

MarkingMate

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Chapter 1 System Installation

Welcome to the world of MarkingMate!

This chapter will tell you how to install the MarkingMate system, the hardware protect key, and how to work with MarkingMate and its related equipment.

1.1 Installation Notice

Please make sure your computer meets the following requirements before installing MarkingMate :

1. Windows 98/2000/XP operating system.
2. Hardware equipment compatible with Windows 98/2000/XP Operating System.
3. Monitor resolution is 1024*768
4. Plug in PCNCIO card or PCMark card, or MC-1 laser controller.

Note:

- ★ The PCNCIO card can only be used in Windows 98 system.
- ★ Before installation, remember to remove the old version of MarkingMate first if you have.

Please follow the below steps to keep the correct settings:

Under the directory of C:\WINDOWS, there is a file named "MM.ini"; backup this file first, then remove the old version.

When the installation of new version software finished, copy the backup file MM.ini to the directory of C:\WINDOWS.

Start the MarkingMate program, the old settings can be used already.

Supporting List				
Name	bus	Supports(Windows)		
		98	2000	XP
PCNCIO	ISA	√		
PCMARK	PCI		√	√
MC-1	USB	√	√	√

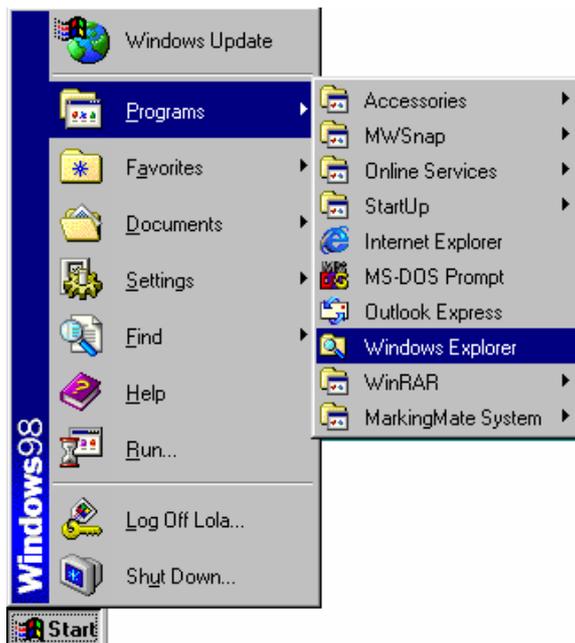
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1.2 MarkingMate Installation

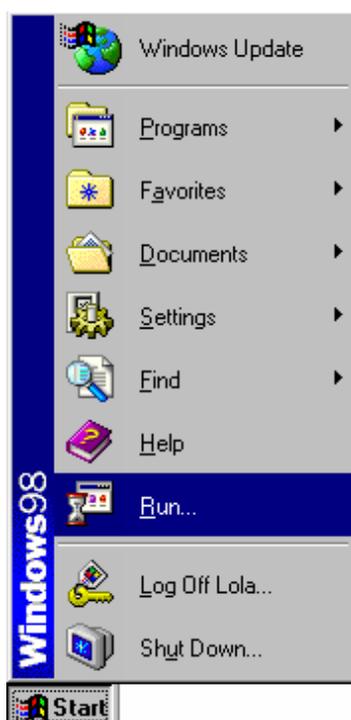
MarkingMate offers a very user-friendly installation interface. It will copy all system related files to the directory you assigned to and prompt you with the necessary information step by step.

How to enter the MarkingMate installation:

Click [Start-Programs-Accessories-File Management] to execute the [Setup .exe] program in CD-ROM.



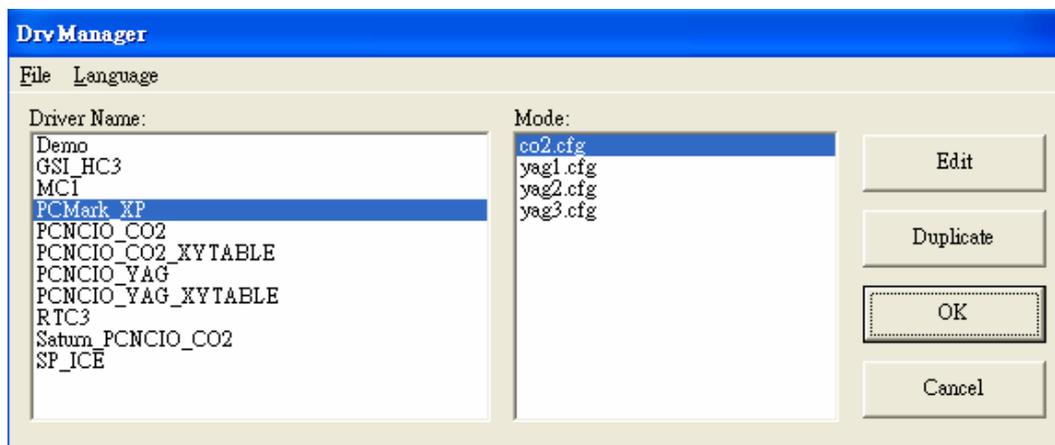
Click [Start-Run] to execute the [Setup.exe] program in CD-ROM.



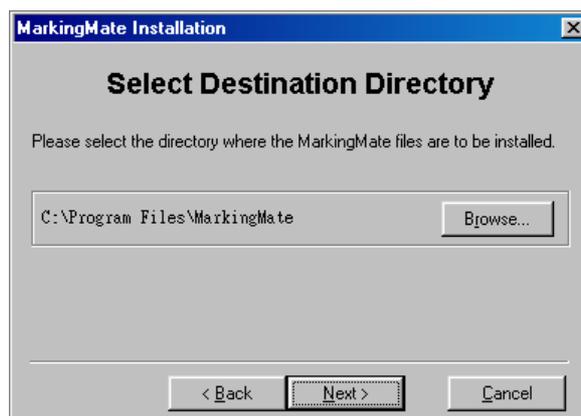
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When you get into the MarkingMate installation, the following frame appears:

Select Laser Driver



Select Destination Directory



Installation Completed



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1.3 Hardware Protect Key Installation



The [Hardware protect key], provided together with [User's manual] and CD-ROM, is a small white box with male-to-female connector. If the [Hardware protect key] does not connect to computer correctly, the MarkingMate system will not be able to work normally.

How does the [Hardware protect key] work

Please plug the [Hardware protect key] into the "parallel port" (for printer) on the PC. It will work normally.

Except MarkingMate system, the [Hardware protect key] will not effect any other software or peripheral equipment connected to the "parallel port".

Notice

Every package contains one [hardware protect key] only, if it is lost or damaged, users can only get another one by purchasing another MarkingMate system. Therefore, users should take good care of the key.

If your [hardware protect key] was unable to work normally, please contact with the distributors to exchange a new one.

Chapter 2 Laser Marking Function Introduction

MarkingMate is a general laser marking system with capability of supporting various laser marking equipments includes CO2 and YAG laser. As the compatible laser machines please inquire to the laser system vendors.

2.1 System Diagram



System Main Function:

Composition Function	Allow users to arrange various objects in suitable position
Object Path Arrangement	After the path settled, the system will control the GALVO motor through the D/A signals
Control Laser Source	The system can control the strength of laser source by PWM signal or D/A signal

2.1.1 Composition Function

Users are able to import files to the system or using the convenient function this system provide to draw a basic figure. Acceptable file formats include vector files (as DXF, and HPGL), and image files (as BMP, TIFF, JPG, and etc.) You can draw lines, arcs, circles, curves, texts, 1D barcode, and 2D barcode in this system, and base on these drawing to create any figures you want. In addition, you can import an image file or import the picture from scanner. Moreover, the system supports auto text (include serial numbers, text file, keyboard key-in, and date time). And the system also allows users to insert some wait or judge instructions to solve the problems may be occurred during production.

2.1.2 Path Arrangement and Control

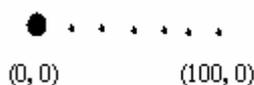
After finishing the design job, the work will be marking. Following we will discuss the two parts of the work, the motor control and the laser control separately. First of all is regarding some basic questions on motor control. **GALVO motor** is controlled by voltage. For instance, some GALVO motor's

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rotate angle is ± 20 degree, its acceptable voltage arrange is $\pm 10V$. If the input voltage is $-10V$, motor degree is -20 degree; when the input voltage turns to $0V$, motor degree is 0 degree; while input voltage is $10V$, motor degree become 20 degree. Through the motor degree and focal length can determine the motion of the motor in one axis. Therefore, two motors are able to control the motion in X- and Y-axis.

The GALVO motor's reaction is fast. The motor can shift to the right place around $3ms$ after adding a voltage (according to different brands, and different models). Therefore, suppose there is a line start at $(0, 0)$, and end at $(100, 0)$; the voltage at $(0, 0)$ is $(0V, 0V)$; and the voltage at $(100, 0)$ is $(10V, 0V)$; if the system output $(0V, 0V)$ voltage ate time 1, and output $(10V, 0V)$ ate time 2, we can image that the motor has been moved from $(0, 0)$ to $(100, 0)$!

