USER MANUAL

NEPTUNE III

Dear Sir or Madam,

Thank you for choosing GCC and the LaserPro Neptune III.   You can be assured that this machine meets all of the highest safety standards while using technological innovations shared by no other laser engraver.   The Neptune III is backed by GCC, a truly international company that is dedicated to helping your business grow.

We at GCC are proud to introduce the LaserPro Neptune III, our most technologically advanced laser engraver to date.   This easy to operate machine has been designed with quality, productivity, and safety in mind.   With innovations like the QSM^{TM}, Stellar Quality Under High Speed,   SmartFILE file management, and the new Linear Low Maintenance Motion System, the Neptune III is clearly on the cutting edge of all laser systems.

GCC understands that a creative technical background is the key to successful growth in the ever-changing information economy.   We have a strong team of R&D experts who propel our company to new heights.   From product development to manufacturing, our engineers are dedicated to innovation and quality.

Guiding our solid technical base is a world-class management team.   At GCC, our leaders bring together marketing, technical support, research development and distribution experts to create an international network able to meet your demands.   Over the years, this network has been able to span the globe.   Our technical support staff is committed to provide you with impeccable service, and when your business is ready to grow, our team will also be there!

Sincerely,

Leonard Shih

President of G.C.C.

Content

FIGURE CONTENT

CHAPTER I -Important Safety Information

Laser Safety

Laser engravers that have the CDRH safety rating of Class 1 are required to have key safety features such as an enclosed laser beam and safety interlock mechanisms designed to protect the operator. In addition to the safety features of a Class1 machine, the LaserPro Neptune III has been equipped with a red guidance pointer. This red dot allows the operator to safely see the focal point of the laser beam. It also gives Neptune III the improved CDRH safety rating of 3R.

Safety Instructions

- Make sure the water chiller is operation properly before turning on the laser machine.
- Before operation, carefully read the warning labels on your machine unit as well as the cautions and warnings in this manual.
- Connect the machine to a properly grounded power outlet. Make sure the voltage level of the machine matches that of the power source.
- Don't open the back door of the unit while system power is on since the power supply inside contains high voltage.
- Don't attempt to modify or disassemble the laser module.
- Invisible intensive laser radiation may cause physical burns or severe eye damage. Be sure to wear appropriate safety goggles during operation, especially when engraving mirrors or coated metals such as enameled brass and anodized aluminum.

  NOTE: Each LaserPro laser machine is equipped with a safety goggle, if you need another one, please contact LaserPro for it or try to get one that meets the following specification.

  > 190-398 nm OD5+
  > 10,600 nm OD5+
  > Visible light transmission: 92.9%

- Good ventilation is required to remove odors and vaporized materials from the work area of the machine. An exhaust system is recommended.
- A clean, well-ventilated room with a temperature of 15 ~30 (60 ~85) (especially the temperature of 30), and a relative humidity between 30% and 40% as an office type of environment.
- Do not work with reflective metals, heat sensitive surfaces, or other materials that may produce toxic substances such as PVC and Teflon.
- A fire extinguisher should always be available near the machine.
- When cutting materials that easily catch fire, such as acrylic, wood, or paper, you should turn on the air compressor to blow out any flames that may occur.
- Never leave the machine unattended during operation, especially when

![LaserPro logo](www.laserproj.com)

engraving the above-mentioned materials.
● If the worktable is used for cutting purposes, do not leave any material underneath, as when material at top is cut through, the material below will burn easily due to trapped heat.
● Follow the instructions on maintaining and cleaning your system. Not only will this enable you to engrave efficiently, but also it will ensure that your machine runs safely.
● Please make sure each door is locked in order to ensure the safety.

Warning Labels

CAUTION
AVOID PLACING YOUR EYES IN THE RED BEAM PATH

(Figure 1- 1 warning label)

On the middle of the top cover

DANGER

LASER RADIATION-AVOID DIRECT EYE EXPOSURE

LASER DIODE 5mW MAX OUTPUT AT 630~680nm

CLASS IIIa LASER PRODUCT

(Figure 1- 2 warning label)

On the left downside of the machine

DANGER
INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK FAILED OR DEFEATED AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADITION

(Figure 1- 3 warning label)

On the middle of the working table

WARNING

Invisible laser radiation when door open and interlock failed. Avoid eye or skin exposure direct to laser radiation.

Please wear goggle to operate while door open.

Do not leave the machine unattended during operation.

Please clean the bearings and motion system tracks everyday.

Do not use reflective metals, heat sensitive surfaces or materials that may produce toxic substances or corrosion problems, such as PVC and Teflon.

(Figure 1- 4 warning label)

On the right top side of the machine (below the control panel)

INVISIBLE LASER RADIATION

AVOID EYE OR SKIN
EXPOSURE TO DIRECT OR
SCATTERED RADIATION

CLASS 4 LASER PRODUCT

60

On the cover of the laser tube

(Figure 1- 5 warning label)

CHAPTER II -Unpacking

Perform the following steps to unpack your machine.

CAUTION: The machine weighs about 400 kg (884 pounds). To prevent damage to the machine or injury to personnel, please get assistance. Do not try to lift the equipment alone.

Step 1. Use an M12 open end or impact wrench to unscrew and remove the top.
Step 2. Remove the 4 sides of the crate in the order.
Step 3. Take the protective wrap off the machine. For step 1 and 2, please see Figure 2-1.

Step 1

Step 2
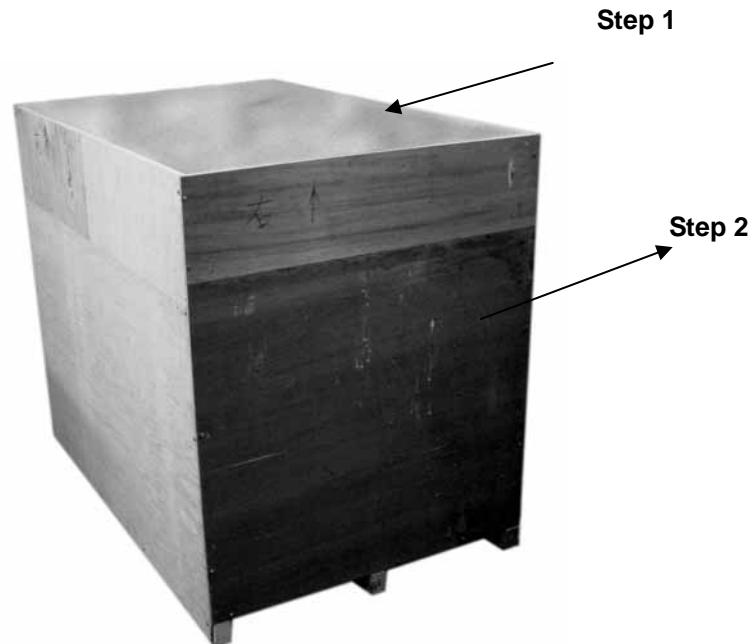
(Figure 2- 1 Unpacking)

Step 4. Take out the wooden holding stick (see Figure 2-2).

(Figure 2- 2 Unpacking)

Step 5. Loosen the pink packing strips and remove them. Firstly push the lock on the strip down (see Figure 2-3), and then pull it out to the top (see Figure 2-4) before you can loosen the strips (see Figure 2-5).

Holding Stick

(Figure 2- 3 Unpacking)

(Figure 2- 4 Unpacking)

(Figure 2- 5 Unpacking)

Step 6. Unscrew the two settled boards (see Figure 2-6), take them out of the crate, and then turn them up side down.
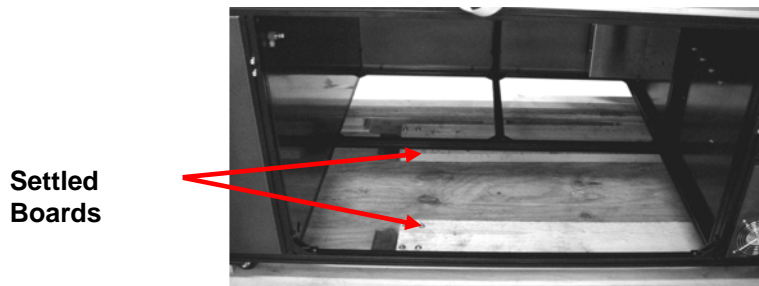
Settled Boards

(Figure 2- 6 Unpacking)

Step 7. Put the settled boards at each end of the crate base to form a slope (see Figure 2-7).
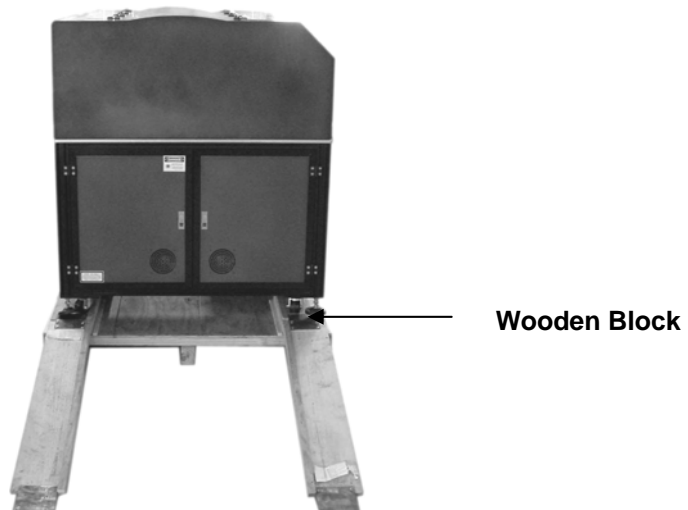
Wooden Block

(Figure 2- 7 Unpacking)

Step 8. Screw them to the crate base (see Figure 2-8).
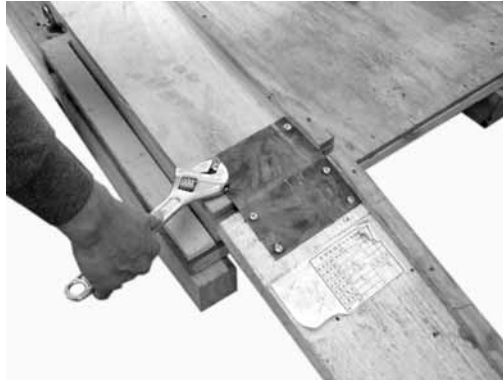
(Figure 2- 8 Unpacking)

Step 9. Remove the wooden block from the crate base (see Figure 2-7), and then unscrew the four holding stands so that they can be moved up (see Figure 2-9).

Holding stand
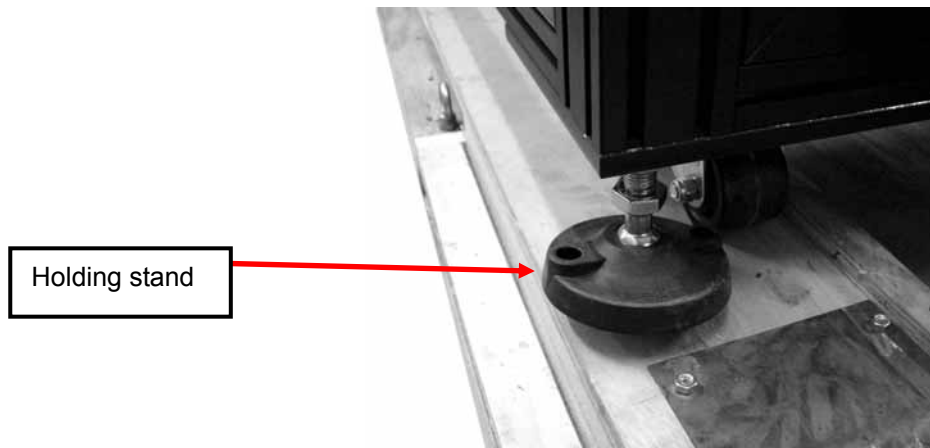
(Figure 2- 9 Unpacking)

Step 10. Finally roll the machine out of the crate base (see Figure 2-10).

(Figure 2- 10 Unpacking)

Step 11. Remove the X-axis restraining strips (see Figure 2-11).

(Figure 2- 11 Unpacking)

Step 12. Save the crate for shipping in case any return service is needed.

Packing List

The following table lists all the items included in your laser machine package. If any of them is missing or damaged, please contact your dealer immediately.

ITEM	QUANTITY

Cleaning Set
     cotton swab
     lens cleaner
     lens tissue (lint free)
	1 pack
	1 bottle
	1 pack

2" Manual Focus Gauge (blue)	1
AC Power Cord	2
Printer Cable	1
USB Cable	1
LaserPro CD including driver, firmware, and user manual	1
Mirror (for Mirror 2 or 3)	1
Goggles	1

(Figure 2- 12 Accessory Box list)

CHAPTER III-Quick Guide

Installation

1. Carefully read the *Important Safety Information* printed at the front of this manual.
2. Before starting adjusting the level of working table, please make sure Neptune is located at plain place, and adjust the four stands by screw driver gradually. Please adjust each stand a little each time and then adjust another one. Do not finish one stand adjustment and process the other, it would make the working table out of shape.
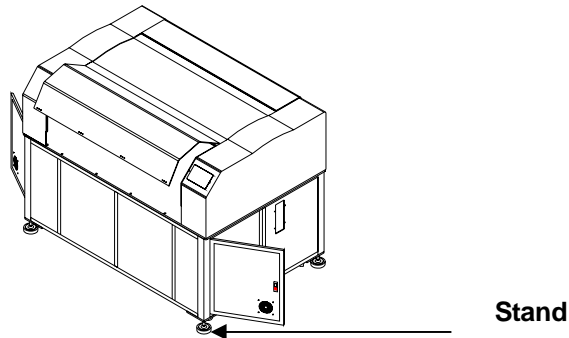
Stand

3. Use a high-precision level along each of the Y-axis's to adjust the stands until the bubble is centered in the level.

(Figure 3- 1 High-precision level)

4. Fix the air ventilation connector onto the left panel located in the back of the machine (see Figure 3-3). Connect the four small ventilation pipes from the dust collecting box beneath the working table, then connect the 4" plastic ventilation pipe from odor reduction to the other end as fig. 3-3 shows. For more information, please refer to "Connecting the Exhaust System" on page 33.

Dust collecting box
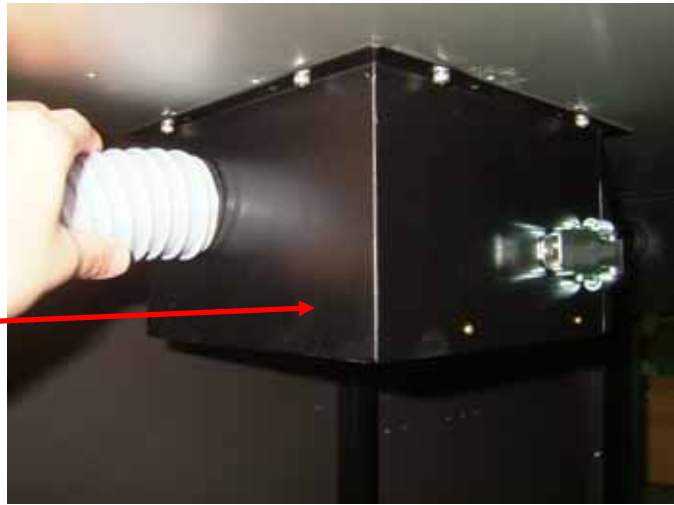
(Figure 3-2 Air ventilation connector)

Connect to the ventilation pipe of odor reduction unit to remove the dust and odors from laser processing.

(Figure 3-3 Air ventilation connector)

5. Connect the air compressor to the airflow valve that is located in the rear side of machine (see Figure 3-4).

(Figure 3-4 Air compressor valve)

6. Connect the water chiller to the laser machine following the instructions on page 37.

7. Connect the machine to a properly grounded power outlet. Make sure the voltage level of the machine matches that of the power source. For more detailed information, please see "Power cord installation" on page 29.

8. Set up the host computer and connect it to the parallel or USB port that is located at the outer right hand side of the machine (see Figure 3-5).

(Figure 3-5 Standard port)

9. Turn on the computer.
10. Run the Windows Printer Setting program to install the LaserPro Neptune III printer driver (follow the installation steps in Chapter VI).
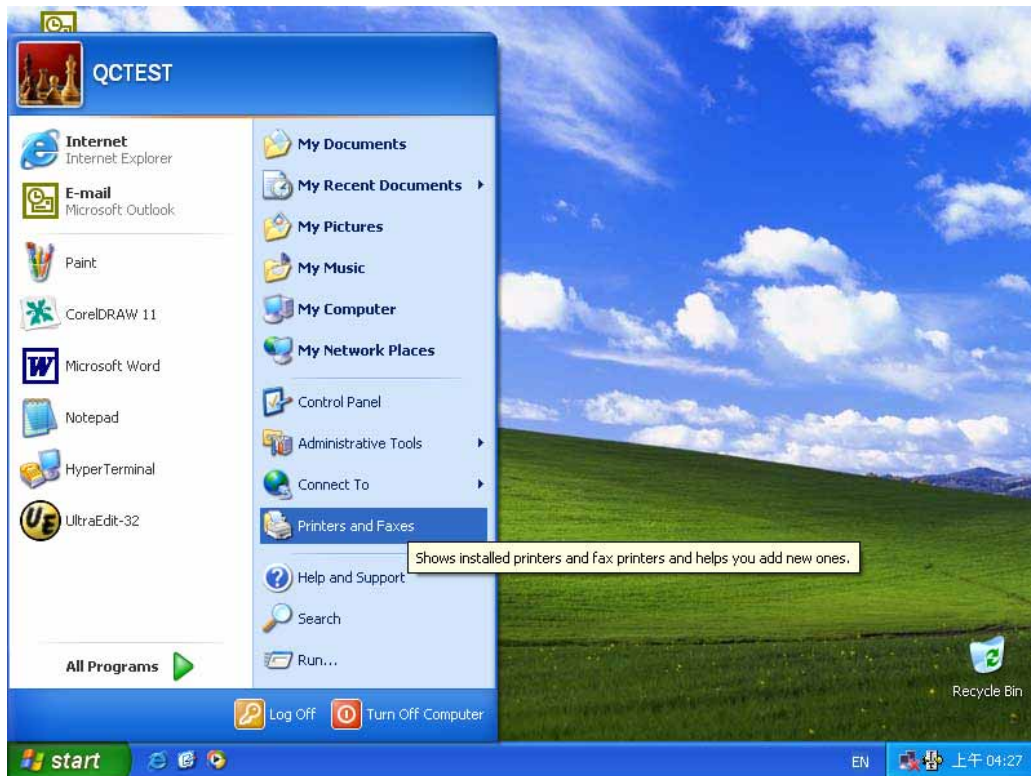
(Figure 3-6 Driver installation)

Operation

<u>NOTICE: Before turning the Neptune III, please make sure the water cooling system is operating properly.</u>

1. Carefully read the *Important Safety Information* printed at the front of this manual.
2. Turn on the host computer.
3. Run your favorite graphics program (e.g., CorelDRAW, PhotoShop and PhotoPaint) and open the file you will be using for engraving or cutting.
4. Turn on the water chiller.
5. Turn on the machine. After system initialization, the lens carriage moves to the machine's zero-point position (upper left corner of the worktable) and the machine is ready to receive a file.
6. Adjusting the focus:
- Press the **START/STOP** key on the control panel once and make sure the machine is under "STOP" status.
- Loosen the screws holding the lens carriage in left side, move the laser carriage to the proper position and then tighten the screws (see Figure 3-8).
- Place the black focus gauge metal on the surface of the material (see Figure 3-7).

