

**Laser Carving Machine**

**User's Manual**

- **Software Installation**
- **Machine Operation**
- **Repair Warranty Terms**
- **Maintenance Card**
- **Packing List**

## **Software Installation**

### **1. Hardware Configuration:**

Computer:

CPU: Intel or Compatible Machine, better than 586

EMS memory: more than 64M

Hard disk: more than 1G houserom left

Display card: support the one with more than 256 color and more than 800\*600 resolution ratio.

### **2. Software Conditions**

Operation System: windows98, windows2000, windows XP

### **3. Software Installation**

1. put the installing CD into the CD driver, click "next" after the installing program is in operation, then click "start" button to install the program, at last click "confirm" to finish the installation.
2. Serial number must be input when performing the software for the first time.

## Machine Operation

### 1. Key technical parameters

Laser tube	Power 40W
Work area	200*280mm
Buffer memory	256MB
Driving force	High accuracy stepping motor
Operating temperature	6–32°C
Power	AC220V/50Hz
Processing materials	Atom mat, cattle horn, organic glass, bamboo and wood, and other organic materials.

### 2. Safety instructions:

- (1) Make sure to use safe electric pressure and the ground connection should meet the requirement.
- (2) Never leave the working engraving machine in the environment with the humidity of more than 50%.
- (3) Keep the working temperature within 6–32 °C.
- (4) Make sure the cooling system is in proper operation before turning on the engraving machine.
- (5) Never put your hands into the working area when the machine is in operation.
- (6) Never let extraneous materials fall into the guide rail.
- (7) Do not adjust the current when the machine is in operation.
- (8) The operators are forbidden to leave the working spot when the machine is on.
- (9) The engraving machine must be off for half an hour if it has been working continuously for three hours.
- (10) Never use it when there is thunder storm.
- (11) Do not insert and pull out the power wire as well as the communication cable when the power is on.

(12) When abnormal phenomena appear, for example, there is no light or reference system collides, power should be cut off first and then rectify the trouble before turning on the machine.

(13) Neither make bold to take the machine apart and repair it, nor allow the maintenance man unauthorized by our company to do it.

The above safety instructions must be strictly followed. In the following chapters, the flow of work as well as some of the safety instructions will be given to impress you more.

Pay attention: Our company is not responsible for your injury or losses caused by your violation of the above rules.

### **3. Install**

1. Open the packing container, check off the machine and other accompanied items according to the packing list. Take good care of the packing container for future use.

★ These important instructions must be followed. Otherwise, some injury, machine damage or packing container economic losses might be caused.

★ Take good care of your maintenance card, which is the only credence for maintenance.

2. Choose the place for install the machine

1) The moisture is not more than 50% and it is well ventilated.

★ Too high moisture is likely to result in high pressure discharge which will damage the machine.

② The temperature should be in the range of 6—32°C. Do not go beyond that.

③ There should be well-conditioned grounding devices.

3. Grounding

① This product is the integrate equipment of machine and electricity. When it works, high electric power, low electric power and minor electric power exist at the same time. So grounding is important.

2. The method for computer grounding is similar to 1, but the distance should more than 2 meters.

★ Grounding should be checked once a month.

★ No grounding is regarded as giving up the qualification for maintenance.

#### 4. Install air discharge system and cooling system

##### ① Install air discharge system

Connect the air discharge pipes with smoke pipe at the back of the machine and blower fan respectively. Meanwhile keep them well-knitted using work carrier.

★ Do not lengthen the wind pipe at will. Otherwise it may weaken the wind-discharging effect and have a bad effect on the machine.

##### ② Install cooling system

Cooling pump we adopt is long-life-span diving pump. Put the whole pump in the water when using it. Connect water outlet of the pump with the water inlet of the machine. And the outlet of the machine should be joined to the container.

Distilled water or pure water should be used for cooling.

Water inlet of the pump should be under the water.

The amount of the water should not be less than 25litres.

★ Protect the machine from freezing in winter. Our company is not responsible for the damage caused by freezing cooling water.

★ It is better to use dust-proof water for cooling, because this can reduce the amount of the times you change the water.

#### 5. Connect power wire and communication cable

Insert the communication cable to the port of the computer and fix it up.

★ Do not insert and pull out the power wire as well as the communication cable when the power is on.

#### Front panel functions

Designation	Functions and operating instructions
Current meter	Show the actual current when the machine is at work
Testing	Pressing the testing button can make laser tubes give off light when the machine is waiting.

Engraving adjustment	Adjust the amount of engraving Current. It gets large when tuned deasil, vise versa.
Control switch	Control the power, "1" indicates the power is on and the machine is waiting; "0" indicates the power is off.

