Beijing ChinaSigns Information Co., Ltd

LCM-BY-Z Series Laser engraving and cutting machine
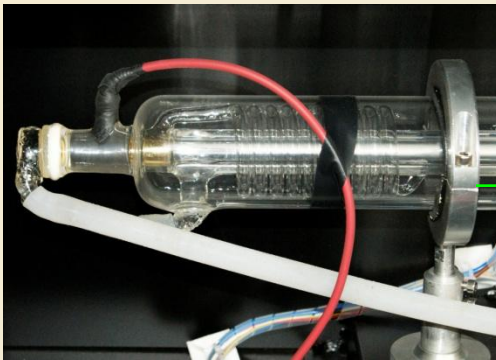
User's Manual

Exit

Contents

Assembly of the laser tube

There are totally four steps to assemble the laser tube.

1. Open the two upper semi-rings on the circular support and put the laser tube on the round support by making the light exit, or the negative pole, towards the No.1 reflector, as shown below.


Positive pole
(high tension end)

Circular
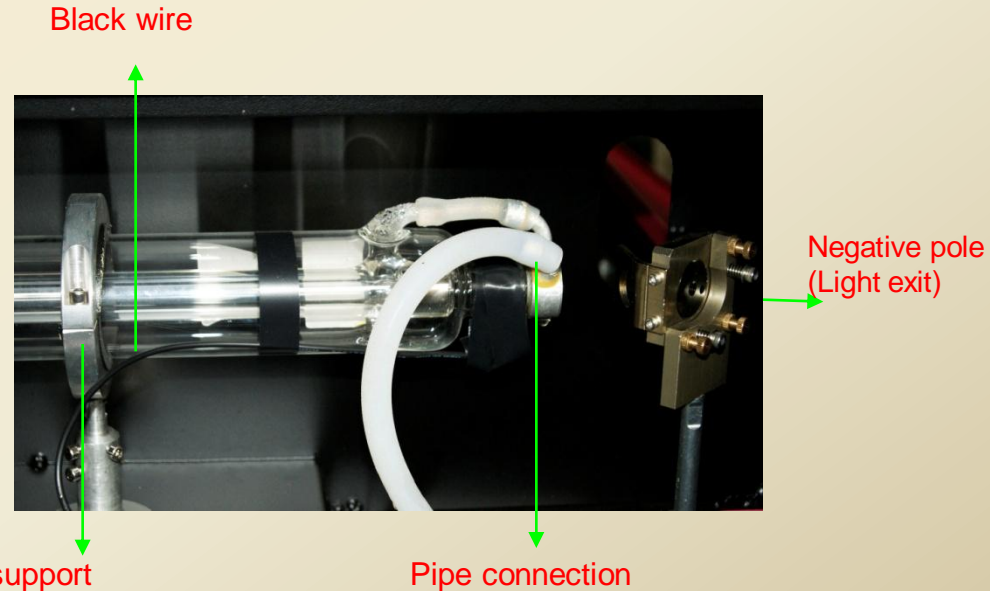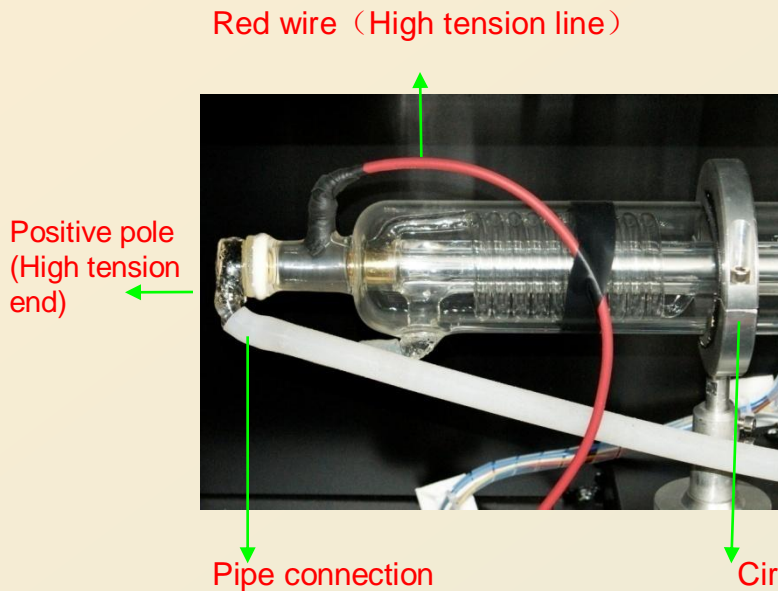Support

Negative pole
（light exit）

2. Electric wire connection——Connect the electric wires on both sides. Connect the red wire to the positive pole and the black wire to the negative pole. ;

3. Water pipe connection——Connect the water tubes on both sides. （Keep the water inlet of the laser tube under the laser tube.）;

4. Finally, assemble the two upper semi-rings on the circular support. Do not overtighten, otherwise the laser tube may be damaged.

Red wire（High tension line）

Black wire

Positive pole
(High tension
end)

Negative pole
(Light exit)

Pipe connection

Circular support
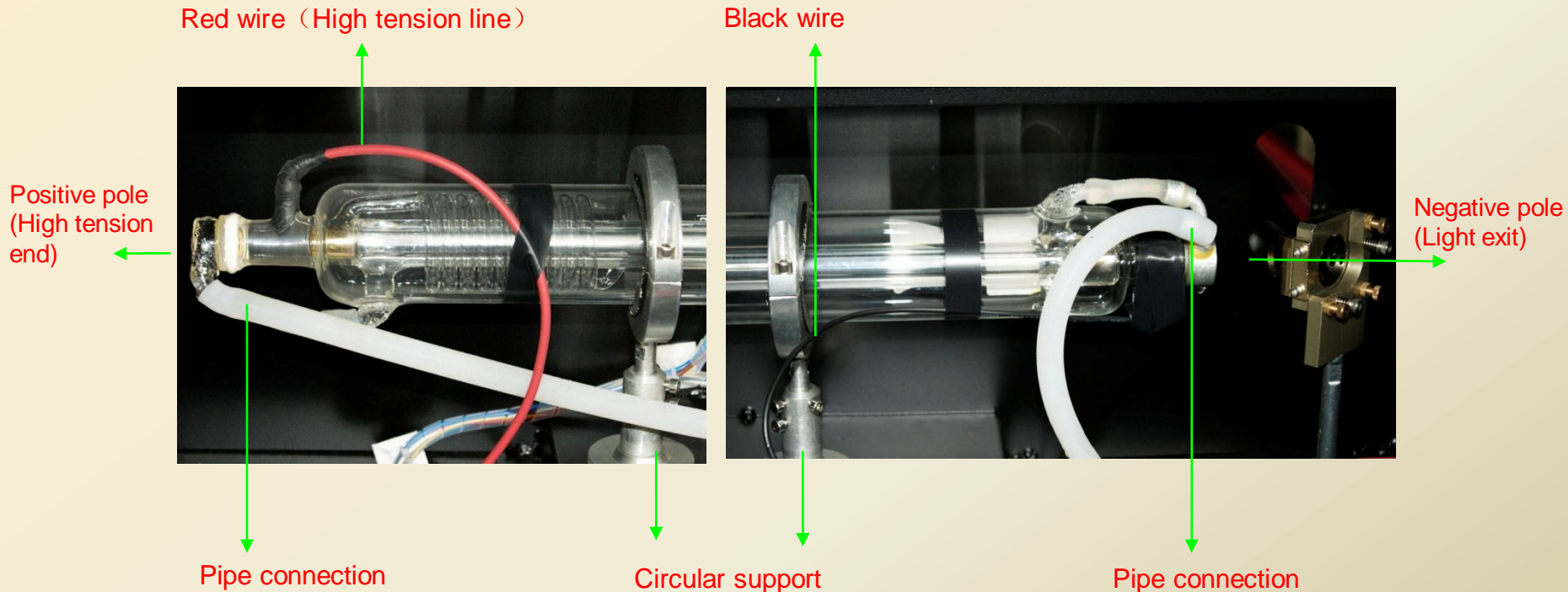
Pipe connection

Disassembly of the laser tube

There are totally five steps to disassemble the laser tube

1. Drainage——Pull out the water pipes at the water inlet of the laser machine（refer to the connection method for water tank）. Then connect the air pump onto the water inlet of the laser machine to discharge the water inside the laser tube.

2. Open the two semi-circle on the circular support.

3. Remove the electric wires——Remove the red and black wire on both sides

4. Remove the water pipes——Remove the water pipes on both sides.

5. Finally, remove the laser tube.

Red wire（High tension line）　　　　　　Black wire

Positive pole (High tension end)

Negative pole (Light exit)

Pipe connection　　　　　　Circular support　　　　　　Pipe connection
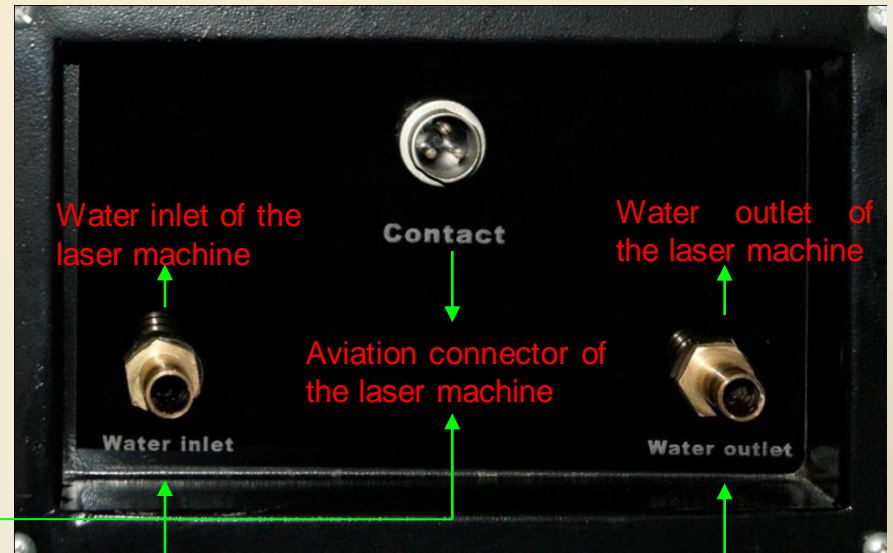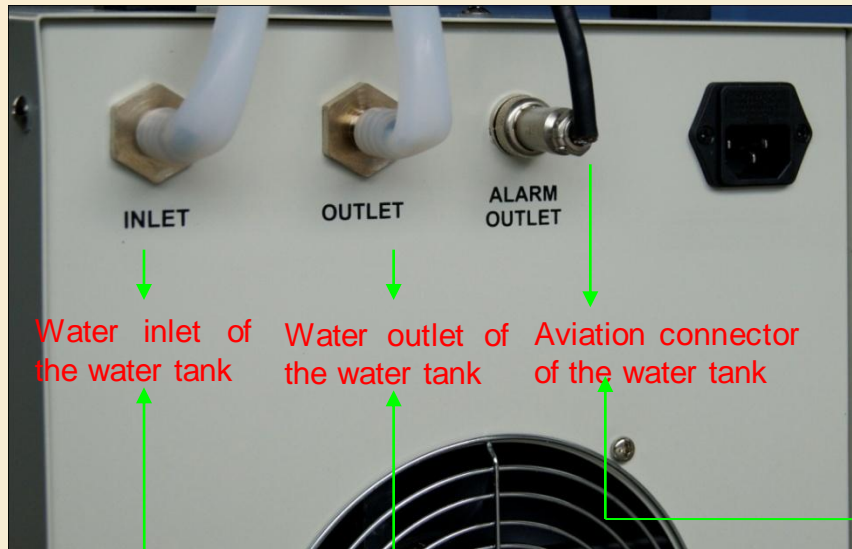
Key points for replacing the laser tube

The following key points must be remembered during replacing the laser tube

1. As the laser tube is made of glass, it should be handled with great care. In particular, the water pipe should be carefully connected to the laser tube, instead of using strong force. Otherwise the laser tube may be broken. The water pipe can be connected to the laser tube by slowly turning and moving inside.

2. As mentioned before, the positive pole of the laser tube is the high tension end with voltage of 20000V. Therefore, remember to cut off all the power supply before replacing the laser tube, so as to avoid safety accidents and casualties.

Red wire（high tension line）

Positive pole（High tension end）

Water pipe connection
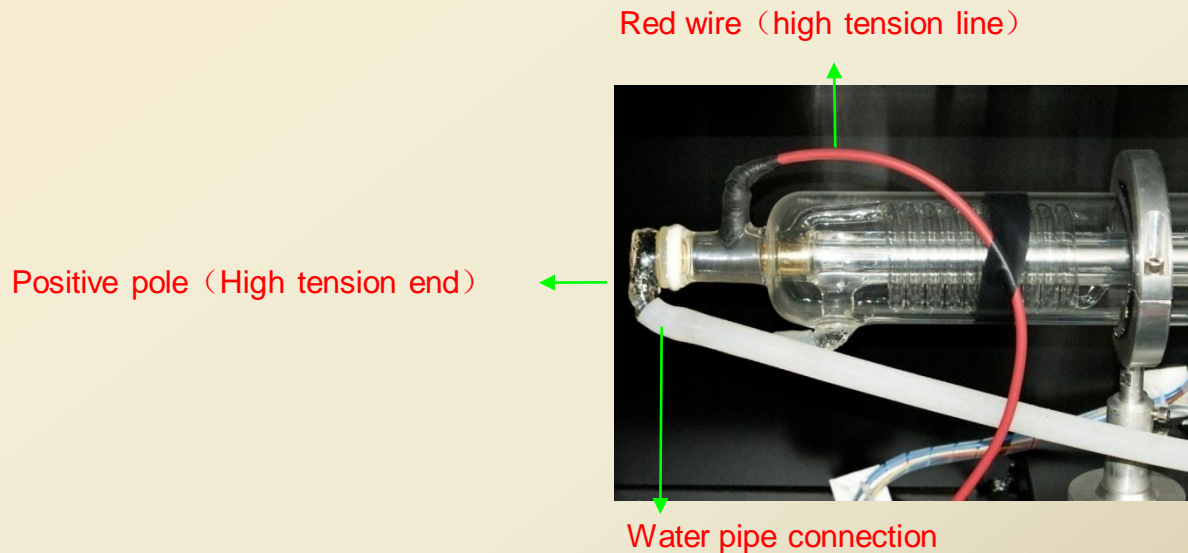
Installation of the water tank

Fill the water tank with purified water. Connect the water inlet of the water tank to the water outlet of the laser machine and connect the water outlet of the water tank to the water inlet of the laser machine. Connect the signal line of the water tank with that of the laser machine. Please see pictures below.

INLET

OUTLET

ALARM OUTLET

Water inlet of the water tank

Water outlet of the water tank

Aviation connector of the water tank

Water inlet of the laser machine

Contact

Water outlet of the laser machine

Aviation connector of the laser machine

Water inlet

Water outlet

Air pump connection

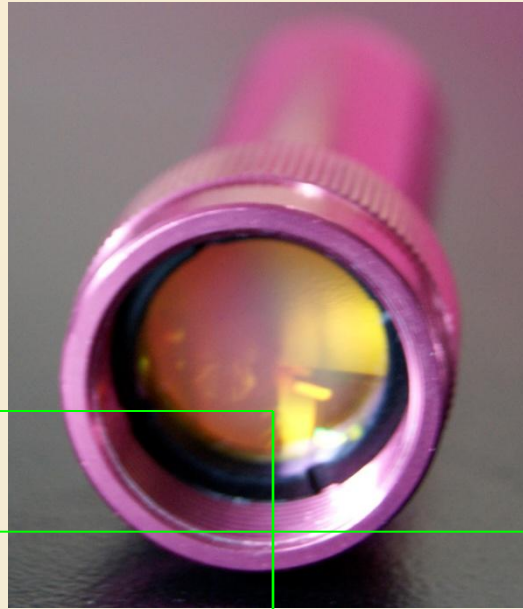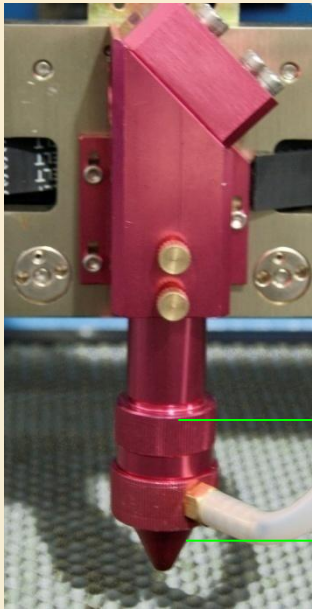Connect the air outlet of the air pump to the air inlet of the laser machine.

Air outlet of the air pump ← → Air inlet of the laser machine

Function of the air pump

The air pump is used to suck in the surrounding air, deliver the air through the air pipe, and finally blow out the air through the light exit of the laser head. It has three main Functions.

1. Cool down the cutting materials below；
2. Cool down the focusing lens inside the lens cone；
3 . Prevent the smoke from getting into the lens cone through the laser exit hole and damaging the focusing lens.

Focusing Lens
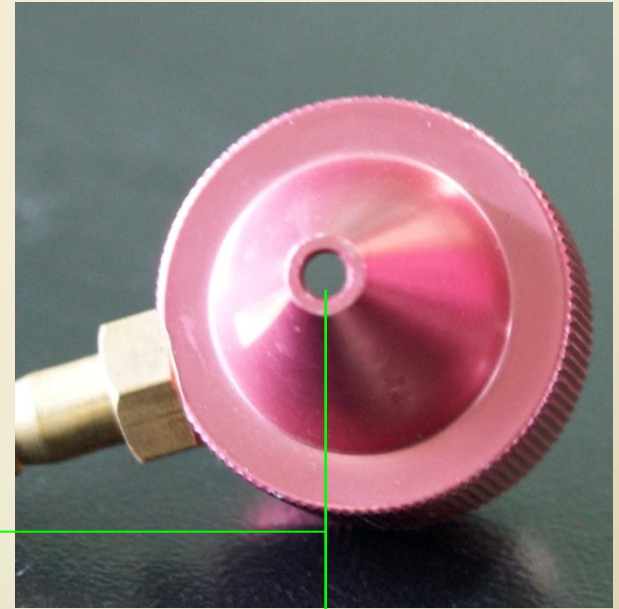
Light Exit Hole

Installation of the Exhaust Fan

Connect the air inlet of the exhaust fan to the air outlet of the laser machine （by using the corrugated tube）. And then connect the outlet of the exhaust fan with the corrugated tube to exhaust.

波纹管

Effect drawing after installation
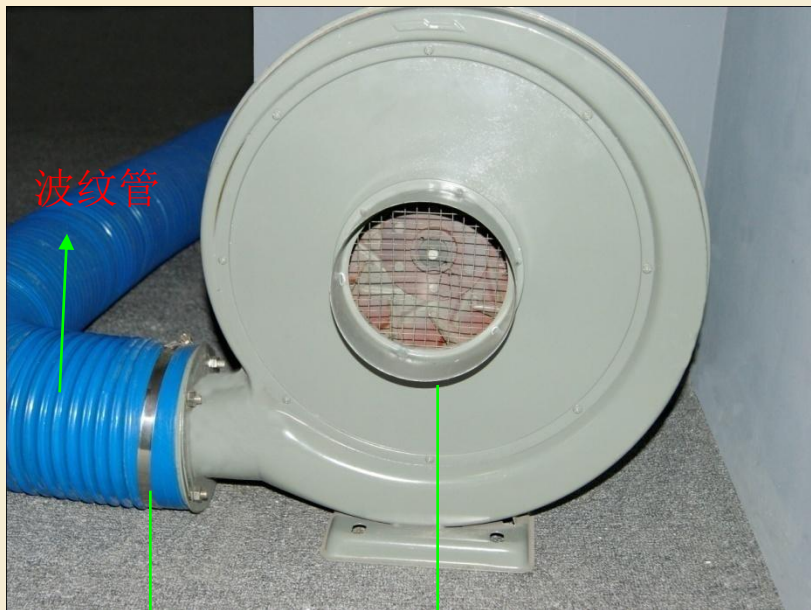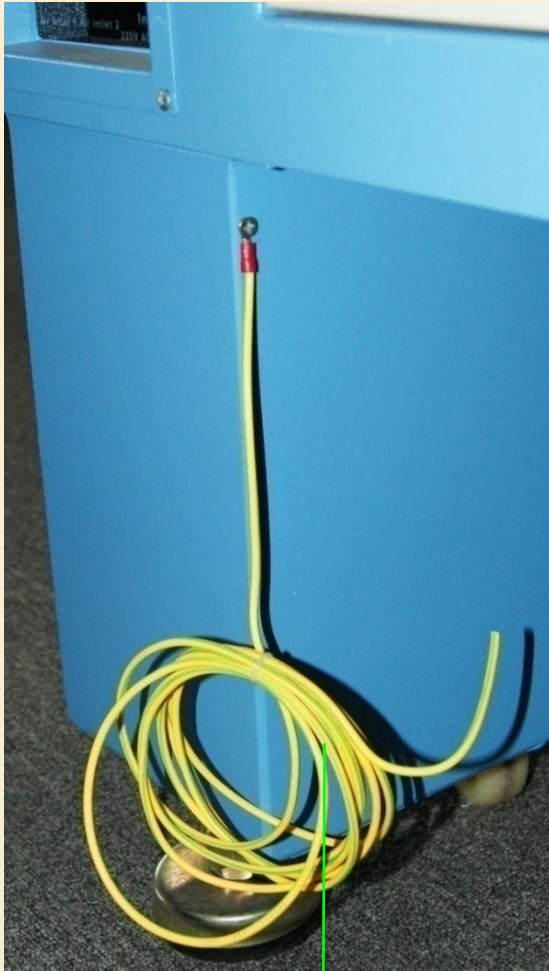
Air outlet of
the exhaust fan

Air inlet of
the exhaust fan

Grounding

Grounding Wire：for discharging the static electricity.

Grounding method

① Find a damp place near the house , dig a hole with one-meter deep, and then put a piece of angle steel inside and connect on end of the grounding wire onto the angle steel (by using the electric wire with 2.5 square meters).

②Then measure the voltage to earth. The standard voltage is less than 5V.

Hazard of no grounding

No grounding or bad grounding will shorten the service life of the laser tube and result in the malfunctions of the equipment. The high voltage discharge may damage the control circuit and cause other safety accidents and even casualties！

Attention: The device is prohibited to be used without grounding. We accept no responsibility for any problems caused by the operation without grounding.
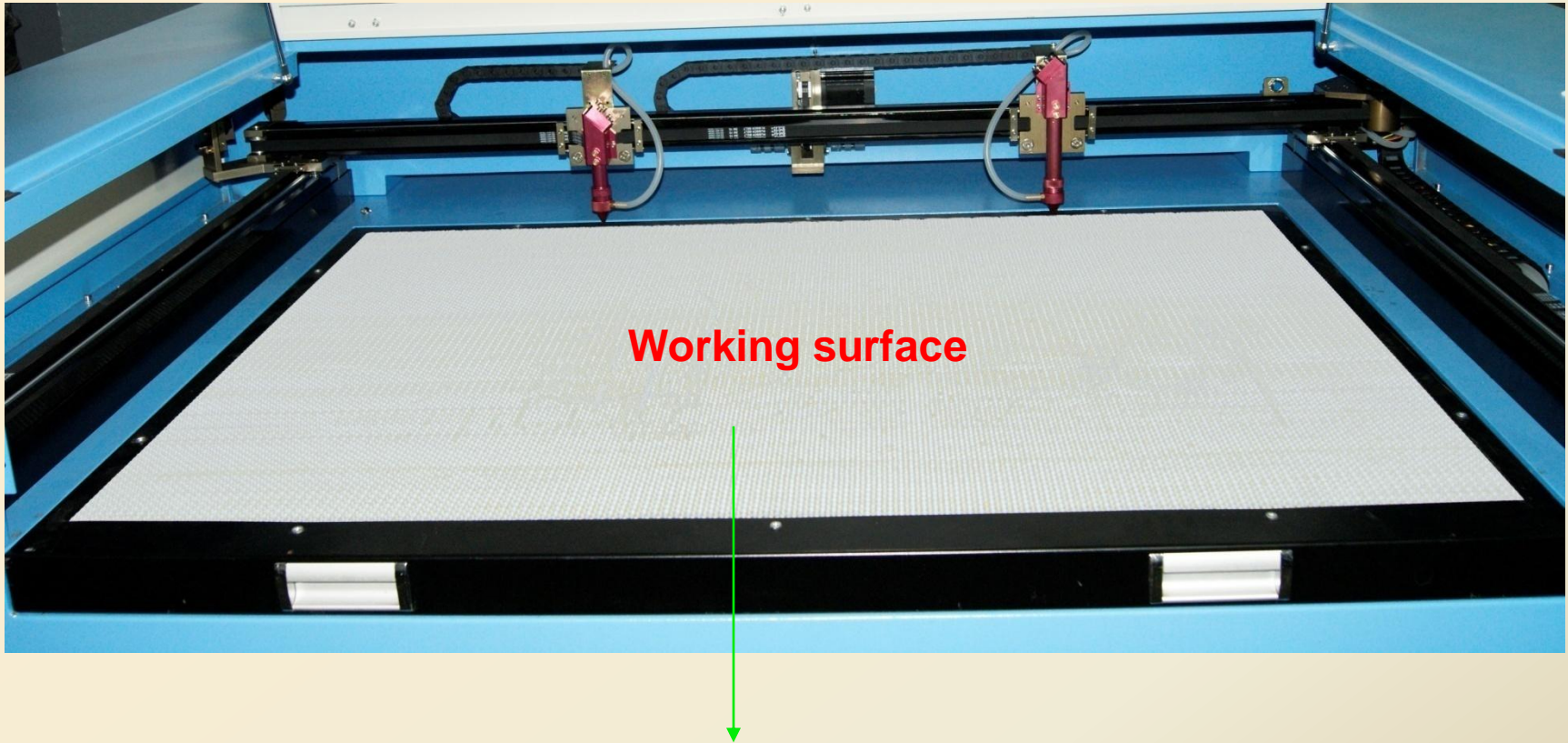
Maintenance for the Guide Rail

Clean the wastes and dust on the 6 rails of the 3 guide rails with clean towel or paper towel. Add new lubricating oil on the 6 rails (once a week, or according to the actual situations.)


Rail 1

Rail 6

Rail 2

Rail 3

Rail 4

Rail 5
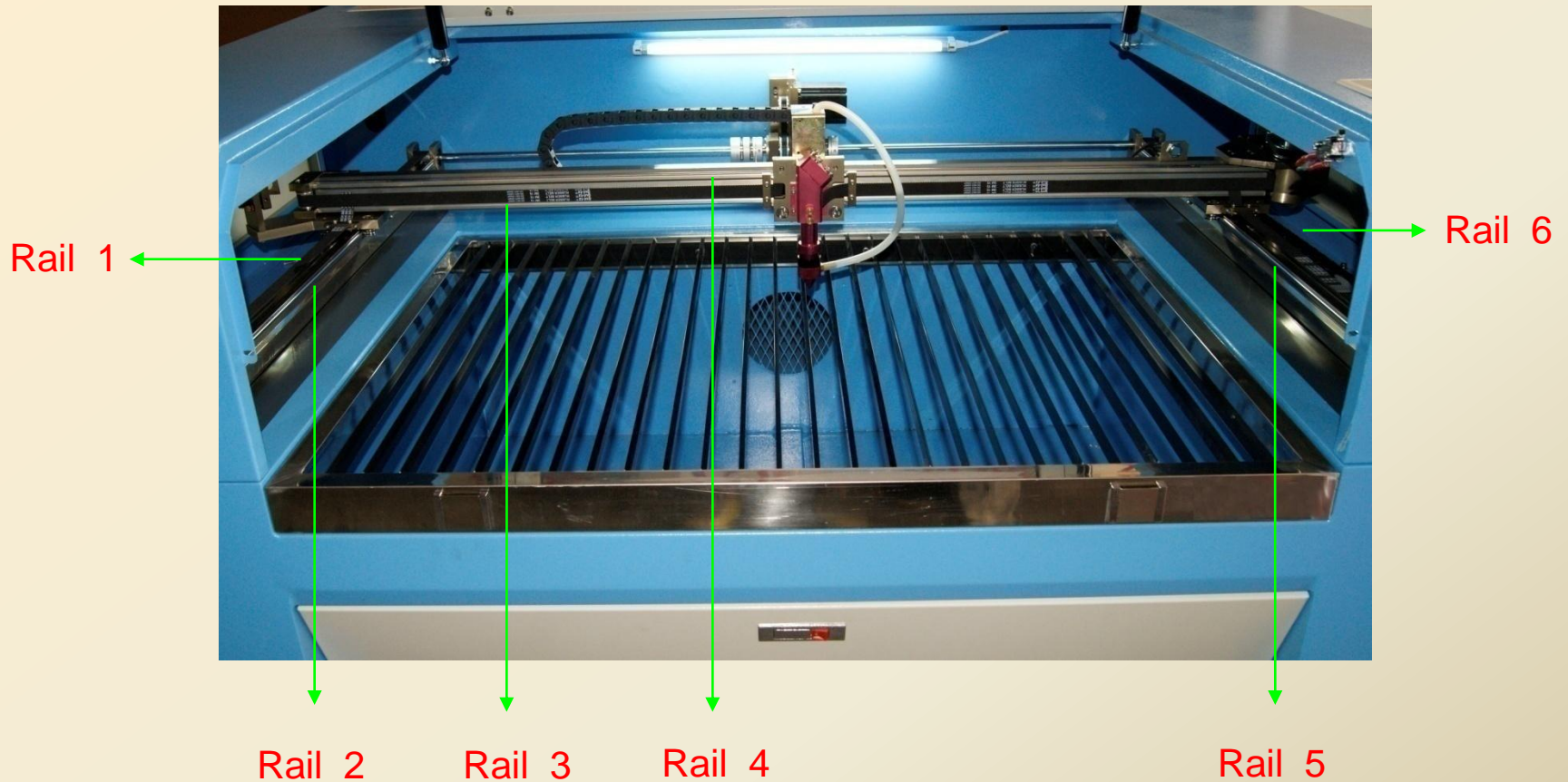
Maintenance for the Working Surface

Working surface

The flatness of the working surface directly influences the processing effect. The more flat surface will result in the better processing effect, vice versa. Therefore, during the operation, do not hit or strike the working surface forcefully and do not push the surface by your hands. Otherwise, the working surface may be deformed.

Maintenance for the Lens

Take a piece of clean cotton swab, dip it in the alcohol solution, and softly wipe the 3 pieces of reflectors and 1 piece of focusing lens. It should use industrial alcohol, or ethanol, instead of medical alcohol because it contains too much water. (Do not wipe the lens too hard, otherwise the layer of membrane on the surface of the lens will be damaged and thus influence the reflecting effect.) As for reflector, the reflecting surface is necessary to be cleaned; as for focusing lens, both sides should be cleaned. After cleaning, use a piece of clean cotton swab to wipe out the remaining alcohol on the surface.
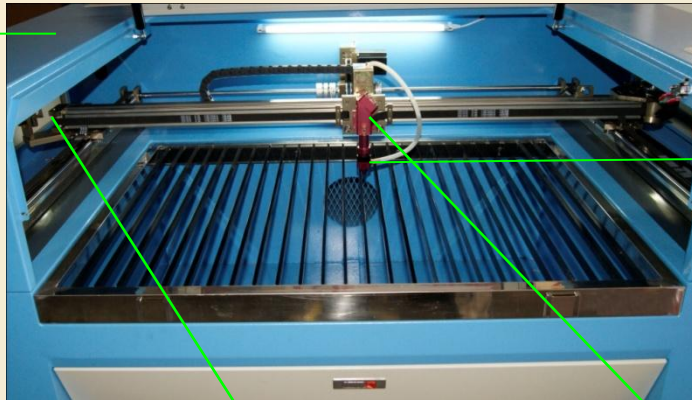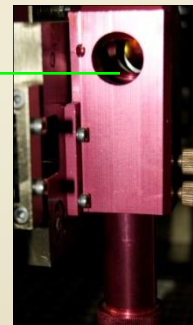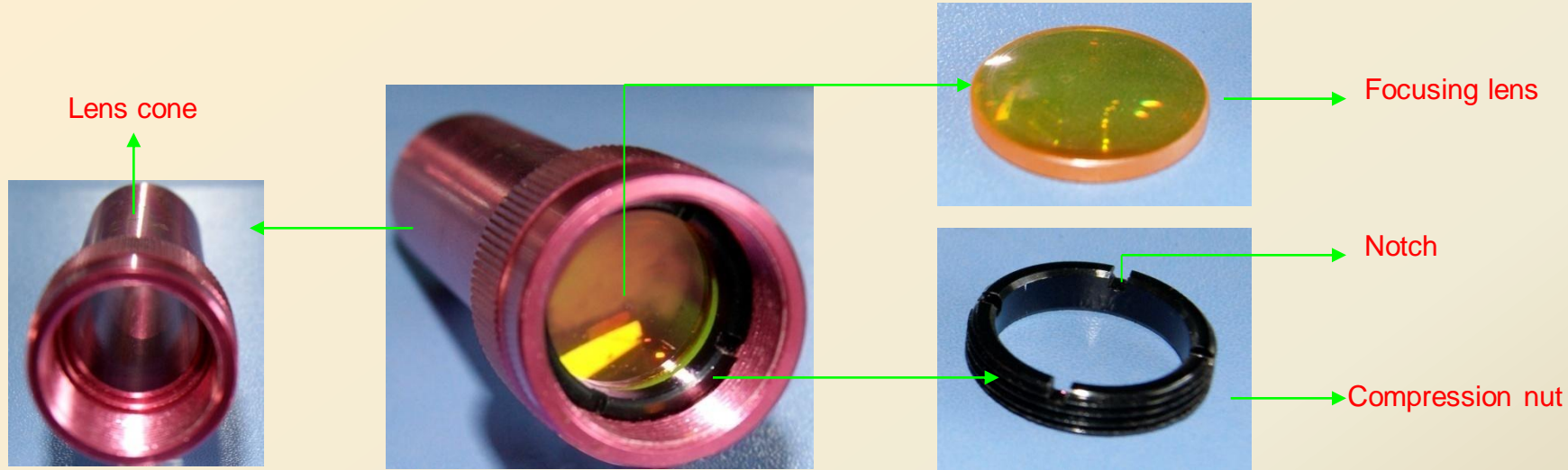
No.1 Reflector
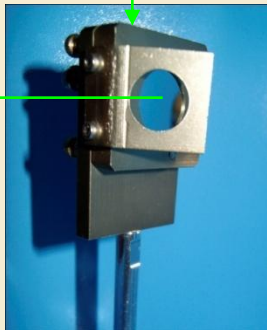
No.2 Reflector
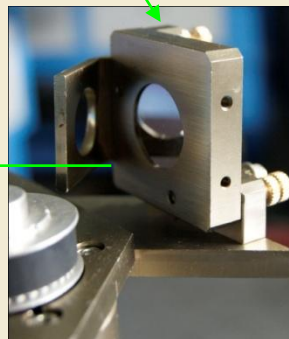
No.3 Reflector

Focusing lens

Remove and wash the focusing lens

Put the tools like circlip pliers or steel rule on the notch of the compression nut, and turn the circlip pliers or steel rule to remove the compression nut and the focusing lens.

Lens cone

Focusing lens

Notch

Compression nut

Assembly of the focusing lens

Assemble the focusing lens into the lens cone by making the right side (or the convex side) upward. Assemble the compression nut and fix with the circlip pliers or steel rule.

Right side (convex side) upward
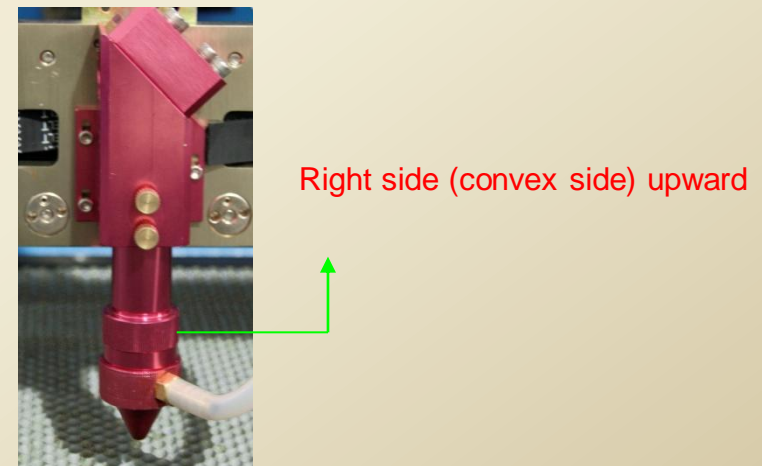
How to adjust the focal length

Put a piece of harder paper under the laser head, adjust the height between the laser head and the paper by the focal length ruler, and then press the 'Laser' button on the panel to make marks. Compare the sizes of the marks made in different height and find the minimum sized mark, and then the appropriate height can be determined as the focal length of the machine.

The following pictures shows an example. You may see that the mark made in the height of 8mm is the minimal. Then we know the focal length is 8mm. In the future, materials with different thickness should be cut in the height of 8mm.