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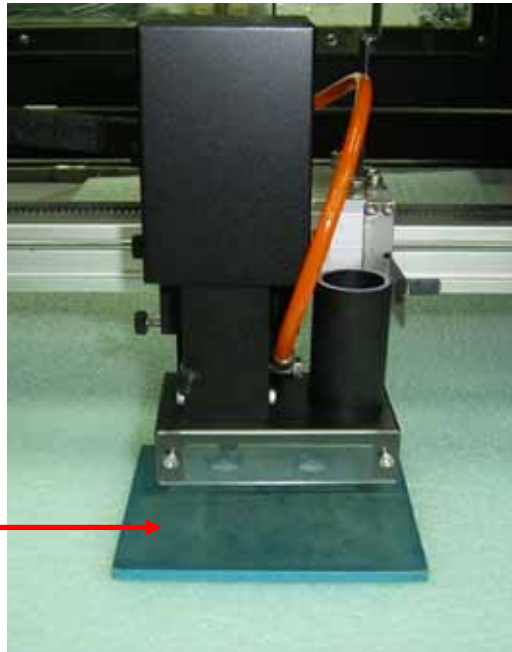
(Figure 3- 7 Focus gauge)

The focus block

- Loosen the lens carriage screws on the left side so as to allow the bottom of the lens carriage to settle on the focus gauge metal piece to get correct focus length. (see Figure 3-8).

(Figure 3- 8 Focus gauge)

Loose these screws to adjust the position of lens carriage.
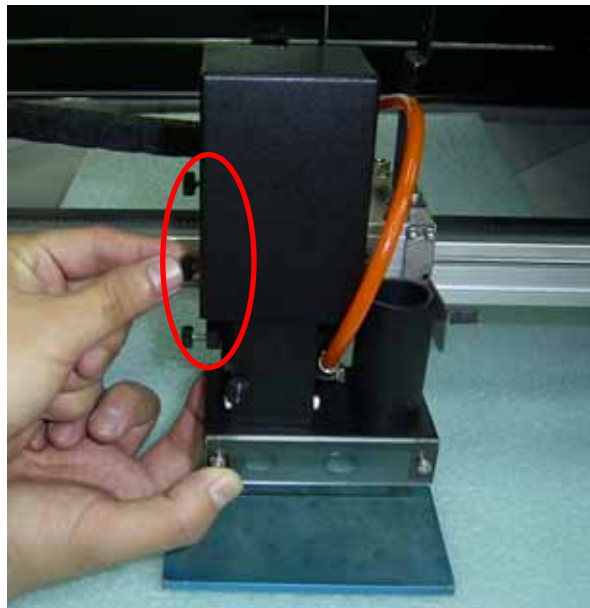
- Tighten the lens carriage screws to fix the lens carriage and remove the focus gauge metal (see Figure 3-9)
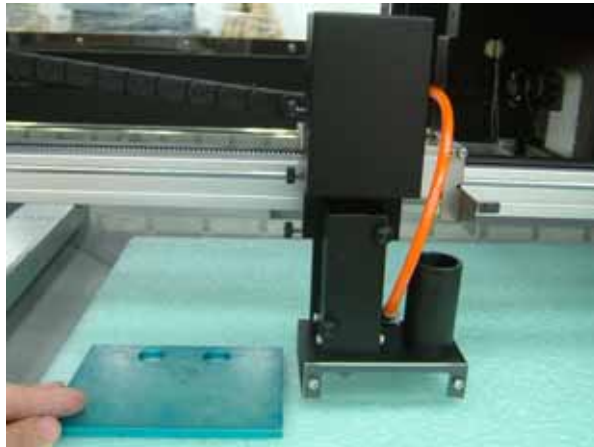
(Figure 3- 9 Focus gauge)

7. Press **Start/ Stop** key once to turn the machine back to "START" status.
8. Turn on the exhaust system.
9. Turn on the air compressor.
10. From the host computer, print the file to the machine using the LaserPro Neptune printer driver.

NOTE: The maximum thickness of the work piece is 30mm.

CHAPTER IV -Introduction

Thank you for choosing LaserPro Neptune, an inexpensive but powerful laser machine that is with oversized working area and ingenious versatility, and is easy to use and maintain. Please read this manual carefully in order to take full advantage of what the machine has to offer.

This chapter provides basic information on your laser machine.

Front View
The following figure shows the external features at the front and on the right-hand side of your machine unit.
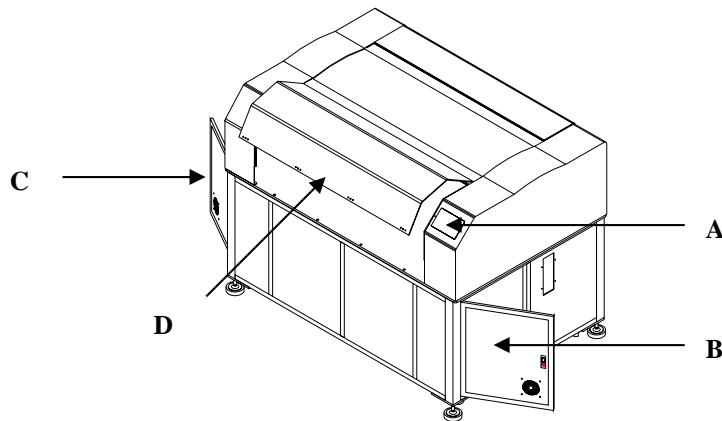
(Figure 4- 1 Machine Front View)

A. **Control panel:** see Chapter VII for more information.
B. **Door 2:** provides passage for the air compressor and access to the system's circuit board and power board.
C. **Door 1:** provides access to the laser module, water-cooling system and power supply.
D. **Front cover:** protects the operator from laser beam.

Rear View

The following figure shows the external features at the back and on the left-hand side of your machine.
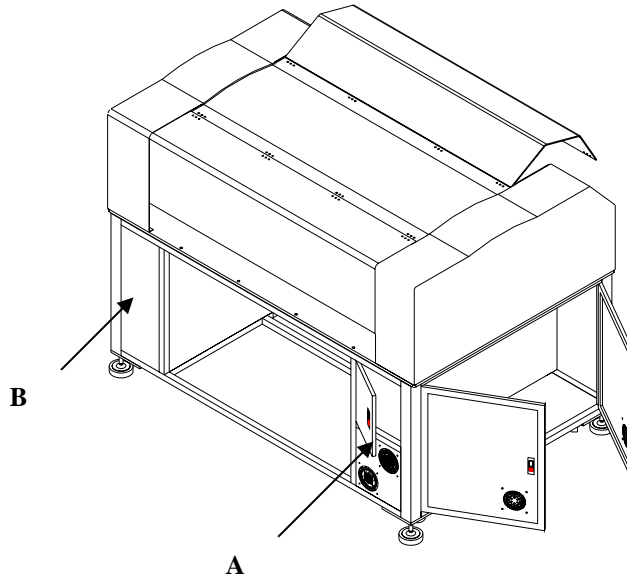
(Figure 4- 2 Machine Rear View)

A. **Door 3:** provides access to mirror 1 for adjustment or cleaning.
B. **Left panel:** provides passage for the exhaust tube.

CAUTION: Do not open Door 1 and Door 3 when the machine's power is on. Please note that there are security latches inside each door except for Door 2. Therefore once you open any one of the doors during operation, the action will activate the security latches that will shutdown the laser temporarily for safety's concern until the doors are closed again.

Motion System

The following figure illustrates the motion system of your machine.
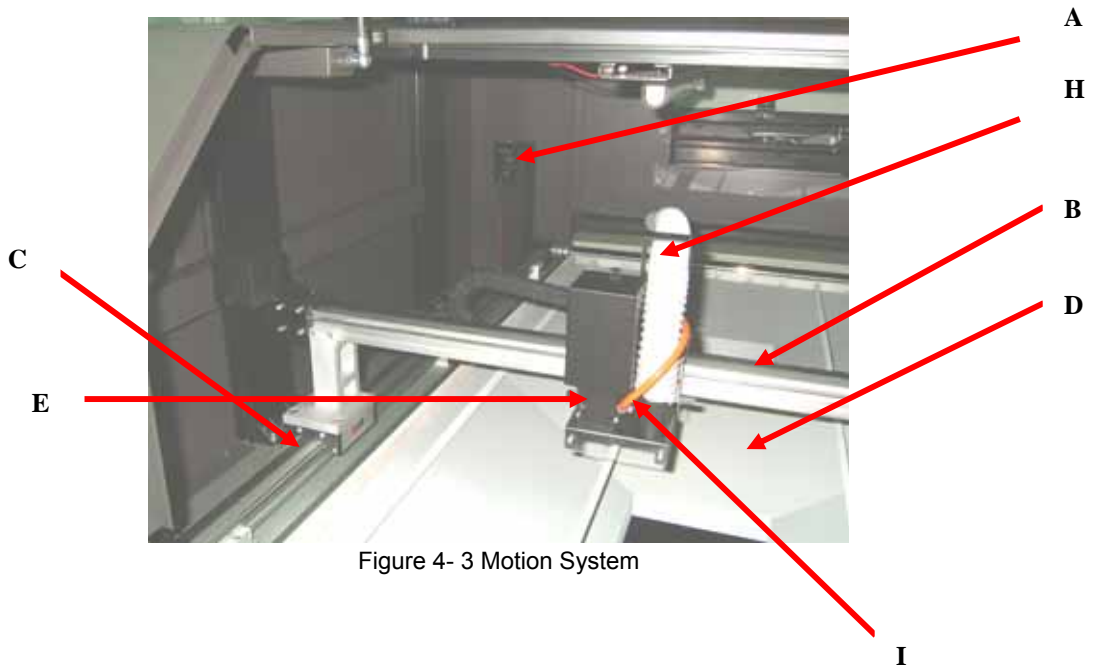
Figure 4- 3 Motion System

A.   Mirror # 2
B.   X-axis belt and motion system
C.   Y-axis belt and motion system
D.   Cutting Table
E.   Lens carriage
F.   Y-axis motor (not shown)
G.   X-axis motor (not shown)
H.   Air ventilation pipe (in white color)
I.   Air assist tube (in orange color)

Focal Length and Lens

Focus, or focal point, is the point where the laser beam, converging after traveling through a lens, comes into contact with the material to be engraved or cut. By changing the lens, i.e., changing the focal length, a focus can be made larger or smaller. For optimal engraving results, the lens needs to be lined up just right with the material to be engraved.

The longer the focal length, the bigger the size of the beam spot will be. High-resolution lenses are designed for precision engraving. Low-resolution lenses are used mostly for cutting because of its less beam divergence that results in a straighter cut in thick materials. However, using higher resolution takes longer for engraving. On the other hand, the large spot size of low-resolution lenses can spread the laser's heat over a larger area, which helps minimize melting and thus can be applied to engraving of certain kinds of plastics.

You can use a manual focus block to ensure accurate focusing of the beam. The following table lists the lenses and the matching focus block available.

Focal Length	Color of Lens	Color of Focus Block	Resolution	Cutting Capacity
2.0"	Blue	Black	High ↑	Thin ↓
4.0"	Red	Black	Low	Thick

Lens Carriage

Driven by two servomotors, the lens carriage carries the laser beam to the right places when engraving. This is also the part of the machine where you change the lens and insert the manual focus block (see Figure 4-4).
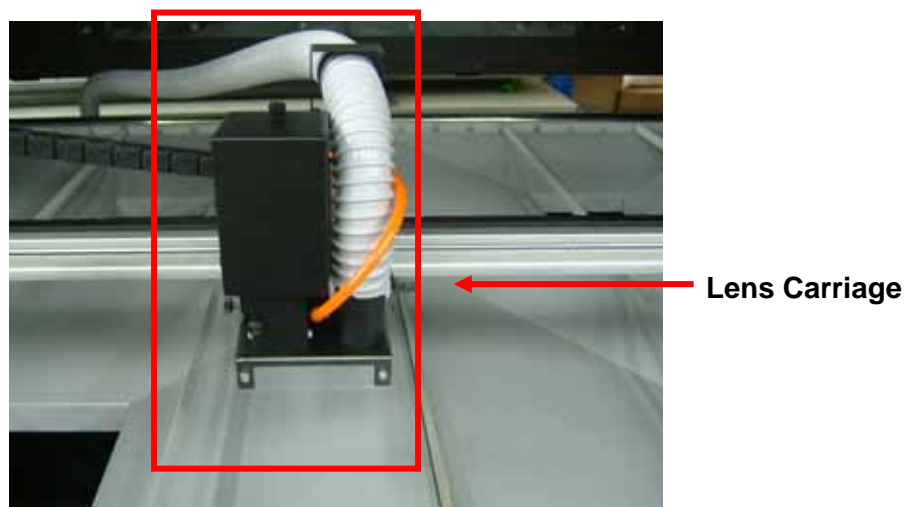
Lens Carriage

(Figure 4- 4 Lens Carriage)

Recommended Configuration

To engrave or cut, you must use a computer that is connected to the printer port of the machine, a graphics application program, and preferably a scanner. Here's the recommended configuration:

Computer

Type	PC
CPU	Pentium or better
DRAM	32 MB or up
FDD	One 3.5" 1.44 MB
HDD	1.2 GB Hard Drive or up
SVGA	15" Super VGA monitor
Parallel Port	SPP preferred (selected from BIOS Setup); if you select ECP, the length of the cable should not exceed 1.8 M.

Scanner

Type	Flat Bed
Resolution	200 dpi minimum

Software

Driver	GCC driver
Operating System	Windows 95 or later
Graphics Program	CoreDRAW 9 or later, or any program that outputs HPGL commands such as Illustrator, Photoshop, AutoCad.

CHAPTER V-Hardware Installation

This chapter provides information on installing the hardware, including the computer, the air compressor, the exhaust system, and the water-cooling system.

CAUTION: Before making any hardware connections, make sure all power switches are in the OFF position and all power cables are disconnected from the power outlet. Moreover, check the plug to see if it matches the wall outlet. If not, please contact your dealer.

Side Panel

The computer and the power cable are connected to the machine's side panel. The following figure shows the connectors and switches on the side panel (see Figure 5-1).
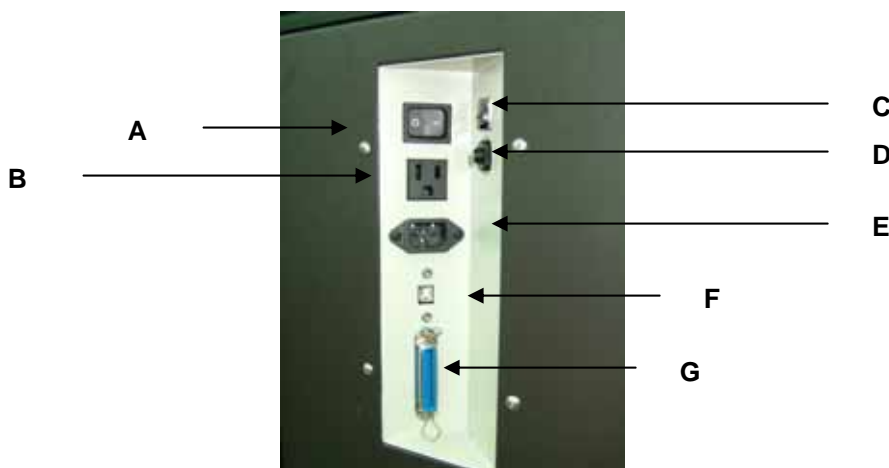
(Figure 5- 1 Side Panel)

A. Power ON/OFF switch
B. Air Compressor Power Outlet
C. 15 amp fuse
D. 20 amp fuse
E. AC power inlet for air assist unit
F. USB Port
G. Print Port

Power Cable Connection

Neptune III requires 200V to 240VAC power input for machine proper operation, please have the professional technician to follow the instruction below to install the

power cable wiring.

Step 1. Each Neptune III machine will equip with the following power cord and the end of each power cord is labeled separately with G-Ground, N-Neutral, and L-Live. Notice that the two ends of the power cord has different type of connectors, O-shape and Y-shape.

(Figure 5- 2 Power Cord)

(Figure 5- 3 Y-shaped Power Cord)

(Figure 5- 4 O-shaped Power Cord)

Step 2. Turn the knob to fasten it and keep the power cord in place.

(Figure 5- 5 Power cord installation)

Step 3. The O-shaped connectors are to be connected with the machine as step 2 and the Y-shaped connects with power source.
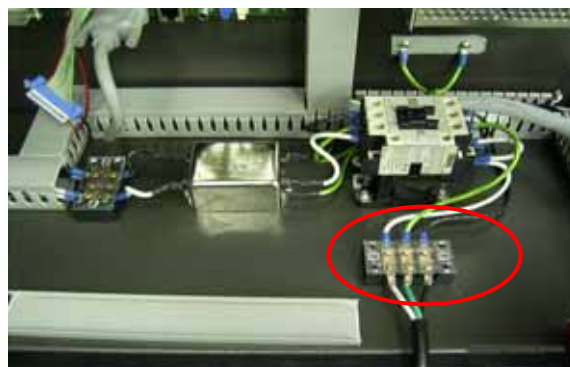
(Figure 5- 6 Power cord installation finished)

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Computer

Your machine communicates with the computer either through the parallel (Centronics) or the USB port.

Parallel or USB Transmission

If you are using a PC with your machine, both Parallel and USB are the recommended methods for data transmission.

1. Attach one end of the parallel cable to the parallel port on the machine.
2. Attach the other end to the parallel port on the PC.

CAUTION: Never use a mechanical switch box when a second printer port is required, because the electrical surges can cause damage to the computer and the machine.

Air Compressor

When cutting materials that can easily catch fire, such as acrylic, wood or paper, an air compressor is needed to deliver compressed air through the air nozzle to blow out any flames that may occur. The air compressor is connected to the air valve (see Figure 5-7) located in the rear side of machine.

Air flowing adjusting screw

Push the ring lock to loose the air tubing
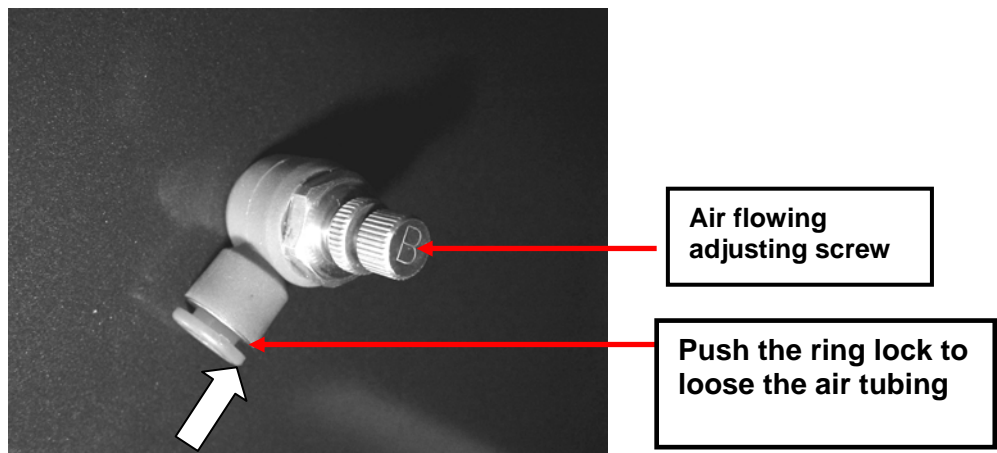
(Figure 5- 7 Air Valve)

Connecting the Air Compressor

To connect the air compressor to your machine:

1. Take the end of the air tubing that comes from the air compressor.
2. Insert it into the inlet of the connector until it reaches the end. The orange ring lock will secure the hose firmly.
3. Turn the airflow adjusting screw on the air valve counterclockwise to allow air passage.

