Rabbit
Laser Engraving Machine

HX3040

User's Manual

Preface

Thank you for buying our Rabbit Series HX3040 Laser Engraving Machine. You will find it has many nice features including easy operation, high precision engraving, and advanced performance.

Before operating the machine it is important that you read this manual. This will help to familiarize you with the operation of the machine, the use of the relevant software and some possible troubleshooting.

1. **Important** Safety Information

a) Laser Safety

This is a closed type of design so that laser and radiation are contained within the shielding case and the external case making it safe for use under normal operating procedures.

It uses a CO2 laser tube and the laser beam itself is invisible but emits very high heat. Please note the following during operation:

- Don't open the cover or take off any parts when the laser is shooting.
- If you need to open the cover of the machine (transparent plastic and metal cover) for operation, be sure to wear protective glasses and be careful not to burn your hands on the hot surface.
- If optics system needs adjustment it must be done by a professional.

DO NOT disassemble the laser tube. There is no part that can be repaired by the user or by a technician.

Improper operation may lead to leakage of the laser gas and radiation, and can cause harm to the user.

b) Electrical Safety

This machine uses 220V 50/60Hz alternating current. Improper use can cause injury.

- Be sure to use the proper power supply (if used with 110V AC you must use a transformer supplied with the machine.
- Be sure that the pins on the plug and the receptacle used match and that the machine is grounded.
- Be sure that the gross current to one socket does not exceed 15 amps.
- Check the cords regularly to be sure there are no broken or damaged wires.
- Do not use the machine around water.
- Do not disassemble any parts or open the cover of the machine while it is working or when the current is on.
- Do not connect or disconnect the power supply when the main power switch for the machine is on.
- DO NOT disassemble the laser tube as there may be residual voltage around it.
- Disconnect the plug before cleaning the machine.

c) Fire Safety

A laser is a light with very highly concentrated energy. Computer software or hardware problems,

mechanical or electronic problems or certain types of target materials can cause fire. Especially when

cutting at low speed, please note:

- Machinery should be operated by a professional who has some knowledge of fire fighting.
- If the material catches fire during operation, immediately cut the electricity and put the fire out. Have the machine checked by an electrician before plugging it back in.
- Keep all flammable and explosive materials far away from the machine (alcohol, oil, etc.)
- When engraving flammable materials, be sure to become familiar with the characteristics of the material before using it.

Have a CO2 fire extinguisher near by and become familiar with its use to avoid greater damage in case of

fire.

d) Cooling System Safety

- If the fan doesn't work turn the machine off to avoid damage to the tube and other parts.

If any of the following problems occur, stop the machine immediately and turn it off.

a) If there is no water circulating within three minutes

b) If the pump works but there are any of the following: unusual noise, water leakage, or

c) Water flow is abnormal – either too fast or too slow

d) Damage to the water pipe.

Always use distilled water for cooling or impurities in the water may cause damage to the impeller of the pump and cause blockage that can decrease the cooling effect.

3. Additional Safety Notes

- Be sure there is adequate ventilation when using the machine.
- Many materials release noxious fumes at high temperatures which can cause illness to the operator and/or damage to the machine.
- Be sure the exhaust system is working properly during operation.
- Machine should be operated on a flat surface.
- Do not try to disassemble or repair or alter any part of the machine even with a professional technician.

Do not use the machine with any other electrical equipment on the same circuit. It is recommended that you use a UPS to avoid problems with the power supply.

Chapter One – Summary

1. Introduction

The HX3040 is a high-tech machine which integrates a laser and a computer in one piece of equipment. It can engrave non-metal materials such as rubber, plastic, organic glass, oxhornN,

wood, fabric, paper, leather, stone, etc. Under computer guidance it is highly efficient with rapid processing speed and stable performance. It can engrave text and graphics equally well.

2. Components

The machine is composed of a case, stabilizer, graphic plotter, optical system, work table that can be raised and lowered, electrical controlling system, cooling system and exhaust system.

3. Technical Specifications

(1) Laser Power: 40-50W

(2) Effective working area: 297 mm X 420 mm (11.7 In. X 16.5 In.); Vertical range: 100 mm (4 In.)

(3) Driver: Stepper motor

(4) Engraving precision: 0.0254 mm

(5) Computer Interface: LPT standard parallel port

(6) Power Supply: 220V AC, 50-60Hz.

(7) Laser Cooling System: water (best if chilled)

(8) Software: NewlyDraw

(9) Machine Dimensions: 1100 mm X 700 mm X 325 mm (44 X 28 X 13 Inches)

4, Installation parameters

(1) Power Supply: AC220 ± 10%, 50-60 Hz

(2) Environmental Temperature: 5º - 35º C. (41º – 95º F)

(3) Environmental Humidity: 5-95% (no condensation)

(4) Working Environmental Requirements: no dust, no corrosive gas, no liquid pollution, no magnetic interference.

5. Applications

Advertising and (?Upholster?), Marking and Decoration, Architecture and Modeling, Arts and Crafts, Clothing and Leather, Fabric, Toys, Computer Embroidery and Cut-out. Note: CO2 laser can only be used with non-metal materials.

Chapter Two – Installation

1. Unpacking

Remove the crate, carton and foam, and remove any tie downs and packing filler. Remove the screw that holds the laser head during shipping. Be sure nothing is left in the machine before connecting the power. Move the X axis (lateral) right and left slowly, and make sure it moves smoothly. Then move the dolly back and forth a couple of times to be sure it moves smoothly as well. If there are problems, please contact the agent.