Marks made in different height

10mm 9mm 8mm 7mm 6mm

1 milimeter=1mm
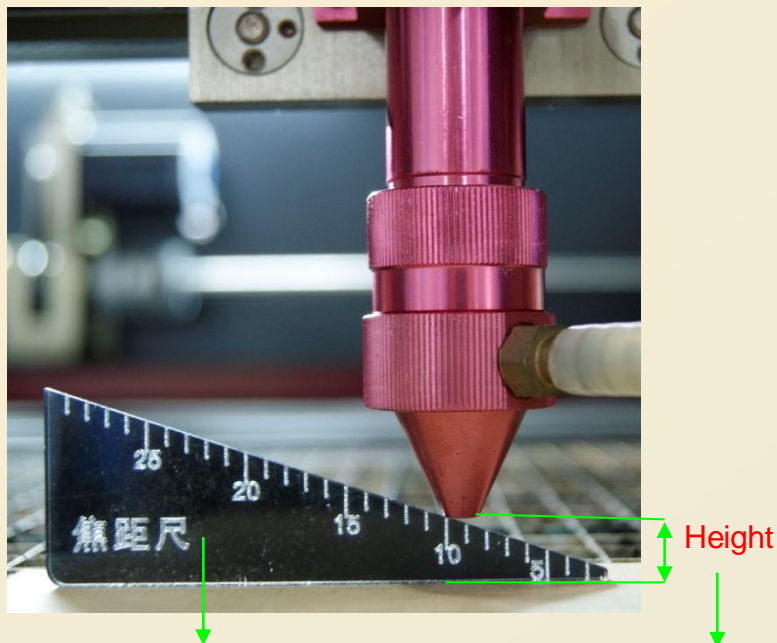
Height

Focal length ruler

Height refers to the distance between the laser head and the surface of the material.
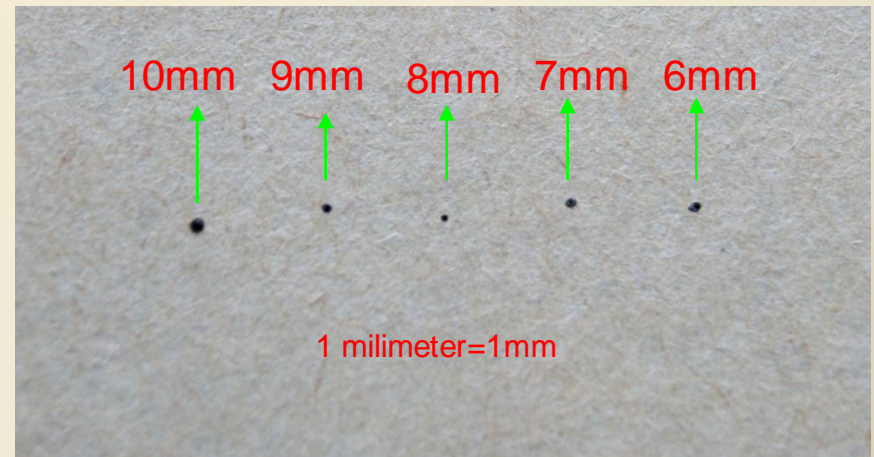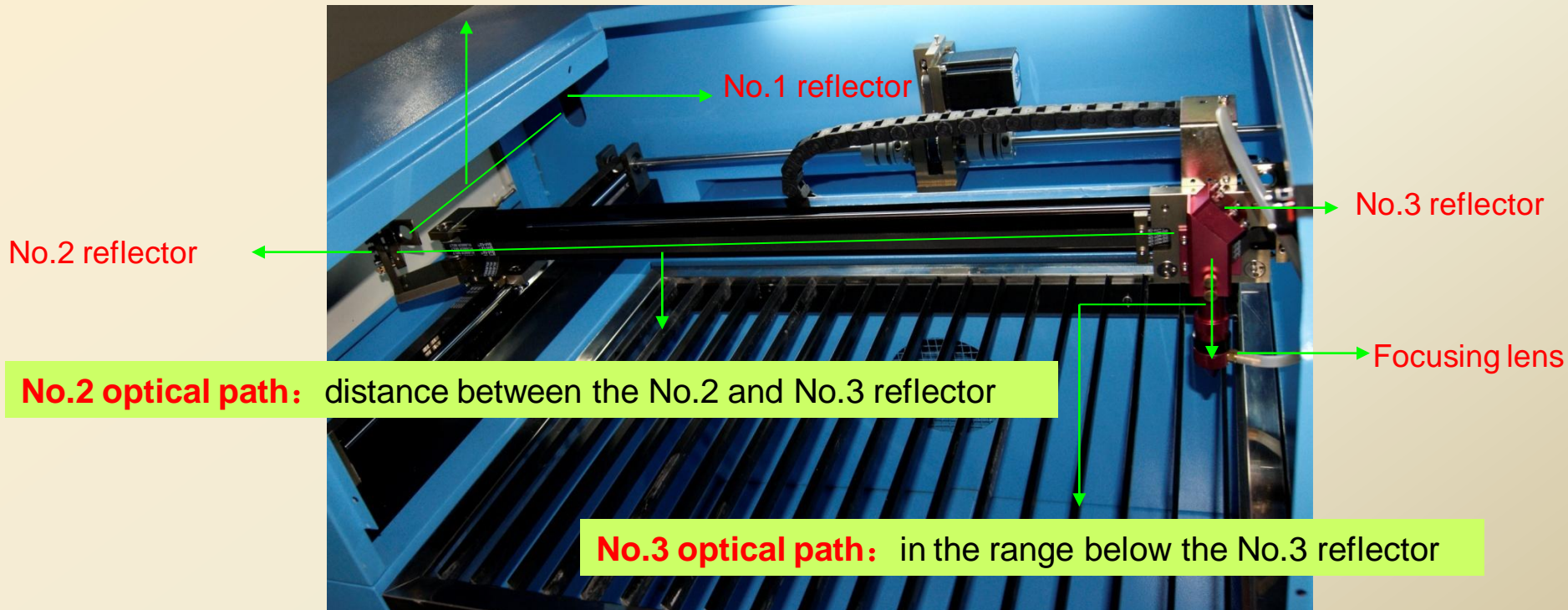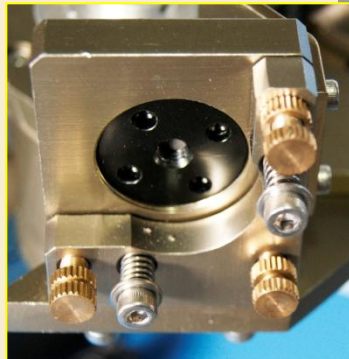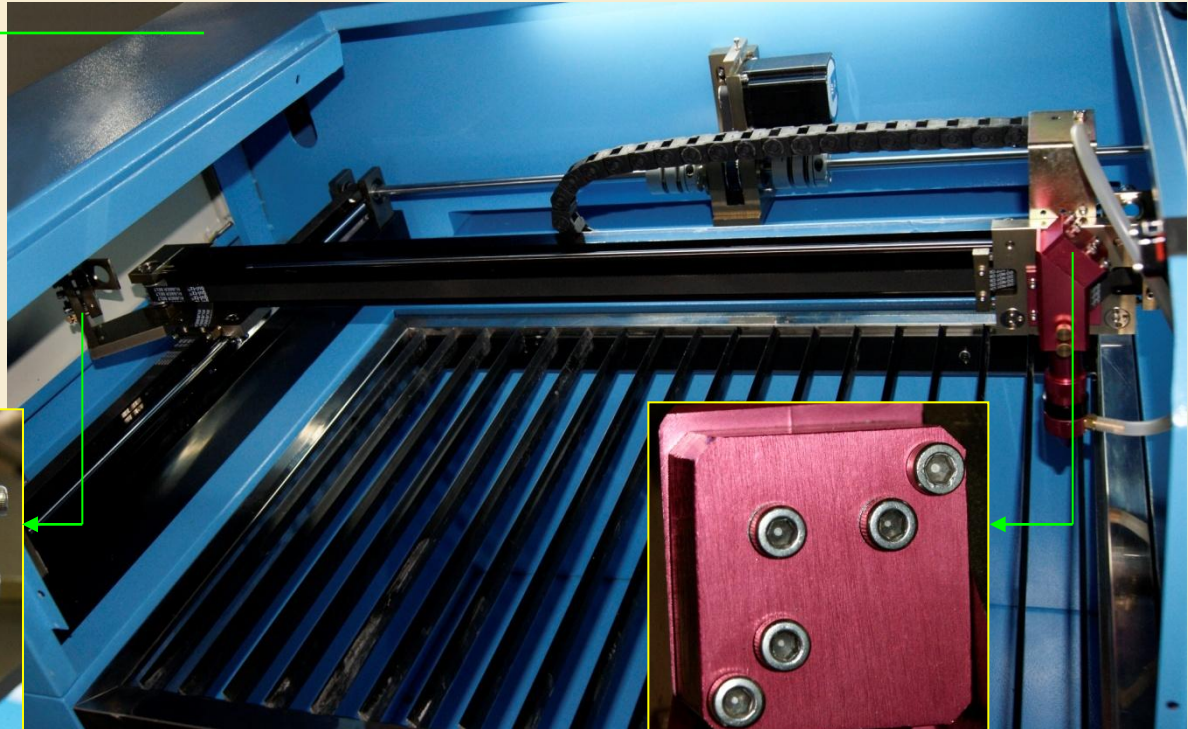
What is the optical path?

The laser emitted from the laser tube is in a certain direction. The No.1 reflector is installed at the light exit of the laser tube. The laser is reflected to the No. 2 reflector by the No.1 reflector. The No.1 optical path is formed between the No.1 and No.2 reflector. And the laser is continued to be reflected to the No.3 reflector by the No.2 reflector. Similarly, the No.2 optical path is formed between the No.2 and No.3 reflector. And finally the laser is reflected to the focusing lens by the No.3 reflector. The third optical path is in the range below the No.3 reflector.

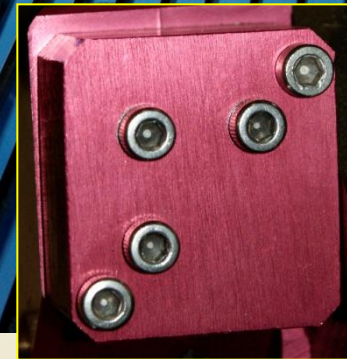No.1 optical path： distance between the No.1 and No.2 reflector

No.1 reflector

No.3 reflector

No.2 reflector

Focusing lens

No.2 optical path： distance between the No.2 and No.3 reflector

No.3 optical path： in the range below the No.3 reflector

No.1 reflector：No.1 optical path is adjusted by the No.1 reflector

No.2 reflector：No. 2 optical path is adjusted by the No.2 reflector

No.3 reflector：No.3 optical path is adjusted by the No.3 reflector

Safety cautions for adjusting the optical path

The following safety cautions should be paid attention during adjusting the optical path.

1. Do not put any part of your body between the optical paths.

2. Do not observe the optical path in parallel. Otherwise the laser may deviate and shoot at your eyes and thus cause the safety accidents.

3. During adjusting the No.2 optical path, move the laser head to the middle position of the working surface and then adjust the optical path. Do not move the laser head far away from the working surface. 。
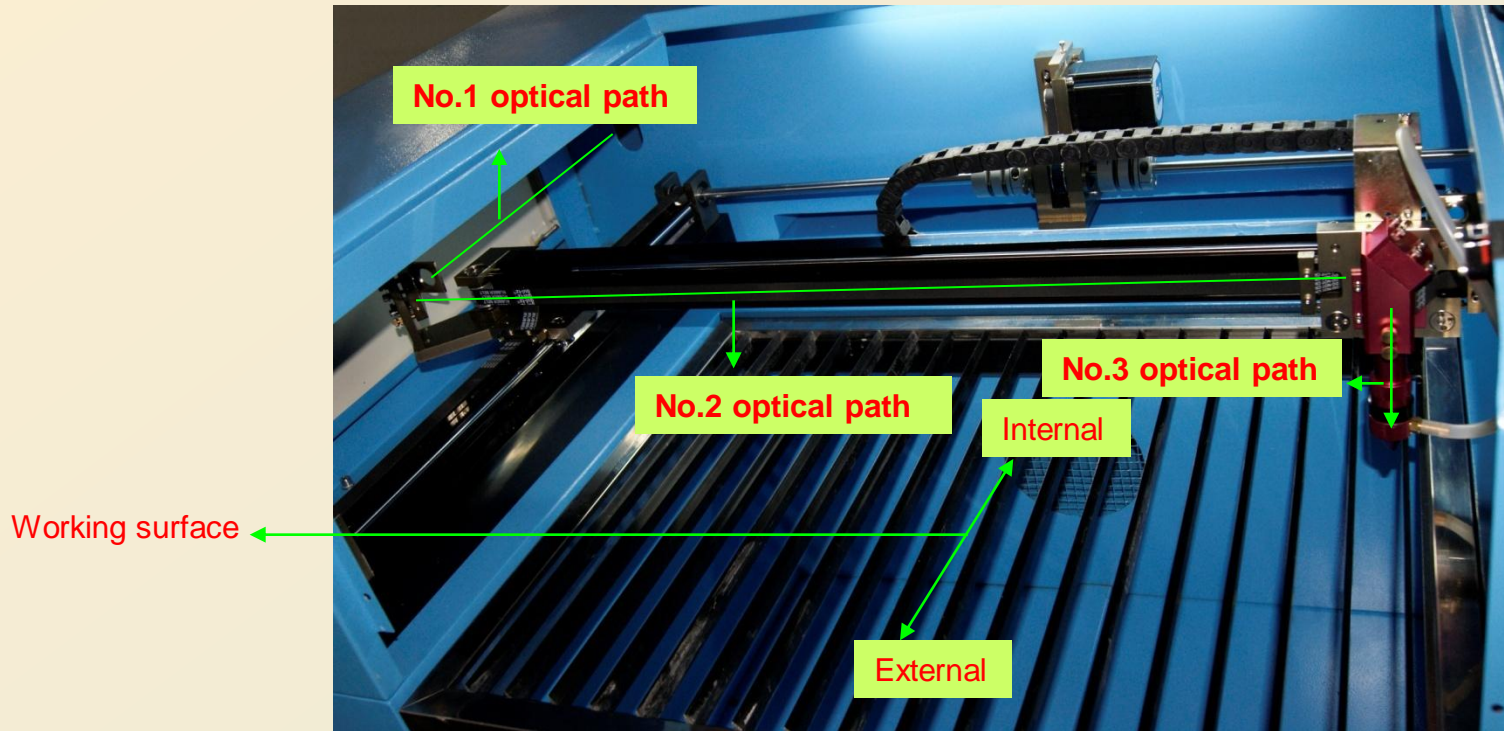
Calibration of the Optical Path

During the operation of the cutting machine, the optical path may be deflected sometimes and cause the phenomenon of no laser or oblique optical path. In this case, please calibrate the optical path in accordance with the following method.

Step 1: adjust the laser beam emitted from the laser tube to shoot at the center of the No.1 reflector.

Shoot at the center of the circle ←
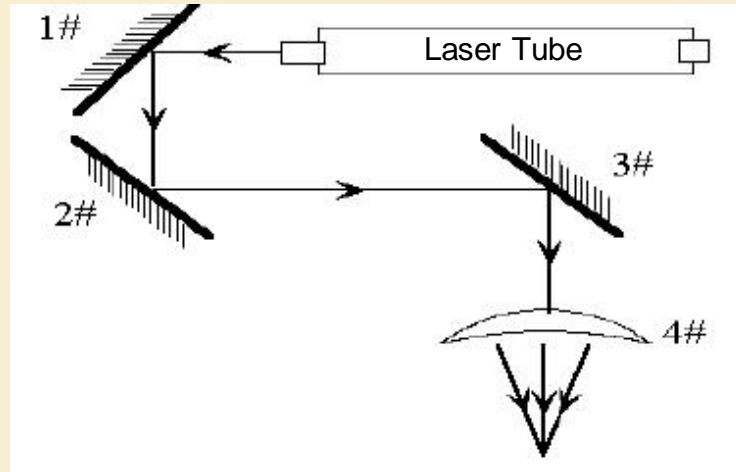
Step 2：Paste a piece of crepe paper, (or other objects) that can be marked, on the No.2 reflector. Move the crossbeam to the nearest position to the laser tube. Then press 'Laser' with (proper light intensity) to make a mark 1. (Attention: to prevent the laser from radiating and injuring people, please firstly use a paper board to determine the approximate location of the light spot and then make adjustment）.

Step 3：Slowly move the crossbeam to the farthest location from the laser tube. Press 'Laser' and make mark 2.
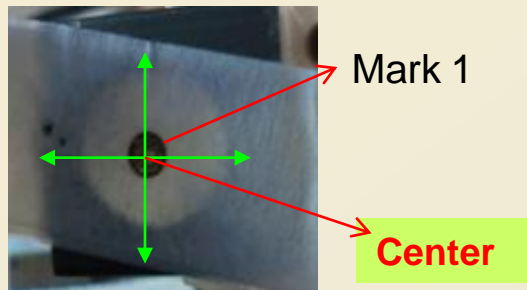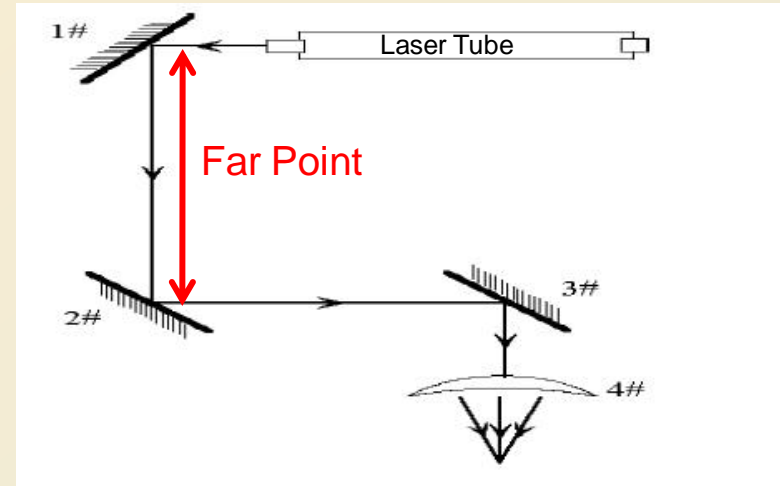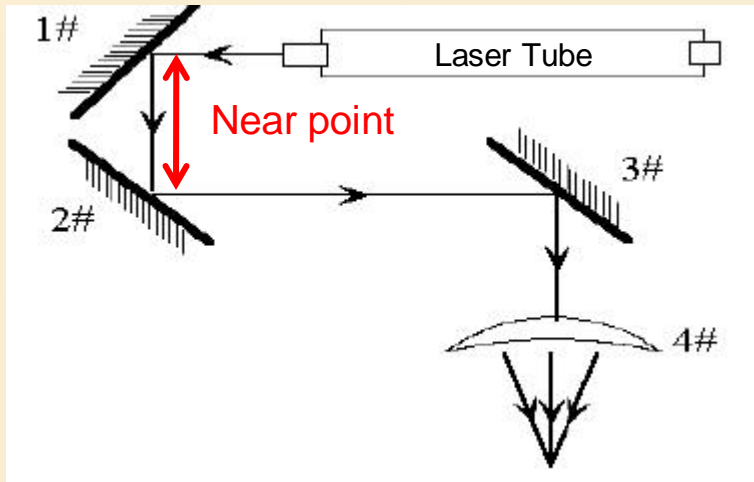
Near point mark on the No.2 reflector
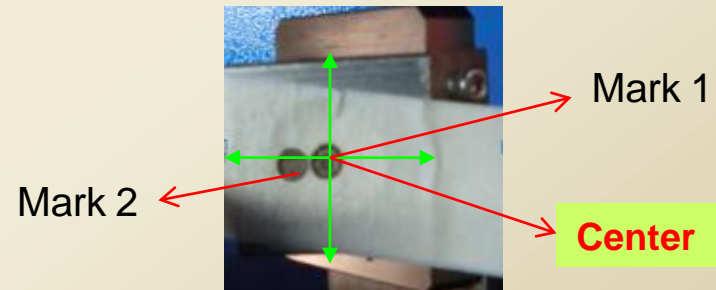
Far point mark on the No.2 reflector

Example：It can be seen from the above picture that the near point mark and the far point mark of the No.2 reflector do not coincide. Tighten the screw 3 on the No.1 reflector to make these two points coincide.

Regulating Screws on No.1 Reflector

Screw 1

Tighten：Move the light downward

Loosen：Move the light upward

Screw 2

Tighten：Move the light up left

Loosen：Move the light down right

Screw 3

Tighten：Move the light to the left

Loosen：Move the light to the right

Step 4: If the two marks do not coincide, adjust the No.1 reflector by using the above method to make these two marks coincide.

Step 5: Repeat the procedure from the step 2 to step 4 until the two marks completely coincide and both of them are located at the center of the circle.
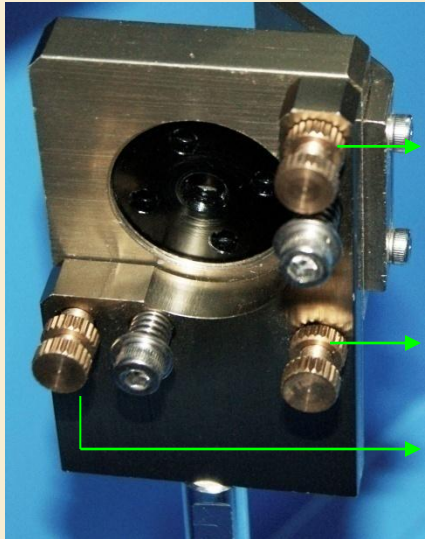
Step 6: Paste a piece of crepe paper on the No.3 reflector, move the laser head to the nearest position to the No.2 reflector, and then press 'Laser' with （proper light intensity） to make a mark 1.
Step 7: Slowly move the laser head to the farthest position from the No.2 reflector and then press 'Laser'. It is better to use a paper board to determine the approximate location of the light spot so as to avoid danger. And then make mark 2.
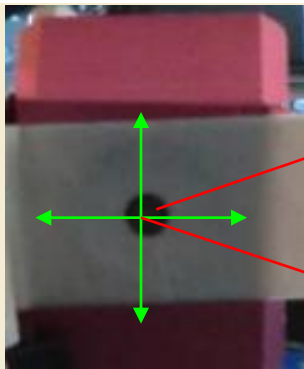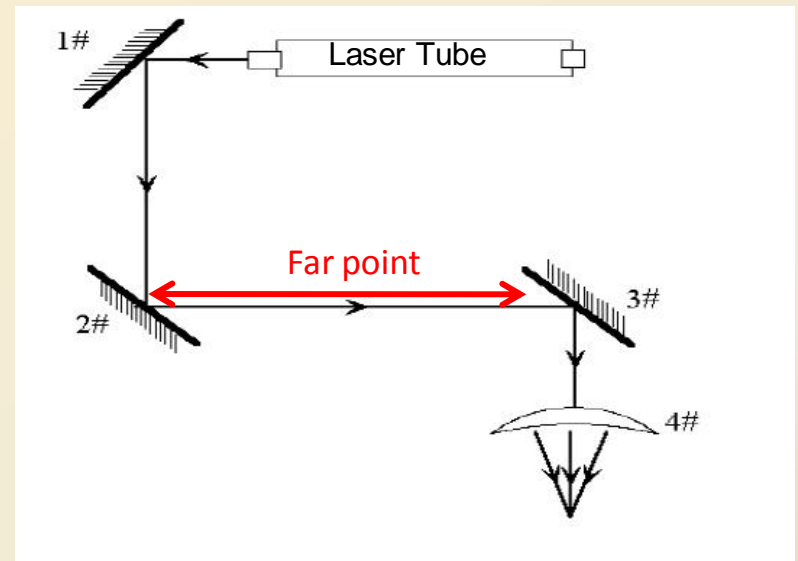
Near point mark on the No.3 reflector
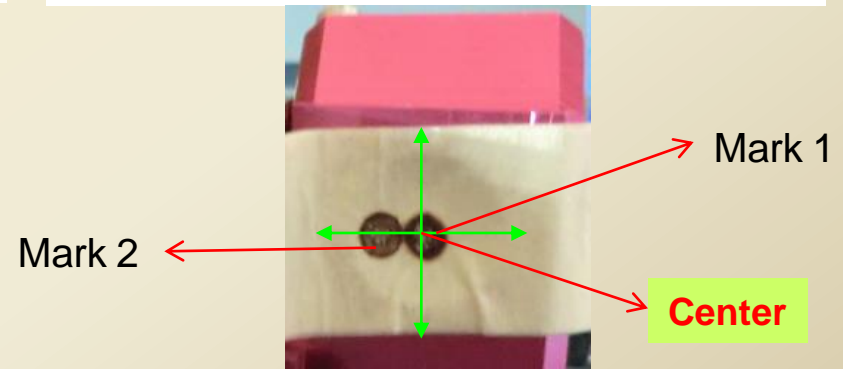
Far point mark on the No.3 reflector

For example ： It can be seen from the above picture that the near point and far point on the No.3 reflector do not coincide. It has to tighten the screw 3 on the No.2 reflector to make these two points coincide.

Screw 1 → **Tighten：Move the light downward**

Screw 1 → **Loosen：Move the light upward**

Screw 2 → **Tighten：Move the light up left**

Screw 2 → **Loosen：Move the light down right**

Screw 3 → **Tighten：Move the light to the left**

→ **Loosen：Move the light to the right**

Position of pasting crepe paper

Up

Left

Right

Down

Center
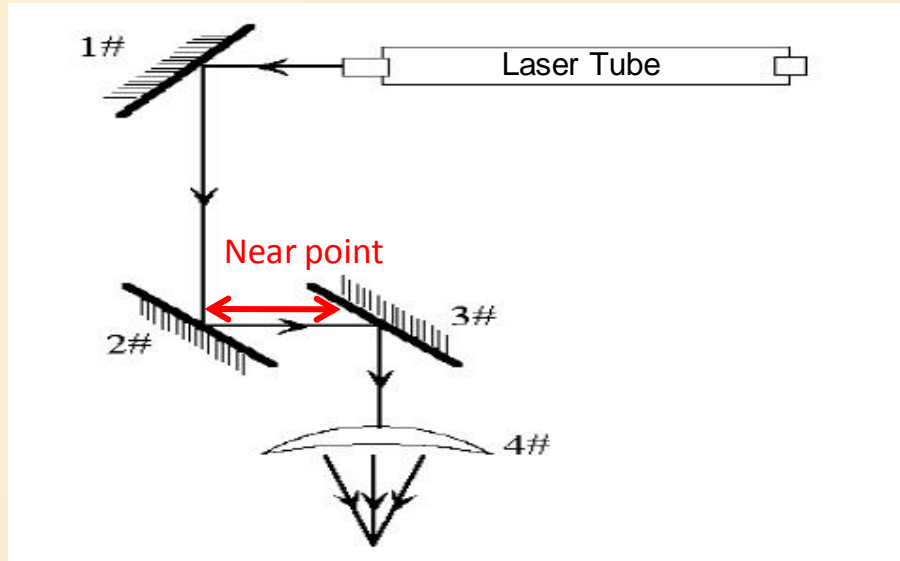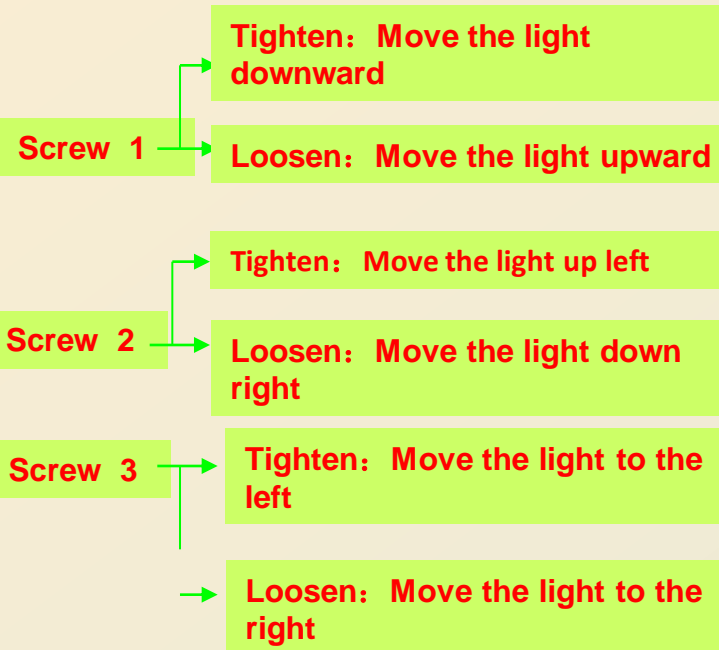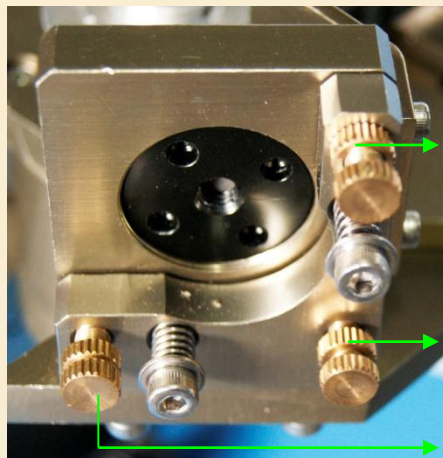
Regulating screws on the No.2 reflector
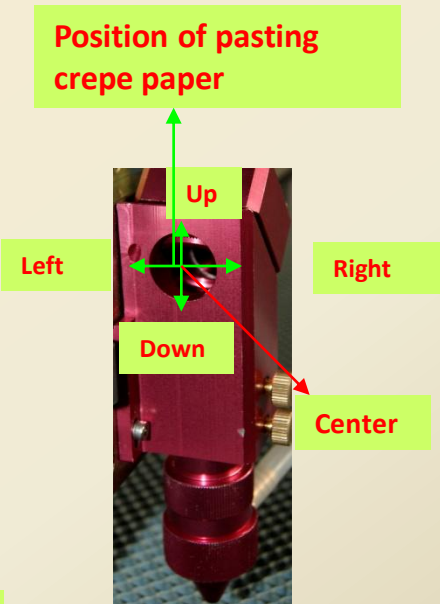
Position of the No.3 reflector

Step 8: If the two marks do not coincide, adjust the No.2 reflector by the above method to make them coincide.

Step 9: Repeat the procedure from the step 6 to the step 8 until the two marks completely coincide.

Step 10: If the two marks in the step 9 are completely coincide and at the center of the circle, then it's qualified.

Step 11: If the two marks are not at the center of the circle, as shown below.

Deviate to Outside

In this instance, the mark deviates to the upper side and outside.

Vertical deviation: Move the laser head to adjust.

Internal and external deviation: Adjust the laser tube internally or externally.

As for this instance, we can adjust the laser tube to the outside and repeat the procedure from the step 10 to the step 11.

It can be seen from the following picture that only if we loosen 3 fixing screws on the two round supporting seats of the laser tube, the laser tube can be lifted or lowered down.

Round Supporting Seat

Fixing Screws

The screw can be adjusted to move the support.
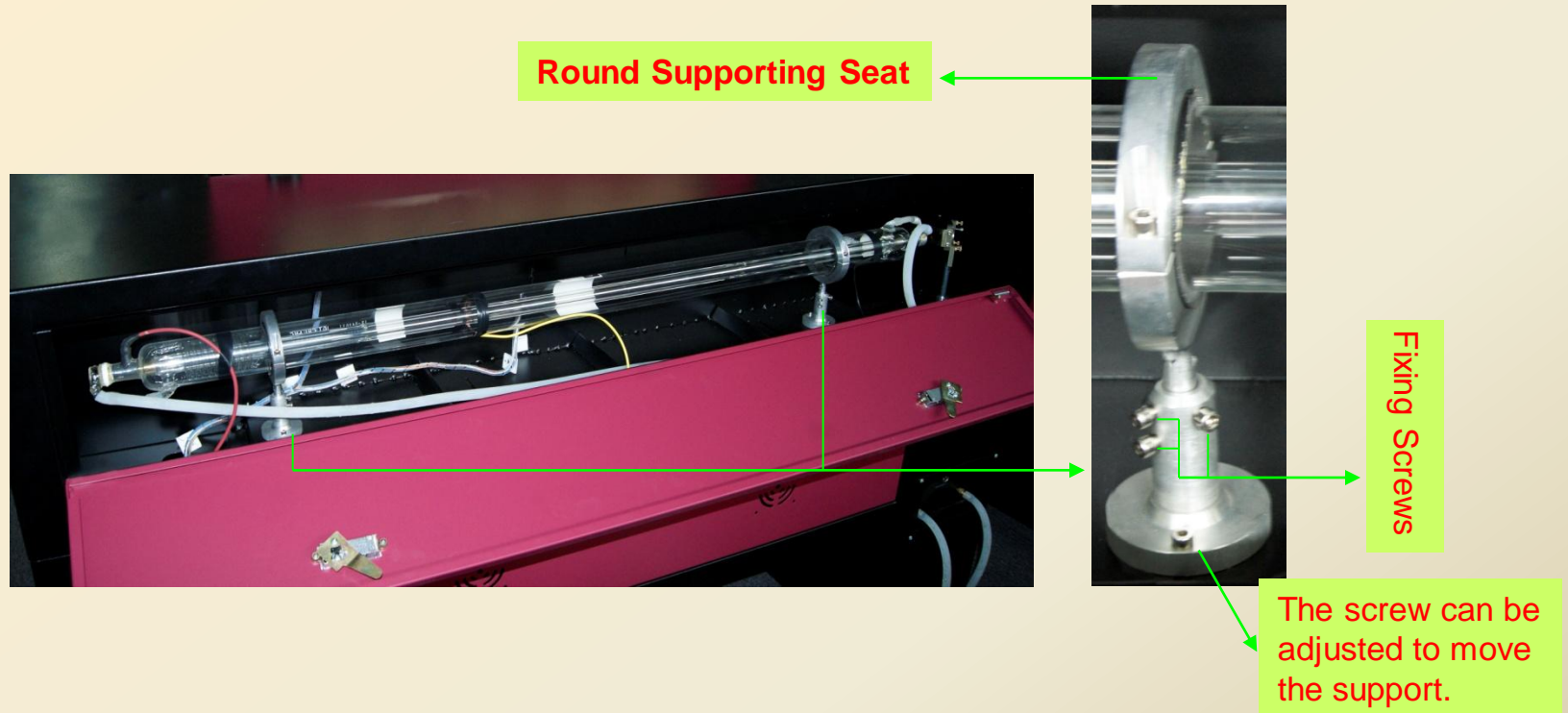
Step 12: Paste a piece of crepe paper on the tip of the laser head. Press 'Laser' to make a mark. Check if the mark is at the center of the circle. If not, adjust the No.3 reflector to make the mark at the center.
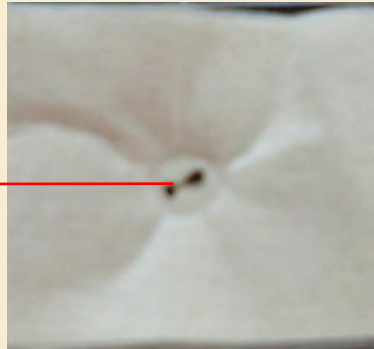
Deviate to the left ←
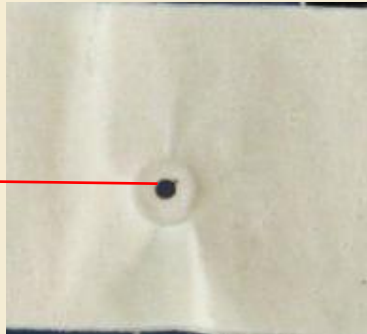
Light adjusting screws

Fixing Screws on the Laser Head ←

Right at the center ←

For example, the problem of deviation to the left, as shown in the above figure, can be solved by adjusting the Screw 1 and 3, and the mark will be centered.

Tighten：**Move the light to the left front**

Screw 1

Loosen：**Move the light to the right back**

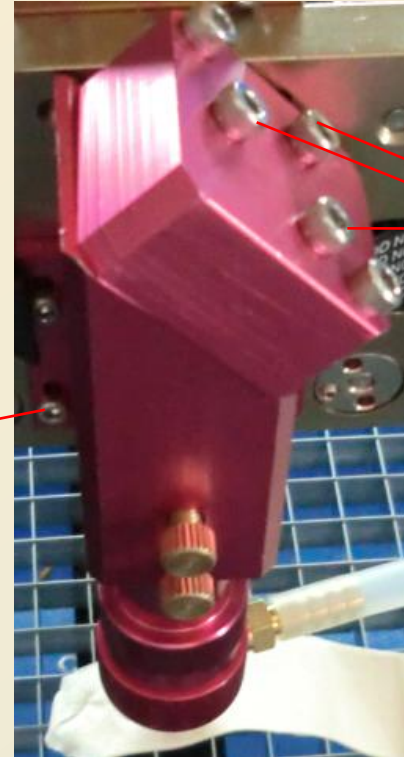**Tighten: Move the light to the left back**

Screw 2

Loosen: Move the light to the right front

Tighten: Move the light to the right front

Screw 3

Loosen: Move the light to the left back
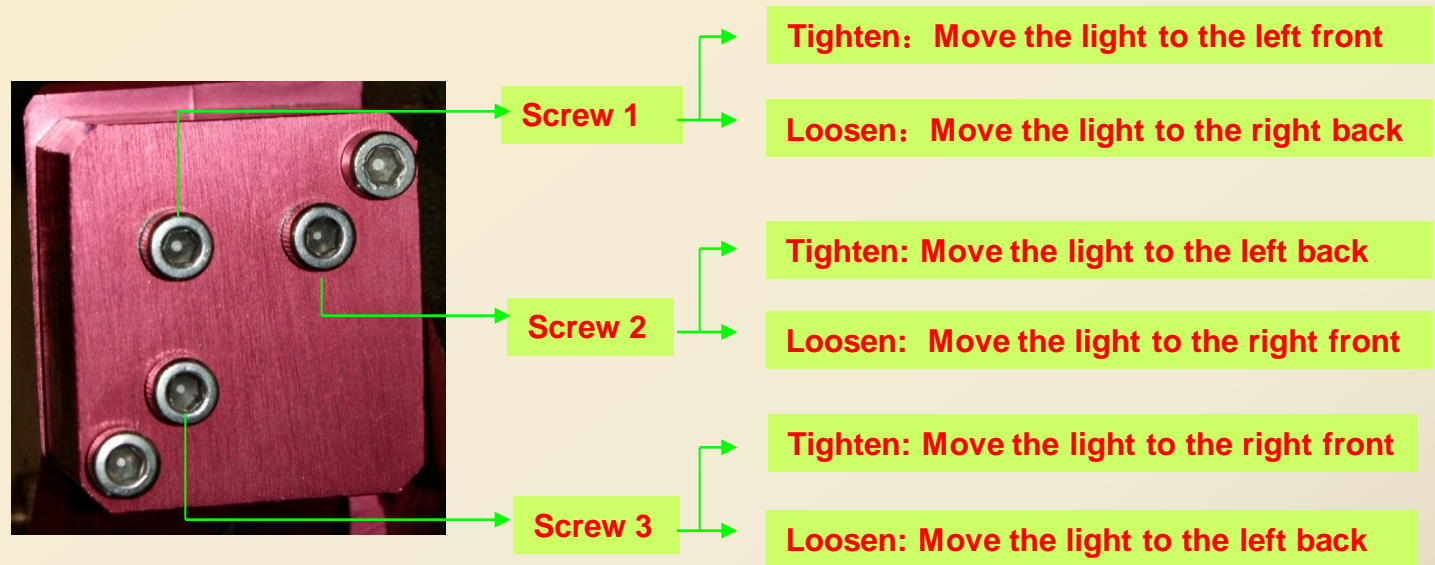
Regulating Screws on the No.3 Reflector

Note: The adjustment should be done by the qualified operators who have accepted professional training, or operate by asking for other person's help. During adjustment, be careful not be damaged by the laser radiation.