However, that resulted in few questions. First, how long is the time difference between time 1 and time 2? Before answer this question, you have to consider how fast you want form marking? $Time = Distance / Speed$. So we got time differences. Assume that the time difference is 1 second, we input $(0V, 0V)$ at time 1, and after one second we input $(10V, 0V)$; the engraving result will be as below:



The reason why a black point occurred at $(0, 0)$ is that the system stay a long time at this position. As the dotted line between $(0, 0)$ and $(100, 0)$, it was because the laser output speed (frequency) is slower than the moving speed. In the other word, although the system has followed user's request, the result was not as we expect. The way to solve this problem is inside-insertion. It means that we cut the line between $(0, 0)$ and $(100, 0)$ into many small line segments, for example 1000 line segments, every $1/1000$ second, we increased voltage to $10/1000 V$. After one second, the motor will move to $(100, 0)$, and the figure will be as below:



Now the line has become better, only some exceptions at the start and the ending parts. This is because that no matter how fast the motor was, it still a little behind the instruction. And all motions start from static need an acceleration to reach the required speed, and need deceleration to reach the stop position at the ending point. It makes laser stay longer at the start point and stop slowly after laser off. That explains why the laser leaves a heavy point at the beginning and become weak at the ending. MarkingMate system will provide related parameters for users to avoid these problems and reach the excellent quality.

2.1.3 Laser Source Control

Laser Source Control contains indirect and direct control. For indirect control, the system do no input the signal to laser source, in stead, input a voltage to a

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controller, then this controller will output a related signal to laser source according to the requirements.

For YAG laser, it can control current and frequency. There will be two D/A outputs to do the control in the indirect control situation.

As the CO2 laser, the only parameter we can control is power. Under the indirect control, all we need is output a DA signal. However, the hardware maybe can adjust the output frequency which is not possible for software to do. Following we will discuss more deeply to the YAG and CO2 laser control.

YAG Laser Control

YAG can shoot the laser right away when receiving a trigger current. If the trigger current higher, the laser will be heavier. Besides, there are two methods for shooting laser, one is continuous wave (CW); the other one is Q-Switch intermittence shooting. Two methods result in different effects. Users have to choose by themselves.

Normally, it needs an I/O point (CW SELECT) to tell the laser controller to enter CW mode or Q-Switch mode.

In CW mode, the laser will continuously shooting when the gate is open and receiving a trigger current; while in Q-Switch mode, even the gate is open, laser is not shooting until the Q-Switch receive a signal. (Maybe open the Q-Switch gate in the edge of rising pulse, and close the gate in the edge of dropping pulse.) Therefore, the laser controller still needs a square pulse. In Q-Switch mode, the engraving quality depends on pulse frequency and the time Q-Switch opened. So the square pulse must be able to modulate to Duty Cycle to get a suitable control.

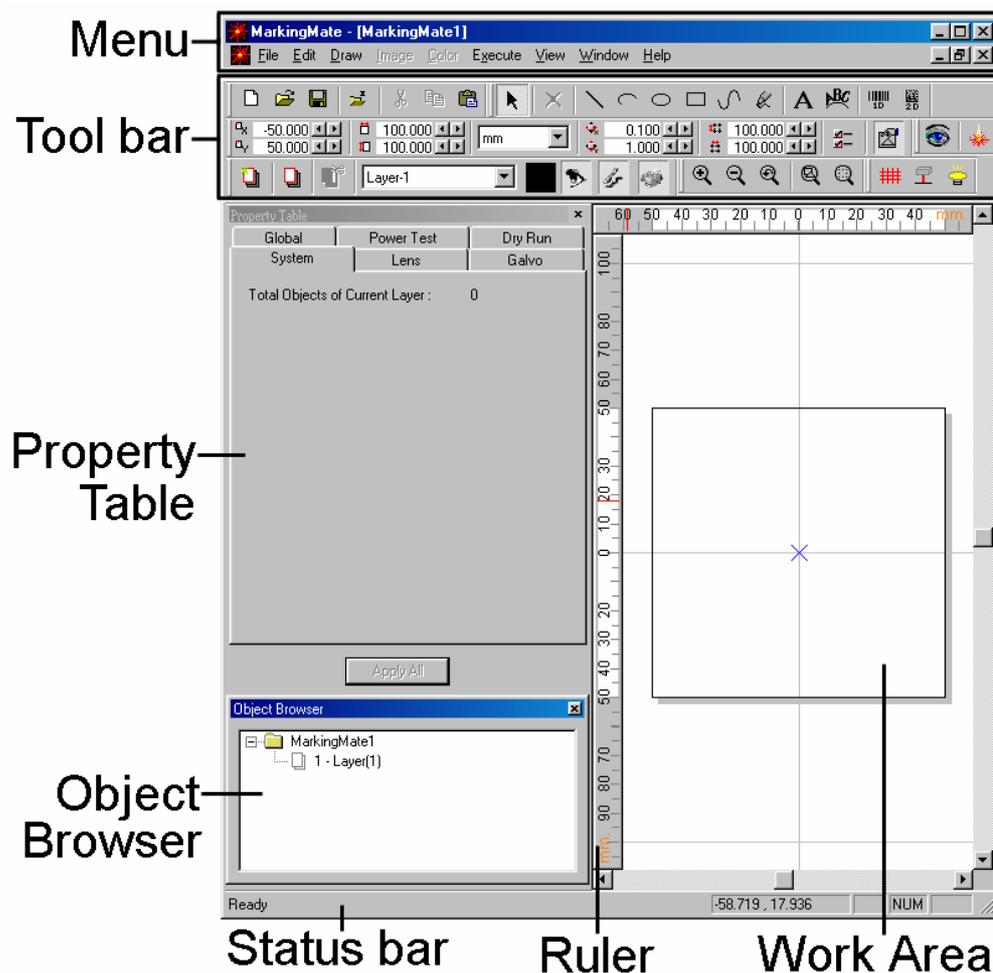
CO2 Laser Control

The CO2 laser control is easier. Its trigger and shooting are controlled by a single PWM signal. In general the PWN frequency is between 5K and 15K. And the laser power is determined by the percentage of high voltage of PWM. When the percentage reaches 100% the laser power is the biggest, while 0% is the smallest. Even the laser is not under shooting, the PWM frequency has to remain on 5K, and the high voltage time needs to be about 1 μ s.

The principal part of MarkingMate is its drawing editing function. There are many tools include toolbox, ruler, grid, zoom in and MarkingMate is a platform that can be upgraded to be a professional CAM/Control system by adding related modules (for example, the CAM module). Following is a brief introduction:

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2.2 User Interface



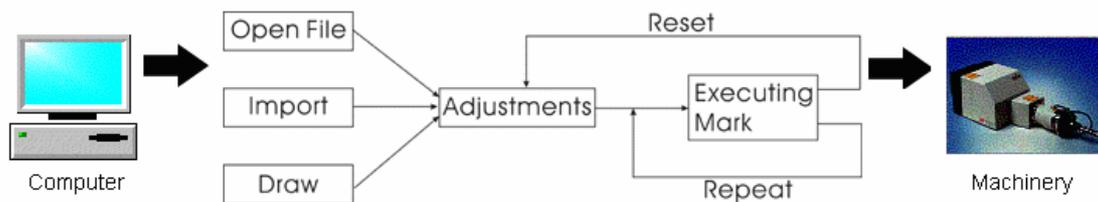
The user interface of MarkingMate are listed as below:	
Menu Bar	Menu Bar contains main function of this program, click each function will drop a list of related items.
Toolbar	The most common use function will be listed in the toolbar. Click and drag the toolbar can move it to any place you want. If you click and drag the toolbar to Work Area, it will become fluctuant; and if move it to the Window frame, it will become a part of the Window frame.
Property Table	Display the properties and related settings of the selected object.
Object Browser	Display all objects in the Work Area.
Ruler	Help users to realize the dimension of the object.
Status Bar	Display the function comment and coordinates of mouse.
Work Area	The area allows users to draw and edit.

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Chapter 3 Quick Guide to Newcomers

MarkingMate allows users to draw pictures and import the other format files such as PLT, DXF, and BMP files which are generally created from the common use software like AutoCAD, CorelDRAW, Photoshop, and etc.

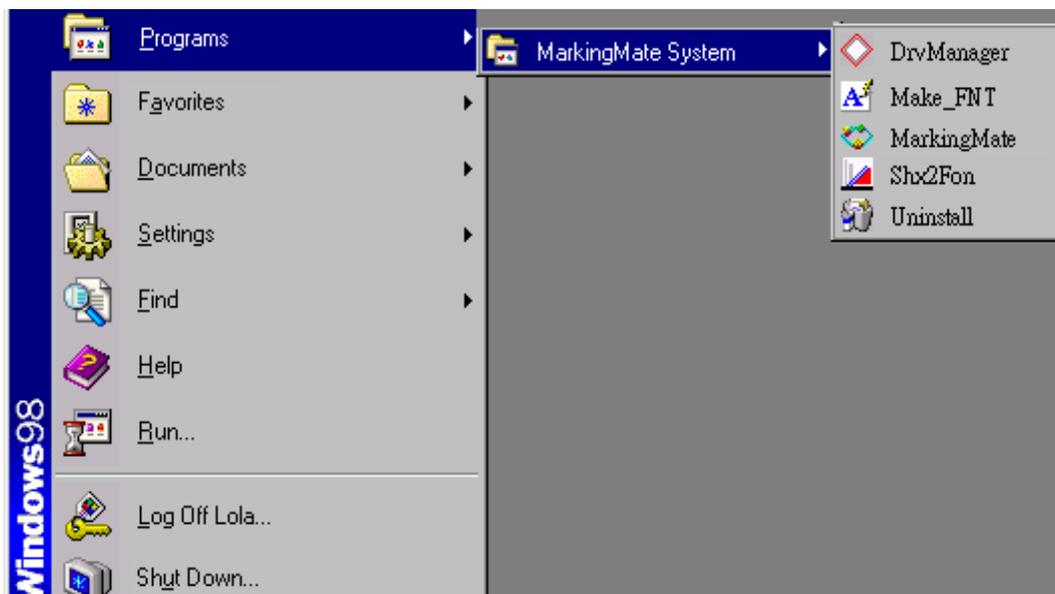
The import graphics will be maintained their shapes and scales so there is no need for any modifications that MarkingMate can use those graphics directly. Its operation is as below:



3.1 Start Program

There are two ways to start the program.

