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TONGXING TECHNOLOGY DEVELOPMENT CO., LTD

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# Laser Machine

# Manual

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
## Laser software

### 1. Software introduction:

With **CorelDraw** software, this software can make the design of laser process graph more simple and quicker; With laser without computer controlling system, this software can finish the movement control of kinds of laser cutting, laser scan, laser engraving.

With **CorelDraw** software, this software can support **CorelDraw 12**、**CorelDraw 13** Chinese and English Edition **Software**.

### 2. Software install:

- 1) Install **CorelDraw** software;
- 2) Open laser software setup CD, open **ZHBCAD2DSetup.exe** file, install **CorelDraw** plug-in, click **"OK"** button;
- 3) Open **CorelDraw** software, choose **"Tools"** menu, click **"Options"**, appears **Options** dialog box; click menu and choose **Macros command**, then choose the third **"Module1.zhb"** in **Macros command** (Figure 1); Copy **"Module1.zhb"** to the left side of Tools in **CorelDraw** software, the (Figure 2), click **"OK"** button; then a  laser process icon is created in **CorelDraw**.

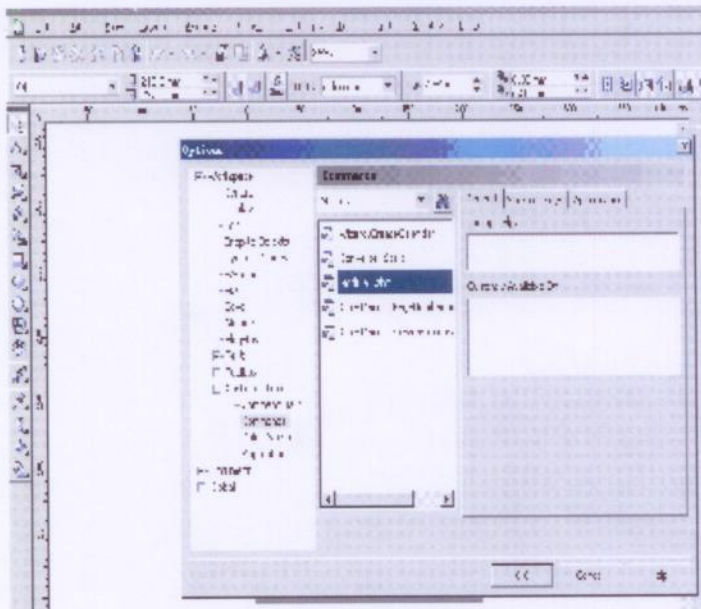


Figure 1

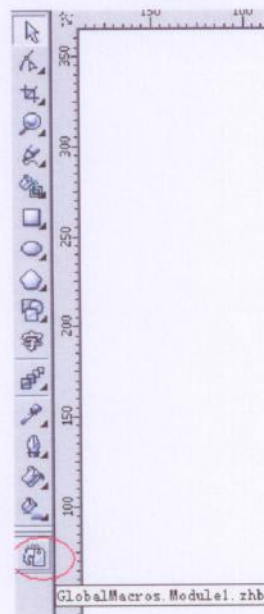



Figure 2

- 4) After add the Laser process button, Click  icon in **CorelDraw** can open the laser process window (Figure 3).



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You can choose language in here.

Figure 3

### 3. Software Use:

In **CorelDraw** software, the sweeping method of vector graph or character sweeping are basic divided into edge sweeping and area sweeping. In this software, we identify the edge sweeping as cutting, while area sweeping as Scanning; Processed BMP format image belongs to sweeping.

#### (1) Image Sweeping

##### 1) Scan sweeping

After drawn of the vector graph or characters in **CorelDraw** software, then select the target graph or characters, make the graph and the characters **Inner sweeping with black** (Figure 4); make the graph or characters **Edge sweeping with no color**; After this the inner sweeping of graph or characters is finished, the software identify it as scanning process. Process effect shows as Figure 4.

##### 2) Cutting sweeping:

Select the target vector graph or characters, make it **Inner No Sweeping with color**, then **edge is black**, and **width of edge is default**; after this only the outside square of graph or characters is been swept, the software identify it as cutting processing. (Figure 5).

##### 3) Male Sweeping:

After drawn the graph and the outside square of the graph, then select the two, unit them as one by the **Combine** command in the **Arrange** menu, then sweep the graph with black, setup the edge as none color. (Figure 6)

##### 4) Line sweeping:

When scanning processing and cutting processing of line, our suggestion is you can choose rectangle with small width to replace, because of the line is not closed.



Figure 4



Figure 5




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Figure 6


#### 5) Graph scan processing:

In **CorelDraw** or **PhotoShop** software, the processed file must be **Black and White (1-bit)**, after import file you can transmit the scan result by CorelDraw software. For the file is sweep graph, you can click the  button and setup the laser process parameters after imported.

#### (2) Laser process track output setup:

In **CorelDraw** software, after sweeping then select the graph, click  then the window



appears, click **LaserProcess** button and enter **Laser process attribute** window (Figure 7), then select **Laser Fill** or **Laser Cut**, re-click the left button of the mouse to set the laser process parameters, click **Path** to enter **track output** page (Figure 8), click  to save the process track as a file, then save it in U flash disk; (When the laser machine is working, insert the U flash disk, then read the file and begin to process). In **Laser process attribute** process track can output the selected one, the unselected track can't be outputted, also you can output multi track to one file.

