Laser Engraving Cutting Machine
BCL-B User Manual

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Preface

Thank you very much for your trust and purchasing our Products. We can provide perfect after-sale service and solutions. Please keep this manual and other attachments carefully, in order to guarantee the equipment's safe running.

This manual is only applied to our company's standard machines. With regard to special customized machines, please read other reference material carefully.

This manual is written to demonstrate the issues about working principle, installation, operation, failure removal, transport,storage, maintenance etc. Please read the manual carefully, if you use the equipment the first time.

For quick and efficient using this equipment, the user should have qualifications as below:

1. The user needs to know basic computer professional knowledge, and can operate related editing and drawing software, such as Coreldraw, Photoshop, Autocad and so on.

2. The user should have basic optical knowledge and related electromechanical device's maintenance knowledge.

3. Before starting the equipment, make sure this equipment's operation procedure is known well and operate accordingly.

Because equipments are continuously updating, there may be some difference between your equipments and equipments shown in the manual in

some aspects. We apologize for the inconvenience.

If you have any suggestions or doubts, please log in our website or call us directly.

Website: www.bodorcnc.com

After-sales' Service:+86-531-88270377

Brief Introduction of Laser Engraving Cutting Machine

I Safety Knowledge

1.1 Basic Information

- Make sure that the operator is being trained before operating the machine.
- Operator must be aside the machine during machine working. Never leave the machine alone in case to cause unnecessary loss.

1.2 Optical Security

Our laser equipment adopts the fourth laser tube. Length of laser beam is 10.6μm. During machine working, we recommend relevant people to wear authorized laser safety goggles. Do not stare at the laser beam or anything beam reflected even when wearing laser safety goggles.

1.3 Electricity Security

- Before connecting electricity, please check carefully the requirements on the equipment's name plate, such as power,working voltage and so on.
- Without our permission, please don't dismantle electrical apparatus elements on the equipment, especially do not touch laser power and laser tube during machine working. Because the equipment has fatal voltage when working, and danger can still exist after disconnecting electricity.

1 Harm

Various potentially dangerous substance can be eliminated through ventilation system during plastic material cutting. If smog or smell is too heavy, gas mask is needed.

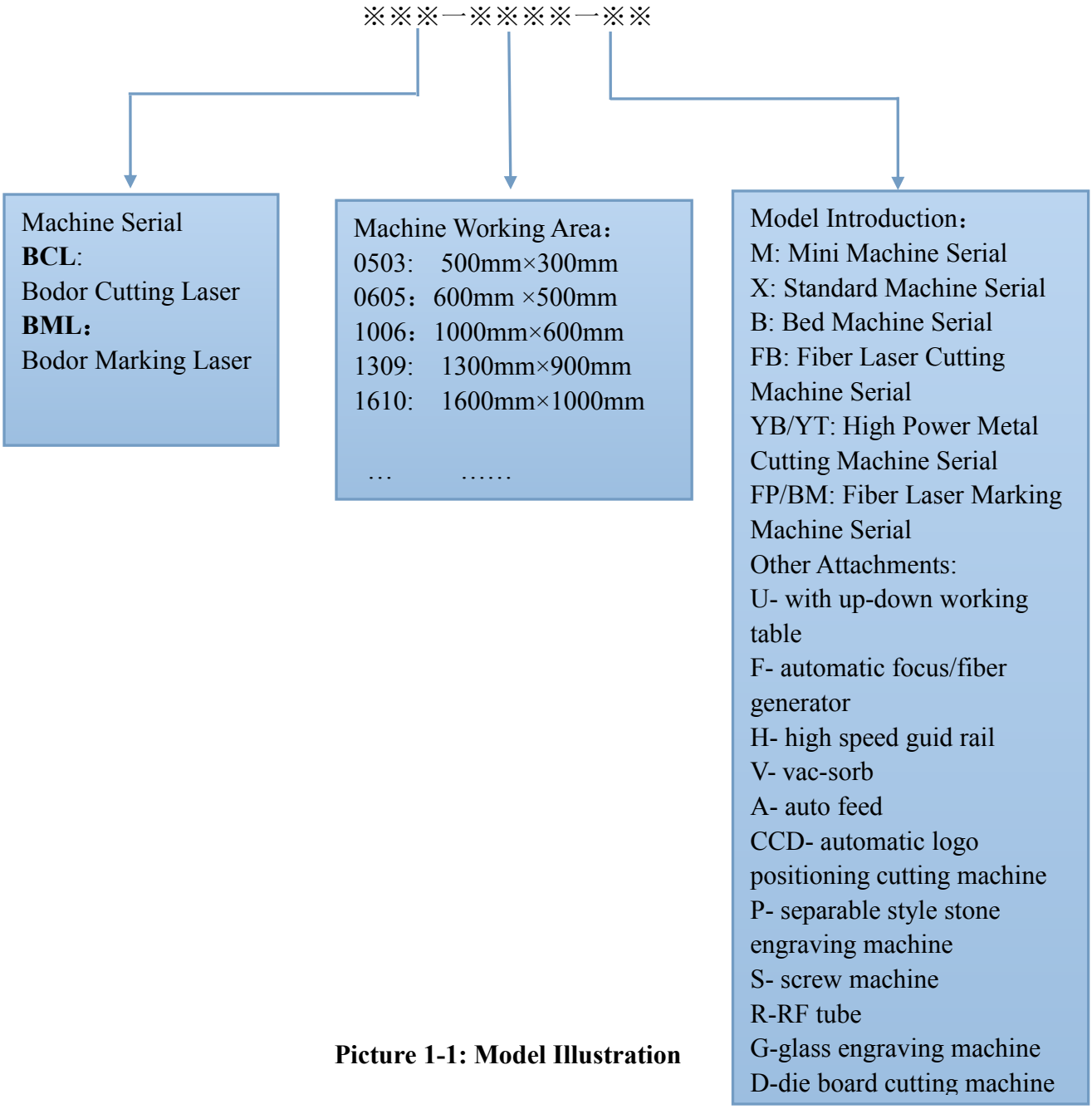
2 Other Harm

Out of security consideration, equipment modification is forbidden without the permission from the Manufacturer.

II Equipment Brief Introduction

2.1 Instruction of Machine Model & Nameplate

1.Model Instruction

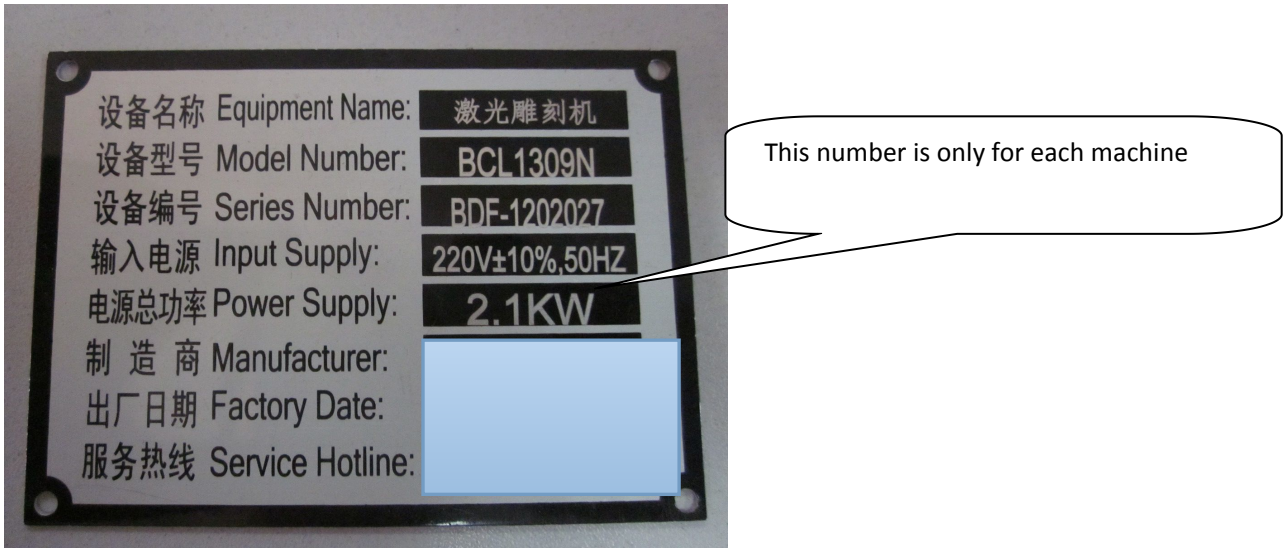


Picture 1-1: Model Illustration

For example, BCL1309XU means standard serial laser cutting machines with 1300mm x 900mm and up-down working table.

Nameplate Illustration:

The vertical motor of this equipment is installed in the middle of the transmission shaft, which can make speedy and stable cutting and engraving.
The nameplate is fixed in the right-back side. You can read the relevant information on it. It is not accepted for anybody to change or remove this nameplate.

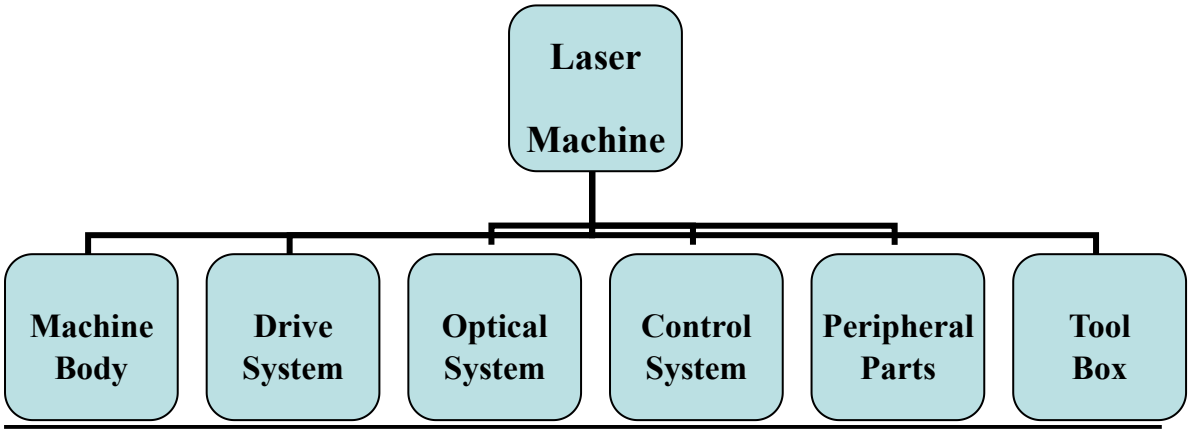


2.2 Equipment Composition

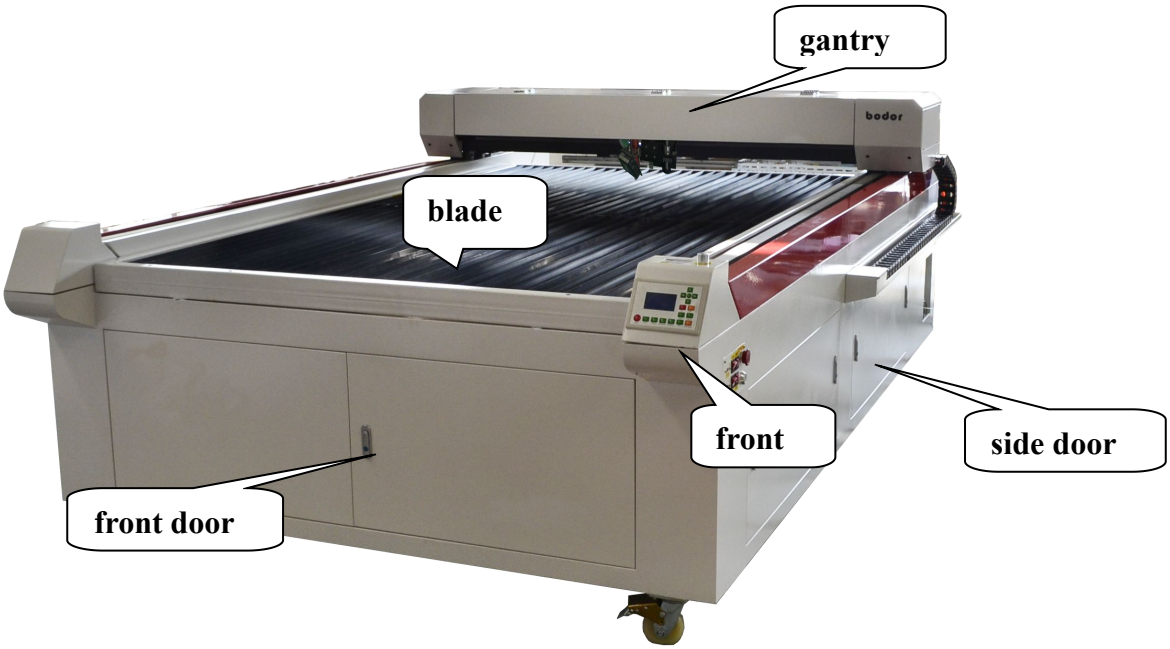
Due to different models or new updates in products, there may be some difference in appearance or some partial detail. Specific equipment is subject to final product.

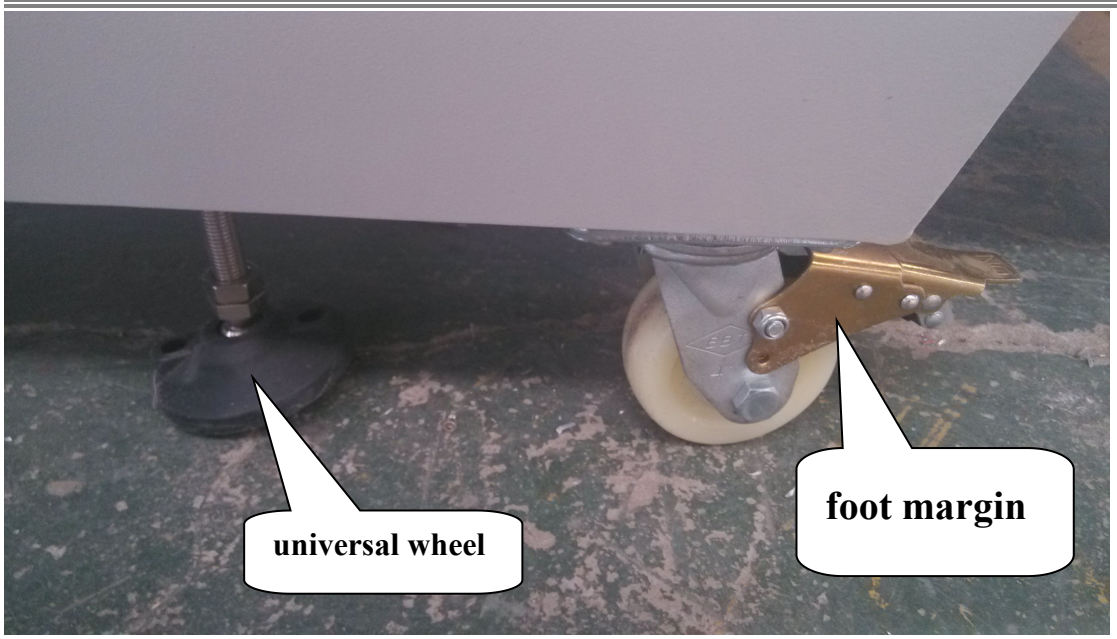
2.2.1 Composition of whole set machine

A.Machine Body
B.Drive System
C.Optical System
D.Control System
E.Peripheral Parts
F. Tool Box