Disconnecting the Air Compressor

To disconnect the air compressor from the machine:

1. Turn the airflow valve on the compressor to the OFF position.
2. Pressing the ring lock, pull the air hose from the connector.

Exhaust System

The exhaust system of the machine is designed to vent and filter odorous or toxic gasses produced when you engrave materials such as rubber or acrylic.

Connecting the Exhaust System

Connect the odor reduction unit to the dust collecting box underneath the laser machine helps to effectively remove the dust in the first beginning when it is produced from laser engraving or cutting. Please follow the steps as described.

1. Connect the four small air tubes from dust collecting box to the ventilation controlling pipe. (see Figure 5-8 and 5-9)

Small ventilation pipe

(Figure 5- 8 Connecting the Exhaust System)

2. Connect the two ends of ventilation controlling pipe with small ventilation pipe, and then connect the small tubing to the connection port in the rear side of machine.

Ventilation controlling pipe to enable and disable the air ventilation for each pipe

(Figure 5- 9 Connecting the Exhaust System))

(Figure 5- 10 Connecting the Exhaust System)

(Figure 5- 11 Connecting the Exhaust System)

NOTE: There are four small ventilation pipes connecting to the dust collecting box underneath the working table and each pipe can be enabled or disabled through the red switch. (see Figure 5-12)

Switch to turn on or off the air ventilation for each dust collecting box
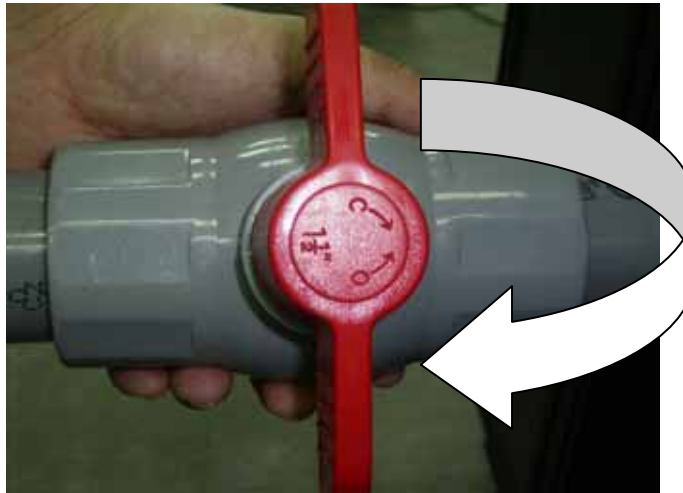
(Figure 5- 12 Connecting the Exhaust System)

3. Connect the large tubing from the odor reduction to the opening of the connection port, and fix the clamping loop around the tube(see Figure 5-13)

(Figure 5- 13 Connecting the Exhaust System)

Larger
Ventilation Pipe

Smaller
Ventilation pipe

(Figure 5- 14 Connecting the Exhaust System))

How to Use the Exhaust System

The exhaust system of LaserPro Neptune III is specially design for cutting job, which divides the working area into four ventilation areas. Each ventilation area can be enabled or disabled through the switching on each ventilation pipe, and have better ventilation effect by concentrating the air flowing to the area the job is performed.

> **TIPS:** The working table of Neptune III is divided into four areas, only enable the air vacuum for area which performing cutting job and disable the air ventilation for other areas will help to deliver better cutting edge.

Disconnecting the Exhaust System

To disconnect the exhaust system:

1. Remove the three exhaust tubes from the air ventilation connection ports.

2. Remove the smaller tubes from the machine through the rear cover.

Water Cooler

The water cooler that will be connected to the machine consists of a cooling system, and two tubes that allow inflow and outflow of water. When you turn the power on, the cooling system is activated and delivers cool water to the laser module to absorb heat produced there, and then brings it back to the cooling system to cool down.

![LaserPro www.laserproi.com]

NOTICE: Make sure to turn on the water chiller before starting to work with Neptune III laser engravers.

Adding Water

The water cooler is an external device that has to be connected to the laser machine for cooling down the laser tube. For water cooler setup and adding water, please refer to the water cooler manual on the device. Here we will show you some basic tubing connection, please follow the steps to connect the water chiller with laser system.

NOTE: 1. If you need to ship the laser machine after using it, you must remove the water tubes that are connected beneath the laser machine, and then lift these two tubes up as high as possible so that the cooling water will not drain out.
2. Do not disconnect the tubes too often, in case the tubes become loose.
3. Do not spill any water onto the internal components of the machine while removing it.

Step 1. Please connect the water pipe of the water chiller to the water inlet and outlet connector on the laser engravers.
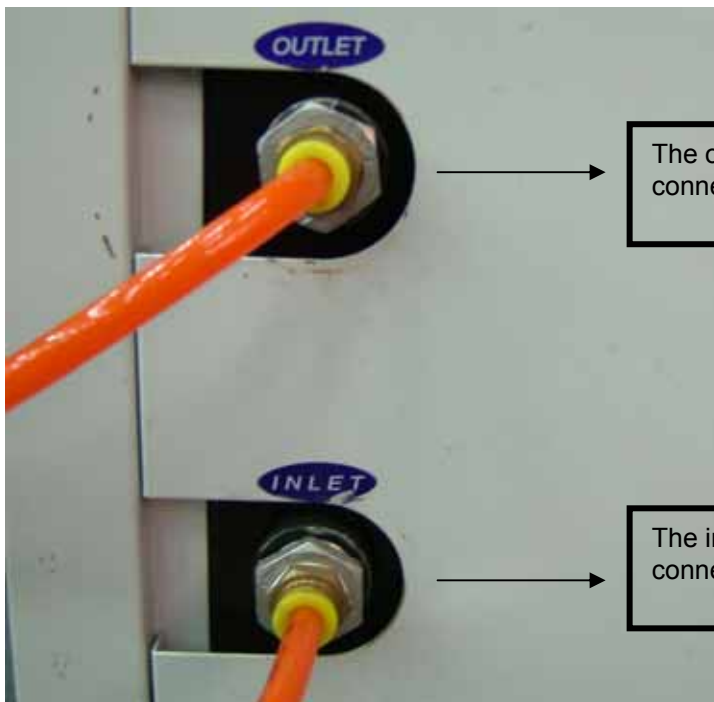
The outlet tubing of chiller should connect to the inlet connector on the engravers.

The inlet tubing of chiller should connect to the outlet connector on the engravers.

(Figure 5- 15 Water chiller installation)

Step 2. Arrange the Outlet and Inlet tubing as follows. Insert the Outlet tubing of chiller through the "Water In" slot opening.

Water in opening for outlet pipe from water chiller

Connect to water in connector in laser tube as step 3 indicates.

Water out opening for inlet pipe from water chiller

(Figure 5- 16 Water chiller installation)

Step 3. Connect the outlet tubing from chiller to the "Water In" connector on laser tube.

Water out connector on laser tube

Water in connector on laser tube

(Figure 5- 17Water chiller installation)

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CHAPTER VI -Software Installation

The host computer recognizes your laser machine as a printing device. Before using the machine, you must install the right printer driver for the machine on the computer. You can use the driver diskette that came with your package to install the LaserPro Neptune III driver.

Install the Neptune III Driver

Perform the following steps to install the Neptune driver:

1. From the Windows desktop, click "Start" and select "Printer and Faxes" click the "Printers" icon (see Figure 6-2).

(Figure 6- 1 Driver installation)

2. Double-click the "Add Printer" icon when you see the following message (see Figure 6-2).
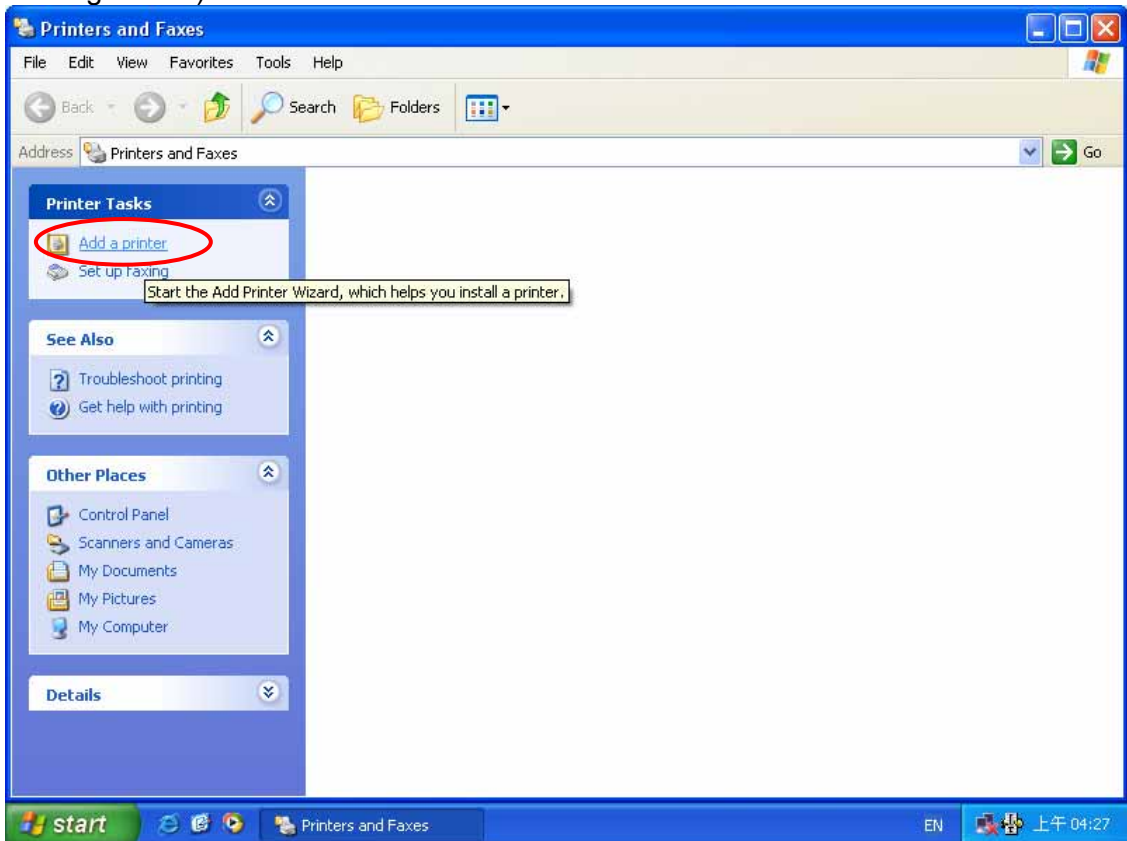
(Figure 6- 2 Driver installation)

3. Click "Next" when you see the following message (see Figure 6-3).
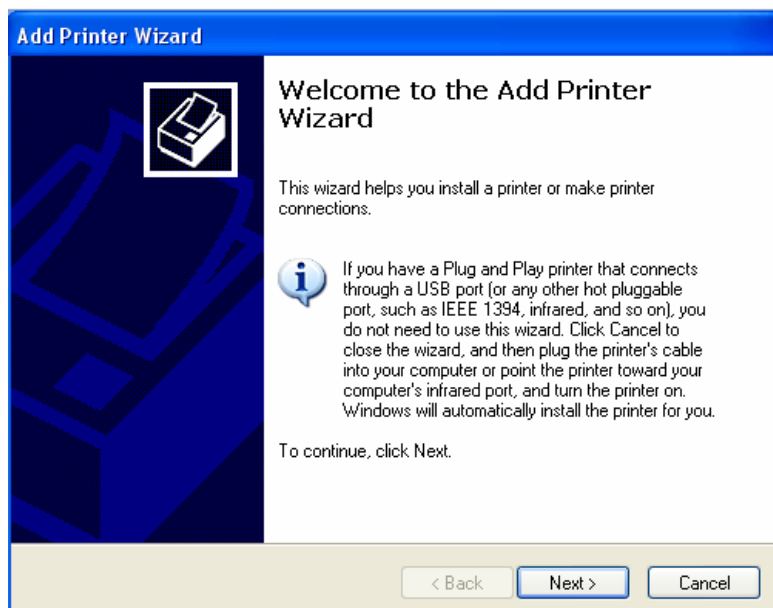
(Figure 6- 3 Driver installation)

4. When you see the following message, choose "Local printer" and then click "Next" (see Figure 6-4).
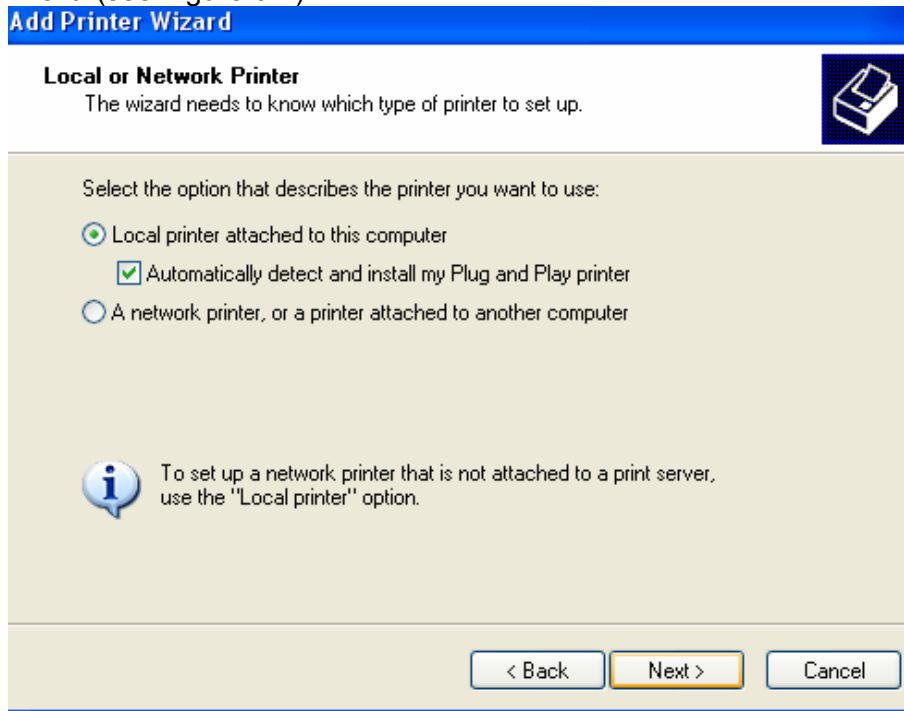
(Figure 6- 4 Driver installation)

5. Click "Have Disk …" when you see the following message (see Figure 6-5).
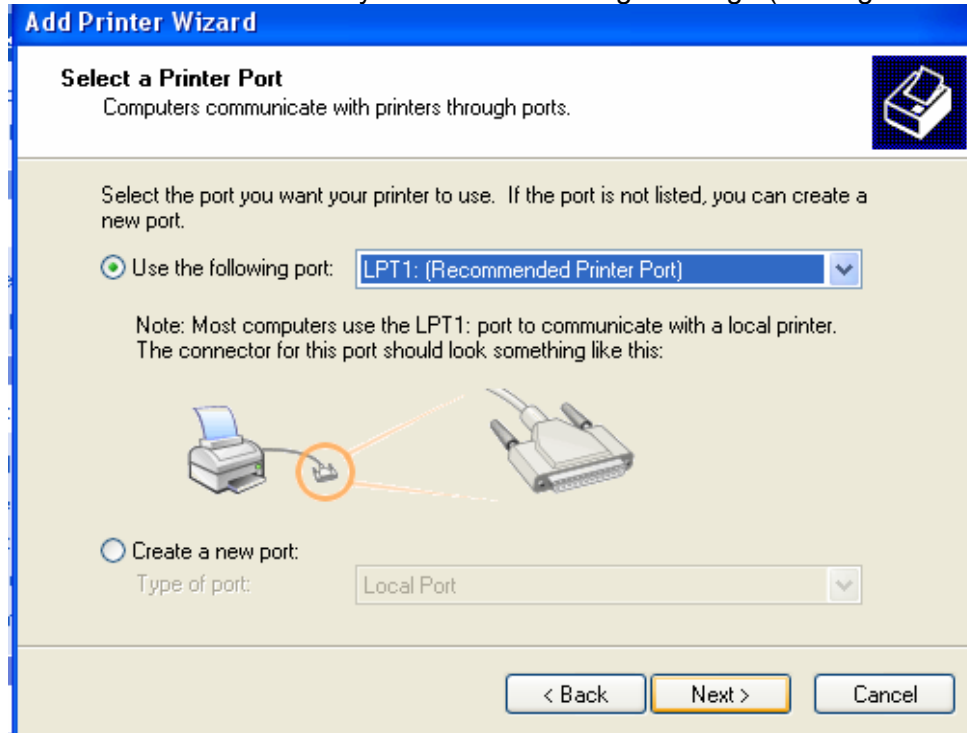
(Figure 6- 5 Driver installation)

6. Click "Have Disk" to find the correct file (see Figure 6-6).
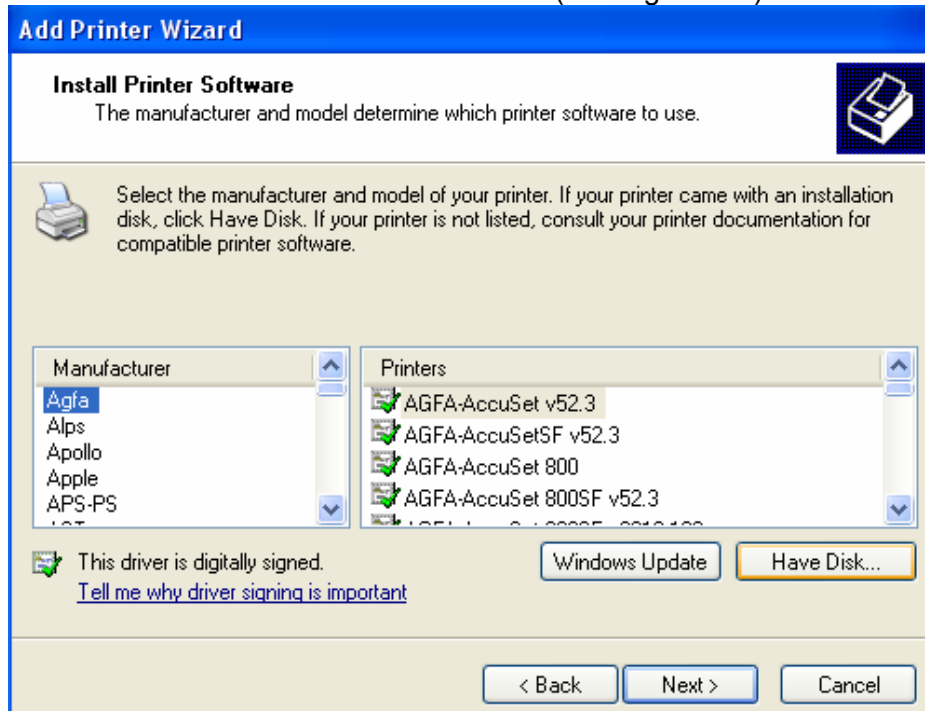
(Figure 6- 6 Driver installation)