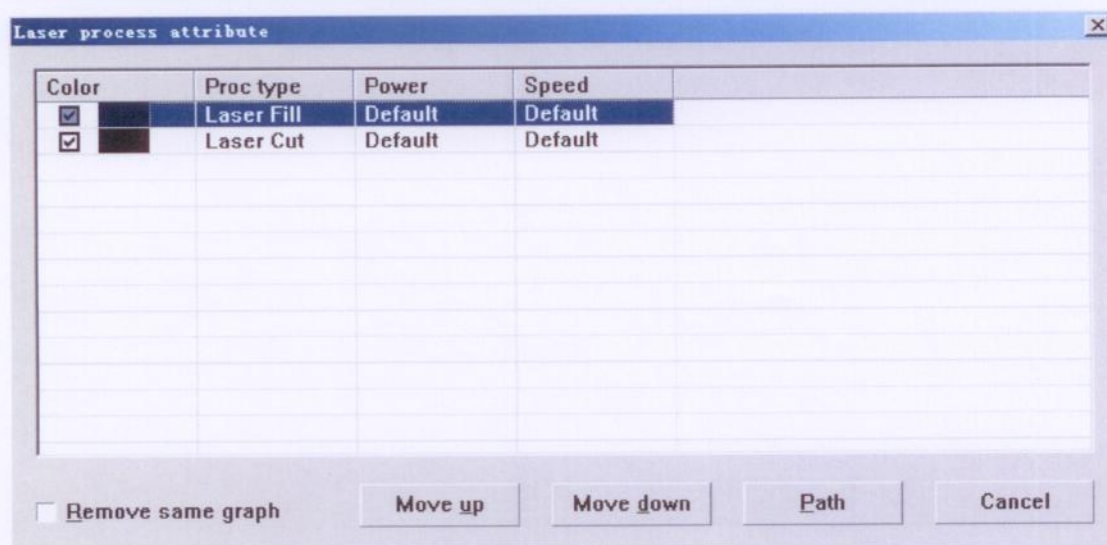


图 7

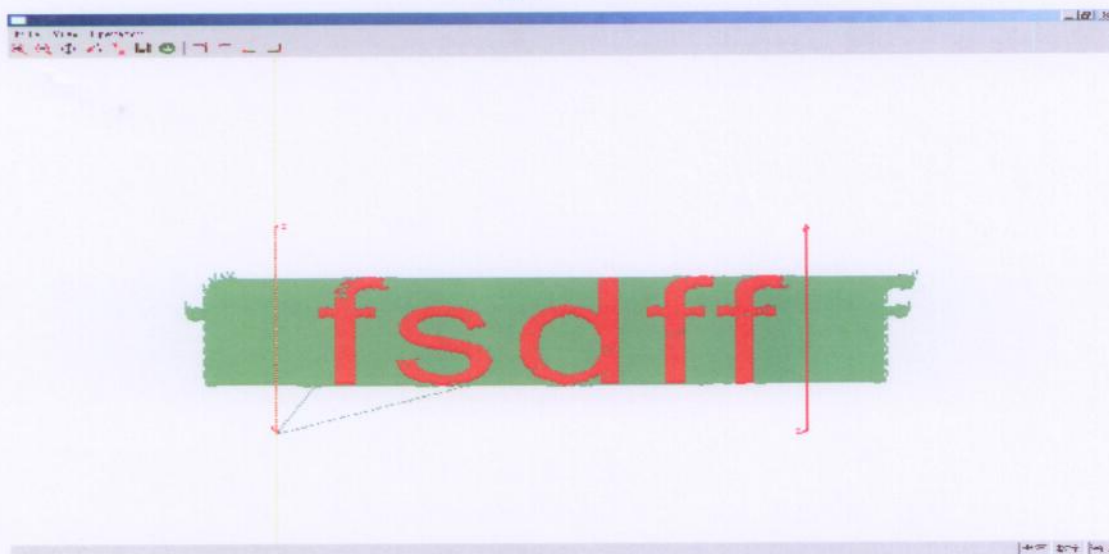


图 8

#### 4. Process Parameters:

(1): Laser sweeping parameters:

**Laser tube power:** Laser software can change the output power by the percent, the user can set it up according to requested material and the sweeping speed.

Sweeping Speed: laser sweeping processing, unit: mm/min.

Sweeping interspaces: Sweeping interspaces between two columns, unit:mm.

Sweeping method: Signal sweeping, bilateral sweeping. Signal sweeping can't be effected by the offset value of sweeping interspaces; While bilateral sweeping, the user can change the offset value to get a good process.

Sweeping acceleration: Unit:  $\text{mm/s}^2$ . Default value is  $13500\text{mm/s}^2$ , Max Value is  $30000\text{mm/s}^2$





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Acceleration Space: Laser Sweeping tool movement, unit: **mm**, default value is 15 **mm** .

Acceleration Compensate Space: In order to get a good process effect for counteracting error which caused by machine moving, it needs to set the offset sometimes, especially for bilateral sweeping. Laser cutting or single sweeping get nothing to do with this value. Unit: **mm**.