How to adjust the tension of the synchronous belt

Tighten the tension regulating screw for synchronous belt to adjust belt tension.

Tension Regulating Screw
for the Synchronous Belt

Synchronous Belt

Fixing Screw

Fixing Screw

Structure Drawing for the
Synchronous Belt
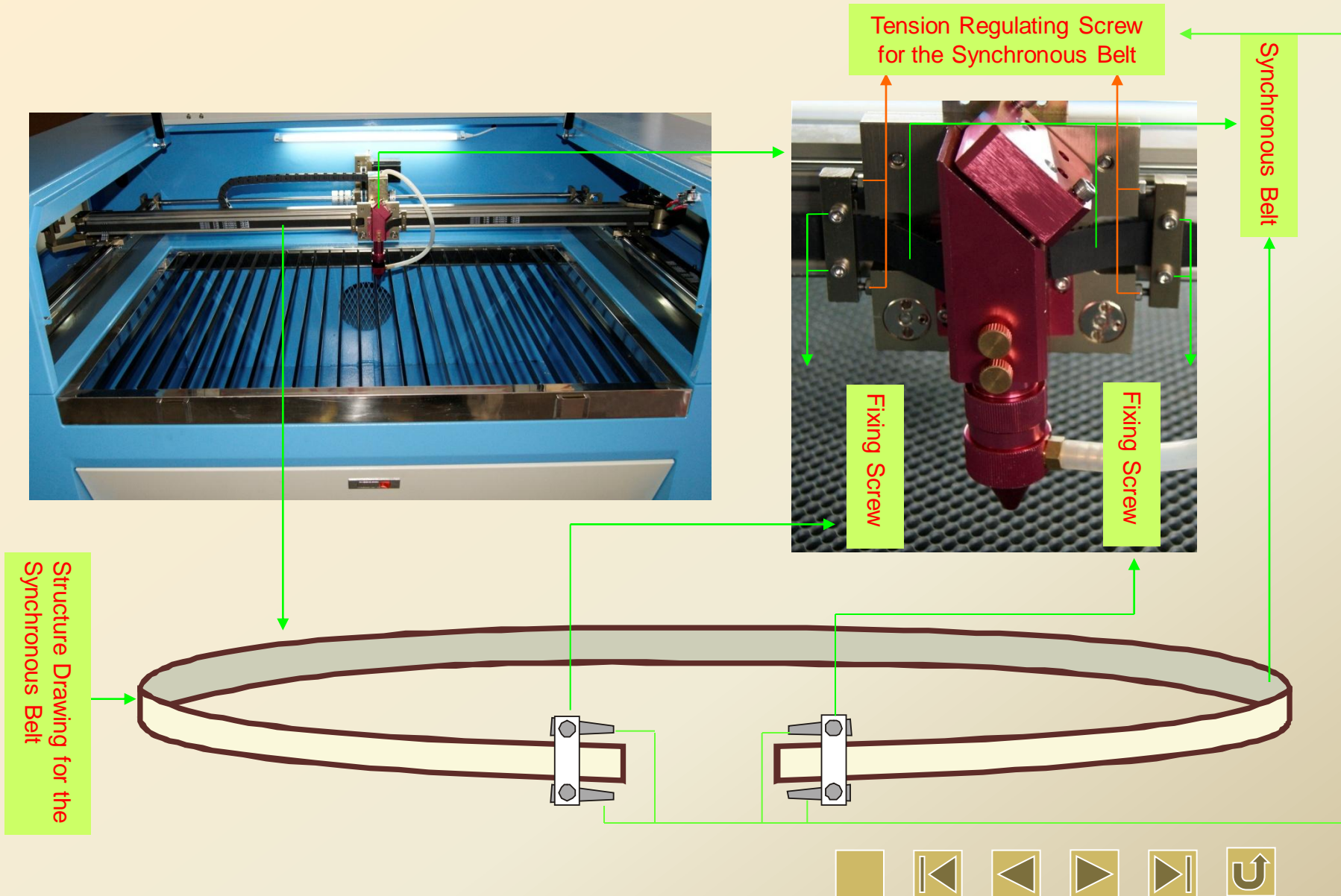
1.Operation of the control Panel
（Click the following buttons for details）

Direction

Z/U

Main Screen

File: 00   Num: 6
Max Power: 29.0 %
 Speed: 200 mm/s
Finished: 00:00:08

退出   Esc
确定   Enter

Enter Esc

Origin

定位   Origin
边框   Frame

Frame

复位   Reset
点射   Laser
速度   Speed
最小功率   MinPower
最大功率   MaxPower
文件   File
启动暂停   Start-Pause

Reset

Laser

Speed

Min Power

Max Power

File

Start-Fause
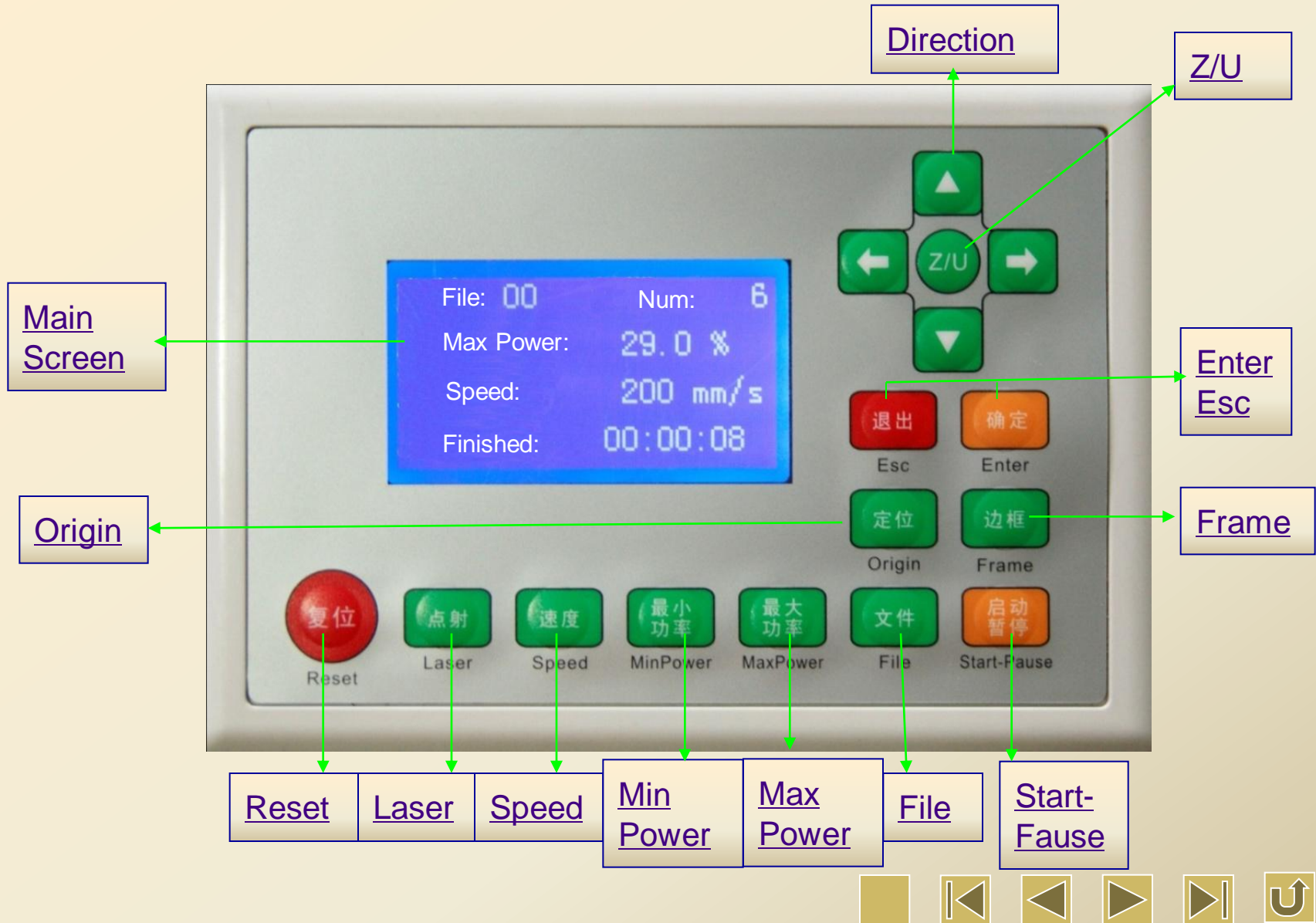
Introduction to the main screens

There are mainly four kinds of displaying screens:1. Idle; 2. Finished; 3. Run; 4. Pause. In fact, the 1st and the 2nd screen are the almost the same. Both of them are in the same idle status, the only difference lies in that the 2nd screen will display the total processing time after the processing finished. The 3rd screen displays the working process. And the 4th screen shows the pause status.

```
File: 04        Num:     18
MaxPower:       35.0 %
Speed    :     304 mm/s
Idle     : 30/6/2011
```

```
File: 04        Num:     21
MaxPower:       30.0 %
Speed    :      50 mm/s
Run      :  00:00:02
```

See the detailed description

See the detailed description

```
File: 04        Num:     20
MaxPower:       35.0 %
Speed    :     304 mm/s
Finished:  00:00:05
```

```
File: 04        Num:     23
MaxPower:       30.0 %
Speed    :      50 mm/s
Pause    :  00:00:01
```
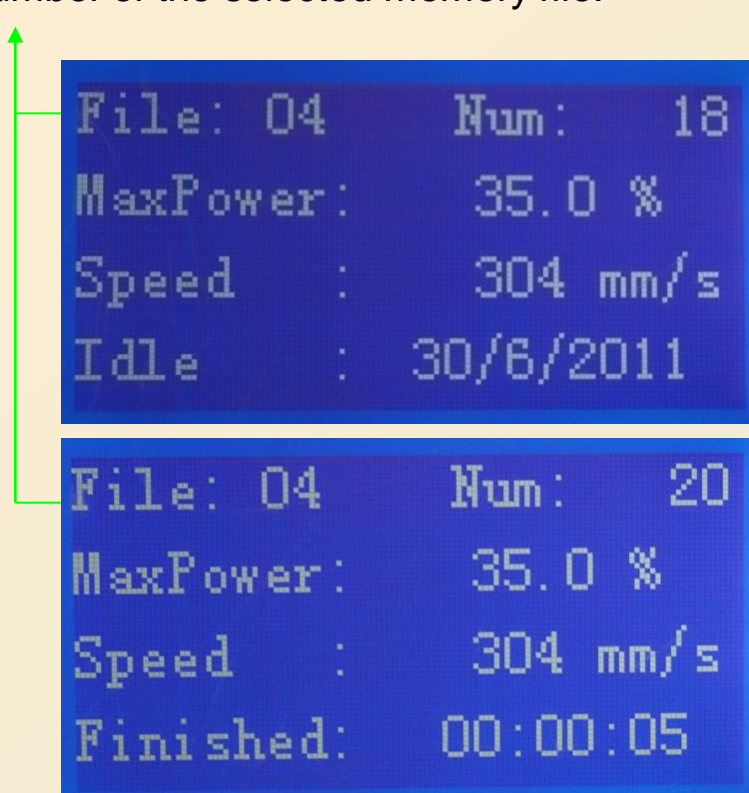
Introduction to the screens of 'Idle' and 'Finished'

File: If 00 is displayed, it indicates that no memory files are selected. If other number is displayed, 01 for example, the number is the file number of the selected memory file.

Num: It shows how many times the file is processed. If new images are output in the PC, the number starts from 0; if the images stored in the memory of the device are output, the number should be added on the basis of the original number of the memory files.

```
File: 04        Num:      18
MaxPower:        35.0 %
Speed   :        304 mm/s
Idle    :        30/6/2011
```

```
File: 04        Num:      20
MaxPower:        35.0 %
Speed   :        304 mm/s
Finished:        00:00:05
```

MaxPower: The maximum power is expressed as a percentage. The value accurate to 0.1%. In idle status, it controls the intensity of the light emitted by pressing the 'Laser' button.

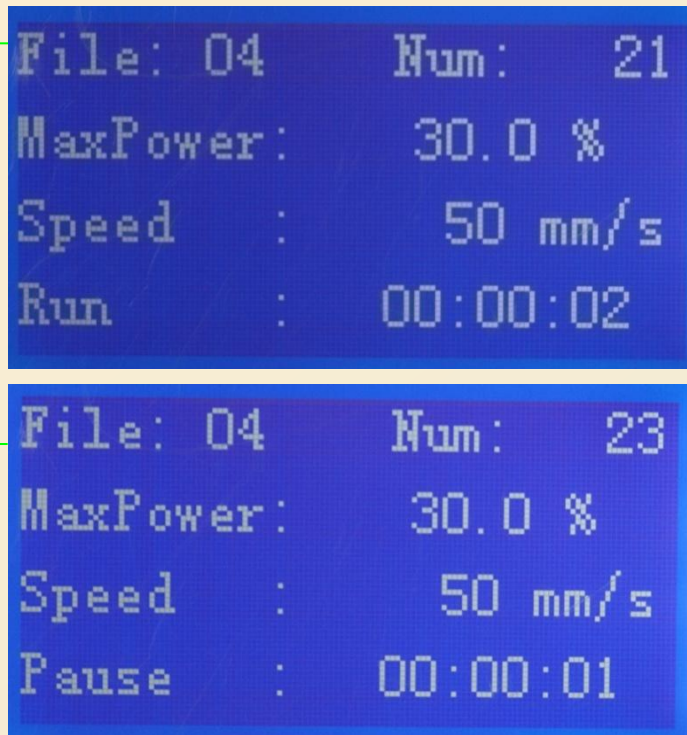**Idle:** It means that the laser is now in idle status and does not work.

Speed: unit: mm/s. It indicates the moving speed in the idle status.

Finished: It indicates that the laser processing has been finished and shows the total processing time.

Introduction to the screens of 'Run' and 'Pause'

File：If 00 is displayed, it indicates that no memory files are selected. If other number is displayed, 01 for example, the number is the file number of the selected memory file.

Num：It shows how many times the file is processed. If new images are output in the PC, the number starts from 0; if the images stored in the memory of the device are output, the number should be added on the basis of the original number of the memory files.

```
File: 04      Num:     21
MaxPower:     30.0 %
Speed    :    50 mm/s
Run      :    00:00:02
```

```
File: 04      Num:     23
MaxPower:     30.0 %
Speed    :    50 mm/s
Pause    :    00:00:01
```

MaxPower：The maximum power is expressed as a percentage. The value accurate to 0.1%. In idle status, it controls the intensity of the light emitted by pressing the 'Laser' button.

Run：It indicates that the laser machine is processing and shows the processing time up to now.

Speed：unit: mm/s. It shows the laser processing speed in the status of running and pause.

Pause：It indicates that the working is stopped temporarily. It shows the processing time up to now.

**In the 'Idle' and 'Finished' status, all the keys on No.3 panel are well functioned.**

In the 'Run' and 'Pause' status, some keys on No.3 panel are not functioned.

In the 'Run' status： Keys like Reset, Speed, MinPower, MaxPower, and Start-Pause are well functioned, while other keys are not functioned.
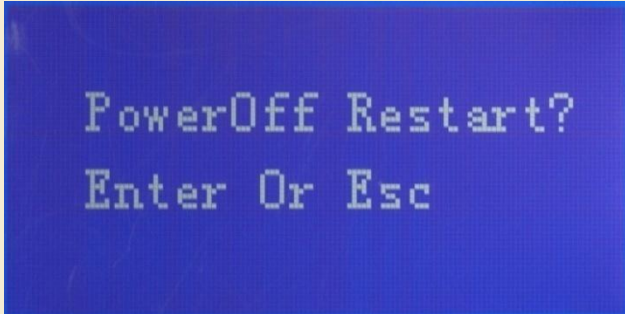
In the 'Pause' status： Keys like Reset, Laser, Speed, MinPower, MaxPower, Start-Pause, Esc, and directional keys are well functioned, while other keys are not functioned. 。
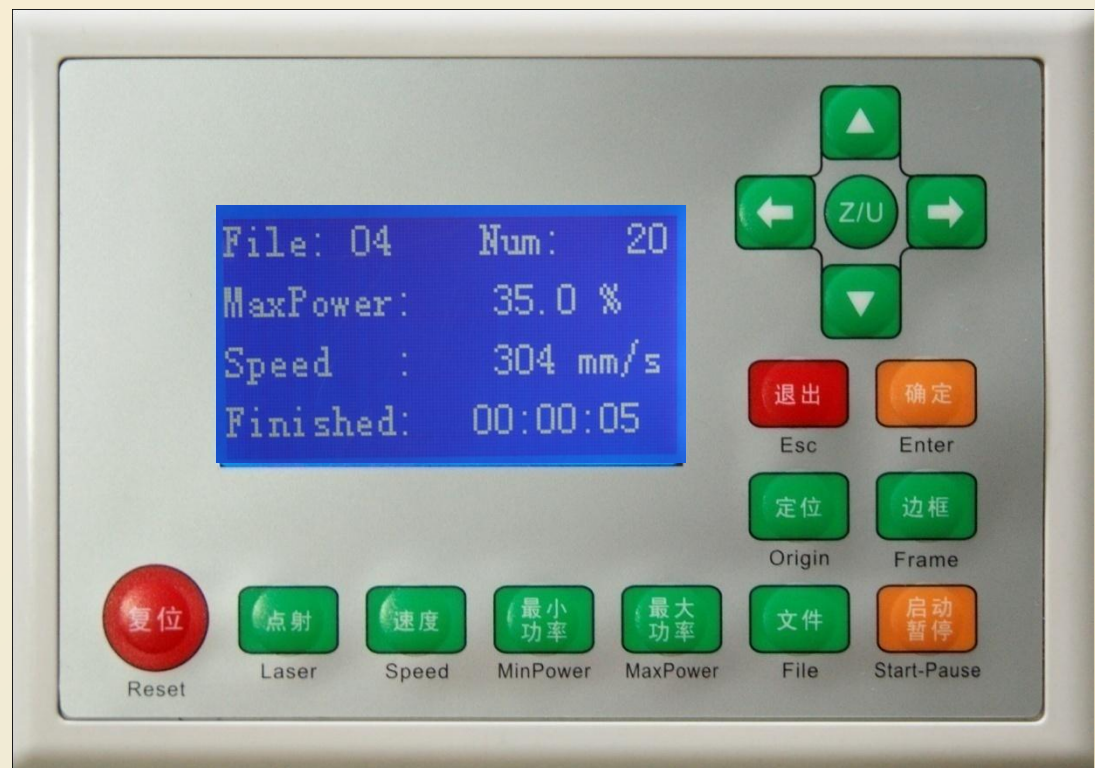
Introduction to the Reset key
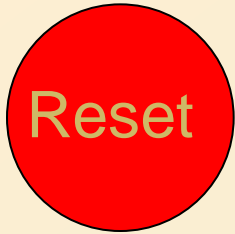
Press reset key in any screen, (or supply power to the system), the motherboard will restart and the machine will look for the original point. It will display 'Reseting…' on the screen. After the machine has been reset to the original point, the laser head will automatically return to the positioning point set at the last time. If the file has been finished processing before reset, the system now will return to the screen of 'Idle'. If the file has not been finished because of the power (off during process), It will display:

Reset

PowerOff Restart?
Enter Or Esc

Press 'ESC' key in the screen of the "continuous engraving from the breaking point", the operation will be canceled and the system is returned to the "Idle" screen. The unfinished image cannot be engraved any more even if the power is on. If the Enter key is pressed, the function of continuous graving from the breaking point is activated and the screen displays "Searching for breaking point, please wait…". The waiting time depends on the data volume processed last time. The larger the data volume, the longer the motherboard searches for the breaking point. For an example, if an image is processed for an hour and the power is off, and then the engraving function can be continued from the breaking point when powered again, and the breaking point searching time is generally about 1 minutes.

Introduction to the Laser key

In the screens of 'Idle', 'Finished', 'Pause', and 'Ask if continue to engrave from the breaking point', the Laser key can be pressed. After pressing ,the laser will be given off. Press to turn on the light and release to cut off the light. Therefore, the lighting time is equal to the pressing time. The directional keys may be used together with the Laser key to engrave or cut manually. In this mode, the laser power is the value set by the MaxPower key. In other screens, the Laser key is not functioned.
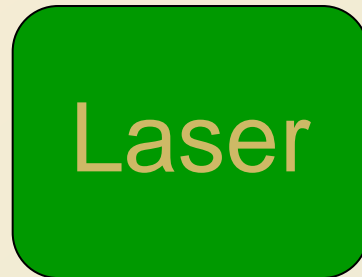
Laser

Introduction to Speed key

Press the Speed key **Speed** , the following screen will be displayed.

Speed: 0800 mm/s
Enter or Esc
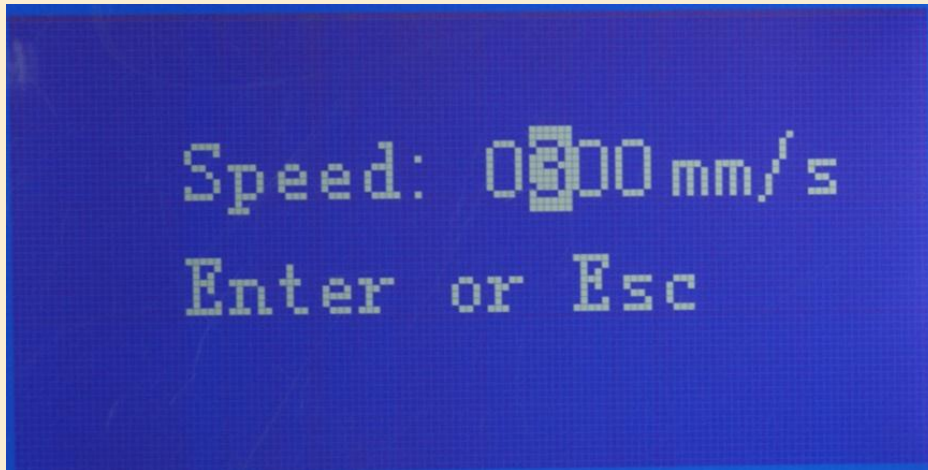
In the screen of 'Idle' and 'Finished'

Change the moving speed of the directional keys (up, down, left, right)

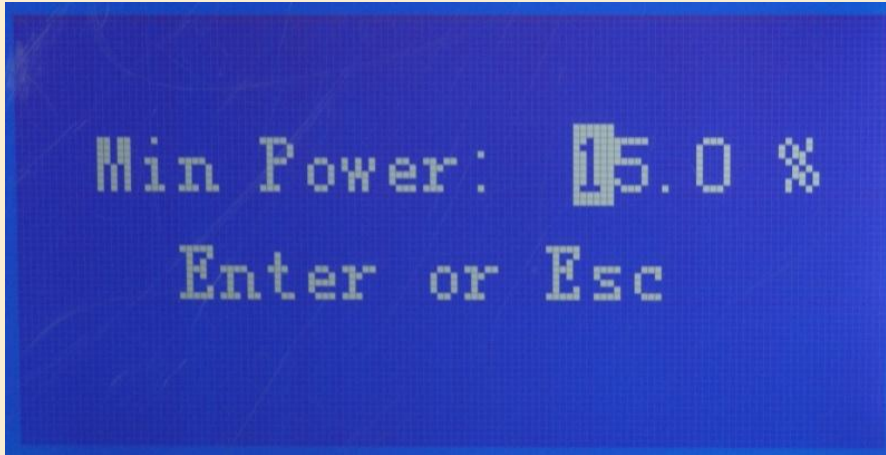In the screen of 'Run' and 'Pause'

Change the laser processing speed.

In this screen, press the left or right key to move the cursor on the parameter needs to be modified, and then press the up or down key to increase or decrease the value. After modification is completed, press Enter to confirm the parameter modification and the original main screen will be displayed. Press Esc to cancel the modification.

Introduction to the Minpower key

Press the Minipower key [Minpower] , the following screen will be displayed.

In the screen of 'Idle' and 'Finished'
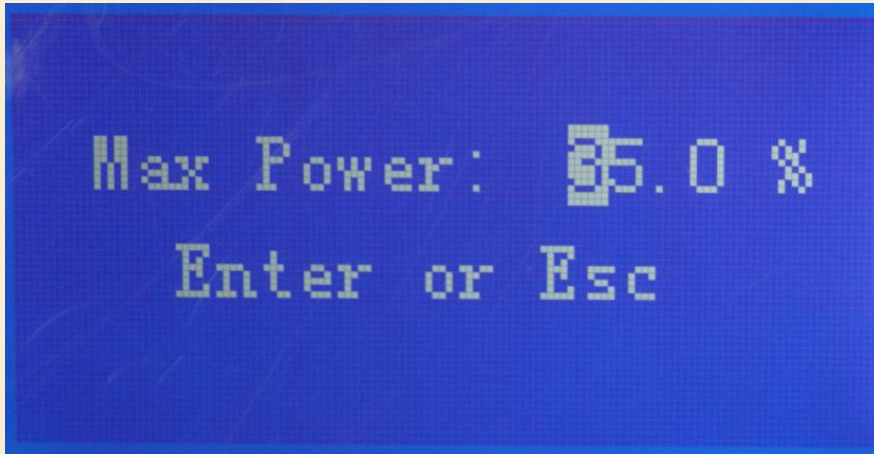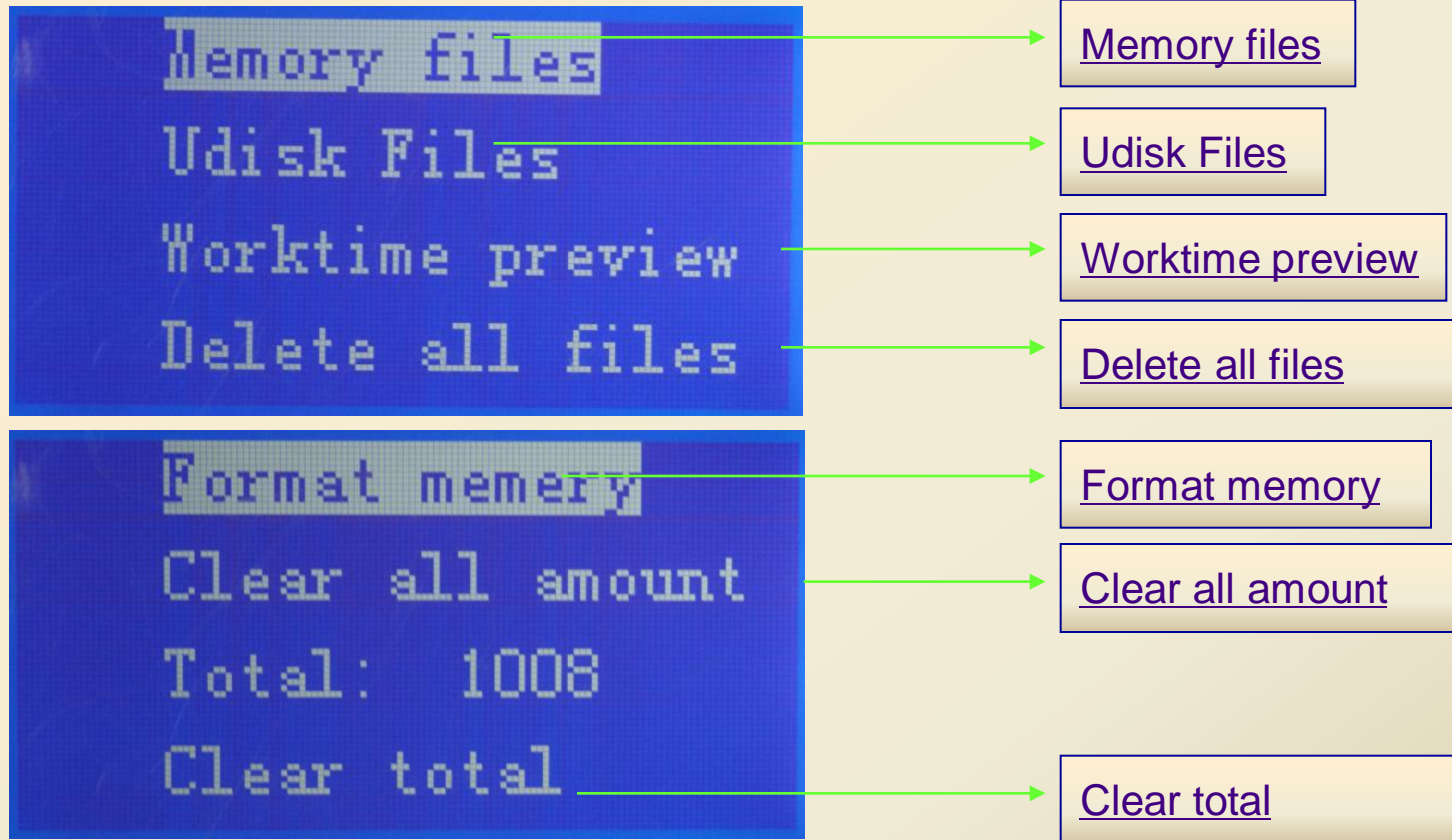Setting of Min Power is invalid.

In the screen of 'Run' and 'Pause'
Change the minimum power in the laser processing.

In this screen, press the left or right key to move the cursor on the parameter needs to be modified, and then press the up or down key to increase or decrease the value. After modification is completed, press Enter to confirm the parameter modification and the original main screen will be displayed. Press Esc to cancel the modification.

Introduction to the Maxpower key

Press the Maxpower key `Maxpower` , the following screen will be displayed.

Max Power: 85.0 %

Enter or Esc

In the screen of 'Idle' and 'Finished'
Change the light intensity in the Laser mode.

In the screen of 'Run' and 'Pause'
Change the maximum power in the laser processing.

In this screen, press the left or right key to move the cursor on the parameter needs to be modified, and then press the up or down key to increase or decrease the value. After modification is completed, press Enter to confirm the parameter modification and the original main screen will be displayed. Press Esc to cancel the modification.

Introduction to the File key.

Press File key 【 File 】, the following screen will be displayed （Click the following links for details）:

Memory files

Udisk Files

Worktime preview

Delete all files

Format memory

Clear all amount

Clear total

Move the cursor by using the up and down keys and choose an option, press Enter to access into the next level menu. 。

Introduction to the "memory files" in the File key

Choose "Memory files" and press Enter to display the following screen:

File number
File name

Amount of production: It refers to the number of processing. When a process finished, the number will be accumulated by 1.

In this screen, choose a certain file by moving the cursor up and down, and then press Enter key, the following screen will be displayed（And choose an option in the same way, and then press Enter key to operate.）：

Run: Directly start the processing for that file.

TrackFrame: The circle is the actual graph and the red rectangle is the smallest external rectangle for this circle. 'Track frame' means that the laser moves along the rectangle and realize the frame preview.

Worktime preview: Calculate the total processing time for this file by using software.

To Udisk: Copy the memory file to Udisk. If failed, it will display error message on the screen. If successful, it will ring once.

Delete: Delete the file from the memory

Clear amount: Clear the amount of the file and count again from zero.

Introduction to the "Udisk Files" in the File key

Choose "Udisk files" and press Enter to display the following two kinds of screens in accordance with the actual situation:

Screen1：If a U-disk is plugged into the Udisk interface and there are off-line files in the U-disk, the following screen will be displayed.：
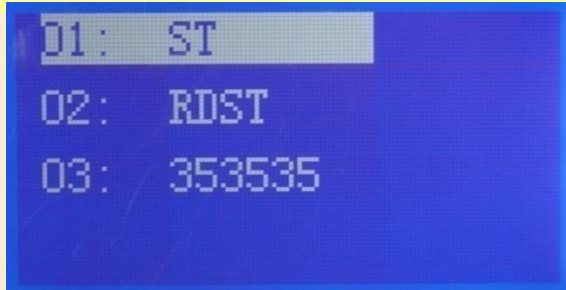
Screen 2：If no U-disk is plugged into the U-disk interface or no off-line files inside the Udisk, it will display "No Files", Press OK to exit.

In screen 1, press Enter to display the following screen：

To Memory：Copy the off-line files to the memory of the device(The motherboard of the laser machine has a memory of 256M). If there are any files in the memory, which have the same names with the copied files, the copying will fail to continue and give prompt of 'file rename'. If there is no files in the memory, which have the same names with the copied files, the copy will be successfully done.

Delete：Delete the selected off-line files in the U-disk.

Introduction to "Worktime preview" in the File key

Choose "Worktime preview" and press Enter to display the following screens.

Hour   Minute   Second

Time: 00.00.01

Enter or Esc
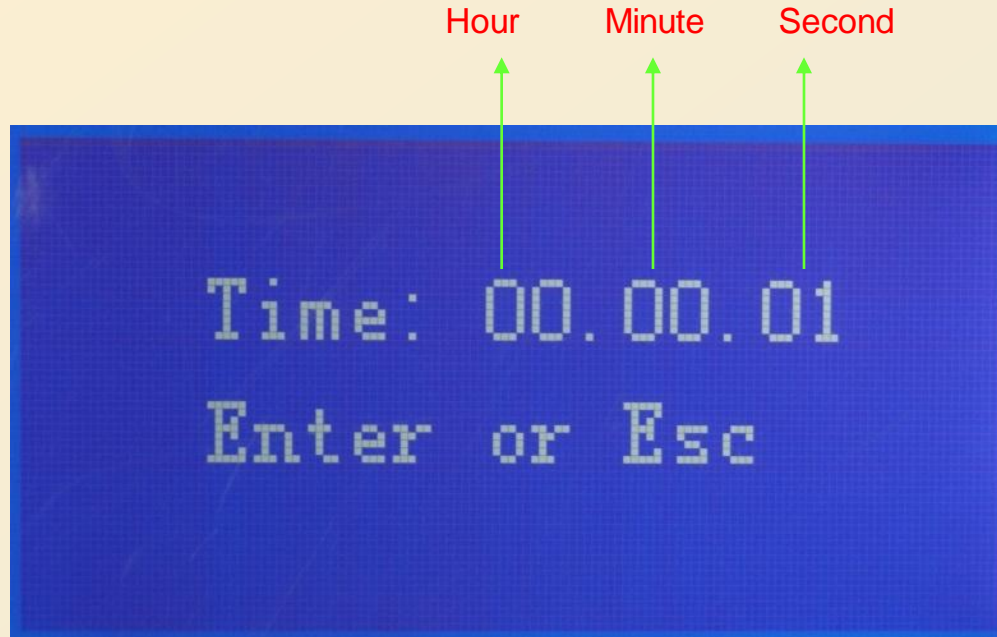
The motherboard of the laser machine has memory function. It can keep the information of the last processing file. This file is recognized by the laser machine as the current file. Therefore, the current worktime preview is to calculate the file processing time by the software.

Introduction to "Delete all files" in the File key

Choose "Delete all files" and press Enter to display the following screens.

Delete all files： Delete all the off-line files in the device memory.

