Essentially, a non-solid fill has the effect of reducing the laser power level. Fills can be used to reduce the effective power level for very soft materials that burn too deeply even at maximum engraving speed. Fills look particularly good on glass.

SECTION SEVEN

ROTARY GLASS ATTACHMENT

HARDWARE INSTALLATION

To install the rotary glass attachment follow the steps below:

1) Lower the engraving table to its lowest point.
2) Turn off the power to the engraver.
3) Set the rotary attachment onto the engraving table so that the three pins in the bottom of the rotary attachment slide into the three corresponding holes in the table. Ensure the bottom of the attachment is flush to the engraving table at all three pin positions.
4) There is a motor on the rotary attachment with a plug on the end. Pull the carriage assembly to the front of the machine for easy access and plug this connector into the mating connector at the back left hand side of the engraver. There is a release tab on this connector that must be towards the front of the machine. This connector is oriented so that you cannot install it backwards unless you use undue force. Do not force it!
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.

ARTWORK SETUP FOR THE ROTARY

1) Using a 22 x 17 inch page in CorelDRAW, setup your artwork as you would like to see it after engraving. The only real restriction you have at this point is that the artwork from the top of the image to the bottom of the image should be the appropriate size for the area you are going to engrave.

2) Images to be engraved need to be adjusted to appear correct on the item being engraved. Rotate your image 90 degrees so that the top of your image is oriented towards the top of the glass. Usually the top of the glass will be at the left hand side of the attachment. Rotate the image 90 degrees the other direction if the top of the glass is at the right side of the rotary attachment. If you are scanning items to be engraved, it is normally easiest to rotate the artwork in the scanner before scanning.

NOTE! The rotary device only works in raster mode. The front control panel will display "Remove Rotary" if Vector mode is selected from the driver.

Rotate 90 Degrees

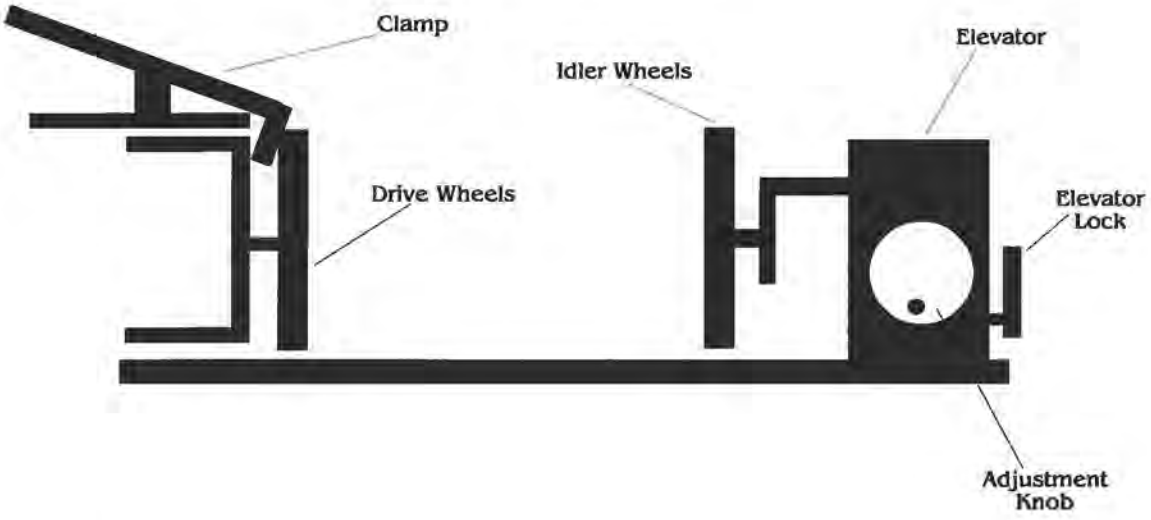
3) After rotating your artwork, position your artwork on the page so that the distance from the left edge of the CorelDRAW page to your image is the distance you want it to engrave from the top of the glass. ***NOTE** **There may be a slight displacement, left to right, between your artwork and where it engraves on the attachment. This displacement will be constant and you will need to compensate for it each time you engrave. Measure this displacement on a practice piece of glass and include it in your placement of your image. Normally this displacement will be less than .05 inches and for most purposes is insignificant and does not need to be accounted for.**

If the image is at the very top of the page in CorelDRAW, the glass won't rotate at all before it starts to engrave. If you move your image down an inch in Corel, the glass will rotate an inch before starting to engrave.

***NOTE** **The maximum diameter the roatary attachment can accommodate is 5 inches.**

ROTARY ENGRAVING

The rotary glass attachment may be used to engrave a variety of cylindrical objects. The following drawing identifies the important parts of the attachment.



1) Load your glass with the open end to the left side of the attachment. The clamp is designed to sit inside the glass and clamp the glass to the drive wheels. Insure the glass is all the way to the left against the plastic stop.

2) The elevator lock is in the unlock position when it is in the forward position. Unlock the lock and slide the elevator left or right until the glass is supported solidly by the idler wheels. The elevator can be raised or lowered with the adjustment knob to accommodate glasses that have different diameters at either end.