(2): **Laser cutting parameters**

Laser power: Laser tube output power when cutting.

Cut Speed: Tool movement speed when cutting, Unit: **mm/min**.

Liner Acceleration: The ability of increase and decrease speed with singal motor when cutting, unit **mm/s<sup>2</sup>** .

Curve Acceleration: The ability of increase and decrease speed with multi motores when cutting, unit: **mm/s<sup>2</sup>** ,

**Remark:**

If sweeping speed is **V**, unit: **mm/s** ; scan acceleration is **a** ; acceleration space is **S**,  $V^2 = 2 * a * S$  .

**5. CorelDraw Software common menu commend**

Command	Menu	Shortcut Button
Property Processor	Click right button of the mouse to select the targe graph	<b>ALT + ENTER</b>
Combination	Arrange→Combination	<b>CTRL + L</b>
Graph location	Arrange→Change→Location	<b>ALT + F7</b>
Graph Size	Arrange→Change→Size	<b>ALT + F10</b>

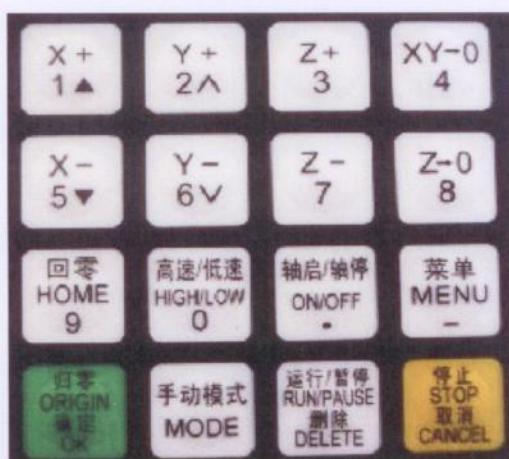


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







## 6. Machine Use

### (1) Button Function Introduction

Controlling panel button as follow picture:



Button function is as follows:

Button	Function
	Positive movement of Xaxis, Menu upward , figure 1 inputting
	Positive movement of Y axis, accelerate process speed, figure 2 inputting, different property selecting in Menu
	Positive movement of Z axis, figure 3 inputting, rise spindle speed in process
	Working origin of X axis and Y axis setting, figure 4 inputting
	Negative movement of X axis; Menu downward, figure 5 inputting
	Negative movement of Y axis; slowdown process speed; figure 6 inputting different property selecting in Menu
	Negative movement of Z axis, figure 7 inputting, spindle speed adjusting in process
	Z axis origin setting ; figure 8 inputting
	Axes home to machine tool origin, figure 9 inputting

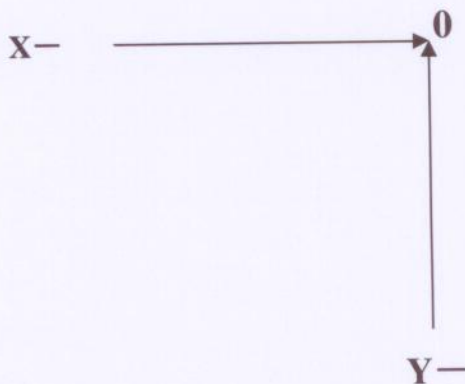




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高速/低速 HIGH/LOW 0	Manual moving mode, high speed or low speed selection, figure 0 inputting
启动/停止 ON/OFF	Laser startup/stop, decimal point inputting
菜单 MENU	Menu setting entering, negative symbol inputting, multi process state checking,
归零 ORIGINS 确定 OK	All axes go working origin: confirm of motions /inputting/operating
手动模式 MODE	Manual move, continue, step and distance modes selection
运行/暂停 RUN/PAUSE 删除 DELETE	Cut process running/pause/inputted words delete
停止 STOP 取消 CANCEL	High/low speed parameter adjust, Cut process stop/selections, inputting and operating cancel

(2) Tool axis:



(3) File processing

File Processing is the system processes files from U flash disk and inne files according to dictate. Before it,you must set up the correct tool and system parameters.

File processing step:

- 1) Working Origin When the system is in the handle movement state,move X、Y axis to

the processed position,press XY-0  
4 button to ensure the origin of X、Y axis.

- 2) Select File After setting the work origin, insert U flash disk with processedfile, press

运行/暂停  
RUN/PAUSE  
删除  
DELETE

button, it will appears a dialogue box:



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








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Choose file:

U Disk file

Inner file

Press  and  button, select "U Disk file",  button, enter the list type, it will appears the former three file names, press  and  button to move cursor, press  and  button to

move cursor with two lines, press  button to exit.



3) File processing parameters setup Find the target file and press



button, user must input file process parameters, including Process speed、Travel Speed、Cutting Power、Turn power、sweep speed、sweep power。

Proc Spd	1000.00
Trvl Spd	6000.00
Cut Pwr	100
Turn Pwr	99
SweepSpd	20000
SweepPwr	22
LA Delay	1



Proc Spd---Process Speed  
Trvl Spd---Travel Speed  
Cut Pwr---Cutting Power  
Turn Pwr---Turn Power  
SweepSpd---Sweep Speed  
SweepPwr---Sweep Power  
LA Delay---Laser Delay

Press  and  button to move cursor and set up, press



button to setup the value, after input value, press



button to confirm, then press  and  button to move




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cursor for choosing next one. Then press  button to confirm, the tool will begin to process.