Introduction to "Format memory" in the File key

Choose "Format memory" and press Enter to display the following screens.
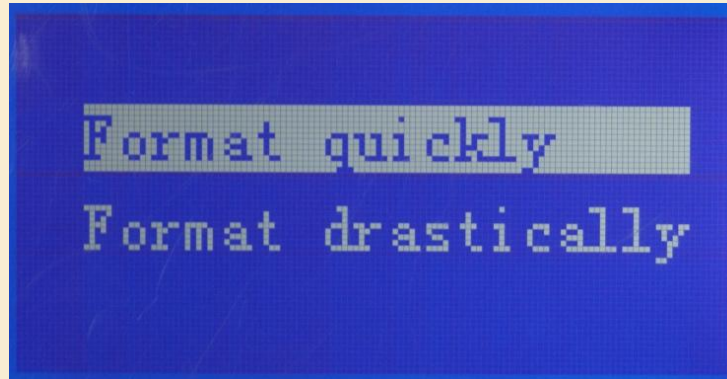
Memory format can be divided into two kinds, i.e. quick format and full format. Quick format takes less time and full format takes longer time. In general, quick format is enough. During formatting, the following screens will be displayed.
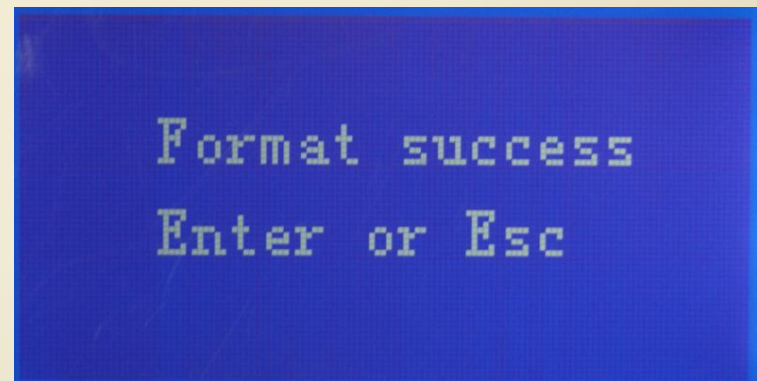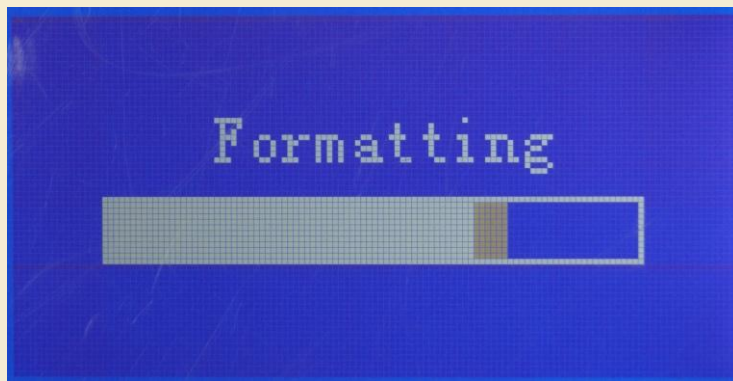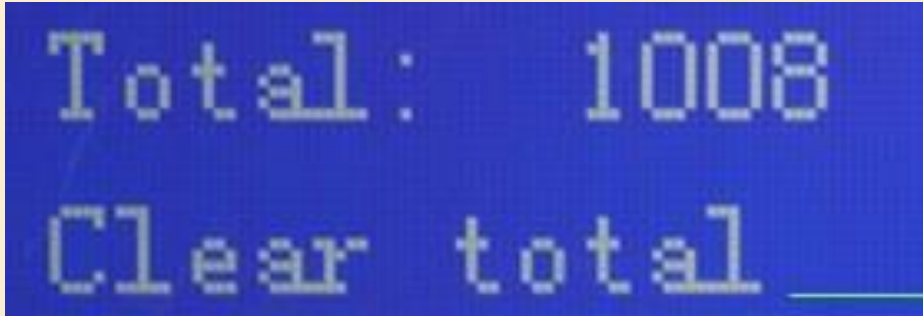
Introduction to "Clear all amount" in the File key

Clear all amount：Clear all the amount of the files in the device memory and count from zero.

Introduction to "Total" and "Clear total"

Total： It refers to the total numbers of all the file processing.

Clear total： Clear the total number above and count from zero.

Introduction to the Start-pause key

In the screens of 'Idle' or 'Finished', press this key to process the current file (the file in the motherboard memory). In the 'Run' screen, press this key to pause the processing. In the 'Pause' screen, press this key to continue the processing. Press Esc in the 'Pause' screen, the processing will be terminated and cannot be continued in the next time.

Start-pause

Introduction to the Origin key

The origin key can be used in 'Idle' screen. After the key is pressed, the motherboard will take the crossing point formed by X axis and Y axis of laser machine as the relative original point for the graph, also called positioning point. (It is also the location of the laser head). As mentioned before, in the 'Idle' or 'Finished' screens, pressing the Start/Pause key will start the processing of the current file (the file in the memory of the motherboard), the positioning point determines the location of the processed file. The positioning point is not functioned in other screens.

Origin

Introduction to the Frame key

Press this key to execute the frame view for the current file (the file in the memory of the motherboard)

Frame

Esc
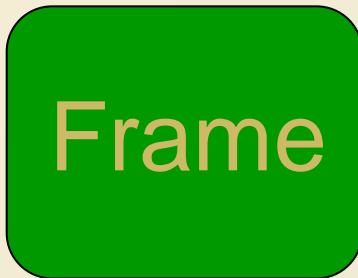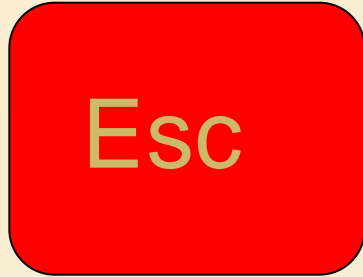
Esc：Cancel the operation

Enter

Enter：Confirm the operation

Introduction to the directional keys
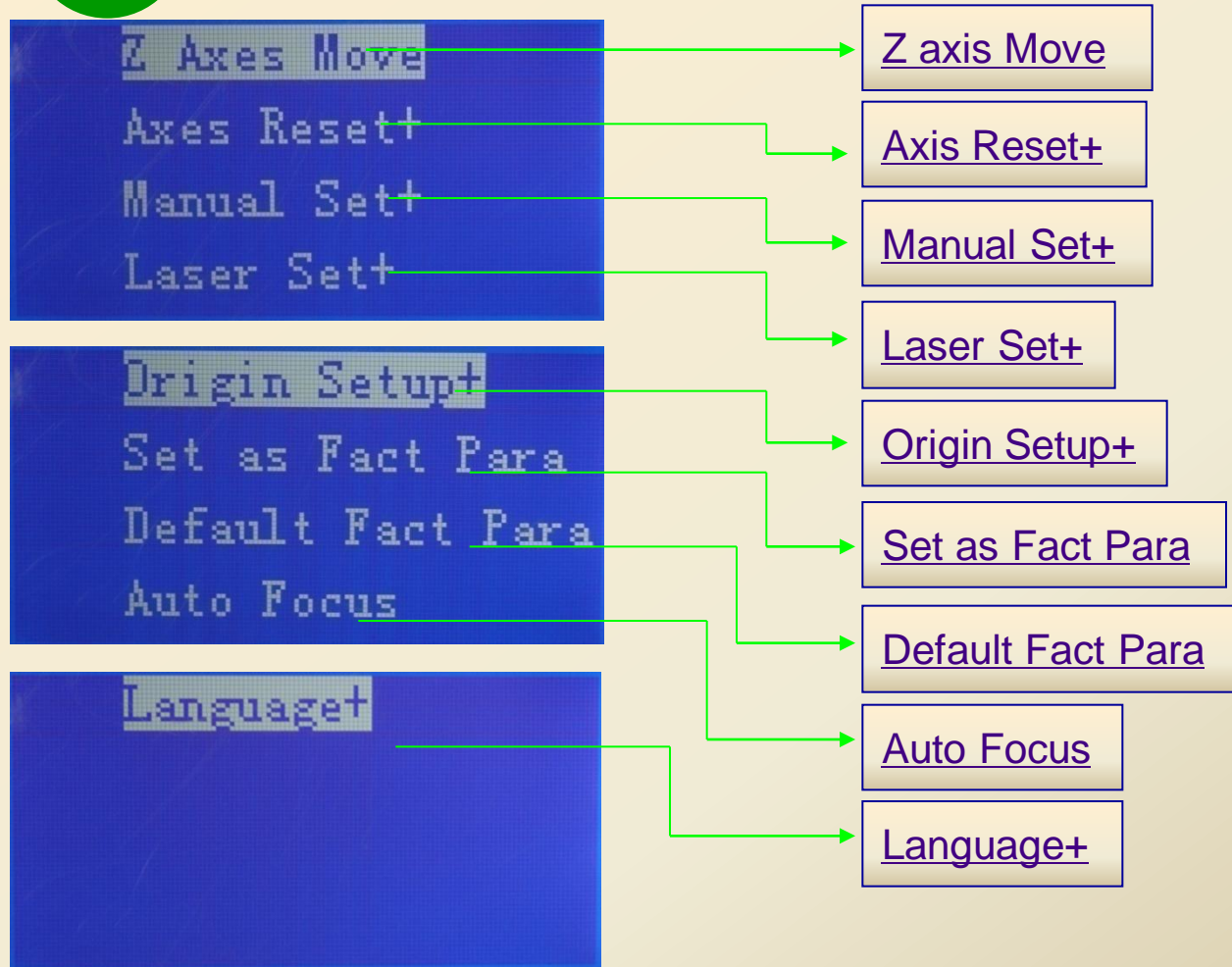
Up

Left

Right

Down

Y axis

Z axis
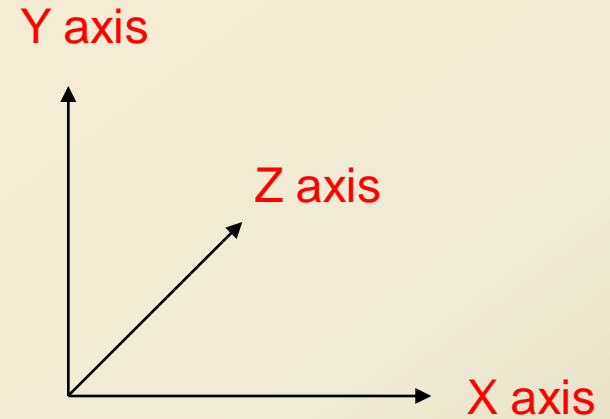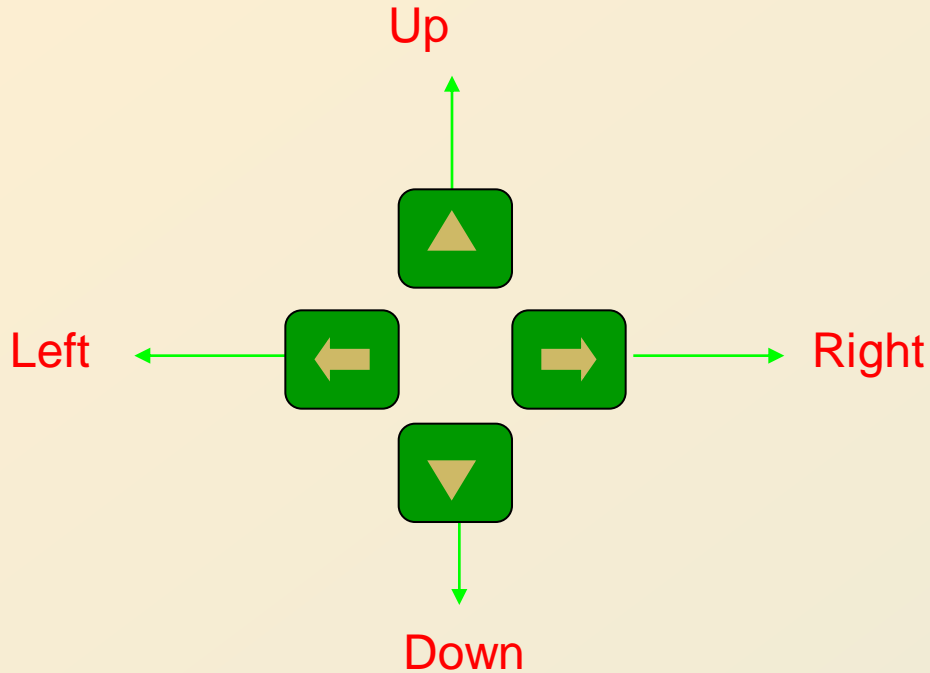
X axis

In addition to the parameter modification and cursor moving, the directional keys can also be used for moving the motion axis in the 'Idle', 'Finished', and 'Pause' screens. In these 3 screens, move X axis by pressing the left and right keys and move Y axis by pressing the up and down keys.
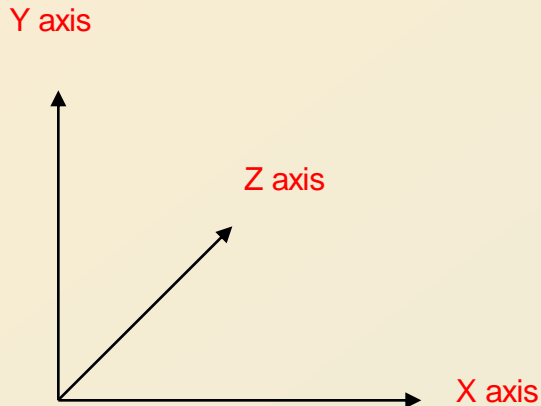
Introduction to Z/U key

Press Z/U key **Z/U**, the following screen will be displayed. (Press the following keys for details.) ：

Z Axes Move → [Z axis Move](#)

Axes Reset+ → [Axis Reset+](#)

Manual Set+ → [Manual Set+](#)

Laser Set+ → [Laser Set+](#)

Origin Setup+ → [Origin Setup+](#)

Set as Fact Para → [Set as Fact Para](#)

Default Fact Para → [Default Fact Para](#)

Auto Focus → [Auto Focus](#)

Language+ → [Language+](#)

Introduction to the "Z axis Move" in the Z/U key

Press the up or down keys to move the cursor to the option of "Z axis Move" and press the left and right keys, the Z axis will be moved, so as to lift or lower down the working surface of the laser machine. It is only valid for the model type which has lifting platform.

Y axis

Z axis
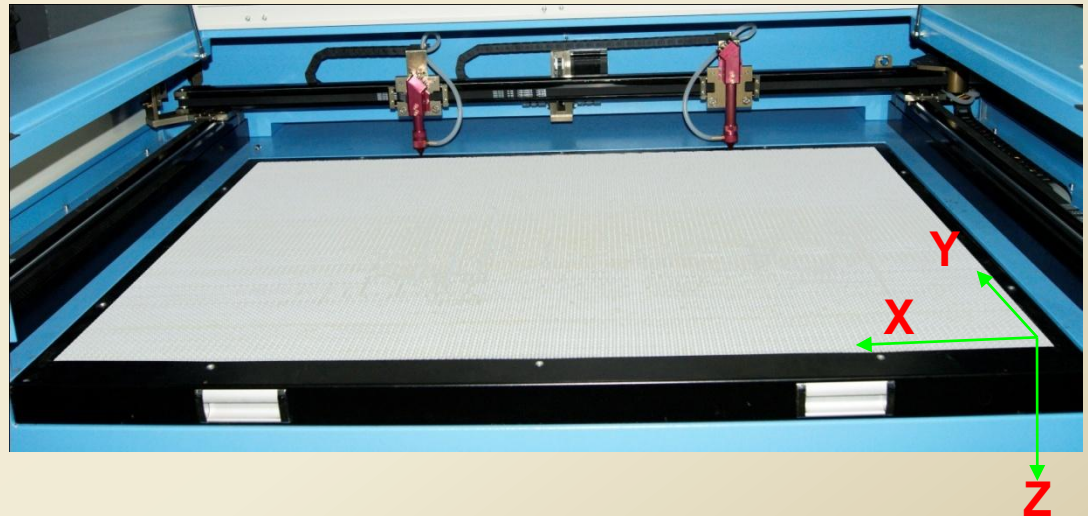
X axis

Introduction to the "Axis Reset+" in the Z/U key

Press the up and down keys to move the cursor to the option of "Axis Reset+" and press Enter, the following screen will be displayed.
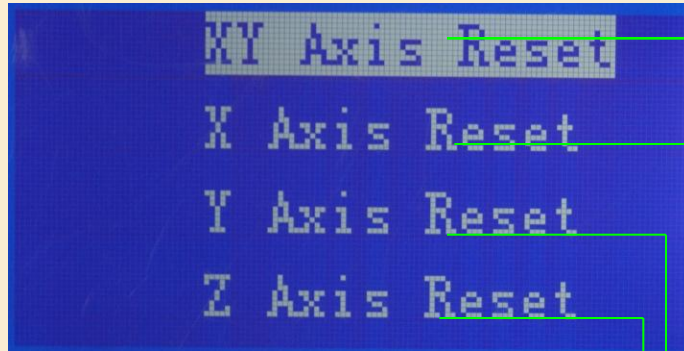
XY Axis Reset：Reset both the X axis and Y axis to the mechanical original point. After being successfully reset, the machine will stay at the original point and do not move.

X Axis Reset：Reset X axis to its original point. After being successfully reset, the machine will stay at the original point and do not move.

Y Axis Reset：Reset Y axis to its original point. After being successfully reset, the machine will stay at the original point and do not move.

Z Axis Reset：Reset Z axis to its original point. After being successfully reset, the machine will stay at the original point and do not move.

Y轴

Z轴

X轴
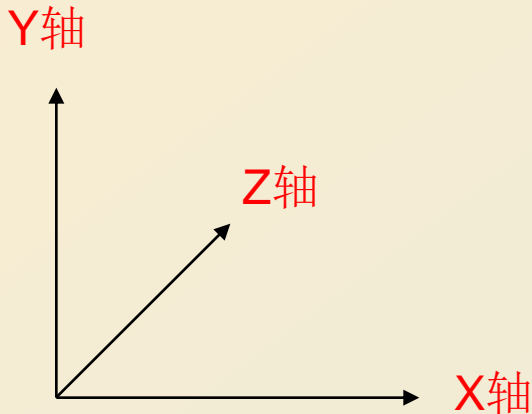
Introduction to the "Manual Set+" in the Z/U key

Press the up and down keys to move the cursor to the option of "Manual Set+" and press Enter, the following screen will be displayed.

ManualSet: 000.0 mm

Enter or Esc
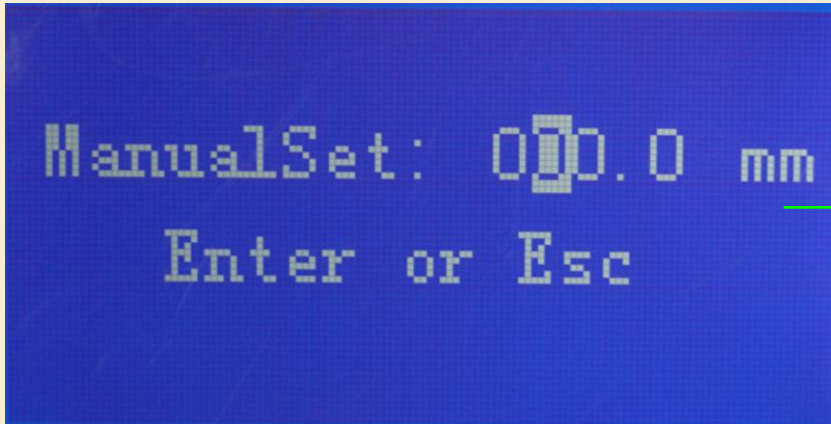
Unit: mm

1000 mm=1 meter

As mentioned before, press the left and right keys to move X axis and press up and down keys to move Y axis. If the value of "Manual Set" is 0, moving distance depends on the time of pressing the directional key. Or to say, press to move and release to stop. If the value of "Manual Set" is not 0, the corresponding axis will move the set value.

Introduction to the "Laser Set+" in the Z/U key

Press the up and down keys to move the cursor to the option of "Laser Set+" and press Enter, the following screen will be displayed.

LaserSet : 0000 ms

Enter or Esc
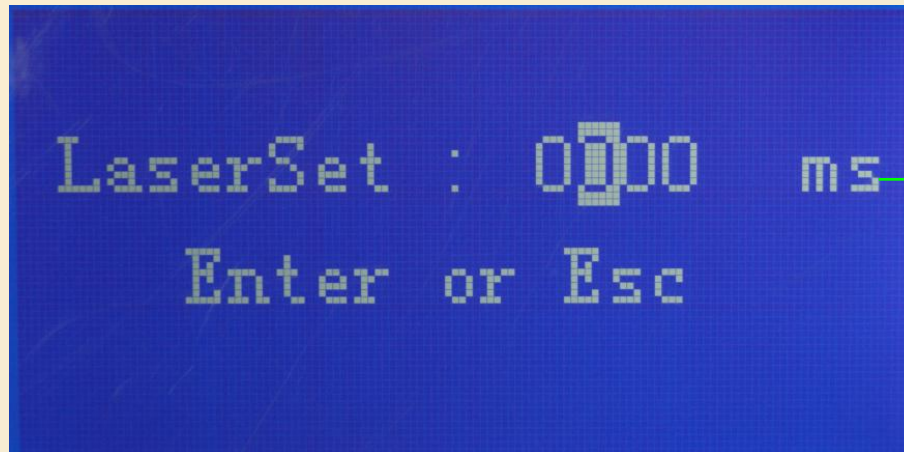
Unit: ms

1000ms=1 second

As mentioned before, press 'Laser' key to give off the laser. The lighting time is the pressing time. Or to say, press to turn on and release to cut off the laser. It is the lighting status when laser setting is '0'. If the laser setting is not '0', the lighting time is the 'LaserSet' value.
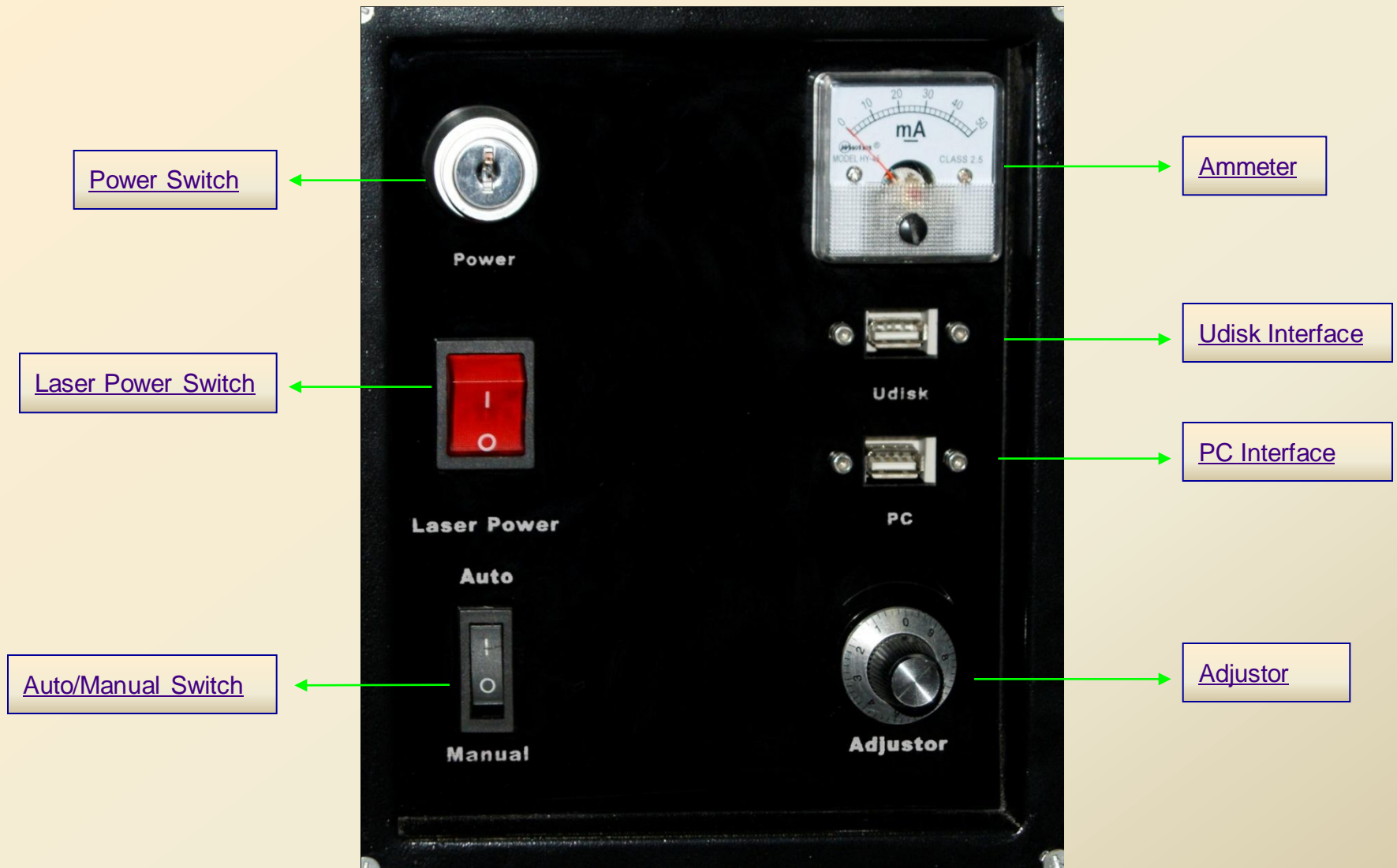
Introduction to the "Origin Setup+" in the Z/U key

Press the up and down keys to move the cursor to the option of "Laser Set+" and press Enter, the following screen will be displayed.

Enable or disable the multi origin. Press Enter in the option and choose "Yes" or "No". "Yes" is enable setting the multi origin and "No" is disable setting the multi origin。

Move the laser head to the location to be set as origin, and press the Origin key on the No.3 panel to set origin. The user can set four different locations as origin.

Normally, after multi origin has been set, the first processing will start from the first origin, the second processing will start from the second origin, the third processing will start from the third origin, and the fourth processing will start from the fourth origin. If the next origin location has chosen a origin, the processing will start from this origin.

Enable or disable the origin by choosing "Yes" or "No". "Yes" is to enable the origin and "No" is to disable.

Introduction to the "Set as Fact Para" in the Z/U key

Press the up and down keys to move the cursor to the option of "Set as Fact Para" and press Enter, the following screen will be displayed.
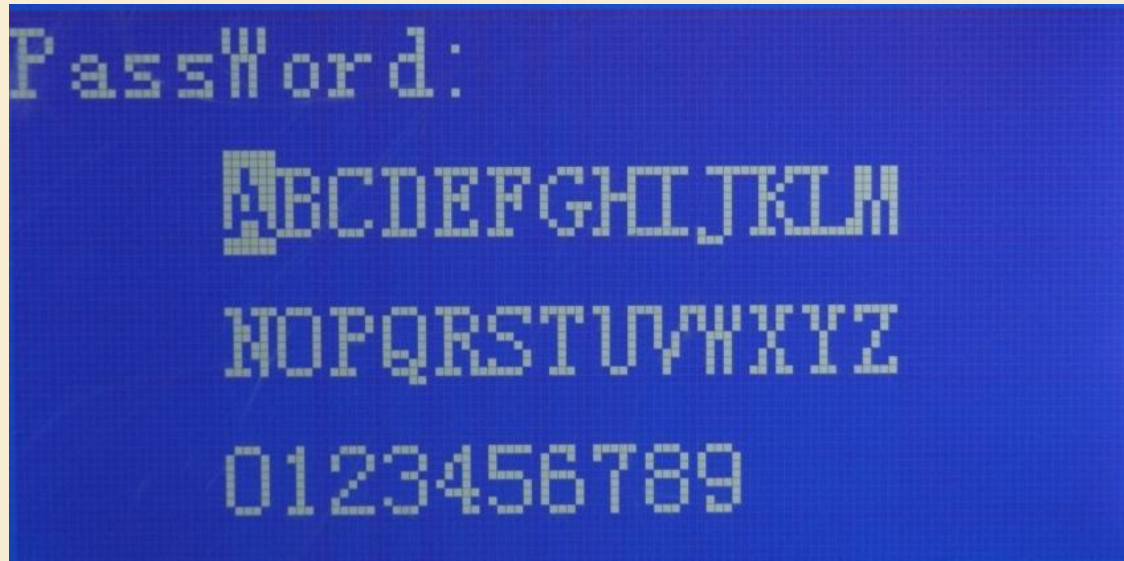
Set as Fact Para： It is used for the manufacturer to set the parameter as the primary data of the laser machine so as to restore the modified parameters in the future.

Introduction to the "Default Fact Para" in the Z/U key

Default Fact Para：The function of default factory parameter setting is used to restore the improperly modified parameters, which cause the wrong or improper processing, to the primary parameters set by the manufacturer.

Auto Focus：The option is temporarily invalid. To enable the option, a limit switch is needed to be assembled on the machine.

Introduction to the "Language+" in the Z/U key

Press the up and down keys to move the cursor to the option of "Language+" and press Enter, the following screen will be displayed.

Use up and down keys to choose a language. Press Enter to use the language as the displayed language on the panel.

Introduction to the switches on the control panel （Click the following links for details. ）

Power Switch

Laser Power Switch

Auto/Manual Switch

Power

Laser Power

Auto

Manual

Udisk

PC

Adjustor

mA

Ammeter

Udisk Interface

PC Interface

Adjustor

Power Switch：Switch on and off the power supply for the machine.

Laser Power Switch：Switch on and off the laser emitting from the laser tube. Press "1" to switch on and "0" to switch off.
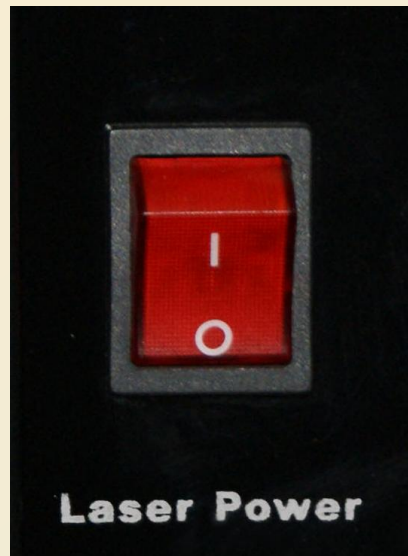
Ammeter： The reading of the ammeter is proportional to the laser intensity. If the laser intensity is stronger, the reading of the ammeter will be larger.

Udisk Interface：Udisk can be plugged in this interface to control the laser machine

PC Interface：The computer controls the laser machine through this interface.
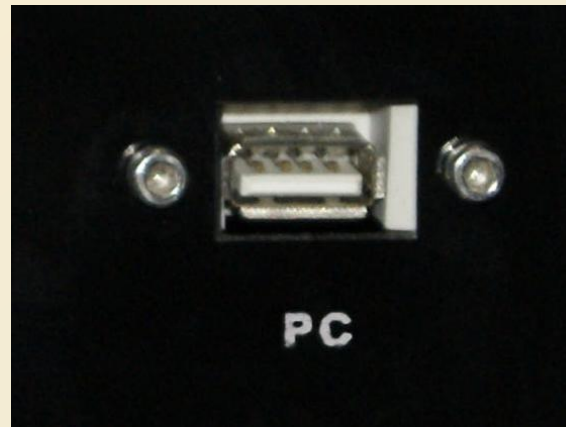
Auto/Manual Switch：Press 1 to switch to auto mode, in which the laser intensity is controlled by the computer or the control panel. Press 0 to switch to manual mode, in which the laser intensity is manually controlled by the adjustor.

Adjustor：It is used in manual mode to control the light intensity of the laser machine.
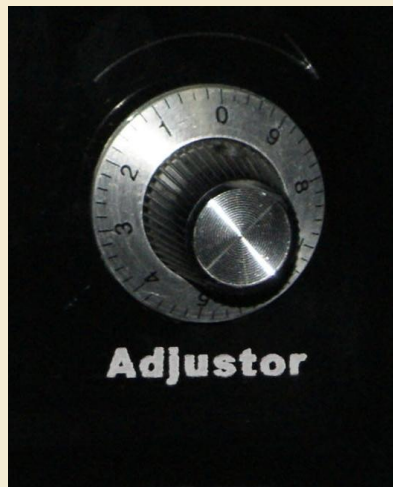
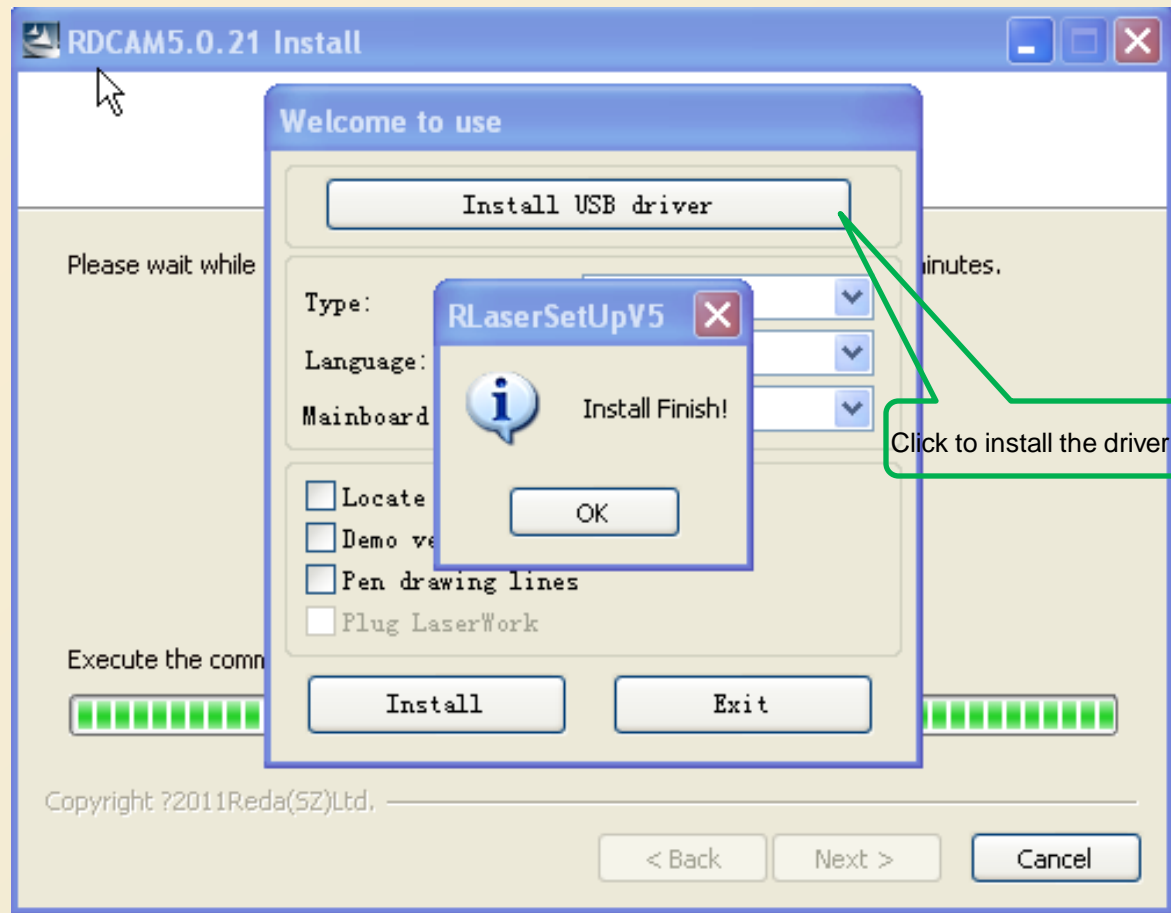# 2. Software Installation

Double click to display the software installation interface.
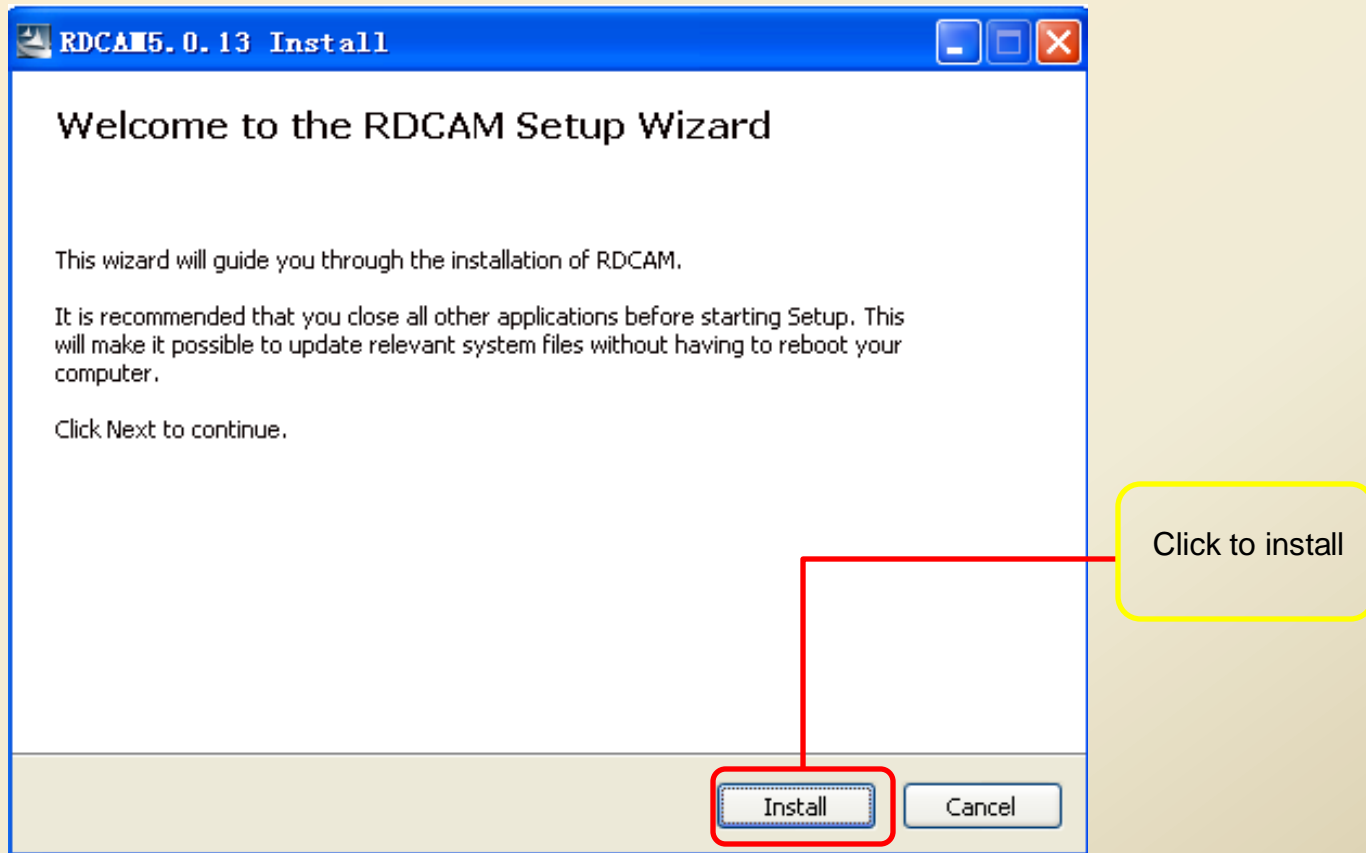
Click to install