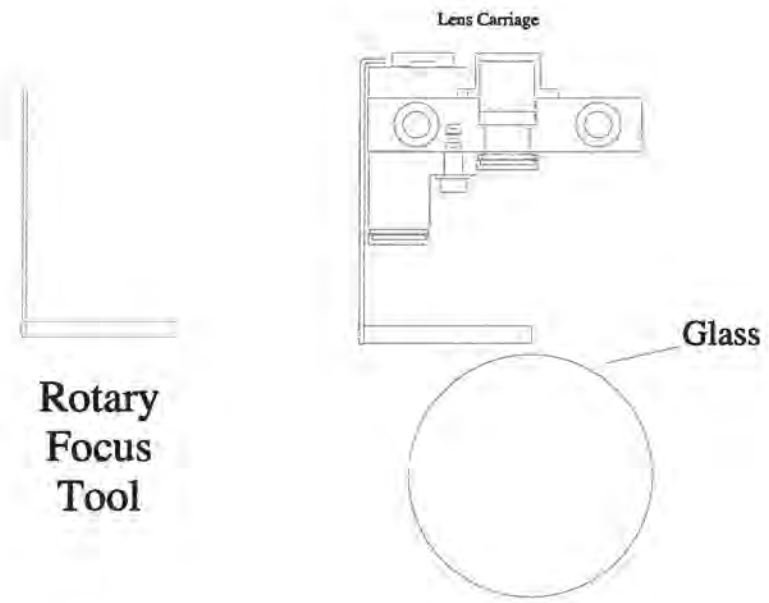
3) Lock the elevator lock.

4) If you are engraving a bottle it is best to put the bottom of the bottle at the left side of the attachment. Loosen the two thumbscrews that hold the clamp in place and slide the clamp to your right and set it down on the engraving table so that you don't forget where you put it. You will need it later for engraving glasses.

5) If you are engraving a mug with a handle the two drive wheels can be reduced in width by removing the two thumbscrews on the inside of each wheel.

FOCUS

1) When the rotary attachment is installed in the engraver you can move the lens carriage left and right by hand. Be careful not to touch the optics on the carriage assembly. Using the rotary focus tool(see drawing on following page) move the lens carriage directly above the highest spot on the glass you are engraving. Move the table up until the gauge touches the glass. If the glass has a significant taper you may want to focus at an intermediate point between the highest and lowest points being engraved. Remove the gauge.



2) Move the lens carriage back to the left to a point where the lens is approximately located above the drive wheels.

3) You are now ready to engrave! "Print" your image.

***NOTE** **Vector engraving is not available when using the rotary attachment.**

HARDWARE REMOVAL

1) Lower the table to its lowest point.

2) Turn off the power to the laser.

3) Pull the carriage to the front of the engraver.

4) Depress the release tab on the connector and unplug the connector.

5) Remove the rotary attachment.

ENGRAVING RUBBER STAMPS

The Epilog Summit laser engraver is equipped with special software that allows you to easily engrave rubber stamps.

NOTE: Epilog does NOT recommend CORELDRAW version 3.0 for stamps. CORELDRAW 3.0 will not print TIF images in Rubber Stamp mode.

The large volume of data involved in calculating shoulders requires a fast computer. A Pentium is strongly suggested.

MACHINE SETUP

There are two different print drivers on the disk in your accessory pack. The primary driver is the Summit. The other driver is called Stamp, and it is used to produce rubber stamps. Use the procedure in section 5 to install the stamp driver onto your system, and make sure that it is selected as your active or default printer.

The driver has two automatic features. The first is to add shoulders to your artwork to produce a well supported stamp. The second is to reverse the colors so that the text and graphics are raised and the background is engraved away.

SOFTWARE SETUP

1) Set up your artwork. Areas to be left raised should be black, with areas to be removed white. Grey scales are also supported.

****NOTE In Coreldraw you must leave a 1/2 inch border from the edge of the fence to the edge of the page for the stamp mode to work properly. the 1/2 inch border is necessary on both the left and top sides of the page.***

2) If you want to have the laser cut the individual stamps out from the sheet, place a .001" outline with no fill around each stamp. You can use rectangles, or you can use the pen tool to draw a tight outline that follows the shape of the stamp.