Click [Start - Program] from the left-bottom of the window and select MarkingMate to start the program.



A shortcut icon of MarkingMate will be added in the desktop after installing the program, click this shortcut will be able to start the program.

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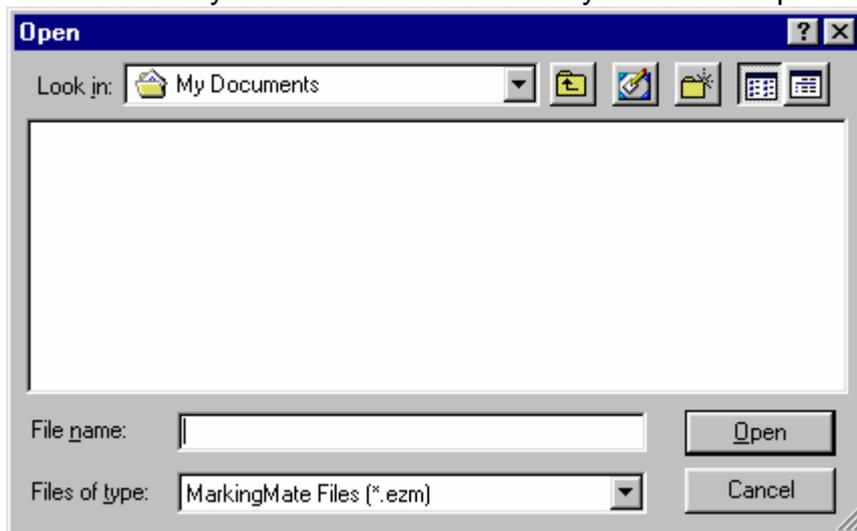
3.2 Read Files

In MarkingMate program, you must create a file before marking. There are three ways of creating files: open, import, and draw.

3.2.1 Open

Click "File - Open" from Menu Bar or click the  button from the Standard Toolbar, a dialogue box will appear.

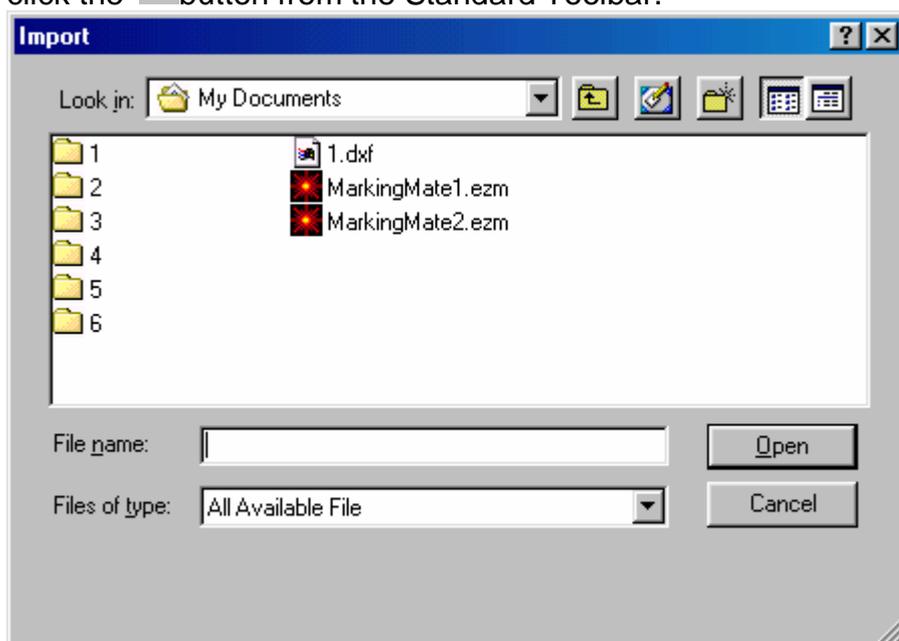
Select the file you want from the directory and click "Open" button.



Edit the file to meet your needs.

3.2.2 Import

Click "File - Import" from Menu Bar, a dialogue box will appear. Select the file you want to import from its directory and click "Import" button. You can also click the  button from the Standard Toolbar.



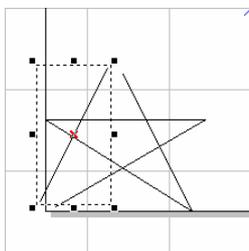
Select the file you want to import, and then click the "Open" button.

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The selected picture will be displayed on the left-down corner of the work area.



When import a graphic object (like a DXF file), users can use “Edit – Break” function to break the selected object into several objects.

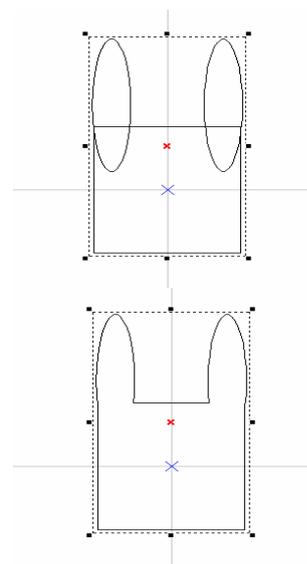


3.2.3 Draw

Click "File - Open" from Menu Bar, a new Work Area will be displayed. Besides, you can click the  button from the Standard Toolbar.

Click "Draw - Rectangle" (or other draw tools) from Menu Bar, draw any figures in the Work Area (as the right figure), or click the buttons from Toolbar.

After finishing drawing, still can edit the figures. For example: select all objects, click "Edit - Combine" from the Menu Bar.



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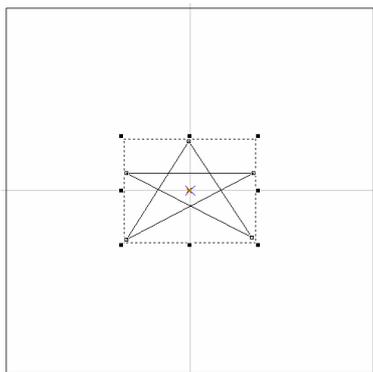
3.3 Parameters Settings

3.3.1 Position Adjustments

If the object position, scale, and direction do not meet your requirements, you can use the mouse or toolbar to do the adjustment, Properties Bar, or Dimension Bar. The frequently use functions are as following:

Place center:

Click the  button on the Property Bar, the picture will be put in the center of the work area.



Align

Click “Edit - Align”, a dialogue box will be displayed. Users can push the  button on the Property Bar also. In the align dialogue box, users have three ways of “align to” (Last Select Object, Paper Edge, and Paper Center) and six directions (Top/Center/Bottom, and Left/Middle/Right) to choose.

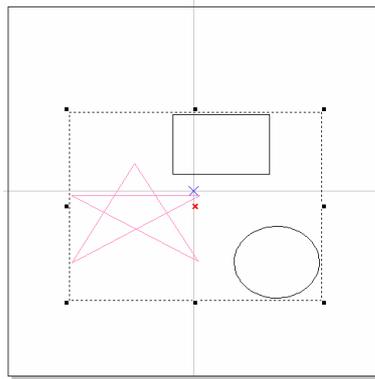
Examples:

Create several objects and select all objects (as figure 1 below). Click “Edit – Align” from Menu Bar, press Left 

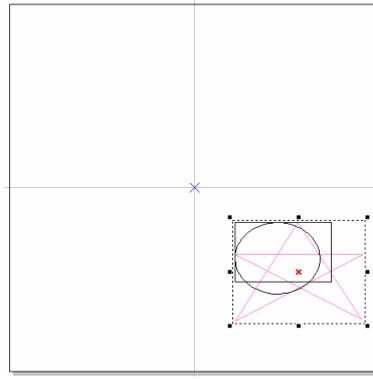
button and Top  button will see that all objects were aligned to the last object (as figure 2 below).



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(Figure 1)



(Figure 2)

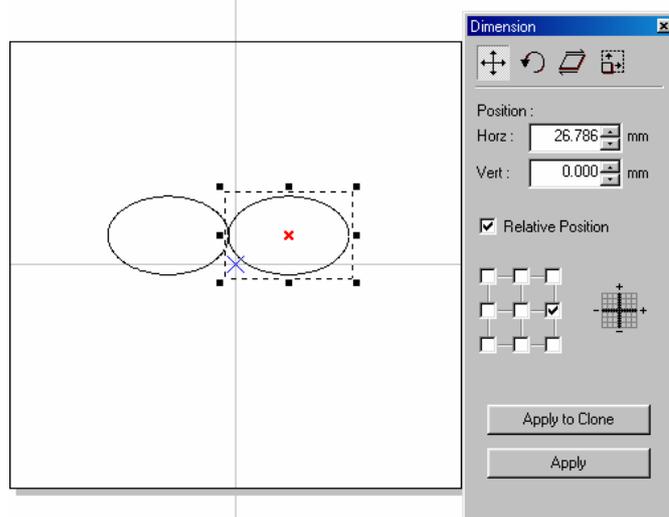
Dimensional Bar

Dimensional Bar contains four main functions: Position , Rotate , Aslope , and Scale .