Choose the proper type, language and mainboard

Welcome to use

Install USB driver

Type:	LaserWork
Language:	Simplify Chinese
Mainboard:	RDLC320

☐ Locate install path
☐ Demo version
☐ Pen drawing lines
☐ Plug LaserWork

Install   Exit

Install USB driver

Choose Type

Choose Language

Choose Mainboard

Install the software
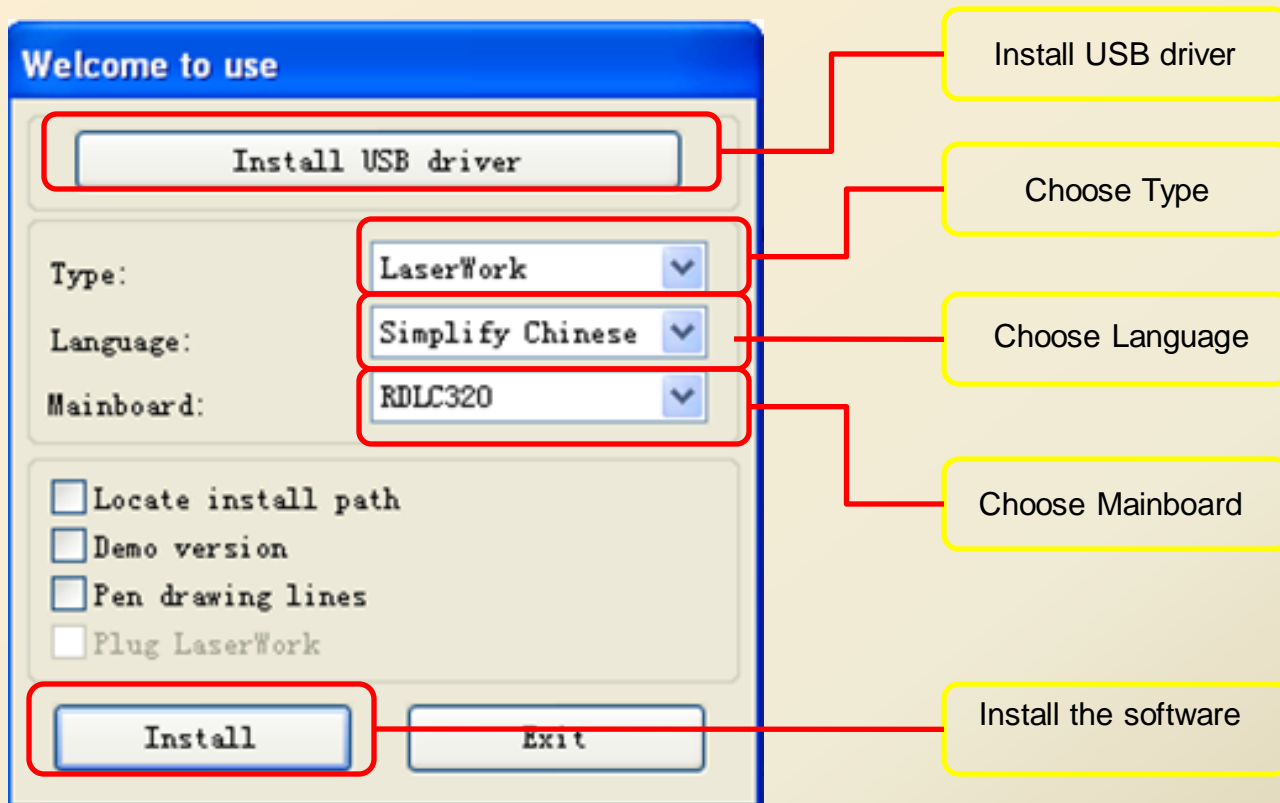
Software installation is finished
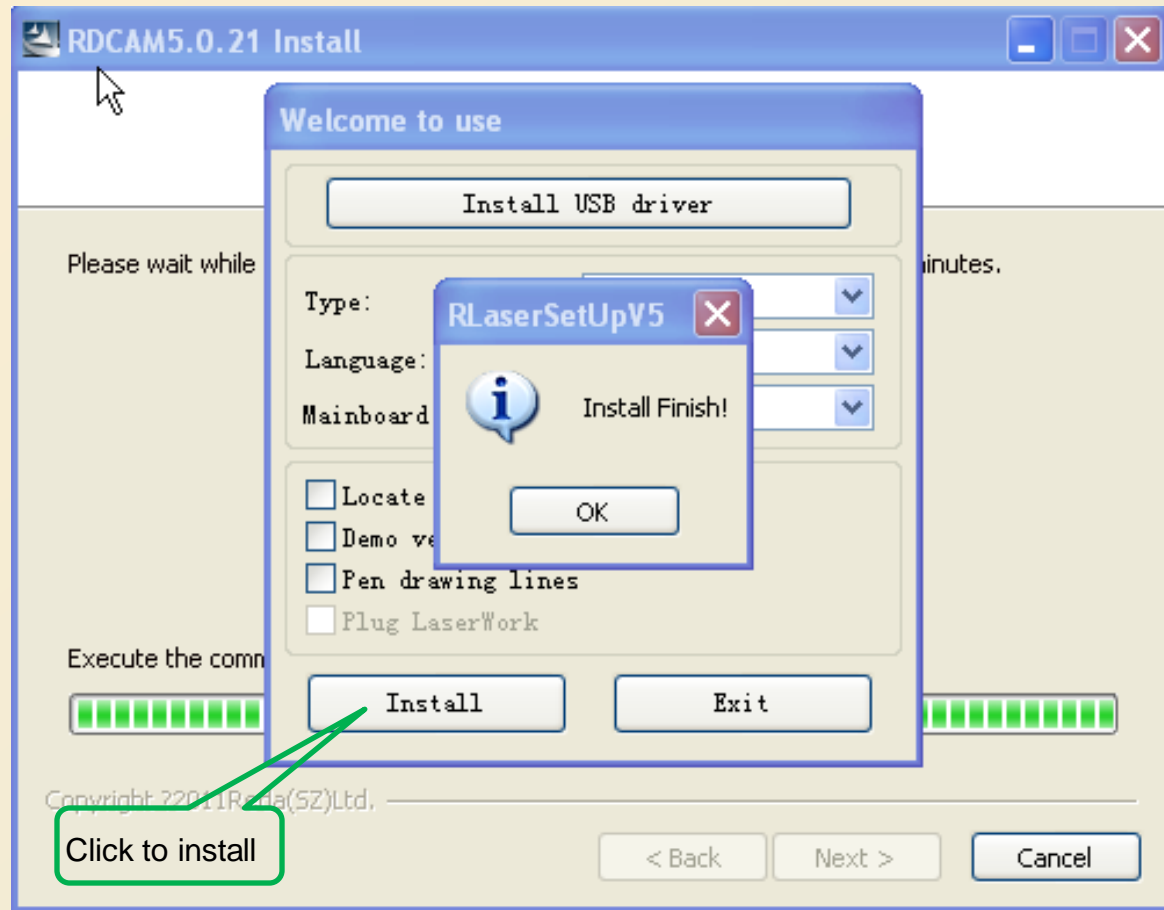
Driver Installation is finished

3.Software Operation
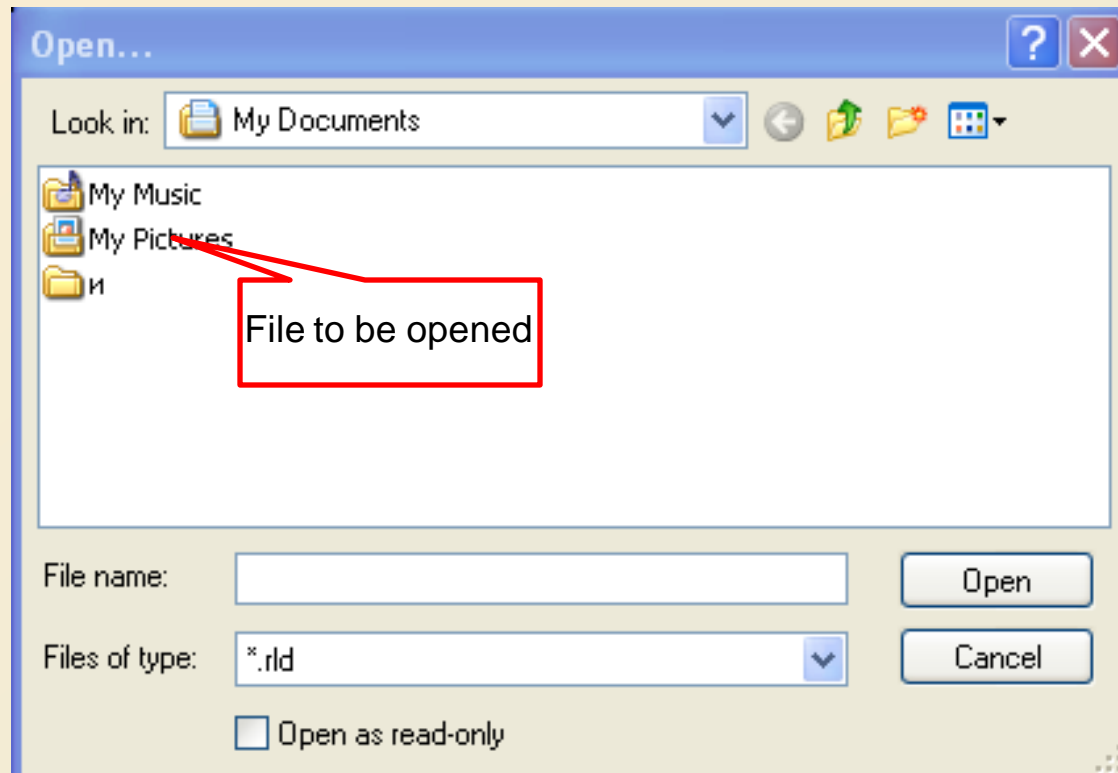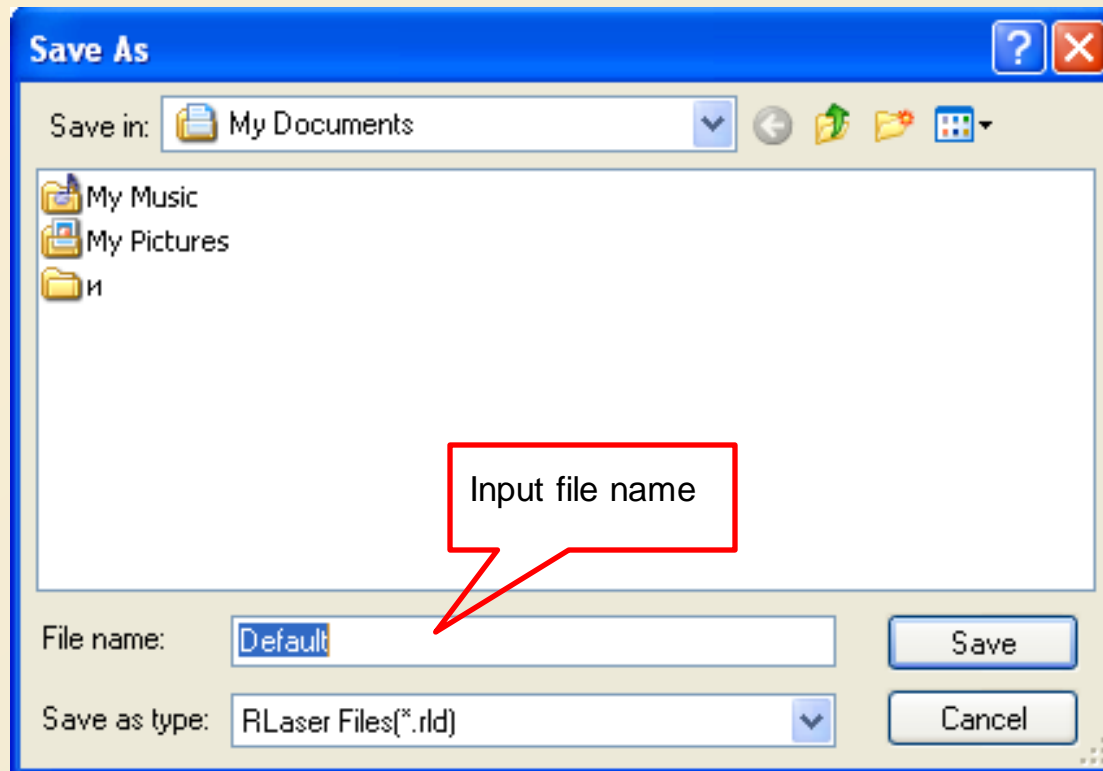
Main Interface of the Software

3.1 File Menu

File(F)	Edit(E)	Draw(D)	Config(S)

New...		Ctrl+N
Open...		Ctrl+O
Save		Ctrl+S
Save As...		
Import...		Ctrl+I
Export...		Ctrl+E
Vendor settings		
1 C:\Users\...\Default.rld		
Exit		
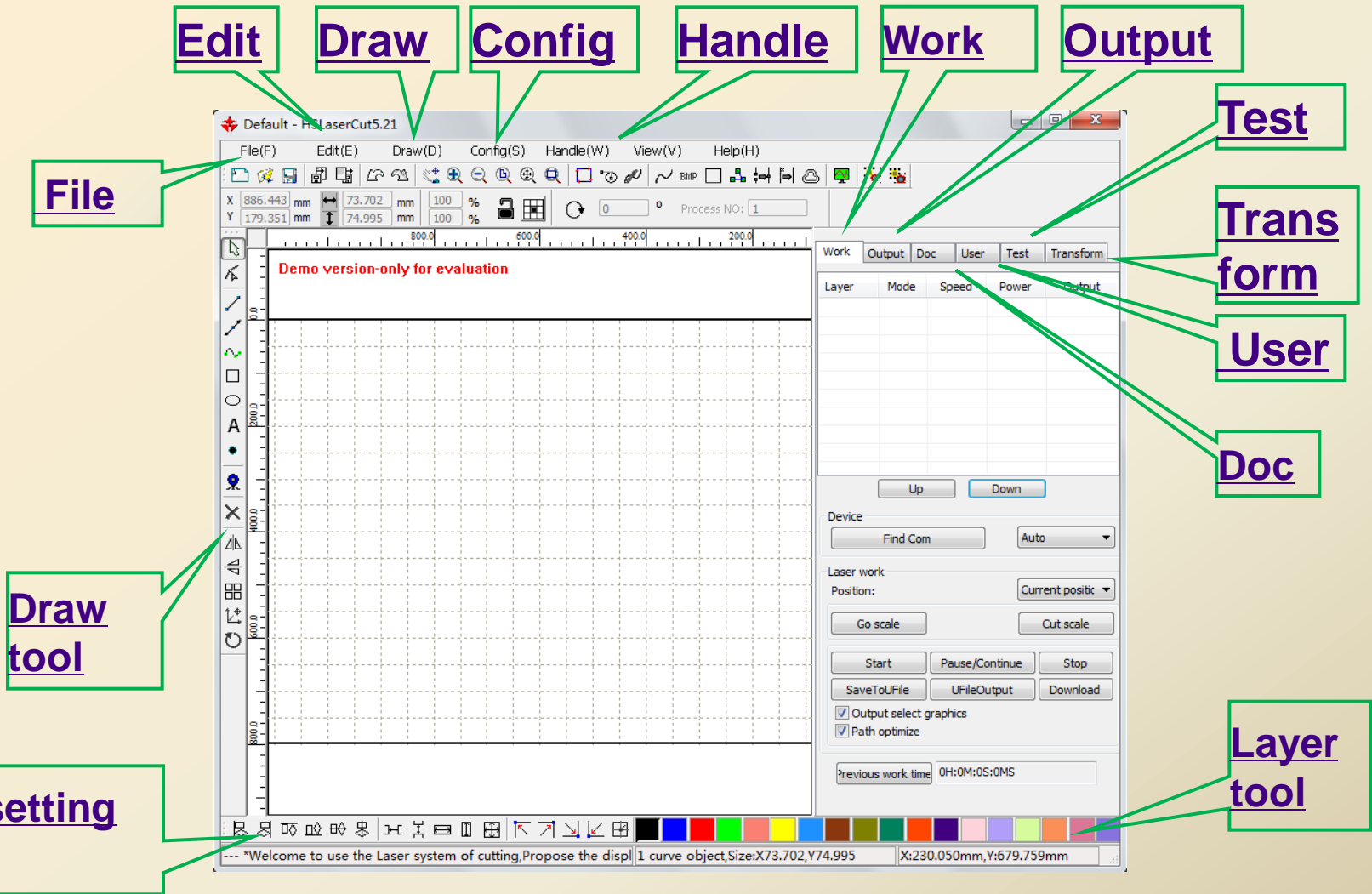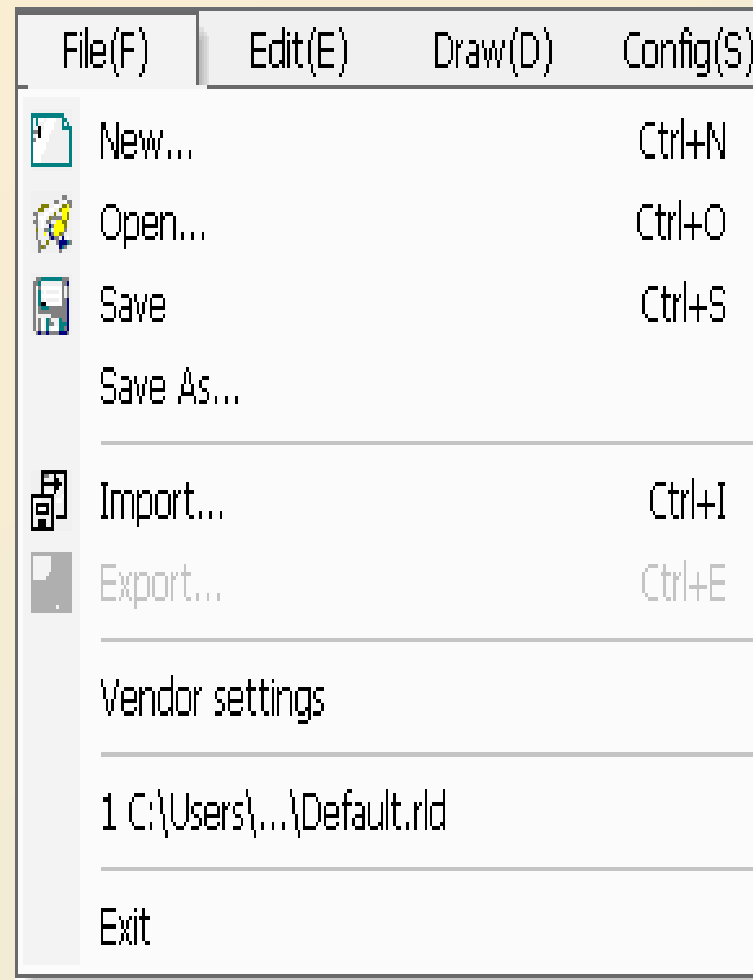
3.1.1 Open file

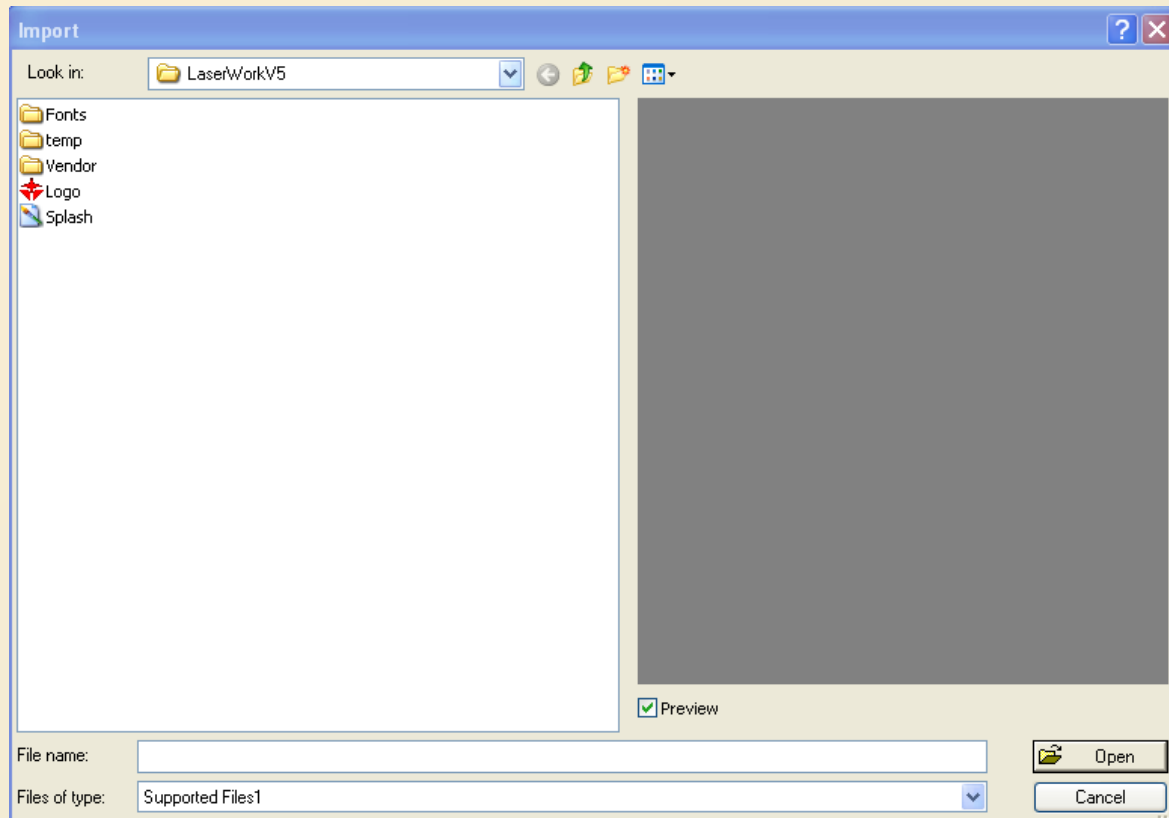Click 'Open' in the File Menu, or click the icon to open.

File to be opened

3.1.2 Save file

Click 'Save' in the File Menu, or click the icon ⊟ to save the file.
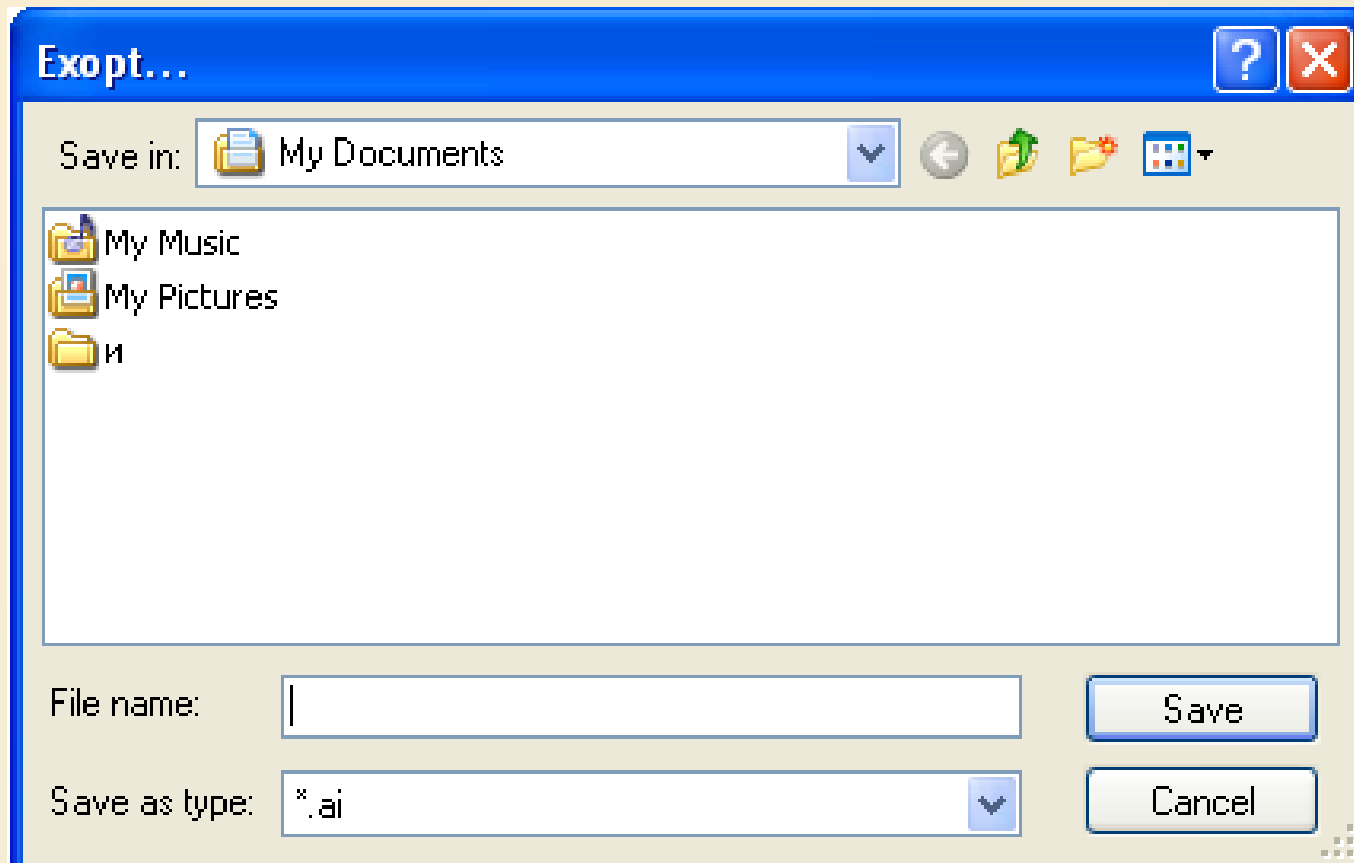

Input file name

3.1.3 Import file

Click 'Import' in the File Menu, or click the icon [icon] to display the following dialog box. Choose files to be imported, and then click 'Open'.
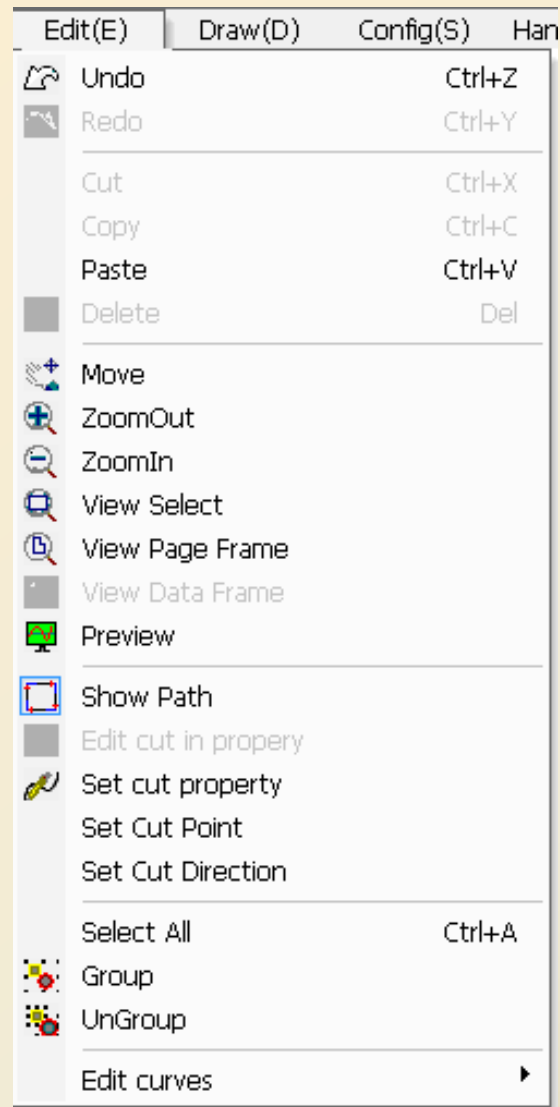
3.1.3 Export file

Click 'Export' in the File menu, or click the icon ⬚ to display the Export dialog box. Input the file name and click 'Save'.

Exopt...

Save in: My Documents

My Music
My Pictures
и

File name:

Save as type: *.ai

Save

Cancel

3.2 Edit Menu

Edit(E)	Draw(D)	Config(S)	Han

Undo	Ctrl+Z
Redo	Ctrl+Y
Cut	Ctrl+X
Copy	Ctrl+C
Paste	Ctrl+V
Delete	Del
Move	
ZoomOut	
ZoomIn	
View Select	
View Page Frame	
View Data Frame	
Preview	
Show Path	
Edit cut in propery	
Set cut property	
Set Cut Point	
Set Cut Direction	
Select All	Ctrl+A
Group	
UnGroup	
Edit curves	▶

3.2.1 View Objects

● Move：Click 'Edit'→ 'Move', or click   on the system toolbar. Press and hold the left mouse button to drag and move in the drawing area.

● Zoom in：Click 'Edit'→ 'Zoom in', or click   on the system toolbar. Each time you click the command on the menu or the toolbar, the picture will be zoomed in once, which is centere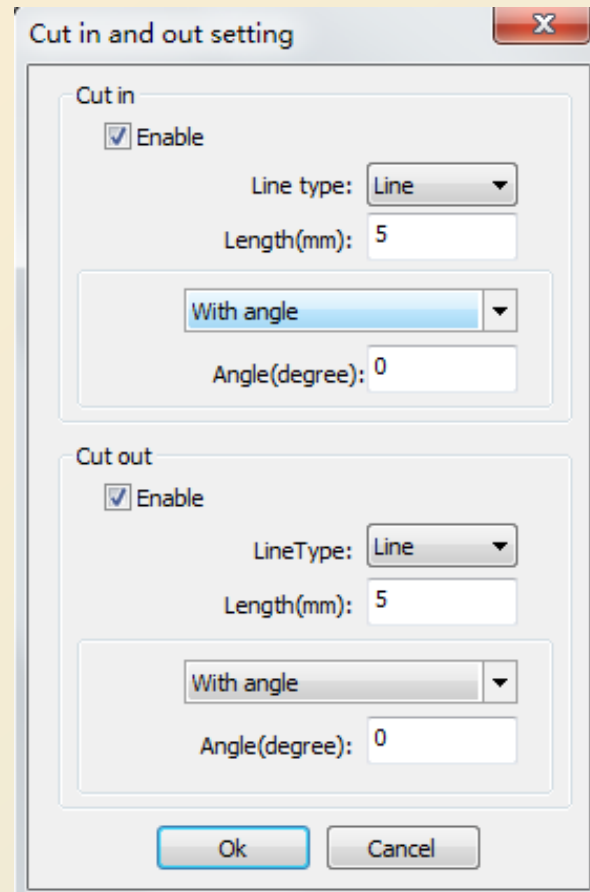d by the drawing area. Move the mouse pointer to the drawing area. Each time you click, the picture will be zoomed in once, which is centered by the location where the mouse clicks.

● Zoom out：Click 'Edit'→ 'Zoom out', or click   on the system toolbar. Each time you click the command on the menu or the toolbar, the picture will be zoomed out once, which is centered by the drawing area. Move the mouse pointer to the drawing area. Each time you click, the picture will be zoomed out once, which is centered by the location where the mouse clicks.

● View Select：Click 'Edit'→ 'View Select', or click   on the system toolbar. Move the mouse pointer to the drawing area. Press and hold the left mouse button to drag in this area. A frame with dotted line will be displayed in the drawing area. After releasing the mouse button, the selected area will be displayed in the maximum ratio in the drawing area.

● View Page Frame：Click 'Edit'→ 'View Select', or click   on the system toolbar. Then it can completely display the page frame in the view.

● View Data Frame：Click 'Edit'→ 'Data Frame', or click   on the system toolbar. Then it can completely display the selected object.

Process Preview
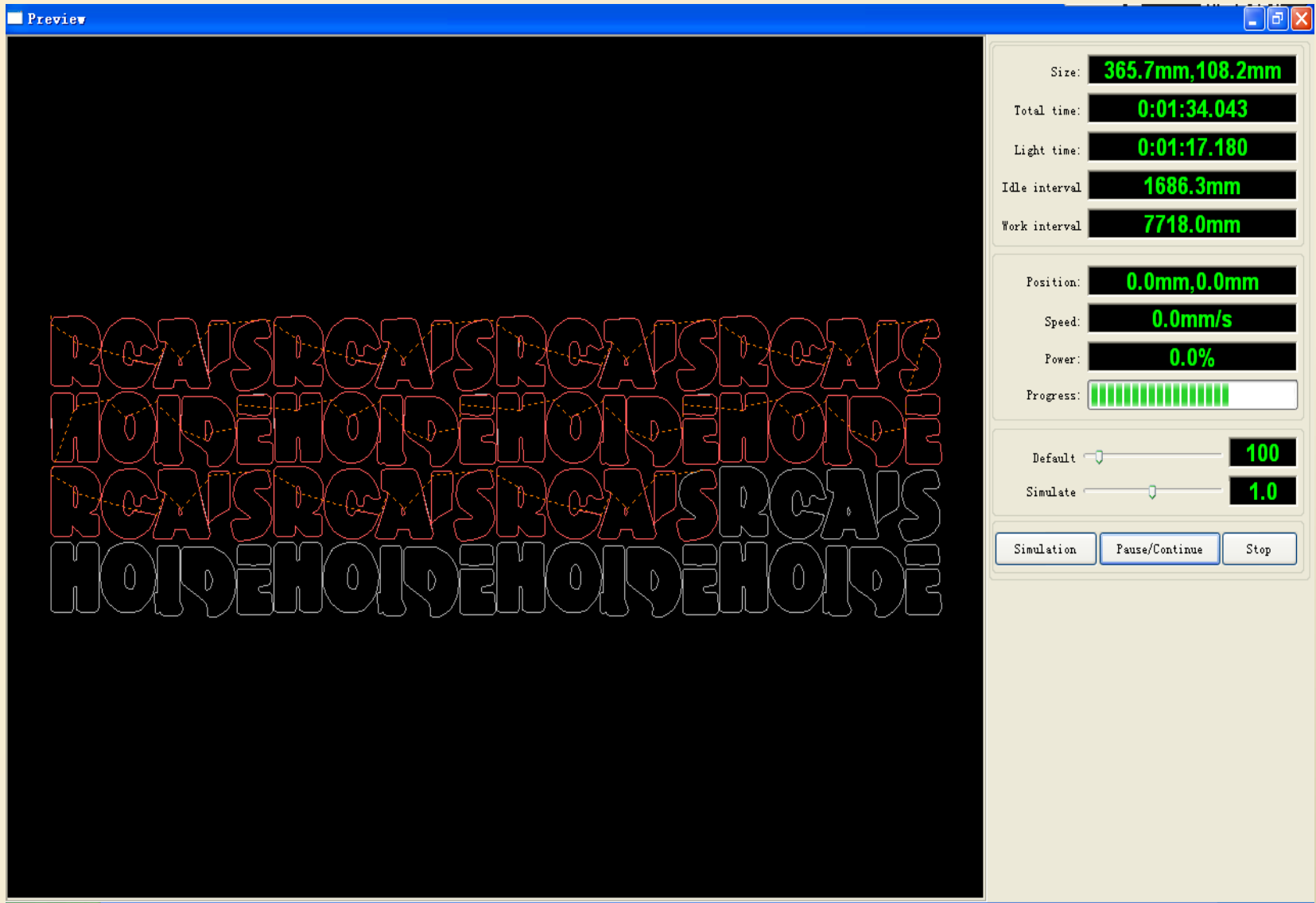
3.2.2　Cutting Setting

● Show Path：Select 'Show Path' to display the cutting sequence and cutting direction of the current graph. With this function, the user can observe the actual changes of the processing sequence when he makes modifications.

● Select 'Cut in and out' or click ⟳ on the system toolbar, then the Cut in and out setting dialog will be displayed.

Cut in and out setting

Cut in
☑ Enable

Line type: Line

Length(mm): 5

With angle

Angle(degree): 0

Cut out
☑ Enable

LineType: Line

Length(mm): 5

With angle

Angle(degree): 0

Ok　Cancel

Firstly, it is necessary to enable the cut in/out function.
There are two kinds of the cut in/out line types, i.e. line and arc

■ There are 3 ways to realize the line cut in

① Cut in with angle: the cut-in line has an angle with the starting line. The angle takes the counterclockwise direction as the positive angle. Its length is set in accordance with the cut-in line.

② Cut in from the center: The line is cut in from the center of the graph to the starting point of the graph. Its length is set in accordance with the length of the cut-in line.

③ Cut in at the center: The starting point of the cut-in line is at the center.