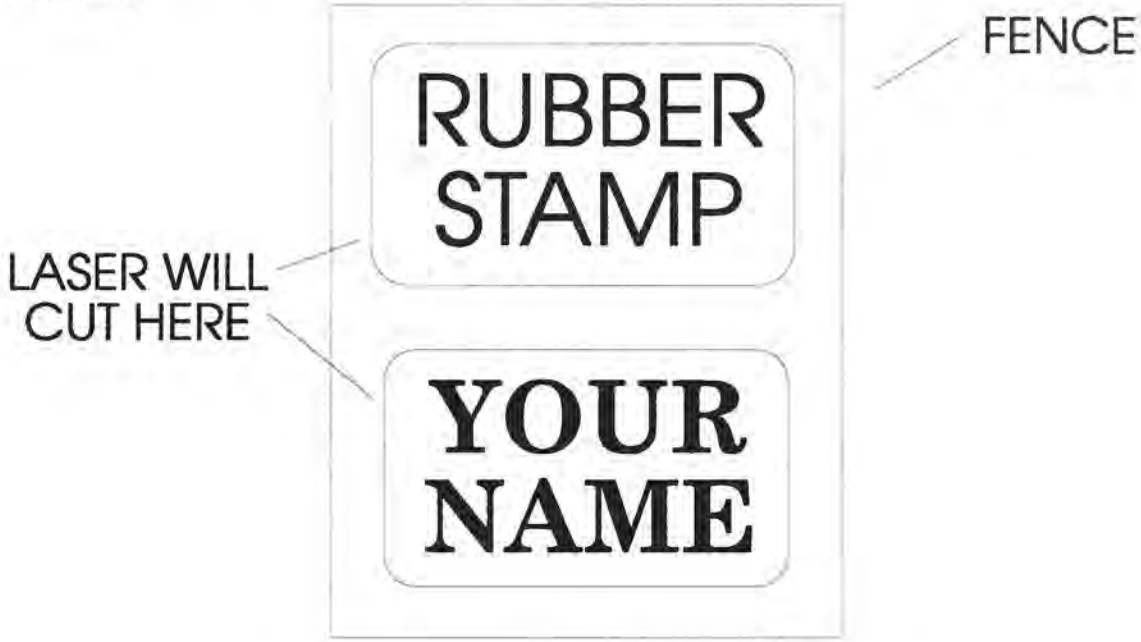
****NOTE Every outline in your drawing that is .007 inch and below will be vector cut after engraving away the background. If you want to include line widths of .007 in your drawing, but do not want them cut as vectors, you can set the Vector Speed and Power settings to Speed = 100, Power = 0%.***

3)Draw your boundary. The boundary, or "Fence" is what the laser will use to determine the limits of the background material to be engraved out. This is a rectangle with a .001" outline and no fill. Every part of your design must be inside the fence for the engraving to work properly. The

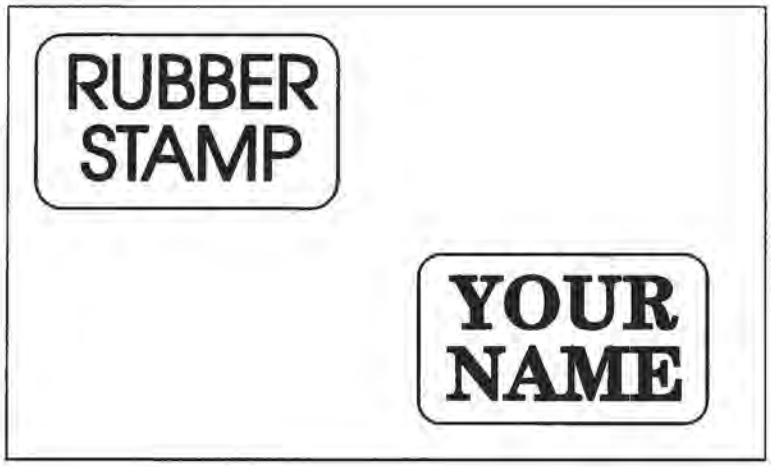
fence should be as small as practical, as this will reduce wasted material and engraving time. Try and place your stamps in such a way that they can be enclosed by the smallest fence.

NOTE The fence must be at least .050 inch from the edge of any characters or images. Putting the fence too close to the characters will result in an unsatisfactory stamp.

4) Mirror your design and print it. Use the "select all" feature to make sure you get all the items in your job, and then do a horizontal mirror. This will produce a mirror image stamp so that the impression made by the stamp is correct.