Position :

Click the  button on the Dimensional Bar and then input the values of horizon and vertical position directly.

Examples: Select an object, click the  button, set relative position to right, and press “Apply for Clone” button, will see the result as below:

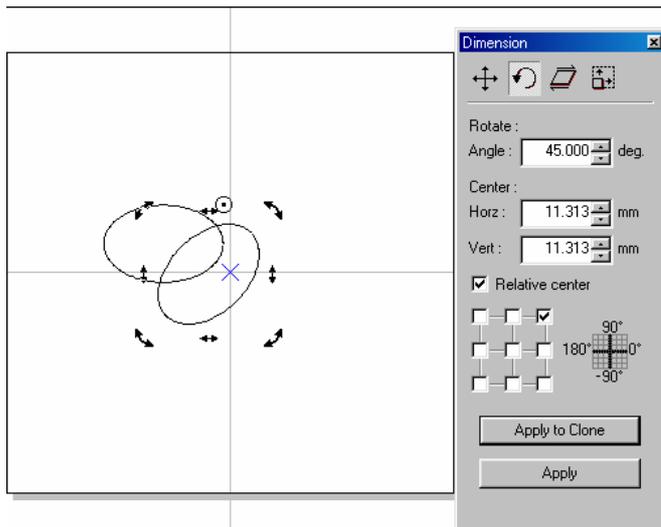


Rotate :

Click the  button on the Dimensional Bar and then input the rotate angles and rotate center position.

Examples: Select an object, click the  button, set Angle to 45 degree, center position as “top-left”, and press “Apply for Clone” button, will see the result as below.

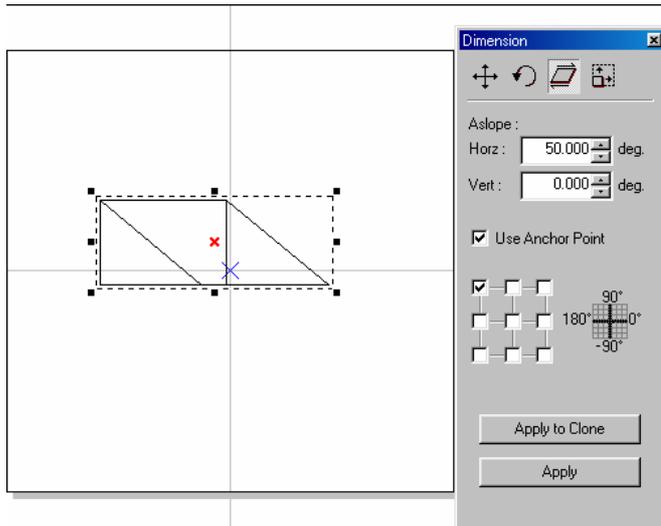
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Aslope :

Click the  button on the Dimensional Bar and then input the aslope angle you want.

Examples: Select an object, click the  button, set aslope angle to 45 degree, set anchor point as “top-left”, and press “Apply to Clone”, will see the result as below:

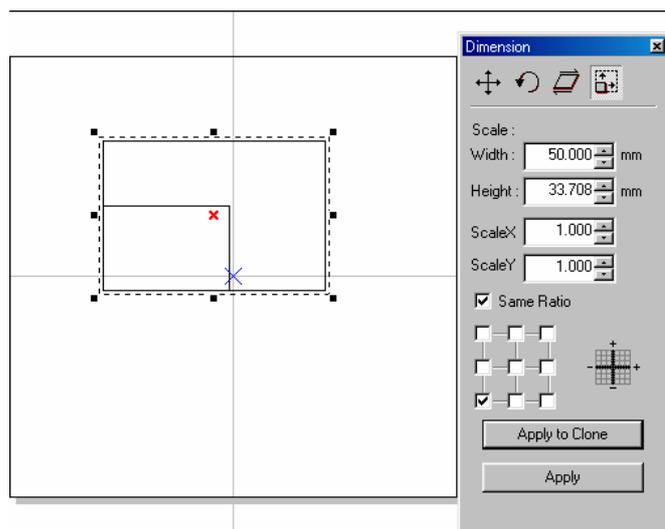


Scale :

Click the  button on the Dimensional Bar and then input the dimension you want.

Examples: Select an object, click the  button, set scale of horizon as 50mm, marked the “Same Ratio” checkbox, set relative position as “bottom-left”, and press “Apply for Clone” button, the result will be as below:

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3.3.2 Marking Parameters

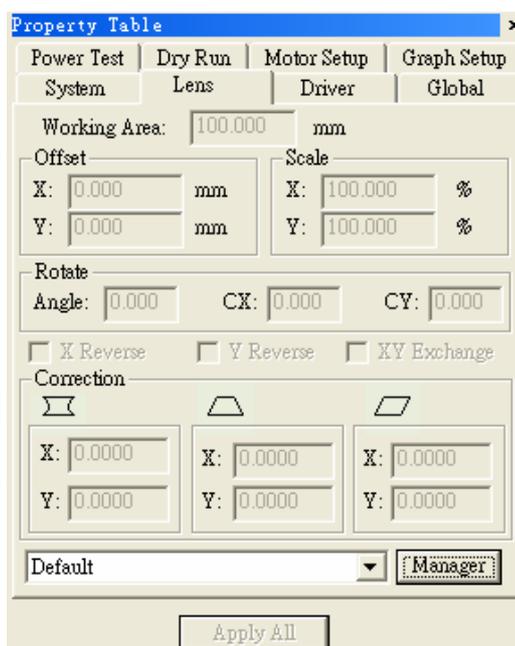
We recommend users to do test marking first before setting marking parameters.

Test Marking: Create a rectangle, place the object in the center of the Work Area, execute Mark function, and then do the marking parameter setting.

The Property Table (no object being selected):

Working Area : The software system uses voltage signals to control GALVO motor, it is unable to know how big the working area is unless user input the correct value. If the work area is 100mm, user should enter 100mm over here. If it is mistaken to be 50mm, the finished goods will be doubly enlarged; on the other hand, if it is mistaken to be 200mm, the finished goods will become half size.

Offset – Normally set X=0 and Y=0 will be fine. However, if system output 0V to X, Y GALVO motor and the laser did not shoot from the center of the f-theta lens, we strongly recommend user to regulate your hardware first, only if you can not succeed from regulating hardware will you try to adjust offset from here. If the mark position is right shift 5mm, you can enter -5mm in the X column. So are the others.



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Scale – Even though every adjustment is correct, still many reasons to cause abnormal scale of the marking goods. Some special item needs to be marked under unfocused situation to create special effects will also result in scale enlarged or shrink. If the scale is too small, please enter a number bigger than 100 (because unit is percentage); on the contrary please enter a value smaller than 100.

Rotate – the mechanism problem will also cause rotate. If so, please fix it to avoid this problem. If hardware is OK, user can rotate an angle of the image to resolve the limitation problem of the Work Area

X reverse / Y reverse / XY exchange

It is possible that user has to adjust the coordinates of the Work Area for his local condition. Our system provides X reverse, Y reverse, and XY exchange for users to choose or combine as their requirements.

Correction

Except barrel distortion, every distortion is result from hardware. Therefore, DO NOT expect on software correction before hardware adjustment, because software correction is based on hardware is correct. If hardware is not property settled, even software can control well, the performance will not be good anyway.

Barrel Correction

A normal f-Theta Lens system will result in barrel distortion because its naturals. The system initial value here is (0.000), if the figure become protuberant in X-axis, the X value will need to be increased like 0.002; while if now it become indentation, the X value will have to be reduced to as 0.0014. Keep adjusting the value until it is acceptable.

Input a square, the output become as below:

Lens Name

The name of the lens parameters. If you want to add other lens parameters, just press the “Manager” button, the Lens Setup page will be displayed as below:

Select the Lens Name Type the new Lens Name

555 Add Add to edit the lens parameters

Lens Name 555 Modify Modify to edit the lens parameters

Working Area : 100.000 mm

Offset Scale

X : 0.000 mm X : 100.000 %

Y : 0.000 mm Y : 100.000 %

Rotate

Angle 0.000 Center X 0.000 Center Y 0.000

X reverse Y reverse XY exchange

Correction

X : 0.0000 X : 0.0000 X : 0.0000

Y : 0.0000 Y : 0.0000 Y : 0.0000

OK

MarkingMate

Global

Marking Maximum: Set up the desired total working times.

This function allows you to avoid the unwilling excess working pieces.

Marking Amount: It enables you to take down how many work pieces you have already done.

Trigger Max: Specify the counts of marking for trigger. Show the message for trigger.

Show MSG: If checked, the system will show message while the marking amount reaching the Trigger Max value.

Comment: Input a summary of the file.

Mark On Fly: It enables you to mark while the working pieces are moving. You can choose to use this function on X or Y Axis.

