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Chapter I - INTRODUCTION

1.1 Principles of a CO₂ Laser

LASER is the acronym for Light Amplification by Stimulated Emission of Radiation. A CO₂ laser works by electrically stimulating the molecules within a carbon dioxide gas mixture. When focused through a lens, this highly-intense and invisible beam will vaporize many materials. Depending on the speed and intensity of the projected beam, a CO₂ laser may be used to engrave or cut through a wide variety of materials.

1.2 Safety Ratings

The LaserPro MercuryIII is equipped with a sealed carbon-dioxide laser that emits intense and invisible laser radiation with a wavelength of 10.6 microns in the infrared spectrum. The laser system is designated as a Class I laser device, meaning that the system is equipped with key safety features and an enclosed laser head to completely contain the laser under normal use. One of the key safety features found on the LaserPro Spirit is a Class 2 red dot safety guidance pointer (similar to a laser-pointer presentation pen) allowing the operator to see the exact location where the laser beam will fire. Even though the LaserPro Spirit is equipped with the most powerful laser to date, through proper usage and taking necessary hardware safeguards, will make it an extremely safe machine. When the front door and back door are open, machine becomes a Class 4 equipment and users must wear goggles to operate the machine.

1.3 The Safety Interlock System

The laser system is equipped with a safety interlock system utilizing magnetic sensors on the top and side access doors, laser-activation and door LED lights on the control panel. The magnetic sensors will deactivate the laser when either door is opened. At this time, the "door" LED light found on the control panel will illuminate, indicating an open or improperly closed door. When the laser is in operation, the “laser” LED will illuminate to inform the operator that the laser is activated. If at any time, any of the access doors are open and the “laser” LED is illuminated, IMMEDIATELY unplug the laser system and contact GCC service team for technical support and maintenance instructions.

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>• DO NOT operate the laser system if any component of the safety system is malfunctioning.</td>
</tr>
<tr>
<td>• DO NOT attempt to remove or modify any component of the safety interlock system.</td>
</tr>
<tr>
<td>• Resulting debris from laser cutting are very dangerous and may cause fire hazard.</td>
</tr>
</tbody>
</table>

1.4 Safety Labels

According to CDRH standards, all fixed or removable covers that allow access to a laser beam must have an appropriate laser warning labels attached to them. These warning labels must be clearly visible to the operator prior to removing the cover. Additional labels must be applied to the interior of the machine and be visible in the event when the covers are removed. A label clearly displaying the manufacturer’s name, date of manufacture, description of product, model number, serial number, and compliance statement must be attached to the outer surface of the machine.
In compliance with CDRH standards, the required warning labels are affixed at the time of manufacture to the LaserPro Spirit, attached on appropriate locations. These labels are not to be modified in any way or removed for any reason. Please familiarize yourself with the specific labels and their locations on the machine. Below is a list of all the safety labels and their locations on the machine.

**Product Label**
This label is located at the right-back side of machine. All the product information such as Serial Number, Model Numbers, Laser Power and Electric power can be found here. Before requiring any further tech support, always provide the service person with the information on this label.

![Product Label](image1)

![Product Label](image2)
<table>
<thead>
<tr>
<th><strong>Manufacturer</strong></th>
<th>Great Computer Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product</strong></td>
<td>Laser Engraver</td>
</tr>
<tr>
<td><strong>Model</strong></td>
<td>Mercury III</td>
</tr>
<tr>
<td><strong>Model Number</strong></td>
<td>ME - 30V</td>
</tr>
<tr>
<td><strong>Wavelength</strong></td>
<td>10.57~10.63 μm</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>CO2 30W</td>
</tr>
<tr>
<td><strong>Input</strong></td>
<td>100<del>240V, 50</del>60Hz, Max 12A</td>
</tr>
</tbody>
</table>

Class I Laser Product Complies with EN60825-1:2007
Class II Laser Product Complies with CDRH
Designed by GCC in Taiwan Assembled in China
No.1, Chen Feng Road, Yushan, Kunshan, Jiangsu, China

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</tr>
<tr>
<td><strong>Model</strong></td>
<td>Mercury III</td>
</tr>
<tr>
<td><strong>Model Number</strong></td>
<td>ME - 40V</td>
</tr>
<tr>
<td><strong>Wavelength</strong></td>
<td>10.57~10.63 μm</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>CO2 40W</td>
</tr>
<tr>
<td><strong>Input</strong></td>
<td>100<del>240V, 50</del>60Hz, Max 12A</td>
</tr>
<tr>
<td><strong>Manufactured</strong></td>
<td>May 2012</td>
</tr>
</tbody>
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<td>Mercury III</td>
</tr>
<tr>
<td>Model Number</td>
<td>ME - 40C</td>
</tr>
<tr>
<td>Wavelength</td>
<td>10.57~10.63 μm</td>
</tr>
<tr>
<td>Power</td>
<td>CO2 40W</td>
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</tbody>
</table>

Class I Laser Product Complies with EN60825-1:2007
Class II Laser Product Complies with CDRH
Designed by GCC in Taiwan Assembled in China
No.1, Chen Feng Road, Yushan, Kunshan, Jiangsu, China
CDRH Label

This label indicates the class level of CDRH.

![CDRH Label Image]

CE Label

This label indicates the class level of CE

![CE Label Image]

Warning Label

Warning Label is written with all the necessary information to be aware of in every operation.

![Warning Label Image]
Laser Path Warning Label
LaserPro machines are very safe under normal functioning conditions. However, in case of any accident, Laser Path Warning Label will be affixed on the possible laser path. When operators are nearby these paths, they should be careful of the possible injury while the machine is operating.

Laser Path Danger label
This label indicates the laser path. Normally you can find this label inside of machine. Please take extra caution of this area when you conduct maintenance.

Emergency Stop Label
This label indicates the emergency stop button. You can find this label on the right upper side of the machine.

Aperture warning stickers (mirror):
This label indicates the laser path. Normally you can find this label inside of machine or laser exit. Please take extra caution of this area when you conduct maintenance or operate machine.

Door open warning labels
1.5 Safety Measures

- **LASER RADIATION WARNING**: Exposure to laser radiation may result in physical burns and severe eye damage. Proper use and regular maintenance of this machine is important to the safety of all people in the immediate area.

- Prior to operation, carefully read and familiarize yourself with the warning labels located on both your laser system and in this manual.

- **Never leave the machine unattended during the laser cutting and engraving process.** The laser may ignite combustible materials. A well-maintained fire extinguisher and operational smoke or fire detector should be kept in the vicinity of the machine.

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

- Resulting debris from laser cutting are very dangerous and may cause fire hazard.

- **DO NOT** leave debris and scraps inside laser machine after job finished. Must keep machine clean after job finished.

**NOTE**

SmartGUARD™ is an optional fire detection alarm system developed by GCC. Contact your local GCC authorized distributor for more details to have this safety option installed onto your system.

- Enable the SmartAIR™ nozzle when engraving or cutting materials that may easily ignite, such as acrylic, wood, or paper.

- Always wear safety goggles when the laser system is in operation. Reflective materials such as mirrors, enameled brass and anodized aluminum may partially-reflect some of the invisible laser radiation. Severe eye damage may occur if proper safety goggles are not worn.

**NOTE**

Each LaserPro laser machine is shipped with a single pair of safety goggles. If additional safety goggles are required, please contact GCC directly or an authorized GCC distributor. If you wish to purchase one on your own, please make sure the safety goggles meet these requirements:

\[
\text{10,600 nm OD5+} \\
\text{Visible Light Transmission: 92.9%}
\]

- Connect the machine to a properly grounded power outlet. Ensure the voltage of the
power source is identical to the voltage of the machine.

• Do not open the laser access panel when the machine is plugged in.
• Do not attempt to modify or disassemble the laser module.
• Do not attempt to remove or modify any component of the machine’s laser interlock safety system.
• Ensure the immediate work area of the machine is well-ventilated. Odors, vapors, and dust are by products generated during the laser engraving and cutting process. An exhaust system, vacuum cutting box, and honeycomb table are recommended. Please contact GCC or your local GCC distributor for more information.
• Do not laser heat-sensitive surfaces or materials that may generate toxic fumes, such as PVC and Teflon. Regularly clean and maintain your machine according to our cleaning and maintenance instructions. Doing so will ensure your machine will operate effectively and safely over a long period of time.

1.6 Operating Environment

Please follow the guidelines when considering a suitable location to set the LaserPro Spirit Series. Improper work environments may lead to operational malfunction and/or unsafe working conditions. The LaserPro Spirit Series should be placed and operated in a standard office-type environment.

• Avoid environments where the machine is exposed to high levels of dust, temperature (temperature exceeding 30°C or 85°F) or humidity (humidity exceeding 70% or where the ambient temperature is near the dew point).
• Avoid small, enclosed areas with poor ventilation.
• Avoid areas with high levels of noise and electrical noise.
• Select a location that is large enough to accommodate the LaserPro Spirit Series, an exhaust system, a computer and a work or storage table.
• Select a location in which the ambient temperature remains between 15°C and 30°C (60°F to 85°F).
• Select a location in which the relative humidity remains between 30% - 40%.
• Select a location in which there is a short, direct path to the fume exhaust system.
• Set the LaserPro Spirit Series on a floor surface that is completely even.
• Make sure your smoke or fire detection system in the immediate area is functioning.
• Setup the machine to be apart from the wall for at least 60 cm (2 feet).
1.7 Machine Safety Information

EC-Declaration of conformity
The manufacturer
GCC Great Computer
4F-1., No.236, Fude 2nd Rd., Xizhi Dist., New Taipei City 22151, Taiwan
hereby declares that the following product
GCC LaserPro Mercury III
Model Number 12W/25W/40W/60W
has demonstrated conformity to the following guidelines:
   2006/42/EC Machinery Directive
   2006/95/EC Low Voltage Directive
   2004/108/EC EMC Directive
   Applied during design and construction of this product:
   - EMC 61000-6-4:2001
   - EMC 61000-6-2:2005
   - EN 60204-1 LVD

GCC Great Computer

1.8 Machine Information

Mercury III Sound Test Result: 68.4 dB
Mercury III Sound Test Conditions: measured at a distance of 1 meter from the surface of the machinery and a height of 1.6 meters from the floor or access platform.
Conditions: measured at a distance of 1 meter from the surface of the machinery and a height of 1.6 meters from the floor or access platform.
Front View

Top View
Right View
Motion System

Mirror 3 & Holder

Release the Screw to Pull Out the Mirror

Y-axis Belt

X-axis Belt

Bearing Track

Dust Prevention Box (Mirror 2 inside)