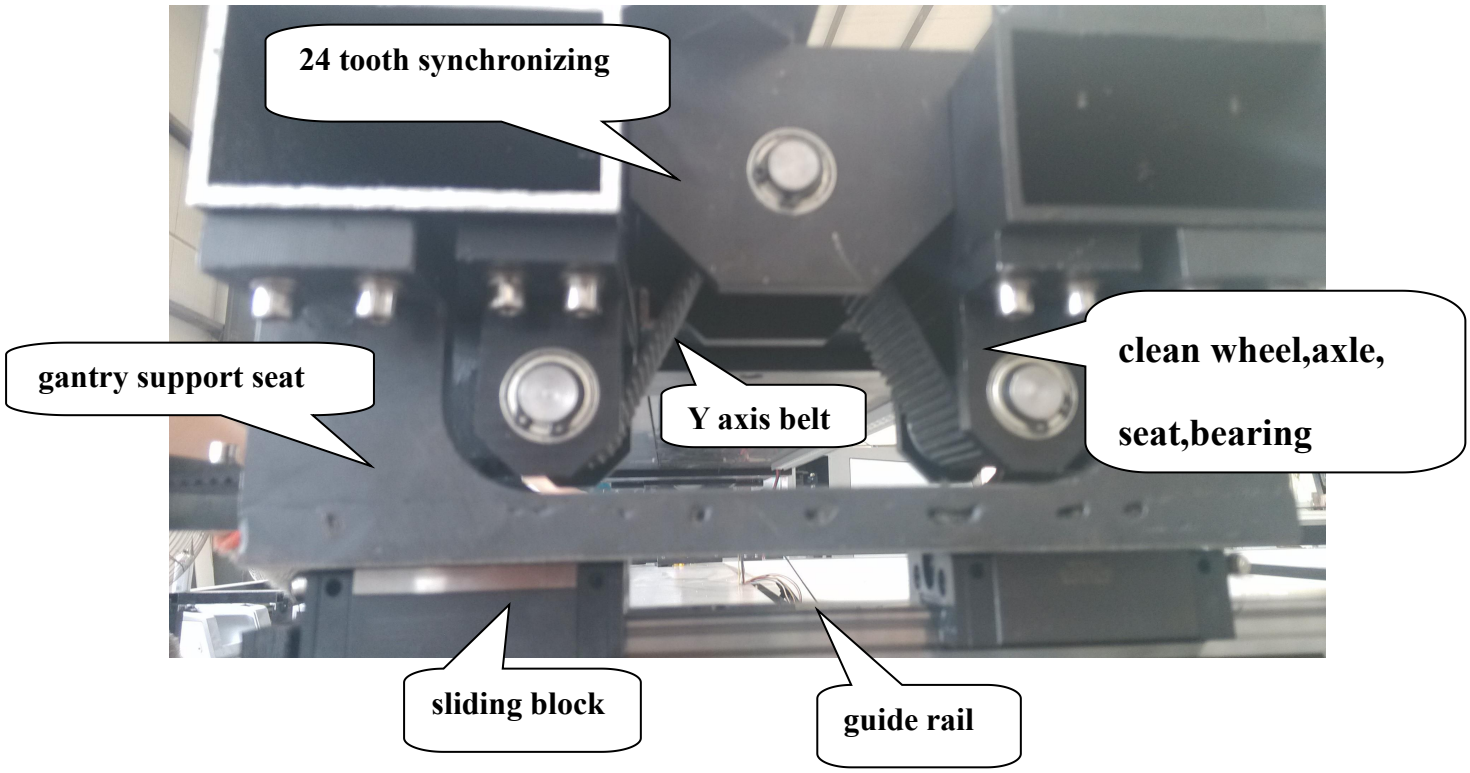
2.2.1.1 Machine Body



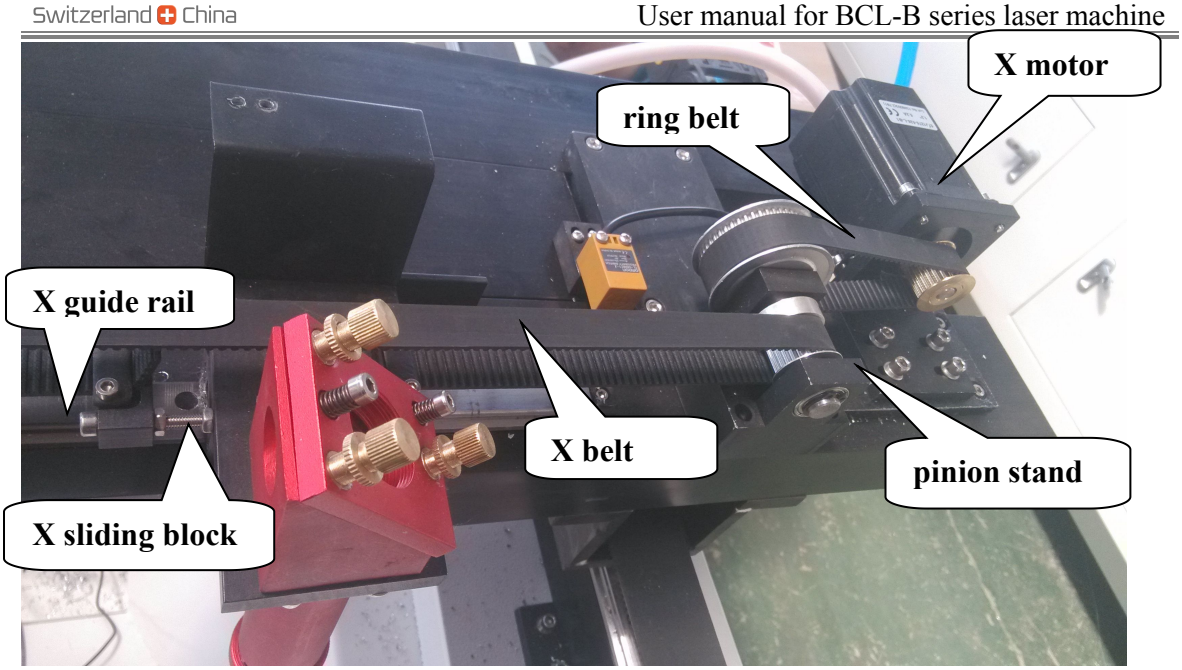


2.2.1.2 Drive System

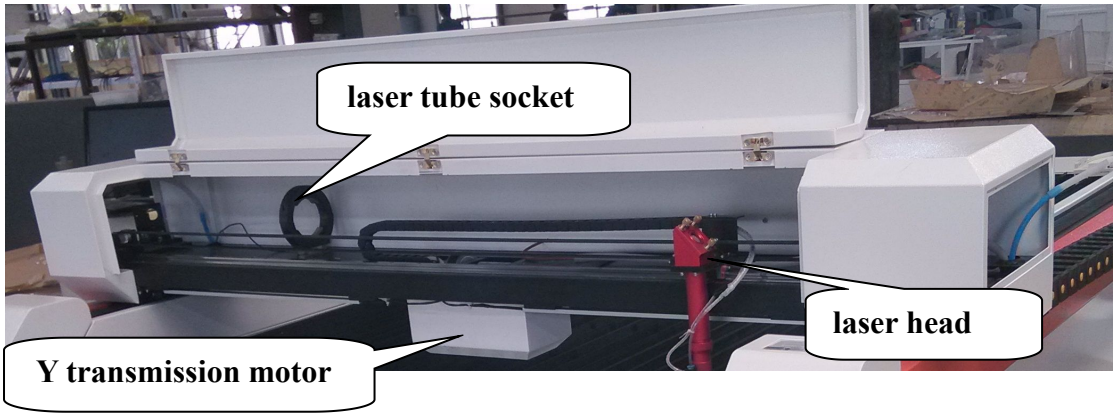
Y Axis:



X Axis:

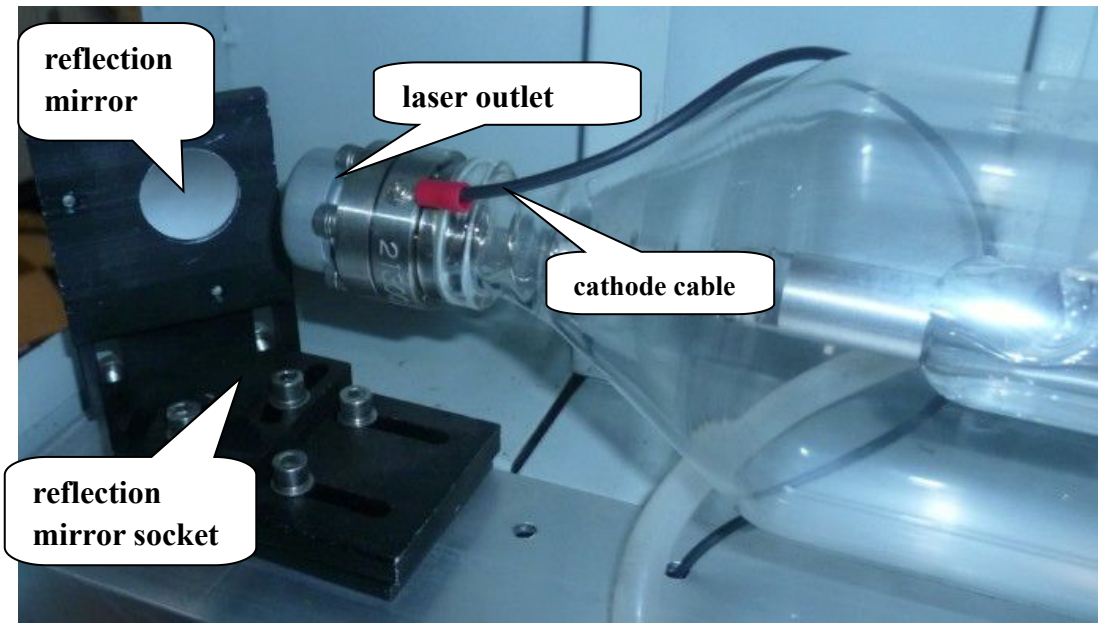


2.2.1.3 Optical System



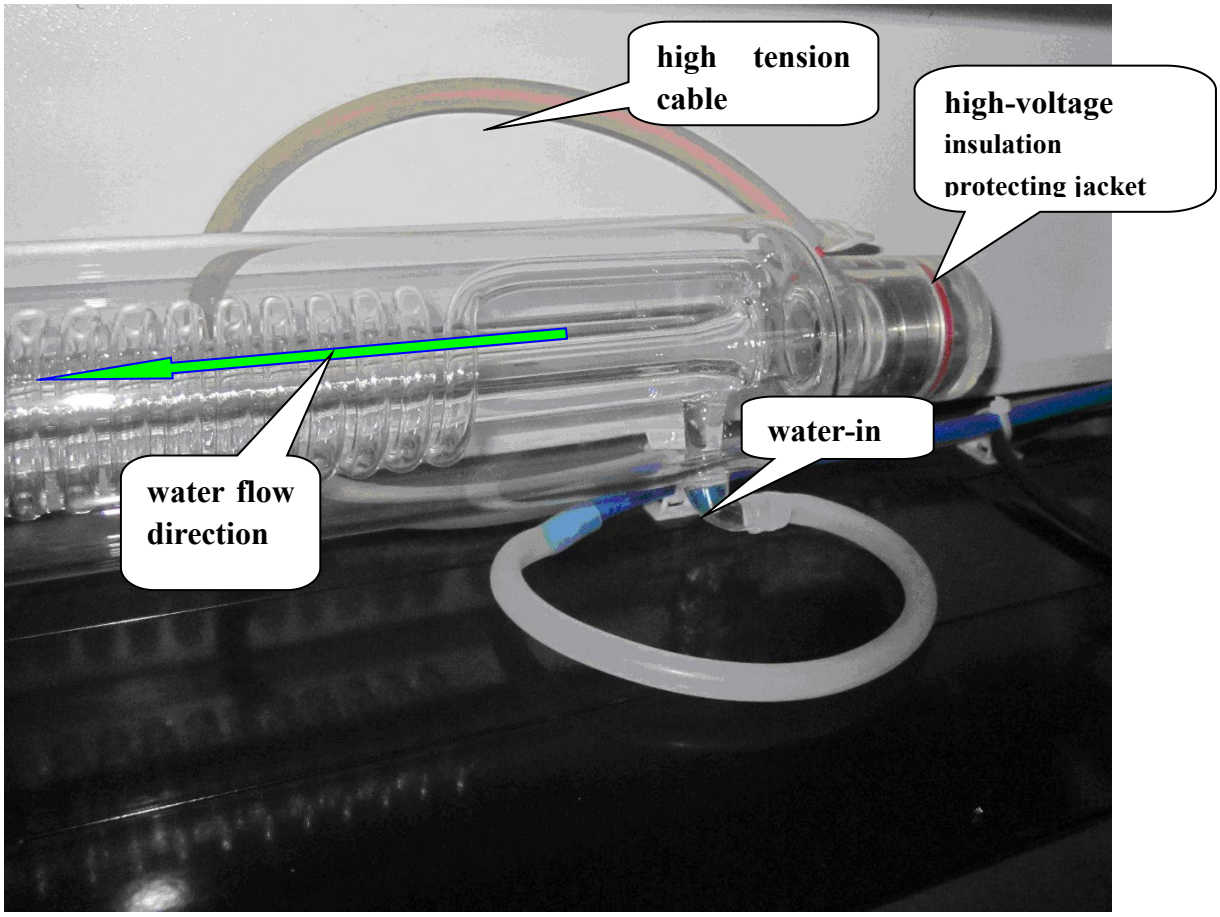
Attention:

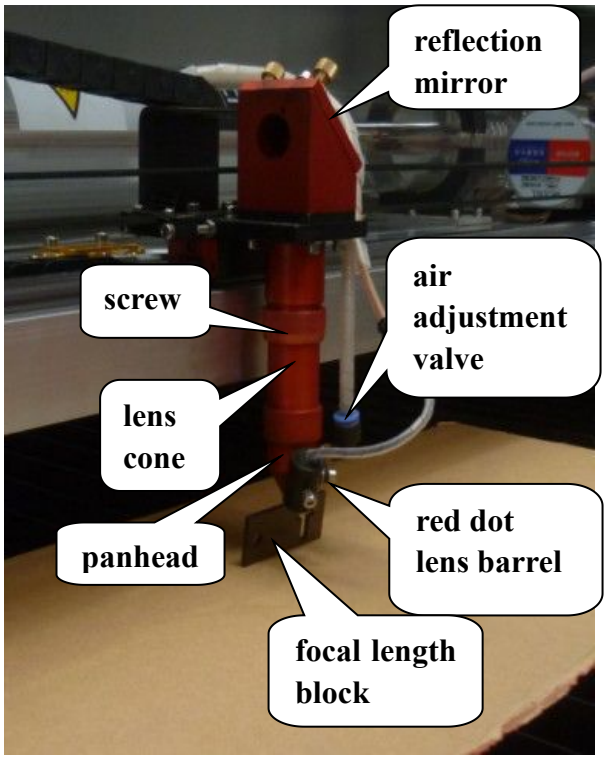
When installing the laser tube, it should be taken slightly. High tension cable and cathode must be fixed enough. Water inlet of the laser tube should be in the lower place, and water outlet be in the higher, so there won't be any bubble. The laser tube socket should be installed with even strength which can just make the tube secure. Do not overexert, it may crush the laser tube.

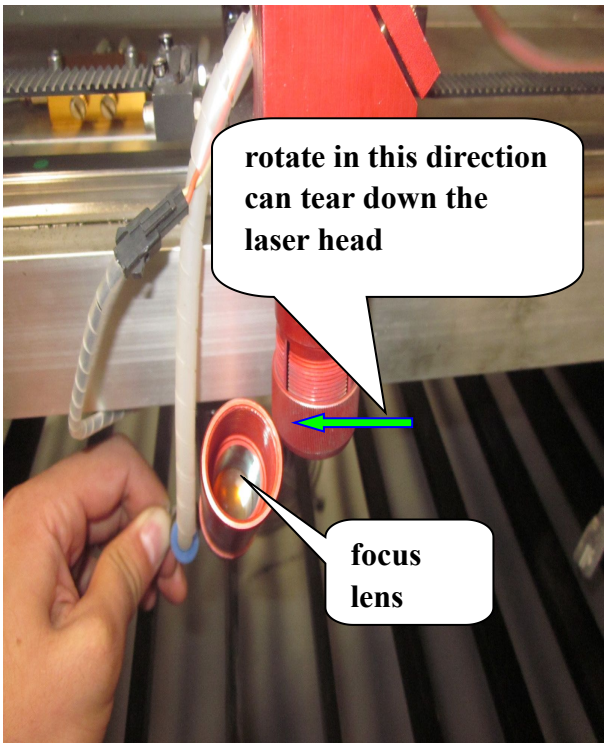


Attention:

The front surface of reflection mirror should be faced to the laser outlet.
Voltage of high tension terminal in laser tube can reach 28KV. After powering off, there may be strong static electricity in short time. Do not touch it with your hand directly, in case of accidents.







Attention:

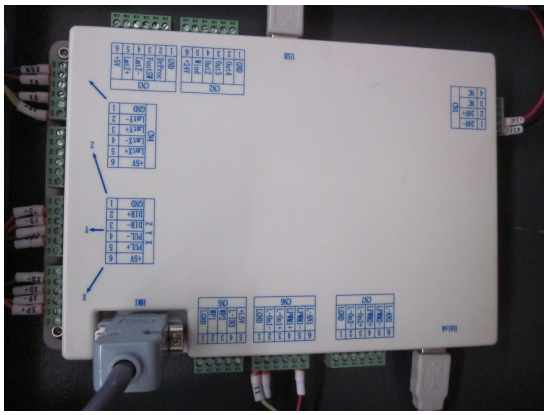
Before working, please adjust the focal length and rotate the screw of lens cone. Put the focal length block between working material and laser outlet. Then lock the screw to work.

2.2.1.4 Control System

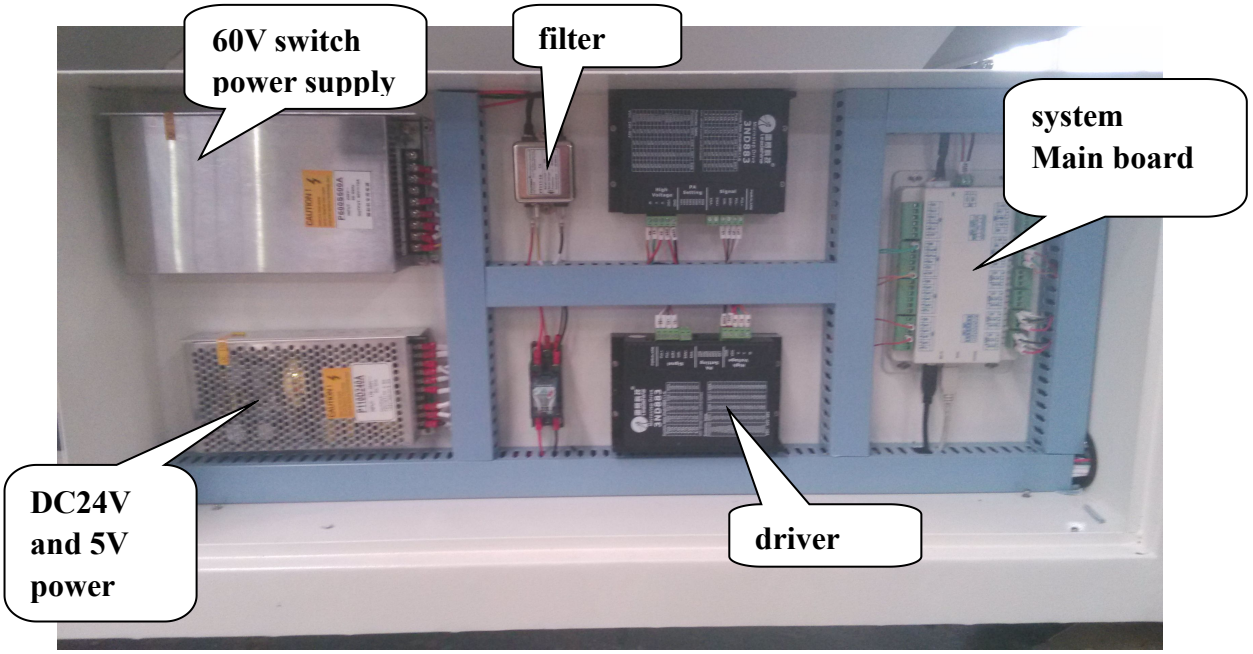
There may be difference of system because of model nonconformity. Detailed information is in accordance with final product.