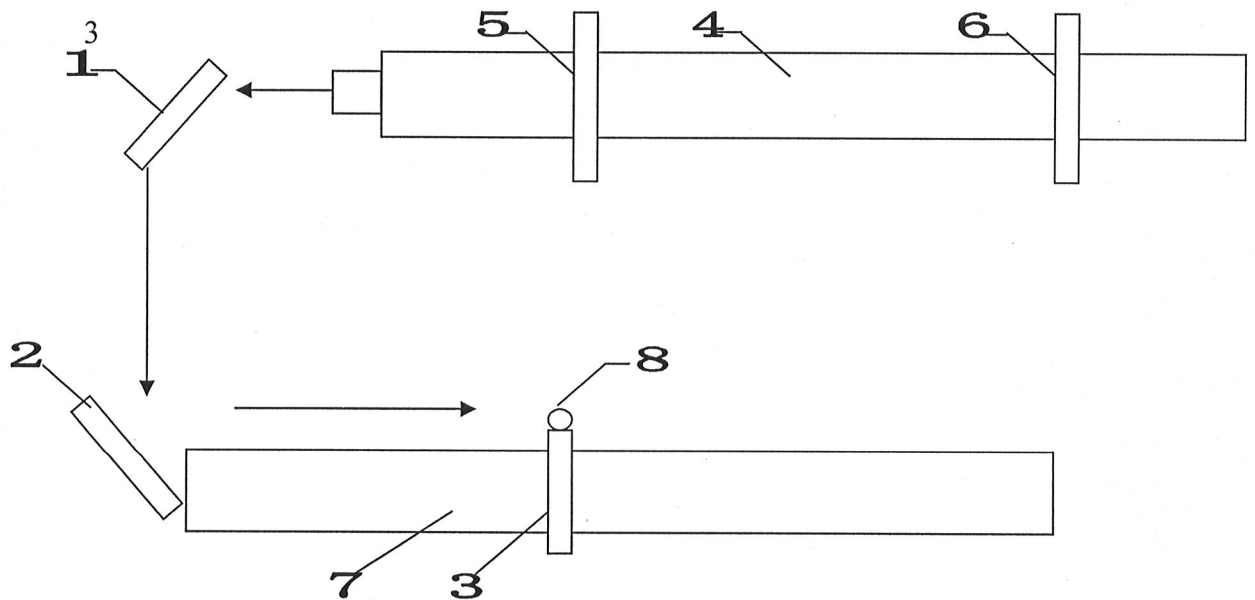
### Debugging

1. Turn on the water tap to cool the power of the system. Make sure the pump is in proper operation

And there is nothing wrong with the back-water system.

2. Turn on the control switch, keep the reference system on its original place, make sure the electric pressure meet the requirements, tune the button at the state of 0.6A, press the testing button to see what is happening to the laser and then turn up the current gradually to the extent which satisfies your needs.

3. Observe the beam of light given off by laser tube and see if it can shoot at the center of laser head. It can be done as follows:



1. reflector frame I

2. reflector frame II

3. dolly

4. laser tube

5. fastening I

6. fastening II

7. crossbeam

8. laser head

★ The adjusting methods

First, plaster the 20 mm deep two-sided mucilage into 5-6 layers, turn on the machine, turn left the button “Engraving adjustment” until the current is 0.6A, and then plaster the two-sided mucilage to reflector bracket I, make sure that 1/4 of the glass is shown, press the button “testing”, make the shot of light in the center of the glass and the effect is good.

Then plaster the two-sided mucilage to reflector frame II, also make sure that 1/4 of the glass is shown, and then pull the crossbeam to the end, press the button “testing” and see the shot of the light, pull the crossbeam forward slowly, and discern the departure, pull the crossbeam to the very end , and adjust the screw behind reflector frame I, make the two shots of the light superposition, and get a good effect in the center of the reflector.

And then plaster the two-sided mucilage to the hole which is on the left of the laser head ,also make sure that 1/4 is shown, and then pull the dolly to the left end, press the button “testing” and see the shot of the light, pull the dolly rightward slowly, and discern the departure, pull the dolly to the very right end , and adjust the screw behind reflector frame II, make the two shots of the light superposition, and get a good effect in the center of the reflector.

And in the end, adjust the laser head. First get the aluminium part which fasten the spotlight glass in the lower part off, and take off the focusing glass. And then plaster the two-sided mucilage to the hole which is under the aluminium part, and then put the aluminium part into the laser head, and press the button “testing” and make the shot of the light in the center of the hole of the aluminium part. If the spot of the light is not in the center, adjust the laser head.

Adjust the distance between the roughcast and the laser head. Make sure that the distance between the lower plane of the laser glass and the roughcast is 50 mm.

★ The laser tube uses high pressure of almost 20000V. Do be careful.

**Engraving operating**

1. Turn on the water cooling system.



★ Our company is not responsible for the damage caused by not turning on the cooling system

2. Nip the roughcast in the left upper side of the nipper, and put a piece of wet newspaper on the surface of the roughcast

3. Turn on the control switch, making the machine in the state of waiting to work

4. Make sure the engraving switch is on

5. Turn on the air discharge system

6. Starting engrave

★ Adding water as engraving, don't let the wet paper move

★ Never put your hands into the working area when the machine is in operation.

★ The engraving machine must be off for half an hour if it has been working continuously for three hours.

★ The operators are forbidden to leave the working spot when the machine is on.