X/Y Encoder (checked):

Factor: the value of conveyer moving per encoder count.

Delay: delay a giving count pulse then start marking.

The screenshot shows the 'Property Table' dialog box with the 'Global' tab selected. The 'Marking Max' is set to 0, 'Marking Amount' is 0, and 'Trigger Max' is 0. The 'Show MSG' checkbox is unchecked. The 'Mark On Fly' section has 'X Axis' and 'Y Axis' checkboxes, both of which are unchecked. Under 'X Axis', 'X Encoder' is checked, 'Speed' is 0.00 mm/sec, and 'Delay' is 0 us. Under 'Y Axis', 'Y Encoder' is unchecked, 'Speed' is 0.00 mm/sec, and 'Delay' is 0 us. There is a 'Comment' text box. At the bottom, there are 'Set Default', 'Apply', and 'Apply All' buttons.

X/Y Encoder (not checked):

Speed: the speed of conveyer.

Delay: delay a giving count pulse then start marking.

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The Property Table (with some objects being selected):

Mark Parameter:

This menu allows you to edit the assigned speed, power, and frequency output of the laser machine. Each pass can be assigned with different speed, power, and frequency settings. In addition, you can also load the value from the Object Parameter Table.

Pass Mode: Select from the list from "1 Pass" to "5 Passes".

Speed/Power/Frequency: Input the related values.

Times: If set the value to be "5", the mark time will be 5 times.

Item Name	Pass	Speed	Power	Freq	Times	Spot ...	Pulse ...	Delay...	Delay...	Delay...	Jump ...	Jump ...
First	3	500	10	33	1	0.1	10	0.01	0.01	0.01	1500	0.5
		500	10	33	1	0.1	10					
Second	1	500	10	10	1	0.1	10	0.01	0.01	0.01	1500	0.5
Third	1	500	10	10	1	0.1	10	0.01	0.01	0.01	1500	0.5

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Delay

This function is used to overcome the problem of motor inertia.

Start Point Delay:

The time differences between system start and laser start at the beginning. Too much delay results in faded, while too little delay results in hot spots.

Mid Point Delay:

The time needed when system makes a turn. Too much delay will creates excess marking, while too little delay will appears an arc in the corner.

End Point Delay:

The time differences between system stop and laser stop. Too much delay will make hot spots in the end of line, while too little delay will result in incomplete lines.

Property Table

Rectangle		Mark Parameter	
Frame/Fill	Delay	Array Copy	Motion
Delay Param			
Start Point Delay:	<input type="text" value="0.000"/>	ms	
Midpoint Delay:	<input type="text" value="0.100"/>	ms	
End Point Delay:	<input type="text" value="0.300"/>	ms	
Jump Param			
Speed:	<input type="text" value="3000.0"/>	mm/sec	
Delay:	<input type="text" value="0.200"/>	ms	

Set Default Apply

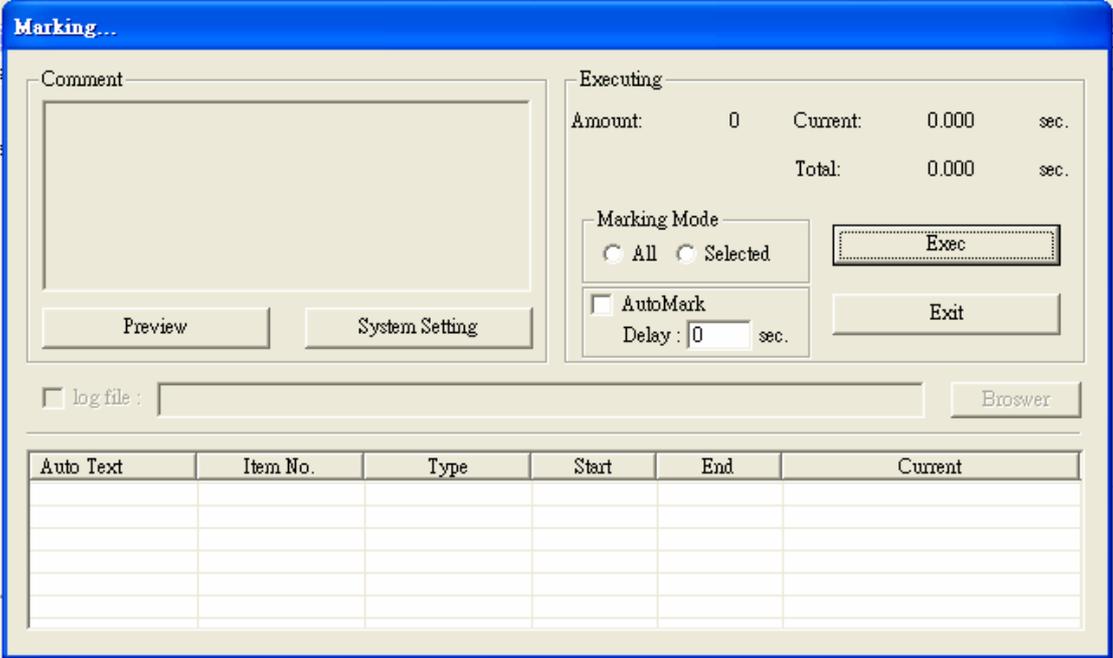
Apply All

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3.4 Execute Mark

Click “Execute – Mark” from the Menu Bar or press the  button from toolbar will see a dialogue box as below:

Click the “Mark” button in the dialogue box to execute marking.



The dialog box titled "Marking..." contains the following elements:

- Comment:** A large text area for entering a comment.
- Executing:** A section showing progress with "Amount: 0", "Current: 0.000 sec.", and "Total: 0.000 sec."
- Marking Mode:** Radio buttons for "All" and "Selected".
- AutoMark:** A checkbox and a "Delay : 0 sec." input field.
- Buttons:** "Preview", "System Setting", "Exec", and "Exit".
- log file:** A checkbox and a text field with a "Browser" button.
- Table:** A table with columns: Auto Text, Item No., Type, Start, End, Current.

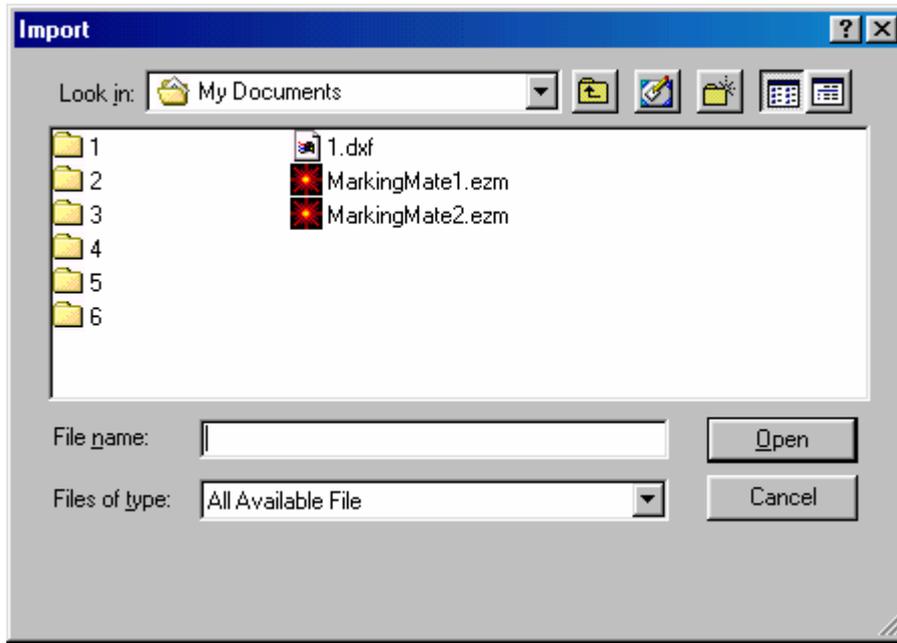
Auto Text	Item No.	Type	Start	End	Current

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3.5 Operation Examples

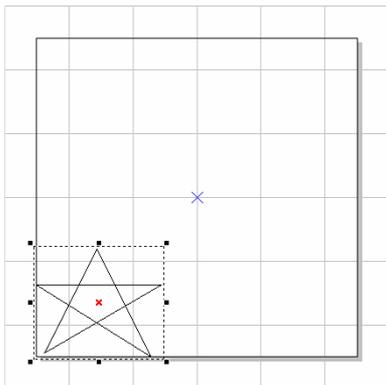
3.5.1 Import DXF File

Step 1: Click “File - Import” or click the  button from the Standard Bar will enter the dialogue box as below.



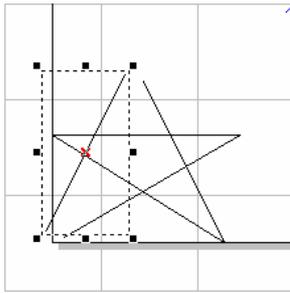
Step 2: Select the DXF file you want, and then click the “Open” button.

Step 3: The selected DXF file will appear in the left-down corner of the working area.