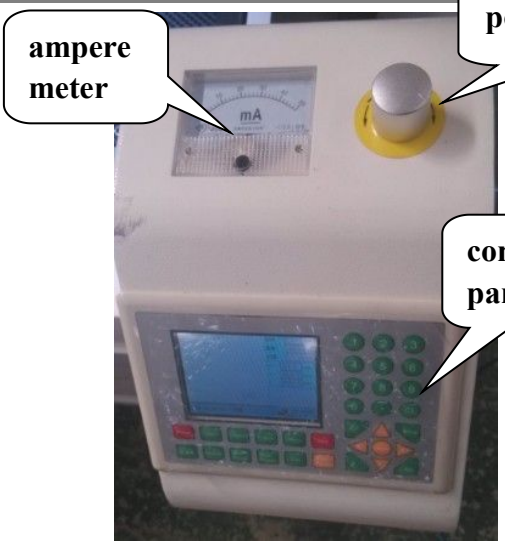
Our control system is as below:
Ruida control system

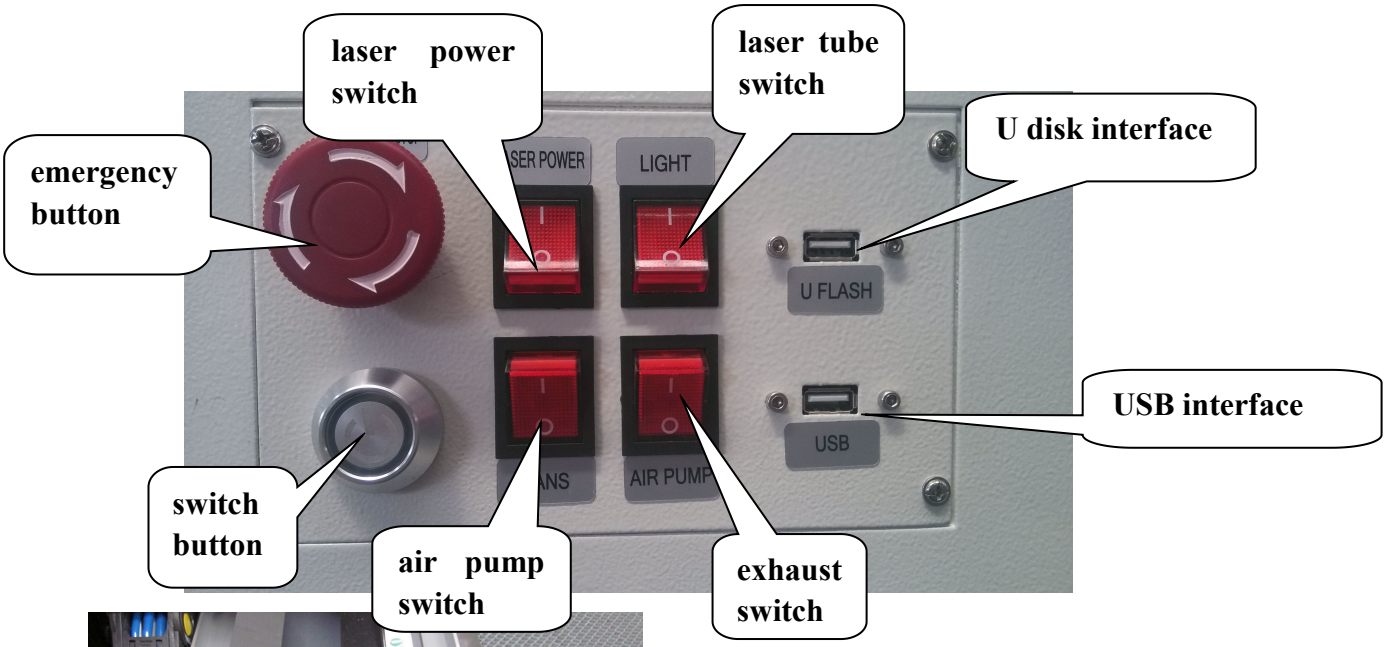
RD6442G control panel

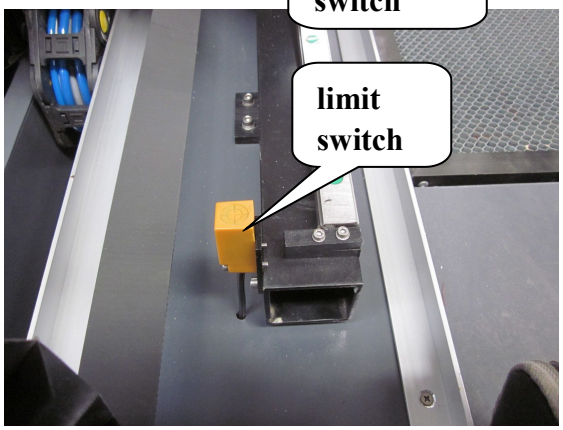


Ruida board card



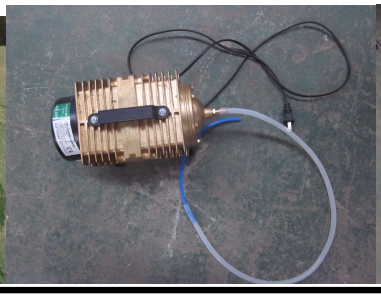

ampere meter
potentiomete
control panel


laser power switch
laser tube switch
U disk interface
emergency button
LIGHT
U FLASH
USB interface
USB
switch button
air pump switch
exhaust switch
AIR PUMP


limit switch

2.2.1.5 Peripheral Instruments

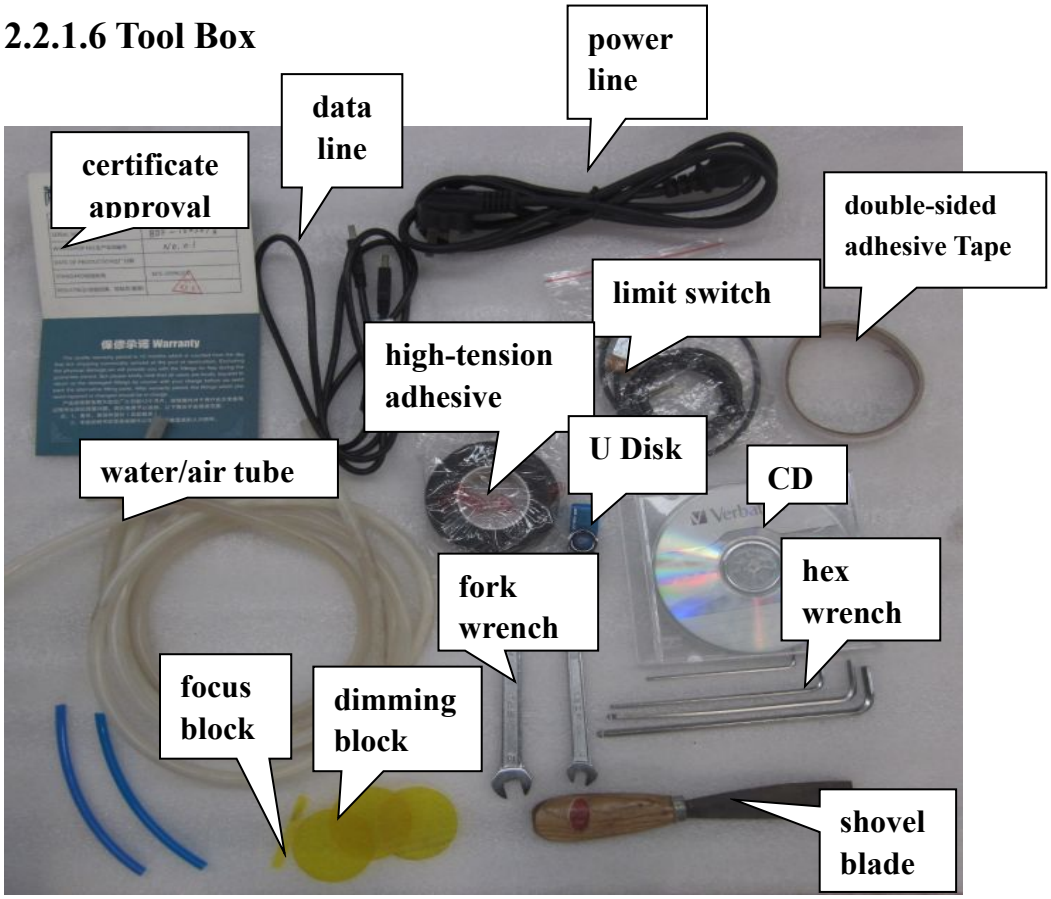
Water Chiller



Air compressor

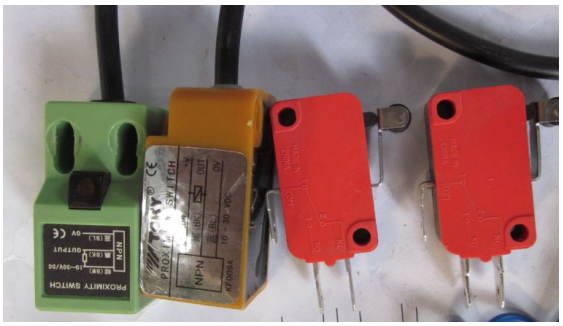
Exhaust fun

2.2.1.6 Tool Box



Attention:

Below accessories are matched with Ruida control system. Tools may be different in models. Detailed accessories are found in toolbox.



Limit switch:proximity switch and micro-switch
(micro-switch is only used when the machine is with Z axis)

usage of Shovel

usage of focus tool

2.2.1.7 Equipment Socket

III Machine Installation

3.1 Before Installation

3.1.1 Preparation of area

Make sure the area is dry enough. And any electromagnetism, strong power, pollution is

forbidden. Temperature of working environment should be 10℃ to 38℃, humidity should be 10- 90%. AC 220V±10%, 50HZ, resistance to ground less than 5Ω.

3.1.2 Preparation of operator

The operator must know well the main point of installation. Otherwise, the damage of machine parts will not in our scope of protection.

3.1.3 Preparation of tools

There is tool box with this machine. Besides, multi-meter and screwdriver and other detection tools are needed.

3.1.4 Other preparation

Purified water for water chiller, power strip, pipe for discharge smoke, sample material, etc.

PS: It's better for users/customers to learn how to install the machine.

3.2 Installation Steps

3.2.1 Package of laser tube

3.2.1.1 package of laser tube

In case of damage during transportation or outside force, the tube is packed with sponge. And two ends of tube are sealed with zip lock bag to prevent the mirror from pollution or scratch. Finally, the tube is built up with sponge supports to prevent tube have direct contact with surrounding.

3.2.1.2 Unpack Laser Tube

Take out the laser tube. Both hands hold the middle of the tube; take off the sponge supports; take off the packing sponge; take off the zip lock bag. Then inspect whether the tube is intact.

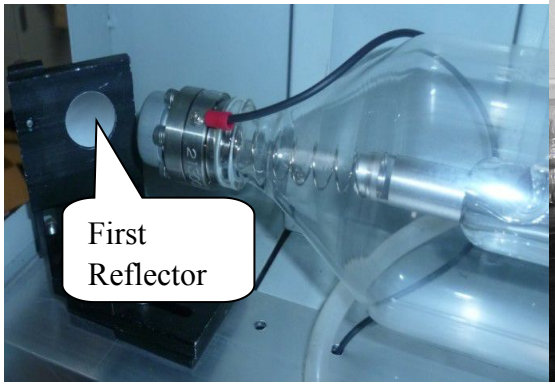
If tube have any defect, please take photo and send to Bodor for confirmation.

Attention: It needs as least two person when unpack. Handle the tube with care.

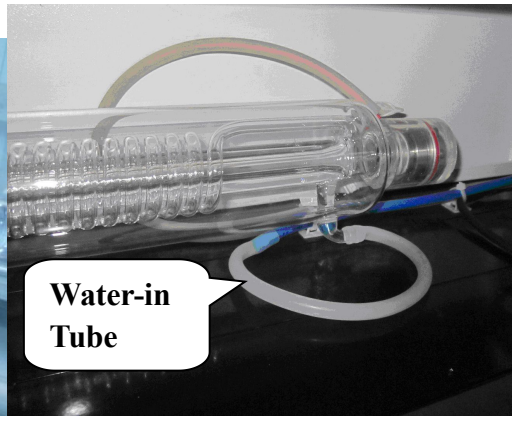
3.2.2 Installation of Laser Tube

Before tube installation, move laser tube to the backside of machine for easy installation.

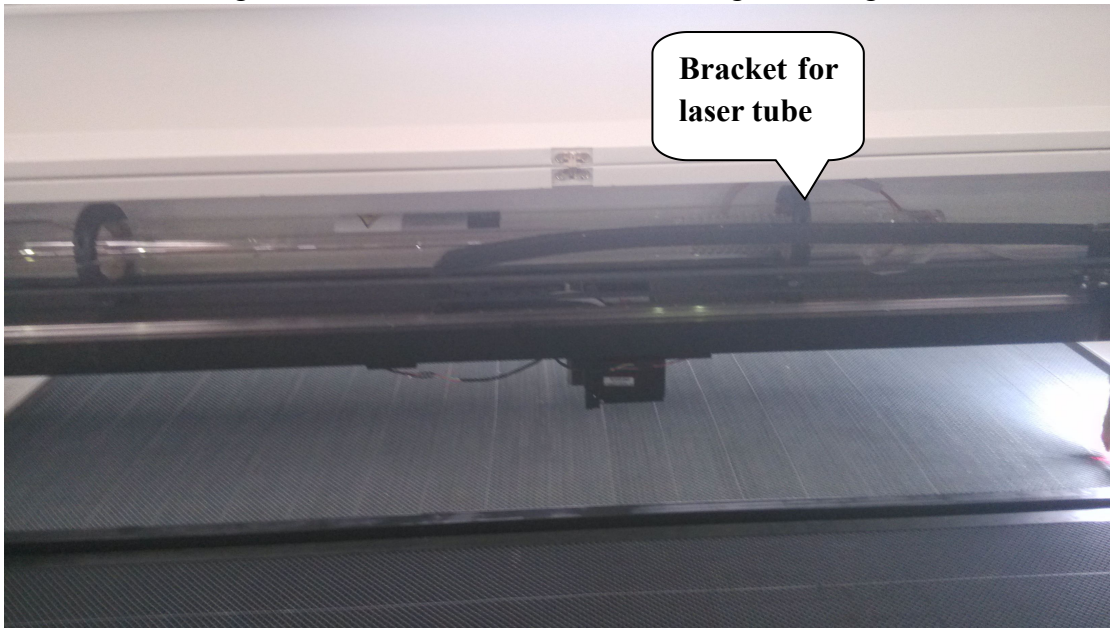
Laser tube is installed in the backside of gantry. Open protective cover for laser tube, we will notice that there are 2 laser tube brackets, 2 water tubes, 1 black lower-voltage wire and 1 red high-voltage wire.



lower-Voltage End of laser tube



Higher-Voltage End



3.2.2.1

Firstly, use M3 Allen Wrench to take off M4 screw on laser tube bracket and take down the upper part. Let the out-gate of laser tube(lower-voltage end) face the first reflector and put it softly on the bracket.

Then fix the upper parts of bracket with screws. Connect high-voltage wire and water-in/out tube. As picture VIII.

PS： ●Beam Out-gate of laser tube should keep estimated 2.5cm distance from the first reflector.

●Do not over fasten laser tube in case there is any damage.

●Must make sure water-in gate is downside and water-out gate is upper side. Keep the water go into laser tube from lower gate and out from upper gate. Take above picture as reference.

●Make sure every connection of water tube is well connected in case any leakage. Water tube should be straightened.

3.2.3 Installation of Water Chiller

▲Firstly open the water-in gate of water chiller and fill pure water or distilled water into it fully.

▲Then connect water-in/out gate of water chiller with water out/in gate of laser machine to make sure the water cycling path.

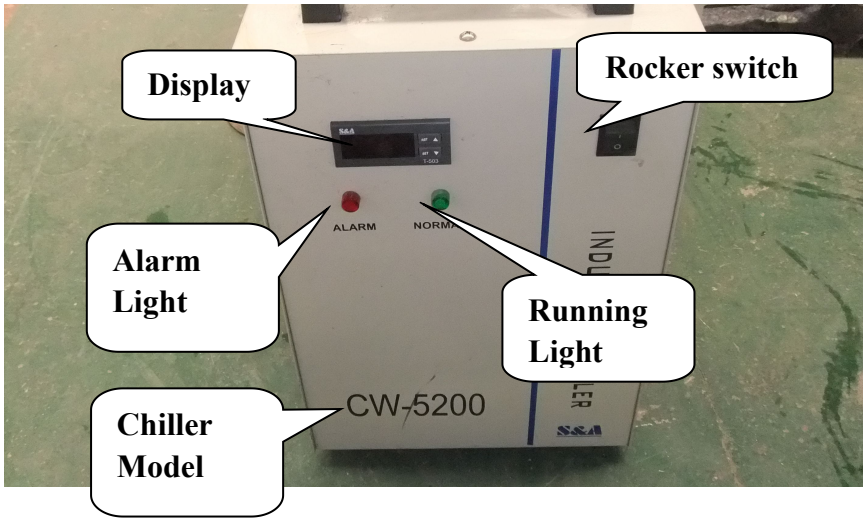
▲Finally, connect Signal wire and power line of water chiller.