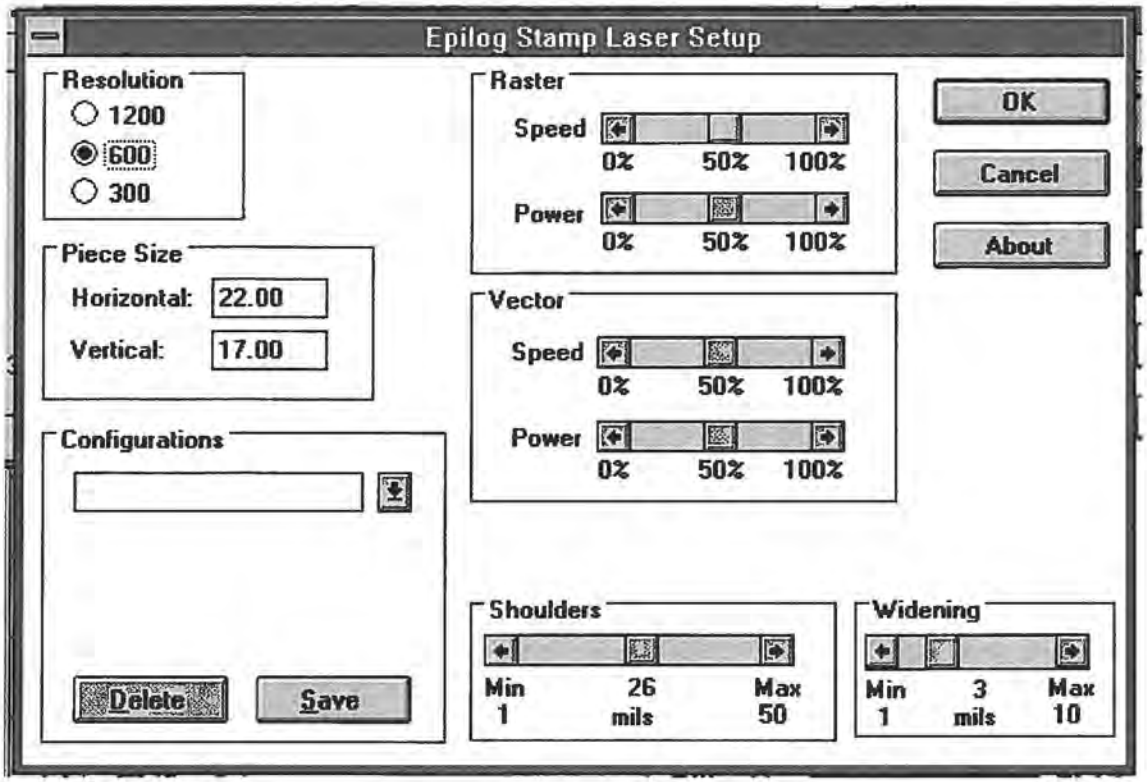
A good design



A Wasteful Design

Please remember, the fence must have a .001" outline and must **completely** enclose your design. You can cutout individual stamps by using a .001" outline within the fence. **ALWAYS MIRROR YOUR WORK!**

The stamp driver panel is shown below. Once your artwork is setup, you need to specify how you want the machine to cut the stamp.



1) RESOLUTION:

600 DPI resolution is recommended. This resolution provides a very high quality engraving with appropriate depth. 1200 DPI will provide a higher quality stamp, but you will be limited on the engraving size due to the large amount of data that is associated with the shoulders. 1200 DPI will also take about twice as long to engrave as 600 DPI. If your engraver gives you an out of memory error, split the job into two sections and print them independently.

2) PIECE SIZE:

This is the size of the plate. If the size here is not the same as the size in your drawing program the engraving will be in the wrong position.

3) RASTER POWER AND SPEED:

Use the adjusters to set the power at 90 to 100, and a speed of 15 to 30. You will need to vary the speed depending on the rubber you are using. Be sure that you do not run the engraver so slowly that the rubber flares or flames. You will ruin your work and possibly damage the optics of the engraver. **NEVER RUN THE MACHINE UNATTENDED**!

4)VECTOR POWER AND SPEED:

Use the adjusters to set a power of 30 - 40 and a speed of 50 - 60. This should be enough to cut most of the way through the rubber without charring the edges. When the part is done you should be able to pull the stamps free of the background.

5)SHOULDERS:

Use the adjuster to determine the size of the shoulders. A small number will give steep shoulders, with a large number giving very broad shoulders.

6)WIDENING:

Use the adjuster to determine the width of the character as it is engraved. A low value (1 or 2) will produce a narrow character. A high value (6 or 7) will produce wider, or bolder, character.

Click on OK if you're ready, or cancel if you aren't sure. ABOUT will give you the driver version. The

configuration box allows you to save all your settings. Please look in section 5 on the engraving driver for use.

SECTION NINE

MEMORY BUFFER MODE

The Epilog Summit memory buffer allows you to download multiple files and store them in the engraver. When you download the files in the engraver they are saved as the file name that was transferred with the file from CorelDRAW. To access the buffer mode follow these simple instructions.

MACHINE SETUP

1) With the engraver turned on, press down and hold the Reset button on the front control panel for three to four seconds. The upper left hand corner of the display will change to read NORMAL. Using the Control Knob, scroll Up until the display reads BUFFERED. Press the Reset button again and the upper left hand corner of the display will read Reset. You are now in BUFFER mode. Press Online and send a job to the engraver. Once the job has finished printing to the engraver you can open a new file and send down a different job, or as many different jobs as you want.

While you are in BUFFERED mode and sending jobs to the engraver, the engraver will not start engraving. While you are downloading files the engraver is acting like an open

file folder that accepts all of the files it can hold but does nothing with them.

When you are finished transferring files to the engraver and are ready to engrave one of the files press the Repeat button on the front Control Panel and your first file name will appear in the upper left hand corner of the display. press the Repeat button again to start engraving that file.

IMPORTANT! Depending on the number and size of the files that you have downloaded to the engraver you may experience a delay in the file name appearing on the display. The first time that you press the Repeat key selects that file, the second time starts the engraving.

Do not press the Repeat button a second time until you see one of your files listed!