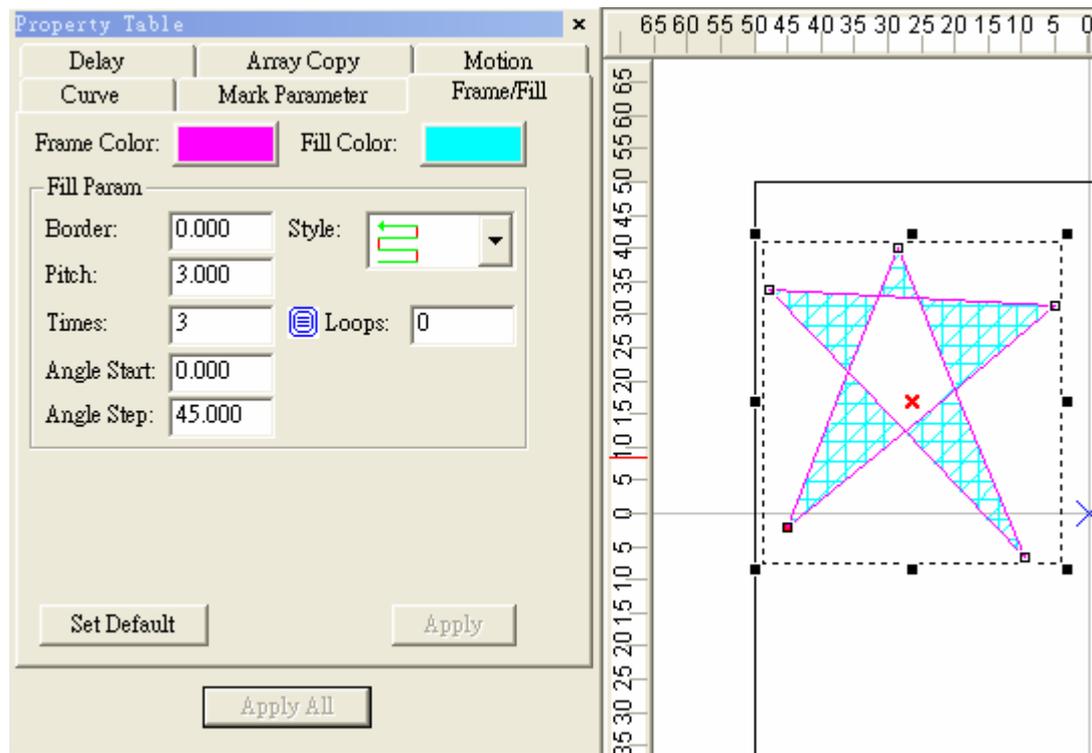


Step 4: If it is a graphic object, click “Edit - Break” to break it into several objects.

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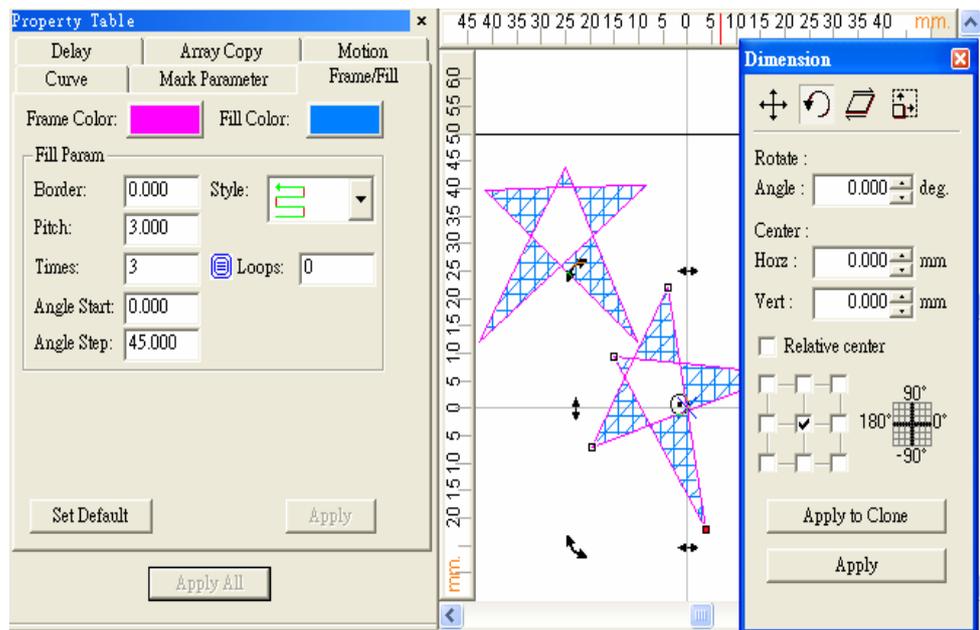
Step 5: Edit the object's properties from the Property Table:
Frame/Fill – Adjust the color of the border and interior shading of the selected object.



Click the  button on the Property Bar to move the object to the center of working area. Next, click the  button to set the rotate angle to 60 degree and the relative position to the “top-right”.

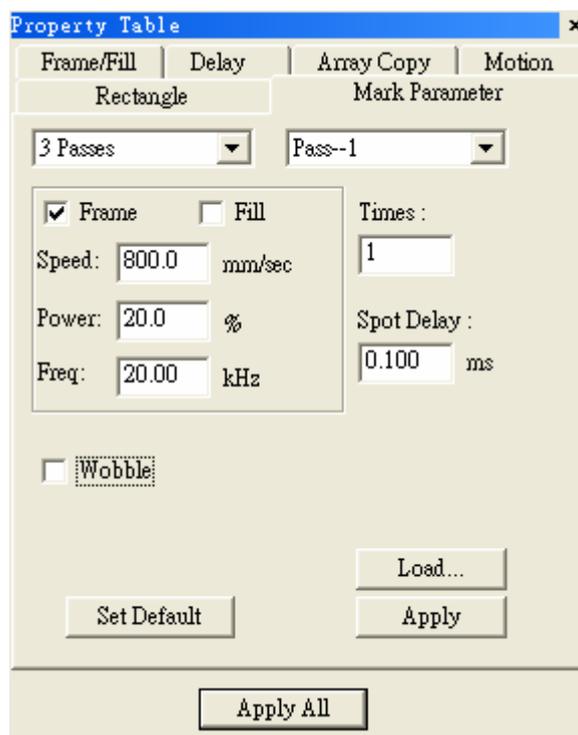
(3) Hit the “Apply to Clone” button as the following:

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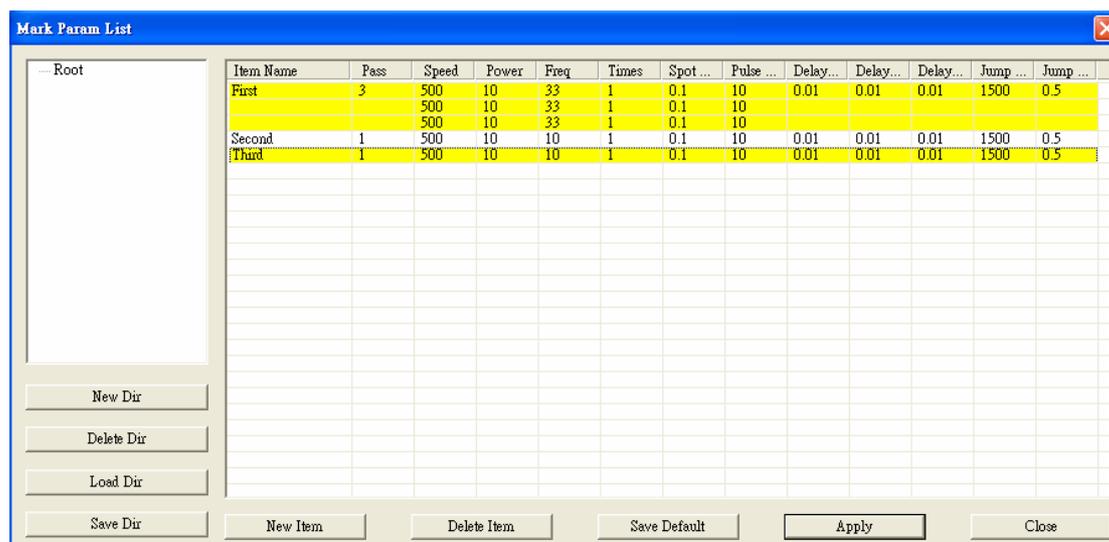


(4) Marking Parameters Settings

Set the mark cycle to 3 Passes; and each pass reload different values from Object Parameter Table.