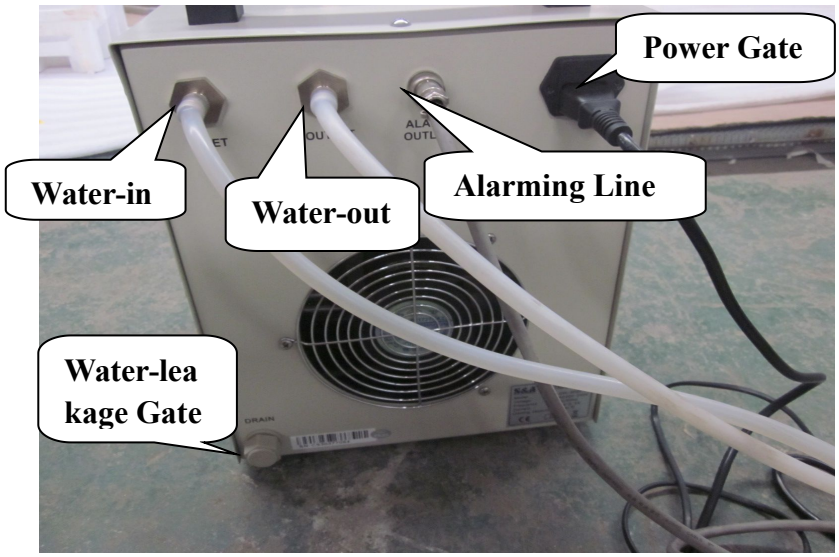
After installation of laser tube, press button to open it. There will be sound of water flow, water will fill inside water tube from higher-voltage end to lower-voltage end. Then green light on water chiller flashes. It proves water cycle is normal if there is no alarm.

PS： ●Water flows from water-in gate to water-out gate during working. Or it will hurt laser tube.

●Power on the machine. If there is any bubble inside laser tube, we could squeeze the water tube softly or rotate laser tube to expel the bubbles.

●During machine running, do not touch higher-voltage wire to keep safety.





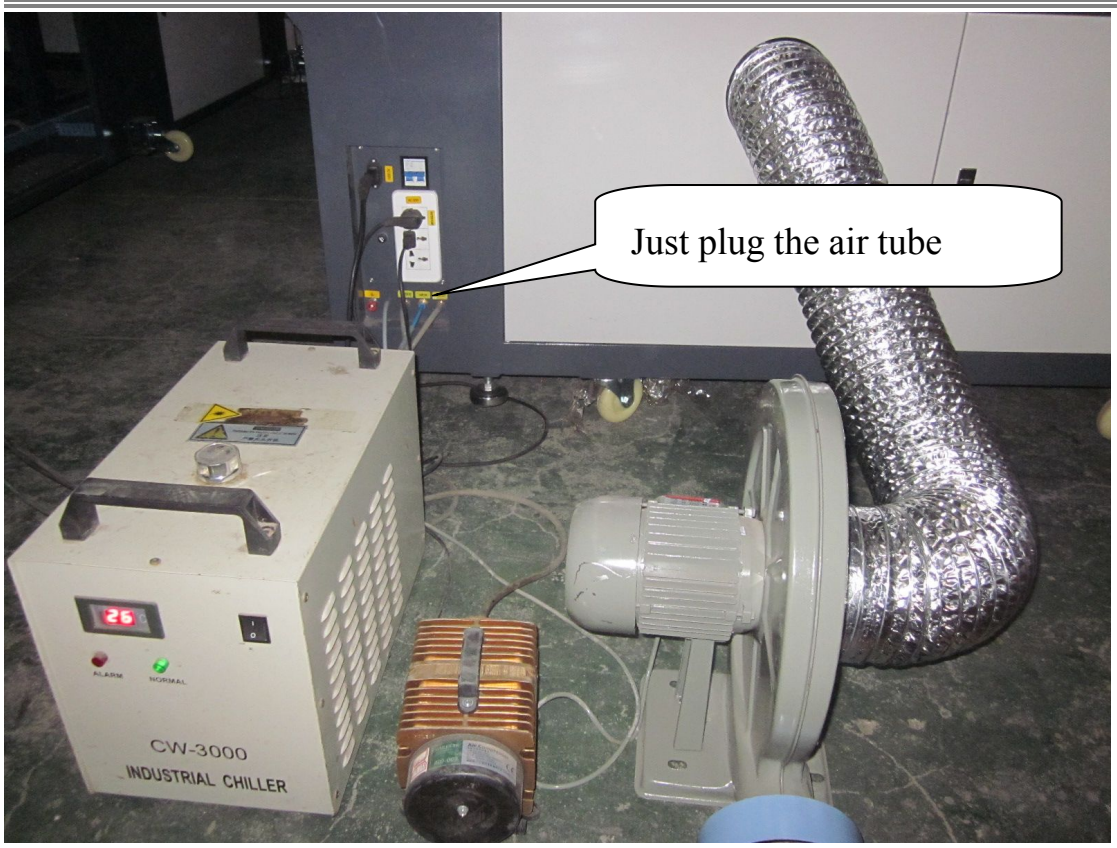
Picture for Installation of Laser Tube: fill water from upper gate

PS: water-in gate should be connected with water-out gate of machine; water out-gate should be connected with water-in gate.

3.2.4 Installation of Exhaust Fan & Air Pump

Installation of Exhaust Fan

Firstly, use 1 air tube to connect exhaust inlet with machine's suction inlet and fasten it well. Then use the other one to connect exhaust outlet and lead it to outside. Finally, power on.
As picture below,



Installation of Air Pump

Use some air tube to connect silicone tube with air-in gate of the machine. Power on and make sure air-blowing gate of laser tube is normal. As picture above.

Air pump (air compressor) is quite important. High pressure gas will blow out from beam-out gate of laser head through air tube. On the one hand, it can keep clean of focus lens; on the other hand, it could lower down the temperature for materials in case any fire.

3.3 Ground Line Connection

The machine has strict requirements for the ground line. Power supply system should be according to local safety standard.
L : 220Vfiring line phase line
N : Zero Line，together with phase line to compose machine's power system.
E：Ground Line. All electrical parts' ground terminal connect with it. To make sure safety, the resistance should be smaller for 5Ω。

PS: Non-standard connection of ground line will lead to high failure rate and it may also result in other safety affairs. Our company will not be responsible for any failure or

incidence occurred.

Ⅳ Light Path Adjustment

4.1 Examination before adjustment

Before powering on the machine, please check whether all wires are well connected. Then move laser head and see whether it moves smoothly. Move the gantry front and back and see whether there is any noise. Power on the machine after everything is okay.

4.1.1 Orders for Power-on/off

Order for Power-on

Keep Air Switch on 'ON' statement→rotate Emergency Stop switch→press metal Start button→press water chiller Rocker Switch→press Exhaust Fan switch

Order for Power-off

Close Rocker Switch(Exhaust fan, air pump, water chiller)→press metal Close button→press Emergency stop switch→close Air Switch
PS: rocker switch is closed when it is in 0 position and 1 for start.

4.1.2 Electrical Commissioning

After powering on, check whether laser head moves normally from the side of control panel; whether there is any noise around gantry; whether all parts are normally running. Please also check whether machine could go back to its home origin and check the travel distance. If everything is normal, then start the process of light path adjustment.

4.2 Laser Adjustment

Total 2 steps: adjustment of laser work and the adjustment of laser light path.

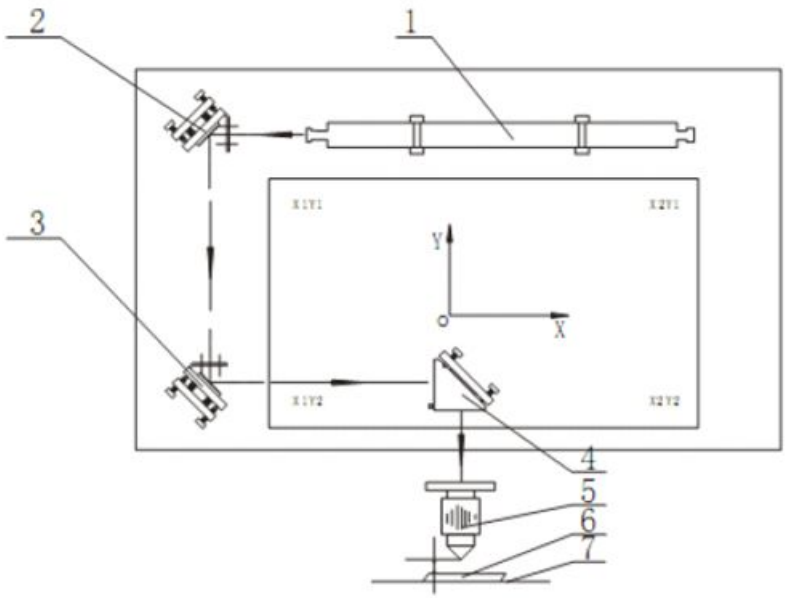
4.2.1 Adjustment of Laser work

After power-on the machine, make sure those works are properly: the water flow direction, water in/out tube, high/low voltage connection wires, is there any bubble inside of the tube.

Next, stick one acrylic block on the first reflection mirror, press the "Laser" button on control panel to test whether there is laser out of the tube or there is facula on the acrylic block. If there is no facula or weak light, then you need to check whether you have set the potentiometer on the max value, or whether the water chiller is connected in right way. If there is still no light, then there may be some defect of laser tube or laser power supply.

4.2.2 Adjust laser Path

Shake during machine transportation may lead to light path skewing. This time, we need to adjust the light path.
The light path is as below: optical system mainly consists of laser tube, 3 reflectors and 1 focus lens, laser head and red cross indication system.



1. Laser tube 2. First Reflection Mirror 3. Second Reflection Mirror 4. Third Reflection Mirror 5. Focus Lens 6. Working Material 7. Work Table

Laser beam goes through front mirror of laser tube and reflected by first, second and third reflector. Finally, it reaches to the work table after focused by the focal lens. In fact, light path is a process of multi-reflect and focusing. During this process, a little loose of a screw will result in light skewing and the laser beam will not come out from laser head.

4.2.2.1 Tools needed during Light Path Adjustment

adjusting tools, double faced adhesive tape, focus tool, shovel and sharp-nose pliers.

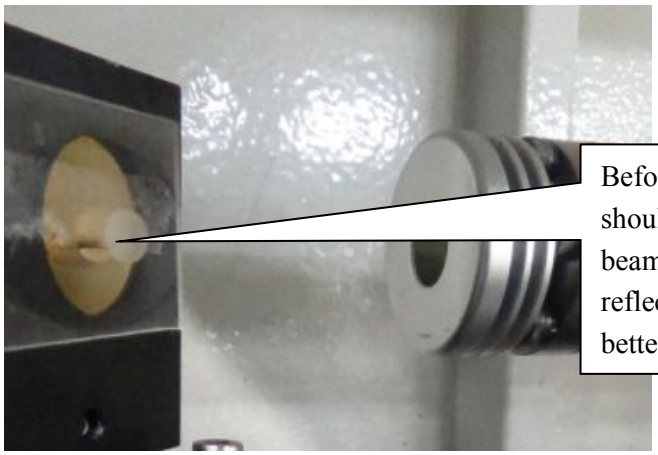
4.2.2.2 Method of Light Path Adjustment：

Rule: take the facula reflected as a point, then adjust the facula to the center through slightly adjust position of laser tube.

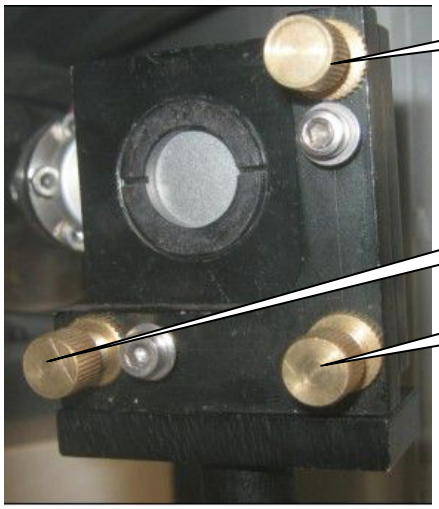
Specific steps are as below,

Laser launched out of the laser tube, reflected by first, second, third reflection mirror, and then focused by focus
lens. Finally reach on the work table.

In short, the laser is reflected three times and focused to achieve the best cutting and engraving effect.If the light path is not correct, it may hurt the laser tube, reflection mirror, focus lens, etc. In case is not correct, please re-adjust it. Steps are as below,



Before light path adjustment, height laser beam out-gate should be same as that of laser head's round hole. The beam from laser tube should be slight on the backside of reflector's center. In this way, the light path will be better. Adjust method: adjust first reflector.

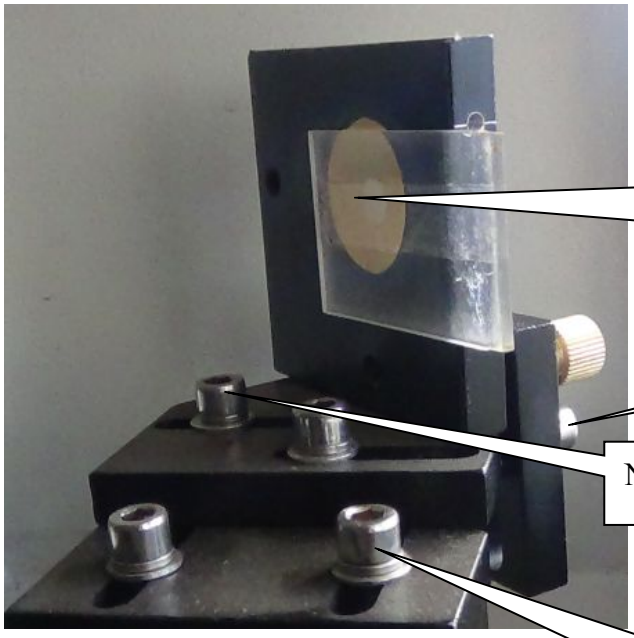


NO.1 Screw

NO.2 Screw

NO.3 Screw

Examination of light from first reflector to second reflector: press ‘Paulse’ when the laser head is in the nearest position of first reflector and again press ‘Paulse’ when it is in the farthest position of first reflector. Through adjustment, make sure the 2 points are on the same position. Upper position: fasten NO.1 screw. Lower: fasten NO.1 and NO.2 screw. Left: fasten NO.2 screw. Right: fasten NO.1 and NO.3 screw.

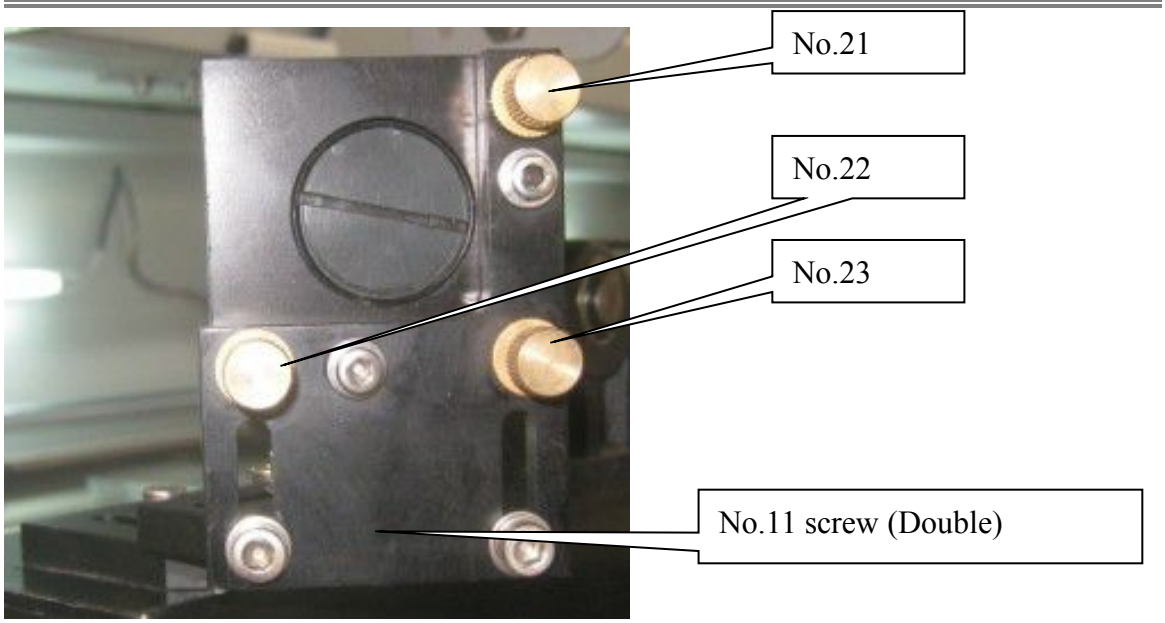


If the 2 points are adjusted to a same place, but not on the right position of the center, then adjust NO. 11, 12 13 screw

NO.11 Screw (2 screws)

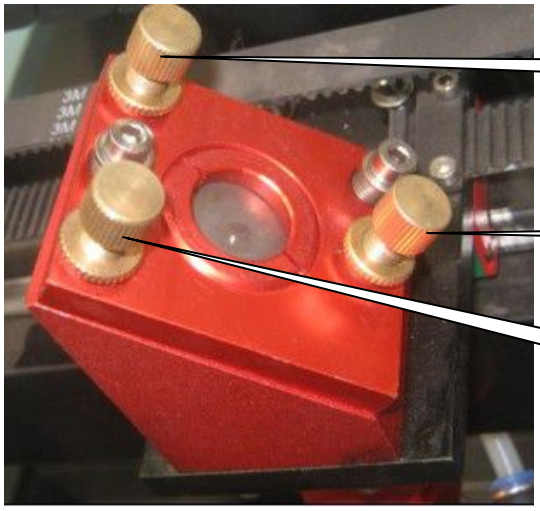
NO.12 Screw (2 screws)

NO.13 Screw (2 screws)


No.21
No.22
No.23
No.11 screw (Double)

From 2nd reflector to 3rd reflector, the laser point on the acrylic should be same when laser head is in the nearest and farthest position.
Upper—adjust No.21 screw;
lower—adjust No.22,23 screw;
Left—adjust No.22 screw;
Right—adjust No.21,23 screw.