Cut-in line
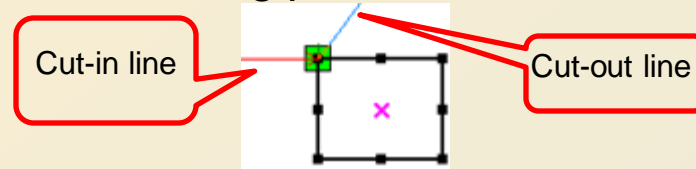
Cut-out line

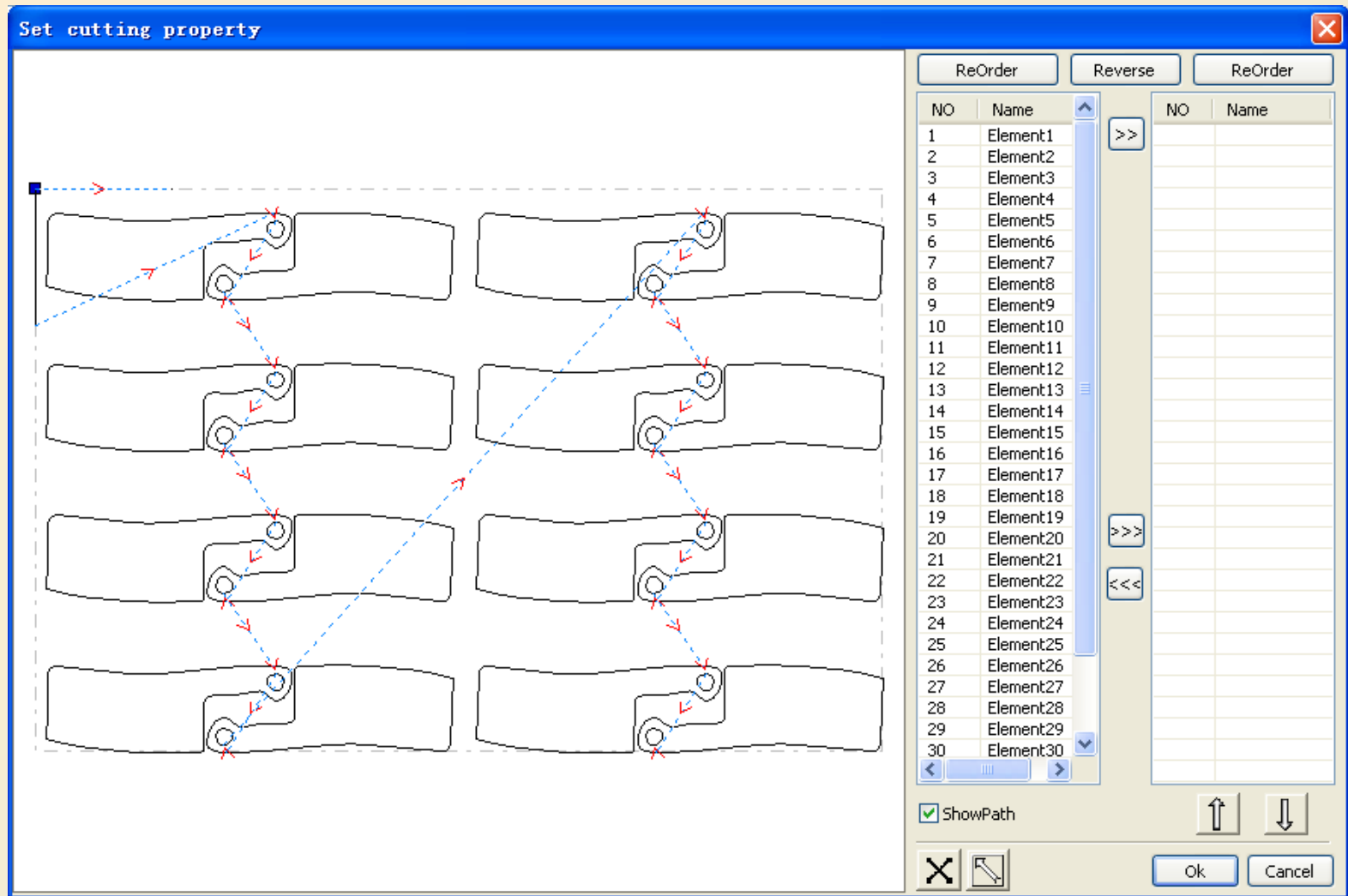■ The arc length is set in accordance with the length of the cut-in line.

The arc cut in can be divided into two types, i.e. male mould and female mould.
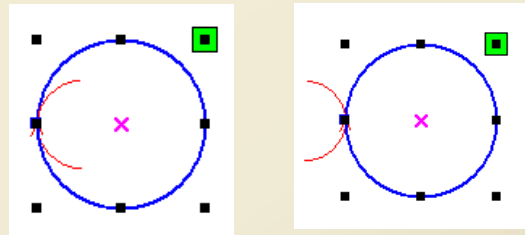
Setting of the cut-out line is the same as the cut-in line.

● Set cutting property

1> Show Path

　　Firstly, check "Show Path", then the order and direction of the cutting will be displayed. The user can observe the changes of the actual processing order during editing.

2> Manual sorting
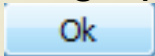
　　Select button ⬊ on the dialog box to switch the current operating status between Edit and View. Select the graph by drawing frame or clicking in the graph display area, (or select the element by clicking or checking in the right list of the dialog box). Then click the buttor ⟩⟩ to transmit the graphs to another list as the elements to be processed, Repeat the operation and all the graphs will be sorted.

3> Change the direction of the graph processing

　　　Select the graph in the display area or the element list and then click the button [Reverse]

4> Change the cutting point.

Select the graph which is necessary to change the cutting point and then all the nodes of the current graph will be displayed. Select a node and double click the mouse button to set it as the starting point of the current graph.

After all the modifications are completed, click button [Ok] to save the modified result.

Set Cutting Point
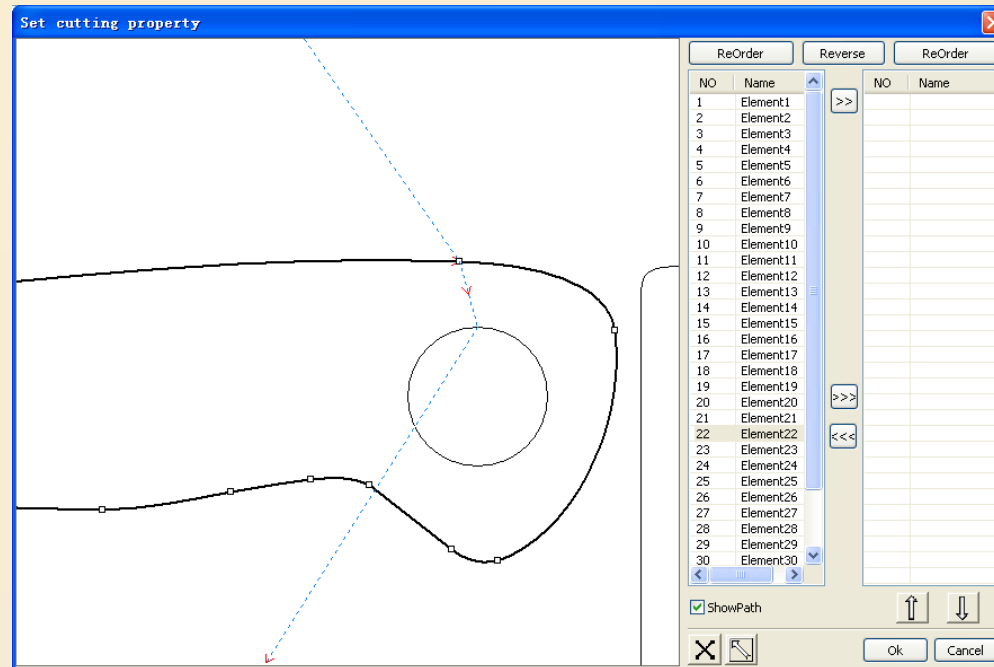
- Group and Ungroup

   In some cases, some graphs have to be edited as a whole, e.g. make type-editing for the multiple line textes.

   The specific operating method: Choose the graphs for grouping and then select Edit→Group(Ungroup), or directly click ⬛⬛ on the toolbar.

3.3 Draw Menu

Select		Ctrl+1
Edit Node		Ctrl+2
Line		Ctrl+3
Polgon		Ctrl+6
Curve		
Rectangle		Ctrl+4
Ellipse		Ctrl+5
Text		Ctrl+7
Point		Ctrl+8
Capture		
Horz Mirror		
Vert Mirror		
Copy Matrix		
Data Center		
Arrange		▶

Draw(D)   Config(S)   Handle(
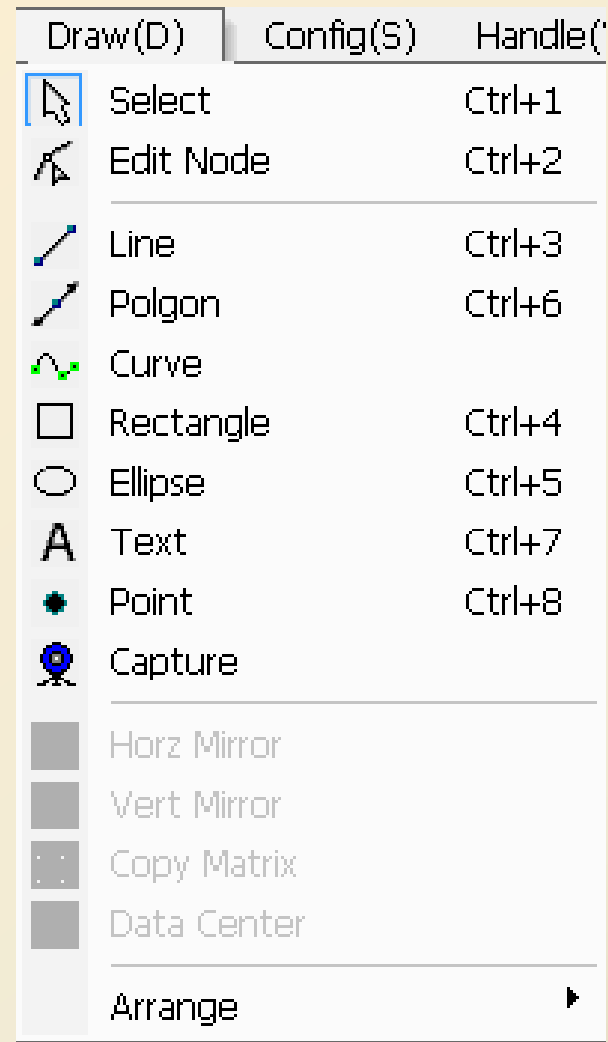
3. 3. 1 Select

Click 'Select' in the Draw Menu, or click ⬉ on the Edit Toolbar to switch to the 'Select' mode. In this mode, the objects can be selected. There are five ways to select the objects.

◆ Click 'Select All' in the Edit Menu, or press Ctrl+A to choose all the objects.

◆ Single Click the mouse button to select a certain object.

Single click an object, then the object will be selected, as shown in figure 1.
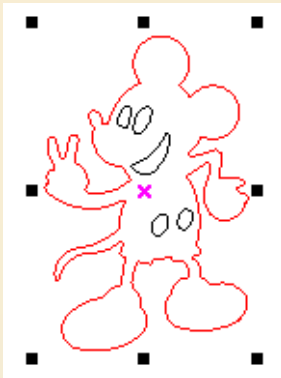
Work	Output	Doc	User	Test	Transform

Layer	Mode	Speed	Power	Output
⬛	Cut	100.000	30.000	Yes
🟦	Cut	100.000	30.000	Yes
🟥	Cut	100.000	30.000	Yes
🟩	Cut	100.000	30.000	Yes
🟨	Cut	100.000	30.000	Yes

Fig.1   Fig.2

◆ select objects according to the color of the layer.

Right click a layer, then all the objects in the layer will be selected, as shown in figure 2.

◆ Frame selection

Press and hold the mouse button to draw a frame. All the objects touched by the frame will be selected.

◆ Add/Remove the selected objects.

Add：Firstly, select the first object, press and hold Shift key, and then single click or frame select the objects.

Remove：Press Shift key and single click or frame select the selected object, then the object will be removed.

3.3.2 Edit Node

Single click the 'Edit Node' in the Draw Menu, or click [icon] on the Edit Toolbar to display the toolbar [icon] . It can add, remove, connect, and separate the nodes, and also the transformation between straight line and the curve.

3.3.3   Creation of the basic graphs

◆   Draw a line

Single click 'Line' in the Draw Menu, or single click [icon] on the Edit Toolbar, and then drag the mouse on the screen to draw a line. Press and hold Ctrl key and at the same time drag the mouse, a horizontal line can be drawn.

◆ **Draw a polygon**

Single click 'Polygon' in the Draw Menu, or single click ✎ on the Edit Toolbar, and then drag and click the mouse on the screen to draw a polygon.

◆ **Draw a rectangle**

Single click 'Rectangle' in the Draw Menu, or single click ▢ on the Edit Toolbar, and then drag the mouse on the screen to draw a rectangle with any size. Press and hold Ctrl key and drag the mouse at the same time to draw a rectangle.

◆ **Draw an Ellipse**

Single click 'Ellipse' in the Draw Menu, or single click ◯ on the Edit Toolbar, and then drag the mouse on the screen to draw an ellipse with any size. Press and hold Ctrl key and drag the mouse at the same time to draw a circle.

◆ **Edit Text**

Single click 'Text' in the Draw Menu, or single click A on the Edit Toolbar, to select TrueType Font or SHX Font.

Double click the left mouse button to display the following dialog box.

Text	X
Text height(mm):	3
Text distance(mm):	0
Line distance(mm):	0

Text

| Ok | Cancel |
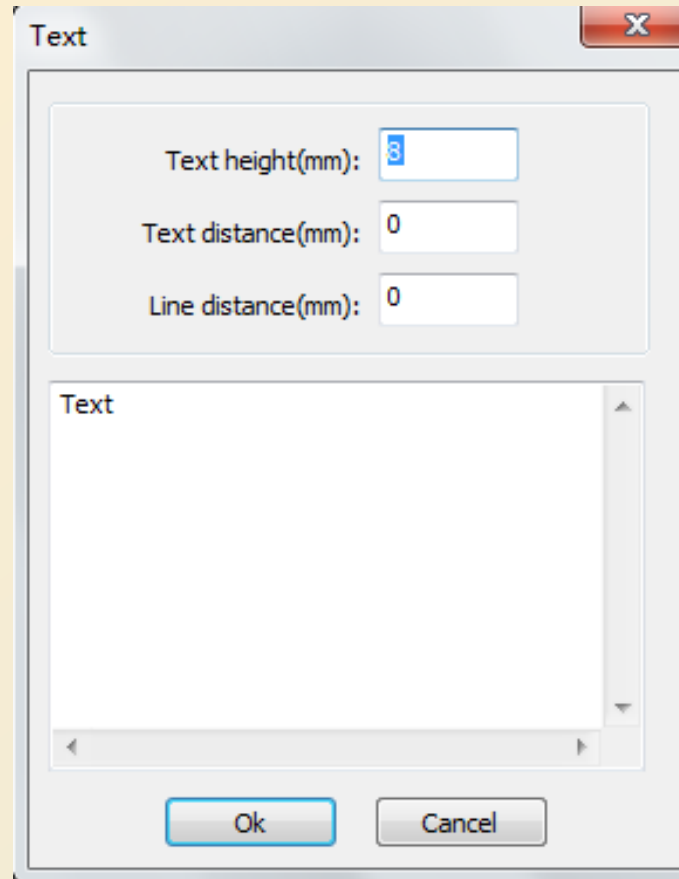
Input the size of the text and then input the text, press OK.

3.3.4   Object Transformation

Object Transformation refers to the transformation on the location, direction, and size of the objects, and does not change the basic shape and features of the objects. The software provides various functions for the users to transform the objects. The user can mirror and rotate the graph through the Draw Toolbar , and can change the location and width and rotate the object in the Object Property Toolbar.

| X | 930.405 | mm | ↔ | 148.697 | mm | 100 | % | | | | 0 | ° | Process NO: | 1 |
| Y | 254.992 | mm | ↕ | 164.213 | mm | 100 | % | | | | | | | |
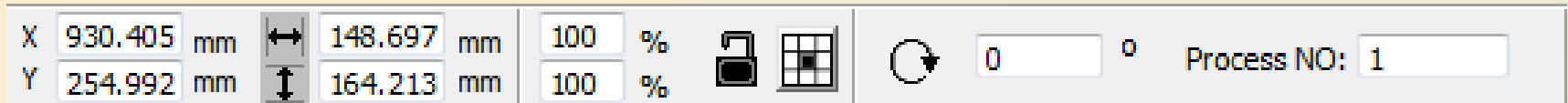
The user can also make various graph transformation and copying by using the transformation tools on the right side, as shown in figure 1 'Move and Copy'.

● Object Mirror

Mirror object is to overturn the object in the horizontal or vertical directions.

Click on the object toolbar to horizontally turn over the selected object.

Click on the object toolbar to vertically turn over the selected object.
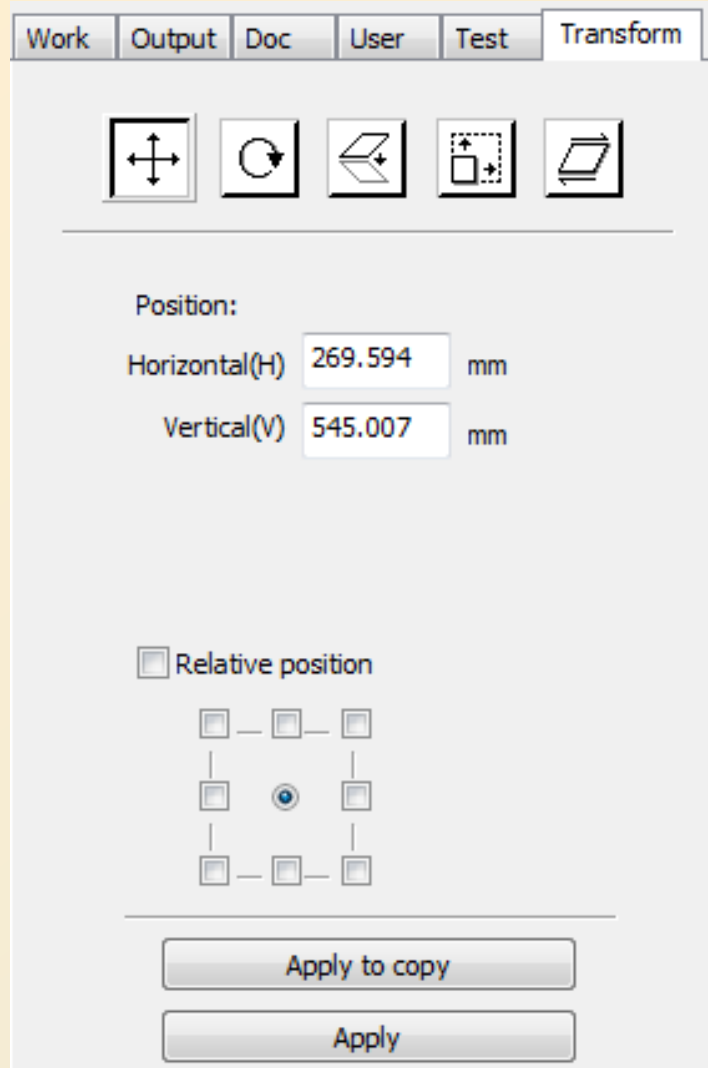
Fig.1 Move and Copy
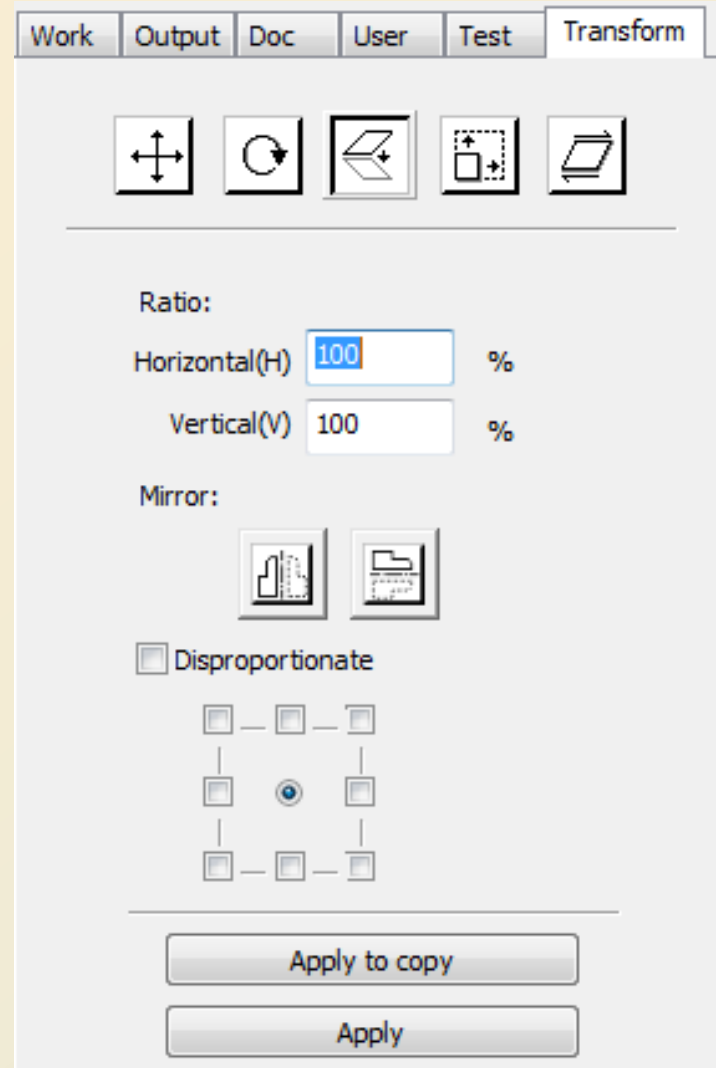
Fig. 2 Mirror Copy

- **Rotate objects**

  Click ↻ on the object toolbar, then the rotate angle setting dialog box will be displayed. Press OK to confirm. It can precisely set the rotate angle. Press OK to confirm.
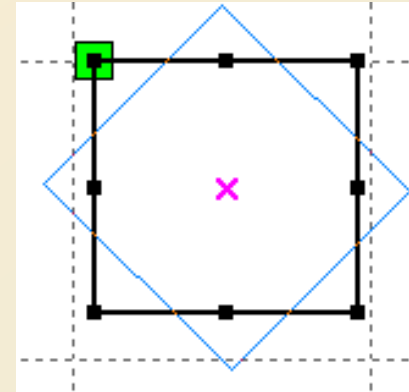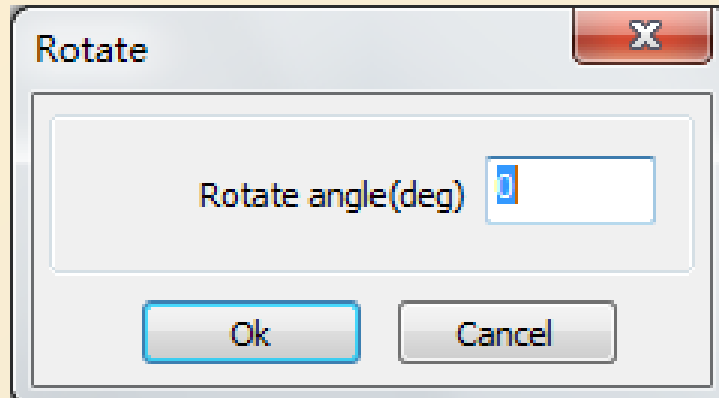
If the object is to be rotated, the user can set the rotate angle as 0 and press OK. And then drag the mouse to adjust the rotate angle. During dragging, the frame moves together with the object. The user may directly input the rotate angle in the object toolbar.

Or the user may directly input the rotate angle in the object property toolbar, as shown in the figure 'Rotate' below.

Rotate

Skew

● Skew

   It can be done by using the skew transformation tools. It can set the anchor point and the anchor angle, as shown in the above figure 'Skew'.
   As skew operation will cause the distortion of the bitmap and consequently it is seldom applied in the actual use. Therefore, the software is only support the skew of the vector diagram.

● Change the object size

 To change the size of the selected object, the user can input the length, width, and proportion, or lock the aspect ratio of the object.

| X | 930.405 | mm | ↔ | 148.697 | mm | 100 | % | | | ↻ | 0 | ° | Process NO: | 1 |
| Y | 254.992 | mm | ↕ | 164.213 | mm | 100 | % | | | | | | | |

   The user may transform, modify the sizes, lock the aspect ratio, and set relative center by using the size transformation toolbar.

● Matrix Copy of the objects

   Select the Edit Toolbar and select the object. And then click the Object Toolbar to display the following dialog box.

Matrix Copy
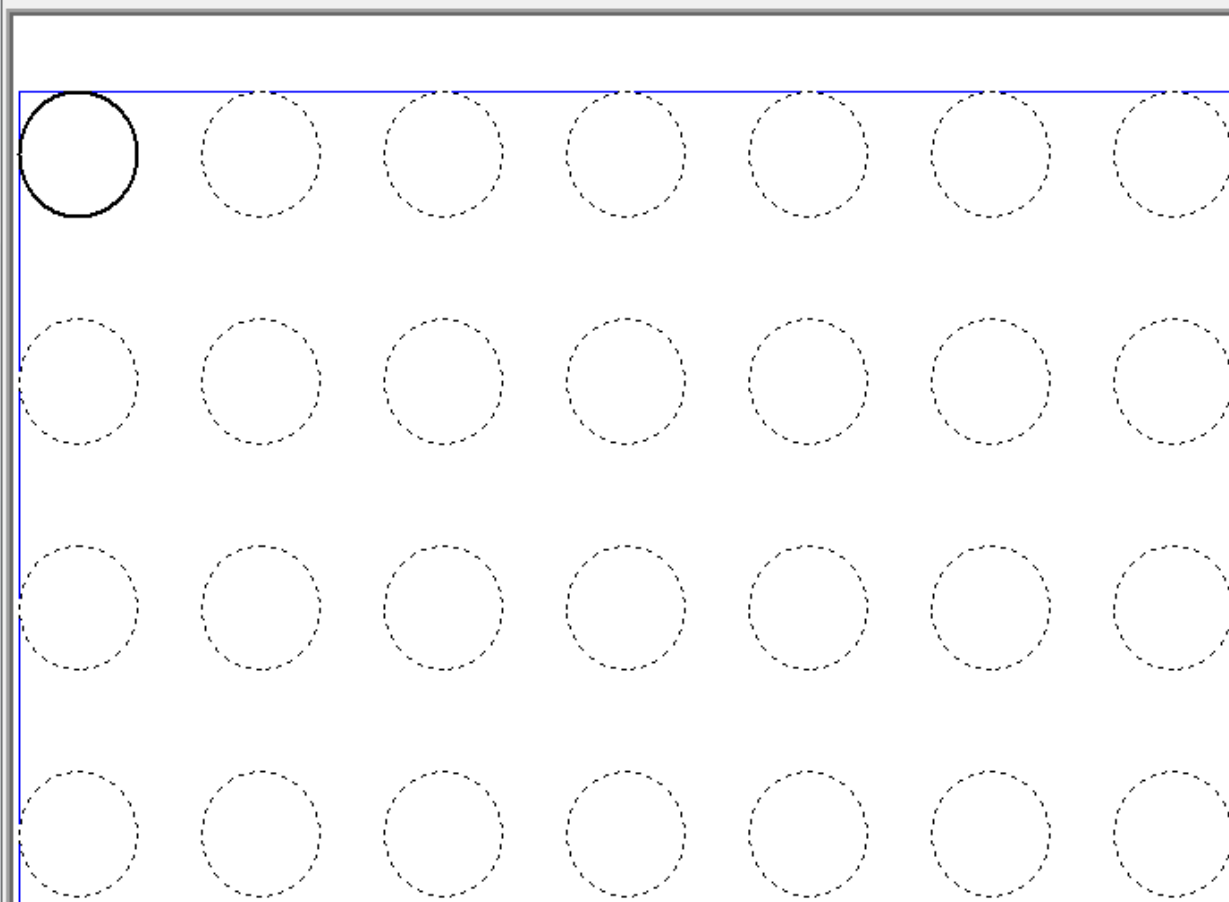
Piece size

↔ 116.371 mm

↕ 122.836 mm

Matrix Direction
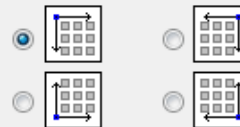
Frame Width(mm): 1200

Frame Height(mm): 800

X num: 7

Y num: 4

X Distance(mm): 63.432

Y Distance(mm): 100.434

☐ Distance between center

[Bestrewing breadth]

[Apply]

☑ Center

[Ok] [Cancel]

⊢⊣ refers to the width of a single graph(Unit: mm). ⊥ refers to the height of a single graph (Unit: mm). The matrix direction can be selected in accordance with the original graph and the matrix can be in different directions. If the matrix direction is in the down right, then the original graph will be in the upper left. If the matrix direction is in the upper left, then the original graph will be in the down right.

After setting the matrix number and matrix distance, single click 'Apply' to see the actual situation of the graph matrix.

The distance has two types, i.e. distance calculated by center and distance calculated by side. If it selects the distance calculated by center, then X Distance(mm) and Y Distance(mm) stand for the center distance of the two graphs. If it selects the distance calculated by side, then X Distance(mm) and Y Distance(mm) stand for the side distance of the two graphs.

Center Distance X = Side Distance X + Piece Height

Center Distance Y = Side Distance Y + Piece Height
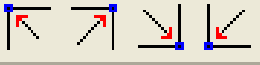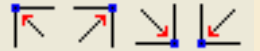
If different calculated methods are switched, the X Distance(mm) and Y Distance(mm) will also automatically switched.

Single click the Bestrewing Breadth, the software will automatically calculate the proper matrix number according to the piece size, frame width, frame height, X Distance, Y Distance.

Adjust Distance: It can directly input value and click Apply, or adjust by using the directional keys on the keyboard. The mouse wheel can be used to zoom in and out the graph. Drag the mouse to move and view the graph.

- **Place the object to the original point**

  The purpose of placing the object is to view or locate. The software provides the following object placing tools ⌞⁺ and ⌜ ⌝ ⌟ ⌞ . ⌞⁺ is to place the object in the center of the page to coincide the center of the object with that of the page. ⌜ ⌝ ⌟ ⌞ is to place the object in the upper left, upper right, down right, and down left, so as to make the four positions of the object coincide with those of the page.

- **Object alignment**

  After selecting the objects, press the icons on the type-setting toolbar.

  ⊟ ⊟ ⊡ ⊡ Stand for the left, right, upper, and down alignment respectively.

3.4　Config

Single click the config to show the following dialog box.


```
Config(S)   Handle(W)    View(\
    System Setting
    File Para Setting

    Page Setting
    Password Setting

✓   Graph Hatch
✓   Show Array
✓   Show grid
```
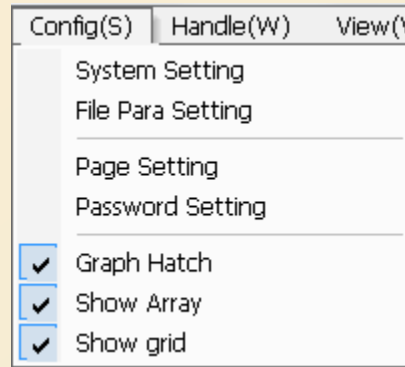
3.4.1 System Setting

● General Setting

Single click Config→System Setting→General Setting, as shown in the figure below.

1> Axis Mirror：Generally the axis mirror is set according to the actual limit position of the machine. The default coordinate system is Cartesian coordinate system. It is traditionally believed that the zero point is in the down left. If the actual zero point of the machine is in the upper left, then only Y axis should be mirrored. If the actual zero point of the machine is in upper right, then both X axis and Y axis should be mirrored. There is a simple way to do this. Check if the arrow location of the coordinate system in the graph display area is the same as the actual origin location of the machine. If not, change the mirror image in the corresponding direction. If the arrow is at the upper left corner and the origin of your machine is at the upper right corner, what you should do is to check the X mirror.
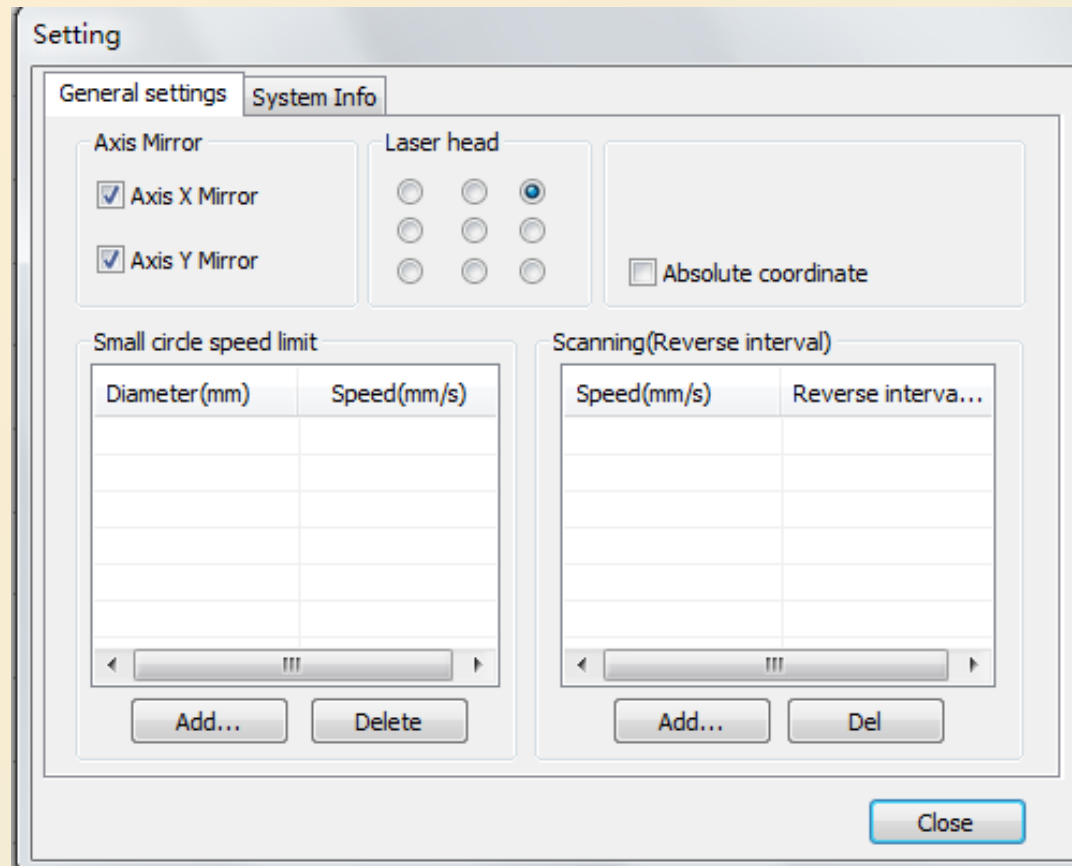
2> Laser Head Location

Laser head location is the location of the laser head relative to the graph. The location is displayed as a green point in the graph display area.

Laser head location
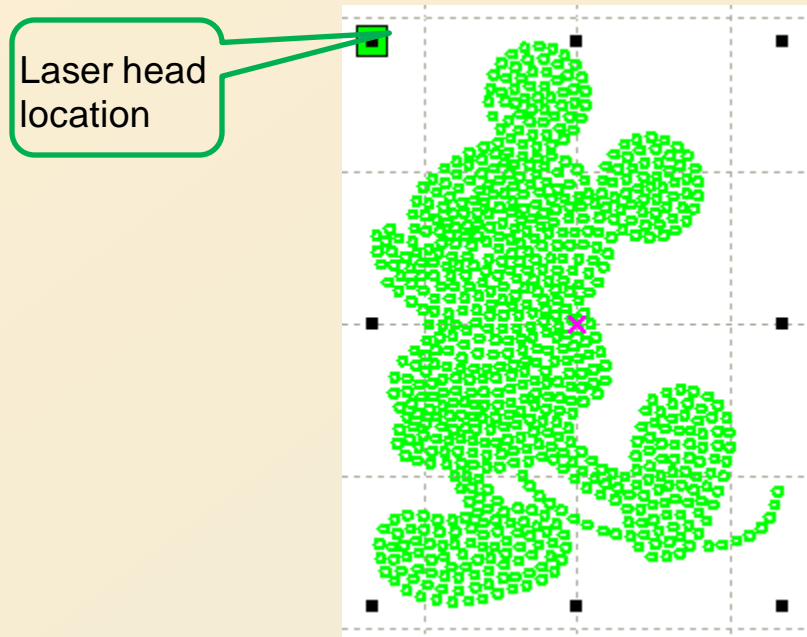
3> Absolute coordinate

Check this option to coordinate the graph location in the graph display area and the processing location of the actual working surface. In this way, the actual output location of the graph will have no relations to the laser head location relative to the graph and the origin, instead, it will always take the mechanical original point as the origin.

4> Speed limitation of the small circle

During processing, the system will automatically decide if the processed object is the small circle with speed limitation, and then process the circle with the currently set limited speed according to the circle diameter. If the parameter is properly set, the cutting quality of the small circle will be greatly enhanced. The parameter can be set by single click the 'Add', 'Delete', and 'Modify'. 。

If the circle is smaller than the smallest circle in the 'small circle speed limitation list', then the output speed is set as the same as that of the smallest circle.

If the circle is larger than the largest circle in the list, then the output speed is set in accordance with the layer speed.

If the diameter of the circle is in the range of the list, the output speed is set by referring to the list.

If the speed is faster than the layer speed set in the layer parameter, it should be output in accordance with the layer speed.
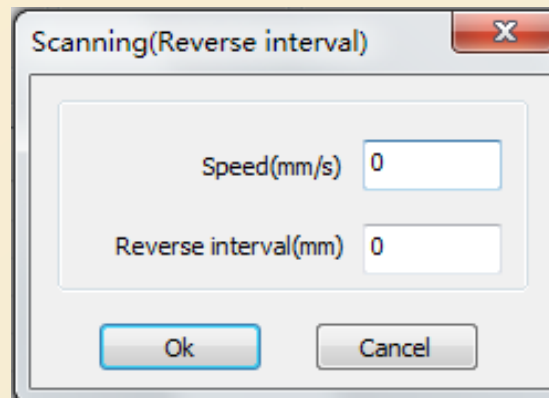
5> Reverse Interval

During the laser processing of the graph, the edge of the scanned graph may be irregular due to the belt tension. Increase the reverse interval to fix the problem. Different speed has its certain reverse interval. In general, the faster the speed is, the larger the reverse interval will be..