The process parameters must be setted according to materials and the request.

#### (4) System Update 系统升级


If it needn' t to update, please don' t to update! Improper update will damage the system and make it not work, The tool cann' t work naturally!


If you want to update the system, the user must connect with our engineers. The update file must be offered by us, save in the U flash disk, then insert the U flash disk to controller, file name is \*.ZUP.

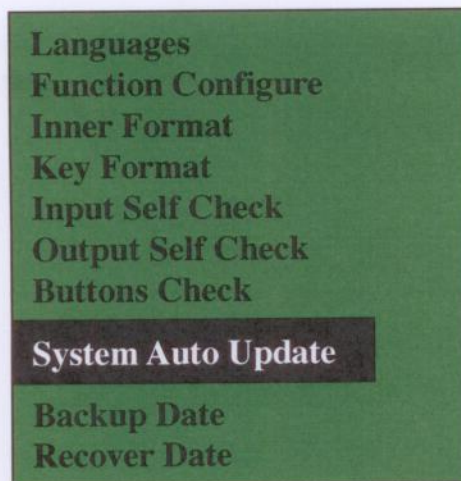
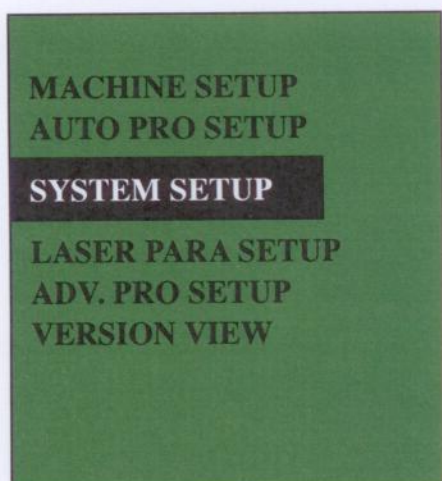
1. Press  button and enter tool menu (Figure 1), then

press  and  button, move cursor to choose "SYSTEM

SETUP", press  button and enter (Figure 2), then press 

and  button, move cursor and choose "System Auto Update",

press  button, it will appears like Figure 3.





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图 1

图 2




图 3


Choose U flash disk file list, press  button and enter, the files from U flash disk will appear in the screen, move cursor to update file(\*.zup), press  button and enter, the update is beginning, the update information will appear in

the screen, user must press  键 button, move cursor to read the all information, then press  button, the system will auto update, a message will appears in the screen, at last press  button to confirm the update is finished successfully.

After the successful update, the system need to setup some parameters as follows:




In menu :  button is enter "select" menu and confirm



and  button is move up and down to choose menu








button is exit the selected menu and cancel




1) Press  button and enter the menu, press  and  button





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to choose "SYSTEM SETUP", press  button, select "Languages",  
press  button, then press  and  button to choose "中文"  
or "English", press  button to confirm.

2) In "SYSTEM SETUP" menu, press  and  button to choose "Fun  
Config", press  button, informations will appear as follows:

Do you need save PowerOFF?OK to  
choose and others deny

Please press  button

Languages  
中文  
English

Press  button after choosing

Set Home switch

X Axis: Enable  
Y Axis: Enable  
Z Axis: Disabl


Please press  button

GoHome types:

Info GoHome

Auto GoHome

Don't GoHome

Select "Info GoHome", press  button

Save Z adjusted value or not?OK  
button saves and others deny

Press  button




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Is there Emergent Stop Sensor?

Press  button

Is there Hard limit sensors?

Press  button

It is in traditional manual mode?  
Press OK for traditional mode

Press  button


T change setup

Toolcove Disable


Dustcove Disable

Press  button

Pressing any button to  
restart.....

Press  button

Goto Home ?

Press  button, the laser head will move  
to tool origin, then it will appear as follows  
(Follow Figure) :

1X 0.000 MANL

LOFF






1Y 0.000 HIGH

Cont3inuuous






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3) Press  button and enter the menu, press  and  button and choose "MACHINE SETUP", press  button, select "Pulse Equiv", press  button and enter, it will display:



Equival pulse/mm  
X Axis: 160.00  
Y Axis: 160.00  
Z Axis: 160.00

Please change "160.00" of "X Axis" to "126.00", press  button to confirm; then change "160.00" of "Y Axis" to "126.00", press  button to confirm; at last change "160.00" of "Z Axis" to "126.00", press  button to confirm.

4) Select "Table Size" in "MACHINE SETUP", press  button and enter the follow page:

Machine Size, mm  
X Axis : 1000.00  
Y Axis : 1000.00  
Z Axis : 1000.00

### Setup according to the tool size






5) Select "Home Setup" in "MACHINE SETUP", press  button, select "Home Direction", press  button and enter the follow page:

Set Home Direction  
X Axis : -Dir  
Y Axis : -Dir  
Z Axis : +Dir



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Please change “-Dir” to “+Dir” in X Axis and Y Axis, press  button  
and  button to amend, press  and  button to select, at  
last press  button to confirm. Like the follow picture:

**Set Home Direction**

X Axis : +Dir

Y Axis : +Dir

Z Axis : +Dir

After Setup all parameters successfully, the tool can process.



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## Guarantee Card

Machine Name:	TONGXING TECHNOLOGY DEVELOPMENT CO., LTD
Model:	
Number:	
Buy Date:	
Saler Name:	
Saler Address:	
Saler Telephone:	
Saler Seal:	

Remark:

1. The card must be filled in carefully, it is valid with the saler seal.
2. The guarantee is one year, from the day of buy, not including the easy-damage spare parts.
3. We offer maintenance service for life.



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## Operation Manual of Laser Machine

Pay attention to the following pictures

1. First, connect fuselage rear "water in" to "water out" in the chilling machine for laser engraver. Secondly, connect fuselage rear "water out" to "back water" in chilling machine for laser engraver. Thirdly, connect fuselage rear "air in" to "air pump". Fourthly, through ventilation tube (3) connect ventilation machine (4) and ventilation export of laser engraver.



(1)

Picture (2) are all the sockets for the air pump and the chilling machine behind the laser engraver. You should connect them correctly.



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(2) All the sockets behind the machine for air pump and the chilling machine.



(3) Air tube

(4) Ventilation machine

2. Supply power, following picture (5) is the correct state. Please notice that you should open "general power", "driver power" and "water pump" power first. (5)



(5)



(6)



3. In order to ensure the chilling machine operate normally ,after step2,please open "laser power", "air power", and "ventilating power".

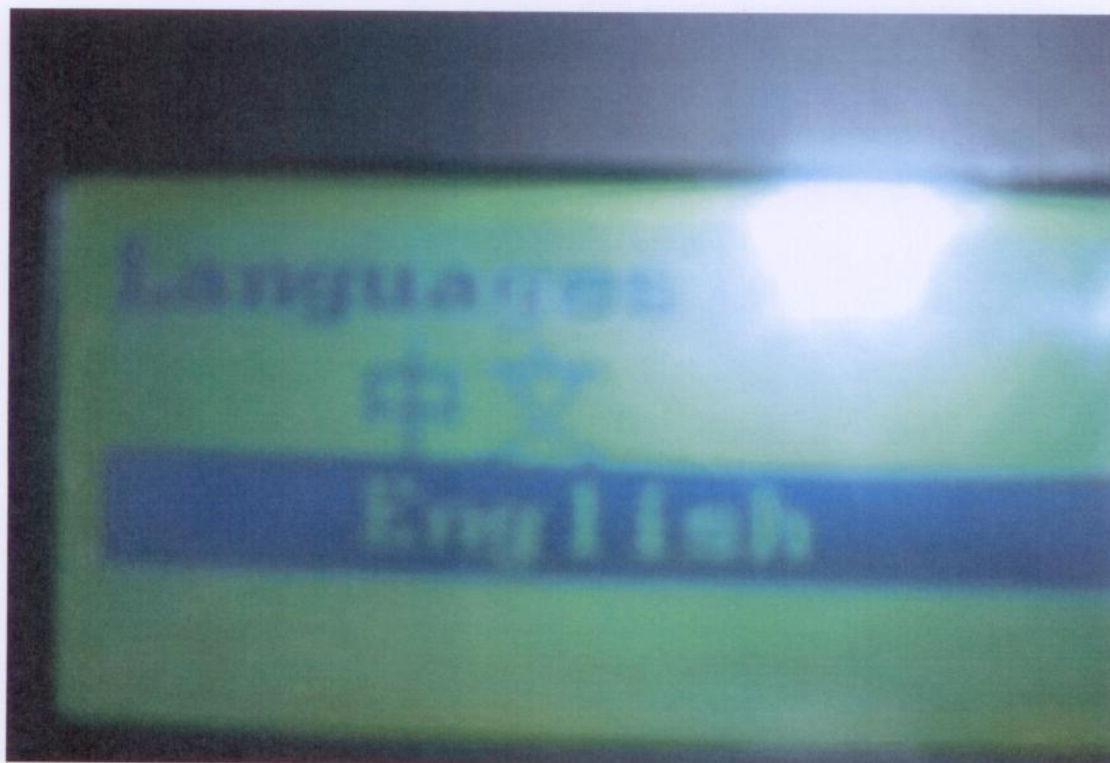




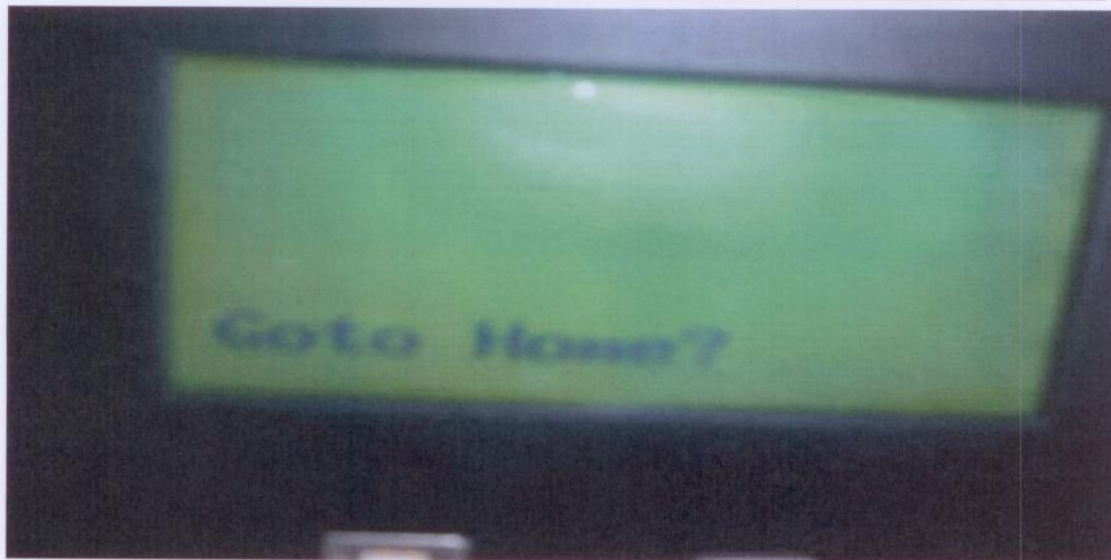
(7)

4. Please note that before operating the machine, you must change the language into English,






first press  button to chose "system parameter", then press  to confirm, the screen will show as follow(8) , After opening those power, the control handle will show "go to home" (9).

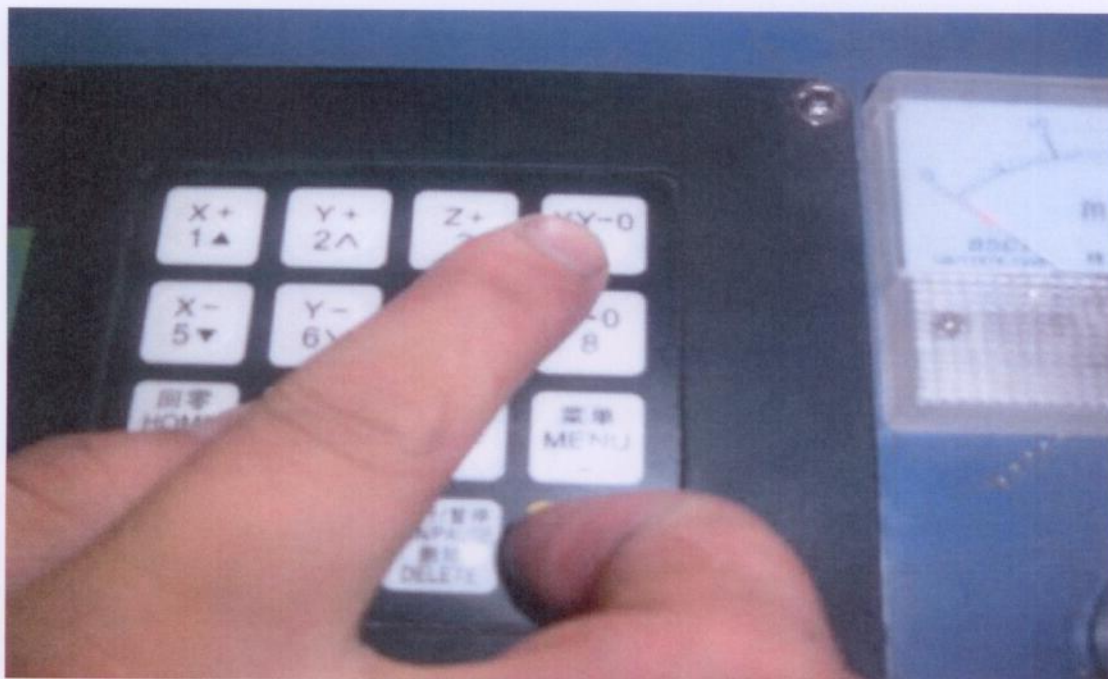


(8)




(9)

5. press  to confirm, you can move , , ,  to change X Y axis direction, then clear X Y to zero as following picture.



(10)

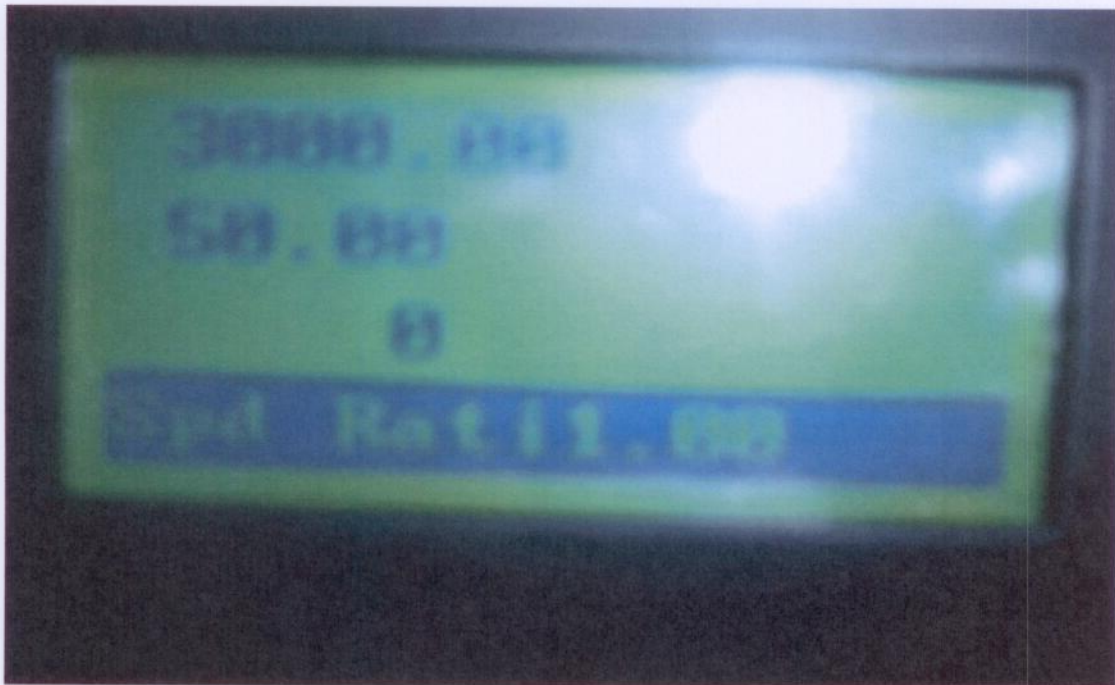
6. After finishing the file in computer, insert the USB Flash Disk, then press  to choose the file list in the USB Flash disk. Through the direction key to choose the target file





(11)

7. After that, you need to change the parameter at your request. If you want to engrave you must change engraving speed, engraving power. But please pay attention: the speed ratio is 1, so you need not to change it.



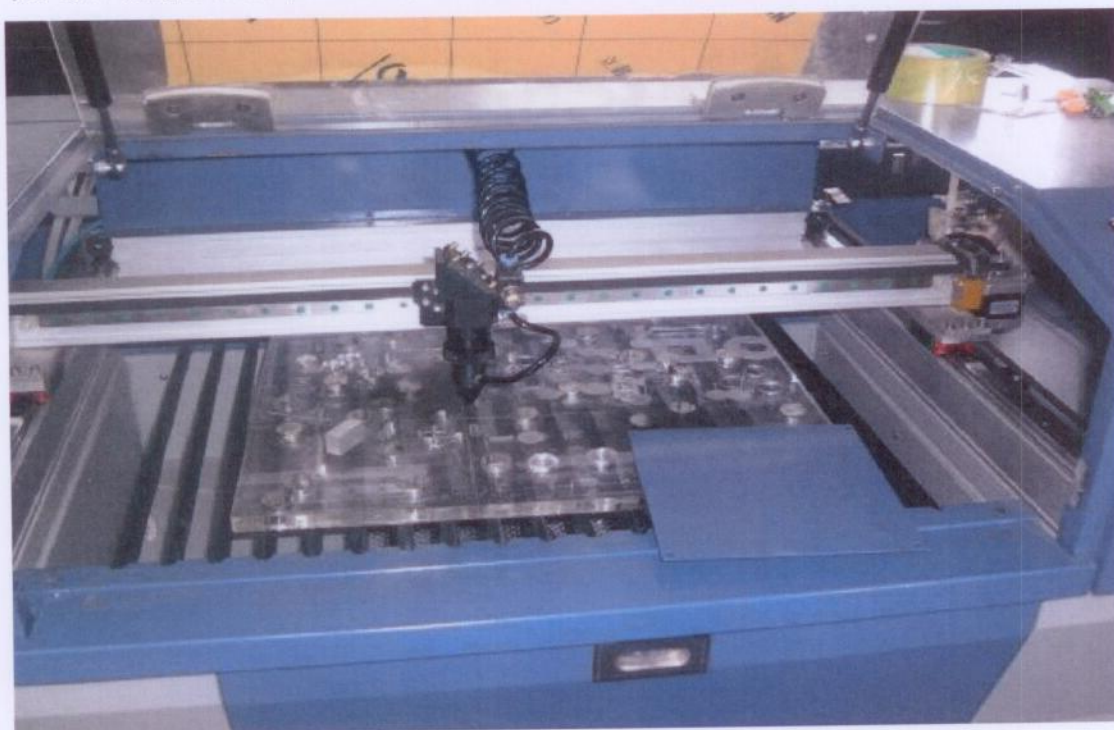
(12)

8. If you want to cut some material, you need to change cutting speed, cutting power and corner power. But the corner power must be smaller than cutting power by 1, as showing in the following picture. For example, if the corner power is 99, then the cutting power is 100.



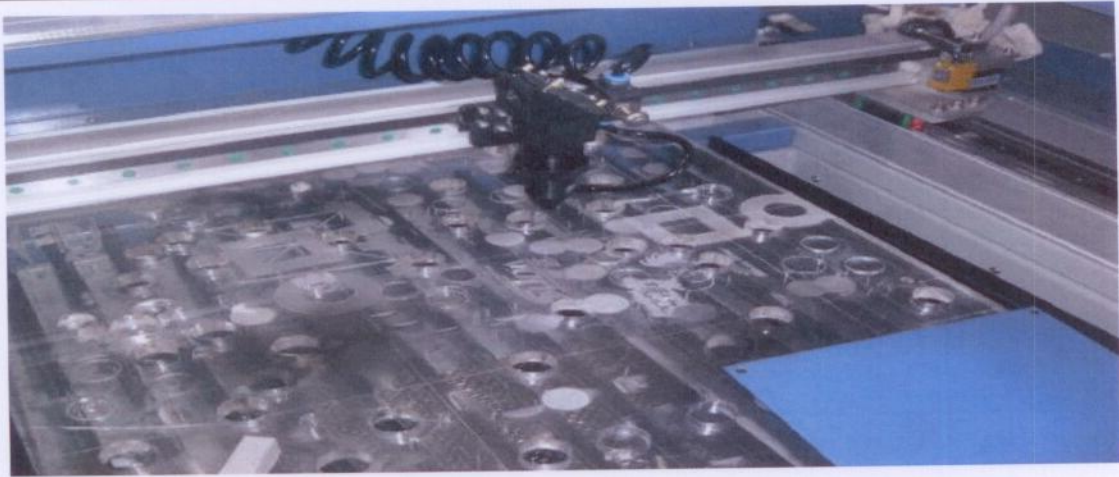
(13)