If on one point but not in the center of the circle, please adjust as below:
Left/ right--No.11; up/down -- adjust the height of laser tube

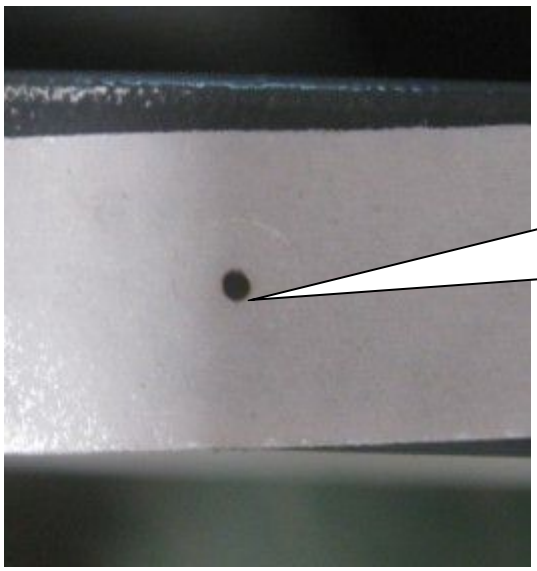


No.31 screw

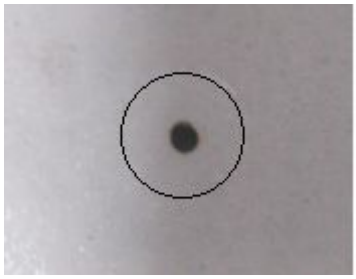
No.32 screw

No.33 screw

put a double-sided adhesive tape on the outlet of the laser head, take left hand side as left, right hand, right;laser tube side, front and people where we stand, backside.



Laser beam spot should be in the center of the outlet. Please refer to picture A. If not, please adjust No.31,32,33 screws.
Left -- please adjust No.32 screw;
Right -- please adjust No.31 and 33 screw;
Front -- please adjust No.32 and 33 screw;
Back -- please adjust No.31 and 32 screw.



picture A

Focus test is as shown in picture A:

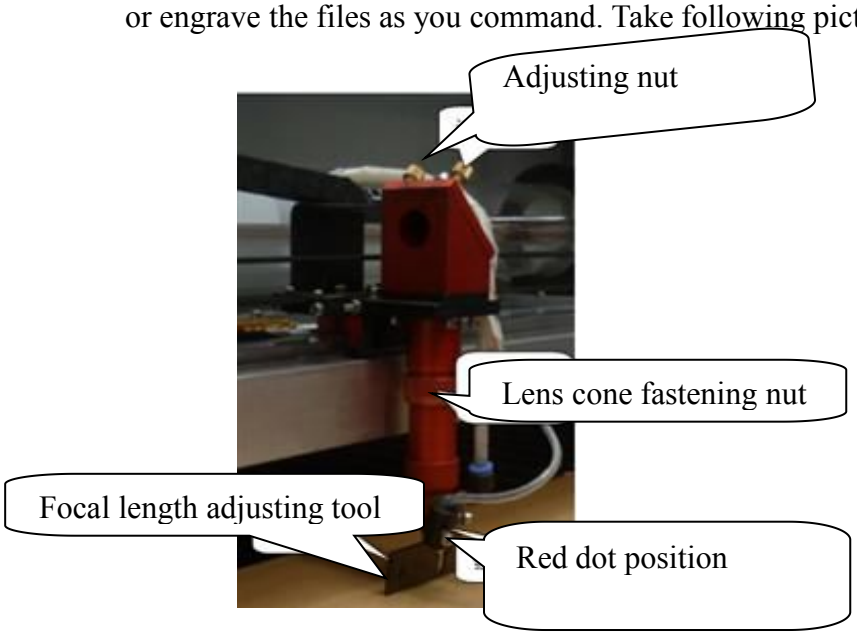
First paste double-sided adhesive tape on outlet, press pulse button and check if the facula is on the center of outlet. If not, please adjust 3 screws of laser head.

Attention:

Laser is invisible light but can do harm to human body. Please keep away from the laser path when debugging. The operator must master the basic knowledge of laser machine.

4.2.3 Testing of Engraving

After debugging of light path, put the working material on the working table, then spin the laser head clockwise(overlooking the laser head), to make it stay in the focal length height. After adjusting the focal length, then anticlockwise the lens cone nut. Then move the laser head to the designated spot, finally open software to design patterns you need, set the processing way, speed and power. Download and name it, then machine could cut or engrave the files as you command. Take following picture as a reference.

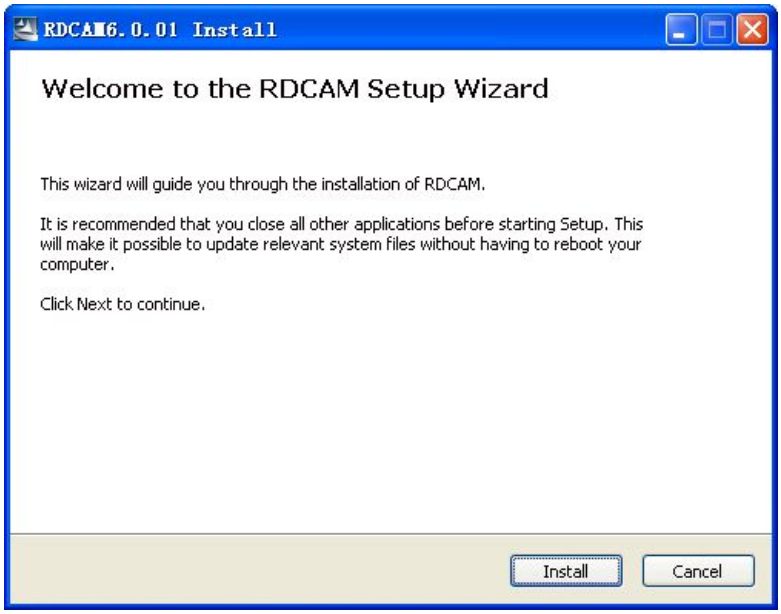


V General Operation User Manual

Power on the machine before using. Connect machine and PC with USB data-line.

5.1 Installing Software

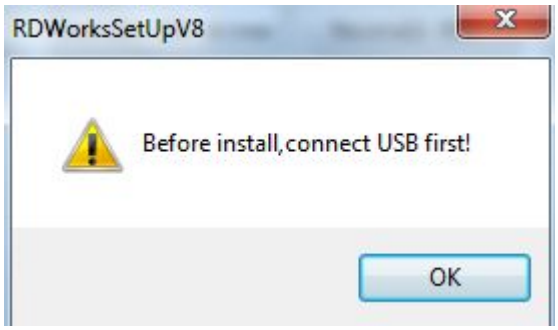
Find CD, double click “RDCAMSetup6.exe,”, as below:

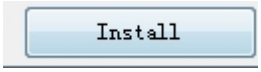


Click 【Install】， then you can get image as below:

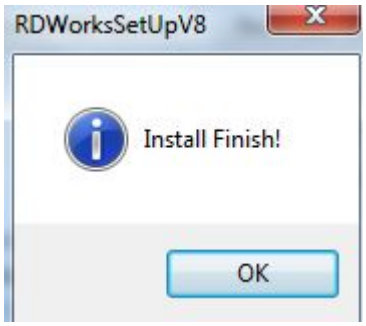
Click “English”, choose Language in English, then click

Click “OK”. Make sure the USB data-line is connected with machine already.



After this, click 

begin to install the software.
Then you can get interface as below:



Click “OK” OK. Finished.

5.2 Instructions for machine using

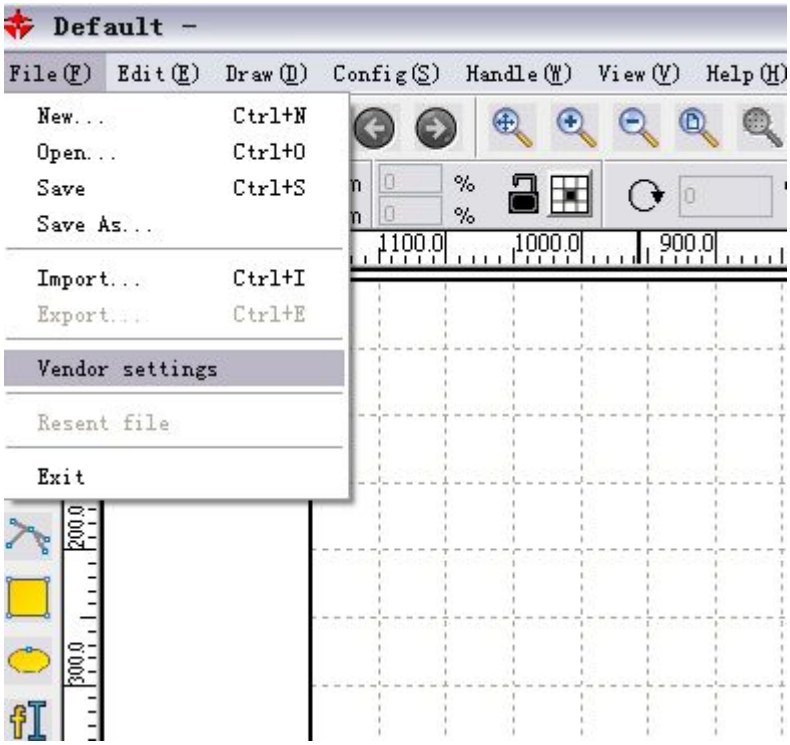
Make sure all the parts installed onto machine normally. Such as: water chiller, air pump, exhaust fan, etc.

5.2.1 Read Parameter

(There maybe different format of software. Just for reference)

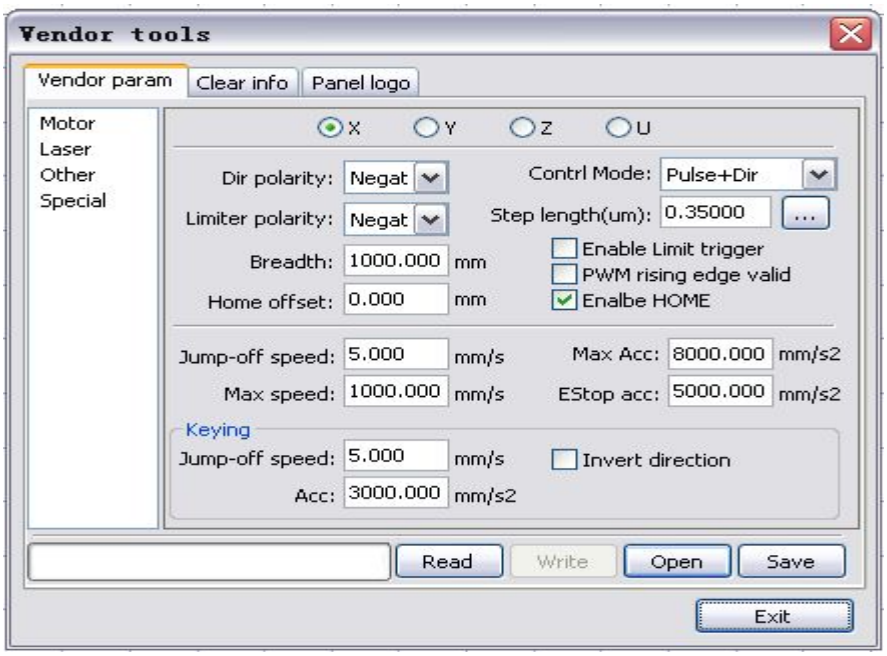
Reading parameter:
To make sure the “vendor parameter” and “user parameter” in the control board are same as software.

Click “file” then open “vendor setting”。

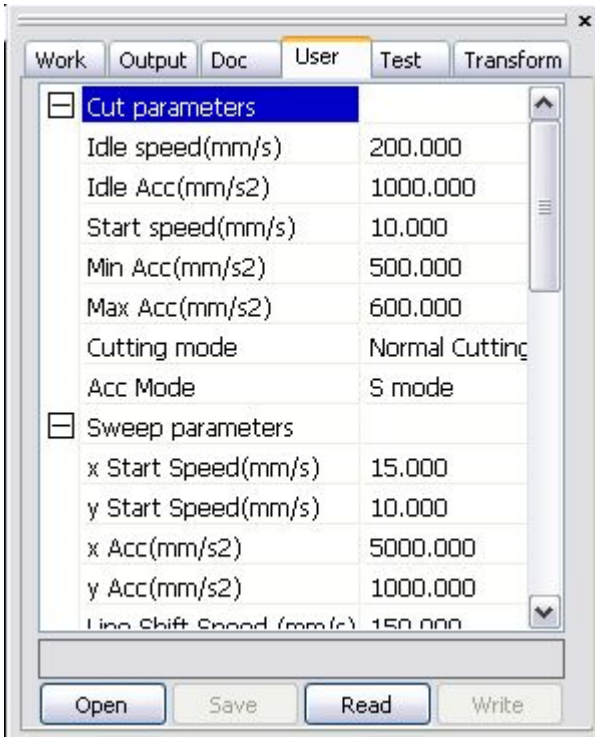


Input the password: rd8888.

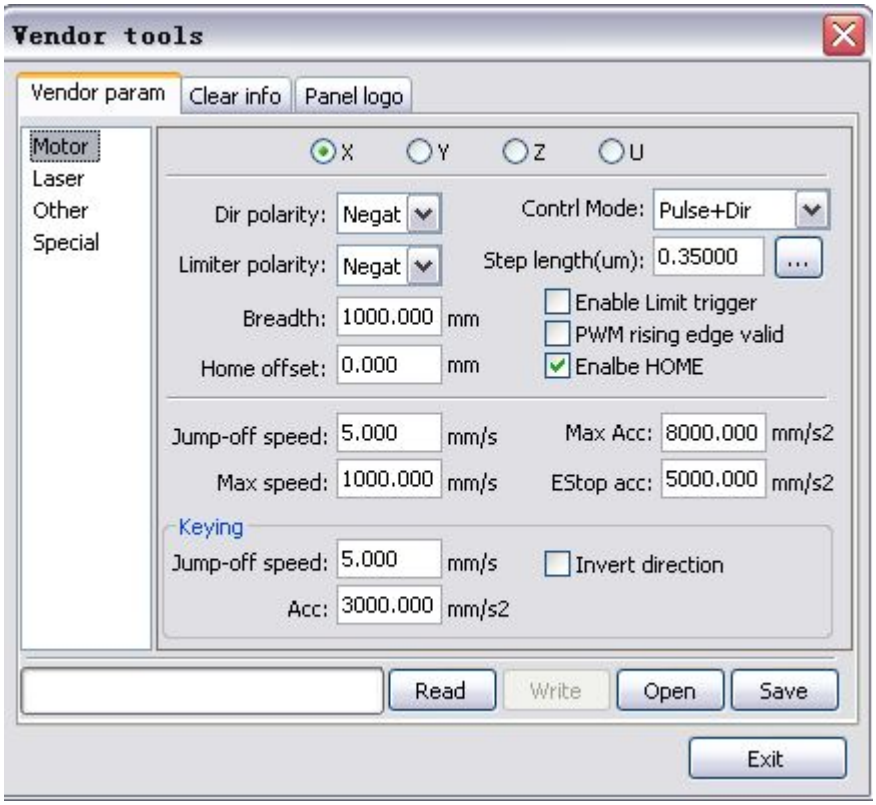
Enter this interface， click“read” 。



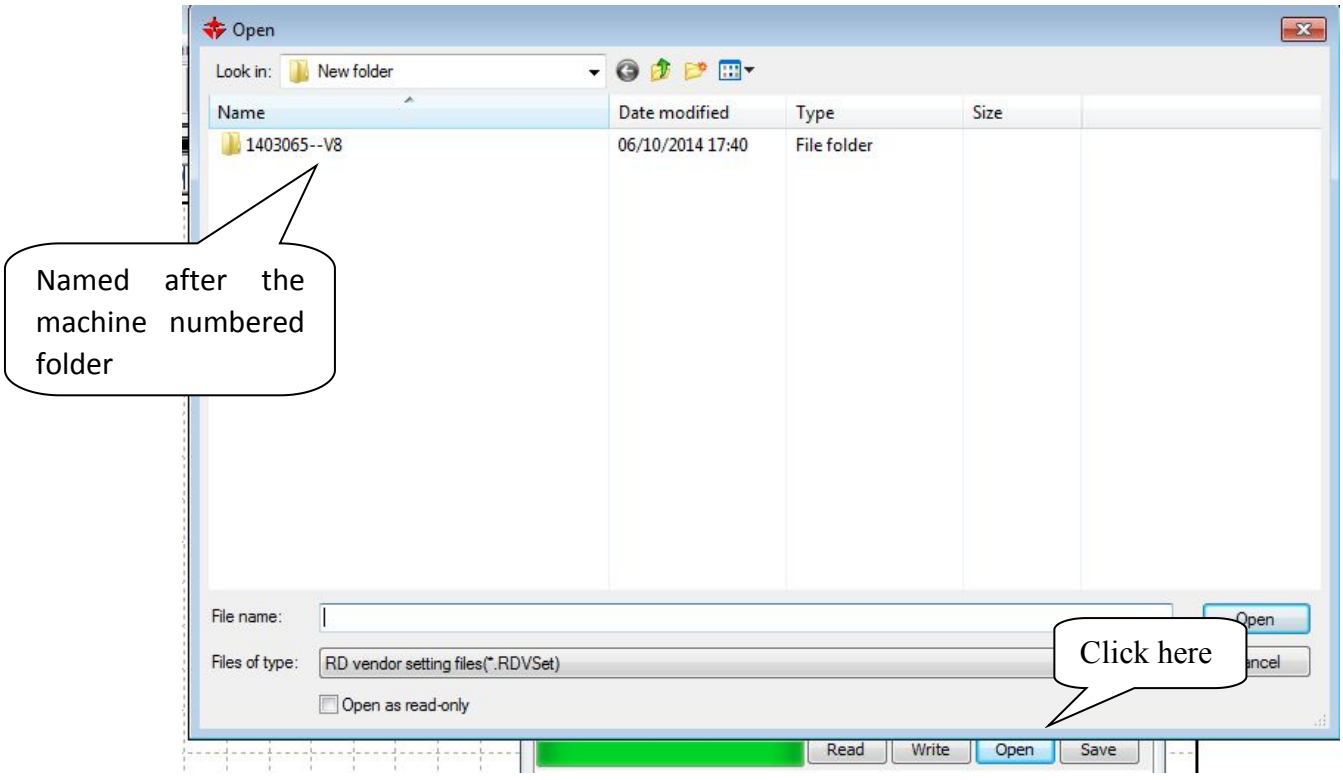
In the right side of the software, find below image, Click“user” as the following shows，then click “read”.