Mirror 4 and Focus Lens inside

X-axis Bearing

X-axis Motor

Y-axis Belt

Manual Focus Gauge Holder

Focal-Sharp™ Auto-focus Gauge

Magnetic Sensor for Dual Head

Port for Rotary Attachment
1.9 Lens and Manual Focus Gauge

<table>
<thead>
<tr>
<th>Focal Length</th>
<th>LENS</th>
<th>Matched Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5” Option</td>
<td>Purple</td>
<td>Blue (same as 2.0”)</td>
</tr>
<tr>
<td>2.0” Standard</td>
<td>Blue</td>
<td>Blue</td>
</tr>
<tr>
<td>2.5” Option</td>
<td>Gold</td>
<td>Gold</td>
</tr>
<tr>
<td>4.0” Option</td>
<td>Red</td>
<td>Red</td>
</tr>
</tbody>
</table>

Manual Focus Gauge

Insert to the hole of the holder for manual focusing

Focus Carriage Assembly
1.10 Instruction of Rotary Attachment

1) Turn off the power of the engraver.
2) Put the rotary attachment onto the engraving table. Ensure the two screw holes should match the two corresponding holes on the table and the white mark of the left side aligns to the position of 24cm (9.45 inch) on the ruler, and then tighten the screws.
3) Plug the cable of the rotary attachment into the port in the middle front of the engraver.
4) Turn on the power and the engraving table moves down to the lowest position automatically.
NOTE: The maximum length of the engraving object is 450 mm (17.71 inch). The maximum diameter of the padded rubber wheel is 94 mm. To get an accurate engraving position during rotating, it is better that the diameter of the engraving object is not smaller than 90mm (3.54 inch). However, the maximum diameter of the loaded object is 180mm and the limited loading weight is 4 Kg (8.8 Lb.).

1. Measure the diameter of the engraving area for setting up the software operation before engraving.
2. Lift the lever, loading the engraving object, slide the adjustable end to the bottom of the object firmly, then lower the lever of the fixture to secure it in place shown as in Fig II.
3. If the engraved object is too small, please use 4-inch lens to prevent collision between carriage and rotary attachment devise.
1.13 SIDE VIEW

4. Turn on the power. The rotary attachment is detected and the working table moves down to the bottom automatically. The system initializes to the home position, at the same time.

5. Set up focus.

6. The following is an example of engraving process by using CorelDRAW V.11 or after version
   a. File
   b. Print Setup, choose MERCURY III
   c. Properties
   d. Paper, select Rotary Fixture
   e. key in the Offset value, X value and Diameter value
   f. OK

NOTICE:
When doing the Print Setup under print driver setting, please always choose Layout → Page Setup → Set From Printer, no matter operating with CorelDraw V.11, or after version.

NOTICE:
Please always choose Portrait for Page Setup on CorelDraw V.11 no matter X or Y value whichever is larger.
Layout → Page Setup → Set From Printer → Portrait

Define engraving location by moving the arrow keys and the red point will show the right position you want. Moving the red point from rotary home position (at the base of the padded rubber wheel) to the open end of the engraving object, the Offset value will be displayed on LCD.

Caution:
- Adjust the working table and set up the focus under STOP status.
- Set up focus after initializing the system to prevent the carriage hit the engraving object.
- Rotary Attachment: Its maximum weight should not exceed 4 kg.
Chapter II - RECOMMENDED CONFIGURATION

2.1 Computer
Your PC must be sufficient to equip with Window XP at least. We recommend the specification of PC for better work as following.

- CPU: Pentium at least
- DRAM: 32 MB RAM or up
- HDD: 1.2 GB Hard Drive or up
- SVGA: 15” Super VGA Monitor

★ ★ On Board Parallel Mode (Setup from PC BIOS):
  - SPP—Preferred Mode
  - ECP—Cable length less than 1.8 meters

2.2 Scanner
Flat Bed
Minimum resolution: 200 DPI

2.3 Software
- GCC driver (designed under Window XP or higher level)
- Windows: Window XP or higher
- CorelDRAW: Version 7.0 or higher version
- Any program that can output HPGL commands

TIP
AutoCAD is the preferred application software for mass cutting production when working with the LaserPro Mercury III for better output performance.
2.4 Installation of Common USB

When you connect computer with GCC machine by USB, the computer will detect and install a common USB driver automatically as below procedure. It will finish all procedure within several minutes.
2.5 Installation of the LaserPro Print Driver

1) Insert the LaserPro CD.
2) From the auto run menu, select **MercuryIII → LaserPro Driver** to begin the LaserPro Print Driver installation.
3) When the Add Printer Wizard menu comes up, click **Next** to continue.
4) At the Local or Network Printer page, select **<Local printer attached to this computer>**, then click **Next** to continue.
5) At the Select a Printer Port page, select **<Use the following port>** and select the port that the LaserPro S290LS will be attached to, then click **Next** to continue.
6) The next screen will prompt you with a list to select the manufacturer and model of your printer. From this menu, click **Have Disk**. Another menu will now pop up for you to indicate the location of the print driver. With the LaserPro CD still in your drive, click **Browse**, select the LaserPro Mercury III driver folder and locate the GLXXX.inf file. Click **OPEN** to have S290LS displayed as a valid printer.
7) Now select Mercury III om the list of printers (Mercury III should be the only printer displayed on the list) and click **Next** to continue.
8) If a screen comes up informing you of the detection of a previous driver and asks to keep the existing driver or use the new one, select **<Replace Existing Driver>** and click **Next** to continue.
9) This screen will prompt you to provide a printer name. Simply type in **<Mercury III>** and select **Yes** or **No** if you want to use this printer as the default printer and click **Next** to continue.

**NOTE**
When working with the LaserPro Mercury III Print Driver within your graphics software, you will need to have the Mercury III set as the default printer to get proper output. If you select to not have the Mercury III be the default printer, please remember to manually change this on your own from within the graphic software printer selection area or from the Windows → Control Panel → Printers and Faxes section.

10) At the Printer Sharing screen, select **<Do not share this printer>** and click **Next** to continue.
11) Select **<No>** when asked if you want to print a test page and click **Next** to continue.
12) Now simply click **Finish** to complete the Add Printer Wizard.
13) Now the installation will proceed, if you get a Hardware Warning about the software you are installing for this hardware has not passed Windows Logo testing, simply click **Continue Anyway** to ignore this warning.
14) Congratulations, your printer driver has been successfully installed!
2.6 Parallels Desktops
MAC users can use GCC LaserPro machines by purchasing the Parallels Desktop software which allows you to install Windows OS in MAC computers and run Windows based software under MAC computer and output with GCC print driver.

1) Purchase Parallels Desktops on its official website.

![Parallels Desktop advertisement]

2) Install Parallels Desktops under Mac OS environment.

![Parallels Desktop installation process]

3) Read Software License Agreement and press “Accept” to continue installation.
4) Enter your Mac OS X User Name and Password then press “OK”

5) Press “Active”

6) Press “OK” when activation is complete.
7) Register Parallels Desktop

![Register Parallels Desktop]

8) Press “Register” and “OK” to complete the installation of Parallels Desktop.

![Register Parallels Desktop]

9) Open Parallels Desktop (in the Applications folder) then choose File → New

![Parallels Desktop]

10) Press “Install Windows from DVD or image file” then press “continue” to install windows OS
11) Select CD-ROM drive with the Windows installation CD

12) Enter the Windows OS product key
13) Select how you would like to run your Windows program.

14) After the prior setting is complete the Windows OS installation procedure will start automatically.

15) Windows OS installation is complete then you can refer to “4.2.5 Installation of the LaserPro Print Driver” to install GCC LaserPro Print Driver.

16) Install the AP that you want to use after the above installation is complete.
2.6 Using Inventor with GCC laser engravers

1. Start drawing.

2. Delete border and title block by right clicking on sheet1 and selecting delete.

Right click and delete sheet. (If you would like border and title block sent to the engraver skip this step.)
3. Set sheet size to match working area of engraver. Engraver working area can be found on the paper tab of the windows driver.

4. Start sketch.
5. **Engraving**
   a. Finish sketch.
   b. Right click on sketch and select properties.
   c. Line Type: By Layer
   d. Line Weight: By Layer
   e. Set color to match one of the 16 colors available in the pen tab of the windows driver.

6. **Cutting**
   a. Finish sketch.
   b. Right click on sketch and select properties.
   c. Line Type: Continuous
   d. Line Weight: .001 in.
   e. Set color to match one of the 16 colors available in the pen tab of the windows driver.
Note: All objects created in one particular sketch will have the same properties meaning all will engrave or all will cut. If you would like to engrave and cut in the same job you will need at least two sketches, one with all the engravings and another with all the cuts, to do so properly.
Chapter III - HARDWARE INSTALLATION

Caution:
- Turn all equipment off before making any connection.
- Check the plug of the power cord to see if it matches the wall outlet. If not, please contact your dealer.

3.1 Cabling Connection:
1. Insert the power cord (male) into a grounded power outlet.
2. Plug the other end (female) into the engraver. The engraver has been design to autoswitch from 100 ~ 240 VAC automatically (40W and above laser engravers require 220~240 VAC only).
3. The laser engraver can communicate with a computer through either the serial (RS-232C) port, the parallel port, or the USB port.
3.2 Parallel Transmission
Connect a parallel cable to the engraver (parallel port) then to the parallel port of the host computer.

**Caution:**
The electrical surges can cause damage to the computer and the engraver.

3.3 USB Transmission
Connect USB cable to the engraver (USB port) then to the serial port of the host computer.

3.4 Exhaust Ventilation
There are two exhaust ports on the Merucry that can be used to connect to the odor reduction unit.

(i)   Exhaust port from beneath the machine
(ii)  Exhaust port from the rear of the machine
Chapter IV - Operating the LaserPro Mercury III

Once you have installed the LaserPro USB Driver (USB connectivity only), LaserPro Print Driver, and have connected the LaserPro Mercury III to your computer, you will need to familiarize yourself with the LaserPro Mercury III’s control panel and LaserPro Print Driver. The print driver will be where you spend most of your time configuring specific laser parameters for your jobs, while the control panel will allow you to set repeat times, manipulate the file order, perform auto / manual focusing, configure the start point, and more.

4.1 Using the Hardware

4.1.1 Adjusting the LCD Display Screen’s Contrast Setting

Depending on the lighting of your immediate work area, you may need to adjust the contrast of LCD display screen. You may increase or decrease the contrast via the contrast adjustment wheel found on the inside of the right shoulder. You can access this area by opening the front door and looking inside to the right shoulder (as shown in the picture below).