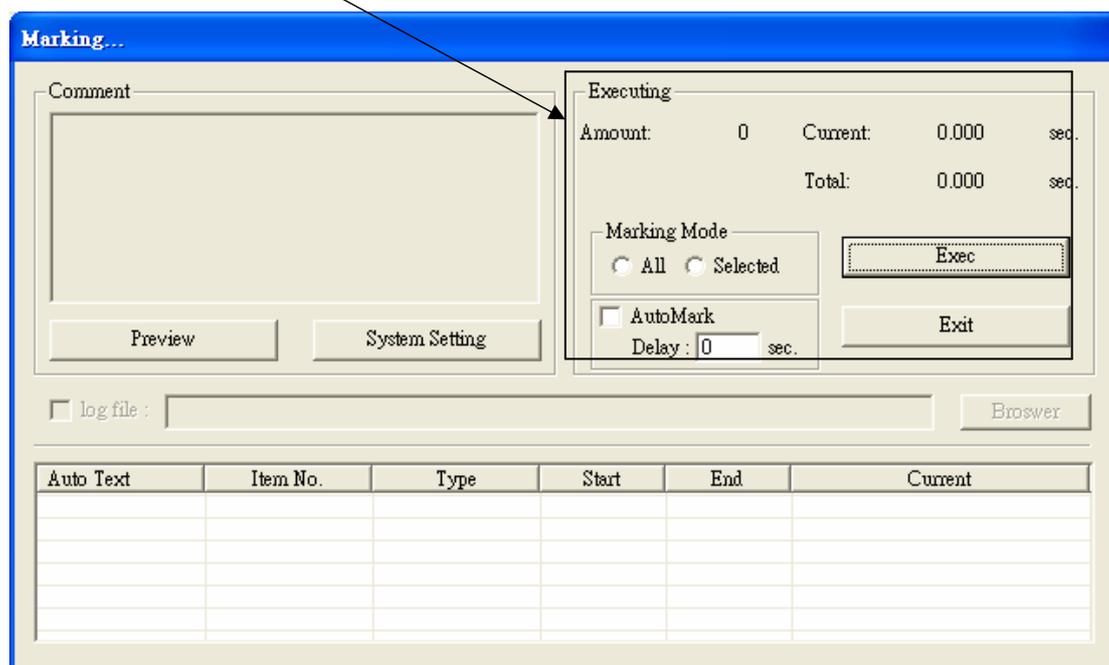


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(5) Cancel the selection, go to the Global page of the Property Table, and set the Marking Maximum to 10.

(6) Click “Execute – Mark” will display the dialogue box, and then click “Exec” button in the box, the system will display its current marking status.



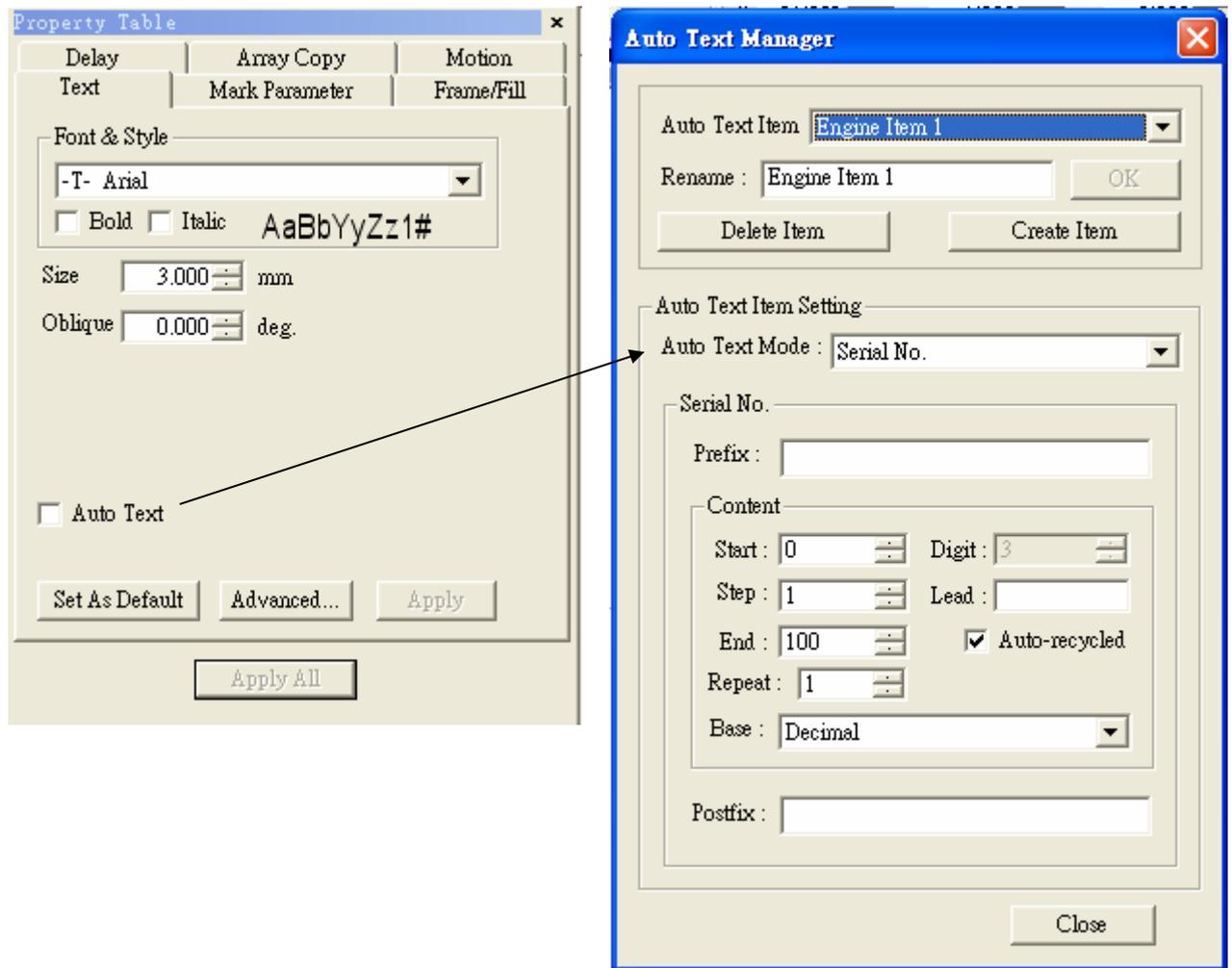
3.5.2 Auto Text

Step 1: Click “Draw – Text” from Menu Bar, or click the **A** button from toolbar.

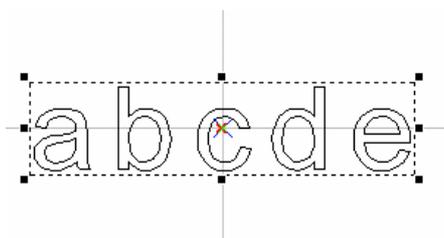
Step 2: Move your mouse to the Work Area and click, a text input box will be displayed; typing the characters you want and then click the right button of the mouse to leave.

Step 3: Go to the Text page in Property Table (as below), check the box of “Auto Text”, the “Auto Text Manager” will appear as below.

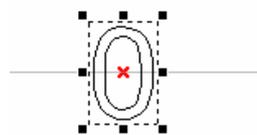
MarkingMate



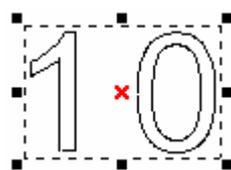
Step 4: Set the Auto Text Mode as Serial No., content start from 0, step 1, and end at 100 (users can define by themselves). Click “Close” and “Apply” buttons, the text will be changed as setting as figure below, the value has become the initial value of the Auto Text (see the right figure below). If you follow the above setting to create another Auto Text, the value will be next by order.



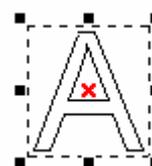
The original text



After applying Auto Text – Serial No.



10 based on decimal



10 based on hexadecimal

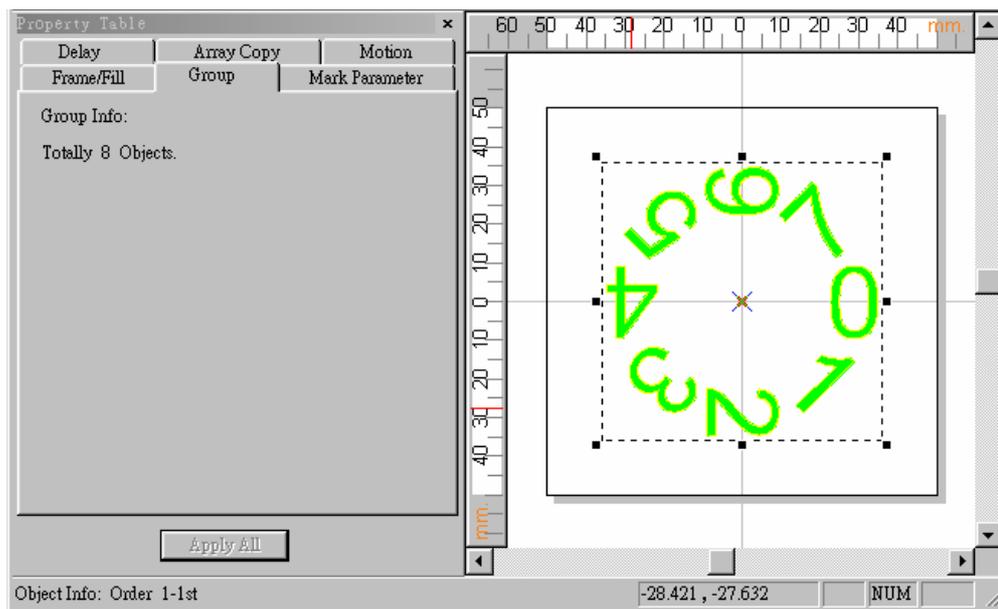
MarkingMate

Step 5: Go to the Property Table of the object

(1) Frame/Fill – Adjust the color of the border and interior shading of a selected object.

(2) Click  button on the Tool Bar to move the object to the center. Click the right button of the mouse and click the “Array Copy” function, a setting dialogue box will be displayed.