9. After you have changed these parameters, the machine will start working as following picture.



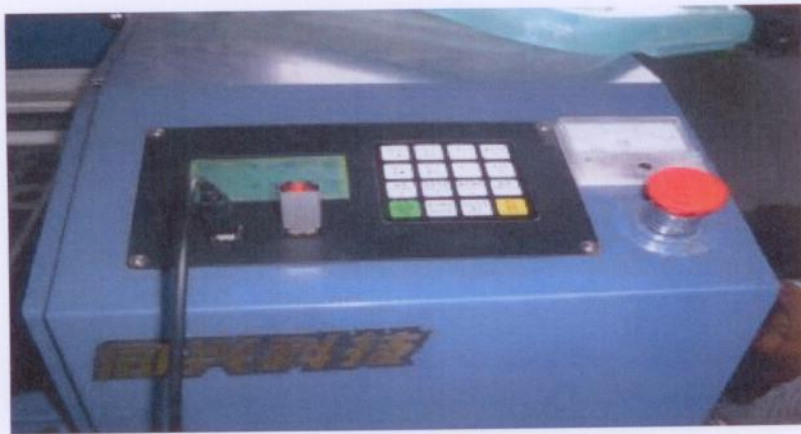
(14)





(15)

10. There are 2 ways to transmit, one is as the USB Flash disk transmitting as the above introduced, the other is the USB data cable as follow.

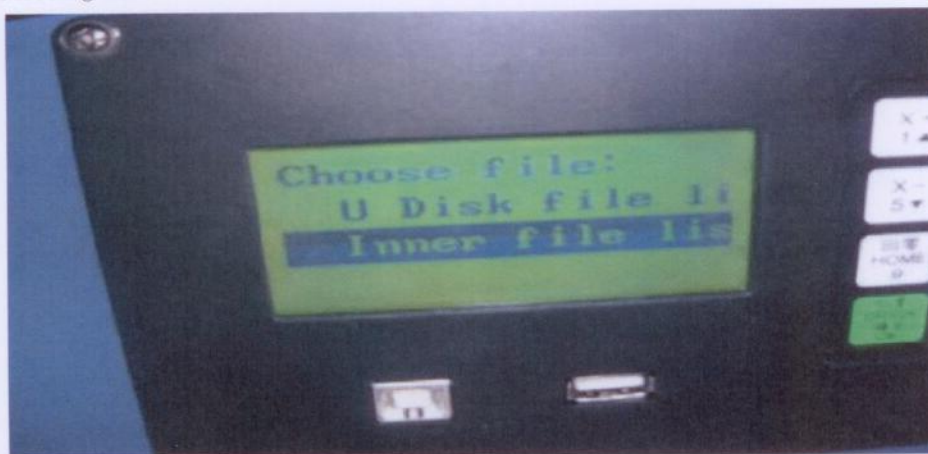


(16)



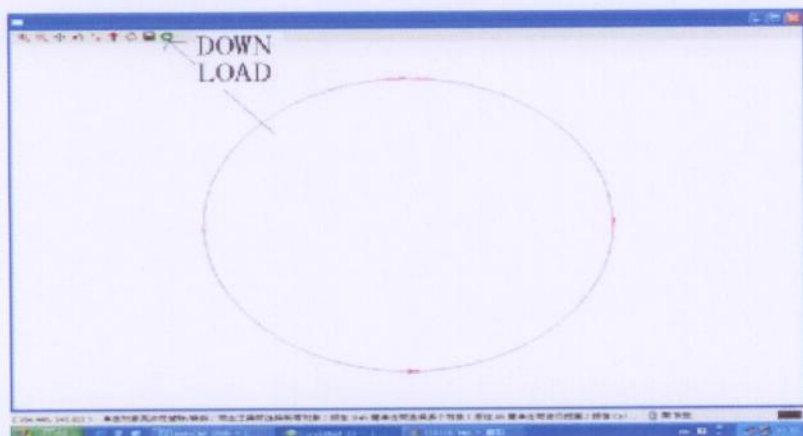
(17)

11. Use the USB data cable to connect the computer and machine, and then save the file from computer to the controller handle. Then chose "inner file", after that chose the target file, you can change the parameter at your request. And then the following steps are the same as the USB Flash disk transmitting mode



(18)

The falling pictures show how to save the file you need into the control handle from your computer.  
Take the circle for example



- (19) Download the file you need by USB data cable from your computer.



- (20) Use USB data cable to save the file into the control handle.