Once the file name appears on the display panel you can use the Control Knob, to scroll through(Up or Down) the list of files until you find the one that you want to engrave. Press Repeat again and the laser will begin to engrave. When the job is finished and you want to engrave a different file, scroll through your file list and find the file the you want to engrave and again press the Repeat key twice.

You may send more jobs to the engraver as long as you are in BUFFERED mode, whether you have been engraving or not.

Press the Reset key first, then press the Online key then print a file to the engraver. As before, the engraver will not begin to engrave until you select a file and press Repeat.

To exit BUFFERED mode is the reverse process outlined in step 1 above. Press down and hold the Reset button on the front control panel for three to four seconds. The upper left hand corner of the display will change to read BUFFERED. Using the Control Knob, scroll Down until the display reads NORMAL. Press the Reset button again and the upper left hand corner of the display will read Reset. You are now out of BUFFERED mode, and back in normal engraving mode.

QUICK TIPS!

1) Press and hold the Reset button to access Buffered mode.
2) Use the Control Knob to scroll to "Buffered".
3) Press the Reset button. You are now in Buffered mode.
4) Press the Online button. You can now accept jobs from the computer.
5) "Print" jobs from CorelDRAW! Remember: the engraver is accepting jobs at this point. It is not attempting to engrave them.
6) Press the Repeat button one time only! Wait for the display to bring up the first job title.
7) Scroll through the jobs to find the one you want.

8) Press the Repeat button again to engrave that job.

9) When the job is finished engraving, scroll to find the next job. Press the Repeat button twice to start engraving next job.

10) Press the Reset button, then the Online key, then "Print" from CorelDRAW if you want to download more jobs to the buffer. The buffer will continue to accept jobs as long as you are in Buffered mode, whether you have engraved some of the jobs or not.

11) Press and hold the Reset button, then scroll back to Normal to exit Buffered mode.

SECTION TEN

LASER SAFETY

The Epilog laser engraver is equipped with a safety enclosure. Any attempt to disassemble or modify this enclosure in any way may render it ineffective. The laser produces a very intense and INVISIBLE beam that can cause severe burns even at very great distances.

Do not attempt to operate the engraver with:

1) An object caught in the door.
2) A door that does not close properly.
3) A damaged door.
4) Any cover removed or modified.

This is for YOUR safety!

Your machine is equipped with redundant safety interlocks to avoid accidental laser exposure. There are spring loaded switches that are released by opening the door deactivating the control signal.

If your engraving work involves the use of metals or mirrors, a set of standard safety or prescription glasses should be considered extra insurance, even though it is

unlikely that the safety enclosure would ever malfunction. Epilog requires their use in most phases of manufacturing and testing of our products.

In addition, a 10 pound carbon dioxide fire extinguisher rated for electrical fires is a good item to have in your shop. Keep it in a very obvious place. Most municipal codes require all businesses to have a fire extinguisher available.

SECTION ELEVEN

IN CASE OF DIFFICULTY

Your Summit laser engraver will begin to engrave as soon as the first line of data from the computer has been received by the engraver. This has the advantage of reducing the total time required for engraving, as the machine is not idle while the job is being loaded.

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, whatever was left of the job you interrupted will be the first thing the computer will send when the engraver is put ONLINE. To avoid most common print problems, **ALWAYS** check or close Print Manager if you interrupt a job in progress.

Problem: Computer displays "problem writing to LPT1"

Solution:

1) Is the engraver ONLINE ? (Press ONLINE key).
2) Is the printer cable connected correctly?
   Review the hookup configuration.
3) If you have multiple printer ports use 'CONTROL PANEL' to select the correct port.

4) **Always use Print Manager to terminate ANY print job that didn't transmit properly.** Do not leave part of a design waiting for transmission. Sending another job with a stalled job will not produce another error message!

Problem: Nothing happens when you print.

Solution:

1) Is the engraver ONLINE ? (Press ONLINE key).

1) Close or clear Print Manager, reset the engraver, and reprint your job. Don't try to reprint a job after an error without clearing Print Manager.

Problem: Engraver starts but stops immediately without doing any engraving.

Solution: Preview your design to be sure that your image is what you intended. White letters on a white background will not engrave.

Problem: The machine appears to be running normally but no engraving occurs (laser not operating).

Solution:

1) Door not shut fully.

2) Lens height (focus) not set right.

Problem: Blurry or erratic image

Solution:

1) Lens height (focus) not set right.

2) Dirty focus lens (See Section Nine).

3) Pattern is too close to edge of engraving field. Increase your borders by .25 inch.

Problem: Engraver display shows PARSER TIMEOUT

Solution: The engraver had a problem with the design sent from the computer. Terminate the print job using Windows Print Manager. Reset the engraver and try to resend the design. Possible causes are:

1) Transmission error. Resend job.

2) Unknown command. Are you using compatible software? If you aren't and the error repeats, you may have an incompatibility problem.

3) Incorrect printer driver. Use the Epilog Summit printer driver. Using another driver may produce errors.

Problem: Engraver starts but displays MEMORY OVERFLOW.

Solution: Your design is too large to fit into memory. Try to print the job in pieces using Print Selected Objects Only option in the Print window of CorelDRAW. If you're printing at 600 DPI, try 300 DPI. 300 DPI uses about one quarter of the memory.