6. Click "Browse" when you see the following message. (See Figure 6-7)
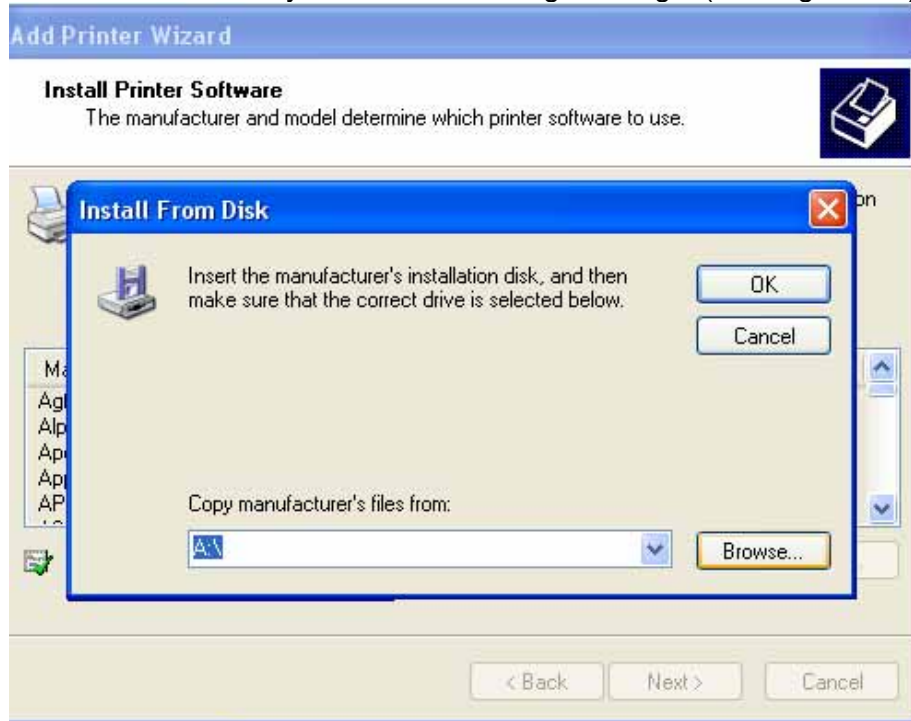
(Figure 6- 7 Driver installation)

7. When you see the following message, click the port you want to use with your machine (in this example, Neptune), and then click "Next" (see Figure 6-8).
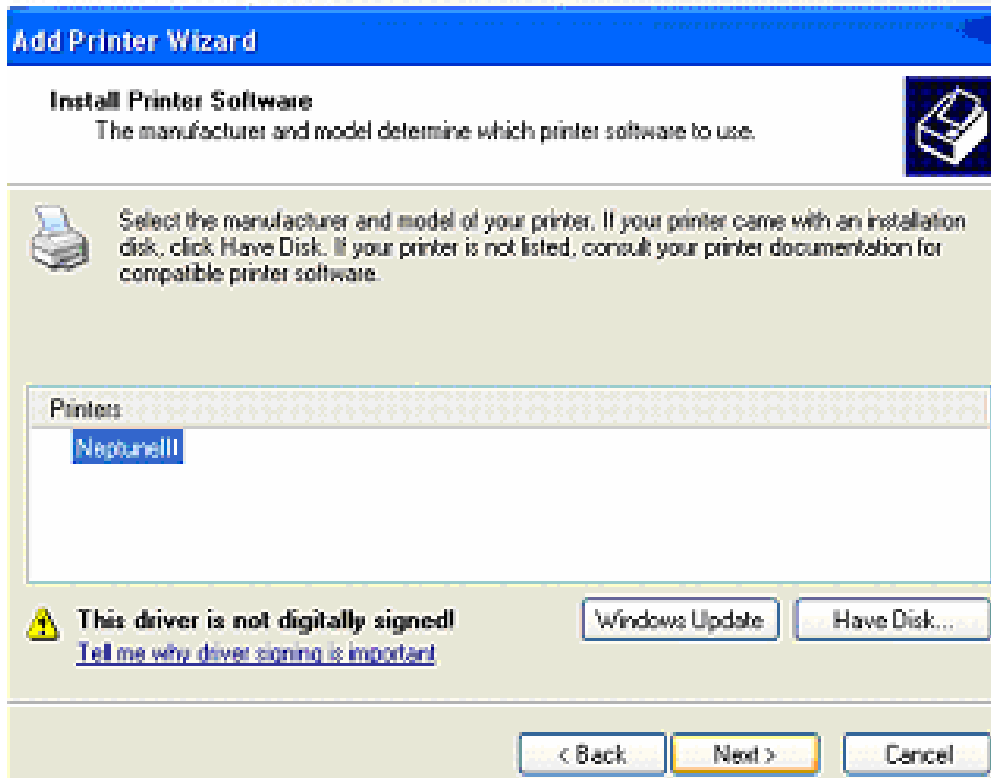
(Figure 6- 8 Driver installation)

8.   Select "Replace existing driver" and click Next "Step"
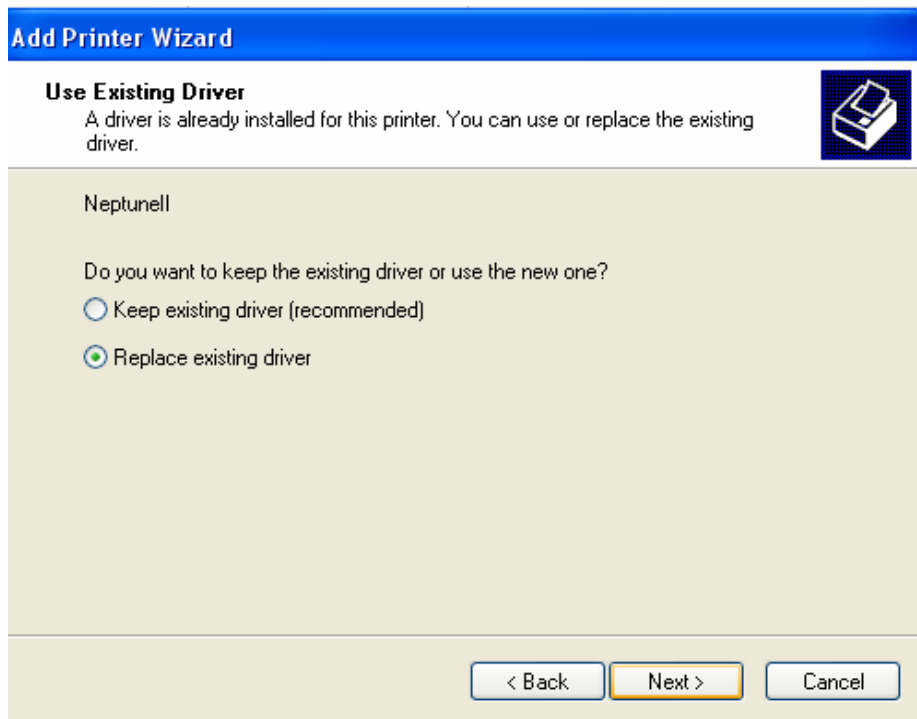
(Figure 6- 9 Driver installation)

9.   Select "NO" when asked to print a test page and click NEXT STEP
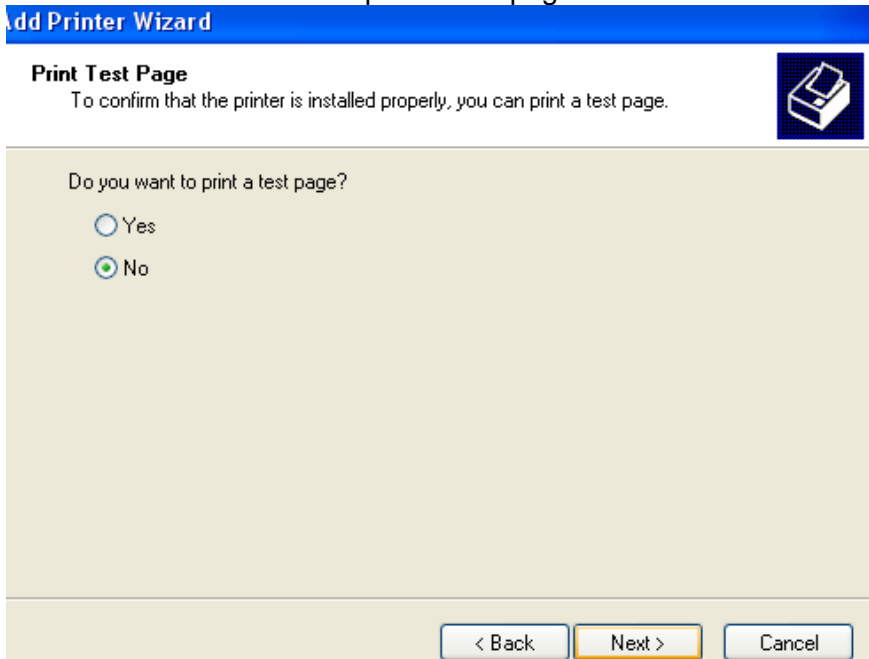
(Figure 6- 10 Driver installation)

12. Click FINISH to complete the Add Printer Wizard
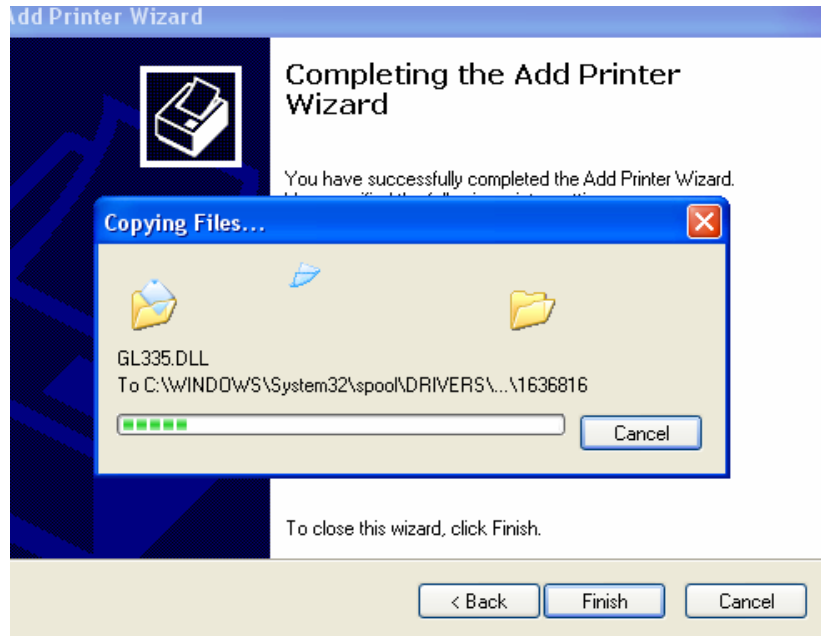
(Figure 6- 11 Driver installation)

13. In a few seconds, you will see the following message, showing Neptune's icon as an installed printer for Windows (see Figure 6-12).
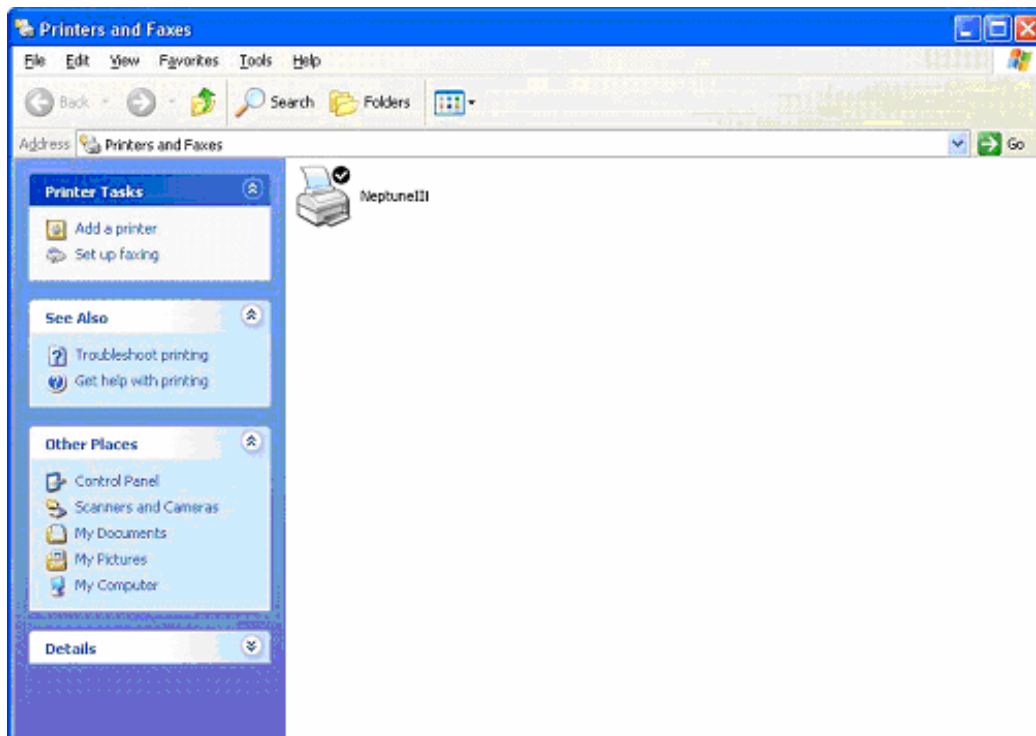
(Figure 6- 12 Driver installation)

14. Now the Neptune III's printer driver is installed completely. Do not forget to take the GCC driver disk from the floppy drive and store it in a safe place.

CHAPTER VII -Operation

This chapter teaches you how to operate your laser machine. It gives detailed information on the ideal working environment and flexible utility of the control panel, which you use to monitor and control Neptune III's hardware. It also provides information on how to set the parameters before you print a graphic file from the host computer.

Environment

- A clean, well-ventilated room with a temperature of 15 ~25 (60 ~78) (especially the temperature of 25), and a relative humidity between 30% and 40%as an office type of environment.
- Avoid from unstable voltage supply.
- Short path for an effective air exhaust.
- Have a fire extinguisher available at all times.

Graphic Control Panel Operation

Once you have the LaserPro Neptune III connect to the computer and the driver installed, you will need to familiarize yourself with the controls of the machine before beginning any cutting or engraving. The Neptune driver will be the primary sources of information for your machine. However, the manual controls on the Neptune allow you to adjusting laser parameter settings, set repeat times, manipulate the file order, focusing, starting point and other important tasks.

The control panel on the LaserPro Neptune III provides easy access to all of the manual controls needed for cutting and engraving. The liquid crystal display (LCD), directional and selection buttons make navigating through the machine's manual controls easy to do. (See Figure 7-1)
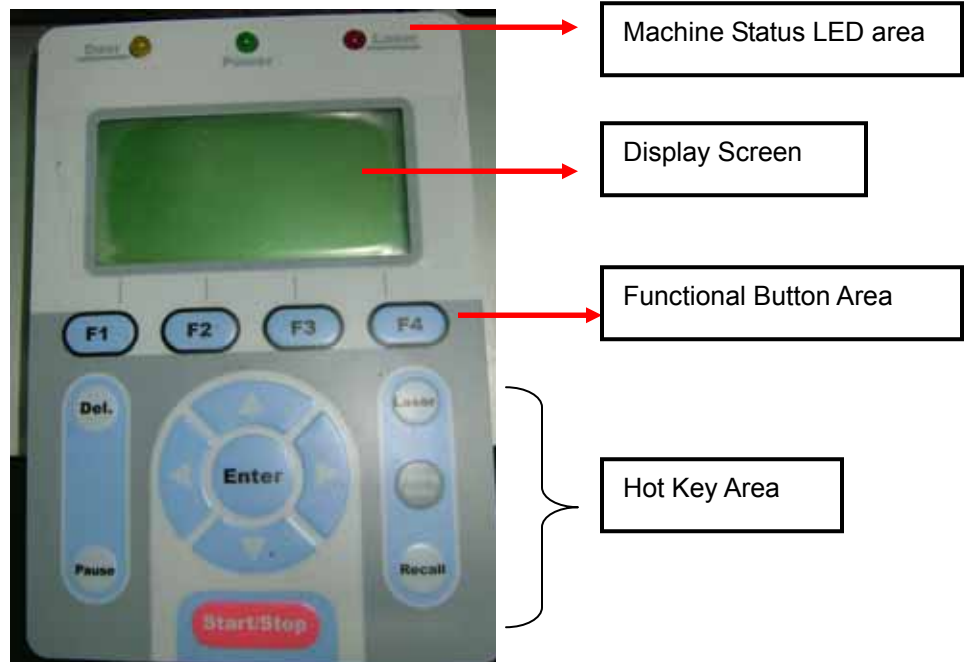
(Figure 7- 1 CONTROL PANEL)

Hot Key Area

● **Direction Buttons**

The four directional buttons on the right side of the control panel allow you to navigate the selection cursor through the control panel menu and adjust the value of specific settings. Move the cursor with the **Up** and **Dwon** directional buttons and adjust value settings with the **Left** and **Right** buttons. Press the **Enter** button to confirm each selection.

● **Hot key area**
In order to make some popular functions easily access within minutes, LaserPro Neptune III is designed with hot keys on control panel. Each function of hot key area can also be found under Functional Button area.

◆ **Delete Key**
Delete Key in hot key zone provides quick access to delete current job.

◆ **Pause Key**
Press the **Pause** Key would help to pause the current working job and resume the previous job by pressing it one more time.

◆ **Start/ Stop key**
The **Start/ Stop** button will start or stop jobs once they have been successfully loaded into the LaserPro Neptune III.

◆ **Laser Key**
The laser hotkey can easily switch the laser status between on and off. When the laser is off, the laser carriage would start to work without laser firing after pressing **Start/ Stop** key to better positioning the laser firing path. Once the position of laser firing is confirmed to be correct, then you can press the **Laser** key again to enable the laser, and start to laser engraving or cutting on materials.

◆ **Cutting Mode Key**
Cutting mode key would access to the four options of cutting quality and speed combination.

◆ **Recall Key**
The recall button makes the laser carriage applies the saved position as origin.

● **Functional Button Area**
The F1, F2, F3, & F4 buttons let you select the various available options located on the lower portion of the screen display.   These buttons will allow you to scroll through the control panel menu, access help pages, and pause and resume jobs.

Display Screen

File Name

Job Counting #

001 FILE NAME
Speed: XX   % DPI: XXX
Power: XX   % PPI: XXX

Laser Parameters

Time calculation

00:01:35   001/ 004

Job repeated times, 004 stands for the job will be repeated 4 times, and 001 means the file is running for its first time.
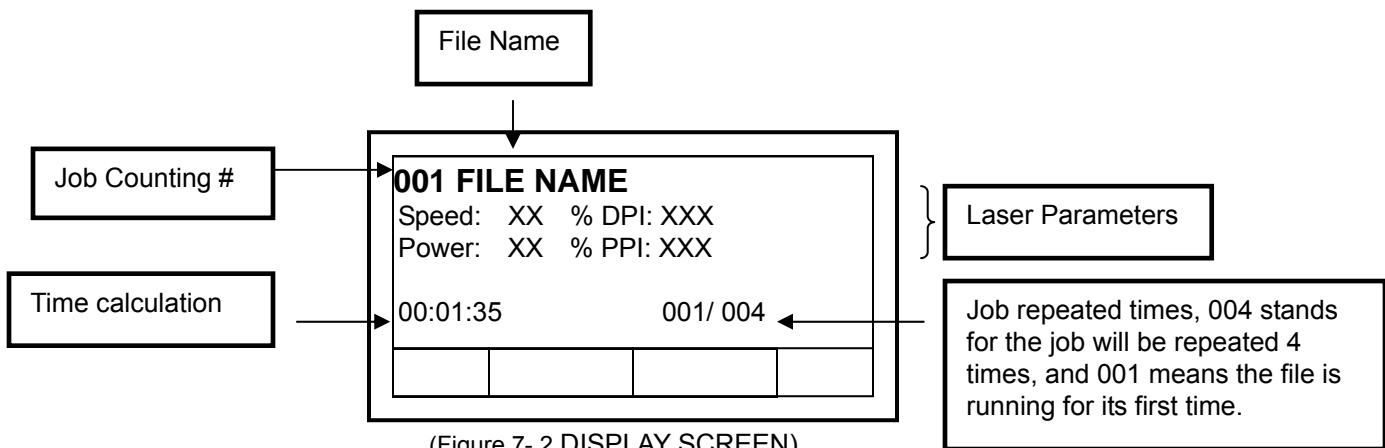
(Figure 7- 2 DISPLAY SCREEN)

When the LaserPro Neptune III is powered on, the machine will perform a series of safety checks and initializing routines.   The graphic control panel will scroll through the GCC Copyright Page, LaserPro logo Page and the Machine Initialization Page before reaching the Main Operation Page.   Once the machine has reached the Main Operation Page, it is ready for job and you can transmit files from PC to Neptune.   Refer to the diagram of Fig. 7-3 for a detailed listing of the different pages within the control panel menu.

Control Panel Operation Chart

Power ON

↓

↓

Machine initialization

↓ Main Working Page

```
002 File name
Speed:   XX   % DPI: XXX
Power:   XX   % PPI: XXX
XX:XX:XX                001/ 002
Prev    Next      Z      Func
```

F1   Previous file

```
001 File name
Speed:   XX   % DPI: XXX
Power:   XX   % PPI: XXX
XX:XX:XX                001/ 001
Prev    Next      Z      Func
```

START   Start working

```
002 File name
Speed:   XX   % DPI: XXX
Power:   XX   % PPI: XXX
XX:XX:XX                001/
002
Prev     Next     Z     Func
```

F2   Next file

```
003 File name
Speed:   XX   % DPI: XXX
Power:   XX   % PPI: XXX
XX:XX:XX                001/ 001
Prev    Next      Z      Func
```

F3   Z

```
Carriage moving
X: 25mm 12 mm
Y: 10 mm   5 mm
           Z:
25mm
```

F1
Back to Job

↓ Down   ↓ UP

F4   Functional Page

```
File management
Machine setting
Machine information
Standby
Back          Help
```

F1
Back to job

```
002 File name
Speed:   XX   % DPI:
XXX
Power:   XX   % PPI:
XXX
XX:XX:XX       001/ 001
```

F3
Help file

```
↑ ↓ : Select function
↔ : Adjust value

Press ENTER to go into items
```

(Figure 7- 3 Control panel operation chart)

Stop or Pause Job

```
File name
Speed:   XX   % DPI: XXX
Power:   XX   % PPI: XXX
XX:XX:XX                001/
001
```

F1

Pause Job

STOP

```
File name
Speed:   XX   % DPI: XXX
Power:   XX   % PPI: XXX
XX:XX:XX          001/ 001

Resume   Edit
```

```
File name
Speed:   XX   % DPI: XXX
Power:   XX   % PPI: XXX
XX:XX:XX          001/ 001

Prev   Next          Z    Func
```

F1

Resume job

```
File name
Speed:   XX   % DPI: XXX
Power:   XX   % PPI: XXX
XX:XX:XX          001/ 001
```

```
Start
```
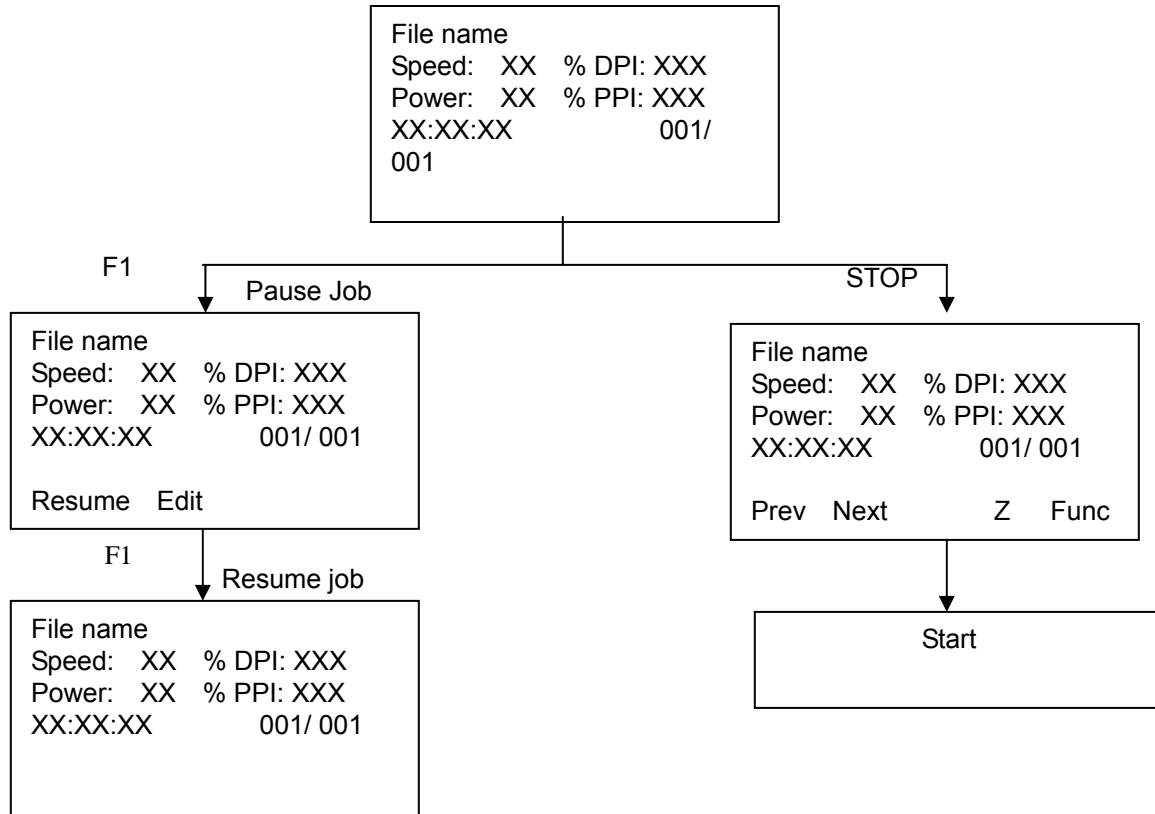
(Figure 7- 4 Stop or pause job)

Carriage Moving

```
File name
Speed:   XX   % DPI: XXX
Power:   XX   % PPI: XXX
XX:XX:XX                001/ 001
```

Directional keys

```
Carriage Moving
             X:   00.00 mm
             Y: 00.00 mm



Back
```
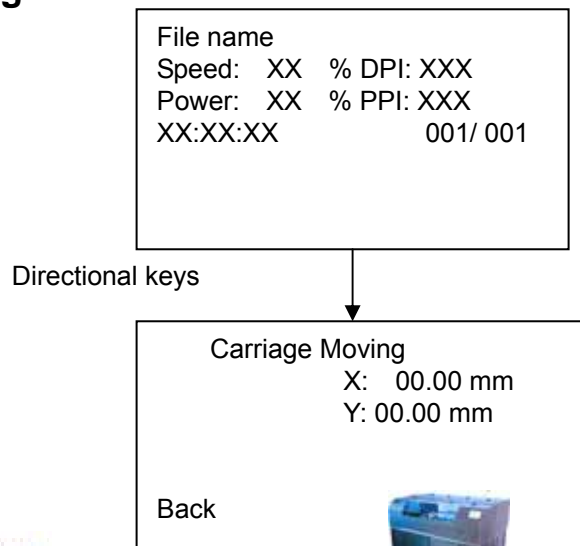
(Figure 7- 5 Moving laser carriage)

Laser on/ off

```
002 File name
Speed:   XX   % DPI: XXX
Power:   XX   % PPI: XXX
XX:XX:XX                001/ 002
Prev    Next       Z       Func
```

F4

```
 Laser
   Set Red Beam
   Carriage Lock
   Set Command Mode
   Save Position
   Flash Memory
   Set File Save Mode
   Set Vector Mode
   Tune Image Power
   Others          Enter
   Reset
```

```
Laser Enable : Yes/ NO



Back
```
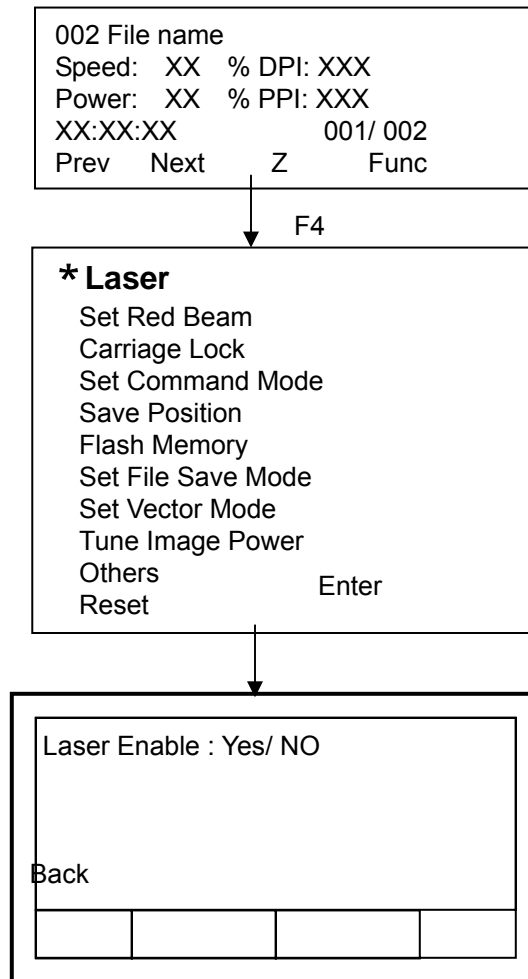
(Figure 7- 6 Laser on/ off operation)

Cutting Mode or Set Vector Mode

```
002 File name
Speed:   XX   % DPI: XXX
Power:   XX   % PPI: XXX
XX:XX:XX                001/ 002
Prev    Next       Z       Func
```

F4

```
Laser
   Set Red Beam
   Carriage Lock
   Set Command Mode
   Save Position
   Flash Memory
   Set File Save Mode
   Set Vector Mode
   Tune Image Power
   Others
   Reset
```

Enter

```
Mode: Quality/Fine/Coarse/Speedy Vector




Back                            Save
```

(Figure 7- 7 Cutting mode/ Set vector mode)

File Management

File management
Machine setting
Information

F1 → **Back to file selection**

Enter — **F3** → Delete All Files

ENTER

01: File name
02: File name
03: File name
04: File name

F2 → Job queue function to change job printing sequence

F4 → Delete the selected file

Choose file for editing   ENTER

02 File name
Speed: XX   % DPI: XXX
Power: XX   % PPI: XXX
XX:XX:XX   001/ 001

Back   Edit

F1 — Back to file selection

F4 — Edit file

01: File name
02: File name
03: File name
04: File name

Raster setting
Vector setting
Repeat times: 000

Raster setting

Raster Power: %
Raster Speed: %
SmartACT: YES or NO

Back

Vector setting

Vector Pen:
Vector Power: %
Vector Speed: %
Vector PPI:
Back

(Figure 7- 8 File Management)

Machine Setting

```
File management
Machine setting
Information
```

↓ ENTER

```
Set Red Beam
Carriage Lock
Set Command Mode
Save Position
Flash Memory
Set File Save Mode
Set Vector Mode
Tune Image Power
Others
Reset
```
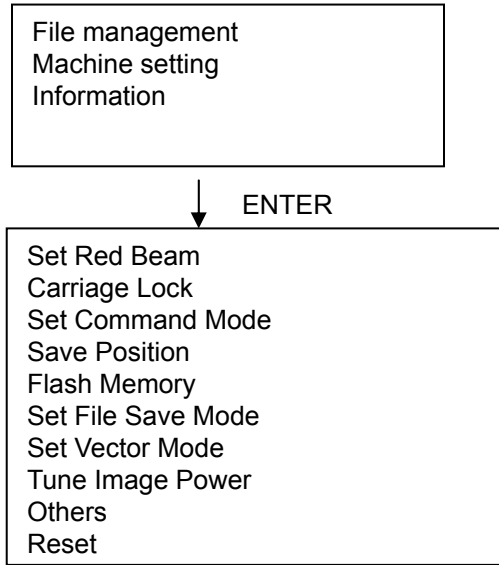
(Figure 7- 9 Machine Setting)

Information

```
File management
Machine setting
Information


Back          Help Recall
```

Machine Information Page   ENTER

```
GCC LaserPro
Neptune
Copyright 2004
```

Down direction key

```
Firmware version: XXX
FPGA: V2.XX
```
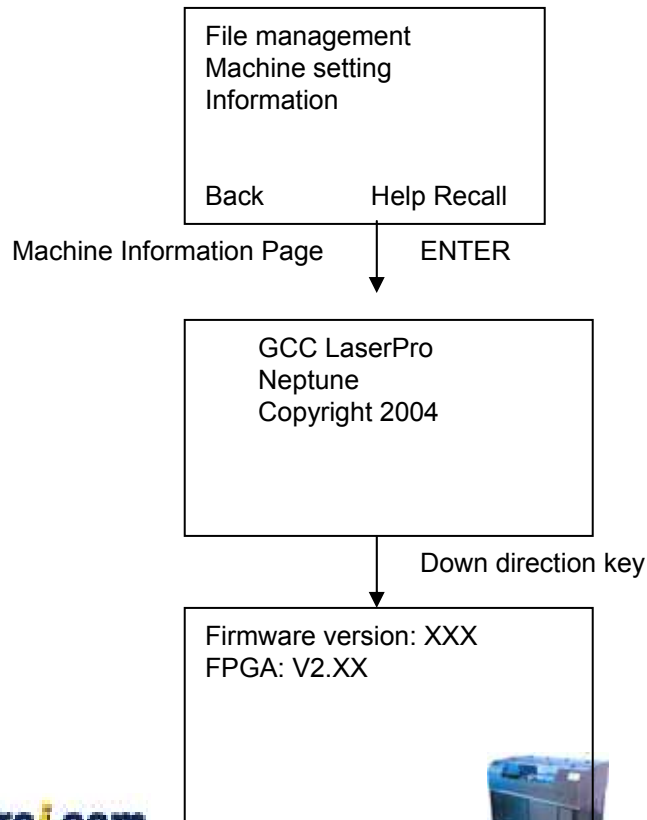
(Figure 7- 10 Machine Setting)

Main Operation Page

The Main Operation Page will be the "home base" for the control panel menu.   It will remain on most of the time during normal operation.   It has been designed to display all of the basic information relevant to operation.   This page will inform you of the speed, power, PPI, DPI, time, and copies of each individual file loaded into the SPIRIT.   The first line of the Main Operation Page indicates the first job's filename.   If more than one job has been downloaded, press the **PREV** and **NEXT** buttons to scroll through the jobs in the buffer.   Pressing the **FUNC** button will transport you to the **Function Select Page**, where you will be able to edit File Management, Machine Settings and Machine Information. (see Fig. 7-11)

```
 --- EMPTY FILE
SPEED   -----% DPI   ------
 POWER   -----% PPI   -------
--  --                    ---/----


 PRE | NEXT  |  Z    | FUNC
```
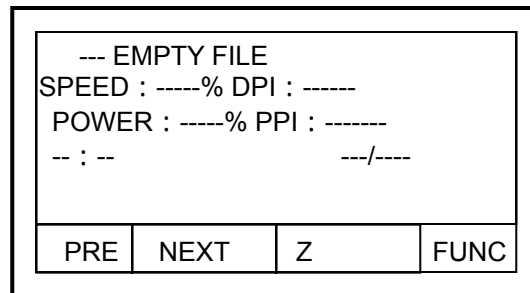
(Figure 7- 11 MAIN OPERATION PAGE)

Job Starting Point
If you want to adjust the starting point of the job before you begin the cutting or engraving, press the directional buttons while in the Main Operation Page.   Pressing the directional buttons will bring to the Carriage Moving Page.   In this page you can adjust the starting 0,0 point of the x and y rails.   Without adjustment, the 0,0 starting point of your job will be the extreme upper left hand corner of the motion system.   This point will correspond to the extreme upper left hand corner of your graphics program.   Manually moving the laser carriage will move the 0,0 starting point to a different location.   The Carriage Moving Page will display in millimeters how far the location is away from the default location.

Start Job
If you are satisfied with the existing settings, auto-focus adjustments and starting point location, press the **START** button to start cutting or engraving.   When a job is in operation, the graphic control panel will display the Working Page.   This page informs you the speed, power, PPI, DPI, time, working time and copies status. While in this page, at no time are you able to edit the laser or file settings.   You may press the **F1** button to jump to the Working Pause Page, which will pause and resume the operation.   Or you may press the **STOP** button that will cease all cutting and engraving and return the control panel menu back to the Main Operation Page. (see fig. 56)

Stop Job
In Working Page, you can press STOP button to stop a job.