4.1.2 Graphic Control Panel Overview (Description)

The Control Panel

The control panel on the LaserPro Mercury III provides an easy access to all the manual controls needed for cutting and engraving. The liquid crystal display (LCD), functional, directional and selection buttons make navigating through the machine’s manual controls easy to do.
LED Indicator Lights

Three indicator lights on the LaserPro Mercury III’s control panel are part of the system’s safety interlock system.

- **Door** - The door light will illuminate when either the top lid or external pass through doors on the LaserPro Mercury III are open or improperly closed.
- **Power** - The power light will illuminate when the LaserPro Mercury III is powered on.
- **Laser** - The laser light will illuminate when the laser is active and in operation.

---

**WARNING**

- **DO NOT** attempt to remove or modify any component of the safety interlock system.
- If at any time, any of the access doors are open and the “laser” LED is illuminated, unplug the laser system IMMEDIATELY and contact GCC technical support for service instructions.
- **DO NOT** operate the laser system if any component of the safety system is malfunctioning.

---

**NOTE**

There is an 8 second warm up period after the door LED is triggered for systems equipped with Synrad laser tubes. i.e. opening the top lid or the external pass through doors of the machine. Operator must wait for 8 seconds before the laser tube can begin to work.
Directional and Selection Buttons

Function (F1 / F2 / F3 / F4) – Four function buttons allow you to select various functions which will change depending on what section of the menu you are in. Each function button’s corresponding task will be displayed right above its respective button on the LCD display screen. Please note that in certain menus, not every function button will always be mapped to a corresponding action. In these situations, that particular button will not have a function.

Directional (Δ / ▽ / ◀ / ▶) – Four directional buttons allow you to navigate the selection cursor through the control panel menu and adjust the value of specific settings. In general, the ◀ / ▶ directional buttons cycle through the various selections, while the Δ / ▽ directional buttons adjust the value of that particular selection.

Enter – Confirms the current selection.
Start / Stop – Allows you to start or stop engraving jobs, once those jobs have been successfully loaded onto the system.
Delete – Provides quick access to delete the current job.
Pause – Pauses the current engraving process. Press again to resume the current process.
Auto Focus – After you have positioned your material and moved the laser carriage head to the area you want to engrave, press this button and the system will automatically adjust the optimal vertical focal distance for the laser.

Manual Focus (▲ / ▼) – To manually adjust the vertical focal distance between the laser head and the material, you can use the ▲ / ▼ buttons to do so. Doing so will adjust the vertical height (z-axis) of the worktable.
4.1.3 Graphic Control Panel Navigation Chart

Main Work Page

Functions Page

File Management Page

Machine Setting Page

Machine Information Page

Link / DLink Page

File Information Page

Select Lens

Tune Auto Focus

Table Down

Red Beam

Vector Mode

Save Position

Carriage Free

Command Mode

File Save Mode

SmartGuard

Scaling

Other

Reset
4.1.4 Graphic Control Panel Function Pages
When the LaserPro Mercury III is powered on, the machine will perform a series of safety checks and initializing routines. The LCD display screen will display the GCC copyright, LaserPro logo, and machine initialization pages before going to the main work page.

Main Work Page

The main work page is the page that the LaserPro Mercury III will default to upon startup and will be the “home base” for when navigating through the various functions of the control panel. This will be the page that is displayed when you are processing your jobs. This page contains specific job information such as the current job’s name, Speed, Power, PPI, DPI, processing / remaining times, and jobs loaded.

<table>
<thead>
<tr>
<th>Relevant Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Prev)</td>
<td>Scroll through previous jobs</td>
</tr>
<tr>
<td>F2 (Next)</td>
<td>Scroll through next jobs</td>
</tr>
<tr>
<td>F3 (Z)</td>
<td>Go to Carriage / Work Table Adjustment Page</td>
</tr>
<tr>
<td>F4 (Func)</td>
<td>Go to Functions Page</td>
</tr>
<tr>
<td>Δ / ▽ / ◀ / ►</td>
<td>Directional</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Start / Stop the current job</td>
</tr>
<tr>
<td>Delete</td>
<td>Delete the current selected job</td>
</tr>
<tr>
<td>Cutting Mode</td>
<td>Set Acceleration</td>
</tr>
</tbody>
</table>
Carriage / Work Table Adjustment Page

Navigating to this page:

Press △, ▽, ◀, ▶, or F3

Main Work Page

Carriage / Work Table Adjustment Page

The Carriage / Work Table Adjustment Page allow you to manually increase and decrease the height of the work table (Z-axis). In addition, you can manually adjust the Y-axis and X-axis of the laser carriage.

<table>
<thead>
<tr>
<th>Relevant Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Back)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>△ / ▽ Directional</td>
<td>Manually adjust the Y-axis position of the laser carriage</td>
</tr>
<tr>
<td>◀ / ▶ Directional</td>
<td>Manually adjust the X-axis position of the laser carriage</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Back to Main Work Page</td>
</tr>
</tbody>
</table>
Under SmartCenter mode the job will be started after the system positions the pen carriage at the center position between two points indicated by the user. There are two ways to activate the SmartCenter mode, either through driver or direct from control panel.

Enter SmartCenter page and we can move the pen carriage by hand and press enter to save the positions indicated by the red pointer. After both points are set, the pen carriage will move to the Center of the two entered points and the job will begin.

### Carriage / Work Table Adjustment Page

<table>
<thead>
<tr>
<th>Relevant Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Back)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>F2 (Reset)</td>
<td>Reset all saved positions</td>
</tr>
<tr>
<td>F4 (Save)</td>
<td>Save current lens carriage position</td>
</tr>
<tr>
<td>△ / ▽ Directional</td>
<td>Manually adjust the Y-axis position of the laser carriage</td>
</tr>
<tr>
<td>◀ / ▶ Directional</td>
<td>Manually adjust the X-axis position of the laser carriage</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Back to Main Work Page</td>
</tr>
<tr>
<td>Auto Focus</td>
<td>Initiate the auto focus function</td>
</tr>
<tr>
<td>▲ / ▼ Manual Focus Buttons</td>
<td>Manually adjust the height of the work table (Z-axis)</td>
</tr>
</tbody>
</table>
The Functions Page allows you to edit file management and machine settings. From this page, you will be able to access the File Management, Machine Setting, and Machine Information pages.

- **File Management Page** – this page allows you to manage the files that you have loaded onto the LaserPro Mercury III.
- **Machine Setting Page** – this page allows you to access and modify various machine settings, including: Set Lens, Tune Auto Focus, Set Table Down, Set Red Beam, Carriage Lock, Set Command Mode, Save Position, Flash Memory, Set File Save Mode, Set Vector Mode, Tune Image Power, Set Laser Wattage, Set Fine Mode, Other, Reset.
- **Machine Information Page** – this page allows you to view information regarding the system such as the GCC logo, machine name, firmware version, and other information.

### Functions Page

<table>
<thead>
<tr>
<th>Relevant Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Back)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>F3 (Help)</td>
<td>Display help</td>
</tr>
<tr>
<td>F4 (Recall)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>Δ / ▼ Directional</td>
<td>Scroll through the menu selections</td>
</tr>
<tr>
<td>Enter</td>
<td>Perform the selection</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Back to Main Work Page</td>
</tr>
</tbody>
</table>

**Navigating to this page:**

Main Work Page

Press F4

Functions Page
File Management Page

The File Management Page allows you to manage the files that you have loaded onto the LaserPro Mercury III. You can scroll through your jobs, delete a selected job, delete all jobs, and go to the Link/DLink Page to set and arrange multiple loaded jobs into a single job queue for processing.

<table>
<thead>
<tr>
<th>Relevant Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Back)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>F2 (Link)</td>
<td>Go to the Link/DLink Page</td>
</tr>
<tr>
<td>F3 (D-All)</td>
<td>Delete all loaded jobs</td>
</tr>
<tr>
<td>F4 (Del)</td>
<td>Delete the selected job</td>
</tr>
<tr>
<td>Δ / ∨ Directional</td>
<td>Scroll through your loaded jobs</td>
</tr>
<tr>
<td>Enter</td>
<td>Go to the File Information Page for the selected job</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Go to the Main Work Page for the selected job</td>
</tr>
</tbody>
</table>
The Link/DLink Page allows you to set, arrange, and remove loaded jobs to and from a job queue for processing. Use the directional keys to cycle through your loaded jobs, then simply press the <F2 (Link)> key to add a file to the job queue. The job queue will be set in a sequential order based on the order you link the files. Press the <F4 (DLink)> key to remove a job from your job queue.

The first column field (before the file name) displays the job number. The sequence for your job queue is displayed in the two columns to the right of your file names. The first column to the right of your job file name displays the job number of the previous file in the job queue sequence. The second column after the file name displays that job’s next file in the job queue sequence. First and last jobs in the job sequence you set will have a (---) in the first and second columns respectively. So according to the image above, the job queue sequence has been set to be processed in this order: 03:Marble.cdr → 01:Marble.cdr → 02:Marble.cdr.

<table>
<thead>
<tr>
<th>Relevant Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Back)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>F2 (Link)</td>
<td>Add the currently selected job to the job queue</td>
</tr>
<tr>
<td>F4 (DLink)</td>
<td>Remove the currently selected job from the job queue</td>
</tr>
<tr>
<td>△ / ▽ Directional</td>
<td>Scroll through your loaded jobs</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Back to Main Work Page</td>
</tr>
</tbody>
</table>
The File Information Page allows you to view the speed, power, DPI, and PPI settings of the selected job. In addition, you will be able to go to the File Management Edit Page from this menu to change raster / vector speed and power settings for the selected job.

<table>
<thead>
<tr>
<th>File Information Page</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevant Buttons</td>
<td></td>
</tr>
<tr>
<td>F1 (Back)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>F4 (Edit)</td>
<td>Go to the File Management Edit Page for the selected job</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Back to Main Work Page</td>
</tr>
</tbody>
</table>
The File Management Edit Page allows you the choice to modify your raster or vector settings for the selected job, as well as setting the number of times to repeated the process of the job selected (Repeat Num).

<table>
<thead>
<tr>
<th>Relevant Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Back)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>△ / ▽ Directional</td>
<td>Scroll through the menu selections</td>
</tr>
<tr>
<td>◀ / ▶ Directional</td>
<td>Cycle through the available selections</td>
</tr>
<tr>
<td>Enter</td>
<td>Perform the selection</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Back to Main Work Page</td>
</tr>
</tbody>
</table>
The File Edit Raster Page allows you to edit the raster power and speed settings, as well as enable or disable SmartACT for the selected job. These settings correspond to the same settings found on the LaserPro Mercury III print driver. This page allows you to easily adjust these values to make immediate adjustments while processing your loaded jobs, even when you have disconnected your computer from the LaserPro Mercury III.