Problem: Engraving is not centered properly.

Solution: Recheck your work dimensions, and ensure that the page size on your software is set accurately. Using construction lines is a helpful tip to ensure that you maintain even borders.

Problem: Extreme right half of engraved design is missing on larger workpieces.

Solution: Check the printer driver by going into "Printer Setup". Make sure you have the Epilog Summit print driver selected.

Problem: Engraver does not power up correctly.

Solution: 1) Check to make sure the carriage can be moved freely with the power off. If the machine can't find the home position it will not power up properly.

2) Check the input power.

Problem: Engraver displays Position Error.

Solution: Something has blocked the carriage from moving freely. Try and free the carriage by turning the power off and moving it with your hand to find the obstruction. Lubricating the bearings may help if you can't find a blockage. See maintenance section for instructions.

Problem: Engraver starts moving immediately after pressing ONLINE.

Solution: An incomplete job is waiting in Print Manager. Stop the engraver, close the Print Manager, then reset the engraver.

Problem: Engraver starts correctly but stops in the middle of a job.

Solution: The printing job from the computer was interrupted. This is normally only seen in computer systems with an additional printer connected to the computer. Switching from the engraver to the printer must not be done until Print Manager shows the entire job has been transferred.

SECTION TWELVE

ENGRAVING MACHINE MAINTENANCE

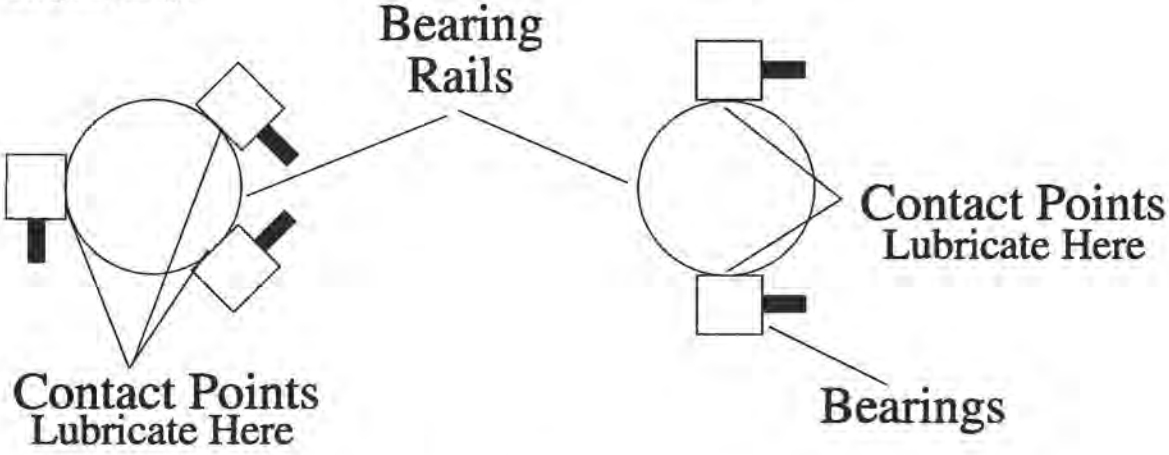
There are a few items that should be checked regularly to assure optimum operation of your engraver.

BLOWER: The blower connected to your engraver requires periodic cleaning to maintain efficiency. How often this must be done depends on the amount of use and material you engrave on. Normally, once every three months should be adequate. You may need to clean more or less frequently. If you detect odor while engraving, or the smoke appears to be moving around more than when the machine was new, you should clean the blower with a stiff bottle brush. Keeping the blower operating properly is essential to a long healthy life for your engraver!

BEARINGS: The bearing rails both left and right and front to back will benefit from occasional cleaning and lubrication. How often this needs to be done depends on use. Generally, once a month should be adequate.

To clean the rails and bearings use a clean soft cloth, lightly soaked with a solvent such as acetone or alcohol and wipe the length of the rails. Also wipe off the outside surface of the bearings that ride on the rails.

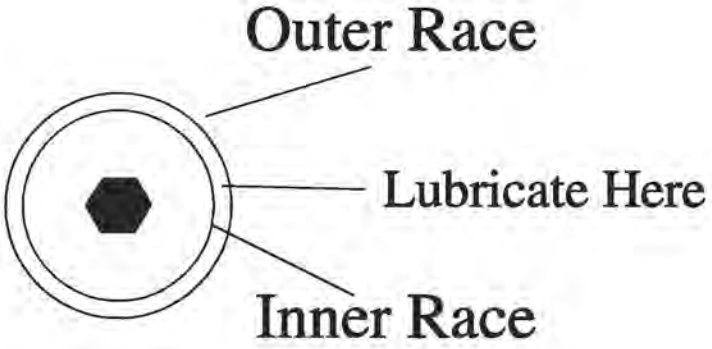
To lubricate the bearing rails, put a drop of Tri-Flo lubricating oil at the point where the bearing contacts the rail. If you do not have Tri-Flo you can use any light lubricating oil. Do not put so much oil on the bearing that it is running or migrating to other surfaces. Running or migrating oil can get on the lenses and affect your engraving.