2. Positioning the Machine

Place the machine close to the computer for convenient operation. Leave enough room around the machine for easy operation, repair and ventilation. Be aware that the plate below the case moves up and down with the internal table. You should install the stabilizer before adjusting the height of the worktable. The machine should be placed on a surface of suitable height.

3. Attaching the power cord

Be sure the power switch is turned off. Connect the power line to the power interface of the machine and connect the other end to the power transformer. The second cord should be attached to the transformer and then to a grounded power outlet. If you wish to use 220V connection the cord should be connected to the machine and then to the 220V outlet.

4. Connecting the Computer

Connect the DB25 machine interface and the LPT of the computer with the provided cable.

5. Installation of the exhaust fan

Slide the fan into the tracks on the left side of the machine and connect the plug to one of the two outlets on the machine case. Attach the exhaust tube.

6. Installing the Cooling System

Attach one end of the silicone tubing to the outlet of the pump and the other end should be placed in the water tank. Fill the tank with distilled water to at least 2" above the top of the pump. Be sure the end of the tube is submerged. Connect the power,

Notes:

(10) Start the machine and check the laser tube to be sure the water circulates through it and there is no leakage; be sure there is enough water in the tank and during use be sure the temperature of the water does not get higher than 30ºC.

(11) During cold weather, be sure the tube doesn't get icy.

7. Install the software

See the software operating manual included on the installation disk.

Chapter Three Using the Equipment

1. Before turning on the power rotate the potentiometer counter-clockwise to the minimum position.

2. Turn on the power switch. The laser head should reposition itself. The water pump and exhaust fan should work normally. Make sure the cooling system is working properly before proceeding.

3. If the cooling system is working properly you can then test the laser. Depress the "laser switch" and then hold down the (unlabeled) green switch to the right of the ampmeter. While holding that switch pulse the "laser test" switch and the laser tube should shoot light. You can then adjust the potentiometer to regulate the current to meet your needs. Note that the maximum current is no greater than 18MA.

4. Using the spanner you can raise or lower the laser bed according to the thickness of the material. NOTE: The distance between the center of the lens and the material should be 45mm. Be careful not to turn the spanner too far when the table is in the highest or lowest position or it might damage the parts.

5. To operate the laser please refer to the software manual.

6. To engrave, open your design in the software program and select the appropriate parameters. Be sure the “laser switch” is depressed and choose “engrave” in your software program.

SAFETY NOTES:

1. Do not use any reflective material on the laser bed because it can reflect the beam and cause severe damage to eyesight or to the equipment.

2. During operation the laser produces higher voltage so you should stay far from the laser power and from the laser tube and do not touch them.

3. Be sure the machine is on a flat surface. Do not move the guide rail or dolly by force.

4. It is important to keep the running part of the guide rail and trolley clean of dust and debris.

5. The laser reflectors and condensing lens should be kept clean as dust can affect the efficiency of the output.

Chapter Four Maintenance

1. In order to keep the machine working efficiently regular cleaning is necessary. Frequency should be determined by frequency of use and type of workload.

2. Cleaning the case – Be sure power switch is off and the cord unplugged before cleaning. Mild detergent is suggested as other cleaning agents such as alcohol or thinner might cause damage to the case, mechanical or electrical parts. Use a soft damp cloth (be sure it is not too wet) to wipe the machine and be careful not to scratch it with any kind of sharp or hard object.

3. Graph plotter – This is a precision part and it shouldn’t require much cleaning. If it does become necessary, use a soft cloth dampened with mild detergent to clean the guide rail. Note: adjustment of the graph plotter should only be done by a professional technician as improper handling can greatly affect the precision of the engraver.

4. Worktable and honeycomb grid – The worktable is assembled with special tools so do not disassemble it. To clean the honeycomb vacuum it carefully and if it becomes necessary to clean beneath it, carefully remove it and set it down softly to avoid any damage or distortion.

5. Optical lens – this can be gently wiped clean using camera lens tissue. Be careful not to wipe the same position repeatedly or press too hard on the lens when cleaning. Do not use lens tissue more than once. Be sure there is no paper or fuzz left on the lens after wiping. If any kind of volatile cleaning agent is used it must be aired completely before operating the machine. Please contact the agent in advance to be sure that alcohol or other organic solvent can be used without causing damage to the lens coating.

6. Laser tube – Requires no maintenance.

7. Exhaust system – Be sure to clean the exhaust fan and pipe regularly. If there is any smoke or peculiar smell in the machine check the connection and the exhaust fan and the pipe immediately.

8. Cooling system – Before daily operation check to see that the cooling system is operating properly and there are no leaks. Check to be sure the water is clean.

9. Electric Controls should only be serviced by a professional technician.

Chapter Five Troubleshooting

The laser machine is a precision piece of equipment and requires a controlled environment. Improper operation or negligence will affect its normal operation and can cause severe damage.

If a problem develops check the following:

- Consult this manual immediately to see if there is any reference to the possible problem.
- Be sure the voltage, current, frequency, etc. are correct and check the power supply. Be sure the environment is not too damp, etc.
- Be sure hardware is installed correctly and all wire connections are correct.
- Check to be sure the software is properly working according to the separate software manual and check that all parameters are correct for the job.

If the problem still cannot be solved or if there is a fire or abnormal smell, please turn off the machine immediately (press the emergency switch on the control panel) and have the machine checked by a professional technician.