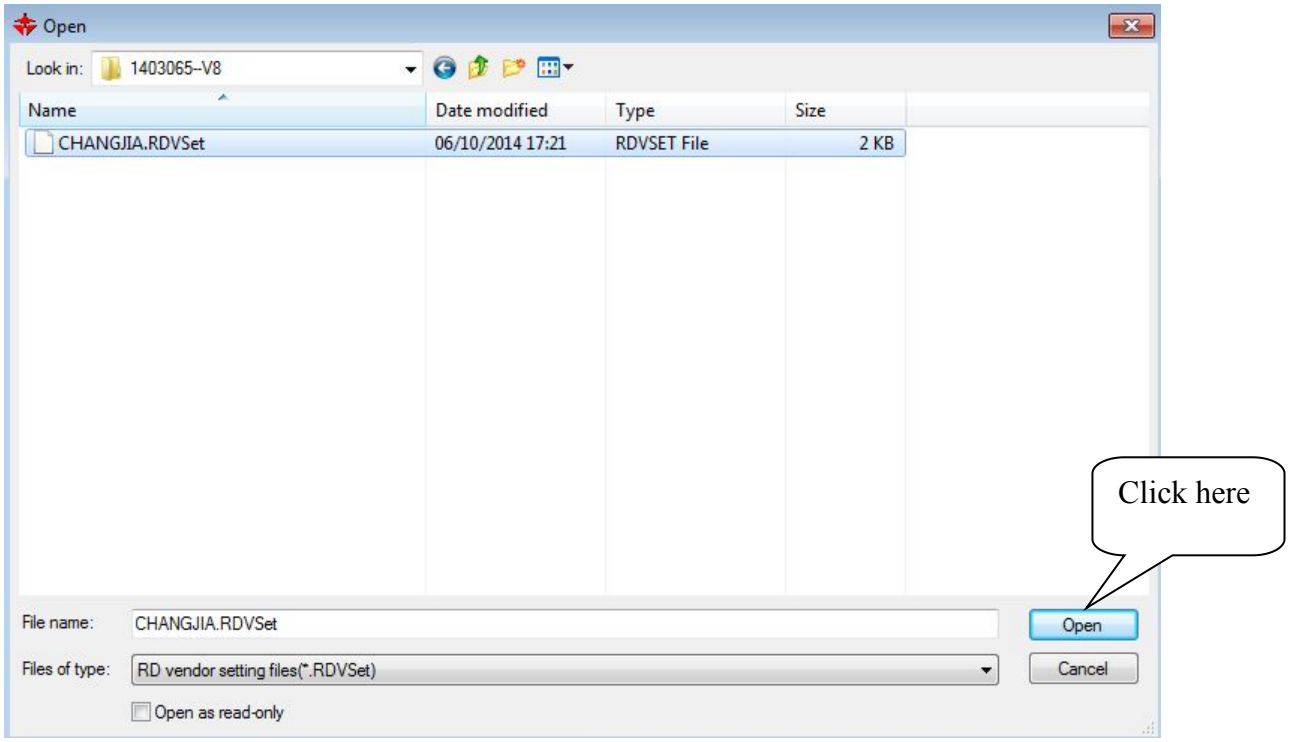
Note： If change main board or revise parameter, you need “read parameter ” first, then find the CD/U disk parameter, then “open”---”write parameter”



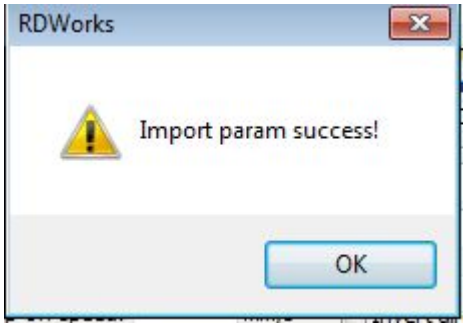
Find the"Named after the machine numbered folder"in the CD/U disk along with machine.

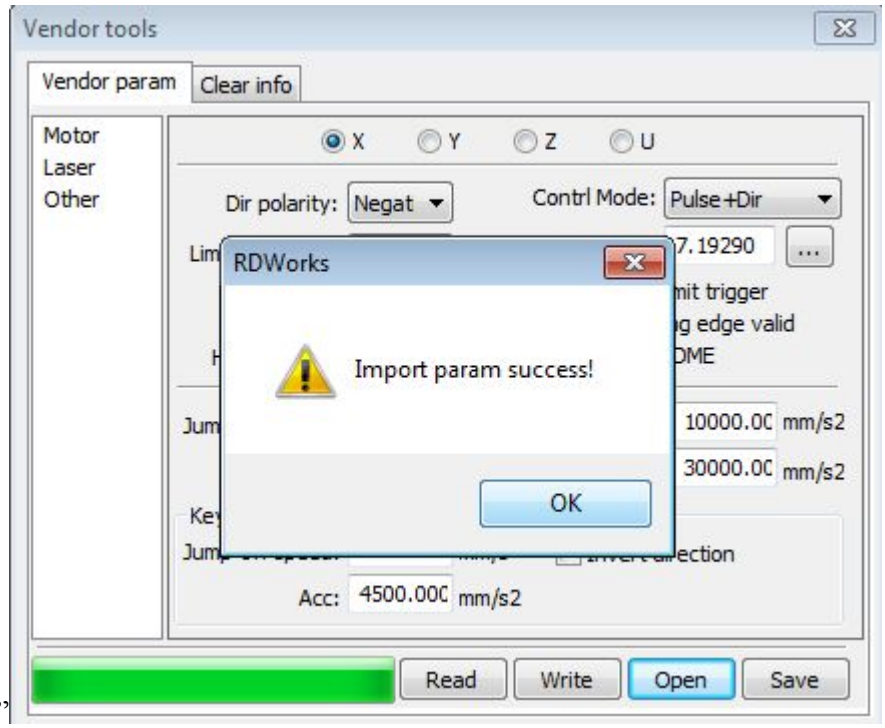


After open， appear " CHANGJIA.RDVSet "file



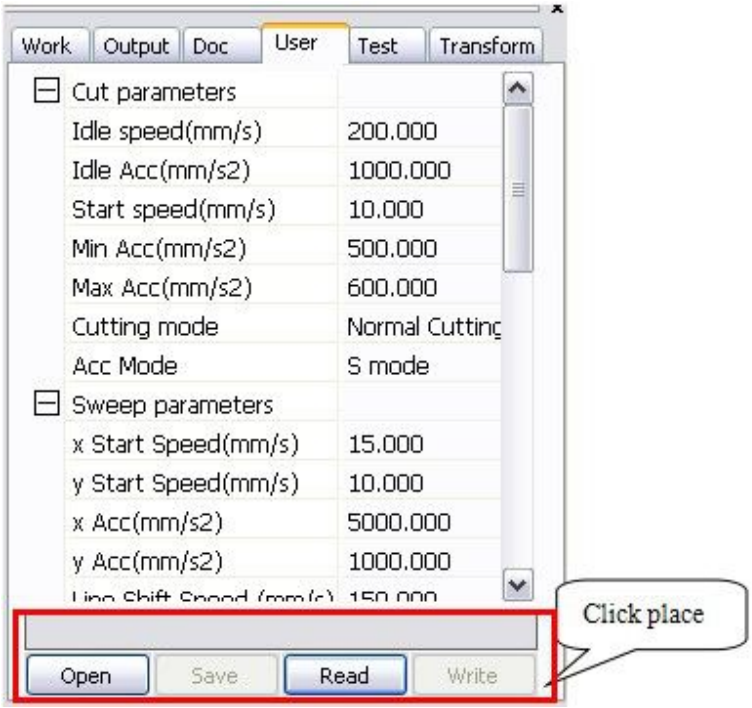
After open, it shows:

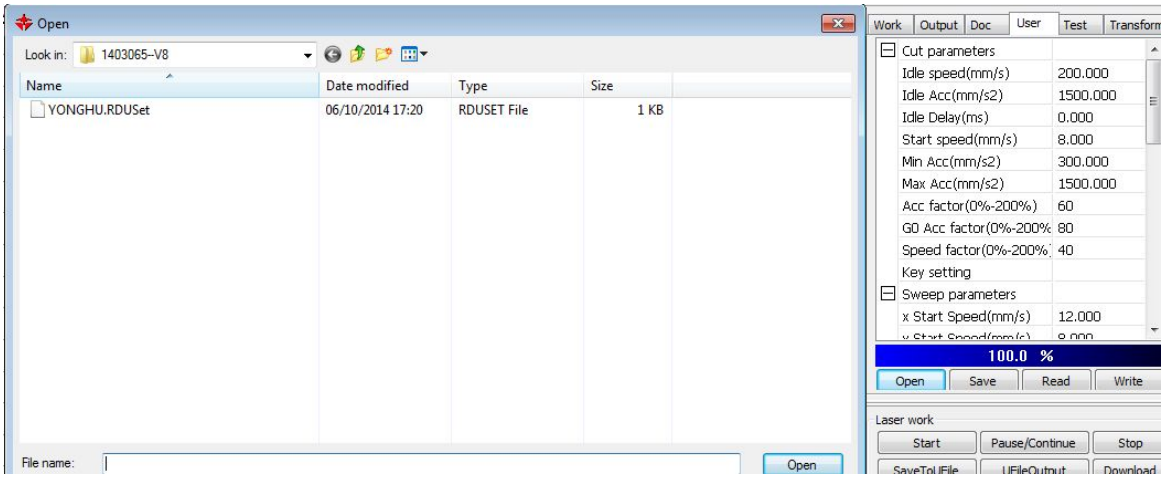




”

Click ”user”, as the following shows, according to vendor setting way, you operate “read”--”open”---”write” accordingly. And import user parameter.

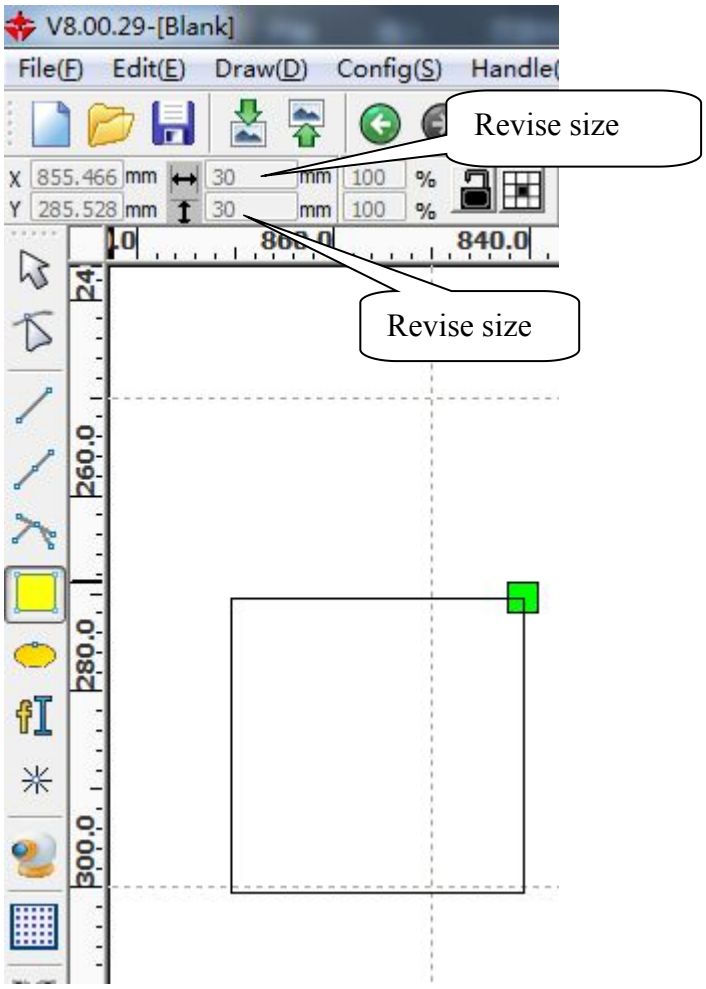




After importing vendor parameter and user parameter, close the software first, then open it again. You can use software normally.

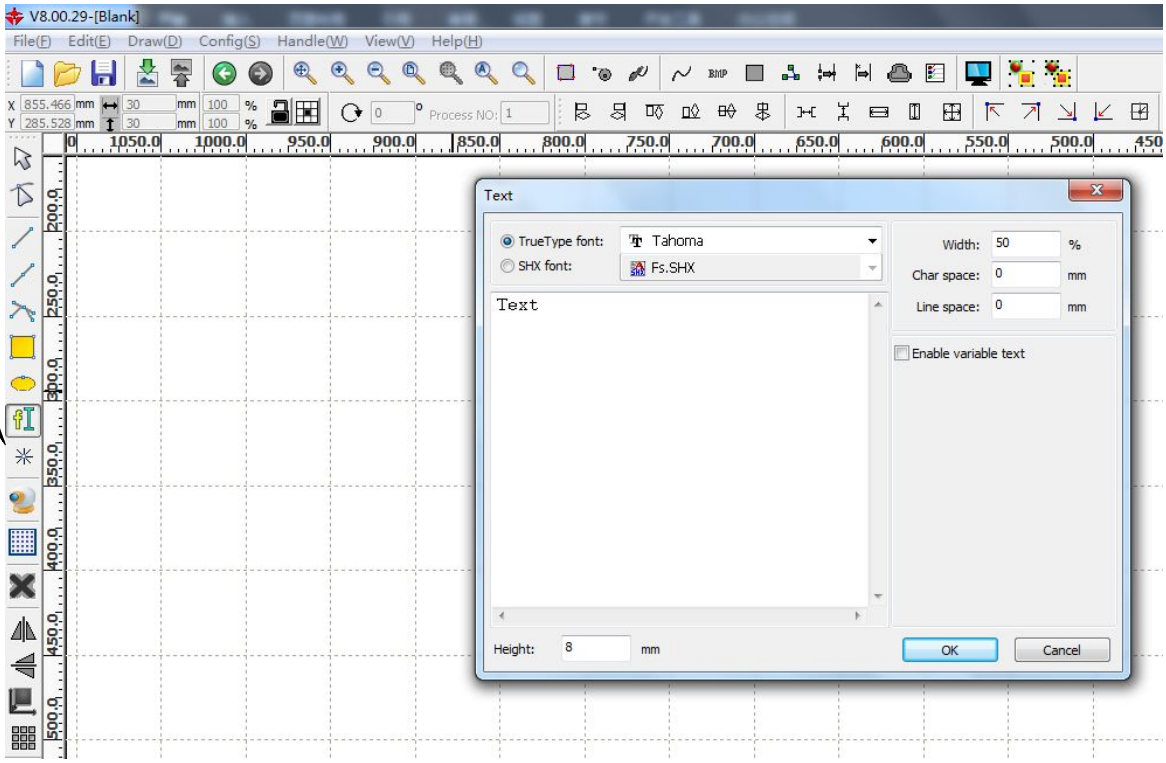
5.2.2 **Do simple graphics, set the layer**

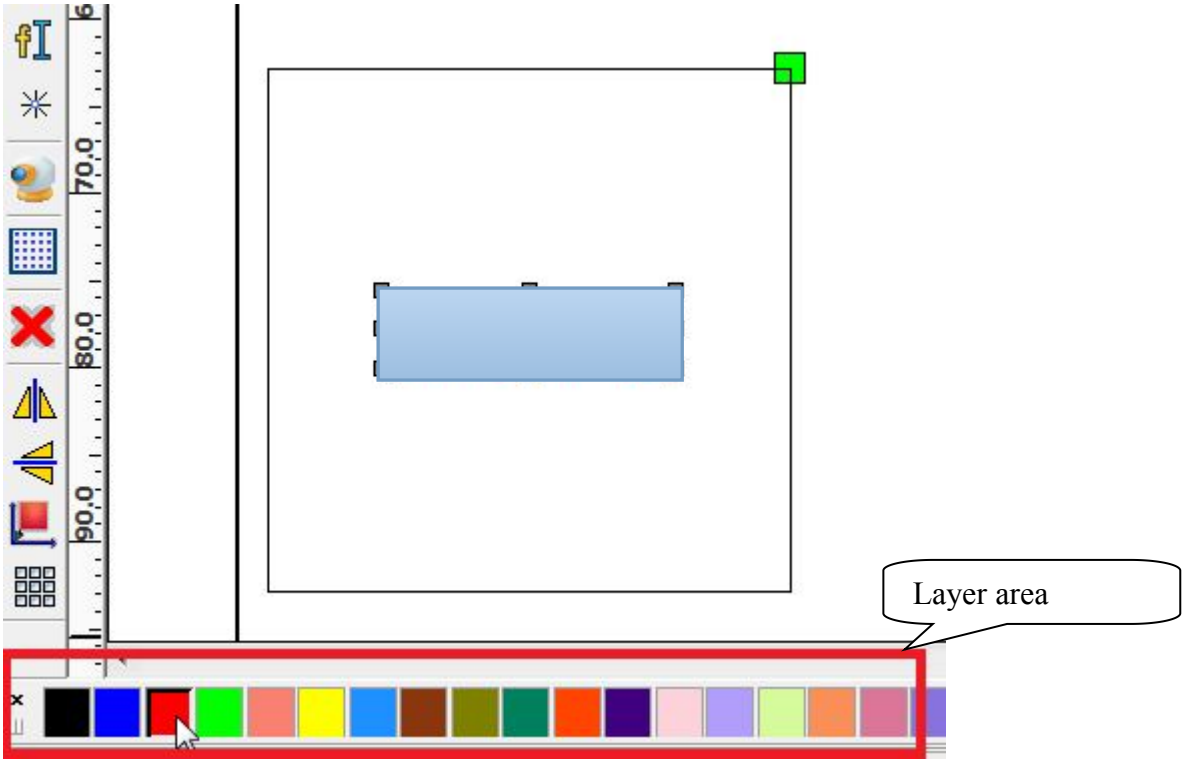
Choose “  ” in software, then make one square block and then revise size.