- Raster Power: 0.0% - 100%
- Raster Speed: 0.0% - 100%
- SmartACT: YES / NO

<table>
<thead>
<tr>
<th>Relevant Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Back)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>△ / ▽ Directional</td>
<td>Scroll through the menu selections</td>
</tr>
<tr>
<td>◀ / ▶ Directional</td>
<td>Adjust the value for that selection</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Back to Main Work Page</td>
</tr>
</tbody>
</table>

Navigating to this page:

1. Main Work Page
   - Press F4
2. Functions Page
   - Select <File Management> from the menu
3. File Management Page
   - Select a job file and press Enter
4. File Information Page
   - Press F4
5. File Management Edit Page
   - Select <Raster Setting> from the menu
6. File Edit Raster Page
The File Edit Vector Page allows you to edit the vector pen, vector power, vector speed, and vector PPI, and power ramp settings for the selected job. These settings correspond to the same settings found on the LaserPro Mercury III print driver. This page allows you to easily adjust these values to make immediate adjustments while processing your loaded jobs, even when you have disconnected your computer from the LaserPro Mercury III.

- Vector Pen: 1 - 16
- Vector Power: 0.0% - 100%
- Vector Speed: 0.0% - 100%
- Vector PPI: 30 - 1524
- Power Ramp: YES / NO

### File Edit Vector Page

<table>
<thead>
<tr>
<th>Relevant Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Back)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>F4 (Save)</td>
<td>Save your current settings</td>
</tr>
<tr>
<td>Δ / ▼ Directional</td>
<td>Scroll through the menu selections</td>
</tr>
<tr>
<td>◄ / ► Directional</td>
<td>Adjust the value for that selection</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Back to Main Work Page</td>
</tr>
</tbody>
</table>
The Machine Setting Page allows you to access and modify a variety of your machine settings, including: Select Lens, Tune Auto Focus, Set Table Down, Set Red Beam, Vector Mode, Save Position, Carriage Lock, Set Command Mode, Set File Save Mode, SmartGuard, Scaling, Other, Reset.

<table>
<thead>
<tr>
<th>Machine Setting Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Relevant Buttons</strong></td>
</tr>
<tr>
<td>F1 (Back)</td>
</tr>
<tr>
<td>△ / ▼ Directional</td>
</tr>
<tr>
<td>Enter</td>
</tr>
<tr>
<td>Start / Stop</td>
</tr>
<tr>
<td>Auto Focus</td>
</tr>
<tr>
<td>▲ / ▼ Manual Focus Buttons</td>
</tr>
</tbody>
</table>
Set Lens Page

Navigating to this page:

- Press F4 to go back to the Main Work Page.
- Select <Machine Setting> from the menu to go to the Functions Page.
- Select <Set Lens> from the menu to go to the Machine Setting Page.
- Select <Set Lens> from the menu to go to the Set Lens Page.

The Set Lens Page allows you to modify the lens setting after you have changed to a different focal lens. Remember to save your settings after you have made the proper changes. Now by pressing the Auto Focus button, the LaserPro Mercury III will auto focus properly using the new lens. The LaserPro Mercury III’s default setting is <2.0”>.

- Lens: 1.5” / 2.0” / 2.5” / 4.0”

<table>
<thead>
<tr>
<th>Relevant Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Back)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>F4 (Save)</td>
<td>Save your current settings</td>
</tr>
<tr>
<td>&lt; / &gt; Directional</td>
<td>Cycle through selections</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Back to Main Work Page</td>
</tr>
<tr>
<td>Auto Focus</td>
<td>Initiate the auto focus function</td>
</tr>
<tr>
<td>▲ / ▼ Manual Focus Buttons</td>
<td>Manually adjust the height of the work table (Z-axis)</td>
</tr>
</tbody>
</table>
The Tune Auto Focus Page allows you to manually set the default auto focus distance / vertical height of the worktable (Z-axis) for when the Auto Focus button is pushed.

<table>
<thead>
<tr>
<th>Relevant Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Back)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>F4 (Save)</td>
<td>Save your current settings</td>
</tr>
<tr>
<td>△ / ▽ Directional</td>
<td>Manually adjust the height of the work table (Z-axis)</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Back to Main Work Page</td>
</tr>
<tr>
<td>Auto Focus</td>
<td>Initiate the auto focus function</td>
</tr>
<tr>
<td>△ / ▽ Manual Focus Buttons</td>
<td>Manually adjust the height of the work table (Z-axis)</td>
</tr>
</tbody>
</table>
The Set Table Down Page allows you to select whether or not the LaserPro Mercury III displays a warning prompt at startup. If the Table Down selection is set to <YES>, the LaserPro Mercury III will display a warning prompt: at startup, stating: “Table will move down and remove objects on table”. Pressing the Enter key at this point will confirm the prompt to move the work table to its lowest position. If the Table Down is set to <NO>, then the LaserPro Mercury III will not display this warning prompt at system startup.

- Table Down: YES / NO
- Distance: 0 - 165 mm

<table>
<thead>
<tr>
<th>Relevant Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Back)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>F4 (Save)</td>
<td>Save your current settings</td>
</tr>
<tr>
<td>/ Directional</td>
<td>Scroll through the menu selections</td>
</tr>
<tr>
<td>/ Directional</td>
<td>Adjust the value for that selection</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Back to Main Work Page</td>
</tr>
<tr>
<td>Auto Focus</td>
<td>Initiate the auto focus function</td>
</tr>
<tr>
<td>▲ / ▼ Manual Focus Buttons</td>
<td>Manually adjust the height of the work table (Z-axis)</td>
</tr>
</tbody>
</table>
The Set Beam Page allows you to turn on or off the red dot laser pointer on the laser carriage. Enabling this function will indicate the exact area the engraving laser will fire upon.

- Red Beam YES / NO

### Set Red Beam Page

<table>
<thead>
<tr>
<th>Relevant Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Back)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>F4 (Save)</td>
<td>Save your current settings</td>
</tr>
<tr>
<td>▼ / ▲ Directional</td>
<td>Cycle Red Beam between YES / NO</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Back to Main Work Page</td>
</tr>
<tr>
<td>Auto Focus</td>
<td>Initiate the auto focus function</td>
</tr>
<tr>
<td>▲ / ▼ Manual Focus Buttons</td>
<td>Manually adjust the height of the work table (Z-axis)</td>
</tr>
</tbody>
</table>
The Set Vector Mode Page allows you to adjust and balance vector mode’s quality and speed settings based on your specific job. Speedy Vector Mode offers the highest output speed, sacrificing quality. Whereas Quality Vector Mode offers the highest quality, sacrificing output speed. Keep in mind that speed and quality are usually at a tradeoff. The system’s default is Fine Vector mode, sacrificing some speed for higher quality. The LaserPro Mercury III’s default setting is <Fine Vector>.

- Modes: Quality Vector, Fine Vector, Coarse Vector, Speedy Vector
  [Slower speeds / higher quality ------------------ Faster speeds / lower quality]

<table>
<thead>
<tr>
<th>Set Vector Mode Page</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>F1 (Back)</strong></td>
<td>Back to previous page</td>
</tr>
<tr>
<td><strong>F4 (Save)</strong></td>
<td>Save your current settings</td>
</tr>
<tr>
<td>▲ / ▼ Directional</td>
<td>Cycle Set Vector Mode between QUALITY VECTOR/ FINEVECTOR/ COARSE VECTOR/ SPEEDY VECTOR</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Back to Main Work Page</td>
</tr>
<tr>
<td>Auto Focus</td>
<td>Initiate the auto focus function</td>
</tr>
<tr>
<td>▲ / ▼ Manual Focus Buttons</td>
<td>Manually adjust the height of the work table (Z-axis)</td>
</tr>
</tbody>
</table>
Save Position Page

Navigating to this page:

Main Work Page
press F4

Functions Page
Select<Machine Setting>from the menu

Machine Setting Page
Select<Set file Save Mode>from the menu

Set File Save Mode Page

The Save Position Function allows you to save the current X-axis and Y-axis positions of the laser carriage and sets this position to be the origin for subsequent jobs.

Tip
This is an excellent function to use when you are processing identical items or engraving relatively smaller objects positioned away from the default start position (top left) of the work table.

Recall Position

Navigating to this page:

Main Work Page
press F4

Functions Page

Select<Recall> by pressing F4

To recall the saved position, simply go to Functions page and press F4 again to recall the saved position. The laser carriage will be moved to the saved position.
The Carriage Lock Page allows you to set whether the laser carriage is locked or free. If the Carriage Free setting is set to <YES>, then you will be able to manually move the laser carriage along the X and Y axis by hand with the top door open. Whereas setting the Carriage Free to <NO> will lock the laser carriage, and movement or positioning can only be done by the control panel.

- **Carriage Free YES / NO**

<table>
<thead>
<tr>
<th>Carriage Lock Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Relevant Buttons</strong></td>
</tr>
<tr>
<td>F1 (Back)</td>
</tr>
<tr>
<td>F4 (Save)</td>
</tr>
<tr>
<td>&lt;</td>
</tr>
<tr>
<td>Start / Stop</td>
</tr>
</tbody>
</table>
Set Command Mode Page

The Set Command Mode Page allows you to configure vector settings when outputting in Default or HPGL mode. Default mode is the standard Windows print driver recognized by the most popular graphic software programs, such as CorelDraw, Photoshop, Illustrator, etc. Whereas, HPGL mode is a less common output format generated from some RIP applications (signage industry). Regardless of which format you will be working with, both output formats are supported.

- Mode: Default / HPGL
- Vector Pen: 1 - 16
- Vector Speed: 0.0% - 100%
- Vector PPI: 0.0% - 100%
- Power Ramp: YES / NO

<table>
<thead>
<tr>
<th>Relevant Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Back)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>F4 (Save)</td>
<td>Save your current settings</td>
</tr>
<tr>
<td>Δ / Δ Directional</td>
<td>Scroll through the menu selections</td>
</tr>
<tr>
<td><code>&lt;</code> / <code>&gt;</code> Directional</td>
<td>Adjust the value for that selection</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Back to Main Work Page</td>
</tr>
</tbody>
</table>

Navigating to this page:

- Press F4
- Select <Machine Setting> from the menu
- Select <Set Command Mode > from the menu
The File Save Mode Page allows you to set whether or not the LaserPro Mercury III automatically deletes each job file after processing. Setting File Save to <NO> will automatically and immediately delete each job file from the LaserPro Mercury III after the engraving or cutting process. Setting File Save to <YES> will retain all job files on the LaserPro Mercury III, even after each job has been processed.

- File Save: YES / NO

<table>
<thead>
<tr>
<th>Set File Save Mode Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Relevant Buttons</strong></td>
</tr>
<tr>
<td>F1 (Back)</td>
</tr>
<tr>
<td>F4 (Save)</td>
</tr>
<tr>
<td>&lt; / &gt; Directional</td>
</tr>
<tr>
<td>Start / Stop</td>
</tr>
</tbody>
</table>
SmartGUARD Page

After hardware installation, please enter the function menu on the control panel to enable the SmartGUARD fire alarm.

**SmartGUARD Enable / Disable:**

Press directional key (left or right) to enable the SmartGUARD device or disable it.

**Sensitivity:**

Press directional key (left or right) to set the sensitivity of SmartGUARD. There are five sensitivity settings (1, 3, 5, 7, 9 seconds) that can be selected. Sensitivity is defined by the delay time from when a fire is detected until the fire alarm alerts the user, and automatically shuts down the system. For example, if the sensor delay switch is set to the 3 second position, the SmartGUARD will start an alarm and automatically shutdown the laser system after detecting a fire for 3 seconds.

<table>
<thead>
<tr>
<th>SmartGUARD Setting Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Relevant Buttons</strong></td>
</tr>
<tr>
<td>F1 (Back)</td>
</tr>
<tr>
<td>F4 (Save)</td>
</tr>
<tr>
<td>△ / ▼ Directional</td>
</tr>
<tr>
<td>&lt; / &gt; Directional</td>
</tr>
</tbody>
</table>

Navigating to this page:

1. Main Work Page
   - press F4
2. Functions Page
   - Select < Machine Settings > from the menu
3. Machine Setting Page
   - Select < SmartGUARD > from the menu
4. SmartGUARD Page
The Scaling page allows you to set the scaling factor of the machine.

### Scaling Page

<table>
<thead>
<tr>
<th>Relevant Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Back)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>F4 (Save)</td>
<td>Save your current settings</td>
</tr>
<tr>
<td>△ / ▽ Directional</td>
<td>Manually adjust the height of the work table (Z-axis)</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Back to Main Work Page</td>
</tr>
<tr>
<td>Auto Focus</td>
<td>Initiate the auto focus function</td>
</tr>
<tr>
<td>▲ / ▼ Manual Focus Buttons</td>
<td>Manually adjust the height of the work table (Z-axis)</td>
</tr>
</tbody>
</table>
Other Page

The Other Page allows you to change various settings that correspond to the control panel. The Language setting will allow users to change available languages displayed by the control panel. The Unit setting will allow you to change whether the units displayed by the control panel is in the metric or imperial system. The EOF (end of file) Alarm setting will enable or disable an audible notification when your jobs are complete. The Air Delay setting allows you to specify the delay in seconds of the SmartAIR air-assist after the point of laser firing.

- Language: ENGLISH (others dependent on Firmware)
- Unit: METRIC / ENGLISH
- EOF Alarm: YES / NO
- Air Delay: 1-100 seconds

**TIP** Depending on the material you are engraving with, your laser settings, and the desired results, please experiment with the air delay to achieve your desired results.

<table>
<thead>
<tr>
<th>Relevant Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Back)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>F4 (Save)</td>
<td>Save your current settings</td>
</tr>
<tr>
<td>Δ / V Directional</td>
<td>Scroll through the menu selections</td>
</tr>
<tr>
<td>&lt; / &gt; Directional</td>
<td>Adjust the value for that selection</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Back to Main Work Page</td>
</tr>
</tbody>
</table>
The Reset Page allows you to reset all changes made to the LaserPro Mercury III’s Machine Settings Page to their default settings. This does not affect the settings saved to an image file on the computer. The User Reset setting will set all settings back to the default. After any firmware updates, you must use the System Reset setting (your previous settings are saved).

- User Reset (will pop up a confirmation, press Enter to confirm and continue)
- System Reset (will pop up a confirmation, press Enter to confirm and continue)

<table>
<thead>
<tr>
<th>Relevant Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Back)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>Δ / ▼ Directional</td>
<td>Scroll through the menu selections</td>
</tr>
<tr>
<td>Enter</td>
<td>Perform the selection</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Back to Main Work Page</td>
</tr>
</tbody>
</table>
The Machine Information Page allows you to view information regarding the system such as the GCC logo, machine name, firmware version, and other information.

<table>
<thead>
<tr>
<th>Relevant Buttons</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 (Back)</td>
<td>Back to previous page</td>
</tr>
<tr>
<td>Δ / V Directional</td>
<td>Scroll through pages</td>
</tr>
<tr>
<td>Start / Stop</td>
<td>Back to Main Work Page</td>
</tr>
</tbody>
</table>
Chapter V - Operating the LaserPro Mercury III

5.1 The LaserPro Mercury III Print Driver

With the LaserPro Mercury III print driver successfully installed, you will need to adjust the printer and page size default settings before you can begin editing and completing jobs. By doing so, you will be setting the work area in your graphics software to match the LaserPro Mercury III’s worktable area.

**NOTE**

Please make sure Mercury III is set to the default printer before proceeding to the page and layout setup.

- Ensure that the LaserPro Mercury III has been selected as the DEFAULT PRINTER. You can do so by going into your Windows Control Panel ➔ Printers and Faxes.

If LaserPro Mercury III is not selected as DEFAULT PRINTER, you may set it up through the graphics software as well. The following example takes Corel Draw to demonstrate how to set up LaserPro Mercury III as the Printer.

1) From the primary menu, click FILE ➔ PRINT SETUP.

2) From the navigation bar Name, click Mercury II ➔ OK
5.1.1 Page Setup and Orientation

The first thing you must do before working with the LaserPro Mercury III Print Driver will be to make sure the page and layout settings are properly configured within your graphics software. You will need to access and edit the Page Setup or Layout page of your graphics software to set your graphics software’s page layout to match the LaserPro Mercury III’s work table’s dimensions and orientation.

From your graphic software’s Page Setup page:
- Set the page orientation in the graphics software to Landscape mode.
- Set page size horizontal length to 635 mm (25 inches) and vertical height to 458 mm (18 inches).

Corel Draw Example (Page Setup and Orientation)

The following is an example of how to set the Page Setup and Orientation in the graphics software. CorelDraw is the designated graphics software used for this example. For other graphics software, you will need to access the corresponding Page Setup page.

1) From the primary menu, click LAYOUT → PAGE SETUP.
2) From the navigation bar on the left, click DOCUMENT → PAGE → SIZE.
3) Ensure that NORMAL PAPER and LANDSCAPE are selected.
4) Ensure the Paper Width and Height dimensions match the LaserPro Mercury III’s work table dimensions of 635 mm (25 inches) and 458 mm (18 inches).
5) Click OK to complete the paper size adjustment.

TIP

Instead of manually selecting the Landscape and setting the Paper Width and Height, you can simply click the Set From Printer function and CorelDraw will automatically set the proper orientation and dimensions based on LaserPro Mercury III’s work table. (You MUST have the Mercury III set as the default printer prior to doing this.)
The image shows a screenshot of a software interface with options for setting page size. The options include:

- **Normal Paper** or **Labels**
- **Portrait** or **Landscape** orientation
- **Width** and **Height** fields with values 25.0 inches and 13.0315 inches

Additional options include:

- **Set From Printer**
- **Save Custom Page**
- **Add Page Frame**

The interface is part of LaserPro MERCURY III User Manual.
5.1.2 Color Management

LaserPro driver uses pen color settings to control laser engraver’s engraving and cutting parameters. In addition to having your Page Setup and Orientation properly set in your graphics software, you will also need to make sure Color Management is DISABLED prior to working with the LaserPro Mercury III Print Driver.

From your graphic software’s Color Management page:
- Disable Color Management or set Color Management to Off.

**Corel Draw Example (Color Management)**

The following is an example of how to properly disable Color Management in the graphics software. CorelDraw is the designated graphics software used for this example. For other graphics software, you will need to access the corresponding Color Management page.

1) From the primary menu, click TOOLS \(\rightarrow\) COLOR MANAGEMENT and CorelDraw’s Color Management will appear.

2) Under the Style pull down menu, select COLOR MANAGEMENT OFF.

3) Click OK to complete the color management adjustments.
5.1.3 Using the LaserPro Mercury III Print Driver

Now after you have properly set the Page and Layout and Color Management of your graphics software, you are ready to configure the details of your actual job through the LaserPro Mercury III Print Driver. The LaserPro Mercury III print driver allows you to adjust your engraving / cutting options. After you have setup your image, design, or text to be engraved in your software application, you can access the LaserPro Mercury III print driver by going to FILE > PRINT > PROPERTIES.

The LaserPro Mercury III Print Driver consists of seven primary sections (pages) in which you will be able to choose various engraving / cutting options and settings:

- Option Page
- Pen Page
- Advance Page
- Paper Page
- Language Page
- Raster Page (appears only in Black & White Mode)
- Stamp Page (appears only in Stamp Mode)

**TIP**

The following sections describe the specific functions for each of the settings found in the LaserPro Mercury III Print Driver. If you are new to laser engraving, it is recommended that you first familiarize yourself with the general principles of the laser process in Section 6, especially the Vector Cutting and Raster Engraving concepts. This will make it easier to understand the various descriptions and terminologies used in this section.

5.1.3.1 LaserPro Mercury III Print Driver >> Option Page
Mode Setting (OPTION PAGE)

[DEFAULT SETTING: Black & White]

You can select from four primary mode settings, depending on your application or results you would like to achieve.

Black & White: Select this mode when using clipart images or drawings with several colors, shades of gray, or many outlines. This mode outputs in a method similar to that of a black and white laser printer. The entire selected image will be engraved using a single set of power and speed settings (the black pen from the PEN menu. Please refer to the next section of the manual for details regarding the PEN functions). The LaserPro Mercury III print driver will interpret colored and shaded areas as different shades of gray by producing a halftone effect while engraving. Instead of engraving only solid lines, gray/half tone areas will be a collection of dots with varying density.

The resolution and depth of these halftone areas can be adjusted with the DPI setting found on the Options page. Please note that selecting the Black & White mode will add a new Raster page to the menu. The Black & White mode dithering settings can be changed from the Raster page. (Please refer to the Raster section below for details). Experiment with different dithering settings to attain the desired results.

TIP

The Black & White mode interprets the processed image by the varying colors and shades. For the best results, we suggest you convert the image to a grayscale image with your graphics software prior to engraving in the Black & White mode.
NOTE

Selecting the Black & White mode will enable the Raster page on the LaserPro Mercury III Print Driver, allowing you to adjust advanced stamp-related settings.

Manual Color Fill: Select this mode when you would like to designate specific power and speed settings and link them to certain colors of your image. The LaserPro Mercury III print driver allows a maximum of 16 pen parameters to be set.

3D Mode: Select this mode to attain a sculptured 3D effect on your engraving. By using images that have a range of gray areas, the LaserPro Mercury III print driver can manipulate the image to give it an added depth, by linking the laser power (depth of engraving) to specific colors. The settings can be adjusted through the DPI setting (Option page) and PPI, power and speed settings (Pen page).

Stamp Mode: Select this mode when you would like to engrave stamps. The stamp mode is one of the more dynamic functions of the LaserPro Mercury III. Due to the unique engraving nature when engraving a stamp, the stamp production requires different operational steps than most engraving or cutting operations.

NOTE

Selecting the Stamp mode will enable the Stamp page on the Mercury III Print Driver, allowing you to adjust advanced stamp-related settings.

DPI (Option Page)
[DEFAULT SETTING: 500]

DPI (dots-per-inch) represents the number of times the laser will fire over a one-inch path. This setting determines the image resolution and quality when performing raster engraving functions. Higher DPI settings result in cleaner and deeper engravings, but require more time to complete. Lower DPI settings result in coarser and shallower engravings, but require less time to complete. The LaserPro Mercury III offers 8 DPI options: 125, 250, 300, 380, 500, 600, 760, and 1000, experiment with different settings to get your desired effect.

Below is a chart for your convenience detailing the Set DPI (your input setting) vs. Actual DPI (your output results).

<table>
<thead>
<tr>
<th>Set DPI</th>
<th>125</th>
<th>250</th>
<th>300*</th>
<th>380</th>
<th>500</th>
<th>600*</th>
<th>760</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual DPI</td>
<td>127</td>
<td>254</td>
<td>381</td>
<td>381</td>
<td>508</td>
<td>762</td>
<td>762</td>
<td>1016</td>
</tr>
</tbody>
</table>

- Mirror (Option Page)
  [DEFAULT SETTING: Unselected]
  Checking this box will automatically engrave your image with a mirrored effect. This setting will flip the image along the Y-axis from left to right and vice-versa.
When engraving a stamp, via the stamp mode, the stamp image needs to be engraved in reverse (mirrored) for the final stamp to be correctly laid out.

**Invert (Option Page)**
[DEFAULT SETTING: Unselected]

Checking this box automatically inverts / reverses the color of your image (the white areas become black and vice versa). The Invert option is not available if disabled with Manual Color File mode is selected.

**Invert mode is useful when creating a stamp in Stamp Mode, as inverting your normal image will set the negative space to be engraved out, with the remaining positive space (your stamp design) protruding out.**

**Print Immediately (Option Page)**
[DEFAULT SETTING: Unselected]

Checking this will instruct the LaserPro Mercury III to immediately begin the laser engraving process, when you select Print from your graphic software program. If Print Immediately is not checked, then selecting Print will transfer the job file to the LaserPro Mercury III system and will need to be initialized from the LaserPro Mercury III control panel.

**File Function (Option Page):**

The file function section allows you to manage various laser parameters. This section is useful when performing duplicate jobs on a variety of objects, allowing you to save your frequently used laser parameters and load them in the future.

- **History File:** This section contains a list of the recent files you have recently created and worked with.

- **Save:** This function will save the current print driver parameter settings to a file and location on your computer of your selection. (Saved parameter setting files will be tagged with the .MER extension)

- **Load:** This function allows you to load previously saved print driver parameters or LaserPro parameter database.
• **Original:** This function will load the print driver’s original factory parameter settings.

• **Save To Default:** This function allows you to save your current print driver parameters as the default start-up settings.

• **Delete:** This function will delete the file you select from the History File section. Please note the Delete function only removes the file from the history file section, it does not remove the .MER file from your hard drive, if you wish to completely remove the file from your hard disk, then you will have to manually delete the file from your operating system.)

**NOTE**

If you are using Windows 2000 or XP as your operating system, then make sure you log in with an administrator or administrator-rights account in order to properly save laser parameter settings.

**TIP**

LaserPro material database settings allow you easy to load the several parameters. If you are loading LaserPro parameter database as your operating parameter, please direct load from several build-in parameter folders.
5.1.3.2 Mercury III Print Driver >> Pen Page

The LaserPro Mercury III incorporates the use of 16 different colors to represent 16 different laser power and speed settings when cutting and engraving. These colors are referred to as “Pens”. Think of each pen as a designated laser setting, rather than as a color. As an example, a black and white image will use only one power and speed laser setting (Black). An image that is made up of black, red and blue colors will be processed using the laser settings designated for each particular color. In order to utilize up to 16 different pens (laser parameter settings), make sure your graphics software can recognize and utilizes the 16 pen colors designated by the Mercury III print driver.

If you would like to specify your own colors to designate to a particular laser setting, then all you have to do is to double-click on that particular pen color from the pen menu and a color manager window will open where you can select “define custom colors” to define your own color (shown in the picture below). This is useful when your image is composed of colors that are not part of the pen menu’s default color selection, and instead of modifying your image, you simply assign the laser settings based on the existing colors based on your current image.

![Color Manager Window](image)

**NOTE**

The Mercury III print driver can store up to 16 pen colors or different laser parameter settings per file.
**Speed (Pen Page)**

[DEFAULT SETTING: 50]

The speed slider controls the laser’s speed during operation (engraving speed) with settings ranging from 0.1 – 100%. Only when moving in straight line with enough distance, the carriage can achieve 100% speed. On the other hand, the machine will automatically slow down when processing curves so the speed % indicator only presents maximum speed % that laser can achieve but not equal to actual laser carriage moving speed. It is exactly like driving a car on a straight road, you can drive faster and on a curve road you have to slow down.

Laser pulse frequency is controlled by the speed setting for vectors and it is opposite to pulse width, meaning higher speed setting for vectors, lower pulse width, and thus less cutting capability. Not only speed% setting affects actual processing time but also the job size, complexity of the graphic and the position of the graphic in the working area.

**Power (Pen Page)**

[DEFAULT SETTING: 50]

The power slider controls the laser’s power during operation (engraving/cutting power) with a range setting from 0 – 100%. The percentage setting represents the power for each laser pulse fired. The lower the power setting, the shallower it engraves or cuts, and vice-versa.

**TIP**

Cutting / engraving depth are determined by a combination of power and speed. Slower speed at higher power will produce deeper cuts and engravings, whereas higher speeds at lower power will produce more shallow cuts and engravings.

**PPI (Pen Page)**

[DEFAULT SETTING: 400]

PPI (pulses-per-inch) represents the pulsing frequency of the laser pulse (fire) numbers within an inch exclusive for vector cutting. Higher PPI settings may cause more melting, burning or charring on the edges when cutting. Lower PPI settings may reduce this effect, but may result in a serrated looking edge. If you drag the PPI slider to the maximum, the value will change to X. This completely disables the PPI control and turns on the laser continuously without pulsing. This disables the power ramp functionality, which automatically controls the PPI depending on the speed of the laser carriage (such as vector cutting around the corner of a square). With PPI to X, the cutting corner with slower speed will generate over burn or melting.

**TIP**

1. When cutting thicker materials, suggest setting PPI to X and slow speed setting to melt/cut through the material.
2. When cutting thin material or do kiss-cutting, it is recommended to set the PPI value to 400 and slower speed setting to keep curve and line with consistent cutting result, no over burn in corner.
**Raster / Vector (Pen Page)**

[DEFAULT SETTING: Selected]

Checking the Raster checkbox will process only the raster functions for the areas of your design that correspond to that particular “pen” color.

Checking the Vector checkbox will process the vector functions for the areas of your design that correspond to that particular “pen” color.

As an example: a particular “pen” color may be assigned to areas in your design containing color fills (raster engraving) and very thin lines (vector cutting). By checking / un-checking the Raster and Vector will force the driver to process / ignore the color fills / thin lines.

<table>
<thead>
<tr>
<th>Vector Checked</th>
<th>Vector Unchecked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raster Checked</td>
<td>Processes both Vector and Raster functions for that particular color</td>
</tr>
<tr>
<td>Raster Unchecked</td>
<td>Processes only the Vector functions for that particular color (Raster functions ignored)</td>
</tr>
</tbody>
</table>

**Air (Pen Page)**

[DEFAULT SETTING: Unselected]

This checkbox controls the SmartAIR air-assist function (if you have the optional air compressor installed). By selecting a pen color and checking this box will enable the SmartAIR air-assist function for that particular pen color. As an example, if you are performing a combination of both surface raster engraving job and deep vector cutting on a material such as acrylic, you may want to enable the SmartAIR air-assist for the vector cutting sections to get the cleanest cuts. To do this, you would simply need to select the pen color that you have assigned to the sections to be cut and select the Air checkbox for those particular pen colors.
5.1.3.3 Mercury III Print Driver >> Advanced Page

**Scaling (Advanced Page)**

[DEFAULT SETTING: 0]

In some cases you may find a slight output inaccuracy in the actual output compared to what you have set in the computer. This margin of error or offset is extremely small (approximately 1/300). What this means is that there may be a 1-unit offset for every 300 unit increments. As an example, if you engrave a 300mm straight line, it may end up measuring only 299mm or 301mm in the final output. In this case, you will want to set the scaling setting to +1 / 1000 or -1 / 1000 respectively to compensate. A general rule of thumb is for every 300 unit increment, you will want to adjust the slider by +1 if the final output is 1 unit increment shorter or -1 if the final output is 1 unit increment longer than your graphic design setting.

**Position Modes (Advanced Page)**

[DEFAULT SETTING: Home]

These selections allow you to control the positioning of the lens carriage after each job completion and before the next subsequent job.

- **Home**: Resets the positioning of the lens carriage to the 'home position' (upper-right) before and after each job.
- **Without Home**: The lens carriage will start the next job based on the position from its graphic application software setting, from the last position of the previous job. Upon
completion of the current job, the lens carriage will remain at the last position of the previous job.

- **Relative:** This mode sets the current lens carriage position to correspond to the origin (top left) position of the graphic software. Therefore, the lens carriage will process the job from its current position relative to its setting in the graphics software.

- **Center:** Sets the current position of the lens carriage as the center point for your subsequent job. As an example, if the subsequent job is to vector cut a circle and you have the Position Mode set to Center, then the Mercury III will vector cut a circle around the initial position of the lens carriage.

**TIP**

It is highly recommended you enable the red dot laser pointer when setting/adjusting the Position Modes, as this will ease your job positioning with more accuracy.

**Image Output Direction (Advanced Page)**

[DEFAULT SETTING: Top to Bottom]

These selections allow you to control the direction in which the system processes an engraved image.

- **Top To Bottom:** Selecting this will force the system to process the current task by moving the laser carriage from the top to the bottom of the image (rear end to front end of the work table).

- **Bottom To Top:** Selecting this will force the system to process the current task by moving the laser carriage from the bottom to the top of the image (front end to rear end of the work table)

(Normally, the LaserPro Mercury III engraves from left to right, top to bottom. Selecting Bottom Up will force the machine to start from the bottom and work its way to the rear of the working table.)

**TIP**

In situations where the material you will be working with may produce a lot of dust byproducts and you are utilizing the optional air extraction system, it is recommended you select the Bottom To Top image output direction option. This will minimize the amount of dust byproducts lodged in the engraved sections as the air extraction system is vented from the rear of the machine, the same direction as the image is processed.

**Border (Advance Page)**

[DEFAULT SETTING: Unselected]

In cases where you are working with a negative image (negative outline areas of your image are engraved, rather than the positive areas), you may wish to include a border around your image. To properly add a border, you will first need to Invert your design from the Option Page, then check Use Border and specify a value for the thickness of the
border you would like to add to your design. This mode is useful for engraving rubber stamps, as it allows you to create the outline around your stamp image.

**NOTE**

If you wish to use the Border and Cluster function simultaneously, then the Border Thickness value must be **less than** the Distance value specified in the Cluster setting.

### Vector Function (Advanced Page)
[DEFAULT SETTING: Normal]

- **Normal**: This selection will not apply any special advanced vector function to your job. This is the default Vector Function setting.

- **All Raster Output**: This selection will instruct the print driver to process your entire image as a raster engraving. Any vector lines within the image will be treated as raster data and outputted as a raster engraving, similar to a dot-matrix printer.

- **Inside Out Cutting**: When performing a vector cutting job in which your image has one vector cut area enclosed within another vector cut area, select the Inside Out Cutting mode. This mode will automatically instruct the print driver to process the inside vector image and moving outwards. If you try to process a vector image that has multiple layers without using this mode, what may occur is the laser engraver may process the outer vector cutting first, and any inner vector cutting will not be possible as your centerpiece material may have dropped to the cutting table. This setting will always automatically direct the laser to cut from the inner most vector shape and move outwards.

- **Cutting Path Optimization**: This is a setting that will minimize your process time. When selected, the print driver will analyze your image and automatically determine the most efficient processing path to process your image.

### Use Cluster (Advanced Page)
[DEFAULT SETTING: Unselected]

This setting allows you to change how the Mercury III interprets and processes individual / independent areas of an image in order to minimize job-processing times. The Cluster function is only applicable when multiple areas of an image are broken down and isolated from each other (areas not touching each other, blank space in-between). Another condition that must be met for the Cluster function is that these individual areas of your design must have some X-axis overlap, meaning that they should be to some extent side-by-side with empty spaces between them. The distance value can be set by the user and represents the limit or cutoff point in which side-by-side objects will be processed in Cluster mode or not. If the distance between side-by-side objects is greater than the set distance value, then the individual areas will be processed in Cluster mode. Conversely, if the distance between side-by-side objects is lesser than the set distance value, then the individual areas will be processed normally (not via Cluster mode).

An example of an image that would benefit from the Cluster function would be: 2 squares to be engraved, side-by-side on the X-axis with a 20 cm gap in between them. In this scenario, you would want to enable the Cluster setting and set the distance to a value less than 20. By doing so, the laser will completely process one square and “leap-frog” to the second square, rather than processing both squares simultaneously. The result: you
shorten the processing time by minimizing the unnecessary travel distance the lens carriage needs to make across the X-axis in between squares, if they were to be processed simultaneously.

NOTE
If you wish to use the Border and Cluster function simultaneously, then the Border Thickness value must be less than the Distance value specified in the Cluster setting.

Enhanced Vector Mode (Advanced Page)
[DEFAULT SETTING: Unselected]

This setting allows you to improve the cutting quality at the expense of speed. Your engraving speed will be dropped by 50%, to maximize the cutting power. We recommend that you enable this function when cutting thicker materials.
Paper Size (Paper Page)

The paper size represents your total work area. Ensure that the paper size is never set greater than the Mercury III’s worktable area of 25” x 18” (640mm x 460mm). The X value represents the length and the Y value represents the width.

NOTE

When using the optional rotary attachment system and with the Rotary Fixture option checked, the X value represents the length of your working piece. The Y value will be changed to Diameter, which represents the diameter of your working piece (at the position you wish to engrave).

Unit (Paper Page)

[DEFAULT SETTING: Metric (mm)]

Here you can set your preferred measurement standard in which you would like use with the Mercury III print driver. You can choose between metric or imperial standards.
Image Tuning (Paper Page)
(DEFAULT SETTING: 0)

In the event that you are processing extremely fine and detailed designs requiring near-microscopic edge-to-edge precision, you will need to adjust the image tuning setting. To adjust this setting, we recommend that you engrave a small black square design as a sample and apply a magnifying glass to the engraved results.

When you look at your engraved test square under a magnifying glass, you may notice the edges of your square may be slightly offset, with every consecutive engraved even or odd line protruding past the square’s ideal edge. This occurrence may occur on the left or right side of the square and can be compensated for by the image tuning setting. In the diagram below, the arrows refer to the direction the lens carriage is moving to generate that engraved line. If the first and every other line protrude to the left of the square’s ideal edge, you will want to set the image tuning to a negative value. If the first and every other consecutive line protrude to the right of the square’s ideal edge, you will want to set the image tuning to a positive value. The further the protruding lines are from the square’s ideal edge, the larger you will need to set the Image Tuning value to compensate.

The following is an example that has the proper image tuning, and demonstrates this significance when engraving fine, small, intricate text. The following two pictures show engraved text magnified with no image tuning (left picture) and image tuning enabled (right picture).
5.1.3.5 Mercury III Print Driver >> Language Page

This page allows you to specify the language displayed by the Mercury III Print Driver. Current language options allow for: English, Spanish, French, and Chinese (Simplified, Traditional), Japanese, and German.

Uninstall Driver (Language Page)

Select this to uninstall the Mercury III print driver. You will then need to restart your computer to complete the process.
5.1.3.6 Mercury III Print Driver >> Raster Page

**NOTE**

The Raster Page is only available when Black & White Mode Setting is selected from the Option Page; this page offers a number of advanced Raster Engraving output options.

![New Mercury Properties](image)

**Contrast (Raster Page)**

[DEFAULT SETTING: 0]

This provides a quick and easy way to immediately adjust the contrast of an engraved image. Moving the slider to the Dark setting will increase the contrast levels of the engraved output, whereas moving the slider to the Light setting will decrease the contrast levels of the engraved output.
There are other ways to adjust an engraved image’s contrast such as: adjust the power / speed settings or simply adjust the contrast of the image in software with the graphic software application.

**Halftone (Raster Page)**

[DEFAULT SETTING: Dithering]

This option controls the way a raster-engraved image is processed. The “digital image to engraved output” process can be processed via two methods: Dithering or Error Diffusion. Each offer additional output options yielding different output effects, style, and quality.

- **Dithering:** Interprets and outputs the raster engraving via the dithering method. This mode will allow you to select the Pattern Type and Dithering Matrix, and Enhanced Dithering.

  - **Pattern Type:** Dot, Bayer, Corner, 45 Degree  
    [DEFAULT SETTING: Dot]

    Each pattern type uses a different shape and arrangement of dots to compose the shading effect of a raster image.

    The following diagram is an example of the raster effects when using the different pattern types.

    ![Raster Effects](image)

      Dot  | Bayer  | Corner

  - **Dithering Matrix:** *Variable depending on the Pattern Type selected.*  
    [DEFAULT SETTING: 8x8]

    This controls the resolution (dot size) and the number of dots the image is broken down into for the dithering process. As an example, selecting 2 x 2 will shade with a 5-grade halftone, where as an 8 x 8 Dithering Matrix will dither with a 65-grade halftone.

    The following diagram is an example of the raster effects when using the different dithering matrices.

    ![Dithering Matrix Effects](image)
• **Enhance Dithering**
  [DEFAULT SETTING: Unselected]
  Selecting this will produce a finer dithering output.

- **Error Diffusion (Raster Page):** Interprets and outputs the raster engraving via the error diffusion method. This mode will allow you to select from three diffusion types: Floyd, Stucki, and Jarvis.

  - **Diffusion Type:** Floyd, Stucki, Jarvis
    [DEFAULT SETTING: Floyd]

    Each diffusion type presents the shade of image as different spread halftones instead of dots to compose a raster image.

    The following diagram is an example of the raster effects when using the different diffusion types.

    ![Floyd](image1), ![Stucki](image2), ![Jarvis](image3)

  **TIP**

  There is no “correct” or “best” setting when using the Raster options. The most appropriate settings will be based on a variety of factors: your design, the material you are engraving on, and the results you wish to achieve, etc. Please take some time to experiment with the multitude of raster options to get the one you feel is the best for your piece. This is where much of the fun in engraving is….experimentation!
5.1.3.7 Mercury III Print Driver >> Stamp Page

Producing stamps require different operational steps than your standard engraving or cutting jobs. The Stamp page offers dynamic options allowing you to customize your stamp production process.

**NOTE**

The Stamp page will only appear and be accessible when you have selected the Stamp Mode from the Option Page.

**TIP**

Functions located on the other pages that are useful when making a stamp: Set Shoulder, Pitch, Border, Invert, and Mirror.

- **Pitch (Stamp Page)**
  - Your stamp will be a reversed image composed of engraved depressions and ridges. Think of these ridges as the "contact sections" of the stamp. If the

Ridge: “Contact section” of the stamp

Slope of ridge (Shoulder Level)

Base of ridge (Pitch)
ridges of these contact sections are too thin, they may break. The Pitch setting allows you to increase the width of the ridge base, hence creating more stable “contact sections” and longer lasting stamp. The pitch value setting allows you to adjust the base width of the ridge. Broad pitch gives the maximum amount of support for each ridge. Experiment with different pitch value settings in order to produce the stamp that is best suited for your application.

**Adjustment Bar / Power Level (Stamp Page)**

Another important aspect of creating a stamp is setting the slope level of the shoulder. The shoulder is the section from the “contact section” of the stamp to its base. This function allows you to adjust the slope for the shoulder sections of your stamp. By sliding the sliders or directly input of power levels, you will be able to change the slope of the shoulder.