★ Never let extraneous materials fall into the guide rail.

### **Turn off the machine**

After operating, you should first turn off the engraving switch, and then the control switch, the air discharge system and the cooling system at last. After maintaining the guide rail, cover the machine cover.

★ Long time galvanized without working is forbidden, you should turn off the electricity when you don't use it

★ You should drain away the cooling water after using it in winter

### **Daily maintenance**

1. You should clean the guide rail and add lubricating oil one time before you use the machine, and oil it another time after you use it. The amount is controlled in the range that the oil don't drip down.

2. Clear away the water, oil and other extraneous materials from the operating plat in time. Our company is not responsible for the damage caused by water or oil flowing into the motor.

3. The screw in the guide rail and nipper should be checked every month, fasten it when it getting flexible.

4. Cooling water: cooling water should be changed every 15 days in summer, every month in spring and autumn, and 3 months in winter.
5. Laser head: there is a focus lens and glisten lens in it, so it should be cleaned by alcohol cotton every week.
  - ★ The alcohol used to clean the lens should be without water
  - ★ The lens are frangible, be more careful when cleaning and installing
  - ★ The focus lens is concave mirror, put the concave side upward.
6. Fans and smoke pipes: clear them according to the workload and the degree of pollution, pay attention to water-proof.

**The malfunctions often seen and settlements:**

1. problem: turning on the machine without replace and engrave in disorder  
 reason: not connect to the ground or ground connection don't meet the requirement.  
 Settlement: connect to the ground as required
2. problem: the depth of engraving is not even  
 reason: the water circulation system doesn't work, and the light is not adjusted  
 settlement: turn off the machine and waiting for an hour, reset the water circulation system until there is water flowing out from the pipe, and then adjust the optical path
3. problem : turning on the machine without electricity pressure  
 reason: the safety tube in the right side doesn't work  
 settlement: change the safety tube
4. problem: the length of engrave is not deep enough  
 reason: the beam of light given off by laser tube is not in the center of the glass, or the lens is too dirty  
 settlement: adjust the optical path and clear the lens
5. problem: the crave is illegible  
 reason: the lens is in reverse or the foci is not right  
 settlement: put the lens right and adjust the foci
6. problem: the machine discharges and strikes fire

reason: the wires are connected badly or there is dust in the wire

settlement: connect to the ground, clear off the dust and keep aerating and dry

- ★ If other problems appear, please call the technology service of the company or the dealer.

## Appendix 1

### **The repair warranty terms**

#### 1 The repair warranty contents and time limit

##### (1) The repair warranty contents

If the laser engraving machines you bought from our company come across quality problems because of material or produce process, we will mend the machine free of charge according to the time limits we have declared in the terms. (we call it repair warranty in the follow).

If we mend the machine by changing some hardware of the machine, the hardware changed belonged to our company.

##### (2). The time limit of repair warranty

The time limit of warranty for the principle machine is 1 year; wind machine, pump, laser tube, lens, the software is of 3 month.

#### 2. Things not suitable for repair warranty

(1) when it is out of the time limits or can not show the maintenance card

(2) Phenomenon felt but are not influential for the performance of the machine (such as sound, vibration, static etc).

(3) Wearing off because of being used for a long time (eg: the fading and cracking of spray-paint, electroplate and plastic articles)

(4) The accompanied items (eg: the water pipes, the tubes, the cables and power cord) and some other parts which are breakable such as strap, button, switch, potentiometer and etc.

(5) Operating not follow the instruction (eg: grounding)

(6) Not use the devices of high quality we provide

(7) force majeure such as natural hazard, fire accidents and stealing etc.

(8)The damages caused by dust, chemicals and some similar factors

(9) The damages caused by moving and repairing done by the repair department which are not appointed by our company

★ The repair warranty accords with the time limit and conditions in the terms will be free of charge, so the repair beyond the time limit and range in the term will be charged.

★ Our company will not bear the fares of repair done by other company, the accompany fares of repair and the expense because stopping use the machines.(eg: telephone charges, carriages, charge for loss of working time and etc.)

Appendix 2

**Packing List**

Principle machine: 1

Pump: 1

Wind machine: 1

Air pipe: 1

Water pipe: 1

Brush pen: 1

Power cord : 1

Printing wire:1

The block of air pipe: 1

The tube of safety 3A: 1

## Appendix 3

# Maintenance Card

The maintenance card of laser engraving machine

(For the user)

The number of the equipment:

The place of purchase:

The date of purchase:

Thank you for purchasing our products. Please read the following instructions carefully so as to make good use of the equipment.

1. The maintenance card is the important credence of your laser engraving machine in maintenance time limit, please take good care of it. We will not replenish it if you lose it.
2. The maintenance card becomes effective only after sealed by our company or the appointed dealer and the date of purchase is fulfilled.
3. The range of maintenance, please refer to the maintenance terms.

The maintenance card of laser engraving machine

(Counterfoil)

The consumer:

The number of the equipment:

Name:

The date of purchase:

Telephone number:

The dealer: