User Manual

（LaserCut 5.0）

V1.1

Contents

Chapter 1 Installation of the system

1.1 Contents of the system

The system is made up of hardware (control card) and software. Hardware includes a MPC03-L * or MPC6515 control card. And software includes drivers for the control card and control software. The whole control system is contained in a packing carton and software in a CD.

Descriptions on software directories:

subdirectory	Files	Explanations
Install	Files of installation	
Drivers	Drivers of control card	
Tools	IOcheck and Vercheck program	
Demo Data	PLT, BMP etc. demo data	
Read me	Explanations of the software edition	

1.2 Installation of MPC03 card

1.2.1 Requirement of PC

Requirement of OS: Window2000、Win XP

IBM compatible computer

CPU: Above Pentium 2

Storage: 128 Meg

HD: Above 10 G

CD-ROM

PCI extending slot

Above one USB interface

1.2.2 Auto-installation

To ensure your safety, the following procedure should be abided by:

A、Close PC, and cut off power.

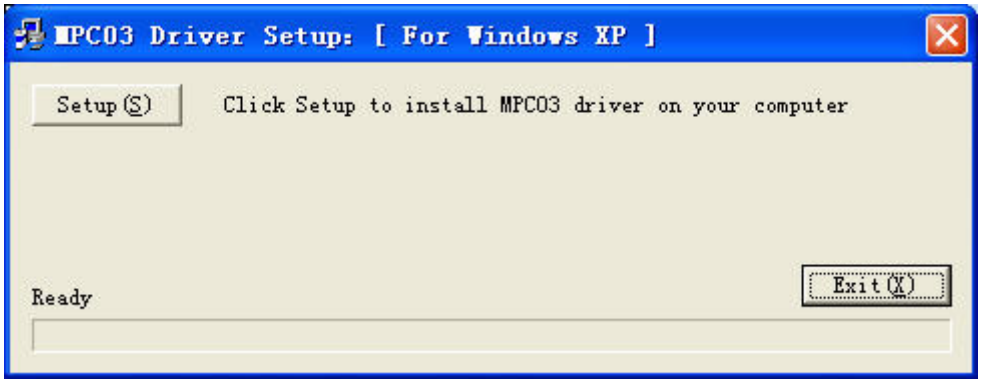
B、Open PC's cover, choose the PCI slot that is not in use and insert control card.

C、Fix control card, and put cover on computer as it is.

D、Connect control card to laser machine by data wire that is attached with machine.

E、Turn on power and run PC.

When PC starts, the control card can be checked automatically. There is an instruction for finding new hardware. At first, please choose “cancel” and then run the file Drivers\ Win2000 (or Win XP)\ SetupMpc03.exe.



Click “Setup”, the driver will be installed automatically.

Then restart the computer please.

1.2.3 Manual installation

Generally, the control card can be installed automatically. Sometimes, the control card can’t be installed because the install program is damaged. Now you have to install the control card manually.

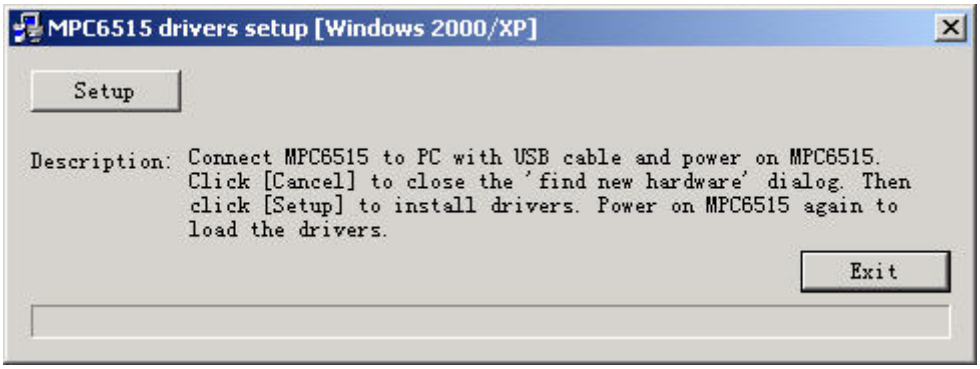
It is supposed that the OS is installed in C disk.

Copy Mpc03ls.inf in [Drivers] to C:\WINDOWS\INF.

Copy MPC03LS.SYS in [Drivers] to C:\WINDOWS\SYSTEM32\DRIVERS.

1.3 Installation of MPC6515 card

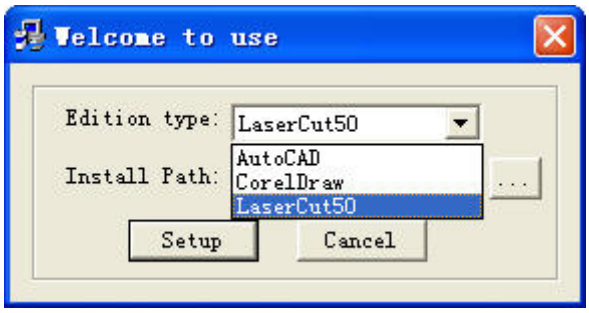
Run the file Drivers\SetupMpc6515Drv.exe.



If this program is not installed, PC can’t communicate with MPC6515.

1.4 Installation of the software

Run Setup.exe, the dialog box as following:



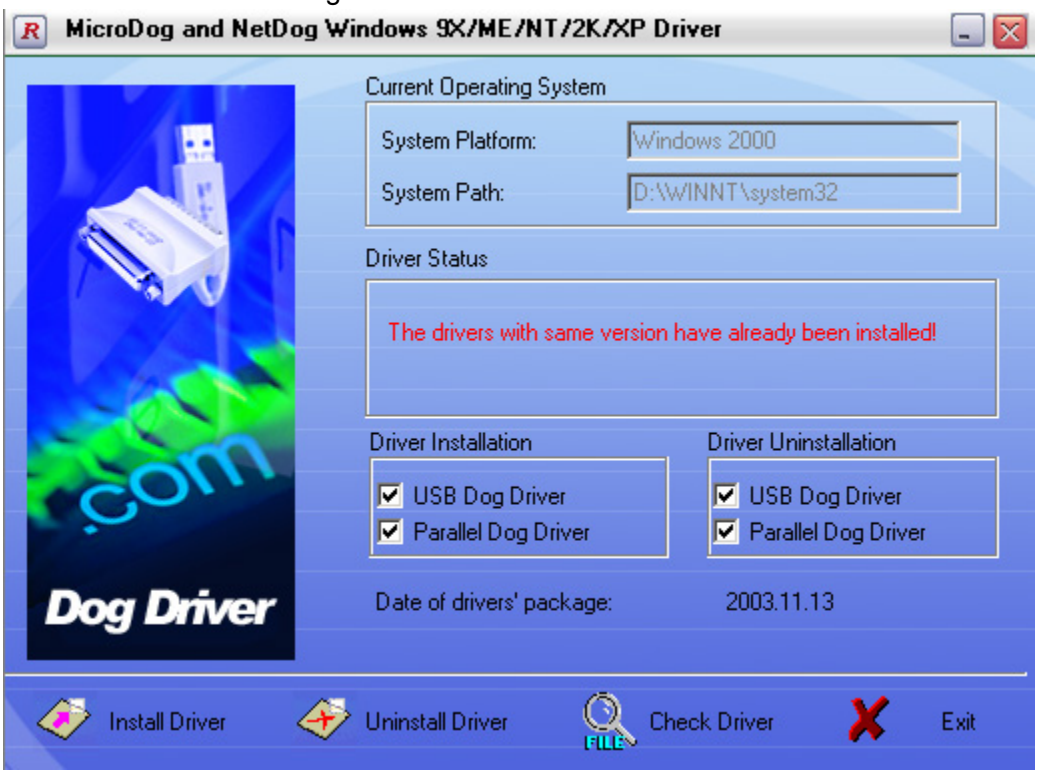
There are three options in “Edition type”, “LaserCut50” should be chose. The default

path is “C:\LaserCut50”. Click  and you can change the install path. Click “Setup” and the software will be installed.

1.5 Installation of the USB softdog key

There is a USB softdog key in machine package that should be inserted in any USB slot of the computer. After this, there is an instruction for finding new hardware. At first, please choose “cancel”.

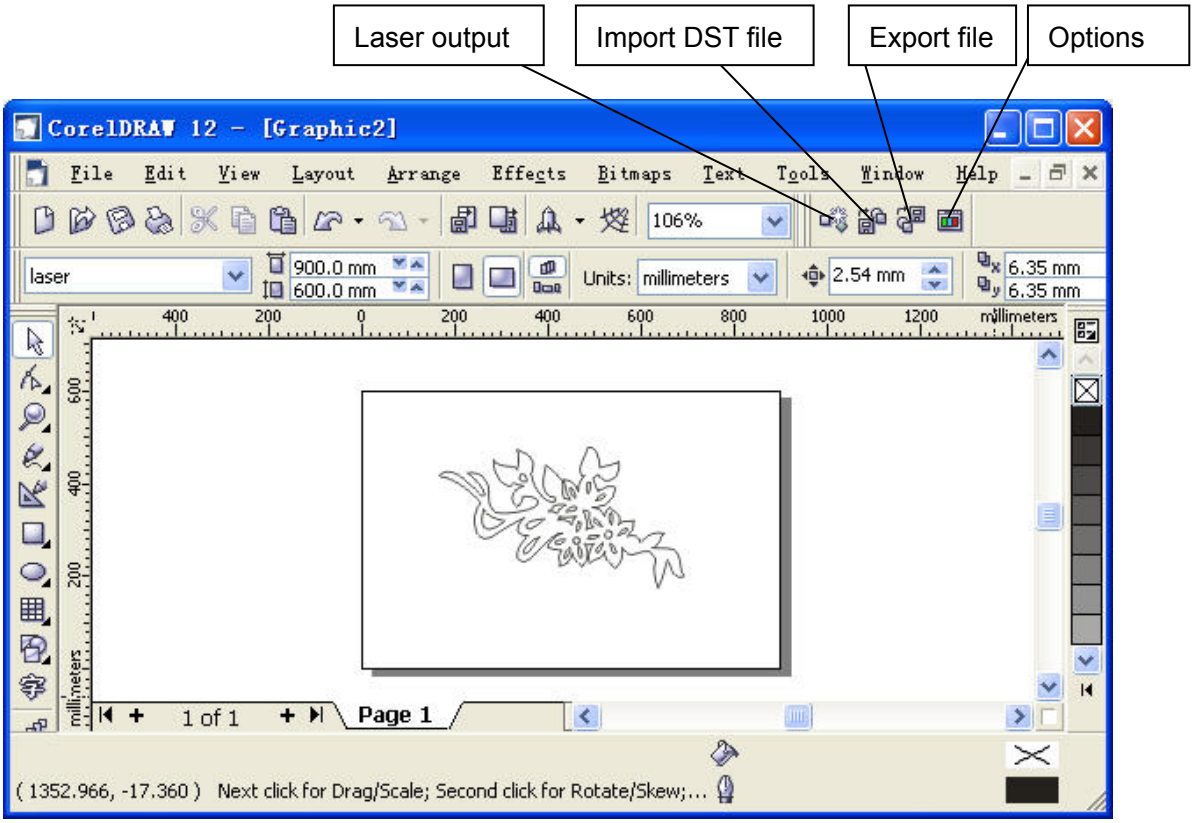
Run the file Drivers\ redDogInstdrv.exe.



Please press “Install Driver” button to install the driver of USB softdog key.

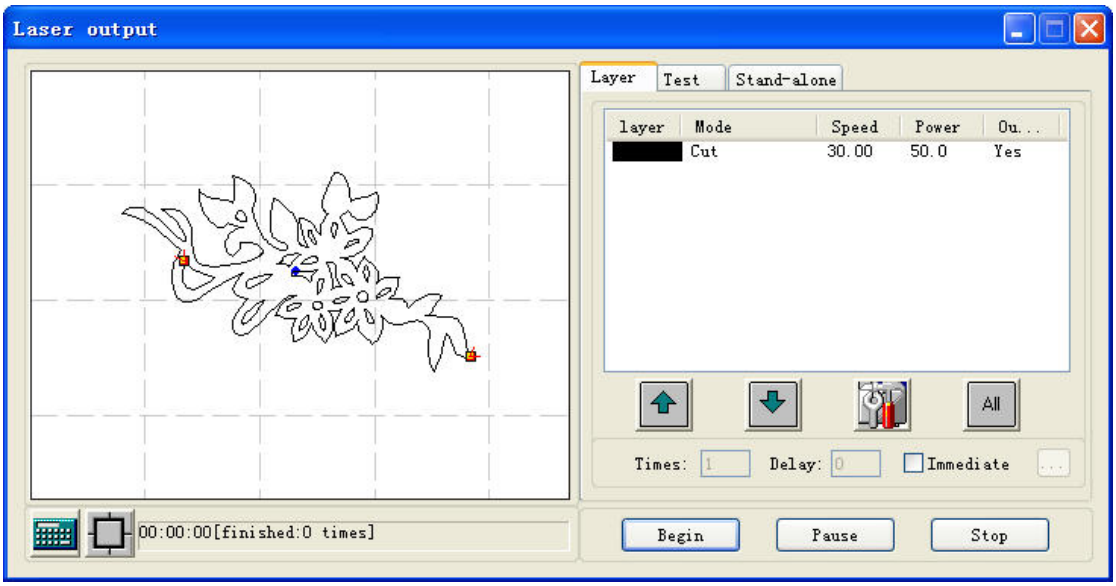
Chapter 2 Explanation for CorelDraw Edition

Run CorelDraw and the interface as following.



2.1 Laser output

Click this button, the dialog is as following.



2.1.1 Layer

Please refer to “Chapter 5”

2.1.2 Test

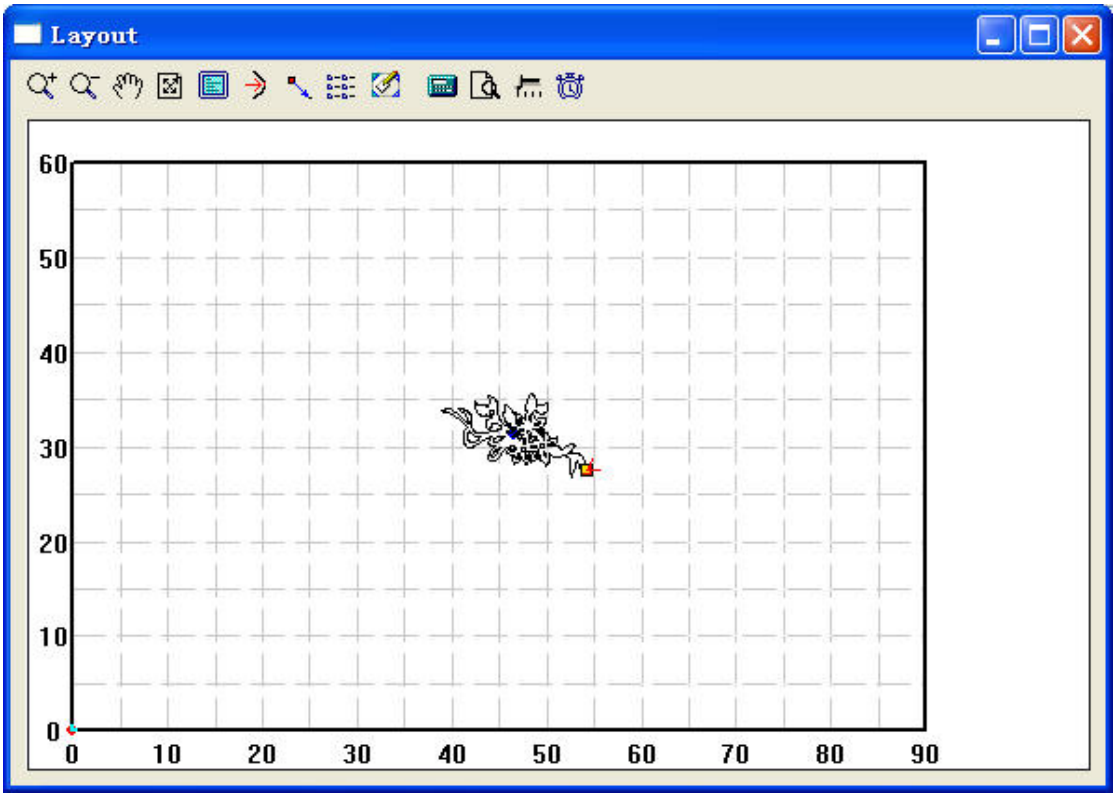
Please refer to “Chapter 5”

2.1.3 Stand alone（only for MPC6515）

Please refer to “Chapter 5”

2.1.4 

Click this button, the dialog is as following.



2.1.4.1 Zoom in

The corresponding icon is  .

Enlarge showing graphics. Click this button, then click your graphics with mouse and the graphics can be enlarged.

2.1.4.2 Zoom out

The corresponding icon is  .

Reduce showing graphics. Click this button, and the graphics can be reduced.

2.1.4.3 Pan

The corresponding icon is  .

Move screen. Click this button; press the left button of your mouse continuously, and move your mouse to any place of the screen, then you can see any part of the screen.

2.1.4.4 Room to all object

The corresponding icon is  .

Show the processing date in max on screen.

2.1.4.5 Room to table

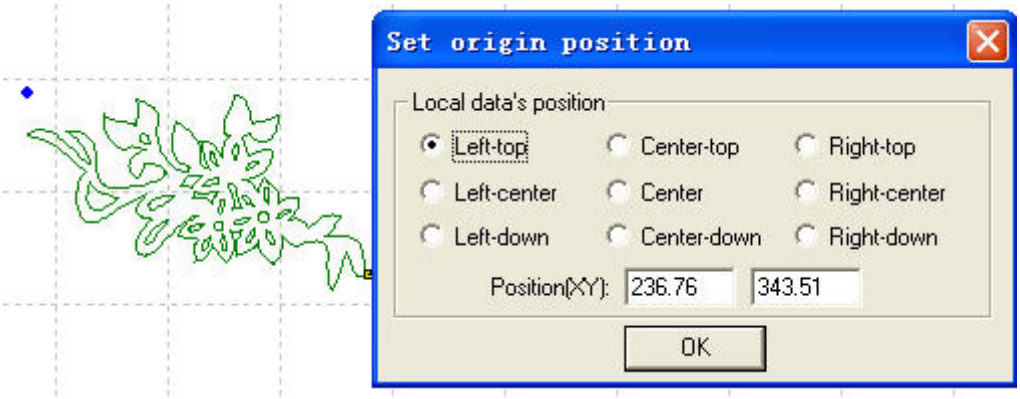
The corresponding icon is  .

Show the whole processing area within the scale of reference frame.

2.1.4.6 Set laser origin

The corresponding icon is .

Click this button.

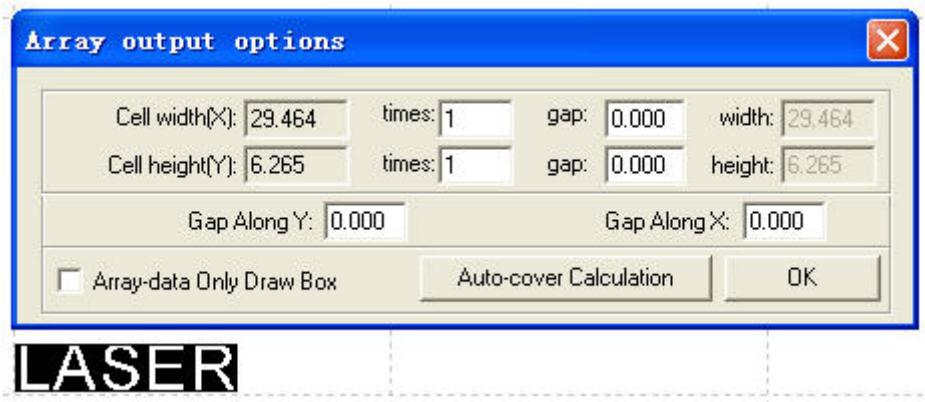


You can set origin point anywhere as you prefer.

2.1.4.7 Array output options

The corresponding icon is .

Click this button.



Cell Width(X/Y): It is the original size of the data.

Times: It is the number of rows and columns you need.

Gap: It is the space between two adjacent rows or columns.

Width: It is the width of whole data.

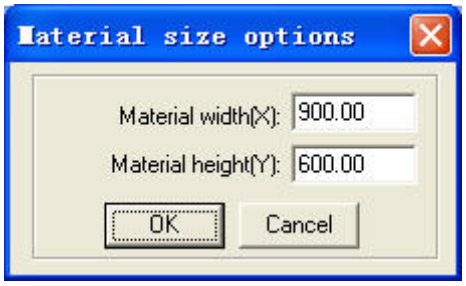
Height: It is the height of whole data.

Gap along Y: It is the space along Y axis between the first and second column.

Gap along X: It is the space along X axis between the first and second row.

Array-data Only Draw Box: If you select this option, there will be only one data on screen; others will be shown as rectangles.

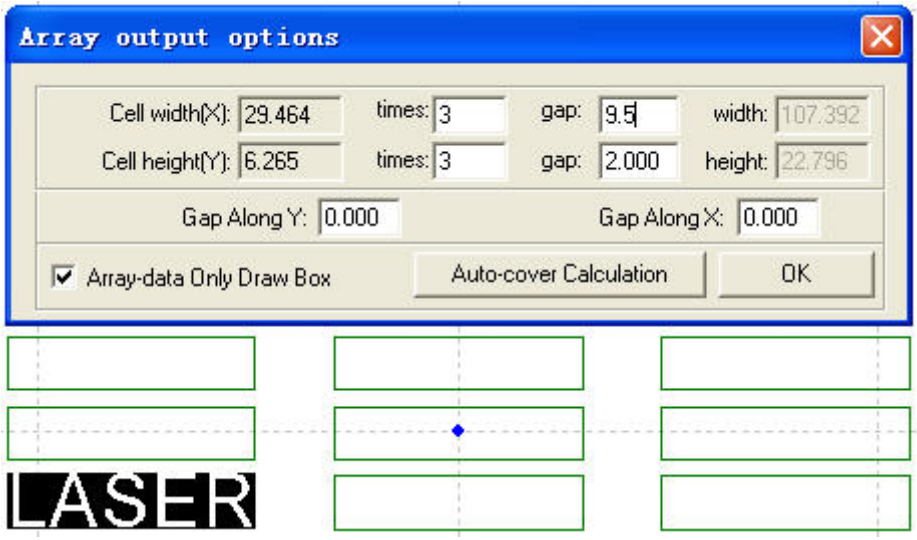
Auto-cover Calculation: This can calculate the number of row and column that can cover the whole material according to the parameter you input. Click this button,



Material width(X): It is the width of the work piece (the default is the worktable's width).

Material height(Y): It is the height of the work piece (the default is the worktable's height).

The following is a sample.



2.1.4.8 Move working table

The corresponding icon is  .

Click this button and move mouse, and you can change the position that the data is in the working table.

2.1.4.9 Calculate

The corresponding icon is  .

When the graph and processing parameters are changed, this button should be clicked to save the processing parameters in processing file.

2.1.4.10 Simulate

The corresponding icon is  .

When parameters set is finished, please click this button. It can simulate the procedure of output for checking the result of output.

2.1.4.11 Set simulate speed

The corresponding icon is  .

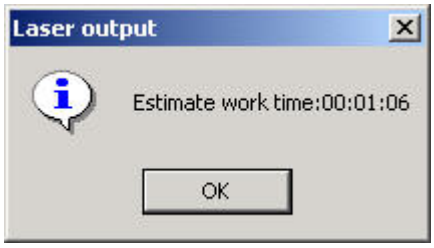
Click this button.

By this tool, you can adjust the simulate speed.

2.1.4.12 Estimate work time

The corresponding icon is  .

Click this button, it will show the work time.



2.1.5 

Calculate. When the graph and processing parameters are changed, this button should be clicked to save the processing parameters in processing file.

2.2 Import DST file

Click this button, you can import DST files.

2.3 Output file

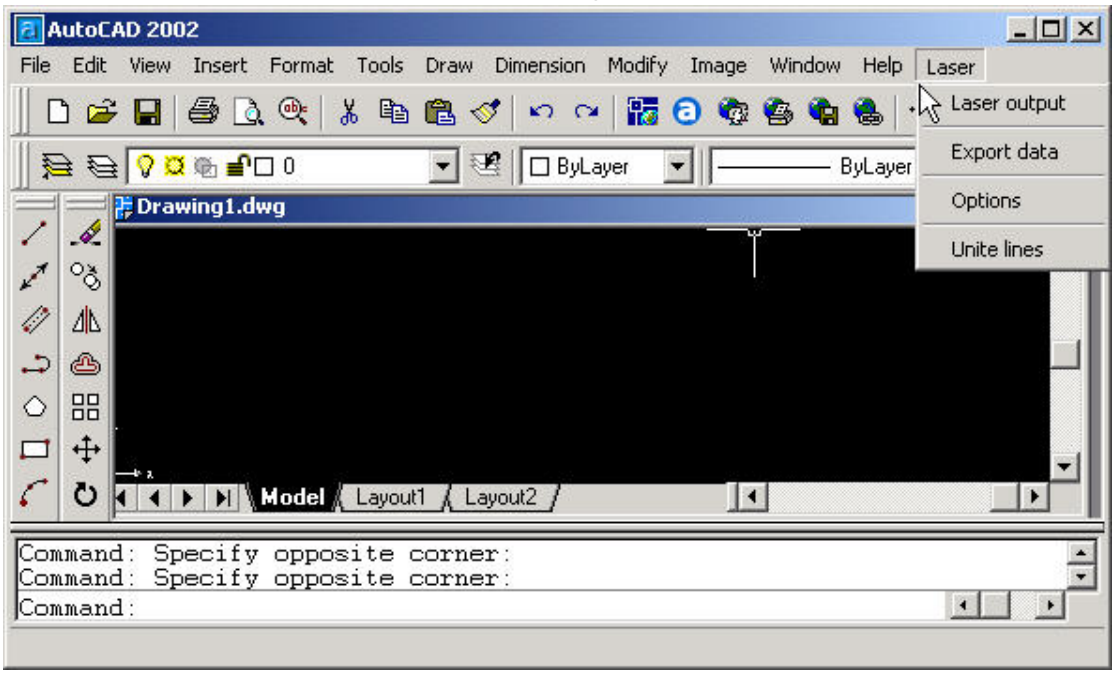
Click this button; you can export the processing files.

2.4 Options

Please refer to “Chapter 6”

Chapter3 Explanation for AutoCAD Edition

Run AutoCAD and the interface as following.



3.1 Laser output

Please refer to “Chapter 2”

3.2 Export Data

Click this button; you can export the processing files.

3.3 Options

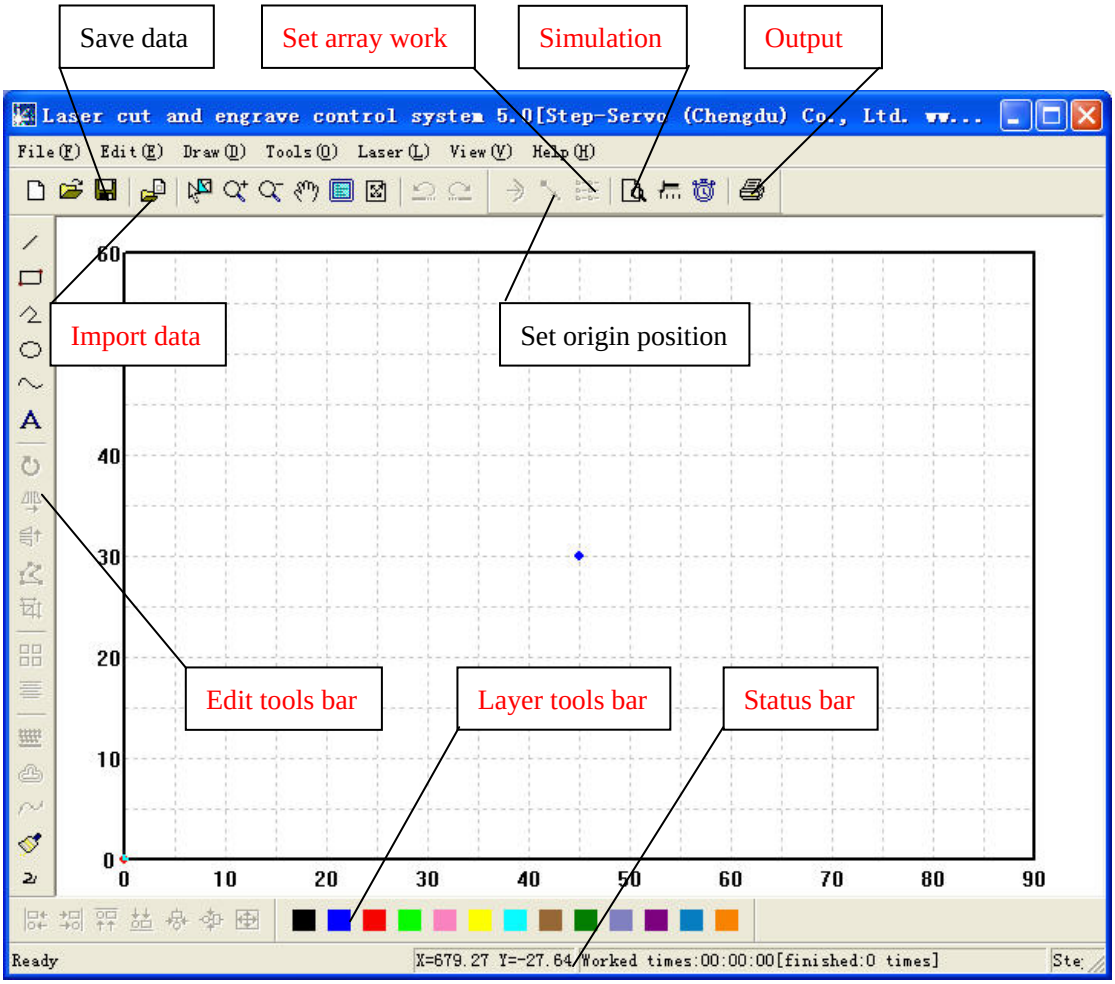
Please refer to “Chapter 6”

3.4 Unite lines

This tool can unite several lines that are intersecting as one line. This is usually used for DXF files.

Chapter 4 Explanation for Universal Edition

When run the software, the interface is as following. All system function can be found on tool bars.



Let mouse stay on an icon for a moment, and it will show the explanation of basic function of tools bar. The following is the explanation of all tool bars.

4.1 File

4. 1.1 New

The corresponding icon is .

Create a new file.

4.1.2 Open

The corresponding icon is .

Load process data made by the software. The file format is ECP-EC Project File (* .ecp).

4.1.3 Save

The corresponding icon is .

Save the graph data that is defined processing parameters as ECP-EC Project File (* .ecp).

4.1.4 Save As

Save a ECP-EC Project File (* .ecp) as another ECP-EC Project File (* .ecp).

4.1.5 Import

The corresponding icon is .

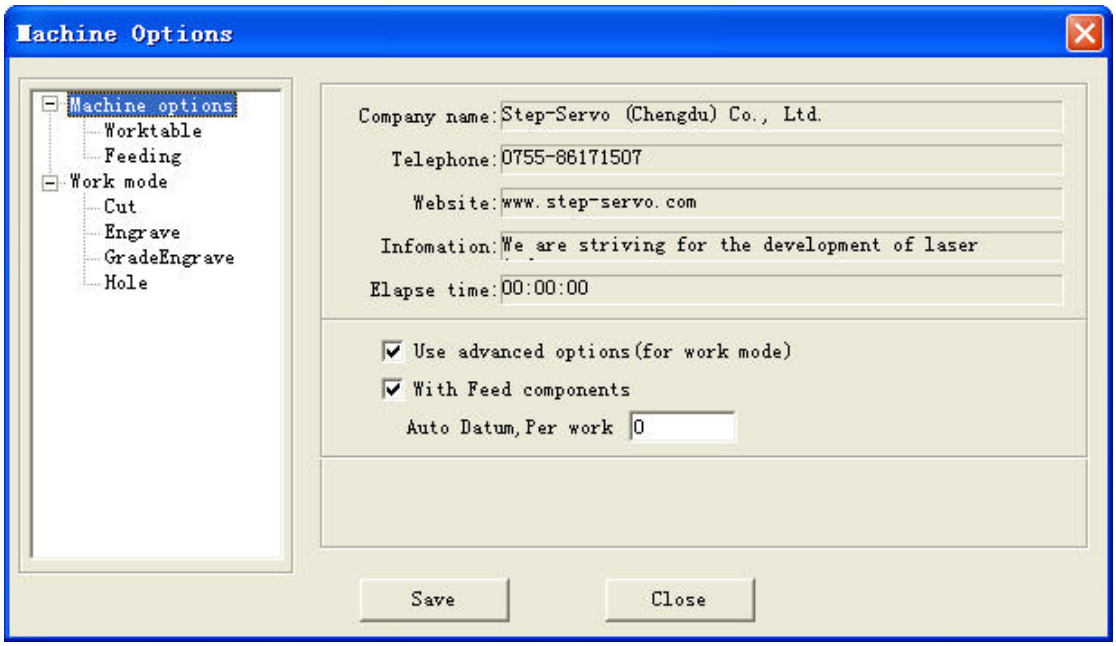
Load data that the software supports. The software can support * .PLT、 * .AI、 * .DXF、 * .DST、 * .BMP etc files.

4.1.6 Export

Save the vector graph data that is in current window as a standard PLT file (*.PLT) or DXF file.

4.1.7 Options

Click this button, and the interface is as following.



Any change of these parameters will change the performance of the machine. Before changing the parameter, you should consult the supplier.

Details please refer to “Chapter 6”

4.1.8 Exit

Click this button, and the software will close.

4.2 Edit

4.2.1 Undo

The corresponding icon is .

4.2.2 Redo

The corresponding icon is .

4.2.3 Refresh

The corresponding icon is .

Click this button, and you can refresh the screen.

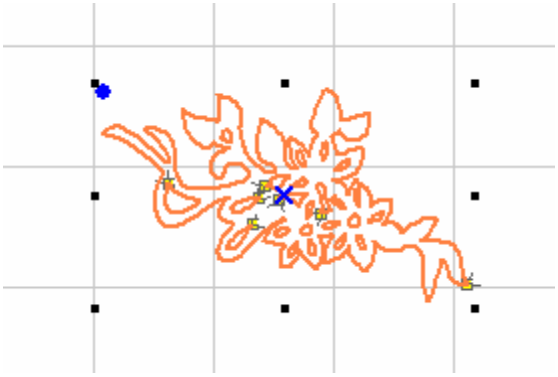
4.2.4 Pick

The corresponding icon is .

Select graphics. Select graphics or a part of the graphics. You can delete, move, change layers of the graphics you select.

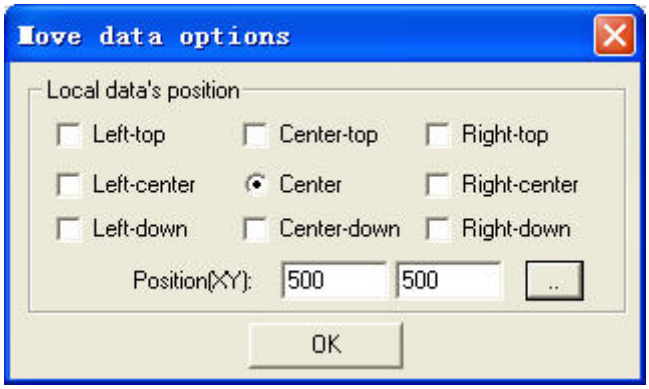
There are other functions about this button:

Click this button, and select the graphics you prefer.



Move the mouse to the nodes, then drag the mouse, you can change the shape of the graphics as you prefer.

After you select the graphics, click “Spacebar”.



Input the coordinate of the X-axis and Y-axis, you can change the position of the graphics.

4.2.5 Zoom in

The corresponding icon is .

Enlarge showing graphics. Click this button, then click your graphics with mouse and the graphics can be enlarged.

4.2.6 Zoom out

The corresponding icon is .

Reduce showing graphics. Click this button, and the graphics can be reduced.

4.2.7 Pan

The corresponding icon is .

Move screen. Click this button; press the left button of your mouse continuously, and move your mouse to any place of the screen, then you can see any part of the screen.

4.2.7 Room to table

The corresponding icon is  .

Show the whole processing area within the scale of reference frame.

4.2.8 Room to all object

The corresponding icon is  .

Show the processing date in max on screen.

4.2.9 Center to table

When the data is input, it may be out of the reference frame. Click this button and you can move data to reference frame. If you select a graph and click this button, the selected graph will be moved to the center of the reference frame.

4.3 Draw

4.3.1 Line

The corresponding icon is  .

Click this button, move mouse on the screen, and you can draw straight lines freely. Press “Ctrl” key, and move mouse on the screen, you can draw horizontal lines.

4.3.2 Rectangle

The corresponding icon is  .

Click this button, move mouse on the screen, and you can draw rectangles of various sizes. Press “Ctrl” key, and move mouse on the screen, you can draw square.

4.3.3 Draw poly-line

The corresponding icon is  .

Click this button, move mouse on the screen, and you can draw poly-line of various sizes by clicking mouse. If you click “C” key, the line will be closed. Press “Ctrl” key, and move mouse on the screen, you can only draw beeline.

4.3.4 Ellipse

The corresponding icon is  .

Click this button, move mouse on the screen, and you can draw ellipse of various sizes. Press “Ctrl” key, and move mouse on the screen, you can draw circle.

4.3.5 Bezier

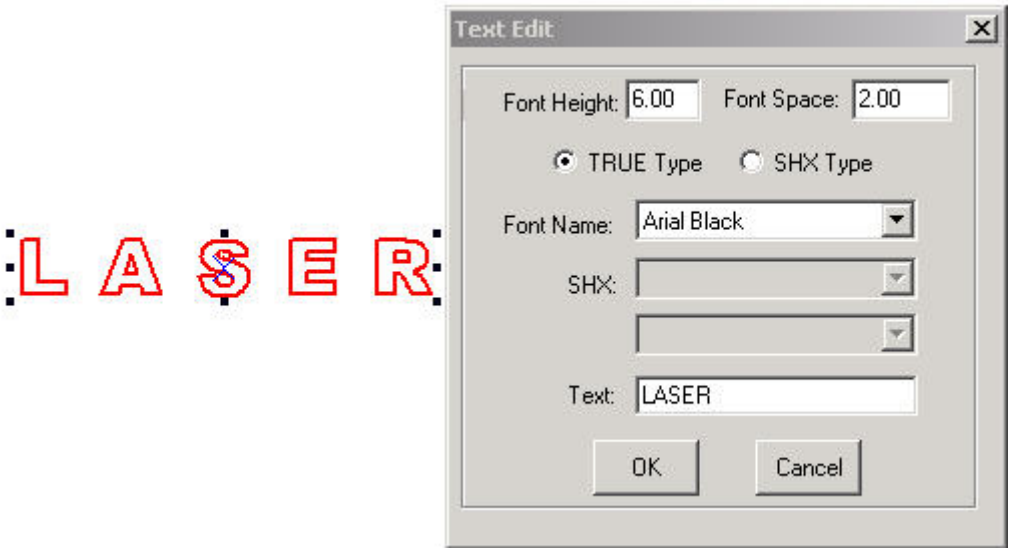
The corresponding icon is  .

Click this button, move mouse on the screen, and you can draw bezier of various sizes.

4.3.6 Text

The corresponding icon is  .

Click this button, and drag mouse.



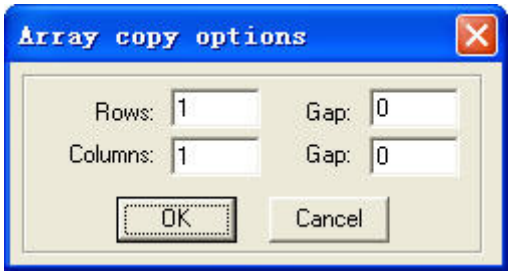
If you want to edit the text, please click this button and drag mouse on the text.

Before you change the size of the text, the text should be changed to curve. The “To curve” button is located in “Tools-- To curve”. When the text changed to curve, the content of the text can’t be changed.

4.3.7 Copies

The corresponding icon is .

Click “select” button , and choose the graphics you want to array copy. Then click this button.



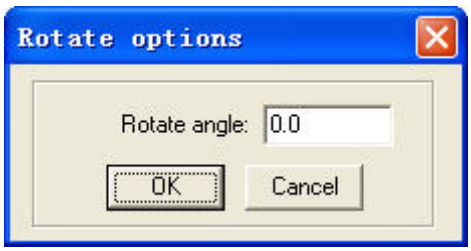
Input relative parameters, then a number of graphics are copied as “rows X columns”.

Gap means the distance between two adjacent rows or columns.

4.3.8 Rotate

The corresponding icon is .

Click “pick” button , and choose the graphics you want to rotate. Then click this button, you can rotate the graphics. Click “Spacebar” key after you click , you will see following dialog box.

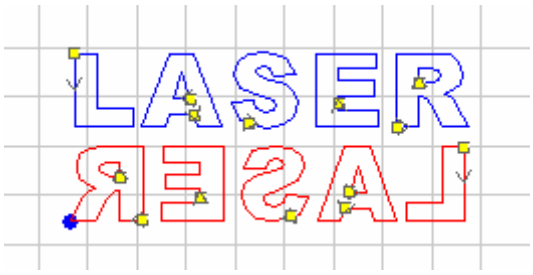


Input the number you want, and you can control the rotate angle.

4.3.9 Mirror (vertically)

The corresponding icon is .

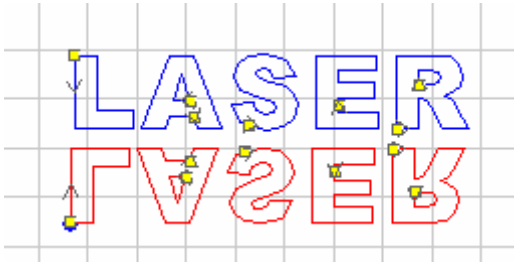
Click “pick” button , and choose the graphics you want to edit. Then click this button, you can change the shape of the graphics. The following is a sample. The upper is original graphics, and the other is edited.



4.3.10 Mirror (horizontally)

The corresponding icon is .

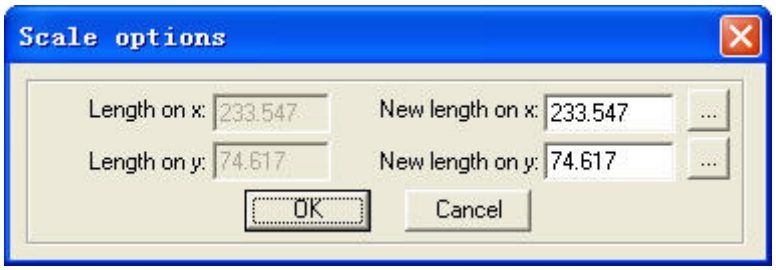
Click “pick” button , and choose the graphics you want to edit. Then click this button, you can change the shape of the graphics. The following is a sample. The upper is original graphics, and the other is edited.



4.3.11 Size

The corresponding icon is .

Change the size of graphics. Click “pick” button , then select the graphics you want to edit. Click this button.



Now, input the number you prefer on X and Y-axis. Click “OK”, the size of graphics can be changed. If you don’t want to change the proportion of X and Y-axis, you can input one of the number (X or Y), then click the button ....

4.3.12 Align

The corresponding icon is  .

There are 7 options for aligning.

4.3.13 Edit node

The corresponding icon is  .

Edit the nodes of the selected vector graph. Click this button, the nodes of the selected graph will show as small squares.

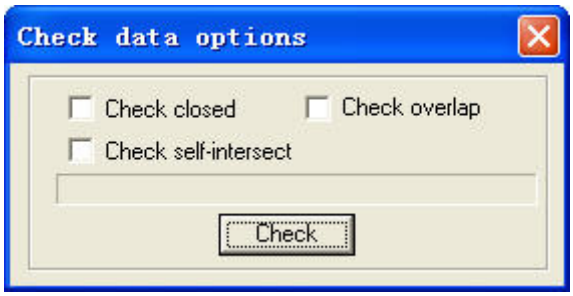
Move mouse to the node, and you can change the shape of the graph by dragging mouse.

Move mouse to the graph, the mouse will change to a crisscross. Dbclicking mouse will add a node. Move mouse to the node and click “Delete” key, the node will be deleted.

4.4 Tools

4.4.1 Data check

Click this button.



This can check if the data is closed, overlap or self-intersect.

When the data is input two times or more, it can’t be processed properly. So if you

find something is unusual such as you can't engrave a graphics data, please use this tool to check overlap or others. Click "Check" and it will inform which part of the data is in trouble by red it. Then click "Delete" key and you can delete unwanted data. Before you click "Delete" key, you have to click .

4.4.2 Smooth curve

The corresponding icon is .

This tool can smooth curves. This can improve the cutting speed. Select the graphics you want, and click this button.

There are 3 options. Compared with "One Level" and "Two Level", "Three Level" is smoother. But the distortion is bigger than the others.

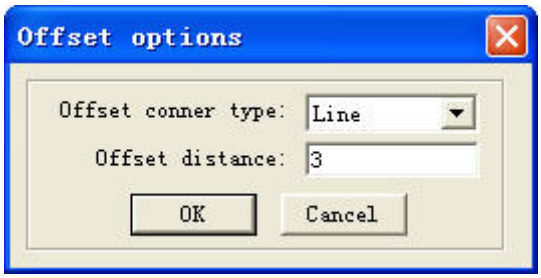
4.4.3 Unite line

This tool can unite several lines that are intersecting as one line. This is usually used for DXF files.

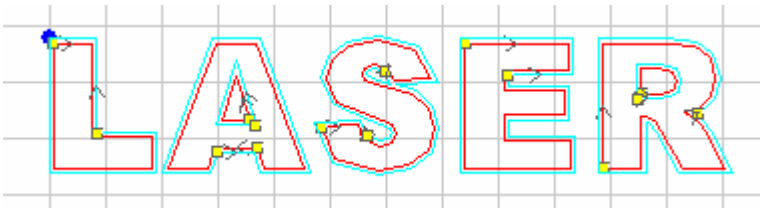
4.4.4 Offset curve

The corresponding icon is .

This tool can expand or reduce the data. Select the data you need and click this button.



Input parameters you need you will get a parallel data and the new data will be set as another layer. The following is a sample.

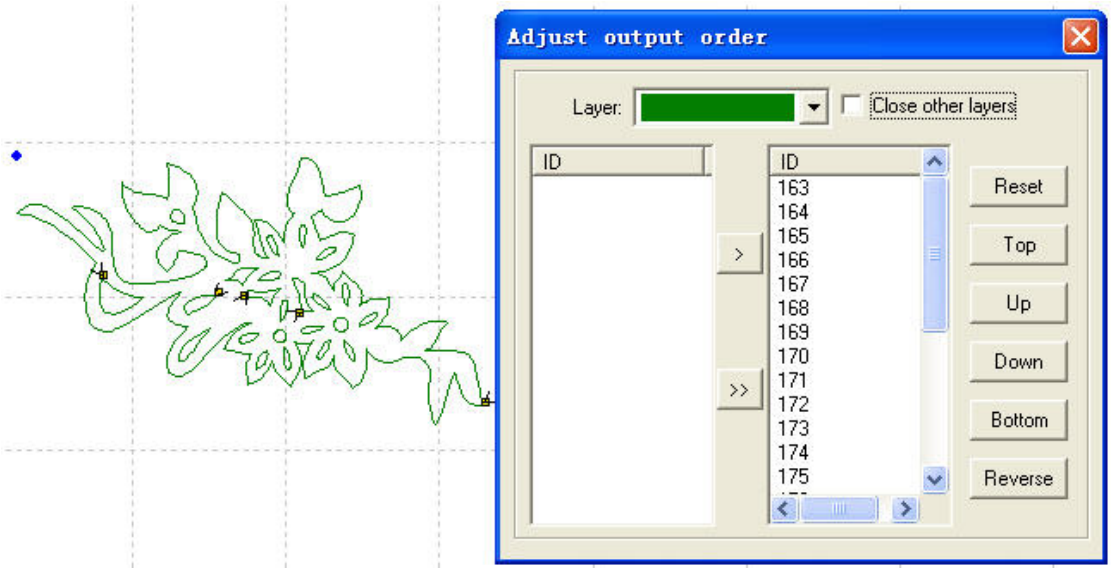


4.4.5 To curve

Convert the text to curve.

4.4.6 Output order

By this tool, you can layout the processing sequence as you prefer. Click this button,



Each ID number represents a separate graph. Change the sequence of the ID number, and the processing sequence will be changed.

4.4.7 Invert colors

The corresponding icon is .

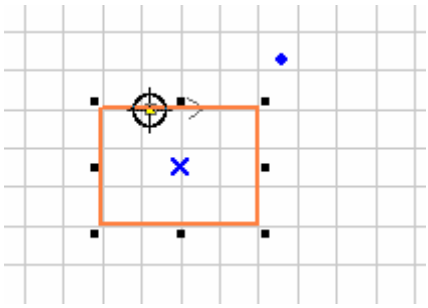
This is only for BMP. Click “pick” button , and choose the graphics you want to edit. Then click this button, the black part will be changed to white and white to black. The following is the sample.

4.5 Laser

4.5.1 Define cut route

The corresponding icon is .

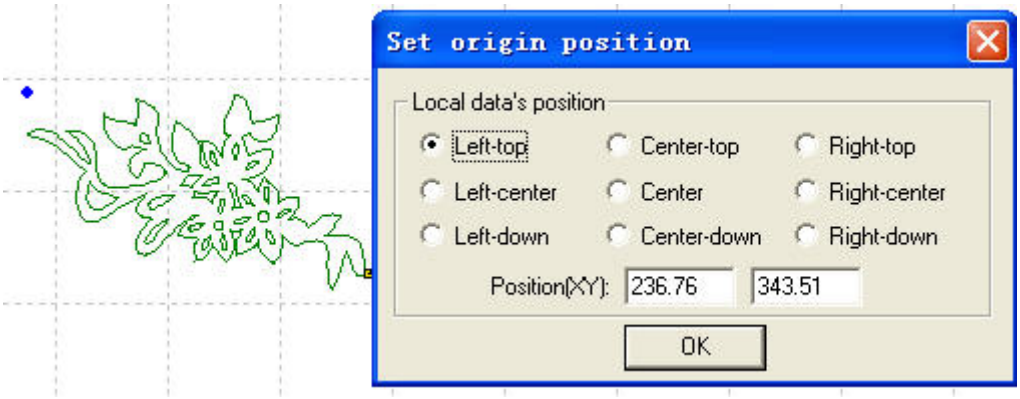
This software will define the starting point and direction automatically. Generally, the point is on the corner. When you need to change the starting point and direction, you can click this button, and then move mouse to the starting point (it is a small yellow square). Now click the left key of mouse, the mouse will be changed to a circle. You can change the direction by clicking “F” key. If you press the left key of mouse and move mouse, you can change the starting point. The following is a sample.



4.5.2 Set laser origin

The corresponding icon is .

Click this button.

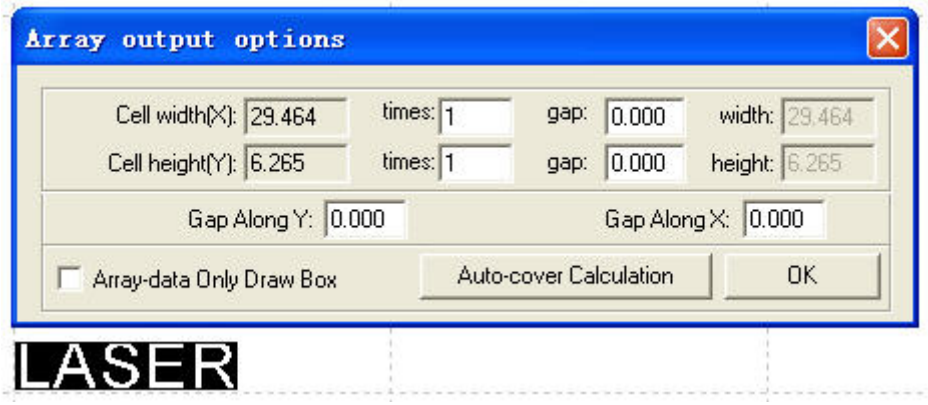


You can set origin point anywhere as you prefer.

4.5.3 Array output options

The corresponding icon is .

Click this button.



Cell Width(X/Y): It is the original size of the data.

Times: It is the number of rows and columns you need.

Gap: It is the space between two adjacent rows or columns.

Width: It is the width of whole data.

Height: It is the height of whole data.

Gap along Y: It is the space along Y axis between the first and second column.

Gap along X: It is the space along X axis between the first and second row.

Array-data Only Draw Box: If you select this option, there will be only one data on

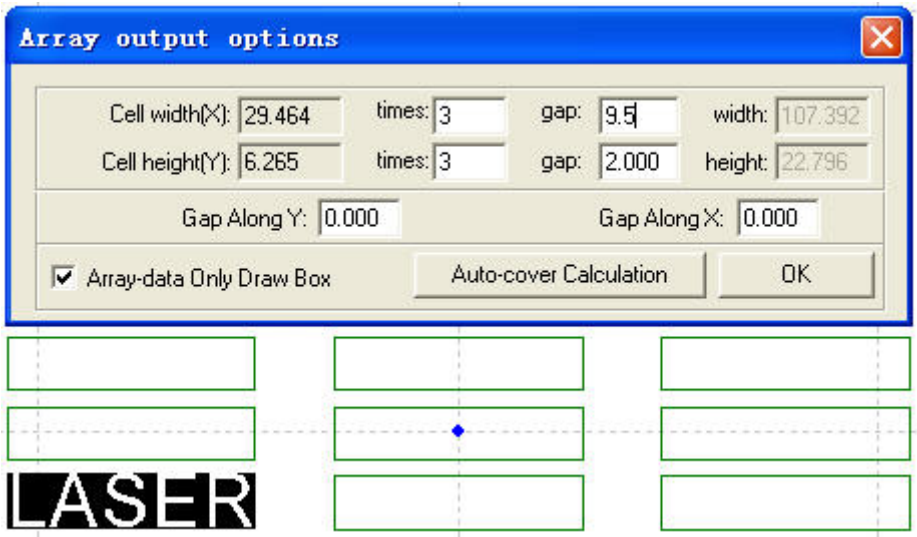
screen; others will be shown as rectangles.

Auto-cover Calculation: This can calculate the number of row and column that can cover the whole material according to the parameter you input. Click this button,

Material width(X): It is the width of the work piece (the default is the worktable's width).

Material height(Y): It is the height of the work piece (the default is the worktable's height).

The following is a sample.



4.5.4 Calculate

When the graph and processing parameters are changed, this button should be clicked to save the processing parameters in processing file.

4.5.5 Clear log

Click this button; the system will clear the log.

4.5.6 Simulate

The corresponding icon is .

When parameters set is finished, please click this button. It can simulate the procedure of output for checking the result of output.

Click "Esc" on the keyboard and you can cancel the simulation process.

4.5.7 Output

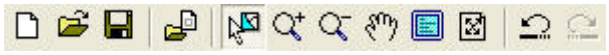
The corresponding icon is .

This is for setting layer parameters, test machine and download data. Details explanation is in "Chapter 5: laser output".

4.6 View

4.6.1 Toolbar

File toolbar: Click this button, you can display or hide the following bar.



Output toolbar: Click this button, you can display or hide the following bar.

Edit toolbar: Click this button, you can display or hide the following bar.

Layers toolbar: Click this button, you can display or hide the following bar.

Click “pick” button  and choose a certain part of graphics on screen (after been chosen, the outline become gray), then click any color button you prefer on the layer bar. Now a new layer will be added in the layer list automatically.

Align toolbar: Click this button, you can display or hide the following bar.

4.6.2 Status bar

Click this button, you can display or hide the following bar.

The status bar show the coordinates of the position that mouse stay on. It also shows the name and website of the manufacturer.

4.7 Help

4.7.1 Help

Click this button, and you can see the manual of the software. You can get any information about how to operate the software.

4.7.2 About

Click this button, and you can see the following dialog box.

It shows information of the software and our phone number. If you have any question, don’t hesitate to call us.

4.8 Other button on the tool bar

4.8.1 Set simulate speed

The corresponding icon is  .

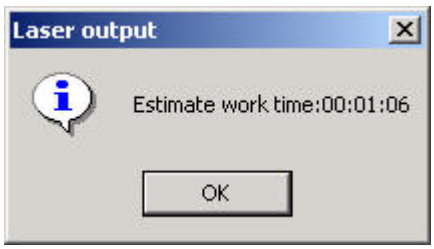
Click this button.

By this tool, you can adjust the simulate speed.

4.8.2 Estimate work time

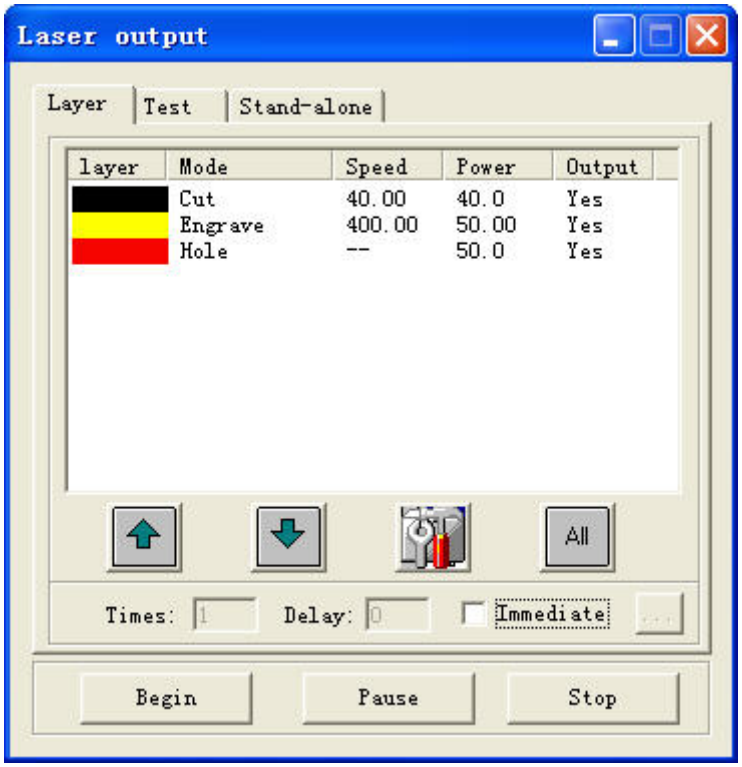
The corresponding icon is  .

Click this button, it will show the work time.



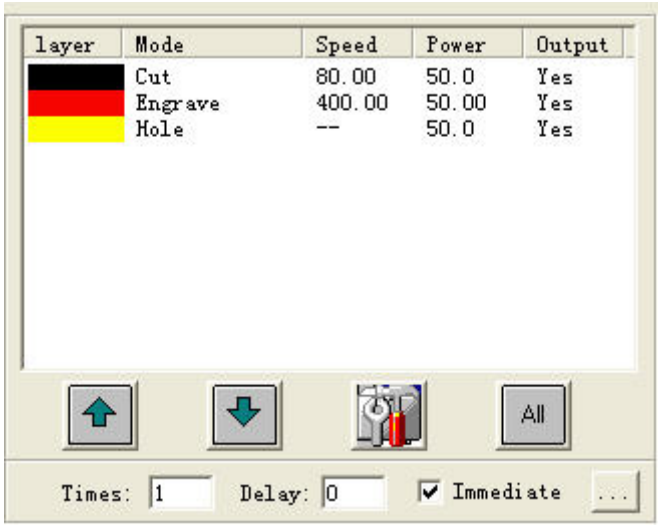
Chapter 5 Laser output

There are 3 parts in this interface as following.



5.1 Layer

Layers management is shown as below:



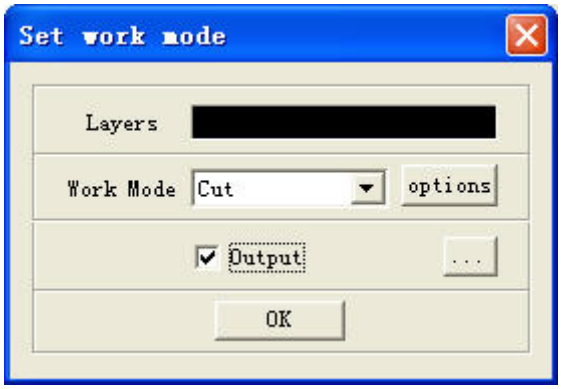
When there are many layers, the processing sequence is from the top down. Select one row and click up arrow or down arrow, and the sequence can be changed.

When there are many layers, select one row and click 

, and all the processing parameters of the other layers can be set as the layer that has just been

selected.

5.1.1 Main interface of “Set work mode”

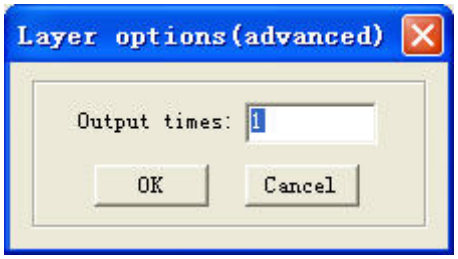


Work Mode: the processing mode of the current layer.

Options: click this button and processing parameters can be set.

Output: the current layer is output or not.

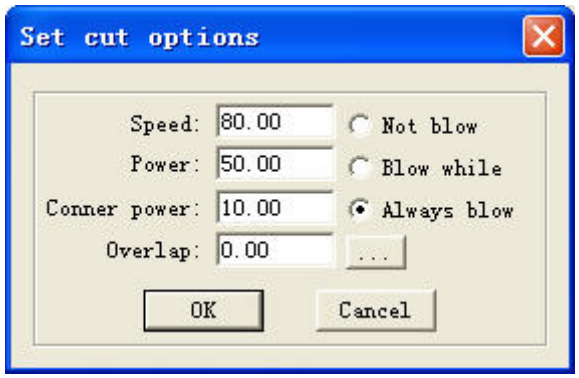
...: This is advanced layer options. Click this button.



Output times: processing times for the current layer.

5.1.2 Interface of “set cut options”

Select the mode as **Cut**; click **Options** and the dialog box as shown below.



Speed: vector speed on X-Y axis

Power: the laser power when the layer is processed

Corner Power: the laser power when laser head runs on corners

Because when laser head runs on corners, the speed will slow down, if the power is constant, the corners will be cut deeper than others.

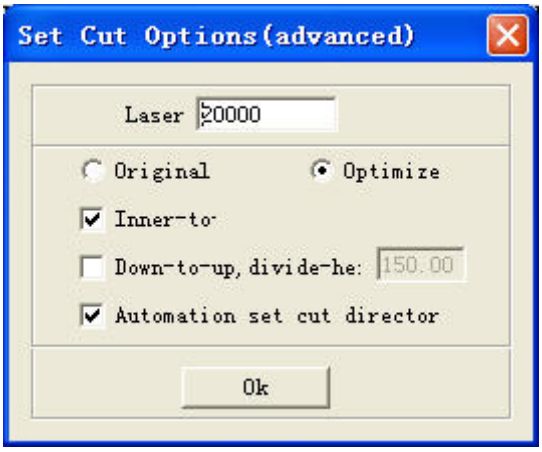
Overlap: When a close graphics can’t be cut as it is (close), adjusting this parameter can avoid it. This may be caused by mechanical gaps. The best way to avoid this problem is improve the mechanical precision of the machine.

Not Blow: blowing function is closed.

Blow with Laser: blowing when laser on. Stop blowing when laser off. This function needs hardware support.

Always Blow: blowing when laser head moves and stop blowing when processing procedure finished.

: This is advanced layer options. Click this button.



Laser: This is the PWM frequency.

Original: The machine draws the graph according the route as it is been made.

Optimize: The software will calculate the route to improve processing efficiency. If you select this option, there are 2 options.

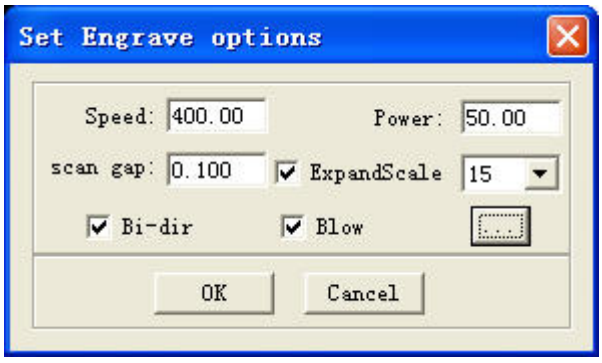
In-Out: cut from inner to outer.

Down-Up: cut from down to up according the number of “divide-height”.

Automation set cut direction: The software will confirm the direction automatically. If you need to change the direction, please cancel this function.

5.1.3 Interface of “set engrave options”

Select the mode as **Engrave**; click **Options** and the dialog box as shown below.



Speed: engraving speed on X-axis.

Power: the laser power when a layer is processed.

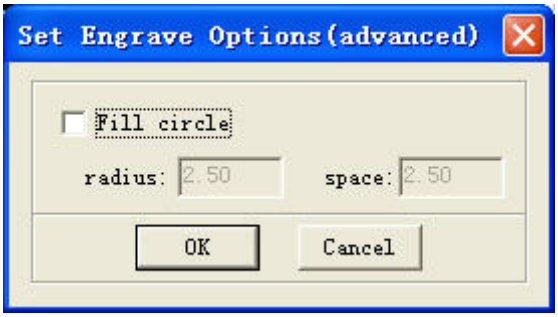
Scan gap: movement distance on Y-axis when engrave a row on X-axis.

Bi-dir: when engraving, laser emit on both negative X-axis and positive X-axis. When cancel this function, laser emit on only one direction.

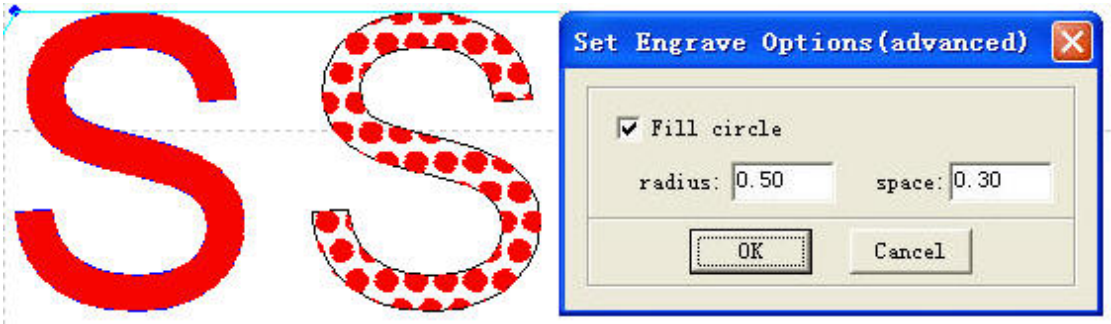
Blow: blow or not. This function needs hardware support.

Expand scale: when engraving small letters, the width of transverse stroke may be smaller than the actual size. Adjusting this parameter can compensate it.

: This is advanced layer options. Click this button.



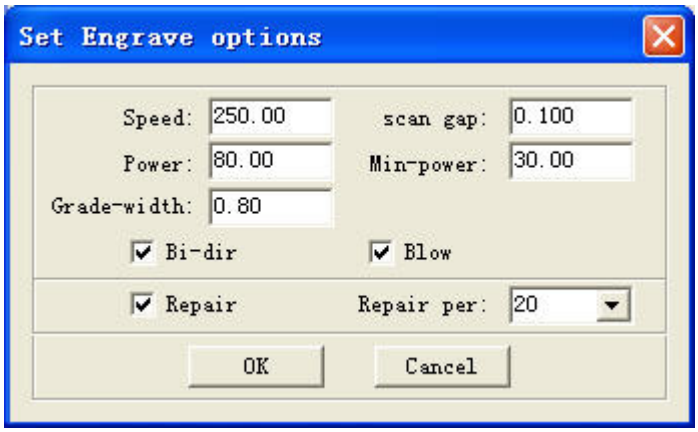
Select this option and small circles will fill the graph as following.



The right “S” is the result of selecting “Fill circle”. You can change the radius and space by inputting different parameters.

5.1.4 Interface of setting grade engrave optoins

Select the mode as **Grade Engrave**; click **Options** and the dialog box as shown below.



Speed: engraving speed on X-axis.

Scan gap: movement distance on Y-axis when engrave a row on X-axis.

Power: the laser power when a layer is processed. This parameter determines the

depth of the slope.

Min-Power: the lowest laser power when grade engraving.

Grade-width: the width of grade.

Bi-dir: when engraving, laser emit on both negative X-axis and positive X-axis. When cancel this function, laser emit on only one direction.

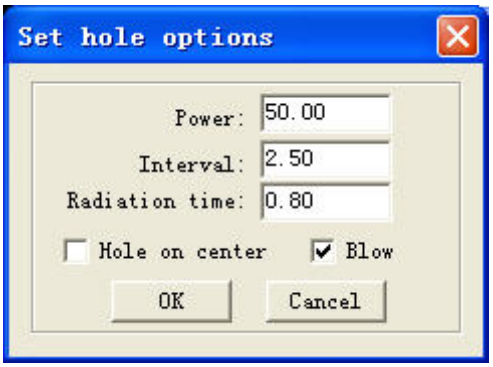
Blow: blow or not. This function needs hardware support.

Repair: select this option and the engraved letters will be clearer.

Repair per: change the parameter will adjust the definition of the engraved letters.

5.1.5 Interface of setting hole options

Select the mode as **Hole**; click **Options** and the dialog box as shown below.



Power: the laser power when a layer is processed.

Interval: the space between two adjacent holes.

Radiation time: delay time for a hole. It determines the size of holes.

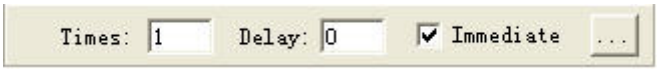
Hole on center: hole on all the center of the close graphs.

Blow: blow or not. This function needs hardware support.

All the defaults are last saved parameters.

5.1.6 Auxiliary processing parameters

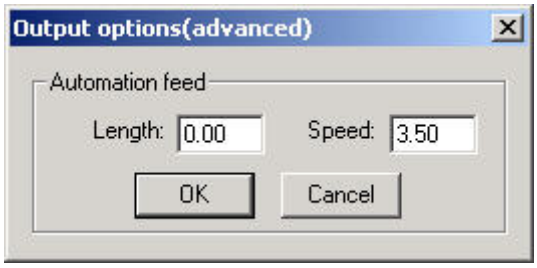
In the following dialog box, some auxiliary processing parameters can be set.



Times and Delay: If input 10 in “Times” and 20 in “Delay”, then press ”Run”, you can get 10 same graphics. And it will stay for 20 seconds after every processing finished. The 20 seconds is for feeding and taking down material. Different time can be set as you need. This function can increase efficiency a lot.

Immediate: If this option is selected, the software will take the position that the laser head is as original point. If this option is not selected, the original point will be the position you set.


: This is advanced layer options. Click this button.

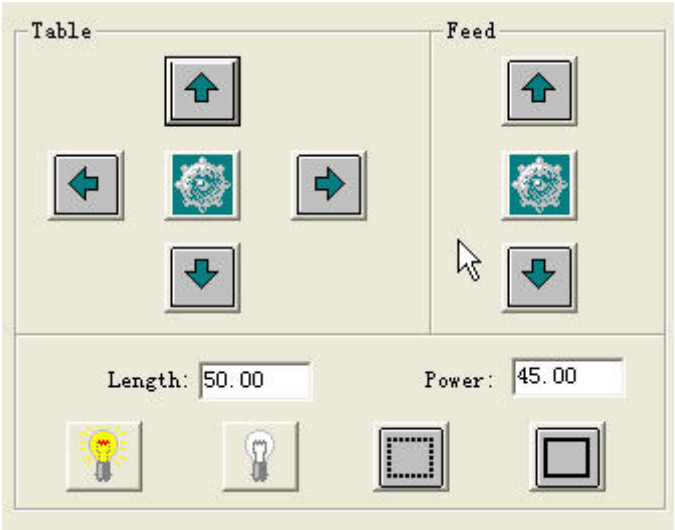


F-length (feeding length): When input a certain number in it, feeding motor will give a certain space after every processing finished. This function needs hardware support.

F-speed (feeding speed): It set the feeding speed.

5.2 Test

Click **Test**, and the dialog box as shown below.



 : Move the Y or feeding axis.

 : Move the Y or feeding axis.

 : Move the X axis.

 : Move the X axis.

 : Click this button and the laser head will move to the home point of the machine slowly (the speed is determined by “Slow Speed” that you can change in the “Machine Parameters Setting” dialog box). Then the laser head will move to the origin point quickly (the speed is determined by “Fast Speed” that you can change in the “Machine Parameters Setting” dialog box). This can eliminate the cumulate error. Generally, the machine should be reset before processing. When run the software, it

will be reset automatically (this function can be cancelled as you prefer).

Length: It determines the distance that the laser head moves.

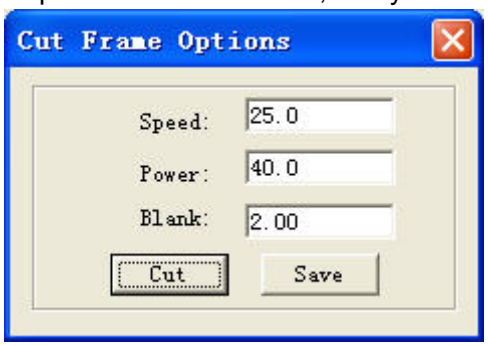
Power: It determines the intensity of the laser power supply. The minimum value is 0 and the maximum value is 100.

 : Laser on.

 : Laser off.

 : Click this button, and laser head will move as a rectangle without laser emitting according to the size of the graphics. This function is used for confirming the location of work piece.

 : Click this button, laser head will move as a rectangle with laser emitting according to the size of the graphics. This function is also used for confirming the location of work piece. Click this button, and you can see the following dialog box:



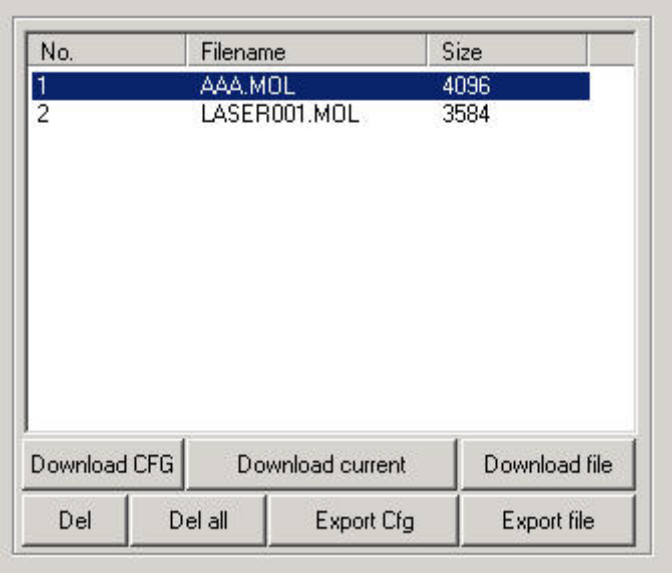
Speed: you can choose different speed according to different material. It's better to confirm proper speed through testing.

Power: the laser power when cutting.

Blank: distance between processing graphics and the edge of cutting piece.

Save: save the parameters for next data.

5.3 Stand Alone (Only For MPC6515)



5.3.1 Download CFG

Download all the parameters of “Machine Settings” to MPC6515 controller. You can also achieve this by exporting a CFG file (*.mol), and copy this file to MPC6515 by USB disk. When modify the parameters of “Machine Settings” or update the firmware, you have to reset CFG to configure the machine settings.

5.3.2 Download Current

Download the current processing data to MPC6515 controller.

5.3.3 Download file

Download processing data to MPC6515 controller.

5.3.4 Del

Delete the file which is selected.

5.3.5 Del all

Delete all the files in MPC6515 controller.

5.3.6 Export Cfg

This will create a *.mol file which includes all the parameters of “Machine Settings”. The file can be downloaded to MPC6515 controller by USB disk.

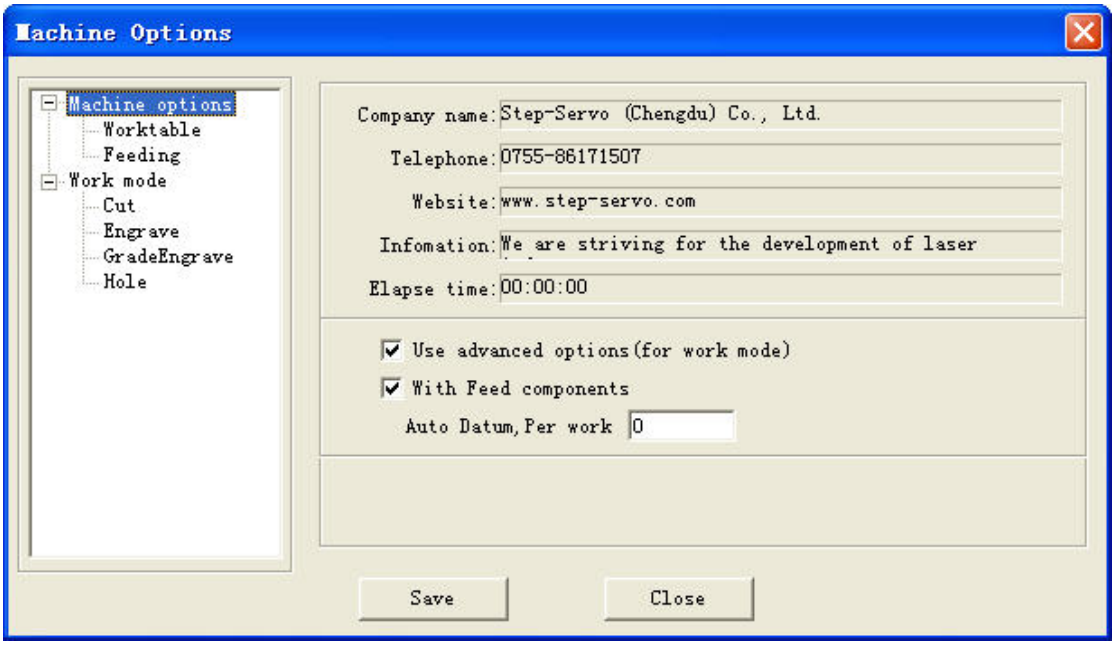
5.3.7 Export file

This will create a *.mol file which includes all the parameters of a processing data. The file can be downloaded to MPC6515 by USB disk.

Chapter 6 Options

Any change of the parameters in “Options” will change the performance of the machine. Before changing the parameter, you should consult the supplier.

6.1 Main interface



6.1.1 Information about manufacturer

It shows the basic information about the manufacturer and can’t be modified.

6.1.2 Elapse time

It shows the time that the machine has run. It can’t be modified.

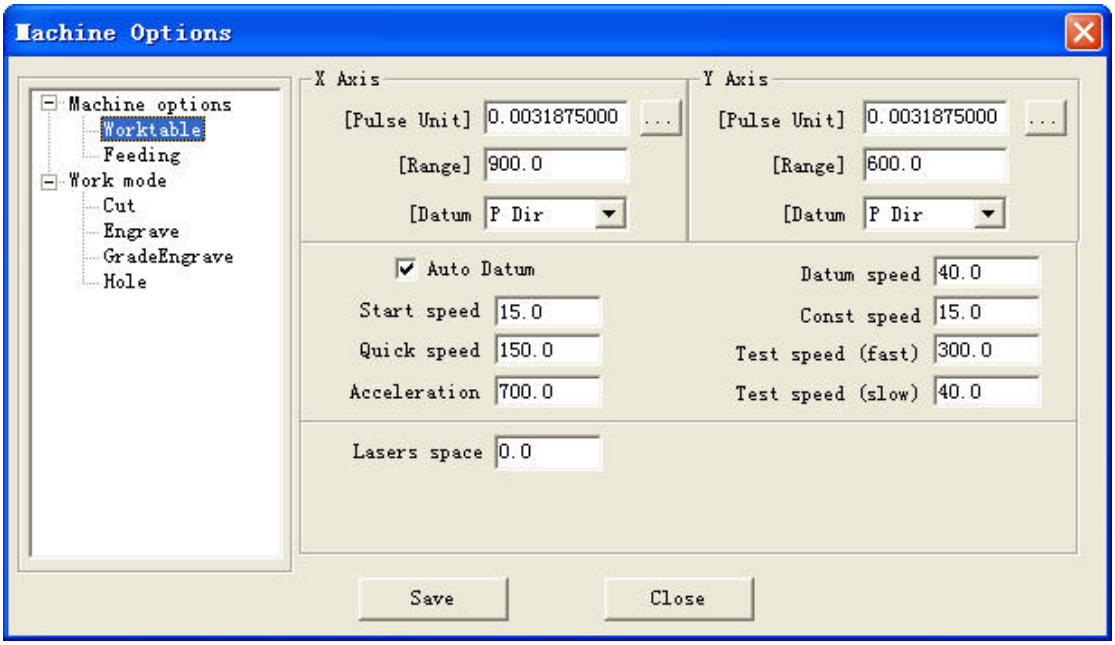
6.1.3 Other options

Use advanced options: There are advanced button as  in “Laser output”. Some accessorial parameters will help you get better effect. But it will make the software more complex. Cancel this option, and you can’t inter the interface of “advanced options”.

With Feed components: This is for feeding axis. If the machine has not feeding axis, this option should be canceled.

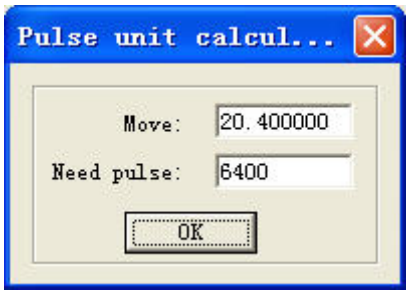
Auto Datum…: If you input a number in it, the machine will datum when the run time reaches the number. It can eliminate the cumulate error of the mechanism.

6.2 Worktable



6.2.1 Pulse unit

It means the distance that the laser head moves when the control system output a pulse. If you don't know this numerical value, please click ... .



Move: When the stepping motor moves a circuit, the laser head will move a relative length. You need to input the number in it.

Need pulse: The number is "driver's subdivision number" ×200.

6.2.2 Range

It is the available processing area of the machine. If you change the number, the reference frame of the main interface will be changed accordingly. The moving range of the 1st and the 2nd axis will be restricted by this parameter.

6.2.3 Datum Dir (Datum Direction)

. It is determined by the position (right or left, up 0r down) of original switch.

6.2.4 Auto datum

If you select this function, when you run the software, it will be reset automatically. The software can remember the coordinates of laser head. So you can move the laser head very quickly without worrying that it will overstep the worktable. If this function is canceled, you can only move the laser head slowly (the speed is "slow speed" and you can change it the "machine parameter setting" dialog box). And when you move the laser head, you have to be very careful to avoid striking the machine.

6.2.5 Datum Speed

It determines the speed of datum.

6.2.6 Start Speed

It is the start speed of all axes. Normally, the number should be chosen from 5-30mm/s according to different machines. If the number set up is too high, machine will shake intensively.

6.2.7 Const Speed

When cutting, if the (processing) speed is higher than even speed, the laser head will slow down on corners of the graphics. If the (processing) speed is lower than even speed, the laser head will not change speed during processing.

6.2.8 Quick Speed

This is the maximum speed of laser head moving without lasers emitting. When move the laser head up, down, left and right, this parameter will work. If the number is too high, machine will shake intensively.

6.2.9 Acceleration

It is the acceleration from start speed to quick speed.

6.2.10 Test Speed (fast)

This is the speed that you move the laser head when you select auto datum.

6.2.11 Test Speed (slow)

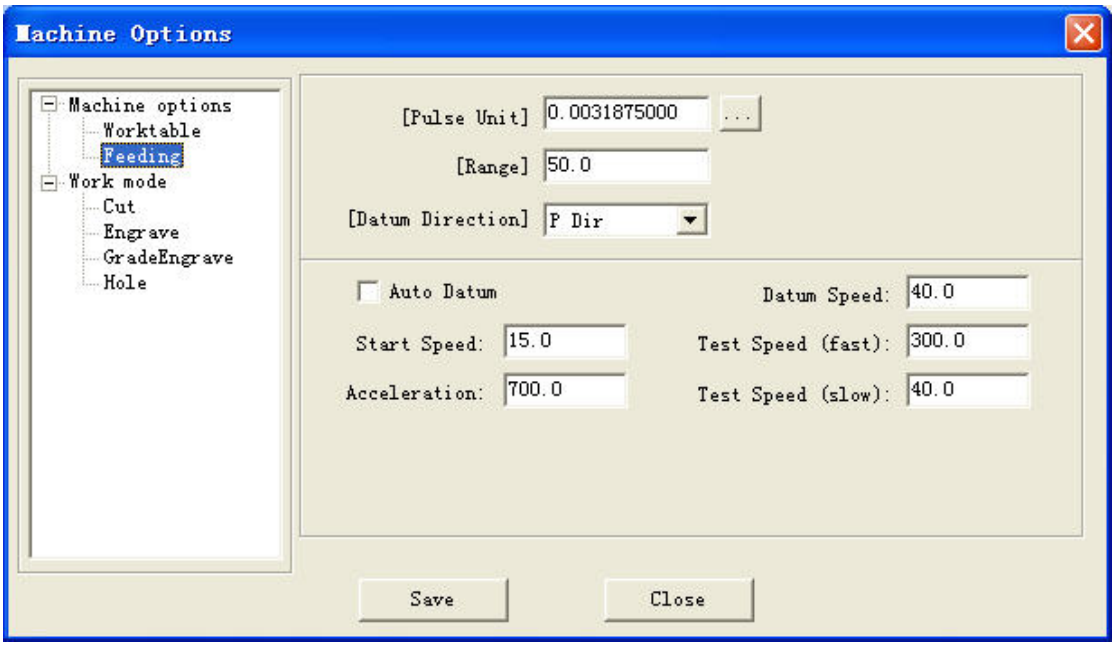
This is the speed that you move the laser head when you don't select auto datum.

6.2.12 Laser space

If there are 2 laser heads, the space of the laser heads should be input.

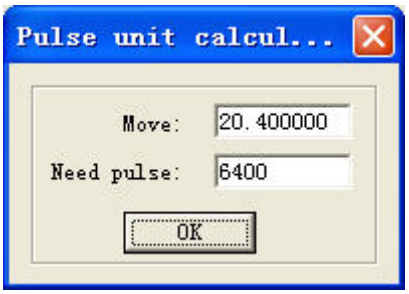
6.3 Feeding

The feeding axis can be used as feeding and lift working table.



6.3.1 Pulse unit

It means the distance that the laser head moves when the control system output a pulse. If you don't know this numerical value, please click ... .



Move: When the stepping motor moves a circuit, the laser head will move a relative length. You need to input the number in it.

Need pulse: The number is “driver’s subdivision number” ×200.

6.3.2 Range

It is the available processing area of the feeding axis. The moving range of the feeding axis will be restricted by this parameter.

6.3.3 Datum Direction

It is determined by the position (up 0r down) of original switch.

6.3.4 Auto Datum

If you select this function, when you run the software, the feeding axis will be reset automatically. The software can remember the location of the feeding axis. So you can move the feeding axis very quickly without worrying that it will overstep the worktable. If this function is canceled, you can only move the feeding axis slowly (the speed is “slow velocity” and you can change it the “machine parameter setting” dialog box). And when you move the feeding axis, you have to be very careful to avoid striking the machine.

6.3.5 Datum Speed

It determines the speed of datum.

6.3.6 Start Speed

It is the start speed of all axes. Normally, the number should be chosen from 5-30mm/s according to different machines. If the number set up is too high, machine will shake intensively.

6.3.7 Acceleration

It is the acceleration from begin speed to fast speed.

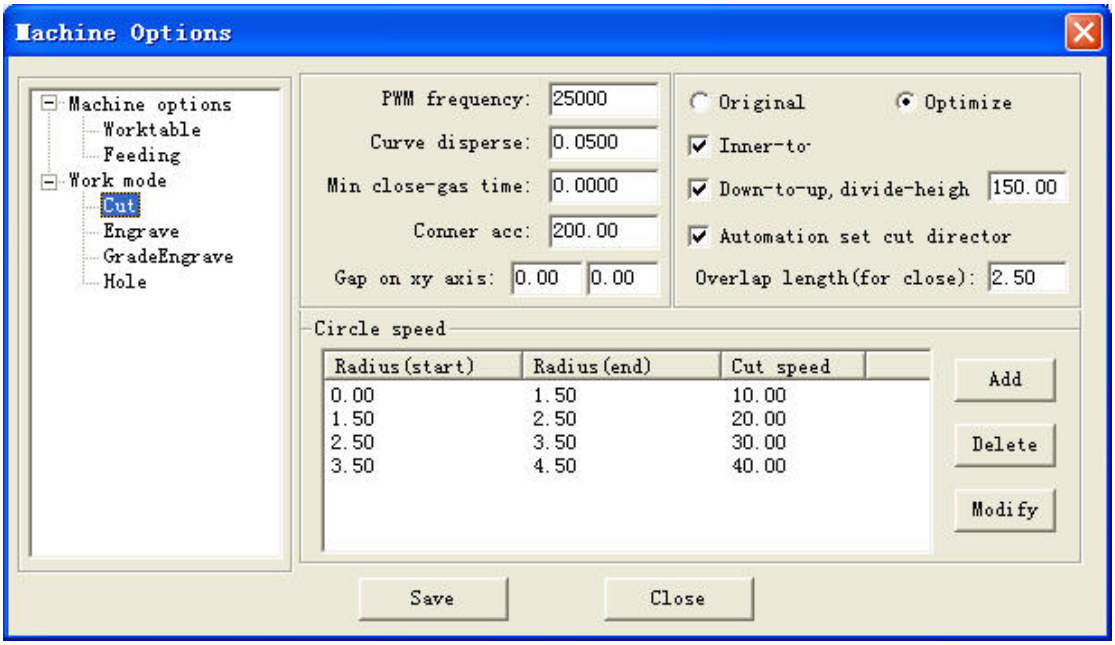
6.3.8 Test Speed (fast)

This is the speed that you move the laser head when you select auto datum.

6.3.9 Test Speed (slow)

This is the speed that you move the laser head when you don’t select auto datum.

6.4 Cut



6.4.1 PWM Frequency

It determines the frequency of PWM signal.

6.4.2 Curve Disperse

It determines the precision of graph data. If the number is smaller, the precision will be higher and cost more time to calculate processing data.

6.4.3 Min close-gas time

When the time between the former blowing off and the next blowing on is less than the number, the machine will not blow off to protect the blowing switch.

6.4.4 Corner acc

It determines the processing precise when the processing route turns the corner.

When the machine can't draw lines smoothly, please input a smaller number in "Acceleration" and "Corner Acc".

6.4.5 Gap on xy axis

Compensation gap when the motor changes direction. This parameter only works when cut with even speed.

6.4.6 Original

The machine draws the graph according the route as it is been made.

6.4.7 Optimize

The software will calculate the route to improve processing efficiency. If you select this option, there are 2 options.

In-Out: cut from inner to outer.

Down-Up: cut from down to up according the number of "divide-height".

6.4.8 Automation set cut direction

The software will confirm the direction automatically. If you need to change the direction, please cancel this function. Compensation

6.4.9 Overlap length

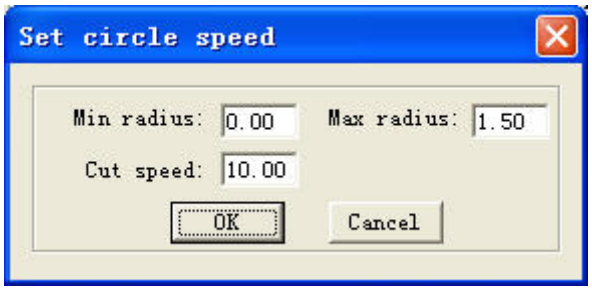
Because of the mechanical gap, circle can't be cut round. Input a certain number in

it, and you can get the circle more round. But this will increase the processing time.

6.4.10 Circle speed

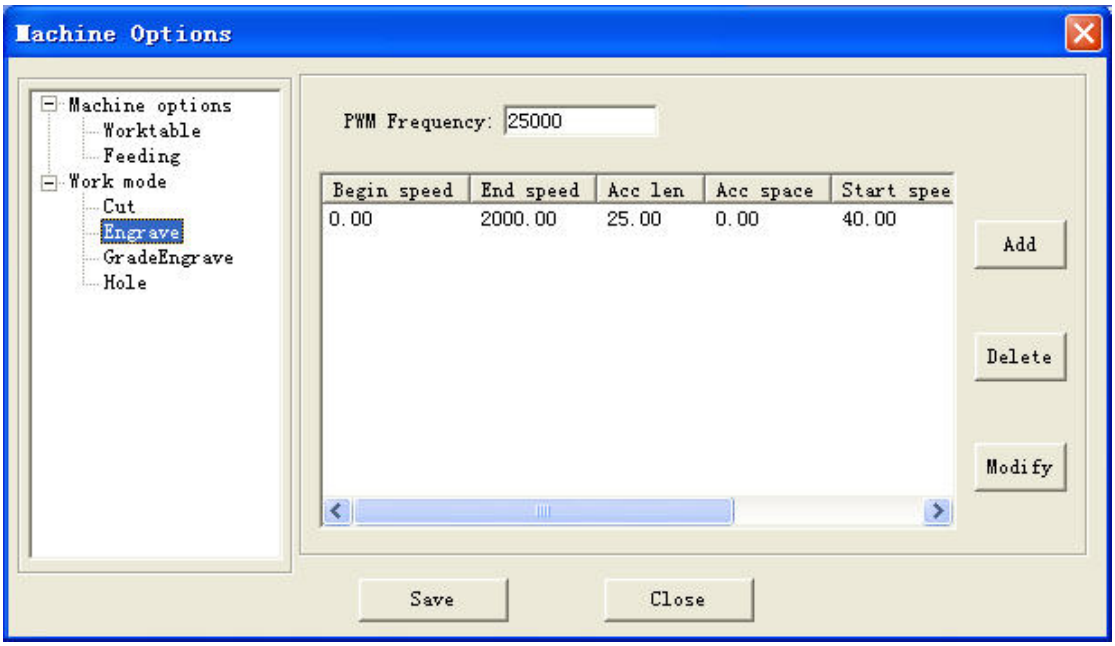
When cutting small circle (the diameter is especially between 1to 3) with high speed, it will be distorted. The parameters of “Set circle speed” are used to reduce distortion.

Double-click ether row of the list.



When the radius of circle is in the range between “Min radius” and “Max radius”, the cut speed will automatically be changed to the number of “Cut speed”.

6.5 Engrave

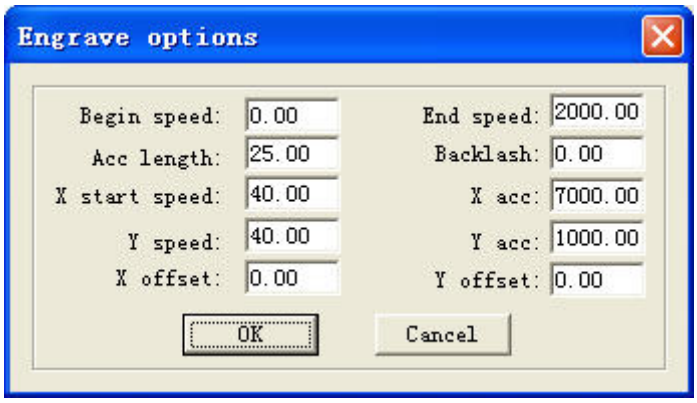


6.5.1 PWM Frequency

It determines the frequency of PWM signal.

6.5.2 Engrave options

Double-click ether row of the list.



Begin Speed and End Speed: When the engrave speed is set in the range between Begin Speed and End Speed, the system will automatically apply the numbers of Acc Length, Backlash…

Acc length: It is the engraving length without laser emitting. It determines the distance that the X-axis moves from start speed to (working) speed. If it is not long enough, the machine will shake intensively.

Backlash: It is used for compensating mechanical gaps. If the engraving edge is not orderly, please set up number in “Backlash”. This number can be positive or negative.

X start speed: It is the start speed of X-axis when engraving.

X acc: It is the acceleration of X-axis from start speed to (working) speed.

Y speed: It is the speed of Y-axis when engraving.

Y acc: It is the acceleration of Y-axis from start speed to “Y Speed”.

If you find graphics error happens (that is, motor lost step), you can set up a bigger number in “Accelerator Length” or a smaller number in “Acceleration”.

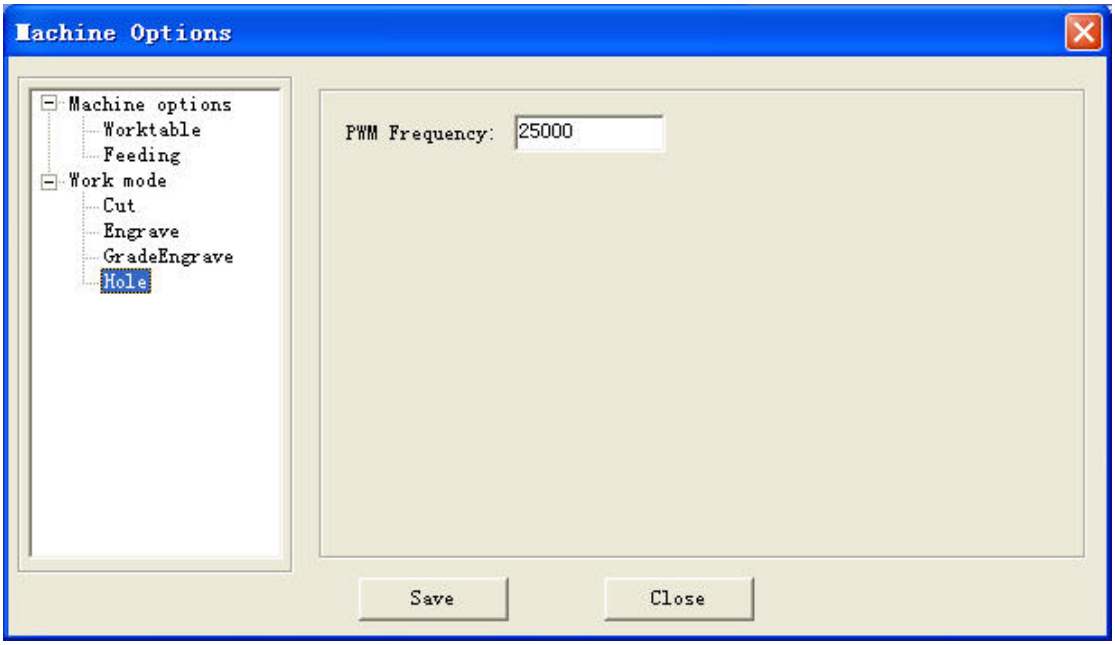
X offset: when engraving graph is not be the actual position. There is an offset. Input the offset is OK.

Y offset: when engraving graph is not be the actual position. There is an offset. Input the offset is OK.

6.6 Grade Engrave

Please refer to 6.5

6.7 Hole

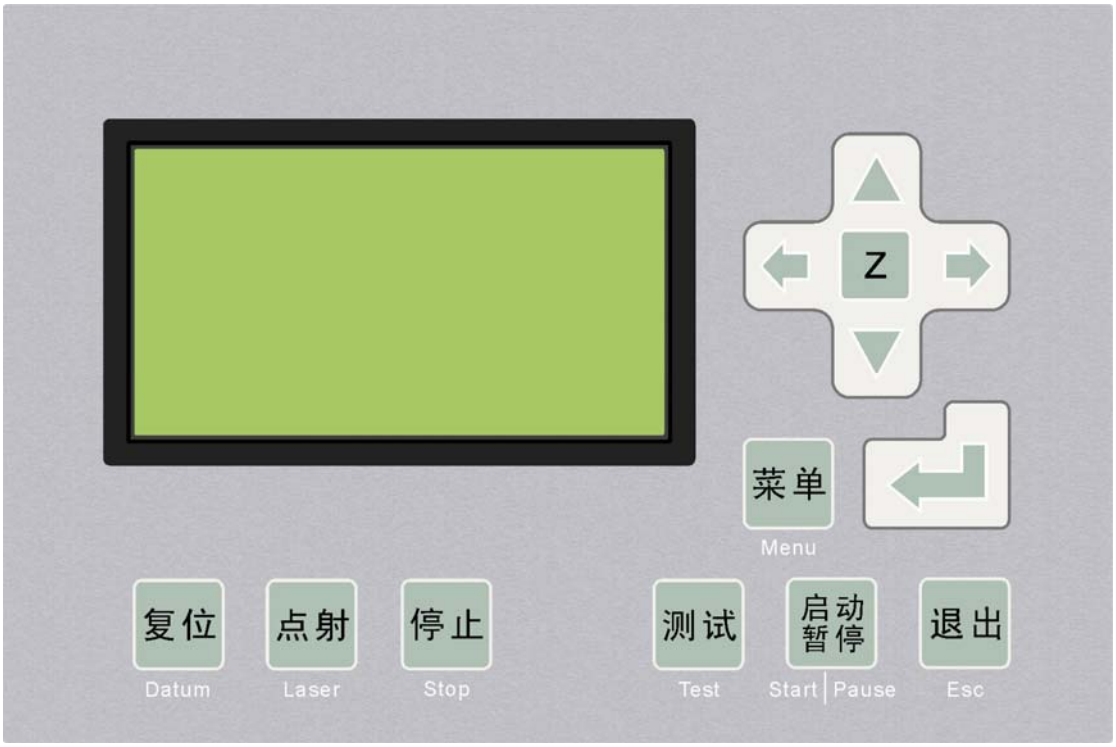


6.7.1 PWM Frequency

It determines the frequency of PWM signal.

Chapter 7 PAD Operation (Only For MPC6515)

7.1 Main interface of PAD03



Datum: Laser head will move to the original point of the machine slowly.
Laser: Laser on/off.
Stop: Cease the processing operation.
Test: The laser head will run along the outline border of the processing data.
Start/Pause: Start/pause the processing operation.
Esc: Escape the current status window.
Menu: Enter accessory interface.


: Click this button, then △ and ▽ can move the Z axis. This function needs hardware (machine) support.


: Enter.

7.1.1 Startup interface

When power on, PAD will show" System starting, please wait".

7.1.2 Main interface

The main interface shows as following.

FILE	AAA	
SPEED	100%	
POWER	100 / 100%	
PIECES	1	DEL

File: File names which are saved in MPC6515 controller.

Speed: Percentage of speed. When it is 100, the actual speed is the number which is set in processing data.

Power: Percentage of power. When it is 100, the actual power is the number which is set in processing data. There are two options: the former is for “Corner -Power” and the latter for “Power”.

Pieces: Repeat times of a file.

Del: Delete the current file.

At first, file name is brightened (word is white and background is black).

Now,

Press ⇦ and ⇨, and you can select the option you want to modify.

Press △ and ▽, and you can change the number in the selected option.

Press  and all the number will be saved.

Press “Esc” and all the options will not be modified (none of the options is brightened). Now, press ⇦ ⇨ △ ▽ and you can move the laser head.

Press  again and you can modify the options (file name is brightened).

7.2 Processing interface of PAD03

Press “Start” and the interface will show as following.

FILE	AAA
SPEED	100%
POWER	100 / 100%
TIME	0 : 0 : 15

File: File name which is being processed.

Speed: Percentage of speed.

Power: Percentage of power.

Time: Time for processing this file.

When processing,

Press ⇦ and ⇨, and you can change the percentage of power (only for Power, not for Corner -Power).

Press △ and ▽, and you can change the percentage of speed.

Press “Start/Pause” and you can control the processing procedure.

Press “Stop” and you can cancel the processing procedure. The interface shows “Stopped”. Press “Esc” and you can see the main interface.

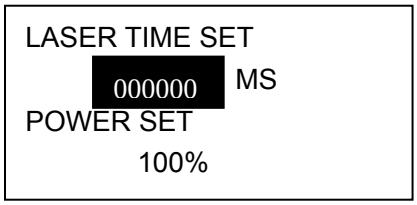
7.3 Accessory interface of PAD03

Press “Menu” and you can see the accessory interface.

CUT	BDR
LAS	SET
PMOV	SET
LANGUAGE	

CUT BDR: Laser head will move a rectangle with laser on according to the size of the graphics.

LAS SET: Select this option and press. The LAS SET interface is as following.



Press or can move the cursor.

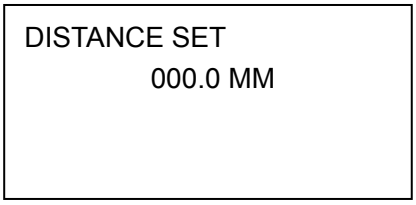
Press or can change the number.

Press and all the number will be saved.

If this number is 0, press “Laser” key and laser on; release “Laser” key and laser off.

If this number is not 0, press “Laser” key, and laser will shoot a certain time as you set.

PMOV SET: Select this option and press. The PMOV SET interface is as following.



Press or can change the number.

Press and all the number will be saved.

If this number is 0, press the direction keys, and the laser head will move; release the direction keys, and the laser head will stop.

If this number is not 0, press the direction keys, and the laser head will move a distance as you set.

LANGUAGE: Select this option and press. The language interface is as following.

Select the language as you prefer.

Chapter 8 Download files

You can download update files, processing files and configuration files by USB disk conveniently.

8.1 Update MPC6515

8.1.1 Copy the latest firmware files (*.FMW and *.HDW) to the root directory of USB disk. The USB disk should be formatted to FAT. And it is suggested that other files should not be saved in this USB disk.

8.1.2 Power on MPC6515 controller and the indicator light (D3 on MPC6515/CPU) will flash 2 times.

8.1.3 After the indicator light (D3 on MPC6515/CPU) flashes 2 times, plug the USB disk in MPC6515 quickly (don't exceed 5 seconds).

8.1.4 The indicator light (D3 on MPC6515/CPU) will shine continuously 2-5 seconds. Now, MPC6515 is updating firmware.

8.1.5 If the updating procedure is finished, the indicator light (D3 on MPC6515/CPU) would flash frequently.

8.1.6 Pull out the USB disk, and MPC6515 will run new firmware program automatically.

8.1.7 After MPC6515 is updated, the CFG file should be downloaded again. Please refer to "**5.3 Stand Alone (Only For MPC6515)**" for detailed information.

If MPC6515 can't run normally, you may make a mistake when updating. You can repeat the above steps. If this doesn't work, please contract the equipment supplier.

	**You need update MPC6515 only when new version is issued.**
Notice	

	**Those USB disk with indicate light is suggested for it is convenient to check whether the download procedure is finished or not.**
Notice	

8.2 Download processing file (*.mol)

There are 2 ways to download processing file to MPC6515 controller.

One is by USB data line. If the computer is close to the machine, this way is very conveniently. Please refer to "**5.3 Stand Alone (Only For MPC6515)**" for detailed information.

The other is by USB disk. If you have two or more machines, this way is very conveniently. The following is the detailed steps.

8.2.1 Copy the processing file (*.mol) to the root directory of USB disk. The USB disk should be formatted to FAT16. And it is suggested that other files should not be saved in this USB disk.

8.2.2 Power on MPC6515 controller.
8.2.3 Plug USB disk in MPC6515 controller.
8.2.4 The indicator light (D3 on MPC6515/CPU) will shine continuously 2-10 seconds. If the file is too large, it will take several minutes. Now, MPC6515 is downloading file.
8.2.5 If the downloading procedure is finished, the indicator light (D3 on MPC6515/CPU) would flash frequently. And the PAD03 will give an alarm.
8.2.6 Pull out the USB disk, and you can run the files by PAD03.

 **Notice**	**If the file is a configuration file, the new parameters will be effective after you run this file by PAD03. If the file is a processing data file, you can run it by PAD03 directly.**
 **Notice**	**If it is the first time to use the MPC6515, you have to download the configuration file and run it. If some parameters are changed, the same operation should be finished.**

Chapter 9 Comments on tool programs

Tool programs are for checking if the control card is normal. It is helpful to find where the trouble is quickly.

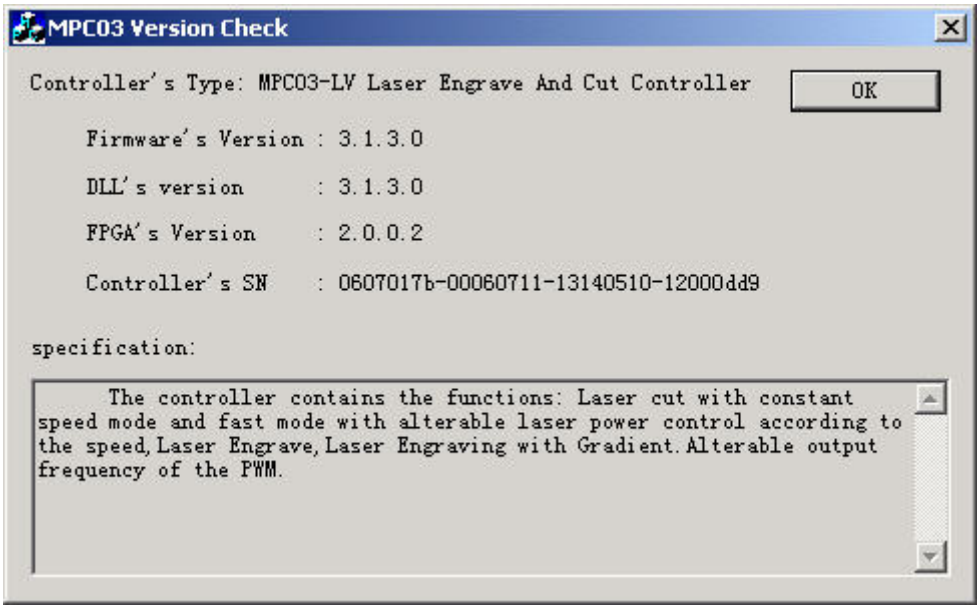
9.1 Version check program（For MPC03）

If the version numbers of card and DLL don't match, the card won't work. Generally, the version numbers of card can't be changed (unless update the firmware). Proper DLL has to be found out to match the card. Version check program can indicate the version numbers of card and DLL.

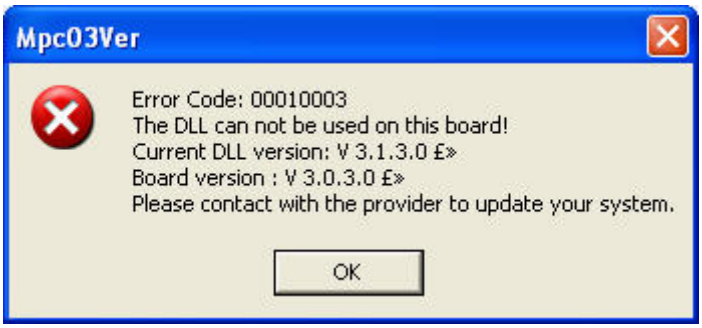
DLL is laid in [Bin], and the filename is mpc03ls.dll.

Version check program is laid in [Bin], and the filename is Vercheck.exe.

Run the program, if the version numbers are match, it is as shown below.



Run the program, if the version numbers are not match, it is as shown below.



Note down the version numbers of card and DLL, and get the proper DLL from the supplier.

9.2 Version check program（For MPC6515）

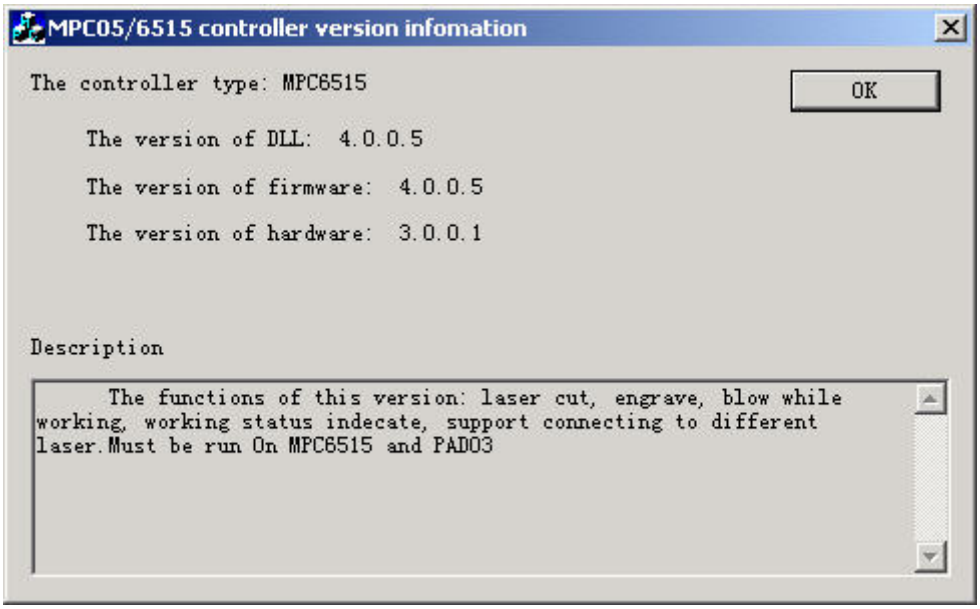
If the version numbers of card and DLL don't match, the card won't work normally. Generally, the version numbers of card can't be changed (unless update the firmware). Proper DLL has to be found out to match the card. Version check program can indicate

the version numbers of card and DLL.

DLL is laid in [Lasercut50], and the filename is MPC05ls.dll.

Version check program is laid in [Lasercut50], and the filename is Mpc05Ver+M05.exe.

Run the program, if the version numbers are match, it is as shown below.



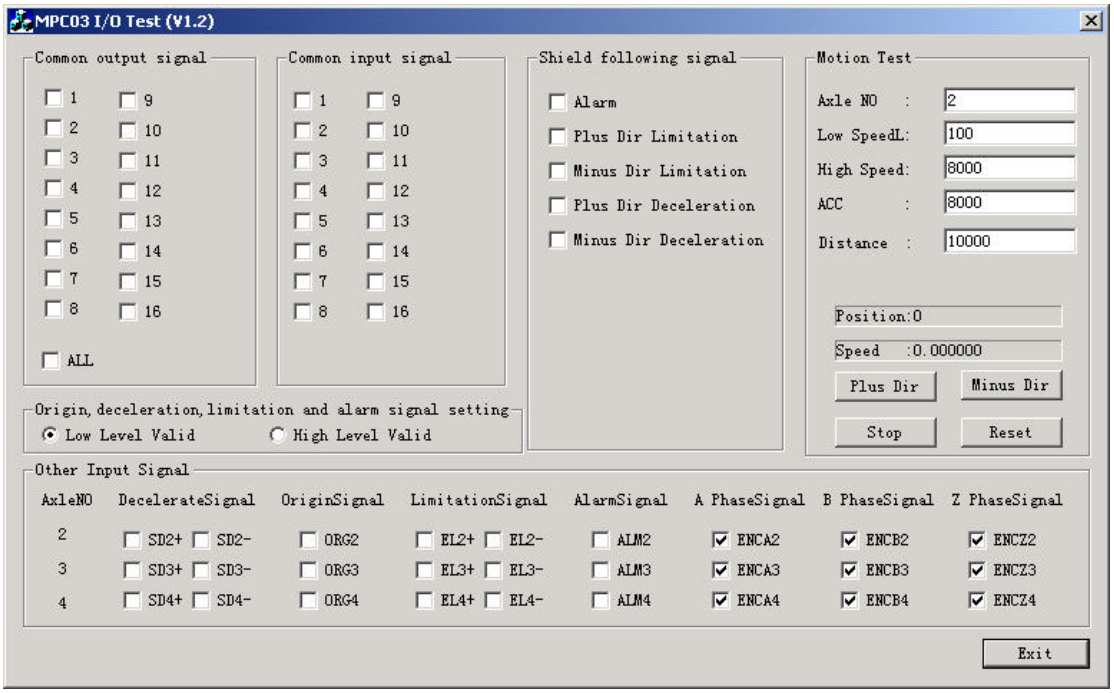
Note down the version numbers of card and DLL, and get the proper DLL from the supplier.

9.3 IO check program（For MPC03）

IO check program is for checking the input and output signal. When the machine doesn't work normally, it is helpful to find where the trouble is quickly. This program can run without softdog.

IO check program is laid in [Bin], and the filename is IOCheck.exe.

Run the program, it is as shown below.



9.3.1 General output signals

No use.

9.3.2 General input signals

No use.

9.3.3 Shield input signals

This can make some input signal useless. But it is seldom used.

9.3.4 Motion test

It can test if a certain axis works normally.

Axis No.: 2, 3 or 4 should be input.

2 represents feeding axis;

3 represents Y axis;

4 represents X axis.

Low speed: start speed (pulse per second)

High speed: work speed (pulse per second)

Acceleration: acceleration from low speed to high speed (pulse per second^2)

Distance: move distance (pulse)

When the motor moves, the program will show the current speed and position of the motor. If input 1000 in [Distance] and the [Position] show 1000, the control card is OK.

9.3.5 Set signal mode

It has to match the type of origin switch, decelerate switch, limit switch and alarm switch. If the switches are open normally, [Low level] should be chose. If the switches are close normally, [High level] should be chose.

9.3.6 Other input signals

Decelerate signal: ☑ indicates that the signal is input. The software doesn't use this signal. If the program indicates that this signal is input, circuitry must have something wrong.

Origin signal: ☑ indicates that the signal is input. When the laser head doesn't contact the origin switch, if the program indicates that this signal is input, circuitry must have something wrong or the switch has been damaged.

Limit signal: ☑ indicates that the signal is input. When the laser head doesn't contact the limit switch, if the program indicates that this signal is input, circuitry must have something wrong or the switch has been damaged.

Alarm signal: ☑ indicates that the signal is input. If the program indicates that this signal is input, the machine won't work.

A, B, Z signal: ☐ indicates that the signal is input. These signals are used as "Start", "Pause", and "Stop" etc. The corresponding relationship is as shown below.

ENCA2	ENCB2	ENCZ2	ENCA3	ENCB3	ENCZ3	ENCA4	ENCB4	ENCZ4
Pause	Datum	Stop	Down	Right	Up	Run frame	Start	Left

9.4 Notes of error code（For MPC03）

Code	Explanation
00010001	Loading control card's DLL failed. 1, Check if the driver of control card is installed. 2, Pull out the control card, and clean the PCI interface of card and PCI slot of PC. Then insert the control card again.
00010002	The PC can't connect with control card, please replace the control card.
00010003	The version of DLL can't match that of control card, please replace the mpc03ls.dll.
00020001	The PC can't connect with control card, please replace the control card.

Chapter 10 Addenda

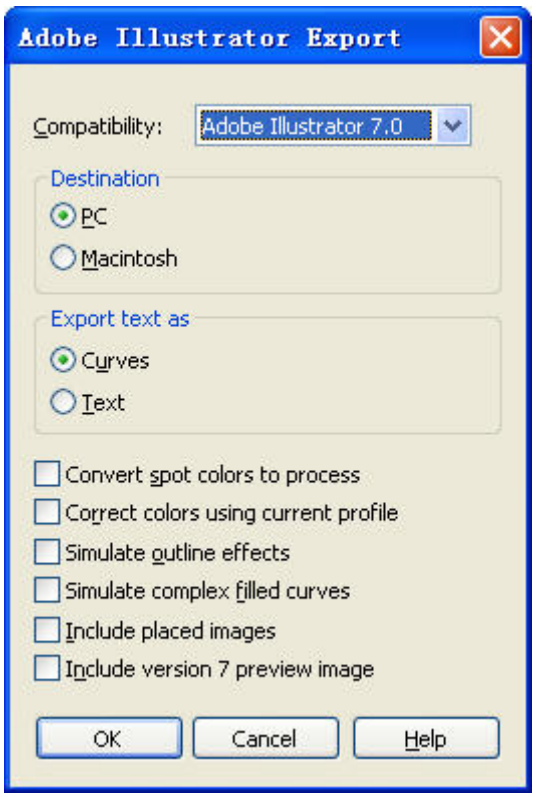
10.1How to deal with mass data

A mass data will expense long time to calculate. When you click “Start”, the machine will wait long time to move.

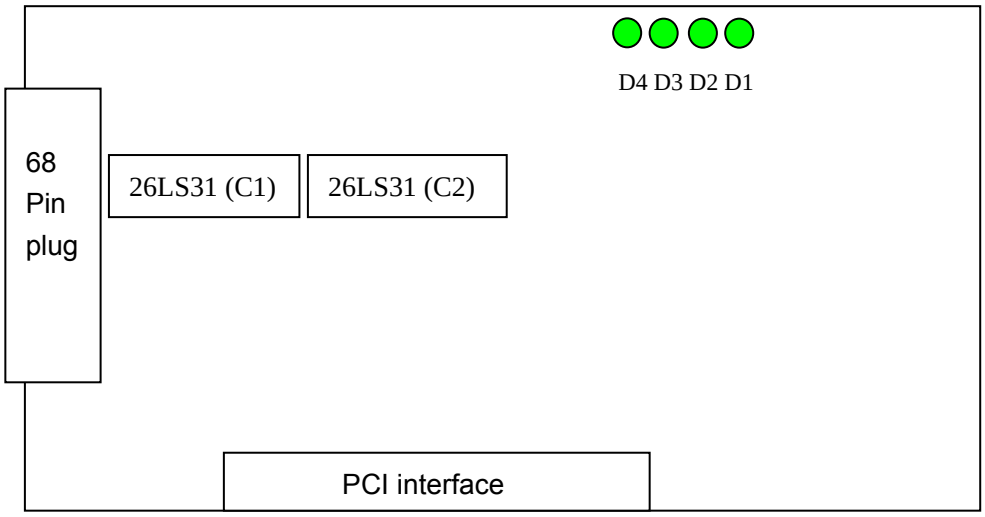
Divide the data into several layers by colors. More layers, and the calculate time shorter. One layer overlaps with another doesn’t matter.

10.2How to make AI (Adobe Illustrator) file

AI file is smoother than PLT file. When cutting, it is suggested to input AI files. When export data in CorelDraw, the file type should be selected as AI（Adobe Illustrator）. The options should be selected as following.



10.3FAQ(For MPC03)



D1：Indicate the status of control card. D1 shining, control card is OK.

D2：Indicate the status of feeding axis. D2 shining, feeding axis is OK.

D3：Indicate the status of Y axis. D2 shining, Y axis is OK.

D4：Indicate the status of X axis. D2 shining, X axis is OK.

10.3.1 X,Y axis can't move

Run IOcheck.exe，and input 3 (or 4) in axis number. Click positive (or negative). If D3 (or D4) doesn't shine, the control card is damaged. Please replace the control card. If D3 (or D4) shines, please follow the next step.

Measure the voltage between Pin 14 and Pin 18 by multimeter. If it is not about 5V, the switching power supply is damaged. Please replace the switching power supply. If it is about 5V, please follow the next step.

Measure the voltage between Pin 14 and Pin 50 (axis number is 3) or Pin 14 and Pin 54 (axis number is 4) by multimeter. Click positive (or negative). Normally, it is about 2.8V. If it is not about 2.8V, the control card is damaged. Please replace the control card. If it is about 2.8V, please follow the next step.

Check if the indicating lamp on drivers is shining. If it doesn't shine, the driver is damaged. If it shines red, it is damaged.

10.3.2 X axis is OK; Y axis can't move

Run IOcheck.exe，and input 3 in axis number. Click positive (or negative). If D3 doesn't shine, the control card is damaged. Please replace the control card. If D3 shines, please follow the next step.

Measure the voltage between Pin 14 and Pin 50 by multimeter. Click positive (or negative). Normally, it is about 2.8V. If it is not about 2.8V, the control card is damaged. Please replace the control card. If it is about 2.8V, please follow the next step.

Exchange the output junction connector (generally, it is labeled A+, A-, B+ and B-) of X and Y drivers. Click positive (or negative). If X axis is OK, the Y motor is damaged. Please replace the motor. If X axis doesn't move, the Y driver is damaged. Please replace this driver.

10.3.3 Y axis is OK; X axis can't move

Run IOcheck.exe，and input 4 in axis number. Click positive (or negative). If D4 doesn't shine, the control card is damaged. Please replace the control card. If D4 shines, please follow the next step.

Measure the voltage between Pin 14 and Pin 54 by multimeter. Click positive (or negative). Normally, it is about 2.8V. If it is not about 2.8V, the control card is damaged. Please replace the control card. If it is about 2.8V, please follow the next step.

Exchange the output junction connector (generally, it is labeled A+, A-, B+ and B-) of X and Y drivers. Click positive (or negative). If Y axis is OK, the X motor is damaged. Please replace this motor. If Y axis doesn't move, the X driver is damaged. Please replace this driver.

10.3.4 X axis only moves on one direction

Run IOcheck.exe，and input 4 in axis number. Click positive in the beginning and negative in the end). Measure the voltage between Pin 14 and Pin 56 by multimeter. Normally, in the beginning it is high level (or low level) and in the end it is low level (or high level).

High level: exceed 2.8V. Low level: less than 0.8V.

If it is always high level (or low level), the control card is damaged. Please replace the control card. If it is not, please check if the driver is OK.

10.3.5 Y axis only moves on one direction

Run IOcheck.exe，and input 3 in axis number. Click positive in the beginning and negative in the end). Measure the voltage between Pin 14 and Pin 52 by multimeter. Normally, in the beginning it is high level (or low level) and in the end it is low level (or high level).

High level: exceed 2.8V. Low level: less than 0.8V.

If it is always high level (or low level), the control card is damaged. Please replace the control card. If it is not, please check if the driver is OK.

10.3.6 Laser always on (or off)

Enter the "Test Machine" interface, click  and  . Measure the voltage between Pin 14 and Pin 15 by multimeter. Normally, in the beginning it is high level (or low level) and in the end it is low level (or high level).

High level: exceed 2.8V. Low level: less than 0.8V.

If it is always high level (or low level), the control card is damaged. Please replace the control card. If it is not, please check if the laser power supply is OK.

If the control card is damaged, you can replace a certain chip to maintain it.

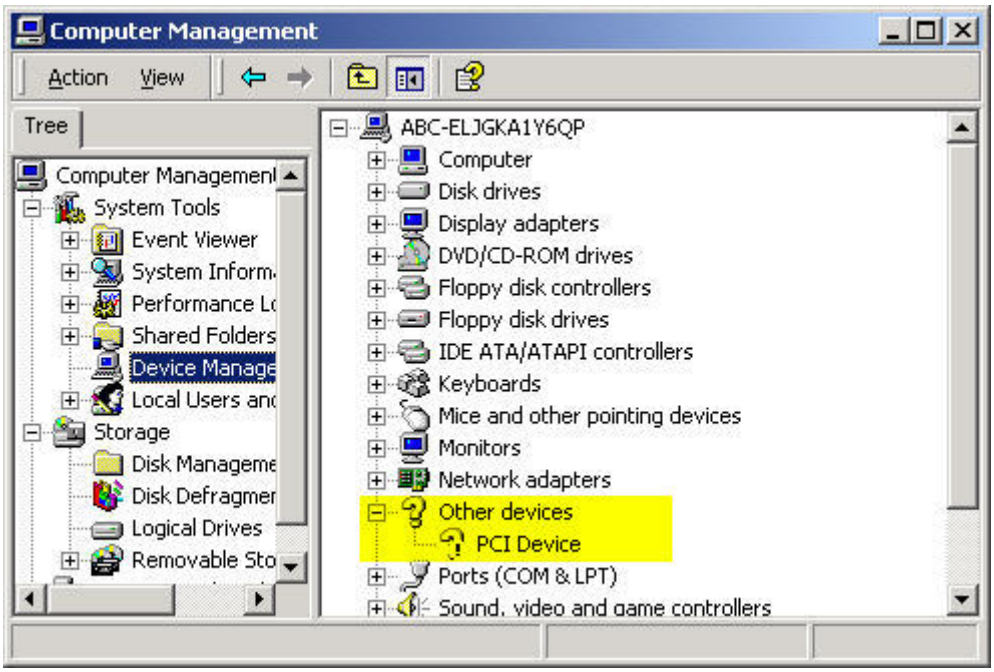
If the X axis is in trouble, please replace 26LS31 (C1).

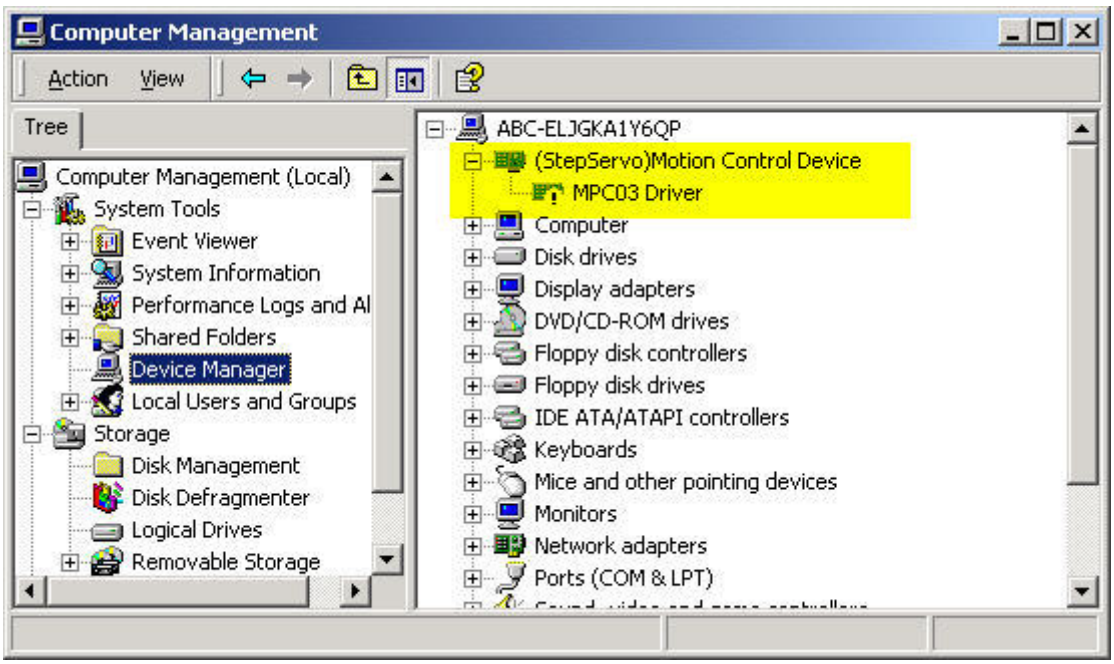
If the Y axis is in trouble, please replace 26LS31 (C2).

If the laser is always on (or off), please replace 26LS31 (C2).

10.3.7 When run the software, it might show the following dialog box.

Enter the “Computer Management”. It might show as below.





It means that driver of control card has not been installed. Please install the driver.

There are two folders in “Drivers”: Win2000 and Win XP. If the OS is Win2000, you should run the files in “Win2000”. If the OS is Win XP, you should run the files in “Win XP”.

Run the file “SetupMpc03.exe”, the drivers will be installed automatically.

If this failed, please follow the next step.

Find the file “Mpc03ls.inf” in “C:\WINDOWS\INF” and delete it.

Find the file “MPC03LS.SYS” in “C:\WINDOWS\SYSTEM32\DRIVERS” and delete it.

Run the file “SetupMpc03.exe”, the drivers will be installed.

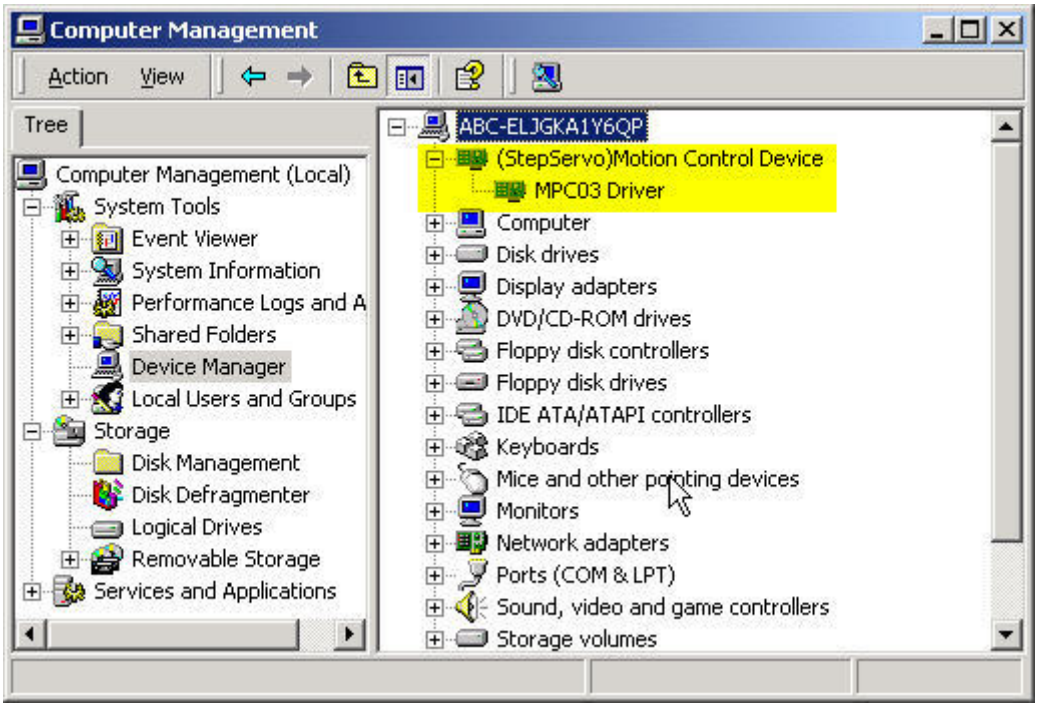
If this failed, please follow the next step.

Copy the file “Mpc03ls.inf” to “C:\WINDOWS\INF”.

Copy the file “MPC03LS.SYS” to “C:\WINDOWS\SYSTEM32\DRIVERS”.

After all the steps, you should restart the PC.

Enter the “Computer Management”.



It means that the control card has been installed successfully.

Run Vercheck.exe. If it shows as bellow.

It means that the version number of control card and DLL don’t match.

Inform supplier of the version number of control card, and you can get the correct DLL.

10.3.8 When grade engraving, the graph is superposition.

This always occurs when the graph is very small. Please input a smaller number in “Grade width”.

10.3.9 If the graph can only move on one direction, please click “Shift” key or ”Ctrl” key.

10.3.10 PLT graph can’t be engraved

Please check if the graph is closed. The software only engrave closed graph.

Please check if there are two same graphs superpose together.

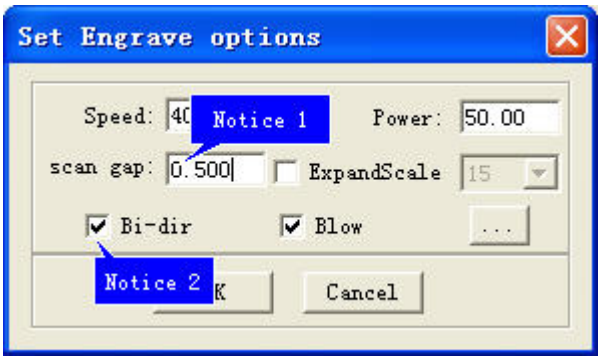
10.3.11 The size of output is not as same as the graph

Please adjust the “Pulse Unit”.

10.3.12 When engraving, the edge is not in order

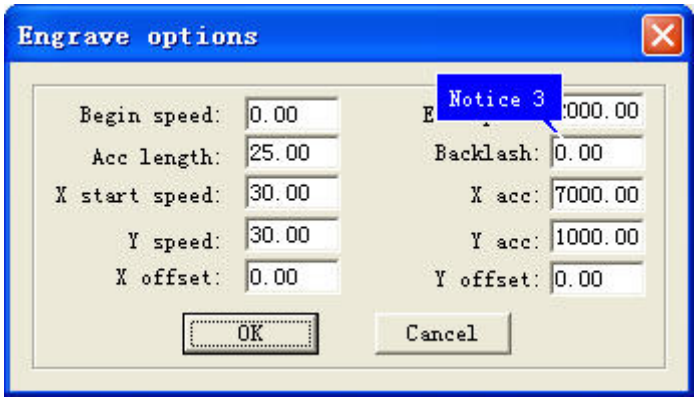
This is caused by the mechanical gap.

Draw a rectangle, and set the mode as “Engrave”. Parameters should be set as the following dialog box.

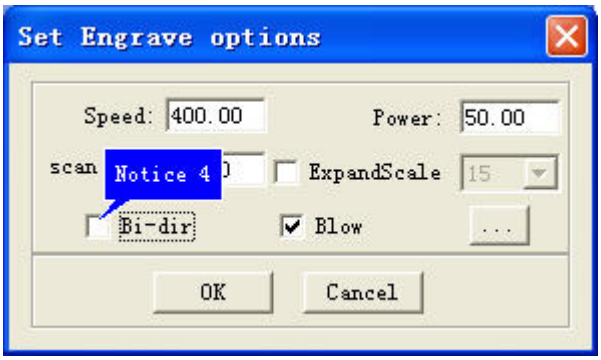


Generally, the odd row and even row won’t be orderly.

Measure the gap between odd row and even row. And input the number in “Notice 3” of the following dialog box.

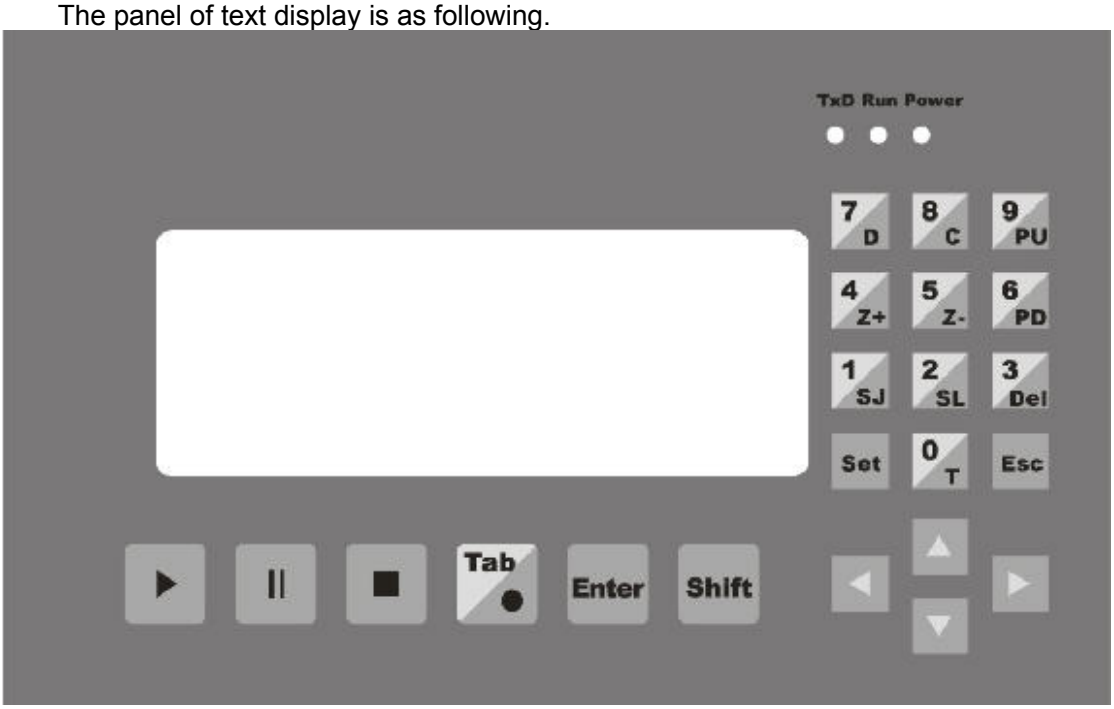


The best way is single direction engraving. But this will slow down the efficiency. Parameters should be set as the following dialog box.


Set Engrave options
Speed: 400.00
Power: 50.00
scan
Notice 4
ExpandScale
15
Bi-dir
Blow
...
OK
Cancel

Chapter 11 Text display operation

The panel of text display is as following.



11.1Main interface

11.1.1 Introduction of displaying content

File: file name of the current file.

No.: serial number of the current file.

Sum: the number of files saved in the MPC6515 controller.

Power: the percentage of laser power. It can be adjusted from 0 to 100. The former is for corner power and the latter is for processing power.

Pcs: repeat times of the current file.

11.1.2 Introduction of keys on the panel (cursor not be enabled)

: Press this key, and switch to work interface.

: Enable cursor.

: Move laser head.

: Switch to jog set interface.

: Switch to laser set interface.

: Delete the current file.

: Move Z axis. This function needs hardware support.

: Page up/Page down. Select file.

: Datum. Press this key, and the machine will run to the original switches.

: Cut. Press this key, and the machine will cut down the work piece.

11.1.3 Introduction of keys on the panel (cursor is enabled)

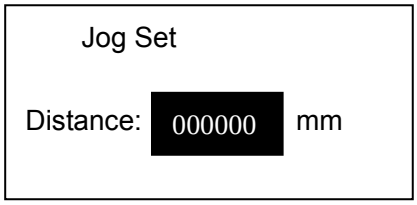
: Move cursor to the option that you want to change the number. After input the number, please click 

to save it.

: Save the input number.

: Reset the number to 0.

11.2Jog set interface



Press 

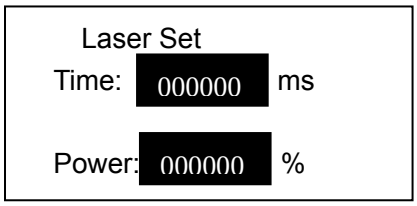
to input number and press 

to save it. The default is 0.

If this number is 0, press the direction keys, and the laser head will move; release the direction keys, and the laser head will stop.

If this number is not 0, press the direction keys, and the laser head will move a distance as you set.

11.3Laser set interface



Press 

to input number and press 

to save it. The default is 0.

If this time is 0, press “Laser” key and laser on; release “Laser” key and laser off.

If this time is not 0, press “Laser” key, and laser will shoot a certain time as you set.

11.4Work interface

File: File name which is being processed.

Speed: Percentage of speed.

Power: Percentage of power.

Time: Time for processing this file.

When processing,

Press  and you can change the percentage of power (only for Power, not for Corner -Power).

Press  and you can change the percentage of speed.

Press  and you can control the processing procedure.