① Increase the reverse interval
    Single click the 'Add' button to show the following screen.

Scanning(Reverse interval)

Speed(mm/s)   0

Reverse interval(mm)   0

Ok   Cancel

Set the speed and the reverse interval, press OK, and then the values will be added in the reverse interval list.

    ② Modify the reverse interval
    Double click the left mouse button to select the option in the scanning block, then the following screen will be displayed.
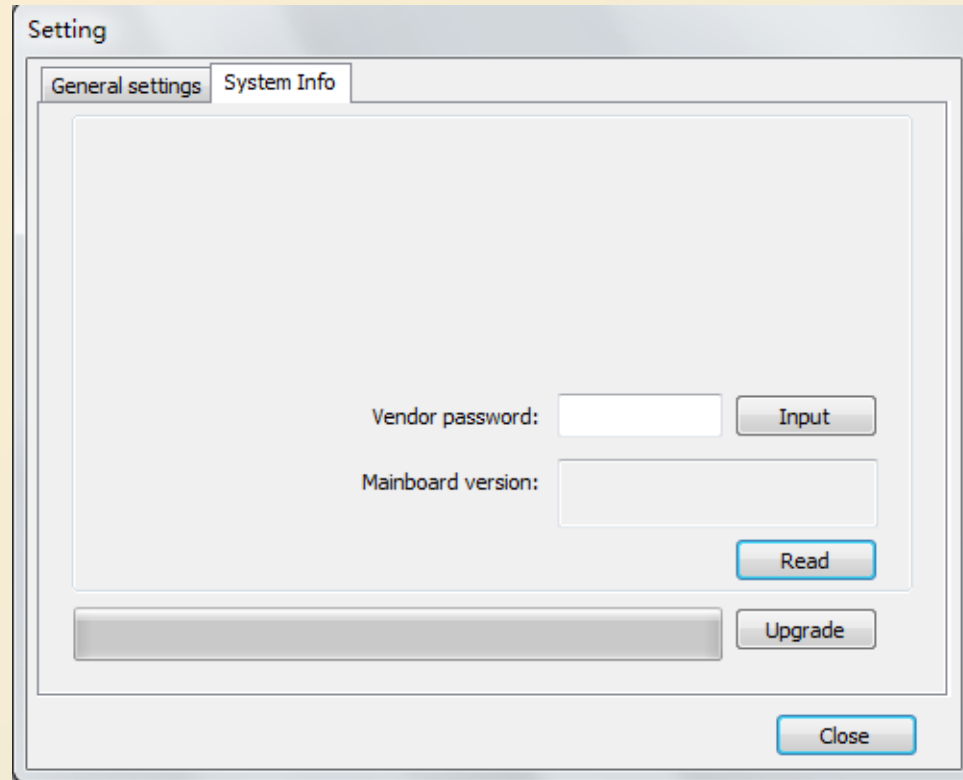
Scanning(Reverse interval)

Speed(mm/s)   0

Reverse interval(mm)   0

Ok   Cancel

③ Delete the reverse internal

Single click the left mouse button to select the option in the scanning block in which the reverse interval is to be deleted, and click 'Delete'

- **System Info**

The mainboard version can be viewed only if the vendor password is correctly input.

Total on time: Total running time of the motherboard
Total processing time: Total running time or actual total processing time including the idle running time.

Setting

| General settings | System Info |

Total on time(hour:min:s):

Total processing time(hour:min:s):

Previous processing time(hour:min:s:ms):

Total laser on time(hour:min:s):

Total processing times:

X Total traval(m):

Y Total travel(m):

Mainboard version:

Read

Upgrade

Close

Previous processing time: Time for the previous processing
Total laser on time: Total working time of the laser machine
Total processing times: Total completed processing times, excluding the processing finished in the mid-way.
X total travel: Total travel of the X axis of the motor
Y total travel: Total travel of the Y axis of the motor
Mainboard version :Version of the current mainboard of the controller.

Upgrade:

If there are any new functions for the mainboard, the manufacturer will provide upgrade file(in *.bin format). The user may upgrade the mainboard by using the upgrade file. After upgrading finished, the user should press 'Reset' button on the control panel to reset the mainboard. Then the mainboard can be used normally.

3.4.2 File Parameter Setting

◆Plotter unit of the PLT file: Choose appropriate import unit according to the precision of the original PLT file.
◆DST/DSB smooth: During importing DST/DSB, if it is necessary to execute smooth treatment.
◆Export Precision: If the export file is PLT, what precision will the export curve be.
◆Velocity Unit: There are two types of velocity units, i.e. mm/s and m/min, which can be selected according to your using habit. After selection, the corresponding velocity units on the screen will be changed accordingly.

File Parameter

Import Setting

PLT Precision: `10 16` ▾

☐ Smooth curves
☑ Auto close curves

Close error(mm): `0.1`

☑ Combine lines

Combine error(mm): `0.1`

☐ Import Dxf text info

Export Setting:

Export Precision(%): `80`

Velocity Unit: `mm/s` ▾

[Ok] [Cancel]

3.4.3 Page Setting

Click 'Page Setting' in Setting, the following dialog box will be displayed.
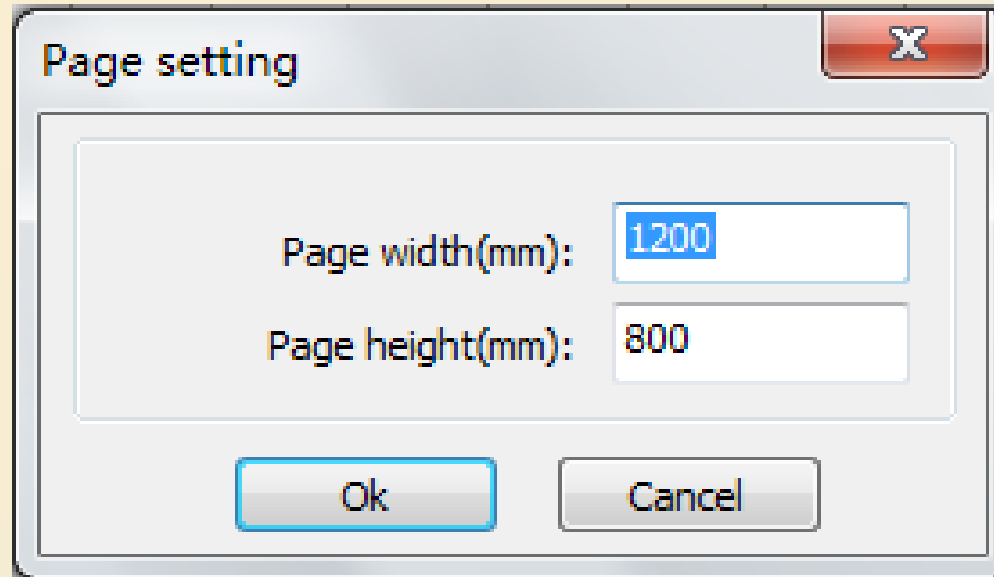
Page width：　Page width is generally set as the X breadth.
Page height：　Page width is generally set as the Y breadth.

3.5　Handle

Click Handle in the menu bar to show the following dialog box.

Handle(W)	View(V)	Help(H
⬜ Curve auto close		
⬜ Bitmap handle		
⬜ Curve smooth		
⛛ Cut optimize		
⬜ Combine curve		
⬜ Delete overlap		
⬜ Offset polygon		
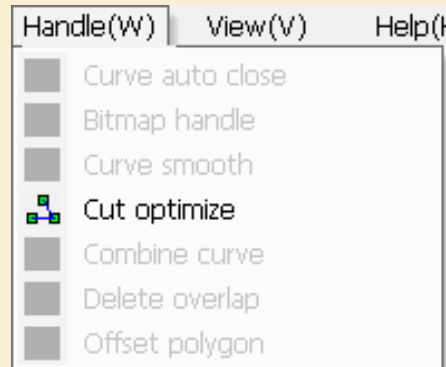
● Close Inspection
Single click 'Handle'→ 'Auto close curves' or click ⬜ on the system toolbar, the setting dialog box will be displayed.

Setting close error

Close error(mm): 0.1

☐ Force to close

Ok　　　Cancel
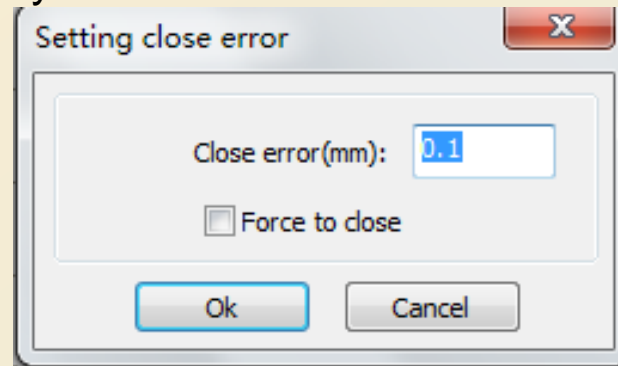
Close error: If the distance between the starting point and the terminal point is less than the close tolerance, the curve will be closed automatically.
Force to close: Force to close all the selected curves.

● Bitmap Handle

Select ⌖ on the edit toolbar and then choose the bitmap to be handled. Click 'Handle'→ 'Bitmap Handle', or click BMP on the System Toolbar.

The upper right of the dialog box shows the graph information.

It should be pointed out that the horizontal resolution and the vertical resolution are constantly changing during the dragging, zooming in/out of the graph.

Apply to View: The current setting is only applied to view and do not influence the original graph. If Cancel is clicked, the graph will be restored to the original status. It is used for adjusting the effect. It will take longer processing time and larger memory space.

Apply to Source: The current setting is directly applied to the original graph. The graph cannot be restored to the original status even if Cancel is clicked.

It is a necessary step in the multi-step operation. Most of the graphs have to be transformed to the grey-scale image and the step of 'Apply to Source' can save the time of the follow-up operation.

Save as: Save the result of the operation. It can not only use the 'Apply to Source' but also export the graph for the follow-up handle.

Grey-scale: Generally we will make other graph handle on the basis of the grey scale image and then click 'Apply to Source'. It is because the grey-scale image takes smaller memory than that of the color images. Handle the larger bitmap with several steps can avoid the insufficient memory to a certain extent.

As for color pictures, the user may adjust the contrast degree and brightness, and has a certain auxiliary effect for the follow-up binary processing.
1 .Adjust the contrast degree

Before processing

After Processing

2 .Invert Color

Before processing

After processing

3. Sharpen

Before processing

After processing

4. There are 3 ways for the binary processing, i.e. net graph, dot graph, black and white graph.

◆ Net graph

The net graph has to set the size of the net(mm) and is suitable for processing low resolution processing material or in the situation where the laser machine responds relatively slower.

The parameters need to be modified include the resolution and net frequency. The higher resolution can make the graph more fine.

The higher the net frequency is, the more the net dots will be, and vice versa.

Generally, the selected resolution is 500-1000 and frequency is 30-40 lines/inch.
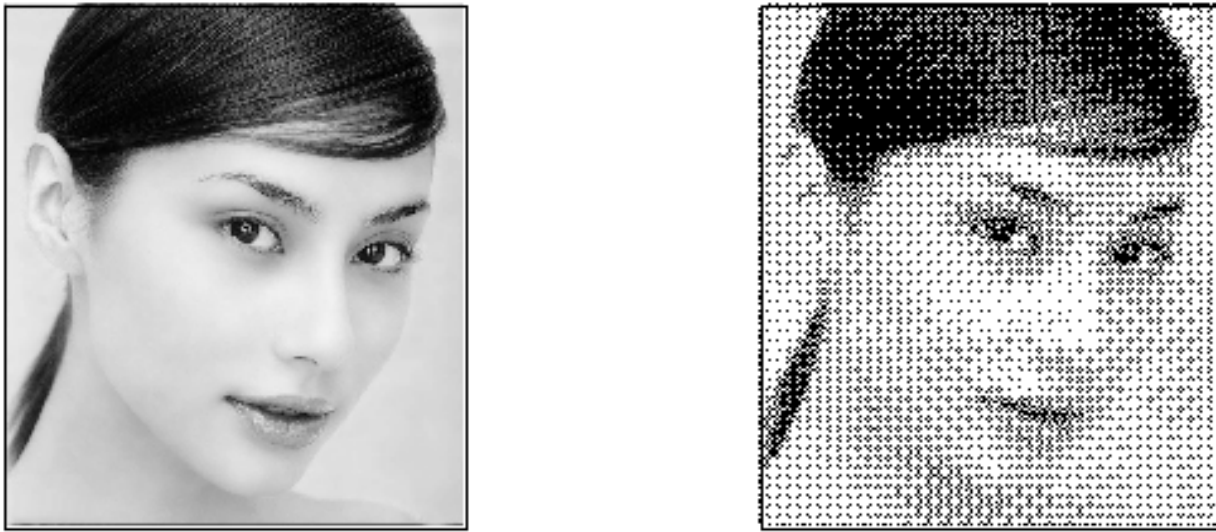
◆ Dot graph

The dot graph has good performance in the grey scale. It is used for the high resolution material and the situation where the laser machine responds faster relatively. 。
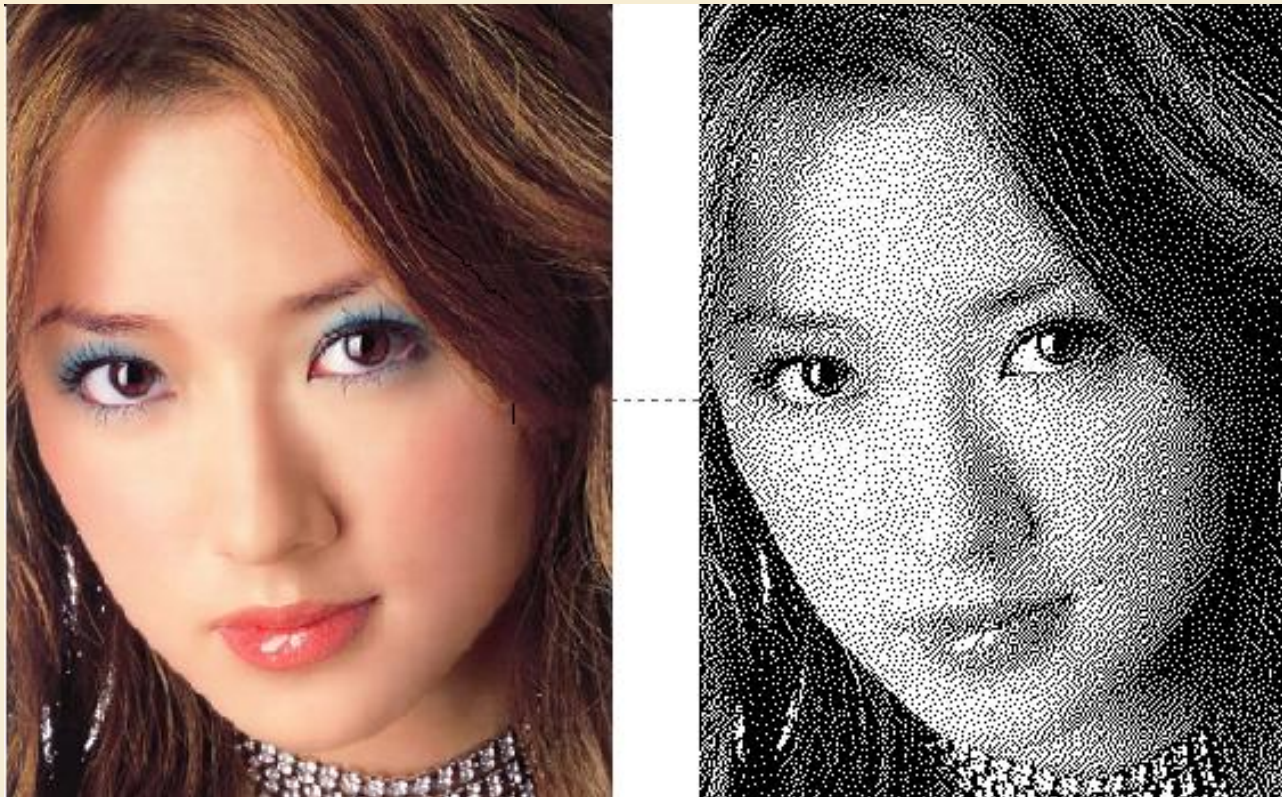
◆　Black and white graph

In most cases, the effect of transforming the color graph to the black and white graph is relatively not good. However, it is convenient for processing some graphs which have clear outlines.

◆ Get outline
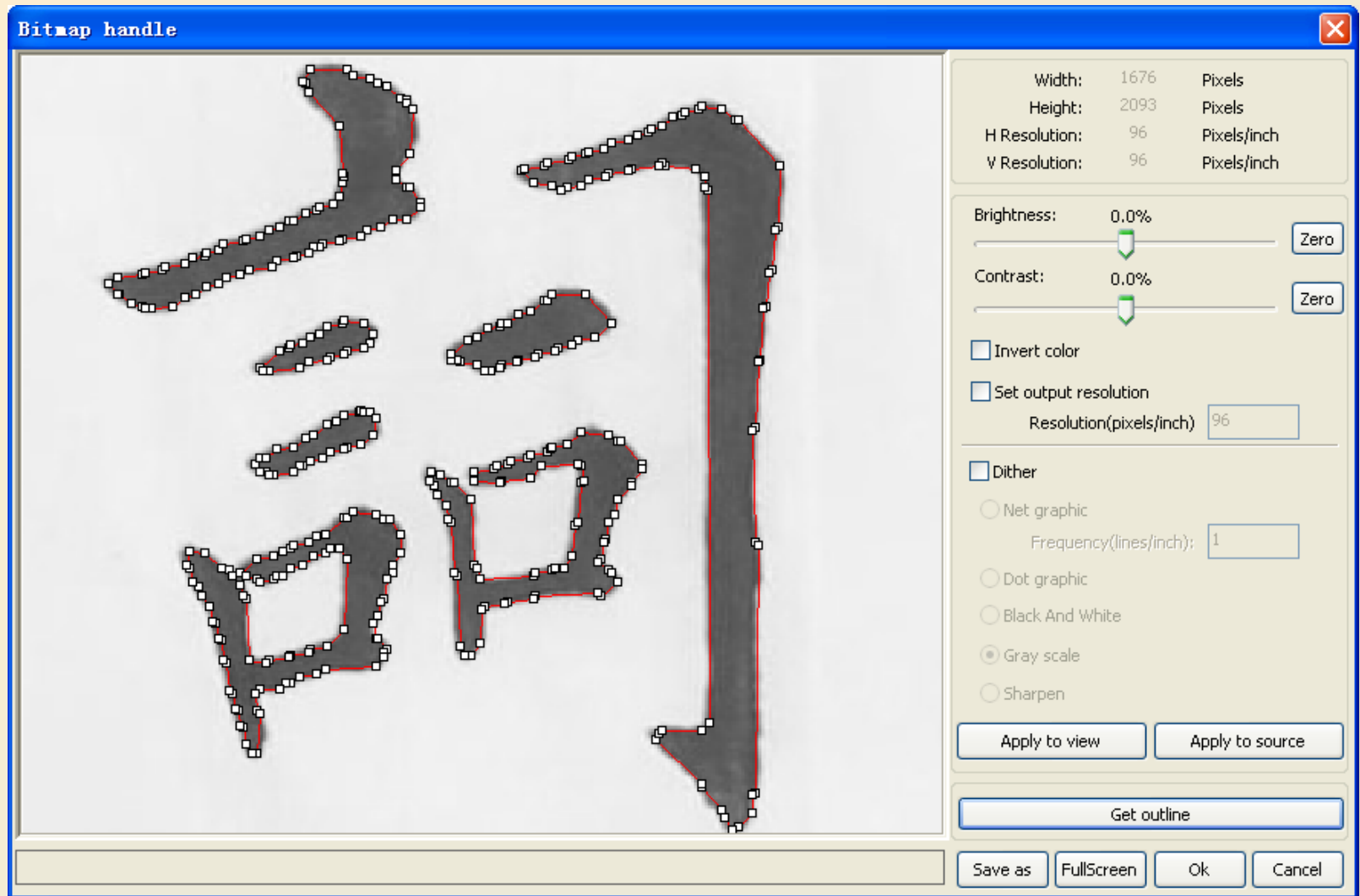
Click 'Get outline' to get the outline of the graph, as shown below.

Outline curve
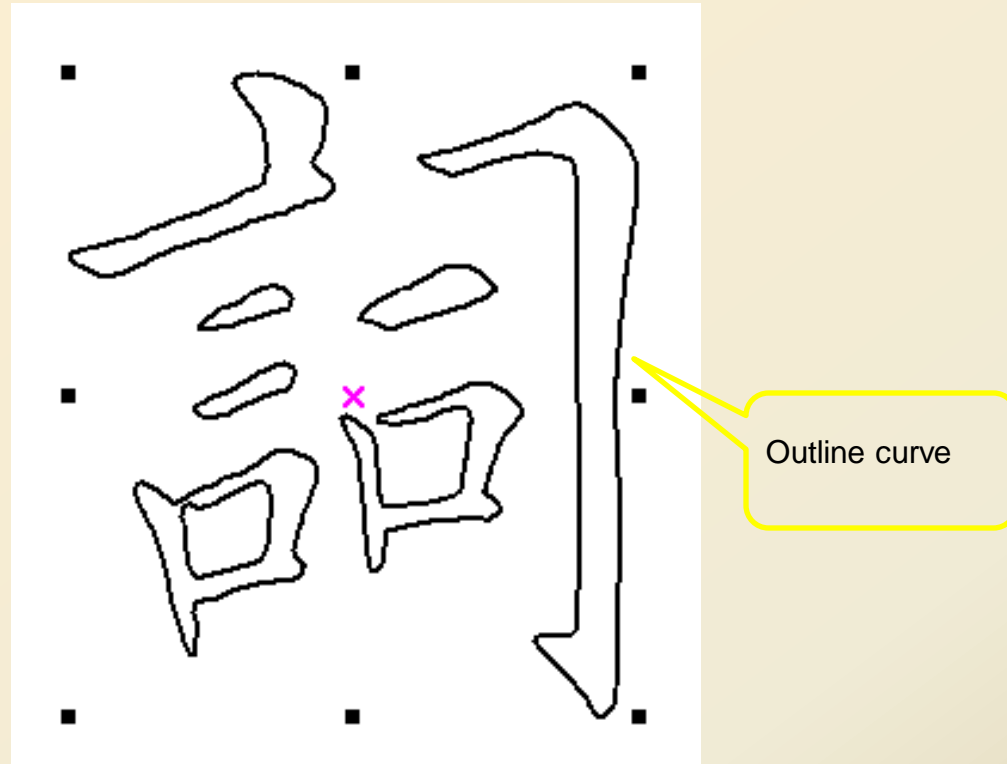
● Curve smoothing

As for some graphs with low precision of the curve, the curve smoothing function can realize smooth graphs and processing.

Single click 'Handle'→ 'Curves smooth', or single click the System Toolbar, the following dialog box will be displayed.
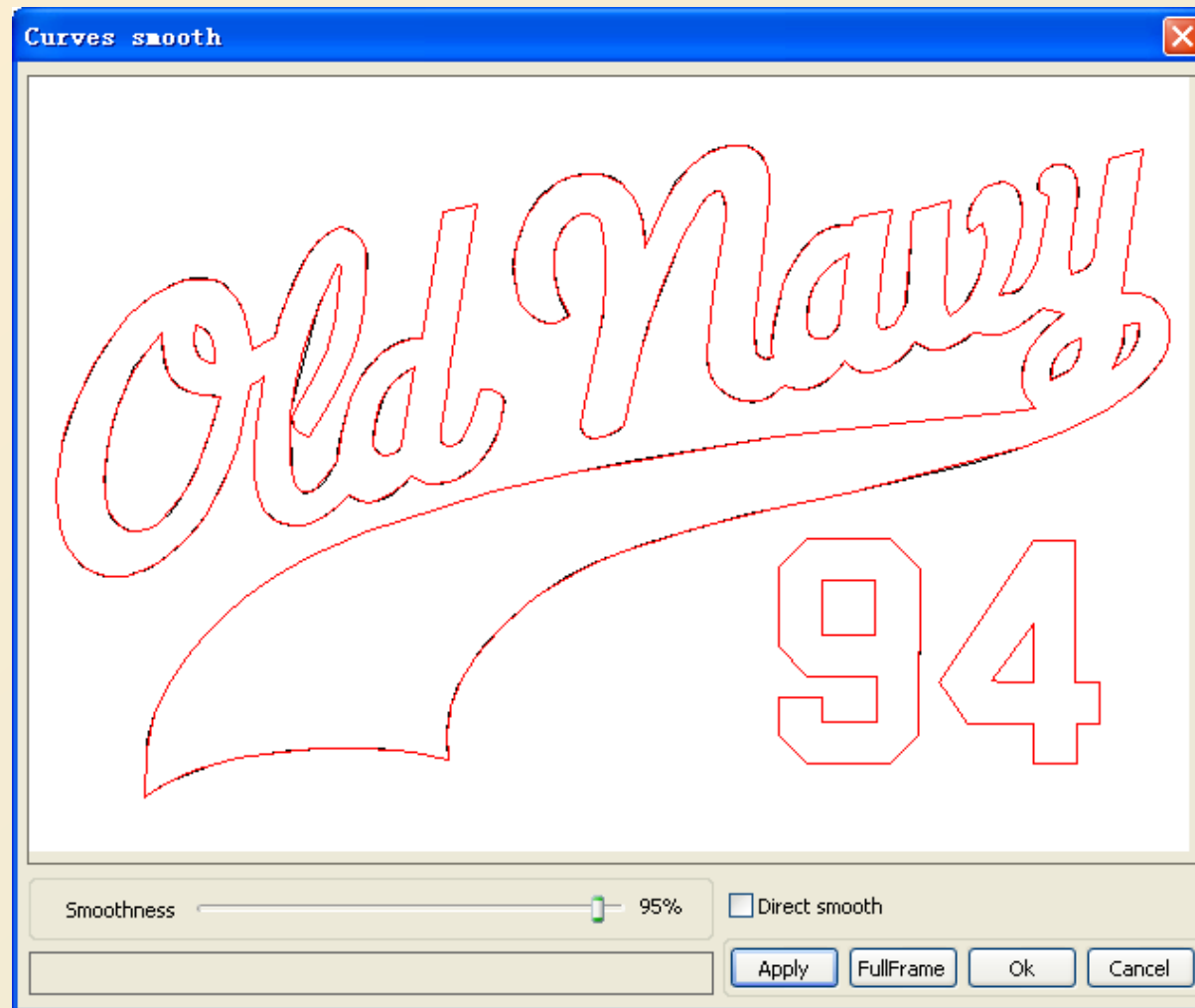
Adjust the smoothness by dragging. And then click 'Apply' button. It will display the curves before and after smoothing. The differences of the two curves can be clearly seen.

Black curve is the original curve and red curve is the curve after smoothing.
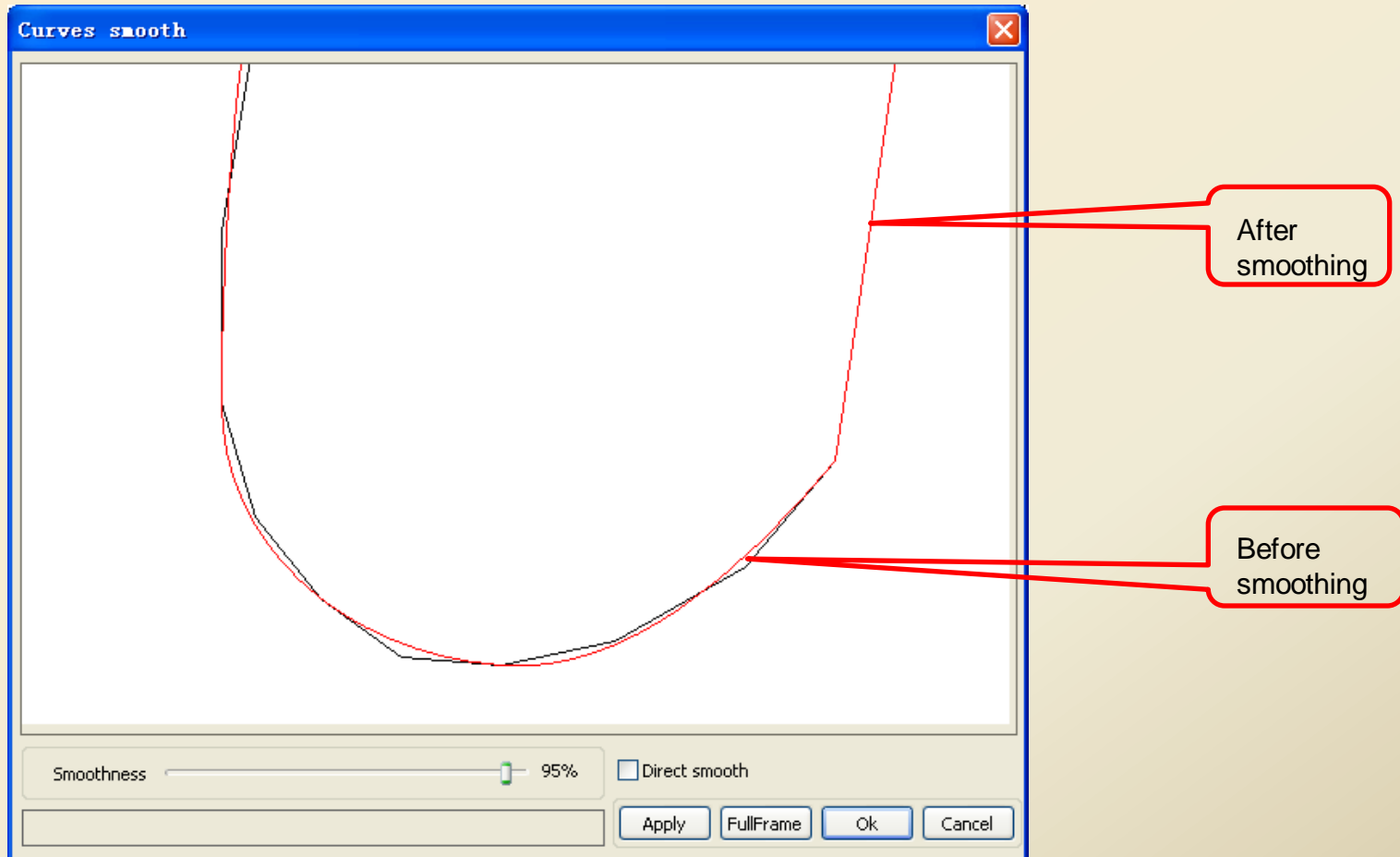
● Cut Optimization

Cut optimization is mainly used to reorder the cut of the vector diagram.
Single click 'Handle'→ 'Cut optimization', or single click   to display the following dialog box.

Cutting optimize handle

☐ Order of layer

☑ Inside to outside

Single inner to outer ▼

Block handle

Height: 50   Dir: Up to bott ▼

☐ Start point optimize
☑ Auto determine start point and direction

Ok   Cancel
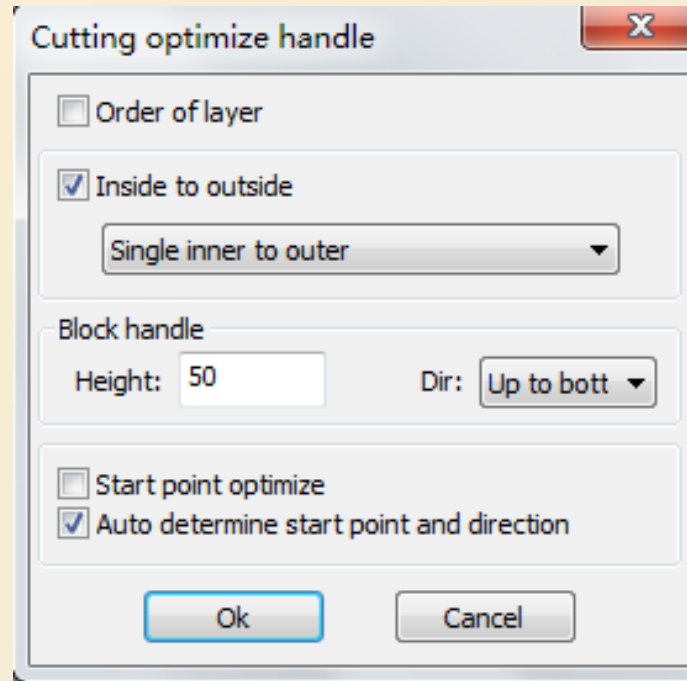
Click 'Edit'→ 'Show Path' , or single click   on the System Toolbar to show the cuts before and after processing.

● Combine Lines

Click 'Handle'→ 'Combine Lines' or single click 🔲 on the system toolbar to display the following dialog box.

Setting combine error

Combine error(mm): 0.1

Ok   Cancel
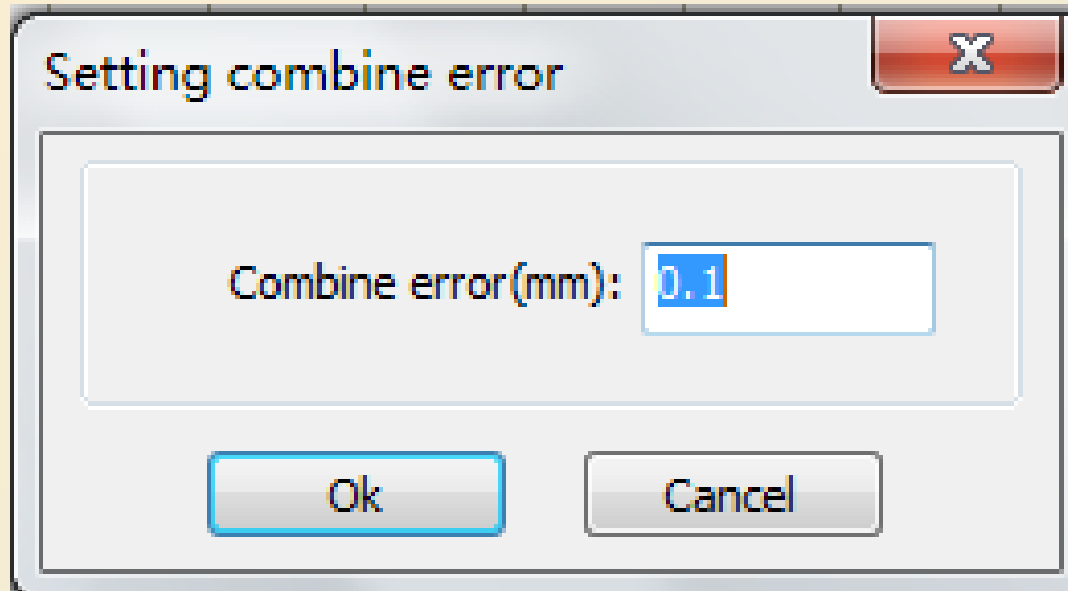
Based on the combine error, the software will automatically select and combine the curves, of which the connection error is less than the combine error, as a curve.

- Delete overlap lines

   Single click 'Handle'→Delete overlap lines, or single click ⊢⊣ on the System Toolbar to display the following dialog box.

Delete overlap lines

☐ Enable Overlap error

Overlap error(mm): 0.001

[Ok] [Cancel]
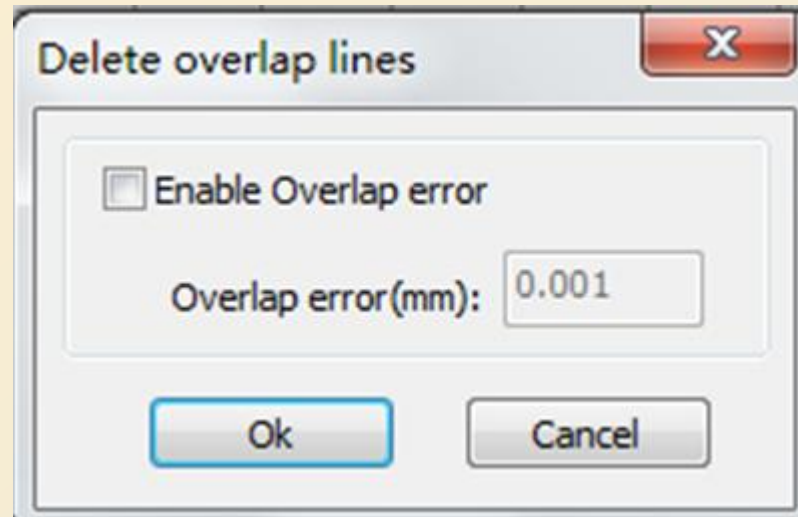
Generally the option 'Enable Overlap error' should not be checked. Only if the two lines are well overlapped, the overlap lines can be deleted.
If the overlap lines within the range of 'overlap error' are to be deleted, the option 'Enable Overlap error' can be checked and the 'Overlap error' can be set accordingly. Do not set too large value of overlap error so as to avoid the wrong deletion.

● Offset Polygon

Click 'Handle'→ 'Offset Polygon', or click 🌫 on the System Toolbar to display the dialog box.

Offset poly   ✕

                        Offset(mm): 0

           ◉ In   ◯ Out

              Ok   Cancel
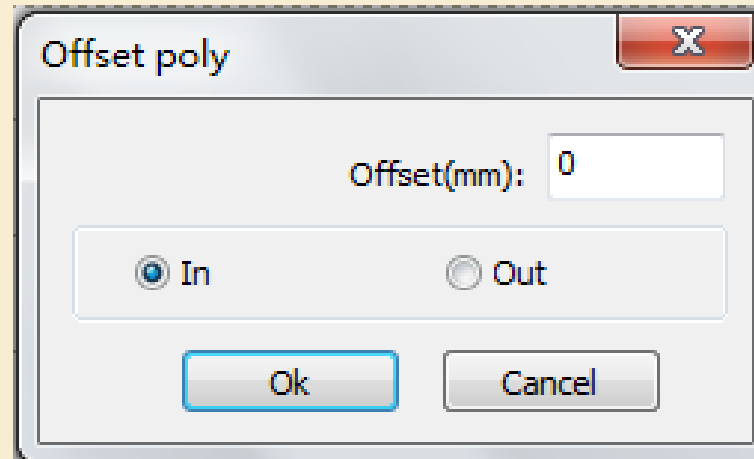
The software will automatically shrink or expand the selected curves in accordance with the offset value.