Click“ ” then click in the drawing area. So it will appear one dialog box and edit characters, then click ”ok”.

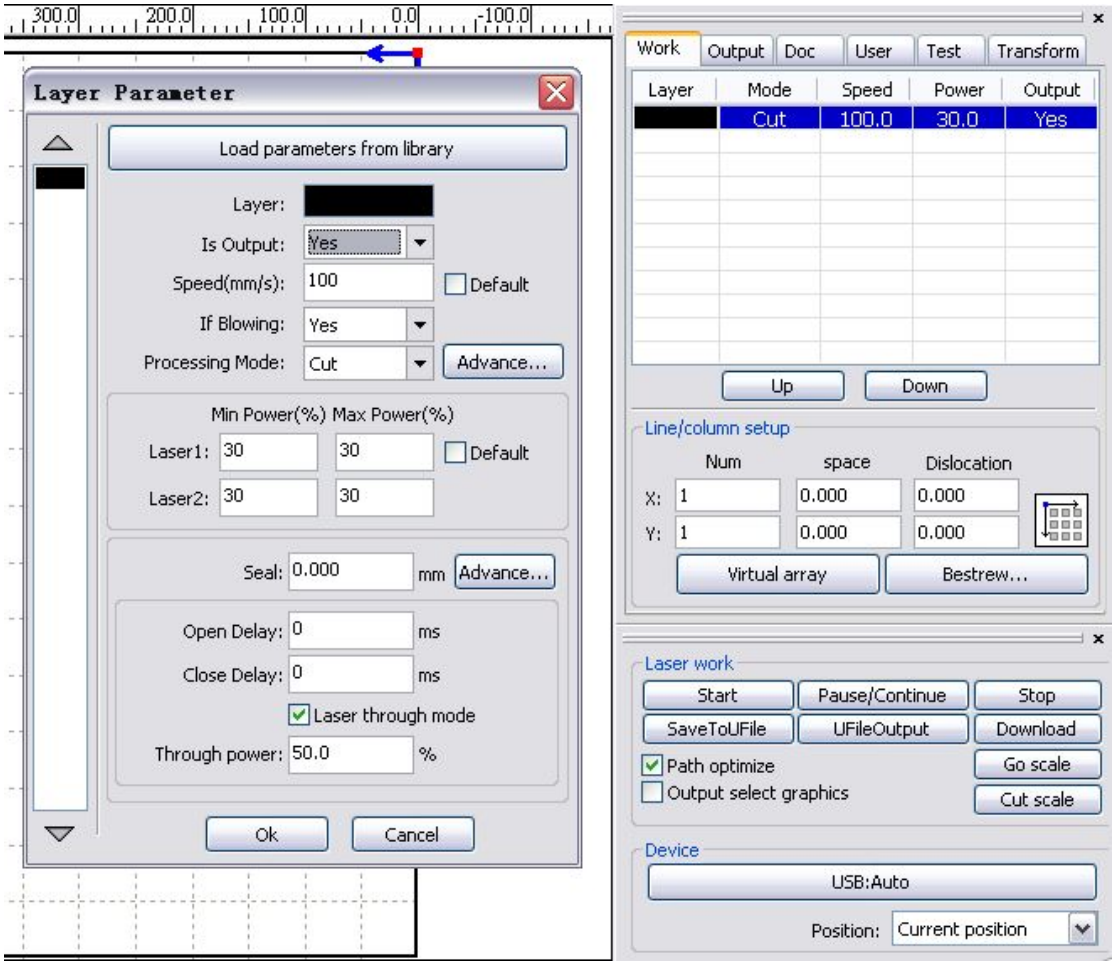
After choose characters, then choose layer. As the following shows.





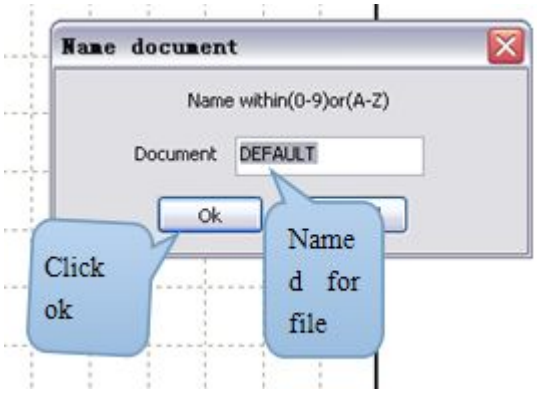
5.2.3 Setting processing method

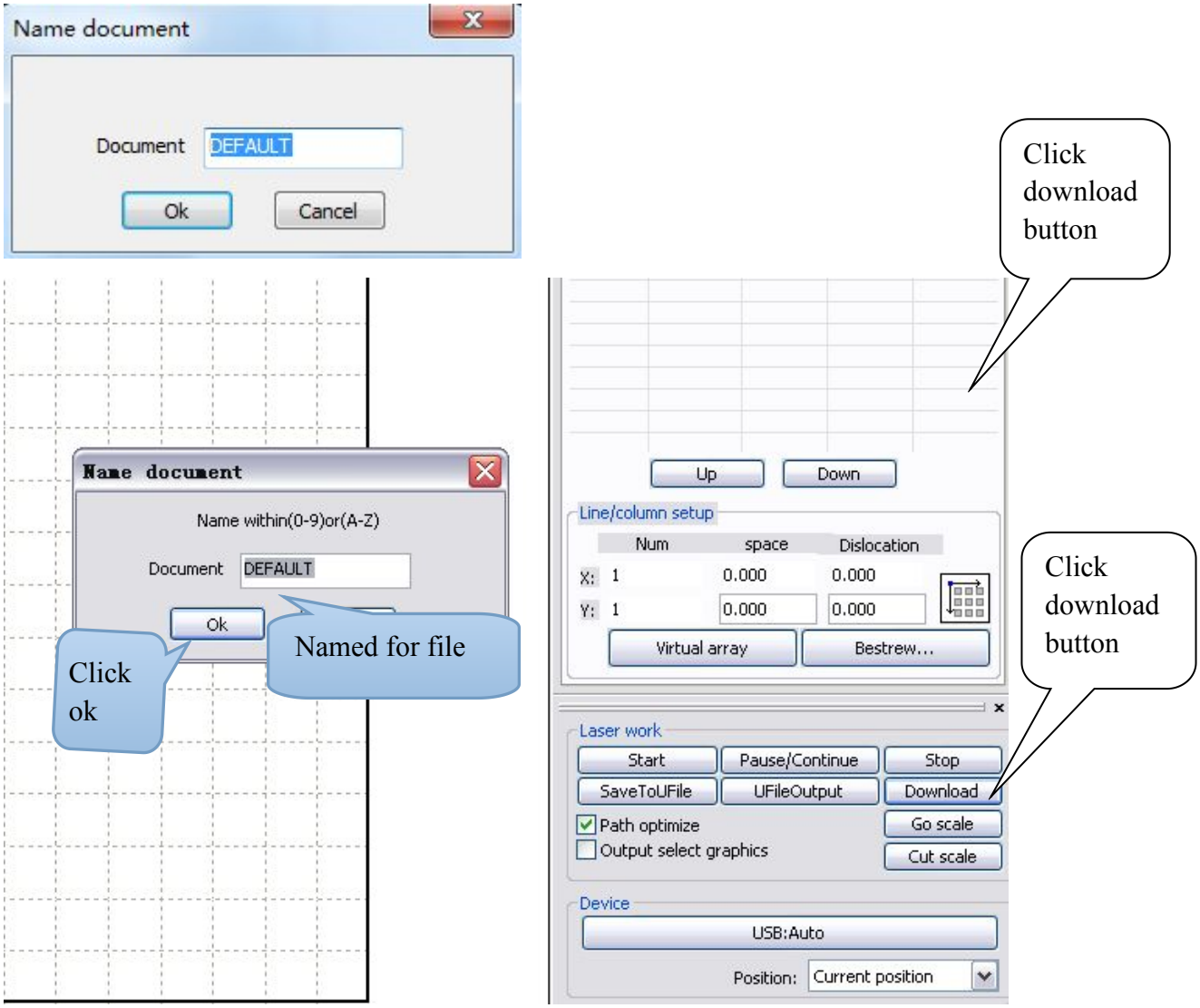
According the cutting material, set power, speed. according to the cutting parameter table.



5.2.4 Download file

Click “DOWNLOAD”，then named for file, and click ok.

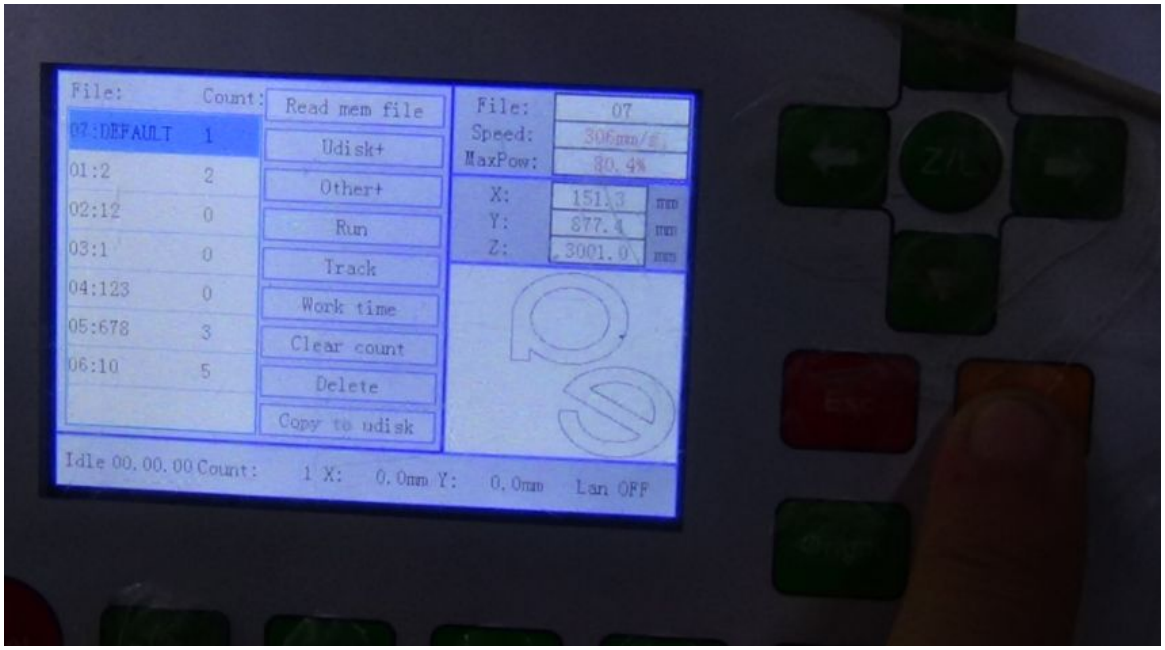




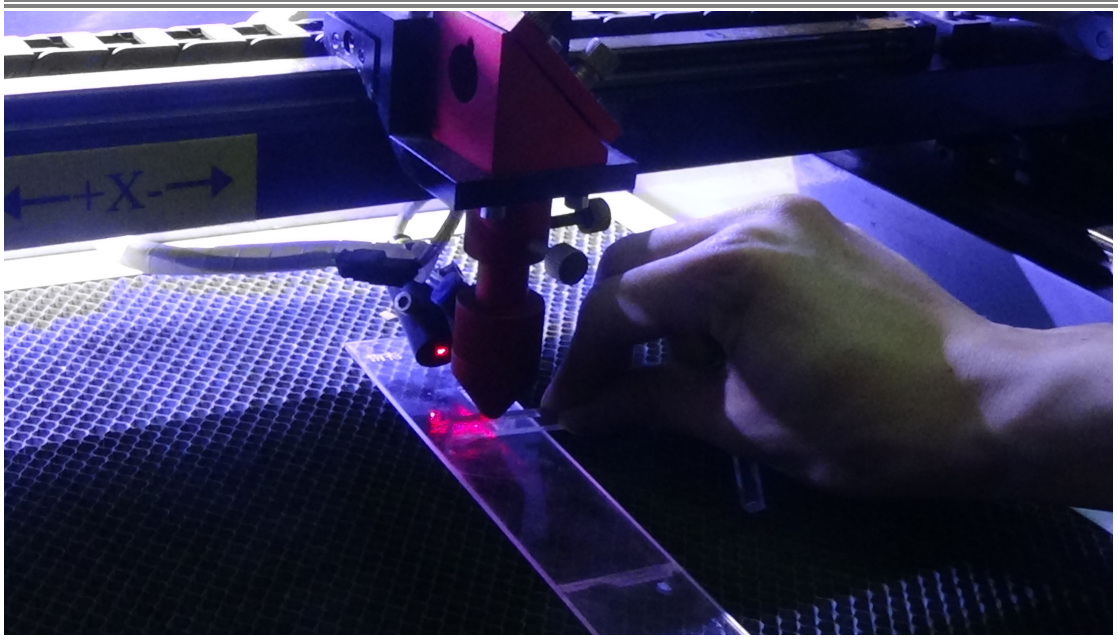
5.2.5 Machine operation

1.On the machine, find downloaded file by pressing “file” button as shown in the picture.

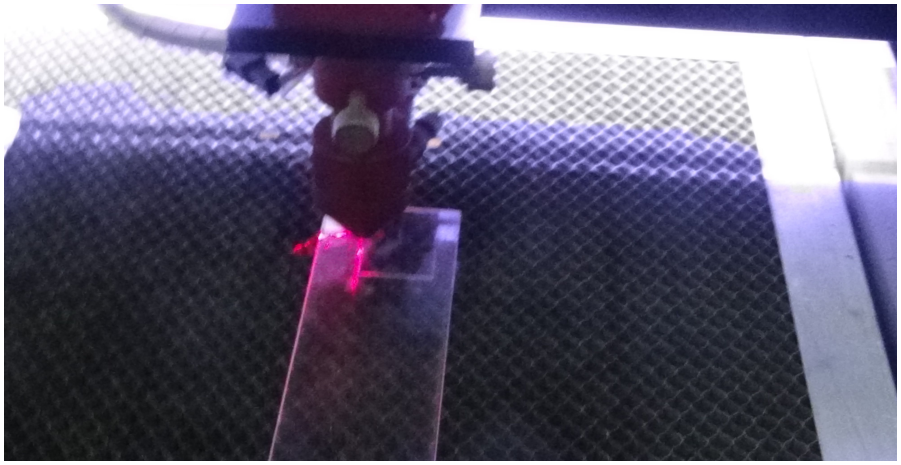
2.After finding named file, press “Enter”button.



3.put cutting material well and adjust focal length well.



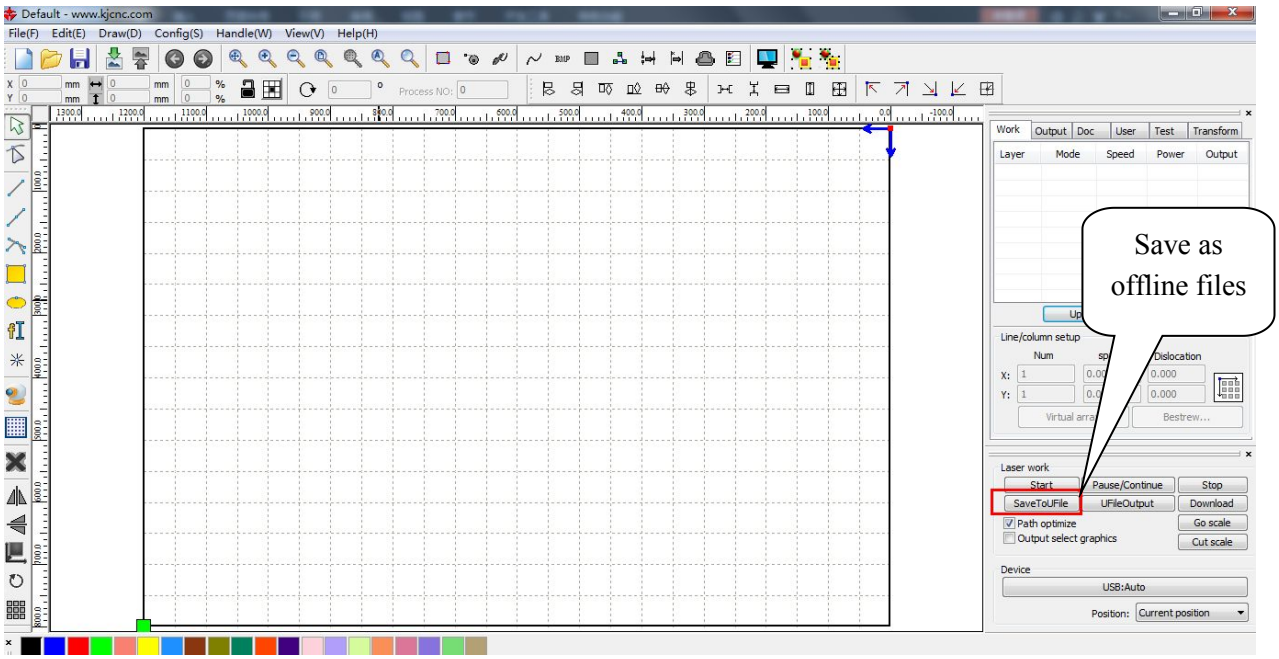
4.find the right place ,press “origin”button to frame cutting area. Then press “start”button. Then you can see the machine is cutting material as shown in below picture.

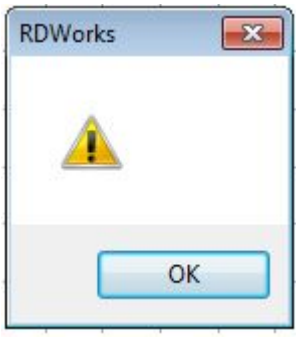


5.3 U disk operation

Same operations with data line will not be listed again.