Pause Job
In the Working Page, you can press **F1** to pause the job temporary and press **F1** again to restart the job in the Working Pause Page. (See fig. 7-12)

```
01   File Name
 Speed    100.0%   DPI    1000
 Power   100.0%   PPI    750
 00   32   19                  000/000


Resume      Edit
```
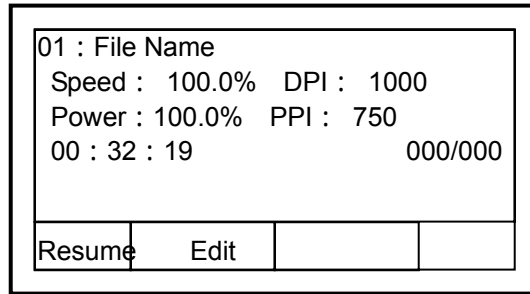
(Figure 7- 12 Pause page)

Function Select Page

Pressing the **F4** button while in the Main Operation Page will bring you to the Function Select Page. This page allows you to edit File Management and Machine Settings. Press the directional keys to move the cursor to the **File Management**, **Machine Setting** and **Information** Page. Press **ENTER** to confirm your selection. (See Fig. 58)

```
┌─────────────────────────────────────┐
│  ┌───────────────────────────────┐  │
│  │ File management               │  │
│  │ Machine setting               │  │
│  │ Information                    │  │
│  │                               │  │
│  ├───────┬───────┬───────┬───────┤  │
│  │ BACK  │       │ HELP  │ RECALL│  │
│  └───────┴───────┴───────┴───────┘  │
└─────────────────────────────────────┘
```
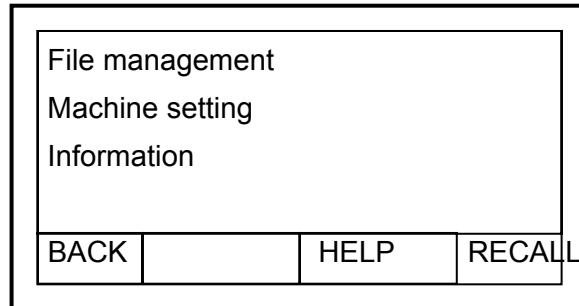
(Figure 7- 13 FUNCTION PAGE)

File Management

The File Management Page will show all of the files that have been downloaded into the Neptune. Pressing the **UP** or **DOWN** directional buttons will scroll through the available files. If a file is no longer needed or if the memory buffer has reached its capacity and you would like to download new files, press **F4** to delete unwanted files. Using **F2** to link the files and using **F3** to delete all files. Press **ENTER** to see the File Settings in the Information Page. (see fig. 59 & 60)

```
┌─────────────────────────────────────┐
│  ┌───────────────────────────────┐  │
│  │  01   File 1                  │  │
│  │  02   File 2                  │  │
│  │  03   File 3                  │  │
│  │  04   File 4                  │  │
│  │                               │  │
│  ├───────┬───────┬───────┬───────┤  │
│  │ BACK  │ LINK  │ D- ALL│ DEL   │  │
│  └───────┴───────┴───────┴───────┘  │
└─────────────────────────────────────┘
```
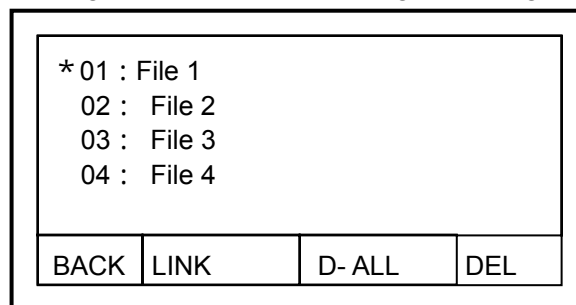
(Figure 7- 14 File management page)

After select a file, you may press **F4** further to edit the settings of this file. Such as raster, vector and repeat settings (see fig. 7-16). Or using **Star** and move to the main operation page.

```
 01   File name
SPEED        % DPI

POWER        % PPI

00:03:35       001/005
                            EDIT
```

(Figure 7- 15 FILE EDITING PAGE)

Once F4 is pressed you will go to the File Management Edit Page to edit the setting of the file.   From here, press the **direction button** to select to adjust the raster, vector and repeat settings and **RIGHT** or **LEFT** directional button to adjust the setting value (see fig. 7-16).

```
        Raster Setting
        Vector Setting
        Others
```

(Figure 7- 16 File parameters adjustment page)

File Management -- Raster Setting

This page will allow you to edit the raster settings of a select file.   Use the directional buttons to scroll through the editing options and adjust the values. Adjusting the Raster Power and Raster Speed will override the saved settings downloaded from the computer.   Select the SmartACT option to initiate the function of SmartACT to speed EXPLORETR operation speed when perfect output quality is not a demand (see fig. 7-17). **F3** button would provide you a direct approach to main operation page.

```
┌─────────────────────────────────┐
│  ┌───────────────────────────┐  │
│  │ Raster Power          %   │  │
│  │ RASTER SPEED              │  │
│  │ SMARTACT    YES           │  │
│  │                           │  │
│  ├──────┬──────┬──────┬──────┤  │
│  │      │      │      │      │  │
│  └──────┴──────┴──────┴──────┘  │
│                                 │
└─────────────────────────────────┘
```

Figure 7- 17 File Management

If your selected file features vector settings, this page will allow you to adjust them. Use the directional buttons to adjust the pen, power, speed, and PPI settings (see fig. 7-18).

```
┌─────────────────────────────────┐
│  ┌───────────────────────────┐  │
│  │                           │  │
│  │ Vector Pen                │  │
│  │ Vector Power          %   │  │
│  │ Vector Speed          %   │  │
│  │ Vector PPI                │  │
│  │                           │  │
│  ├──────┬──────┬──────┬──────┤  │
│  │      │      │      │      │  │
│  └──────┴──────┴──────┴──────┘  │
└─────────────────────────────────┘
```

Figure 7- 18 File Management

File Management-- Others

If you press **ENTER** at OTHERS item, you would be able to set the repeat times of the selected file by using **LEFT** or **RIGHT** direction buttons to adjust repeat times (see fig. 7-19).

```
┌─────────────────────────────────┐
│  ┌───────────────────────────┐  │
│  │ Repeat Times:             │  │
│  │                           │  │
│  │                           │  │
│  ├──────┬──────┬──────┬──────┤  │
│  │      │      │      │ Back │  │
│  └──────┴──────┴──────┴──────┘  │
└─────────────────────────────────┘
```

Figure 7- 19 File Management

NOTE: If the Repeat Times is set to "0", the file would be repeated without limits.

Where is the LINK/ DLINK function

Step 1. Go to the Main Working Page as fig. 7-20 shows

```
01| Laser1.cdr
 Speed :   100.0% DPI: 300
 Power:   50.0%   PPI:762
--- : --- : ---        000/001

 Prev   Next                    Z
```

(Figure 7- 20 The link/ dlink function)

Step 2. Press F4 key to enter Function Selection Page and pressing ENTER to choose File Management

```
 * File management
   Machine setting
   Information

   Back               Help      Recall
```

(Figure 7- 21 The link/ dlink function)

Step 3. Stop the cursor at the starting file you would like set as the first printing job and press F2 key to initiate the LINK function or F4 to DLINK (see fig. 7-22 & 7-23)

```
  03| Laser3.cdr
 * 01| Laser1.cdr
  02| Laser2.cdr

   Back Link                    DLink
```

(Figure 7- 22 The link/ dlink function)

```
 03| Laser3.cdr       |---|---
 *01| Laser1.cdr      |---|---
 02| Laser2.cdr       |---|---

  Back   Link                   Dlink
```

(Figure 7- 23 The link/ dlink function)

How to Link Files

Take a printing sequence of Laser3.cdr--->Laser2.cdr--->Laser1.cdr for example to show how to link different files.

Step 1. Go to the LINK/ DLINK function page as fig. 7-24 shows.

```
02| Laser2.cdr        |---|---
*03| Laser3.cdr       |---|---
01| Laser1.cdr        |---|---

Back Link             Dlink
```

(Figure 7- 24 Link Files)

Step 2. Stop cursor at Laser3.cdr and press F2 to start LINK. You would find Laser3.crd file gets an X sign. The x sign means that the LINK is working and you can link the current file to another one.

```
02| Laser2.cdr        |---|---
*03| Laser3.cdr       |---x---        01|
Laser1.cdr            |---|---

 Back Link            Dlink
```

(Figure 7- 25 Link Files)

Step 3. Move cursor by arrow keys and stop at Laser2.cdr file then press F2 to link laser3.cdr and laser2.crd.

```
01| Laser1.cdr        |----|---
*02| Laser2.cdr       |-03x---
03| Laser3.cdr        |----|-02

Back Link             Dlink
```

(Figure 7- 26 Link Files)

Step 4. Move cursor by arrow keys and stop at Laser1.cdr file then press F2 to link laser2.cdr and laser1.crd.

```
03| Laser3.cdr        |----|-02
*01| Laser1.cdr       |-02x---
02| Laser2.cdr        |-03|-01

Back Link             Dlink
```

(Figure 7- 27 Link Files)

Step 5. Press F2 again to finish the LINK function and the x sign would disappear.

```
03| Laser3.cdr      |----|-02
*01| Laser1.cdr     |-02|---
02| Laser2.cdr      |-03|-01


  Back Link           Dlink
```

(Figure 7- 28 Link Files)

How to DLINK Files

DLINK here stands for removing files from specified job queue. Here we would show you how to remove Laser2.cdr from Laser3.cdr--->Laser2.cdr-->Laser1.cdr job queue.

Step 1. Go to LINK/ DLINK function page and stop cursor at Laser2.cdr.

```
01| Laser1.cdr      |-02|---
*02| Laser2.cdr     |-03|-01
03| Laser3.cdr      |----|-02

Back Link           Dlink
```

(Figure 7- 29 DLINK Files)

Step 2. Press F4 key to initiate DLINK function and you would find Laser2.cdris removed from the job queue.

```
01| Laser1.cdr      |-03|---
*02| Laser2.cdr     |----|---
03| Laser3.cdr      |----|-01

Back Link           Dlink
```

(Figure 7- 30 DLINK Files)

NOTE:
● The same file can't print more than once in the same job queue.

- Neptune III can accept multiple job queues at the same time, each job queue is independent and unable to link each other.
- In order to know the printing sequence, the main working page would remind you what is the next printing job. Find fig.7-31 for example.

```
03| Laser3.cdr        *02          ───►   02 is the next file
Speed :   100.0% DPI: 300
Power:   50.0%   PPI:762
--- : --- : ---        000/001

Prev   Next       Z       Func
```
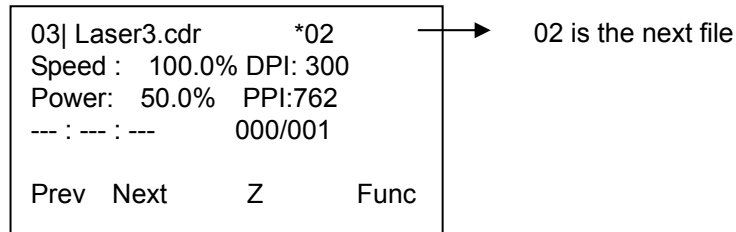
(Figure 7- 31 DLINK Files)

Machine Setting

Under Machine setting page, you would have Set Read Beam, Carriage Lock, Set Command Mode, Save Position, Flash Memory, Set File Save Mode, Set Vector Mode, Tune Image Power, Other and Reset options by pressing ENTER to go into each function.

```
Set Read Beam
Carriage Lock
Set Command Mode
Save Position
```
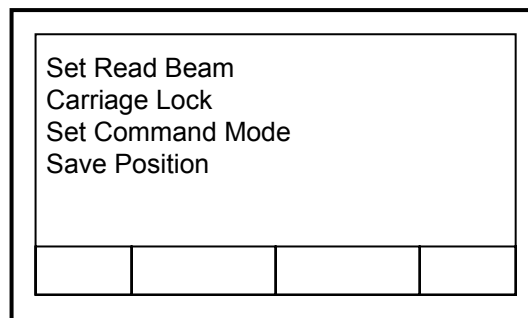
(Figure 7- 32 Machine Setting)

```
Flash Memory

Set File Save Mode

Set Vector Mode

Tune Image Power
```

(Figure 7- 33 Machine Setting)

```
┌─────────────────────────────────────┐
│  ┌───────────────────────────────┐  │
│  │                               │  │
│  │  Other                        │  │
│  │  Reset                        │  │
│  │                               │  │
│  │                               │  │
│  │                               │  │
│  │                               │  │
│  ├──────┬──────┬──────┬──────────┤  │
│  │      │      │      │          │  │
│  └──────┴──────┴──────┴──────────┘  │
└─────────────────────────────────────┘
```
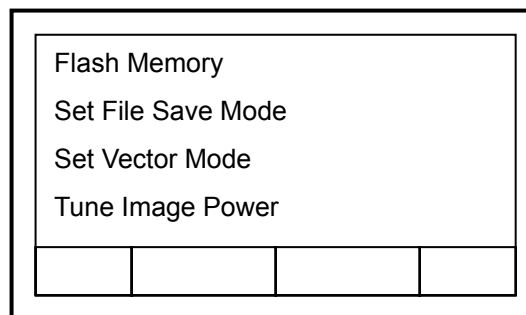
(Figure 7- 33 Machine Setting)

- **Set Red Beam : Yes/ No**
  When the read beam is on, users can see the red light shines when laser is firing.

- **Carriage Lock : Yes/No**
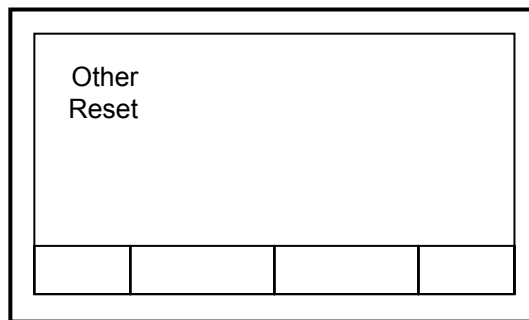 If users lock the carriage, the carriage can not be moved at will. The carriage will be fixed in one position.

- **Set Command Mode: Default/ HPGL**
  Default means under normal operation system(Win9x with LaserPro driver and Coreldraw). HPGL means under DOS operation system. HPGL only works in cutting function.

- **Save Position: Enter = Yes**
  No matter where the carriage moves, once the position is saved press **Recall** button, and the carriage will move back to the saved location.

- **Flash Memory: Write Flash Memory/Read Flash Memory**
  Write Flash Memory means save the files. Read Flash Memory means open the saved files.

- **Set File Save Mode: Yes/ No**
  The file can temporarily be kept in the machine if users choose Yes. No means the file will be detected immediately after work.

- **Set Vector Mode: Quality Vector/Fine Vector/ Coarse Vector/ Speedy Vector**
  Different vector qualities offer different application.

- **Tune Image Power: Yes/No**
  The function is to control the power of laser when engraving graphic.

● **Others**

This page allows you to change the language of usage, the unit of measurement (from metric to inches), to enable/disable the EOF (end of file) alarm, and to set a delay time of the Air Assist System to make sure the air assist is functioning when job starts working. When the setting is finished, please use F4 to save the changing.

```
Language    English
Unit           metric
EOF Alarm        YES
Air delay       sec
Back                    Save
```

(Figure 7- 34 Machine Setting)

NOTE: The EOF (end of file) alarm will make an audible "beep" when your file has been completed.

Machine Setting – Reset

● User Reset- Click **User Reset,** all setting would be set back to the origins.

● System Reset- After upgrading a new firmware, the system has to be reset, click **System Reset,** the version of firmware is updated but previous settings are well saved.
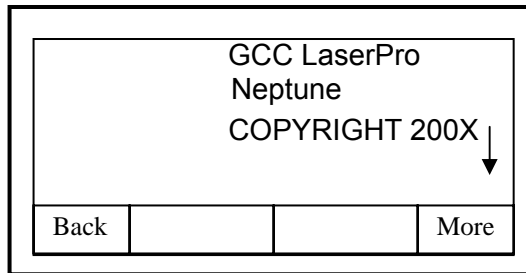
```
●    User Reset
●    System Reset

Back
```
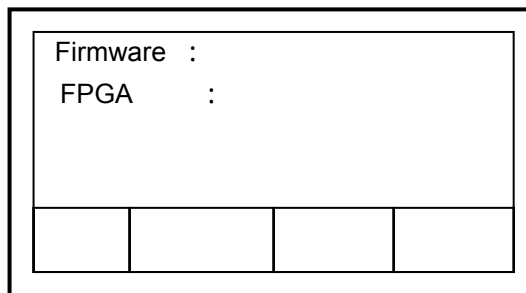
(Figure 7- 35 Machine Setting)

Information

Under the Machine Information Page, you can find the machine information including G.C.C. logo, machine name and firmware version etc. By pressing **DOWN** button, you can go further to next page. (see fig. 7-37 and 7-38)

```
┌─────────────────────────────────┐
│   ┌───────────────────────────┐ │
│   │        GCC LaserPro        │ │
│   │        Neptune             │ │
│   │        COPYRIGHT 200X ↓    │ │
│   │                           │ │
│   │                           │ │
│   ├──────┬──────┬──────┬──────┤ │
│   │ Back │      │      │ More │ │
│   └──────┴──────┴──────┴──────┘ │
└─────────────────────────────────┘
```

(Figure 7- 36 Machine Setting)

```
┌─────────────────────────────────┐
│   ┌───────────────────────────┐ │
│   │ Firmware                   │ │
│   │  FPGA                      │ │
│   │                           │ │
│   │                           │ │
│   ├──────┬──────┬──────┬──────┤ │
│   │      │      │      │      │ │
│   └──────┴──────┴──────┴──────┘ │
└─────────────────────────────────┘
```

(Figure 7- 37 Machine setting)

Setting Neptune III Driver Parameters

Before engraving or cutting, you can use the Neptune III driver to make changes to various parameters in order to get optimal effects. Under any graphic editing software, go to File→ Print→ Choose Neptune III → click on "Properties", the "Properties" screen of the Neptune III driver provides an easy way to do these settings.

The "Options" dialog box includes fields for setting parameters in three modes, i.e., the B/W Mode, the Manual Color Fill Mode, the 3D Effect and the Stamp Mode.

B/W (Black and White) Mode

This mode allows you to obtain halftone effects quickly without going through complex steps of application software for similar results. You can decide the look of the laser-engraved piece by selecting one of the halftone options: Fine, Coarse, or Error Diffusion (see Figure 7-39)
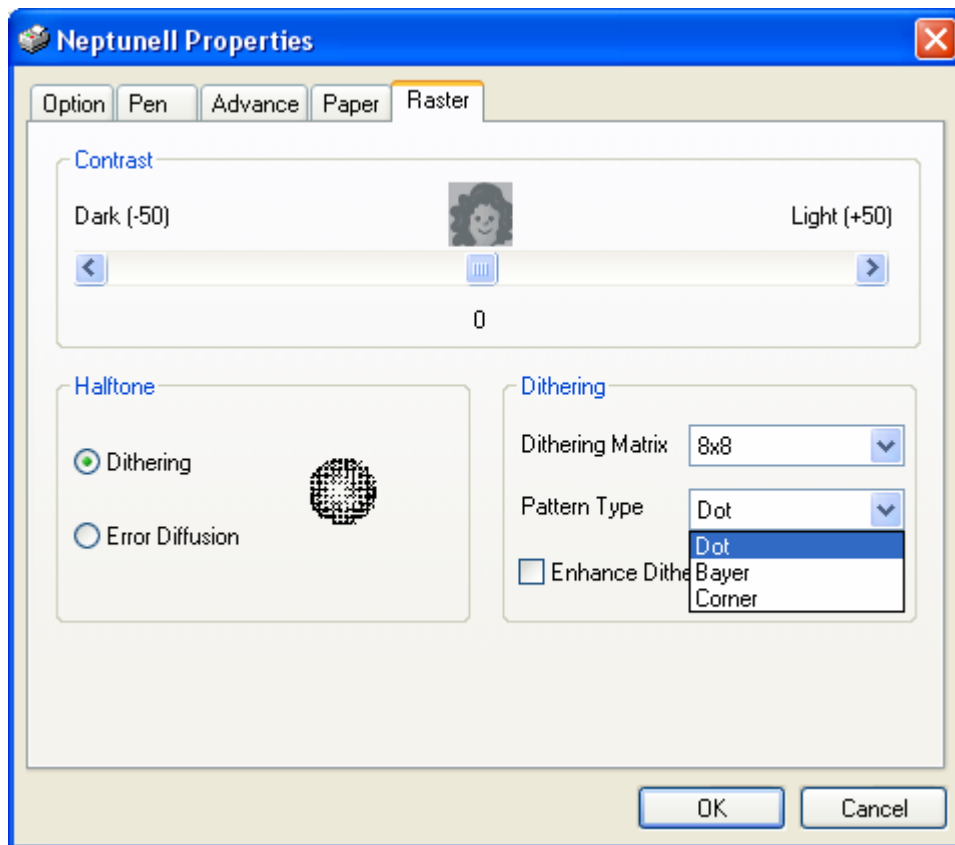
(Figure 7- 38 Driver Parameters)

Dithering Type- The gray areas of image will be filled with from a 5-grade halftone with 2x2 dots to a 65-grade halftone with 8x8 dots. 8x8 dithering type would presents the image into different shading effect than the 2x2 dithering, while the 2x2 dithering type would have smaller dots than 8x8, that produces higher resolution. The dithering type choice would depend on the image and application.

Enhance Dithering- the enhance dithering as what it reads would help to dithering type and enhance dithering at the same time, the image would be printed with 256-grade halftone and 2x2dots, therefore, better shading effect with small 2x2 dots/ grids.

Error Diffusion- The error diffusion presents the shade of image as a spread halftone instead of dots, therefore more detailed.

Pattern Type- The halftone pattern has three kinds of layout options, which determine the shape of each grid/ dot to compose the shading effect of raster image.

● **Dot:** A halftone pattern consists of circle dots.
● **Corner**: The dark dot spread from the left upper corner of the pattern result in a little triangle shape to imitate a shading effect.
● **Bayer** : A random halftone pattern.

Neptune   USER MANUAL

NOTE: The B/W Mode is the easiest way to get the halftone effects. To compare the results of the above settings, see Figure 7-40
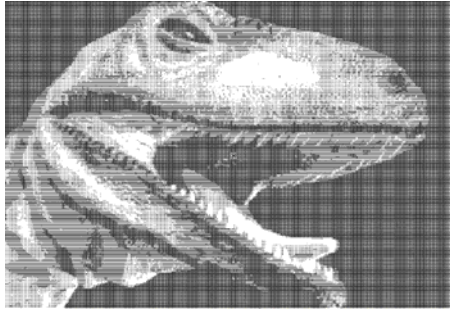
2*2 DITHERING
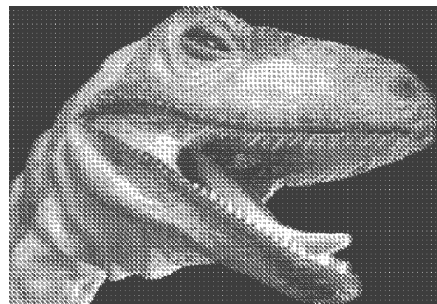

4*4 DITHERING

8*8 DITHERING

ERROR DIFFUSION

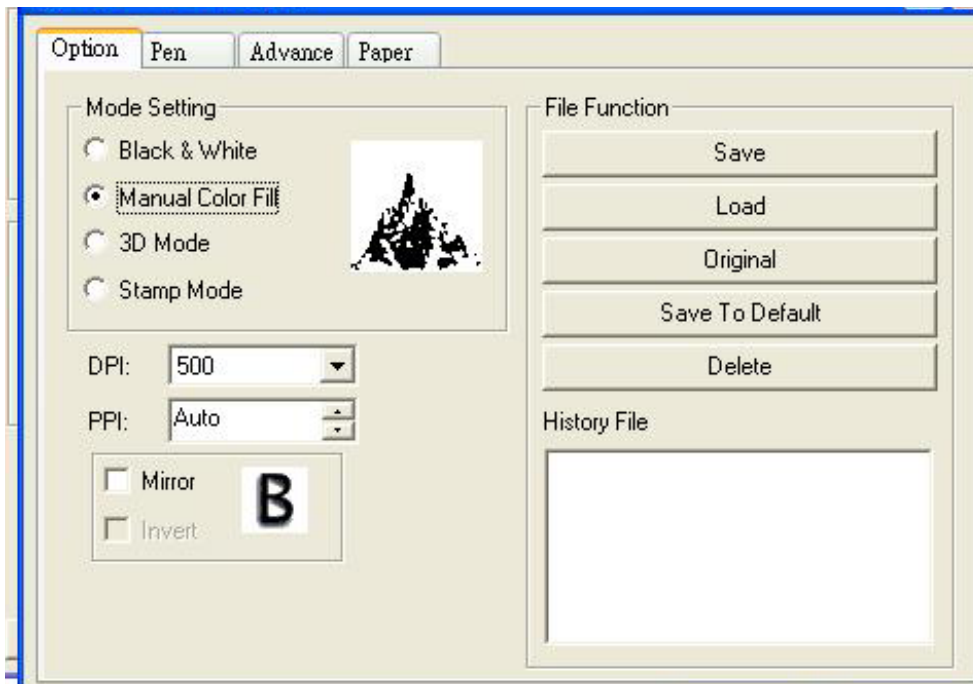2X2 ENHANCE DITHERING

8X8 ENHANCE DITHERING

DOT

BAYER

CORNER

(Figure 7- 39 Driver Parameters)

Manual Color Fill Mode

(Figure 7- 40 Driver Parameters)

By pulling the sliding controls, you can set different power and speed percentages for different colors. If the speed or power of a color is set to 0, the corresponding area or vector line will receive no laser beams. Totally 16 color settings are available. The order of these colors can be adjusted by changing the ratio of Red, Green, and Blue of each pen.

3D Effect Mode

The sculpture effect can be reached with this function. The engrave image must have gray levels, and is effected by PPI, DPI, power and speed setting.
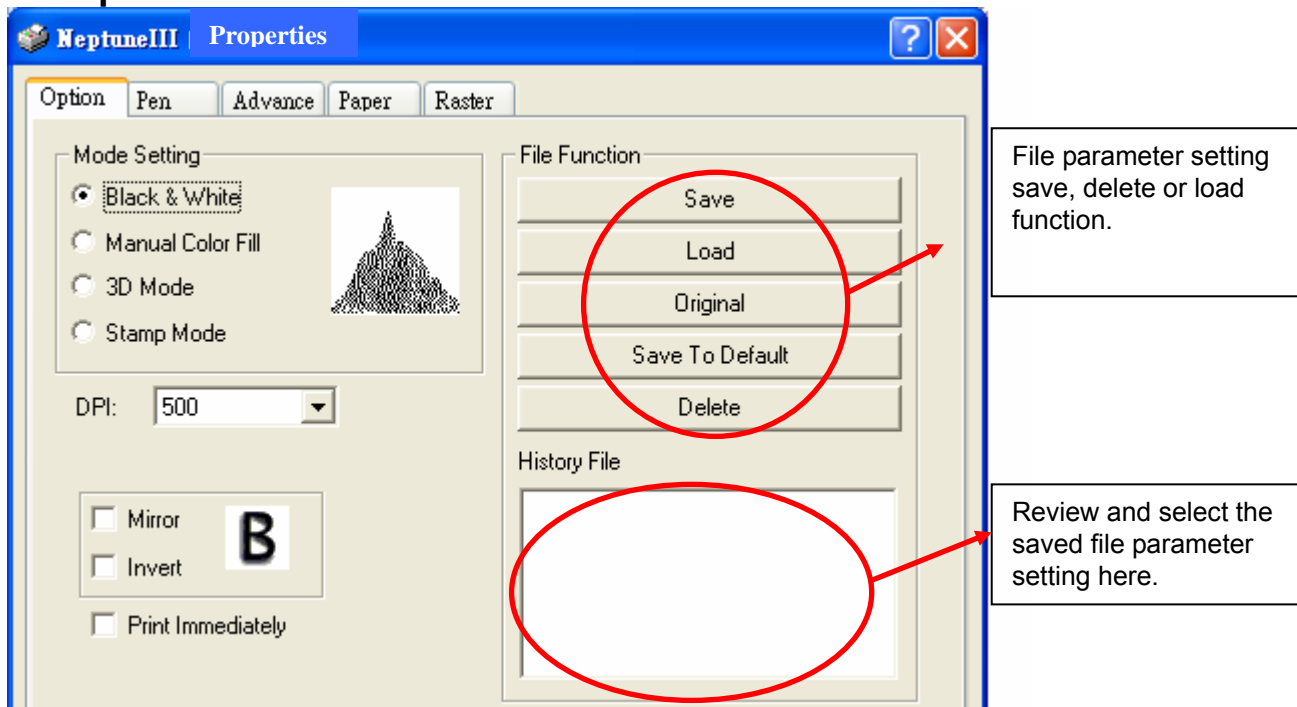

GCC LaserPro™
Neptune 3D Effect
www.gccworld.com

(Figure 7- 41 Grayscale image for 3D engraving)

Stamp Mode

File parameter setting save, delete or load function.

Review and select the saved file parameter setting here.

(Figure 7- 42 Stamp Mode)

This mode is mainly used in rubber stamp production. It creates a slope base of characters by setting up the stamp parameter (see Figure 7-43. Normally the pitch number for engraving a 2~3mm thick rubber pad can be set at 0.2 or 0.3. The smaller the pitch numbers, the sharper the slope will be. If you set the pitch number at a very high value, it may take a very long time to process.

For example, to engrave stamps with Neptune, depending on the thickness of the rubber pad, 2~3mm rubber pad for instance, the ideal power is 100% at speed around 40%. The pitch value varies depending on the size of text; the bigger the letter, the higher the pitch value is required. With 1cm-size letters, for example, 0.1~0.3 pitch is enough. Of course, the higher the laser power, the less time it will take to do the job. It really depends on how thick the rubber you engrave and what size of the letter you use. The higher the pitch value, the longer it will take the computer to process.

POWER LEVEL OF STAMP MODE

This function is for adjusting the power distribution of the slope shoulder to get the better shape of a stamp's vertical profile. Select "set shoulder" in the page "Options", and then enter the dialog box of stamp parameter. The black bars in the center are for the surface of each letter, while the blue bars are for the shoulders. Adjust the value of power level by using the adjusting bar or left clicking the mouse to edit the shape of the shoulders (see Figure 7-44).

● Image Invert   Selecting this option reverses the black and white image. It leaves the characters intact while engraving the remaining part of the rubber. This function is disabled under the Manual Color Fill Mode.

- Cluster   Selecting this option can cluster the output movement to reduce the working time. For example in Figure 7-45, if the "Distance" you specified is D, and the distance between A and B is X (see Figure 7-44). If you choose the function "Cluster", and X > D, the output movement will be route b. If you do not choose "Cluster", or choose "Cluster" and X □ D, the output movement will be route a.

route a

route b
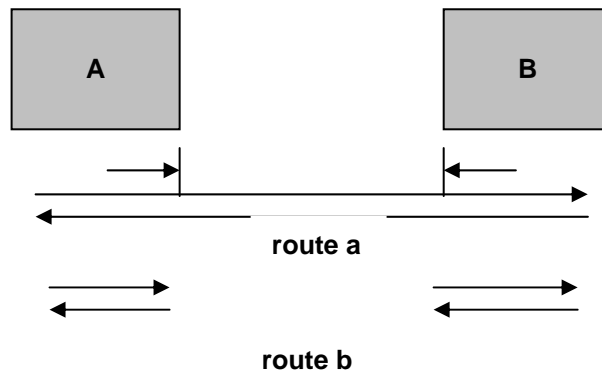
(Figure 7- 43 Stamp Mode)

- Border   Selecting this option at the image edge can have a better output for the stamp image

"Image Invert" must be selected under Stamp Mode when using "Border". For Figure 90, the border X and Y can be specified. If you choose the "Cluster" option and want to have border, the border X and Y must be less than the "Distance" D you specified.

origin   Add border   Y   X
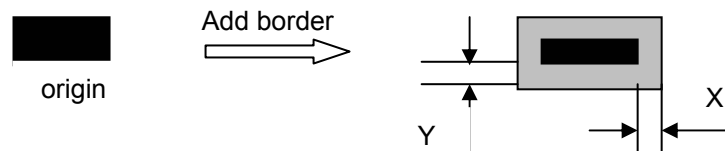
(Figure 7- 44 Stamp Mode)

- Image Mirror   Selecting this option reverses the left and the right side to produce a mirror image.
- Without Vector   Selecting this option allows you to engrave without processing vector data.

ORIGINAL SETTING

Clicking this button recalls the default values set by the manufacturer.

SET AS DEFAULTS

Clicking this button saves your constantly used parameters as new default settings. Thus, whenever you open a new file, the default settings will be adopted automatically.

HISTORY SETTING

Up to 10 constantly used sets of parameters can be saved in the History Setting. To recall a set of parameters, double-click the file name displayed in the box.

SAVE

Clicking this button saves the currently open settings file or saves the current settings to a new file

LOAD

Clicking this button loads a settings file
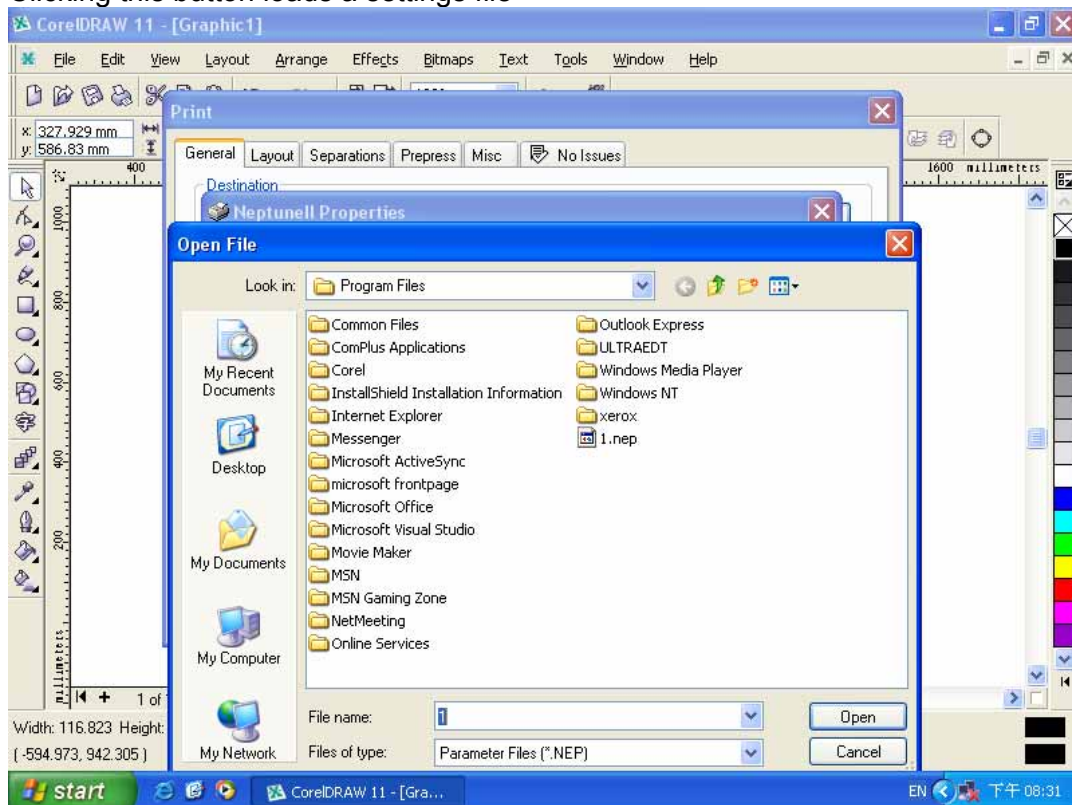
(Figure 7- 45 Load File)

TO MODIFY COLOR

You can double-click a selected color box (see Figure 7-47) to adjust the color's RGB (Red, Green and Blue) ratio.

(Figure 7- 46 modify color)

RASTER/VECTOR
Double-clicking these fields toggles between Yes and No options.
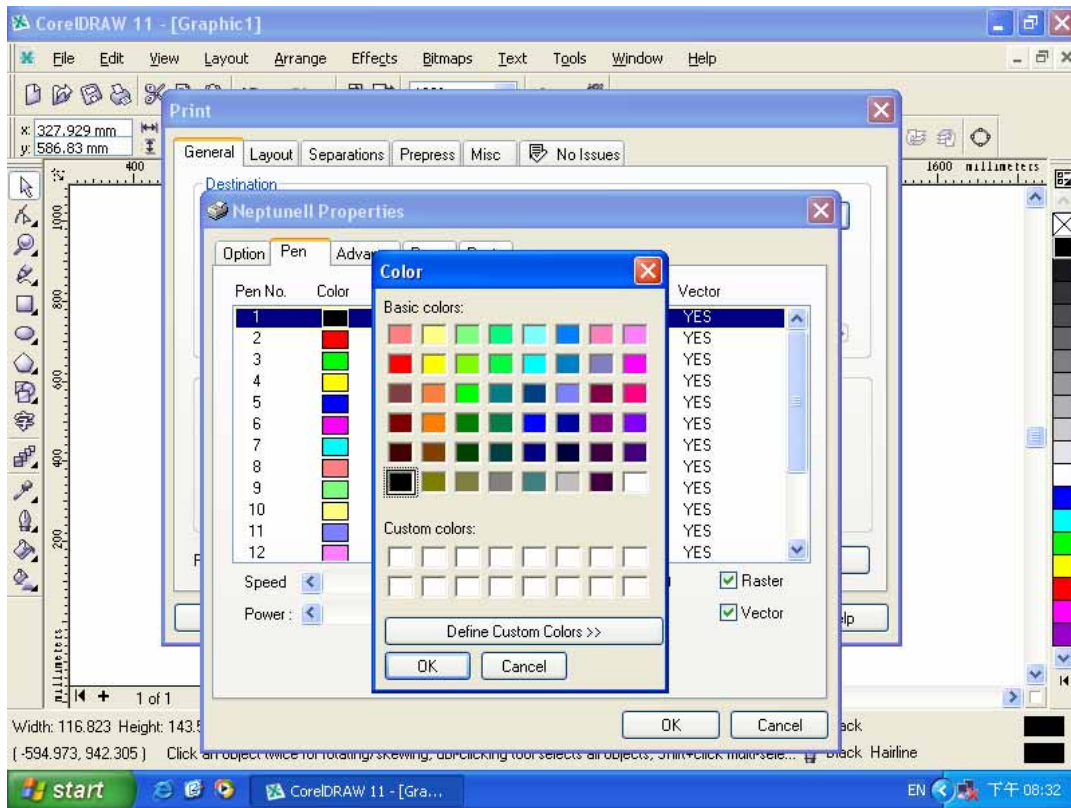
P.P.I. (LASER FIRING PULSES PER INCH)
- Purpose   By changing the laser firing pulses per inch, the energy distribution of energy would be changed.
- Description   The adjusted range is 30 to 1500 PPI, otherwise "auto mode" can be chosen. When choosing "auto mode", the system will come up with the proper PPI value automatically. To maintain the quality of raster graph, the PPI value is set automatically for being at least equal to DPI value even if you set the PPI value lower than the DPI value. For a 100W machine, the PPI value of raster function is always set automatically.