**NOTE**

The visual representations of the Pitch and Shoulder Levels in the Mercury III driver are an exaggerated representation to allow for easy visual guidance and precise input. Remember we are working with distances less than 1 mm here.
Chapter VI - BASIC MAINTENANCE

**Caution:**
- Keeping the optics and motion system clean is essential to an excellent quality engraving and the reliability of your engraver. **Please clean Bearing track and X-axis (DU) bearing daily to maintain good condition of machine.**
- Never pour or spray any liquid directly onto the laser system.
- Turn off the power and unplug the system before cleaning.

1. **Inside the System:** Open the top door, the front door and the back door (if necessary). Vacuum to clean inside of the engraver and vent area thoroughly.

2. **Engraving Table:** Dampen the paper towel or cloth with alcohol or cleaner to clean the Engraving Table.

3. **Motion System:** Dampen the cotton swab to clean the rails of the Motion System. Get rid of any debris built up in the bearing tracks.

4. **Bearings:** Hold a dampened cotton swab against the bearing and moving the motion system by hand to clean each bearing.

5. **Mirrors and Lens:** The focus lens and the mirror located on the carriage are the two components most likely to require frequent cleaning.

**Caution:**
Don't scratch out the soft coating of the mirror's surface. Excessive cleaning the mirrors and lens may cause damage and reduce their life cycle (refer to Fig. 24).

**TIP**
Please clean the AutoFocus pin each time after completing the engraved job to make sure the AutoFocus pin is not stuck.

6.1 Clean the mirror – Please refer to the figure as below

1. Unscrew and remove front cover of the focus carriage. Release the top screw and pull out mirror carefully.
2. Put lens tissue on the mirror and drop a little lens cleaner on the middle area of the tissue, after the fluid has been absorbed evenly, pull the tissue in one direction gently to clean the mirror.
3. Let it air dry and re-install it. 
4. Unscrew and remove the dust prevention box then clean the X-axis Mirror, Y-axis Mirror and #1 mirror same as above process separately.
Do not use cotton swab to rub clean the mirror

○ (CORRECT)

Pull the tissue one direction gently after the cleaner has been absorbed evenly

● (CORRECT)

Lens Cleaner

Lens Tissue

× (INCORRECT)
6.2 Clean the focus lens –
1. Unscrew and remove the front cover of the focus carriage. Pull out focus lens carefully.
2. Flood the focus lens with lens cleanser on both sides then using a cotton swab or lens tissue to dry off the remaining solution gently.
3. Do not touch the lens surface with your bare hands or press down hard with any cleaning material.
Chapter VII - TROUBLESHOOTING

7.1 Quality Problems
- Check focus length set under the function key to see if it matches the type of the lens installed.
- Focus Lens is not installed correctly. Focus Lens is loose in the holder.
- Debris or dust builds up in the bearing tracks or X-Axis rails.
- The focus lens and the mirror in the carriage are damaged or need to be clean.

7.2 Non-operational Problems
- Laser beam does not generate.
  1. If the red alignment beam is not revealed, the laser beam is misalignment. Adjust reflection mirrors for exact focus.
  2. If the red alignment beam is revealed, please check the driver power. The laser power may be too low to be detected. Please increase the percentage setting of the Laser Power from the software driver or the control panel.
  3. Please check if the laser power connector is loose.
  4. For safety purpose, the laser beam will not be generated when the top or front door is opened unless you short the connector of the magnetic switches.
Appendix A. 3D Tips

3D Mode is one of the functions of LaserPro laser engraver. Instead of traditional two dimensional graphic processing, 3D Mode allows the naked eyes to visualize the curvatures of the 3D effect. Although it is easy to produce 3D samples with LaserPro Engraver, production of the 3D graphic can be a hassle for our users.

Principle for 3D production by laser

3D processing uses degrees of the gray level to adjust the output energy of the laser. Take the figures below as an example. When the color of a certain block is set as 100% black, the laser output energy for processing will be at 100%. The processing depth will be fairly deep. When the gray level is set as 50% black, the laser output energy will be adjusted to a smaller value accordingly so that the processing depth is not as deep.

By specifying the degrees of the gray level in this way, various energy output is achieved and the 3D effects are produced.

Introduction to software for 3D graphic production

Many ways to produce 3D graphics are available. If you are familiar with or frequently use one of the 3D software in the market, you may use it for the production of 3D graphics. After completion, save the 3D images as one of the formats that is compatible with the Laser Engraver (such as JPG or BMP) and let the machine begin the engraving. If you are not familiar with any 3D software, some editing software specific for laser in the market also have 3D mode functionality, which could be a handy tool for you to produce 3D objects. Of course, you may also use Photoshop or CorelDRAW, which you might be using on daily basis, for the production of 3D objects. Ways to produce 3D graphics with these software are not the same. In the following section, we will give you simple illustrations with respect to how these software work.

Laser Professional AP

Currently, quite few Laser Professional AP is available in the market. The users can not only create all kinds of vector images with these AP but also convert these vector images into 3D module, which is a great way to produce 3D graphics.

As illustrated in the figure below, all you need to do is to choose the direction of the vector and then set the length and shape of the convex or concave surface. The software will automatically generate the 3D graphic for you.
Illustration for the production of 3D graphics with Laser Professional AP

In addition, you may output the completed graphic directly to the Laser Engraver, which is very handy. You may also export the graphic as JPG or BMP format and then use CorelDRAW or Illustrator, which you probably use frequently, to output the graphic.

Photoshop & CorelDRAW

The way to produce 3D graphics with Photoshop and CorelDRAW is very similar. Fill in the desired gray level colors to each of the drawn figures, and proceed with further arrangement and combination. Then you may output the 3D graphic to the laser for the production of the 3D object. Take the figure below as an example. After producing two graphs in gray level, proceed with the arrangement and combination. Then you may let the laser proceed with 3D mode.

Both Photoshop and CorelDRAW may produce 3D graphics in the manner of combination.

A way to produce 3D graphics

For the production of 3D graphics, in addition to the requirement of having great familiarity with the software, a significant amount of time is required to design and arrange the layout. Thus, we use a relatively simple graphic for illustration so that you would understand how to produce 3D graphics better.

Take the graphic above as a production example. CorelDRAW is used for the production of the 3D graphic.

Step 1. Produce the gray level background
1. Draw a rectangular box with the drawing tool.

2. Select Fountain Fill to fill in the gray level.

3. Select Linear as the type of the gray level.

4. Set the gray level angle as 90 degrees.

5. Select Two color as the type of the gray level.

6. Set the From color as 0% Black.
LaserPro requests your attention

If you need to produce circular 3D graphics, you only need to select Radial as the gray level type in the pull-down menu of Type. Then, a circular 3D graphic may be produced.

Step 2. Produce three-dimensional characters
1. Edit the word with the Text toolbox
2. Use the Color toolbox on the right to fill the white color into the characters
3. Select the desired font and size
4. Bold and italic style may also be used
▲ On the palette, set the exterior frame as 10% gray level (Right click the mouse to set the color of the line for the exterior frame quickly).

▲ Click on the Outline Pen tool

▲ Set the width of the line for the exterior frame.

▲ Check the Behind Fill option.

▲ Click OK to complete the text editing.

▲ Three-dimensional characters are completed.
Step 3. Edit the characters for the website

1. Edit the word with the Text toolbox
2. Select the desired font and size

Step 4. Combine the 3D images

After finishing the production for each of the objects, you may proceed with the combination of the objects. The combined graphic may be output with the laser engraver.

Output the 3D graphic

After selecting the graphic to be output, set the Mode as 3D Mode in the driver. After setting the engraving parameters, output the 3D graphic.
**Tips for engraving 3D graphics**

LaserPro Application Lab provides a few reminders that may require your attention during the 3D engraving in order to improve the result of the engraving.

**Turn on the Air Assist function**
When the engraving is done along with Air Assist, the depth of the engraving would be deeper. Set Air assist inside the driver by checking the box.

---

**Polish**
Dust will accumulate during the engraving when acrylic is engraved. The acrylic may be polished with Polish after the engraving. After the processing, don’t remove the engraved object. Use the Control Panel to lower the platform (for about 7~8 mm) and then engrave once again to achieve the better finish.

---

After engraving the wooden objects, please use a toothbrush with some clean water to remove the dust on top of the object.
Appendix B

<table>
<thead>
<tr>
<th>Mercury III</th>
<th>ME-12</th>
<th>ME-25</th>
<th>ME-40</th>
<th>ME-60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser Source</td>
<td>12W</td>
<td>25W</td>
<td>40W</td>
<td>60W</td>
</tr>
<tr>
<td>Sealed CO₂ Laser</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling</td>
<td>Air-cooled, Operating environment temperature 15°-30°C (60°-86°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Area</td>
<td>25 x 18 in. (640 x 460 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Part Size (W x L x H)</td>
<td>All doors closed 27 x 19 x 6.5 in. (685 x 482 x 165 mm)</td>
<td>All doors open 27 x ∞ x 6.5 in. (685 x ∞ x 165 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table Size</td>
<td>31.1 x 20.9 in. (790 x 530 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>44.3 x 28.3 x 39.6 in. (1125 x 720 x 1005 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drive</td>
<td>Closed-loop DC Servo Control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Throughput*</td>
<td>166.3 in² / hr (1072.8 cm² / hr)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speed Control</td>
<td>Adjustable from 0.1~100% of 42 IPS (Up to 16 color-linked speed settings per job)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Control</td>
<td>Adjustable from 1~100% (Up to 16 color-linked power settings per job)</td>
<td></td>
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<tr>
<td>Z-Axis Movement</td>
<td>Automatic</td>
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</tr>
<tr>
<td>Resolution (DPI)</td>
<td>Available 125, 250, 300, 380, 500, 600, 760, 1000</td>
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<td></td>
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</tr>
<tr>
<td>Display Panel</td>
<td>4-line LCD panel showing current file name, total working time, laser power, engraving speed, file(s) loaded into memory buffer, setup and diagnostic menus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety</td>
<td>Class 2 for red pointer</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Facility Requirements

| Electrical | Below 40 Watt, 100~240 Volt AC Auto Switching; 40 Watt or above, 200~240 Volt AC Auto Switching |
| Power Consumption | 700W | 880W | 1740W | 2200W |
| Air Exhaust System | External exhaust system required, one 4" connection on the back of the machine. |

- Speed is not equal to throughput. See dealer or visit [www.GCCworld.com](http://www.GCCworld.com) for more details
- Caution—Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- Specifications are subject to change without prior notice.