X-Axis Bearings & Rails
Side View

To lubricate the bearing put a drop of oil between the outer race and the inner race. Again, do not put so much oil on the bearing that it runs or migrates. Wipe off any excess oil.

Bearing
Side View



Bearing
Top View

The bearings and rails in the Y-Axis(front to back) are difficult to reach without taking the cover off, however you can use a cotton swab soaked with oil to help you reach the lubrication points. It is more critical that the X-Axis(left to right) bearings are properly maintained as they see much more movement.

IMPORTANT!

The single most important thing that you can do to keep you laser engraver working as if 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 virtually no maintenance required for your laser engraver if you ***KEEP IT CLEAN!***

OPTICS: About once a week, you will need to clean the optics (mirrors and lenses) of your Summit laser engraver. If smoke, resin, or other contaminants are allowed to accumulate too heavily, they will reduce the available laser power and may even cause damage.

The two optical components most likely to require cleaning are the focus lens and the mirror directly above it. This mirror is called the x-axis carriage mirror. Both are located on the carriage. You will find the lens easier to clean if you lower the table. In addition there are three other mirrors that need occasional cleaning. Two of these mirrors are readily accessible through the open door of the engraver. The y-axis carriage mirror is located at the right end of the Thompson rails. All the way to the right of the x-axis carriage mirror. The upper steering mirror is located all the way in the back right hand corner of the engraver.

The fourth mirror is called the lower steering mirror, and only needs occasional cleaning. It is located well away from most of the smoke. To get to this mirror locate the small three inch by three and a half inch access panel located diagonally opposite the power on/off switch. It is just above the stand. This mirror is difficult to see or access. Clean it with a bent cotton swab. DO NOT REMOVE THIS MIRROR FOR CLEANING! The alignment of this mirror is critical for the proper operation of the laser engraver.

To clean the lens, first remove the shoulder screw using a 1/8 inch Allen wrench that holds the lens assembly in place. Use a high-quality cotton swab moistened with reagent-grade acetone, ethyl alcohol, or anhydrous isopropyl alcohol. Acetone is supplied in your accessories kit. Please read the label on the bottle carefully. Do not use rubbing alcohol or "hardware store" solvents such as denatured alcohol, as they contain impurities which can contaminate the optics. If chemicals are not readily available in your area, you may obtain pure ethyl (grain) alcohol at any liquor store, under such brand names as "Golden Grain" and "Everclear."

Wet the swab thoroughly with the solvent, and then blot it against a paper towel or 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, and allow the optics to dry before you operate your engraver.

The best way to keep your optics clean is to make sure the blower system is working efficiently. The smoke should never get near the lens. If the blower isn't cleaned periodically, the smoke will linger in the engraving area and settle on the optics.

LASER: The laser tube used in the Epilog engraver does have a maximum service life. The amount of engraving time that you get from a tube will depend to a large extent on how much material you remove from your plaques. Typical tube life is 10000 - 20000 hours, operating. Depending on your particular usage, the tube should be good for a long, long time. The tubes are refurbished and are available on an exchange basis.

LIGHT: The work area lights use a standard automotive instrument bulb (Number 194, available at most

discount stores with an auto department). To change the bulb, the machine must be turned off with the door open. Remove the two Philip head screws that secure the light cover, and the bulb can be removed by pulling gently with your fingers. When you reinstall the cover just make sure that the opening faces down.

SECTION THIRTEEN

APPENDIX

The Epilog SUMMIT laser engraver is a State of the Art machine, utilizing the latest developments in laser technology coupled with advanced desktop publishing. By emulating a laser printer, the user is allowed access to almost unlimited typefaces and electronic art.

The laser is a sealed unit, requiring only electrical power and cooling to produce 25 watts of laser power. Excitation is RF (Radio Frequency 45 Mhz) discharge, eliminating the need for bulky and expensive high voltage power supplies. Cooling is by forced air.

The engraving process takes place when the energy of the laser is concentrated into an area less than five one thousandths of an inch in diameter. Most material is rapidly consumed. The laser beam is moved over the surface of the item being engraved according to the instructions loaded in memory, removing material in the desired pattern.

The engraving method is RASTER. A raster image is made by moving the laser from side to side, advancing by the width of the laser spot between lines. The laser is turned

off and on at just the right intervals to produce the image. Raster images are the native language of laser printers, and they produce an image in a nearly identical manner. If you watch your machine while it is engraving, you can better understand exactly how the image is assembled. The lens will travel from side to side, and at the end of the motion the rails carrying the lens carriage advance.

The laser beam itself is invisible. The beam is about half the diameter of a #2 pencil. Unfocused, it will just make an ugly burn, leaving lots of charred material behind. The focus lens gives the beam an hourglass shape. At the center point the energy density is concentrated, allowing the very precise and clean material removal that is characteristic of laser engraving. That is the purpose of the focus gauge. Exactly two and one half inches from the bottom of the lens is the smallest spot, and that is where you want the engraved item to be.

The Summit uses a DC Servo system with optical encoders for position feedback. The optical encoders allow for extremely accurate switching of the laser. You will find that the Epilog engraver has very accurate edge definition.

Government regulations require that laser products be provided with appropriate identification, certification, and safety labeling. The Epilog Model 2000/25A (Summit) laser engraver has a combined Certification/Identification label on the cabinet rear, above the AC line cord connector. There are two Housing Safety labels, one on the cabinet rear below the top cover and one above an access panel on the lower right rear of the cabinet.

The safety interlocks within the Model 2000/25A may be defeated, for servicing purposes only, with the top cover removed from the machine. The Housing Safety label below the top cover is worded to reflect this fact.

Reproductions of the cabinet labels are shown on the following page.

DANGER - Invisible laser radiation when open.

AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION.

DANGER - Invisible laser radiation when open and interlock defeated.

AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION.

Epilog Corporation

400 Corporate Circle Suite M
Golden, Colorado 80401 USA

Model Number: 2000/25 Laser Engraver
Serial Number: XXXXXX
Date of Manufacture: XXXX XXXX

Class 1 Laser Device

This product complies with 21 CFR 1040.10
Made In USA

MATERIAL SUPPLIERS

Laser Engraving Materials Sources
For Use With Your Epilog Eclipse Laser Engraver

1) ACRYLIC

Acrylic Idea Factory
6669-C Peachtree Industrial Blvd.
Norcross, GA 30092
1-800-543-9253

2) ANODIZED ALUMINUM

Identification Plates, Inc.
1555 HighPoint Drive
Mesquite, TX 75149-9009
(214) 216-1616
(214) 216-1555

3) LASER ENGRAVABLE COATED METALS

Victory
1820 N. Major Avenue
Chicago, IL 60639
1-800-327-5578
(312) 637-7777

R. S. Owens & Co.
5535 North Lynch Avenue
Chicago, IL 60630
1-800-282-6200

4) PRESSBOARD PLAQUES - Melamine or Vinyl Coated

Quail Industries
300 Fallon Road
Hollister, CA 95023
1-800-232-1031
(408) 636-1031 - Voice
(408) 636-1033 - FAX

5) WALNUT PLAQUES & SPECIALTY WOOD PRODUCT

Colorado Heirloom
333 E. 4th Street
Loveland, CO 80537
(303) 667-8880 - Voice
(303) 667-4222 - FAX

Wishbone Woodworks
110 Brodhead Street
Mazomanie, WI 53560
(608) 767-2385

Kentucky Woodcrafts Co.
PO Box 220 McKee Industrial Park
McKee, KY 40447
1-800-354-0196

Lee's Wood Products
131 Smithers Street
P.O. Box 159
Rocky Mount, VA 24151
(703) 483-9728
FAX (303) 483-4645

Stanton Manufacturing
Lake Road 54-15
Lake Ozark, MO 65049
(314) 465-2441

6) MIRRORED ACRYLIC

Alenite Dodge
5750 W. Bloomingdale Avenue
Chicago, IL 60639
1-800-227-2440

7) CORIAN or FOUNTAINHEAD - Synthetic Marble

Johnson Plastics
9240 Grand Avenue South
Minneapolis, MN 55420-3604
(612) 888-9507 - Voice
(612) 888-4997 - FAX
1-800-869-7800 - Customer Service

TACAP Inc.
2705 CR118
Rushsylvania, OH 43347
(513) 468-7701
Fax (513) 468-7038

8) ENGRAVEABLE PLASTICS

Innovative Plastics Inc.
PO Box 65
Alogonquin, IL 60102
(815) 477-0778

Johnson Plastics
9240 Grand Avenue South
Minneapolis, MN 55420-3604
(612) 888-9507 - Voice
(612) 888-4997 - FAX
1-800-869-7800 - Customer Service
Johnson Plastics is a large distributor of the Rowmark name plastics. Call for a distributor near you.

Roland Inc.
15 Massirio Drive
Kensington, CT 06037
(203) 828-8282 - Voice
(203) 828-1900 - FAX
Roland manufactures a very wide variety of laser engraveable plastics under the Rowmark name. They have a large number of distributors throughout the US. Call for a distributor near you.

9) FLAT GLASS

Gold Coast Graphics
15841 Graham Street
Huntington Beach, CA 92649
(714) 898-0061

10) PEN & PENCIL SETS

IMARK Pen Co.
3008 Pleasant Valley Lane
Arlington, TX 76015
(817) 465-6681

11) RUBBER STAMP MATERIAL

Laserlight America Stamp Systems
1515 N. Loop West
Houston, TX 77008
Phone (713)862-8615
Phone (800)943-3425
Fax (713)862-1271

12) ENGRAVING FOILS - VINYLS - COLOR FILL MASK & PAPER MASK

Innotec Of Wisconsin Inc.
PO BOX 085546
or
1760 State Street
Racine, WI 53404
(414) 637-7103
1-800-776-7194
Fax (414)637-8205