1.After setting power, speed and cutting method, click“save to u file” and shows dialog box. Name the name of the file. Then click and save .

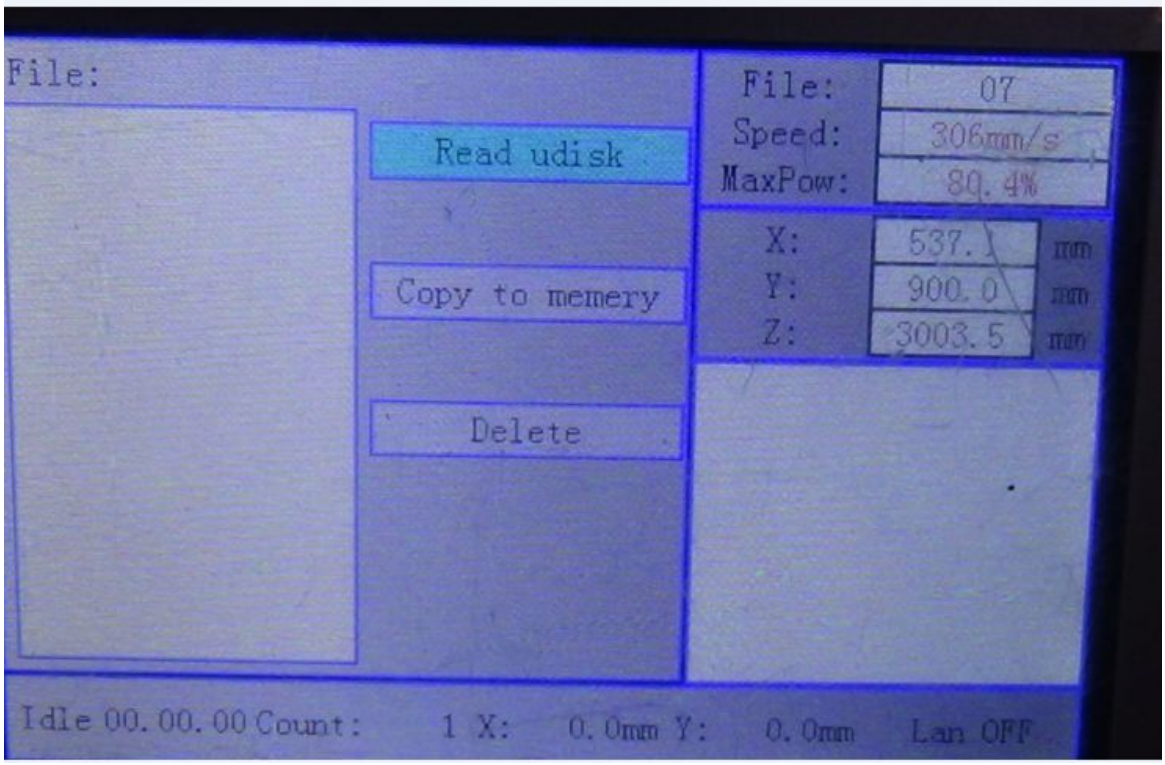




Find the file, then save it in U Disk

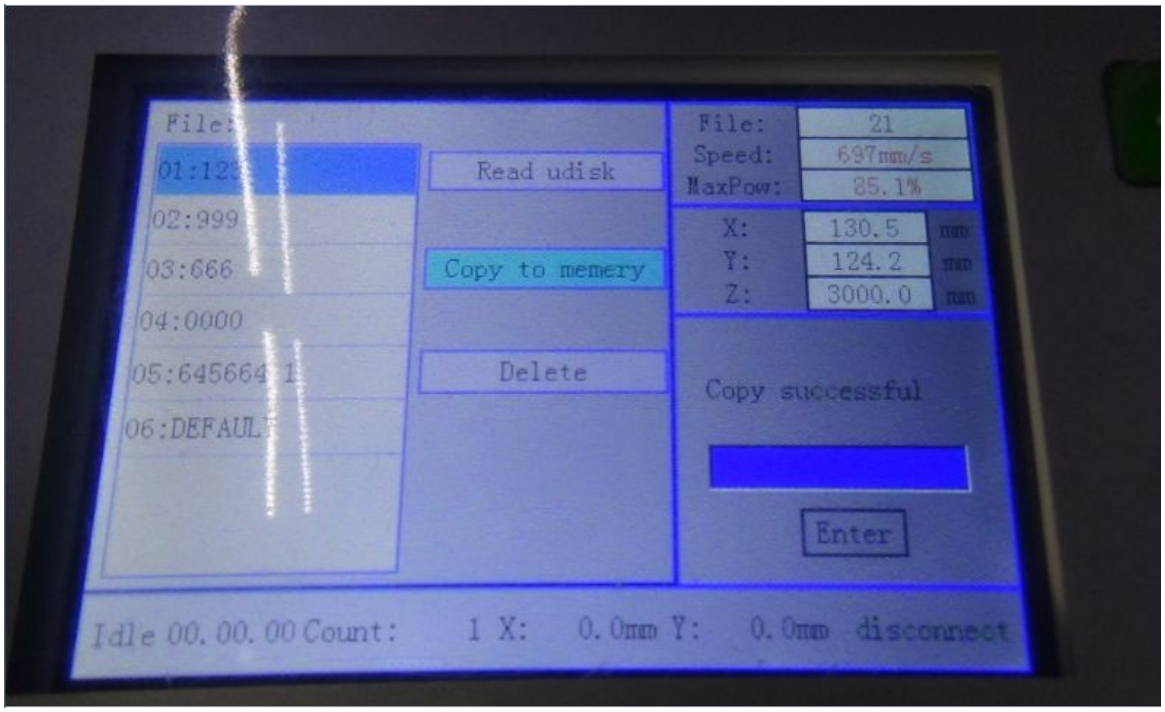
Insert U disk to machine interface

Click"read UDISK file", then click "confirm" button

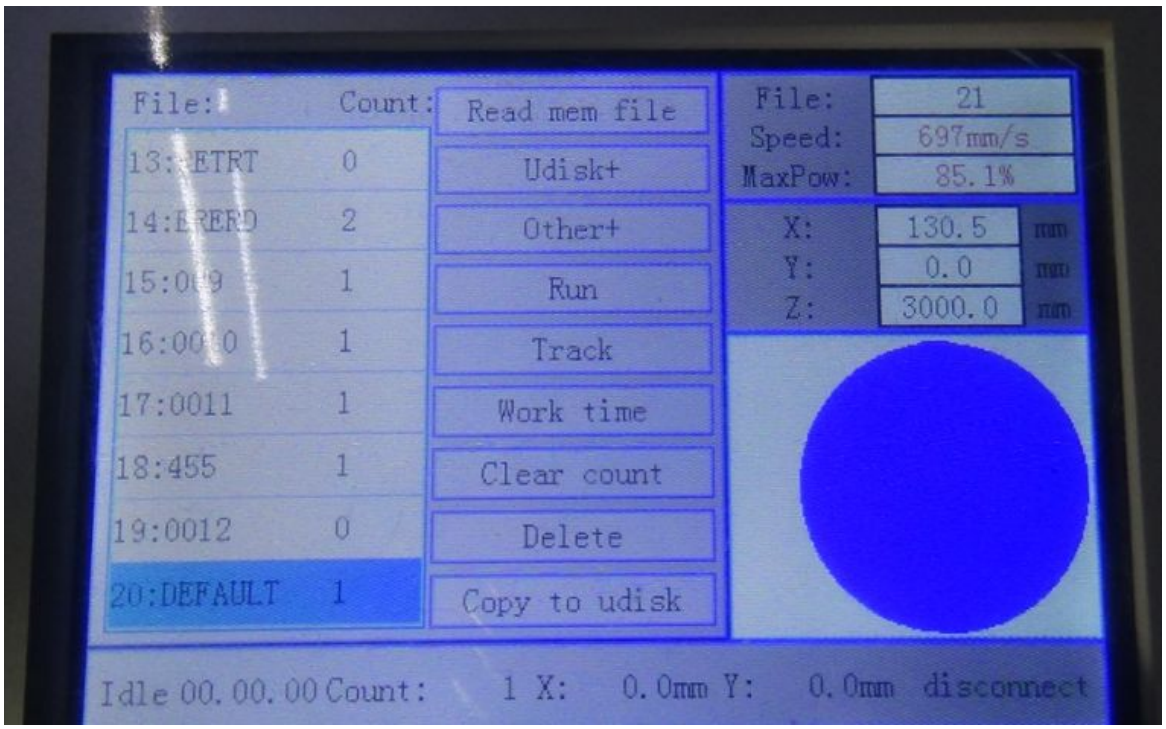


Then, click"copy to memory", click"confirm"button

As the below picture shows (Attention: if one name of file in memory is same as the name of UDISK, copy failed. Change the name is ok)



Now find the copy file in memory, then start to process.



VI Equipment's maintenance

6.1 Daily maintenance

Equipment's working environment could not be too severe. If temperature is higher than 30℃， lower than 18℃， and if there is too much dust, with severe air pollution, then the machine could be badly damaged, failure rate goes up steadily. Various electric parts are easily damaged under wet environment.

6.2 Water tank's change and clean (suggest to change water and clean water tank per week)

Attention:
before machine starts to work, be sure that laser tube is full of water and without bubble. Recycling water's quality and temperature could affect laser tube's lifespan directly. We suggest to use pure water, and control the water under 35℃. If it's higher than 35, then need to change recycling water, or add ice to water (we suggest customers choose water chiller, or use two water tanks)

Clean water tank: firstly, switch off electric power, take off the water-inlet water tube to let water inside laser tube go to water tank. Open water tank, take out water pump, clean dirt on it. After cleaning water tank, changing new recycling water, put back the water pump. Connecting water tube on pump to water-inlet gate, and other joints. Connect electric power to water pump separately for 2-3 minutes(make laser tube be full of recycling water).

6.3 Exhaust fan’s clean

After long term's using of exhaust fan, it would accumulate much solid dust, which could make exhaust fan produce big noise and it is also not good for eliminating wasted air and smell. When it occurs that exhaust fan is not good enough to suck and eliminate air, firstly close the power, take off air-in and out tubes, remove dust inside, bottom up the exhaust fan, roll fan blades inside until it's totally cleaned. Finally, set up the exhaust fan.

6.4 Reflectors' and lens' clean

(suggest to clean before working everyday, equipment should be under power off situation)

There are 3 reflectors and 1 lens on Laser equipment(the first reflector is set on emission exit of laser tube, mean on the laser equipment's upper-left side, the second reflector is on the left side of transom, the third one is on the top side of laser head, lens is inside in lens cone), laser beam is transmitted through these reflectors and lens. It's easily for mirrors to smear dust and other dirt, which could result in laser's loss or mirrors' damage. The first and second reflector needn't have to be taken off when do cleaning. Take lens wiping paper with leaner to wipe reflectors from center to edge. The third one and lens need to take off from lens frame and clean them with same way, and put back after finishing.
Attention:①wipe the reflectors and lens softly, do not damage their surface coating film;②handle gently during wiping to avoid falling down;③the convexity side must be

arranged downward.

6.5 Guide rail's clean

(suggest clean it every half a month, power off operation)

As key parts, guide rail and straight line axis play role of guiding and supporting. In order to guarantee higher processing precision, higher requirement for guide rail's guiding accuracy and straight line axis' moving stability. During processing, the material processed can produce much corrosive dust and smog. After long term acceleration of these dust and smog on guide rail and straight line axis, equipment's working precision can be affected and can also form corrosive spot on them, thus shorten machine's lifespan. For maintaining equipment's normal and stable work, make sure the products' processing quality, please do well in guide rail and straight line axis' daily maintenance.
Attention:For cleaning guide rail, please prepare dry cotton cloth, lubricating oil(sewing machine oil can be adopted)

6.6 Light path's examination

Laser engraving equipment's optical system consists of reflectors' reflection and lens' focusing. In light path, lens doesn't exist excursion, however, the three reflectors are fixed through machinery, so possibility for excursion can be big. Generally speaking, the light path could be skewing, we suggest users to test it before everyday working.

VII CO2 glass laser tube's precautions for use

7.1 Before using, please connect the water pump/chiller first, adopts lower side in and higher side out principle, adjust water-outlet tube's position, guarantee cooling water is full of cooling tube. There should be not any bubble inside the laser tube, then power on.Requirement: cooling water should adopt software(distilled water or pure water), and frequently pay attention to cooling water's temperature, should be within 12-30℃. It should not be too low or too high, especially in summer. Once water's temperature is too high, should change cooling water in time or stop the equipment for some time. Cold area should guarantee water should not be freeze, especially when machine stops working, cooling water must not stay inside in laser tube in case there is any frozen cooling water to cause explosion.(Specially attention: users who use AC, cooling water tank must connect with ground)

7.2 The two supporting points should be on the 1/4 point on the laser tube, and guarantee water-flow at the level of 2L-4L per minute, or the effect is not good, which could lead to mode hopping, light spot becomes several, thus result in power going down. Cooling water's water-outlet tube must be submerged in water, or there will occur laser tube is not filled totally with water when power off and on.

7.3 Pay attention to protect laser tube's exit side, to avoid smog sputtering on the exit

surface and pollute the it, or power will be lower down. The mirror on exit side can not be cleaned with cotton ball and other tools, or it's power will be severe affected. Correct methods for cleaning this mirror:

1) once the mirror is polluted, do not open the laser tube
2) obliquely blow mirror's surface
3) use pure alcohol compressed by cylinder needle to spray the mirror surface
4) open the laser after alcohol volatilizing totally
5) if above methods have no effects, professional stuff need to use cotton to clean it's surface from center to edge vertically with cotton ball dipped in alcohol. The best way is to protect mirror from pollution. Special attention: don't use ACETONE to clean the mirror.

7.4 During the debugging, through adjusting laser tube's supporting position or rotating laser tube's direction to reach the best effect, then fix the laser tube.

7.5 Must pay attention: avoid dust acceleration on high voltage electrode, keep dry. Be away from metals as much as possible in case any fire hazard. In order to protect high voltage sheath from dust, please entangle plastic wrap on it.

7.6 During using of laser tube, there should be no scale inside laser tube in case to cause water plugging, thus affect cooling effect. Once there is any scale, use 20% diluted hydroelectric acid clean it.

7.7 Laser tube belongs to glass products, fragile. Avoid local stress when arranging laser tube.

7.8 To use laser tube properly, save laser power. Laser tube's best power is 80% of rated power

VIII Common Breakdown Maintenance

Symptoms	Problem analysis	Processing method
No laser beam during working	1.Firstly, check if laser tube itself works normally(the exit of laser),if it works normally	Test if mirrors are damaged or not, light path is skewing.
	2.The exit of laser tube has no laser, then check if water recycling works normally(see if water flow is smoothly), if no water flow or it's not smoothly	clean water pump, dredge water tube
	3.Water recycles normally, then check if laser power guiding light is bright or not, fan rotates or not, if not	Laser power goes bad, need to change laser power

	4.Press "laser", if there is no light	Laser power or laser tube has problem
	5.If there is light	Water protector goes bad, need to change
	6.If short circuit water protector, there is still no light	Main board or wiring board has problem, need to change
Scanning becomes shallow	1.Check working light's intensity and speed, if speed is too fast, intensity is small, water temperature is too high	Enlarge light's intensity, lower down speed, change recycling water
	2.Check depth of crisperding, and see if it's normal, if it's normal,	Increasing graphics resolution or scanning precision
	3.Crisperding is still shallow, or both occasionally,	Check if Mirrors are dirty or damaged, light path is skewing
	4.Connect ampere meter, if it can reach 20MA, but the depth is still shallow	Laser tube aging, need to change laser tube
Light is not stable, sometimes has, sometimes does not	1.Check if the mirrors are too dirty or if they are damaged, light path is skewing or not	Clean or change mirrors, adjusting light path
	2.Mirrors' light path is normal, then check if water recycling is normal or not, if it is not normal,	Clean or change water pump, dredge water tube
	3.Water cycling is normal, it's may water protector's problem	Change water protector
	4.If problems remain, main board, laser power, laser tube, all possible to lead to this phenomenon	Change all part above alternately, and check the reason
Output patterns, but the size is not right	1. Check "Coreldraw" and see if Graph Plotter unit is 1016 when it outputs PLT	1016Change graph plotter's unit to 1016
	2.See if resolution ratio is right or not	Recount resolution ratio
Equipment reset abnormal	1.The direction is right when reset, but reaches the vertex,the transom can not stop(if new machine, please check main board's parameter first, if it's right)	Check if it's stuck during moving, main board, tool sensor problem, change
	2.Transom resets normally, laser head doesn't move, maybe tensioner get stuck or motor axis break, parameter is wrong	Change tensioner or small motor, modify parameter, check motor line's clip
	3.Contrary to transom's movement, and strike the side	Main board parameter is wrong. Stop the machine and modify main board parameter. Re-down load configuration

	4.Drivers or Motors' problem	Change drivers or motors
Equipment stop engraving, skip engraving or disordered engraving	1.Check equipment's grounding situation, and check grounding line is standard or not(resistance to ground should not be bigger than 5Ω)	Modify grounding line to reach standard requirement.
	2.Check if the original patten has mistake, such as patten is cross, leaking, or lack something	Correct mistakes in patterns
	3.If other patterns don't have this problem, only some one has such problem	Patterns and date mismanage, need to make working sketch again
	4.Problem remains	Maybe it's computer's serial port, engraver's main board's problem

Postscript

The specification of the final interpretation belongs to Bodor. we will do our utmost to ensure the accuracy of the contents of this manual. Because the editor is limited, there may be something wrong or omissions. We all consequences caused thereby does not assume any form of liability. We bodor does not undertake direct, indirect, special, incidental or consequential loss or liability due to the use of the manual or the product improperly caused. Urge readers and colleagues criticized the correction.

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