Setting Paper Parameters
The "Paper" dialog box (see Figure 7-48) provides fields for setting more parameters, as described in the following sections.
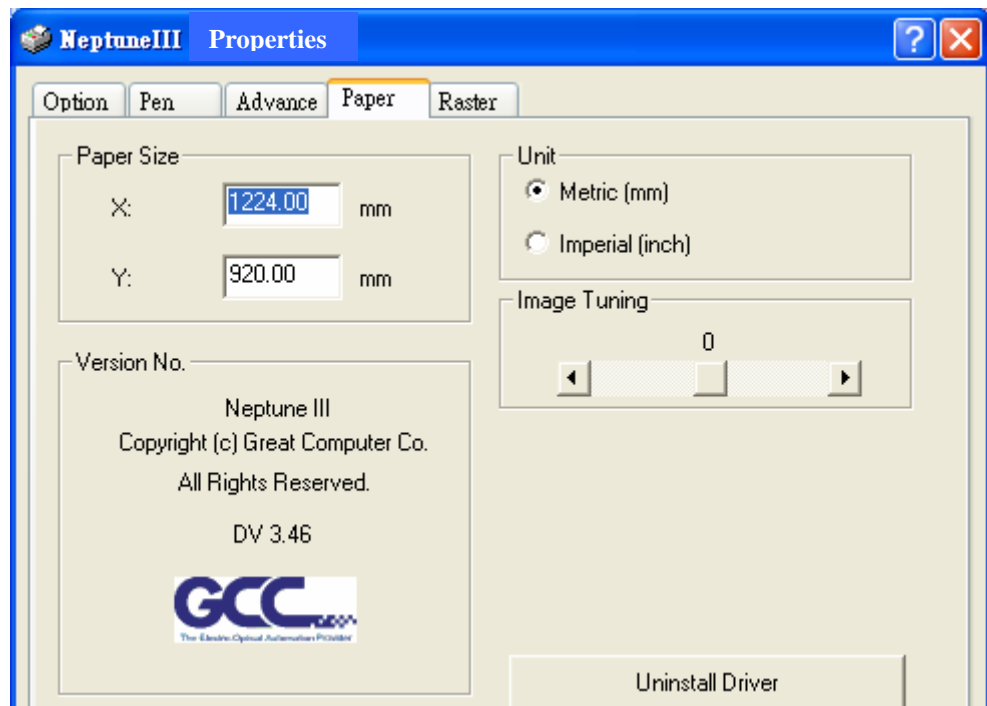
(Figure 7- 47 Paper Size)

PAPER SIZE
This field allows you to set the size of the artwork for engraving.

ORIENTATION
This field allows you to set the orientation of the artwork.

SCALING
You can use this function to adjust the difference in size between the object in the software page and the real object engraved. Scales can be adjusted up to ± 50/1000. Positive values are used to enlarge the size, negative ones are used to reduce the size. For example, setting the scale at +10 enlarges the object's size by 10/1000.

POSITION OF THE LENS CARRIAGE
● Home — the lens carriage goes back to the upper right position after finishing a job.
● Without Home — the lens carriage stops at the last position of a data file. In this way, you can engrave a bowel or a concave object from inside without hitting the object.
● Relative Move — you can place the lens carriage anywhere you want to start a job. When finishing a job, the lens carriage will move back to the original starting point. In this way, you can engrave a bowel or a concave object from inside without hitting the object.

Enhanced Vector Mode

Check the enhanced vector mode to increase the cutting capacity.

NOTE: If you are one of the users had the driver before V.3.46, firmware before V1.07 and upgraded recently, please reset your parameters when you select Enhanced Vector Mode. The following chart could be your reference for the relationship of speed with Enhanced Vector and without Enhanced Vector.

NOTE:

- The speed from 0.1% to 3% under enhanced vector mode is linear allocation, such as 0.2% is 2 times faster than 0.1%.

- The speed from 3.1% to 100% under enhanced vector mode is another linear allocation. The 100% is equal to 20ips.

- The 3% under enhanced vector mode is a turning point of the speed curve.

Speed with Enhanced Vector Mode	Speed without Enhanced Vector Mode
0.10%	N/A
0.20%	0.10%
0.30%	N/A
0.40%	N/A
0.50%	N/A
0.60%	0.20%
0.70%	N/A
0.80%	N/A
0.90%	N/A
1.00%	0.30%
1.10%	N/A
1.20%	N/A
1.30%	N/A
1.40%	0.40%
1.50%	N/A
1.60%	N/A
1.70%	N/A
1.80%	0.50%
1.90%	N/A
2.00%	N/A
2.10%	N/A
2.20%	0.60%

2.30%	N/A
2.40%	N/A
2.50%	N/A
2.60%	0.70%
2.70%	N/A
2.80%	N/A
2.90%	N/A
3.00%	N/A
3.10%	0.80%
5.00%	1.70%
10.00%	4.20%
20.00%	9.20%
30.00%	14.20%
40.00%	19.20%
50.00%	24.20%
60.00%	29.20%
70.00%	34.20%
80.00%	39.20%
90.00%	44.20%
100.00%	49.20%

Figure 7- 48 Enhanced Vector Mode and Normal Speed Comparison table

CHAPTER VIII- Basic Maintenance

Keeping the optics and the motion system clean is essential to quality engraving and reliability of your machine. This chapter provides information on basic maintenance that you should do to keep the machine in the best condition. It also includes a section on replacing the machine's laser module.

CAUTION: Turn off the power and unplug the system before cleaning.

Routine Cleaning

Cleaning the Inside of the System
Open the front cover, and the back cover. Use a vacuum cleaner to clean the inside of the machine thoroughly.

Cleaning the Worktable
Use a paper towel or cloth dampened with alcohol or cleaner to clean the worktable surface if the machine is used as an engraver. Use a vacuum cleaner to clean the inside of the worktable if the machine is used as a cutter.

Cleaning the Motion System
Use a vacuum cleaner to clean the motion system. Get rid off any debris that has built up in the motion system. You should clean the motion system every day.

CAUTION: Never pour or spray any liquid directly onto the laser system.

Mirrors and Lenses
The mirrors and the focus lenses are the two components most likely to require cleaning periodically. Check these parts at least twice a week to see if they need cleaning.

Cleaning the Mirrors
1. For mirror 1 that is located inside the door at the left hand side of the machine (see Figure 8-1).

Mirror 1

(Figure 8- 1 Cleaning the Mirrors)

2. For mirror 2, at the left hand side of working table, take the two screws off and remove the cover (see Figure 8-2).
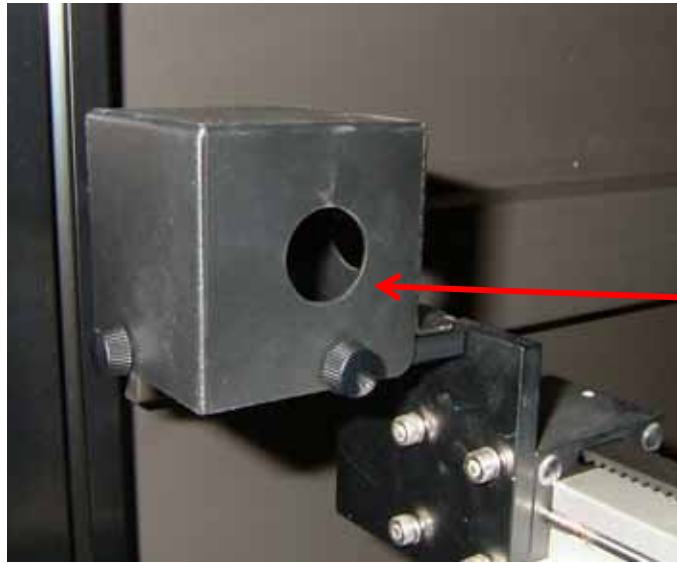

Mirror 2

(Figure 8- 2 Cleaning the Mirrors)

3. For mirror 3, at the left hand side of X-axis, take the two screws off and remove the cover (see Figure 8-3).
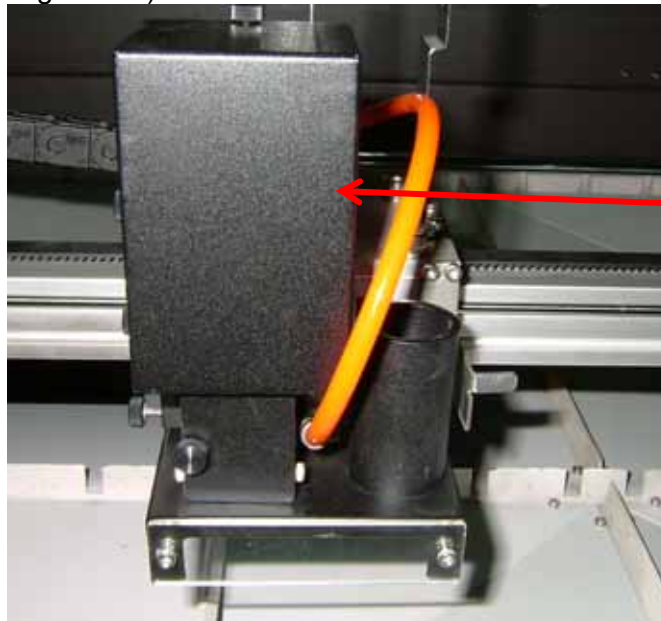
(Figure 8- 3 Cleaning the Mirrors)

4. For mirror 4, at the top of carriage, take the two screws off and remove the cover (see Figure 8-4).

(Figure 8- 4 Cleaning the Mirrors)

NOTE: 1. Do not loosen the wrong screws of mirror 1, 2 and 3, in case the optical path may change. 2. The covers of mirrors 2 and 3 have to be taken off as well for adjusting the optical path.

5. For mirror 1, mirror 2 and mirror 3, release the mirror securing screws and pull the mirror out carefully(see Figure 8-5)

(Figure 8- 5 Cleaning the Mirrors)

6. Use a rubber blower to blow away any dust from the surface of the mirror.
7. Put a lens tissue on the mirror and drop an little lens cleaner on the part of the tissue that covers the mirror (see Figure8-6)

(Figure 8- 6 Cleaning the Mirrors)

8. After the fluid has been absorbed evenly, pull the tissue one direction gently to clean the mirror(see Figure 8-7)

(Figure 8- 7 Cleaning the Mirrors)

9. The mirror 4 does not need to be removed, drop a little lens cleaner on the part of the tissue, pull the tissue one direction gently to clean the mirror.


(Figure 8- 8 Cleaning the Mirrors)

10. Allow the mirror to dry before re-installing it.

CAUTION: 1. Don't scratch the coating of the mirror's surface. Excessive cleaning may cause damage and reduce the life of the mirror.
2. Always handle the optics with care. Applying too much force on the optics may cause cracks or chips.

Cleaning the Focus Lens

1. Unscrew with one of your hands (see Figure 8-9 and 8-10) and remove the front cover of the lens carriage (see Figure 8-11).Pull out the focus lens carefully.
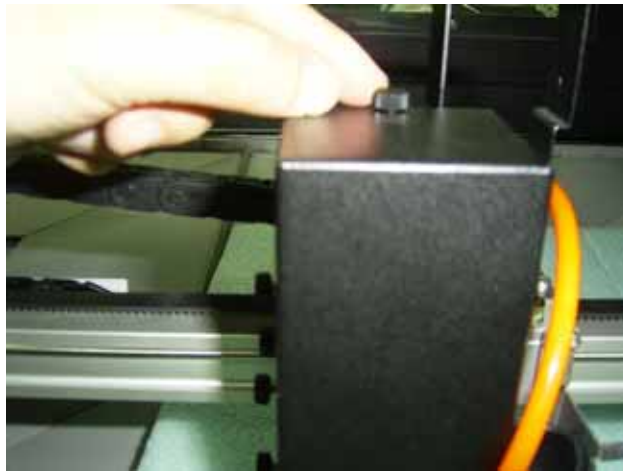
(Figure 8- 9 Cleaning the Focus Lens)
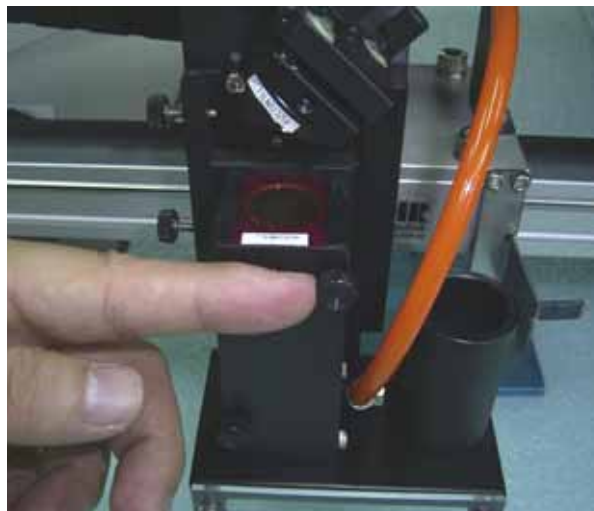
(Figure 8- 10 Cleaning the Focus Lens)

(Figure 8- 11 Cleaning the Focus Lens)

2. Flood the lens with lens cleanser on both sides(see Figure8-12), and Use a cotton swab or lens tissue to dry off the remaining solution gently. (see Figure 8-13)

(Figure 8- 12 Cleaning the Focus Lens)

(Figure 8- 13 Cleaning the Focus Lens)

3. Cover the front cover, tighten screw and cover the top cover of the lens carriage.(see Figure 8-14 and 8-15)

(Figure 8- 14 Cleaning the Focus Lens)

(Figure 8- 15 Cleaning the Focus Lens)

CAUTION: Do not touch the surface of the lens with your fingers or press down hard with any cleaning material.

NOTE: Once you finish cleaning and are ready to reinstall the lens back in place, remember that the holes and corners must match.

Replacing the Laser Module

If you need to replace the laser module, please contact your Neptune dealer and send it to service personnel to do the job. Do not attempt to replace the laser module by yourself.

CHAPTER IX- Troubleshooting

Quality Problems
- The focus lens is not properly installed or loose in the holder.
- Debris or dust has built up in the bearing tracks or X-Axis rails.
- The focus lens and the mirror in the carriage are damaged or need cleaning.

Non-operational Problems

Laser Beam Does Not Generate
- If the red beam does not show, the laser beam is misaligned. Adjust the reflection mirrors for exact focus.
- If the red beam shows, the laser power may be too low to be detected. Increase the percentage of laser power from the Neptune driver.
- Check to see if the laser power connector is loose.
- For safety reasons, the laser beam will not be generated when the top or front cover is opened, unless you shorten the connector of the magnetic switches.
- Check the water level or temperature of the water cooler. If it is overheated, laser beam will shut down automatically.

Appendix

Specifications

	LaserPro Neptune III	
Models	**NP – 100L**	**NP-150L**
Laser Source	100 W	150W
	Sealed CO_2 laser	
Laser Cooling	Water- cooled	
Working Area	49.6" x 36.6" (1260mm x 930mm)	
Max.Work Piece (W×D×H)	Door-closed 52.75" × 45.66" × 1.18" (1340mm x 1160mm x 30mm) Door-open 52.75" × ∞ × 1.18" (1340mm × ∞ ×30mm)	
Overall Dimensions (W×D×H)	71.5" × 46.8" × 53.5" (1815mm x 1190mm x 1360 mm)	
Weight (N.W. and G.W.)	352 kg / 776 lb 590kg/ 1,301 lb	360 kg/ 794 lb 598 kg/ 1,319 lb
Drive	DC servo control	
Cutting Speed Control Engraving speed Control	19.6 inch/s (500mm/s) Max.; Adjustable from 0.1% to 100% with up to 16 colors linked speed setting per job 31.5 inch/s (800mm/s) Max.; Adjustable from 0.1% to 100% with up to 16 colors linked speed setting per job	
Power Control	Adjustable from 1% to 100% and 16 colors linked power setting per job	
Z-Axis Moving	Manual	
Resolution (DPI)	125, 250, 300, 380, 500, 600, 760, 1000 DPI	
Computer Interface	Standard USB and print port	
Memory Buffer	32MB standard and upgrade to 64MB	
Display Panel	Graphic LCD Display with file names, speed, and working time etc.	
Power Consumption	220~240VAC; 20 AMP	
Water Chiller	External Chiller is required	
Safety	Class IIIa for standard red pointer device	
Optional Items	● Water Chiller ● Honeycomb Table ● Air Assist System ● Air Extraction System	

*The above specifications are subject to change without prior notice.

Frequently Asked Questions

1. What materials can be processed by CO2 laser?
    Virtually any materials such as acrylic, wood, fabrics, glass, leather, marble, stone, rubber stamps, paper products, coated metals, plastics (especially micro plastic developed by IPI, Spectrum and Rowmark, etc.) other hard-surface materials blended with polyester and fibers (Corian™, Fountainhead™, and Avonite™ etc.) or laserable simulated products of stone, wood and metal etc.

    Bare metals cannot get a good engraving result by using CO2 laser. However, special kind of spray has been developed that allows CO2 laser to mark on the bare metals such as stainless steel, aluminum etc. Do not engrave or cut materials that are heat sensitive or toxic substances can be produced (e.g. PVC and Teflon coating).

2. What is the main purpose of air assist system?
    The air assist system can provide a much better engraving and cutting effect, as it will blow away vaporized particles and prevent fire caused by overheating.

3. What is the maximum engraving speed of LaserPro Neptune III?
    The maximum engraving speed of LasePro Neptune III is 600 mm/sec (24 inch/sec). When engraving the A4 size (18 cm x 28 cm) with 250dpi at full speed, it takes LaserPro Neptune about 32 minutes to complete.

4. How do I match Neptune III driver's color with CorelDRAW V.9.0?
    In order to match Neptune III driver's color, make sure the function "Calibrate colors for display" of your CorelDRAW V.9.0 is disabled. Please follow the steps:
    (1) **Tools**
    (2) **Options**
    (3) **Global**
    (4) **Color Management**
    (5) Disable **"Calibrate colors for display"**
    (6) **OK.**

5. Which setting should I choose when operating the machine with CorelDRAW V.8.0 or higher version?
    Please choose **Landscape for Page Setup** when X   Y, and choose **Portrait** when X   Y, and then press **OK**.

6. How do I prevent the hidden vector lines shown on my engravings when using the available artworks from the clipart of CorelDRAW?
    To prevent the hidden vector lines shown on your engravings in this case, please do as follows for CorelDRAW: Choose a file from
    (1) **Clipart**
    (2) **Bitmaps**
    (3) Convert to **Bitmap**
    (4) Click on **Color** then choose **Grayscale**

(5) OK.

7. What is the life cycle of the laser source?
   The life cycle of laser source is around 20,000 hours, however it can be re-filled and should be done by your dealer.

8. What is the honeycomb table for?
   The honeycomb table is especially useful for vector cutting application. The space between materials and working table, gapped by honeycomb table, allows heat and smoke to be disbursed and vented out that may otherwise cause bad cutting effect.