● Object color

The object color is actually the color of the object outline. The color of the selected object can be changed by clicking the colors in the Color Toolbar. The color button in ON status is the color of the current layer.

3.6.1 Processing

Layer Setting

Layer	Mode	Speed	Power	Output
	Cut	100.000	30.000	Yes

Work | Output | Doc | User | Test | Transform

Up   Down

Device

Search Device → Find Com   Auto ▼

Laser work

Graph Position → Position: Current positic ▼

Go scale   Cut scale

Processing Control → Start   Pause/Continue   Stop

SaveToUFile   UFileOutput   Download

☐ Output select graphics
☑ Path optimize

Previous work time   0H:0M:0S:0MS
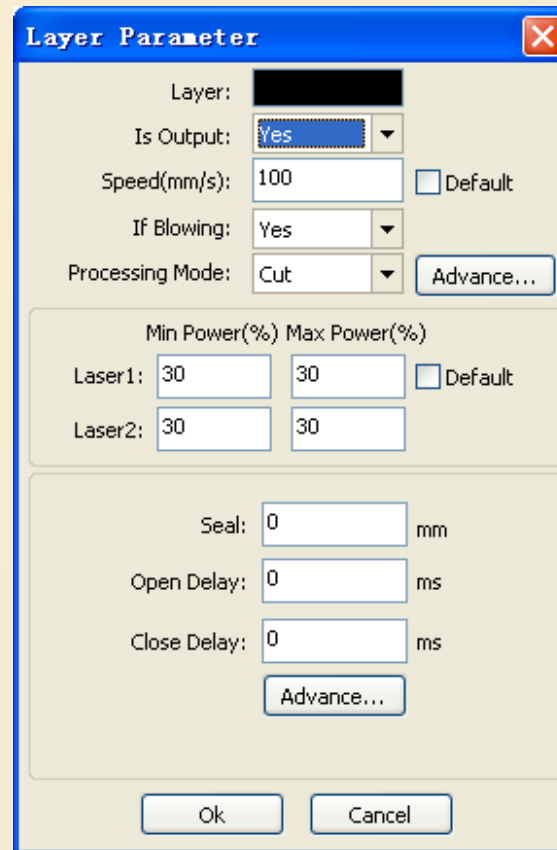
● Layer Setting
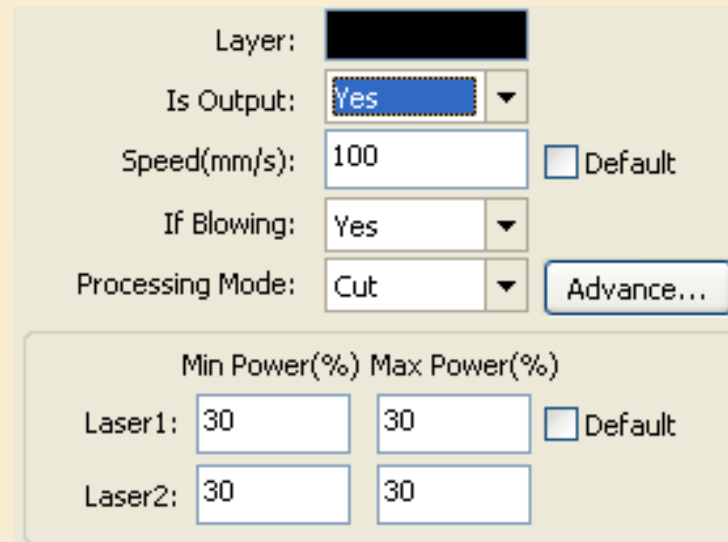
Double click the layer to be edited in the layer list, the layer parameter dialog box will be displayed. There two kinds of parameters. One is the public layer parameters. This part of layer parameters are always fixed, no matter what type of processing the layer is. The other is special layer parameters. With the changing of the processing types of the layer, the parameter will change accordingly.

1>.Parameter setting for the public layer

Layer:	■
Is Output:	Yes ▼
Speed(mm/s):	100 ☐ Default
If Blowing:	Yes ▼
Processing Mode:	Cut ▼ Advance...

	Min Power(%)	Max Power(%)	
Laser1:	30	30	☐ Default
Laser2:	30	30	

✓ Layer: The software uses layer to differentiate the processing parameters of different graphs. As for scanning processing, the bitmaps in the same layer will be output as a graph. If the user wants to output the bitmaps separately, he can place the bitmaps in different layers.

✓ Is Output：Yes or No. Yes: the corresponding layer will be output and processed. No: do not output and process.

✓ Speed：Processing speed for the relevant processing mode.

As for cutting processing, the low speed will bring better processing effect and more smooth edge. If the speed is faster, the processing effect will be worse and the edge will be rougher.

As for scanning processing , in the same power, the lower speed will make the scanning depth deeper, the scanning lines thicker, and the scanning resolution is lower. And the faster speed will make the scanning depth shallower and much more detail distortion.

As for dot processing, it mainly changes the moving speed.

If 'Default' is checked, the actual speed will be decided by the speed set in the control panel.

✓ If Blowing：If a blower is connected to the machine and it has been enabled to use, then choosing 'Yes' will start the blower during the layer processing. Otherwise, the blower will not be started. If the blower is not enabled, both 'Yes' or 'No' will not start the blower.

✓ Processing Mode: Method for processing the relevant layers.

If the current layer is vector layer, or color layer, then there will be three options: Laser scanning, Laser cutting, and Laser dotting.

If the current layer is bitmap layer, or BMP layer, then only one option is available, i.e. Laser scanning.

✓ Laser 1 and Laser 2: They refer to the No.1 and No.2 laser signal output of the mainboard. As for single machine, No.2 laser is useless.

✓ Min Power and Max Power: The range of the power is 0~100, which shows the laser intensity during processing. Large value indicates the strong laser, vice versa. The value of the minimum power should not be more than that of the maximum power.

Different processing modes have different meanings. As for cutting, the actual power is changed according to the cutting speed. Low speed needs low power and high speed needs high power. Only in this way it can keep the energy of the whole process even. Therefore, the minimum power is the energy when the speed is the slowest, generally the value is 0. However, if the take-off speed is set, the minimum speed is the take-off speed and the maximum power is decided by the layer speed.

The procedure of setting the minimum power and maximum power：

Set the minimum power and maximum power as the same values and then adjust synchronously until all the cutting curves appear. Keep the maximum power unchanged, gradually reduce the minimum power until the high energy point of the cutting curve reduces to the minimum level while all the connection part can be processed. If it does not achieve the best effect, make fine adjustment for the maximum power. If it is cut through, then the minimum power and maximum power will have no apparent differentiation and can be set as the same value.
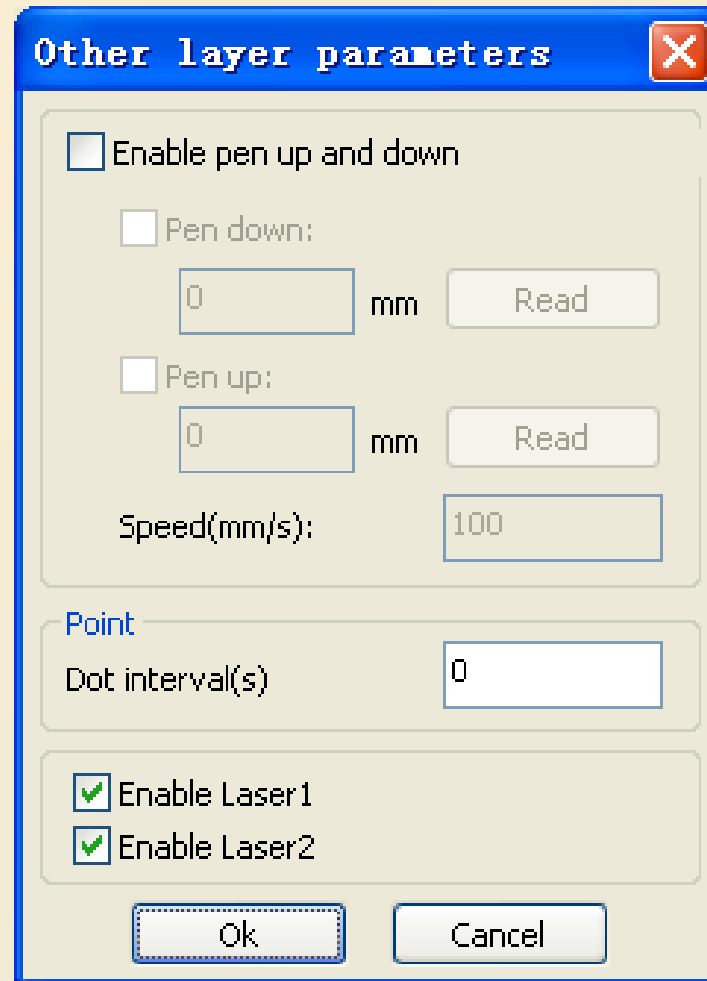
As for scanning processing and common scanning, the minimum power and the maximum power should be set as the same value. As for ramp engraving, the minimum power is the power on the top of the ramp. If the minimum power is smaller, the top will be wider and the details are not very clear. If the minimum power is larger, the slope is not clearly recognized.

As for dot processing, set the minimum power and maximum power as the same value. If 'Default' is checked, the actual power is set according to the power set in the control panel.

✓ Advanced Settings

Other layer parameters

☐ Enable pen up and down

☐ Pen down:

`0` mm [Read]

☐ Pen up:

`0` mm [Read]

Speed(mm/s): `100`

Point

Dot interval(s) `0`

☑ Enable Laser1
☑ Enable Laser2

[Ok] [Cancel]

① Pen up and down：
    If the machine has lifting platform and needs to process in different heights, the pen up and down function should be enabled. The pen down position is set according to the processing height of the platform and the pen up position is set according to the false moving forward. Move platform to a certain height and then move the laser head, so that it will not interfere with the work pieces to be processed. If it is ensured that the laser head will not interfere with the work pieces to be processed, the pen up position is not necessary to be set.
    Enable the pen down, manually control the buttons on the control panel to move the platform to the processing surface, and then adjust focal length. Press 'Read' and the pen down position is set accordingly.
Enable pen up, manually control the buttons on the control panel to move the platform to the height where the laser head will not interfere with the work piece. Move laser head by the buttons on the control panel and make sure no interference will occur. Press 'Read' and the pen up position is set accordingly.
② Point：It refers to the point graph drawn by the drawing instrument or imported from the dxf files. It is not influenced by the processing mode of the current layer. In other words, no matter cutting or scanning, the point graph will be output in dot mode. The moving speed of dotting is layer speed and the dot energy is the maximum laser power in the layer.
③ Enable Laser：If the machine has two ways of laser, generally the two ways of laser will be output simultaneously.
However, the user may set to enable only one way laser.

2> Parameter setting for laser scanning

Layer Parameter

Layer:

Is Output: Yes

Speed(mm/s): 100 ☐ Default

If Blowing: Yes

Processing Mode: Scan [Advance...]

Min Power(%) Max Power(%)

Laser1: 30 30 ☐ Default

Laser2: 30 30

☐ Negative Engrave ☐ Optimized Scan
☐ Ramp Effect ☐ Output direct

Ramp Length: 0 mm

Overstriking: Un-process

Scan Mode: X_swing

Interval(mm): 0.1 [Advance...]

[Ok] [Cancel]

Layer Parameter

Layer:

Is Output: Yes

Speed(mm/s): 100 ☐ Default

If Blowing: Yes

Processing Mode: Scan [Advance...]

Min Power(%) Max Power(%)

Laser1: 30 30 ☐ Default

Laser2: 30 30

☐ Negative Engrave ☐ Optimized Scan
☐ Ramp Effect ☐ Output direct

Ramp Length: 0 mm

Overstriking: Un-process

Scan Mode: X_swing

Interval(mm): 0.1 [Advance...]

[Ok] [Cancel]

The left dialog box is the parameter setting for vector scanning and the right is the parameter setting for bitmap scanning.

　　Vector scanning does not support the functions like Negative engrave, Optimized scan and Direct output.

① Negative engrave：As for normal scanning ,the laser is on for the black dots and off for the white dots on the bitmap.

While for negative scanning, the laser is on for the white dots and off for black dots.

② Optimized scan ：The optimized scan can automatically adjust the customized scanning interval to the best value and achieve the best scanning effect. Otherwise, the graph will be scanned by the customized scan interval. Generally we use optimized scan.

③ Direct output：The grey-scale bitmap is output in accordance with the actual grey scale. In other words, the deep color requires higher energy and the shallow color requires lower energy.

Ramp effect：Create a ramp for the edge of scanned graph to achieve the stereoscopic effect.

④ Overstriking：include un-process, scan font, and scan bottom. General setting is un-process.

　　　　　　　Scan font: the scanning part is the font. It is negative engrave.

　　　　　　　Scan bottom: the scanning part is the bottom. It is positive engrave.

It should be noted that it should be set 'Un-process' after selecting the ramp effect. Otherwise, it may not achieve good ramp effect.

⑤ Negative Engrave: It has no outer frame and scans the font, as shown below.

Welcome

⑥ Positive Engrave: It has outer frame and scans the bottom of the graph, as
    shown below.

Welcome

⑦ Scan Mode: X- one way, X-swing, Y-one way, Y-swing.
X-one way: The laser head scans the graph back and forth in horizontal direction
while emitting laser in only one direction. For example, the laser head may be on in
scanning from the right to the left while off from the left to the right.
⑧ X-swing: The laser head scans the graph back and forth in horizontal direction.
⑨ Y- one way: The laser head scans the graph up and down in vertical direction
while emitting laser in only one direction. For example, the laser head may be on in
scanning from up to down while off from down to up.
⑩ Y-swing: The laser scans the graph up and down in vertical direction.
    Note: X-swing is generally used.
⑪ Scan Interval: It refers to the interval between the lines scanned by laser head.
The narrower interval can achieve deeper colored graph, vice versa.

Recommendation:① As for vector layer, or color layer, the scan interval should be set less than 0.1mm.

② As for bitmap layer, or BMP layer, the scan interval is generally set more than 0.1mm. Change the Min Power and Max Power to achieve the good effect for the scanned graph.

3>. Parameter setting for the laser cutting

Layer Parameter

Layer:	
Is Output:	Yes
Speed(mm/s):	100 ☐ Default
If Blowing:	Yes
Processing Mode:	Cut Advance...

Min Power(%) Max Power(%)

Laser1:	30	30	☐ Default
Laser2:	30	30	

Seal:	0	mm
Open Delay:	0	ms
Close Delay:	0	ms

Advance...

Ok   Cancel

If there are any unclosed seals during cutting the closed graph, it can be compensated by setting the seal. If the seal is dislocated, it cannot be compensated by this way. Instead, it can be compensated by interval optimization or reverse compensation in customer parameters.

Open delay

Close delay

Enable sew compensation to compensate the graph size deviation caused by the laser cutting.

Sew compensation is only valid for closed graph.

The compensation direction is set according to the actual needs. For example, if you want to keep the circle being cut, you should set the direction as outward. If you wan to keep the hole, you should set the direction as inward.

Sew width is the width of laser cutting clearance.

Other cutting param

☐ Enable sew compensation

Direction: Inward

Sew width 0.1 mm

Ok   Cancel

4> Parameter setting for the laser dotting

Layer Parameter

Layer:	⬛
Is Output:	Yes ▼
Speed(mm/s):	100 ☐ Default
If Blowing:	Yes ▼
Processing Mode:	Dot ▼ [Advance...]

Min Power(%) Max Power(%)

Laser1:	30	30	☐ Default
Laser2:	30	30	

Dot time:	0.1	s
Dot interval:	5	mm
Dot length:	8	mm

☐ Center dot

[Ok]   [Cancel]

It refers to the time by which the laser shoots at a dot continuously. The large value will make deeper dot, vice versa.

Distance between the dots

Draw dotted line

Center dot

- **Device port**

If the computer is connected with one laser machine, the option can be set as Auto. The software will automatically detect the device port.
If the computer is connected with many laser machines, click 'Search Device' and wait until the searching completes. The dropdown menu will display the currently connected device port. Select the proper device port to output to the device.

- **Process by layer**

Firstly, click 'Handle' → 'Path optimize' , and then check the option 'by layer order', and finally press Ok. The layer order can be adjusted by choosing the layers and using up and down keys [Up] [Down] , or directly drag the layer to the specific location.

In addition, the option 'Path optimize' ☑ Path optimize should be checked.

- **Laser work position**

After processing finished, the laser head will return to three positions, i.e. current position, anchor point, and machine zero.

1.Current position: the laser head returns to the position where the laser head stays
before processing.

2.Anchor point: The laser head returns to the previous anchor point. The anchor point can be set by the buttons on the panel.

3.Machine zero: The laser head returns to the limit point of the machine.
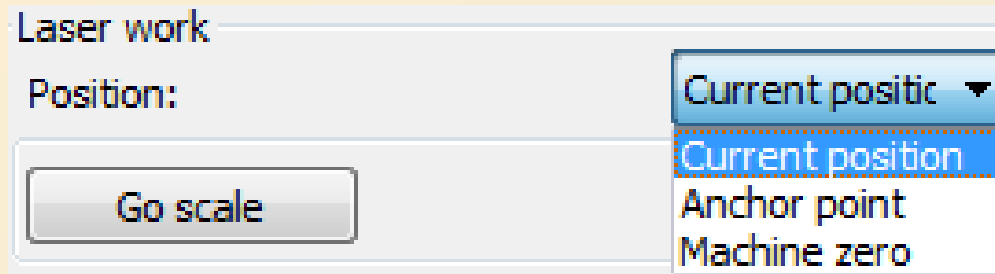
- Go scale and Cut scale

Go scale：Please see the picture below. The circle is the actual graph and the red rectangle is the minimum outer rectangle of the circle. Press Go Scale button to make the laser head to travel along the rectangle.

Cut scale: The circle is the actual graph and the red rectangle is the minimum outer rectangle of the circle. Press Cut Scale button to make the laser head to cut the rectangle.

- Start, Pause/Continue, Stop, Save to Ufile, Ufile output, Download.
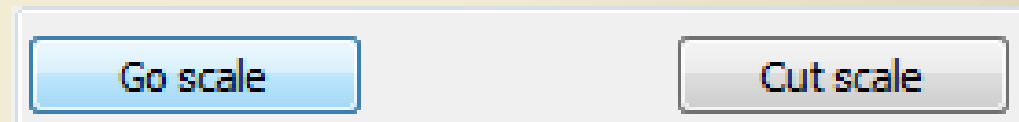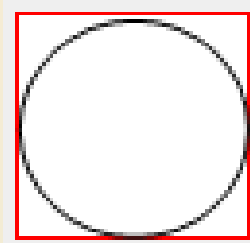
Start	Pause/Continue	Stop
SaveToUFile	UFileOutput	Download
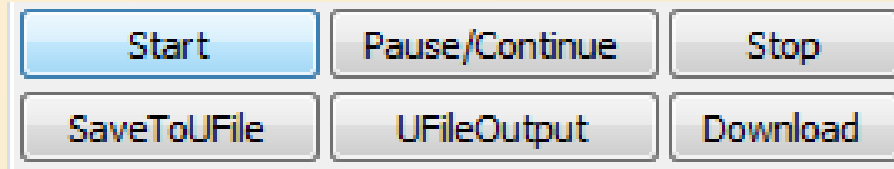
1.Start：Click the button to output the current graph to the machine and process.
2.Pause\Continue：Click to pause the processing. Click again to continue.
3.Stop：Stop the current processing
4.Save to Ufile： Save the current file as the file in RD format for the Udisk offline processing. See figure below.
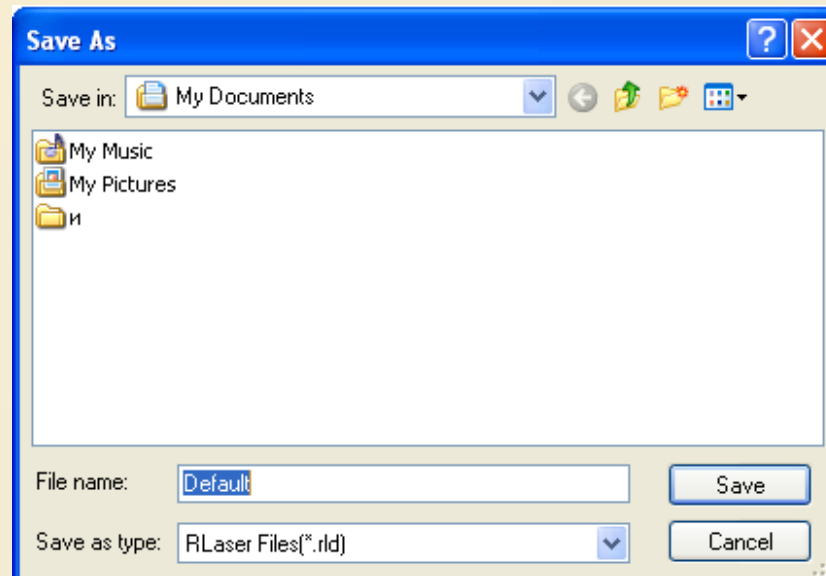
5. Ufile output: output Ufile in RD format.
6.Download: Download the graph processing data after software treatment and store in the machine. Then it can directly start processing by using the buttons on the control panel.
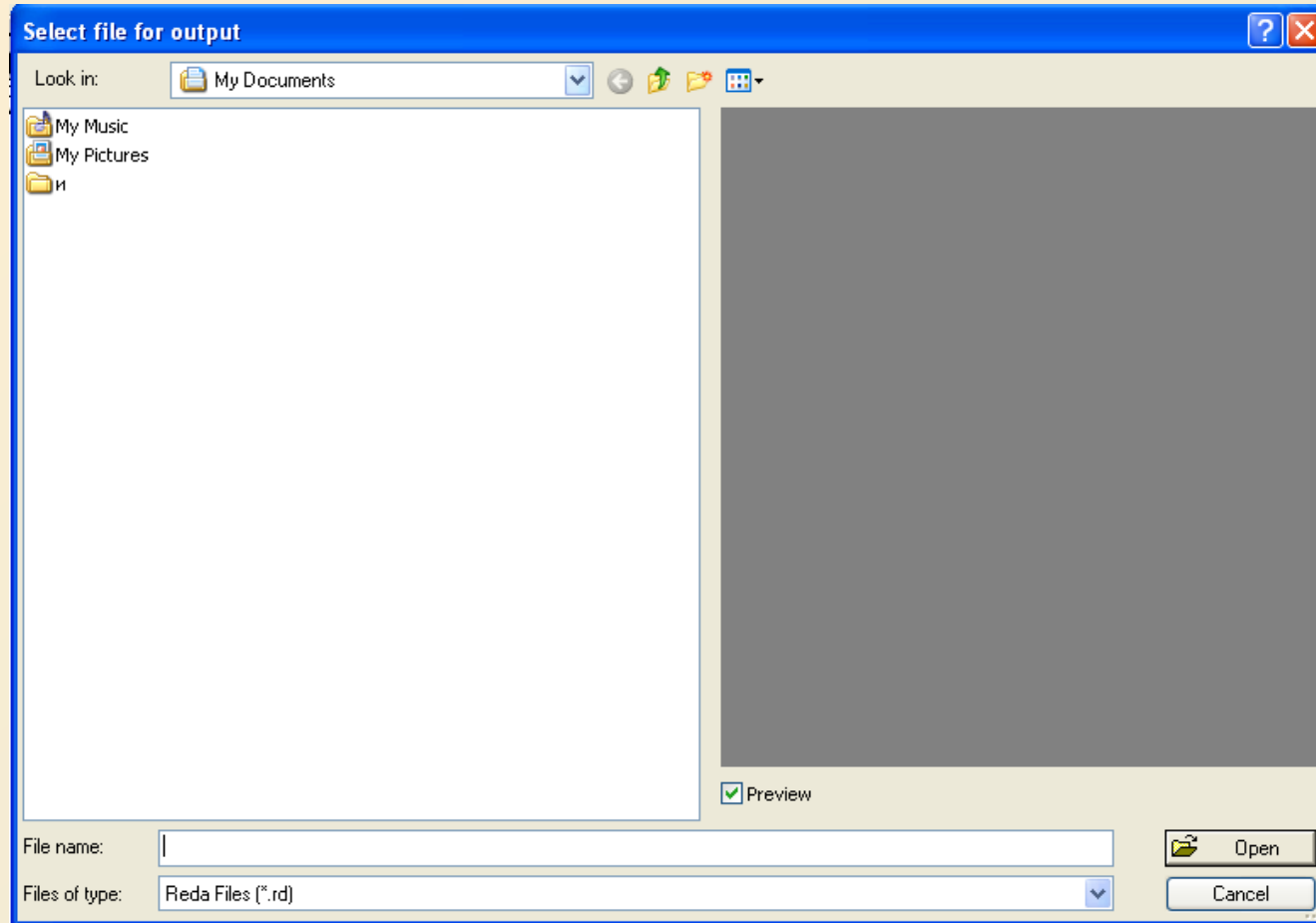
Ufile output

- Output select graphics

  Check the option ☑ Output select graphics , then processing and save to ufile are only for selected parts. If no parts are selected, there will be no output.

3.6.2 Output Setting

Work	Output	Doc	User	Test	Transform

Line/column setup

	X Num:	(space(mm):
X:	1	0
Y:	1	0

Bestrew...

☑ Enable rotate engrave

Circle pulse: 9500

Diameter(mm): 20   [Test]

☐ Enable feeding

Feeding Count: 0

Distance(mm): 500

☐ Backlash reapy optimize

① Line/Column Setup

Line/column setup is for the array processing of the graph.

X Num and Y Num refer to the columns and lines of the array.

X space and Y space refer to the column space and line space of the array.

[icon] shows the direction of the array. It can choose down right, down left, upper right, and upper left according to actual needs.
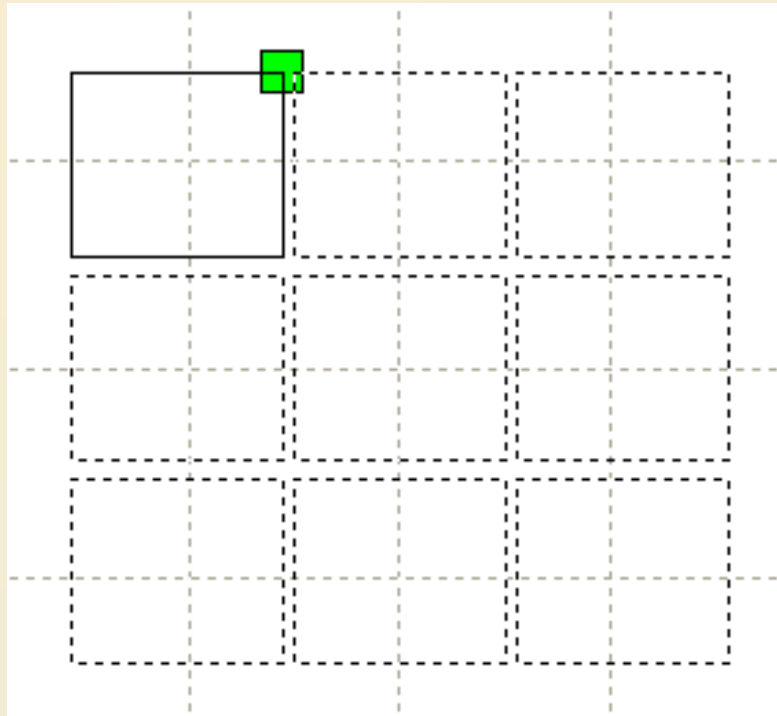
However, in the situation which is showed in above picture, it may cause the graph beyond boundary. We can see that the graph is in upper right position relative to the location of the laser head while the array direction is down right. The location of the laser head is relative to a certain graph, instead of the complete set of graph in the array. In this case, change the array direction to the down left to solve the problem.

It means that X space and Y space stand for the graph margin. If required, you may make X space and Y space to show the center distance of the graphs in the array.

Adjust X space and Y space to make the graph setting more compact. Click the plotter area to unselect the graph. And then adjust by using the up, down, left and right keys on the keyboard and zoom in/out by the mouse wheel to make the space adjustment more accurate.

Bestrewing breadth: Determine the maximum number of output lines(Y Num) and columns (X Num) . Press 'Bestrewing breadth' to show the following figure.

Bestrewing breadth	X
X breadth(mm):	1200
Y braddth(mm):	800
Ok	Cancel

Press Ok, the software can automatically calculate the lines and columns which are to be set in the whole breadth.

② Rotate Engrave

Enable rotate engrave：After enabling the rotate engrave, the actual Y axis precision will match with the diameter, circle pulse and axis pulse precision. In addition, Y axis breadth display in the main interface will be switched between the rotation processing and flat processing.

Diameter：Diameter of the parts to be processed.

Circle pulse：It refers to the motor pulse for 1 circle rotation of the work piece. It should be set as 9500.

The function is mainly used for replacing the work pieces. It can only be used when the sizes of the work pieces are similar. If the size of the work pieces deviate greatly, it is suggested to do it by directly modifying the motor stepping.

Rotation engraving can only be used as the rotation axis for replacing Y axis.

③ Feeding

Firstly, enable feeding.

Set feeding parameters. After processing once, the feeding axis will feed according to the feeding length and repeat processing until the processing times reach the feeding counts.

If the machine does not equip with the feeding device, generally it is prohibited to enable feeding.

④ Backlash repay optimize

When there is backlash in the machine, such as the seal dislocation of the cutting graph, the option can be checked.

3.6.3 Document

Work	Output	Doc	User	Test	Transform

Number	File Name	Time(H:M:S:MS)

Read　Process　Download

Delete　Delete All　Cal time

1> Read

Click Read button, the system will be connected with the Ruida controller and read the file list on the controller. And the list will be displayed on the dialog box.

2> Download

Click Download button and the Doc dialog box will be displayed. Choose and download the rd file to the controller. If successful, the document list on the interface will be updated.

3> Process

Select the document to be processed in the file list and click the Process button, then the controller will start processing the specified document.

4> Delete

Select the file to be deleted in the file list and click Delete button to delete the specified document. If successful, the document list will be updated.

5> Delete All

Automatically delete all the documents on the controller and then refresh the document list.

6> Cal Time

The mainboard supports the working time calculation for the document to be proecessed. Select the document and click the Cal Time button. After calculation completes, the operation panel will give prompt of completion. Click Read button to show the calculated working time.

Besides, when the document is processed, the working time information will be overwrote by the actual processing time.

3.6.4　User Management

Work	Output	Doc	**User**	Test	Transform

⊟ Cut parameters	
Idle speed(mm/s)	200.000
Idle Acc(mm/s2)	3000.000
Start speed(mm/s)	20.000
Min Acc(mm/s2)	400.000
Max Acc(mm/s2)	3000.000
Cutting mode	Normal Cutting
Acc Mode	S mode
⊟ Sweep parameters	
x Start Speed(mm/s)	10.000
y Start Speed(mm/s)	10.000
x Acc(mm/s2)	10000.000
y Acc(mm/s2)	3000.000
Line Shift Speed (mm/s)	100.000
Scan Mode	Common Mode
Facula Size(50~99%)	80.000
⊟ Home para	
Home speed(mm/s)	20.000
Auto home X	Yes
Auto home Y	Yes
Auto home z	No
Auto home U	No

Open	Save	Read	Write

Before setting the User parameters, the mainboard parameters should be read first.

Cut parameters	
Idle speed(mm/s)	200.000
Idle Acc(mm/s2)	3000.000
Start speed(mm/s)	20.000
Min Acc(mm/s2)	400.000
Max Acc(mm/s2)	3000.000
Cutting mode	Normal Cutting
Acc Mode	S mode

● Cut parameters

① Idle speed：It decides the highest speed of all the non-light lines during motion. The parameter should not be less than the X/Y axis take-off speed and should not be more than the max speed of X/Y axis. If the user set illegally, the controller will automatically put the parameter in the above range. Fast idle speed can shorten the processing time of the whole graph. However, if the value is too large, the track may be jitter. Set the value according to the situation.

Idle acceleration：It refers to the acceleration during idle running. Idle acceleration should match with the idle speed. If the speed is set too low, the actual idle speed may not reach the set value. If it is set too high, the mechanical structure may vibrate.

Generally the idle acceleration is slightly higher than the cutting acceleration.

② Cutting acceleration：It refers to the acceleration for cutting speed. (The cutting speed is the layer speed in the layer parameter.)

③ Turning speed：It refers to the minimum turning speed during cutting process. If the graph has irregular edge, the turning speed should be reduced.

④ Turning acceleration：It should match with the turning speed.

⑤ Cutting mode：Precision cutting, fast cutting, ultra-fast cutting. The user may select according to the actual situations. If you need the precision, you may choose precision cutting. If you emphasize on speed, you may choose fast cutting.

⑥ Acc mode：S acceleration and T acceleration. S acceleration is more mild and T acceleration is faster.

● Sweep parameters

① X Acc、Y Acc：The parameters should match with the scanning speed (or the layer speed in the layer parameters). If the set value is too small, the scanning will need longer acceleration distance and thus influence the scanning efficiency. The actual acceleration depends on the machine structure and the loading conditions. X axis and Y axis have different load capacities. Generally X acceleration is much higher than the Y acceleration.

② Line shift speed: It is used to control the highest speed of vertically shifting the upper line to the lower line in scanning mode. If the line height is too large in scanning or distance among the blocks is too large in scanning block graph, it is necessary to locate every line or block precisely. In this case, the line shift speed should be set as a lower value. The parameter should not be less than the take-off speed of the motion axis in shifting lines and should not be more than the maximum speed of the motion axis in shifting lines. If the parameter is set illegally, the controller will automatically control it in the range.

| Sweep parameters	
x Start Speed(mm/s)	10.000
y Start Speed(mm/s)	10.000
x Acc(mm/s2)	10000.000
y Acc(mm/s2)	3000.000
Line Shift Speed (mm/s)	100.000
Scan Mode	Common Mode
Facula Size(50~99%)	80.000

③ Scan Mode: Two types: Common Mode and Special Mode. In common mode, no treatment will be done during scanning; while in special mode, the facula will be treated during scanning. If special mode is selected, the laser power should be increased.

The lower percentage of the facula will result in much reduction of the laser power. To achieve the same degree of scanning depth, the laser power has to be set larger. The purpose of using special mode is to make laser machine work at high power rate in short time, so as to realize the flatter bottom during deep scanning. It should be noted that the facula may not be properly adjusted and the service life of the laser machine may be influenced in the special mode. The default setting is 'Common Mode'.

④ Facula Size：It is invalid in Common Mode and valid in Special Mode. It is controlled within the range of 50％～99％.

● Home Parameters

Home para	
Home speed(mm/s)	20.000
Auto home X	Yes
Auto home Y	Yes
Auto home z	No
Auto home U	No

Home speed：It determines the speed of the machine returning home at start-up. If the breadth is large ,the home speed can be set higher. However, the home speed should not be set too high.

Auto home X(Y, Z, U)：Enable or disable the auto home of the axis at start-up.

- **Go Scale Parameter**

Go Scale para	
Go scale mode	Close laser
Go scale blank(mm)	0.000

① Go scale mode：three modes: close laser, open laser, dot at corner.
② Go scale blank：Leave certain margin according to the original size of the graph so as to ensure the frame can completely embrace the actual graph.

     It is for the go scale function on the operating panel and has no relations to the go scale function of the software.

- **Other parameters**

Other parameters	
Array processing	Bi-dir Array
Return position	Absolute Origir
Delay before feed(s)	0.000
Dealy after feed(ms)	0.000
Focus depth(mm)	5.000
Backlash X(mm)	0.000
Backlash Y(mm)	0.000

① Array processing：It can choose Bi-dir Array and Single-dir Array
Bi-dir Array::Cut the array back and forth in two directions.
Single-dir Array: Cut the array in only one direction.
In single-dir array, all the array units have the same action modes and the action fluency. However, it takes longer time than the Bi-dir array mode. Generally it sets the Bi-dir Array.

② Return position：It includes absolute origin, anchor point, and no return. It determines the laser location after processing.

③ Delay before feed：It can provide certain delay time between the feeding and the user may take this time to arrange some works, such as picking up materials.

④ Delay after feed：After the materials are delivered to the position by the feeding device, it needs some time to stabilize before processing.

⑤ Focus depth：It is related to the auto focusing operation on the panel.

⑥ Backlash X、Y：It is to compensate the backlash caused by the machine driving.

3.6.5 Test

Single axis motion controls only one axis moving in each time. It can set offset, speed, and power (If lighted). If it is to move to the specific absolute position relative to the mechanical origin, the option 'Move from origin' has to be selected. In this way, the offset is not the displacement, instead, it is the absolute position relative to mechanical origin.

Let's take X axis as an example. If the current position is 100mm and offset is 10mm, then new position will be 110mm after one move. If check the option 'Move from origin', the new position will be 10mm after on move and the position will not change in the follow-up motions.

It should be noted that the absolute position should not be negative in the whole breadth according to the controller setting. If you check 'Move from origin' and set the offset as negative value, then the machine with XY platform will hit the limit position.

Work	Output	Doc	User	Test	Transform

Current Position
X=?
Y=?
Z=?

Axis Move

Y+   Z+   Offset(mm): 10

X- Home X+ Home   Speed(mm/s): 50

Y-   Z-   Power(%): 0

☐ Move from origin
☐ If Light

Thanks!

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