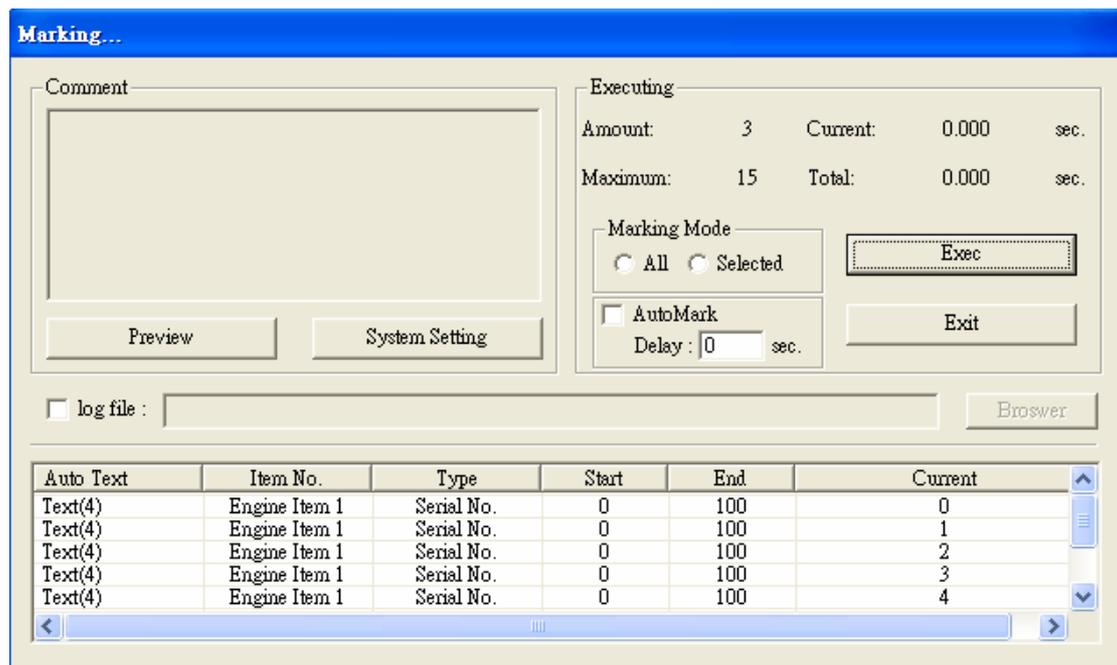
(3) Select Array Copy Mode: By Circle, set circle radius as 10mm, object count 8, and check the checkbox of “Auto Angle”, “Rotate Obj”, “CCW Copy”, and “Serialized Auto Text” and click “OK” button, then the content will be changed as below:



(4) Marking Parameter Setting – Set the mark cycle to 2 Passes.

(5) Click “Execute – Marking” will appear the Execute dialogue box; and then click “Exec” button, the current status of each Auto Text will be displayed as below:

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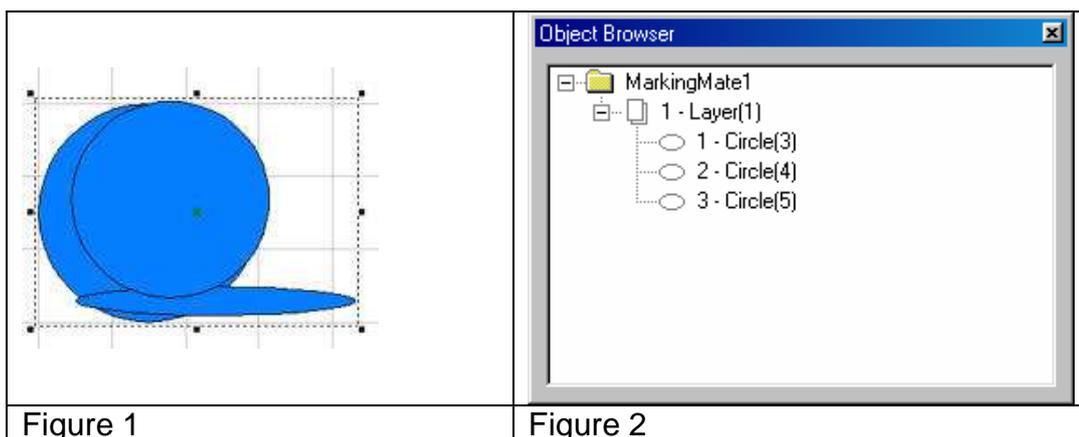


3.5.3 Combine/Break

Combine-

Step 1: Click “File – New” from Menu Bar, or click the  button from toolbar directly.

Step 2: Click “Draw – Circle” from Menu Bar, or click the  button from toolbar. Draw any figure in the Work Area; fill in all objects (as Figure 1 below). Now you can see all objects are circles in Object Browser (as Figure 2 below).



Step 3: Select the object you want to edit, click “Edit – Combine” from Menu Bar. This will make the overlapping part become a hollow (as Figure 3 below), and then you can see the object in Object Browser has become a curve (as Figure 4 below).

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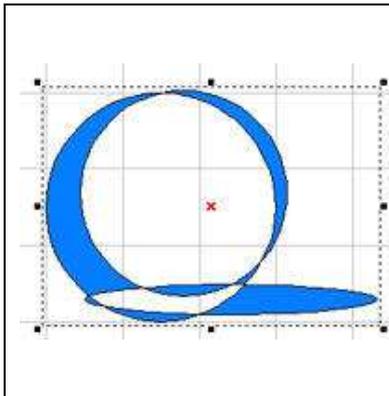


Figure 3

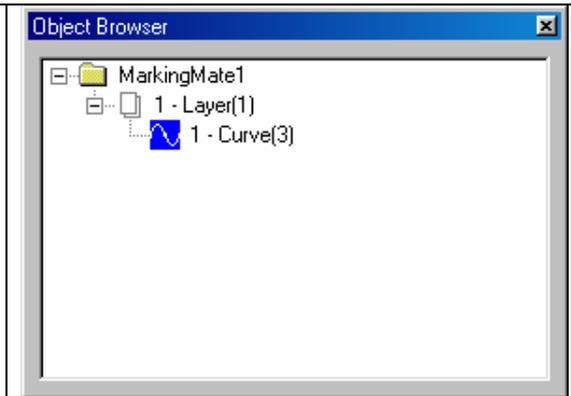


Figure 4

Break-

Step 1: If want to separate the combined objects, you can use “Break” function. Click “Edit – Break” from Menu Bar. All objects will go back to what they was original (as Figure 5 below), however, they are remain curve (as Figure 6 below).

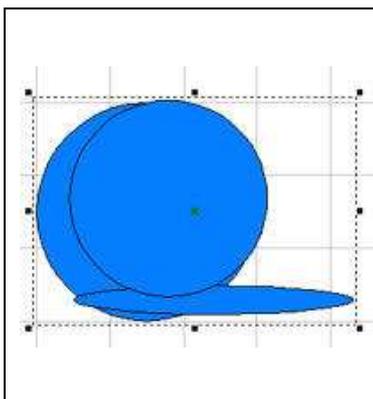


Figure 5

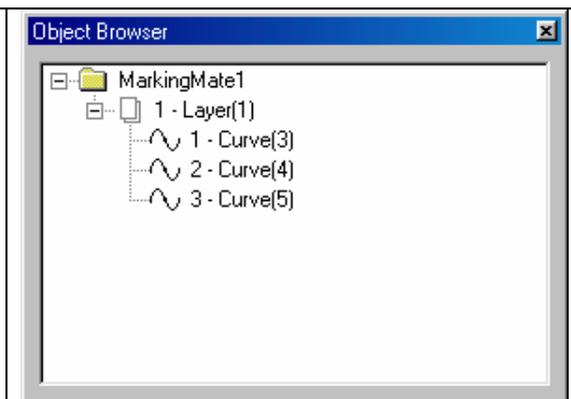


Figure 6

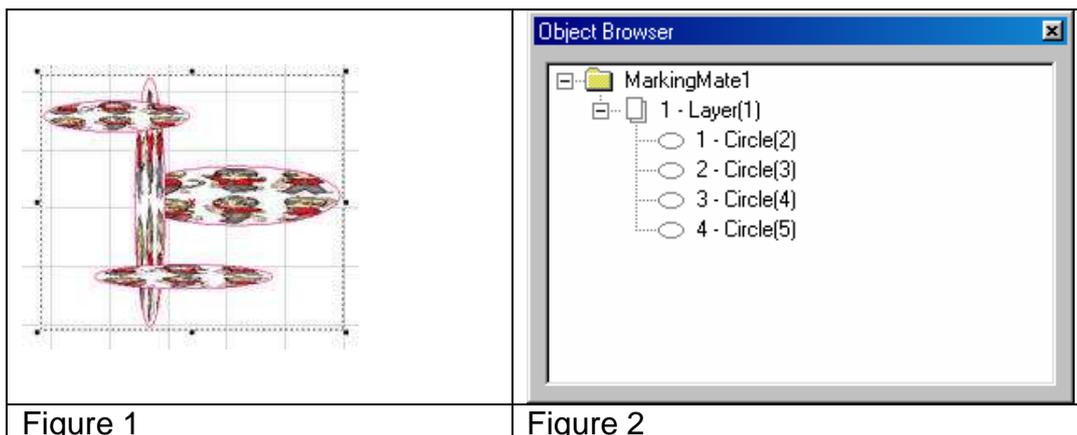
3.5.4 Group/UnGroup

Group-

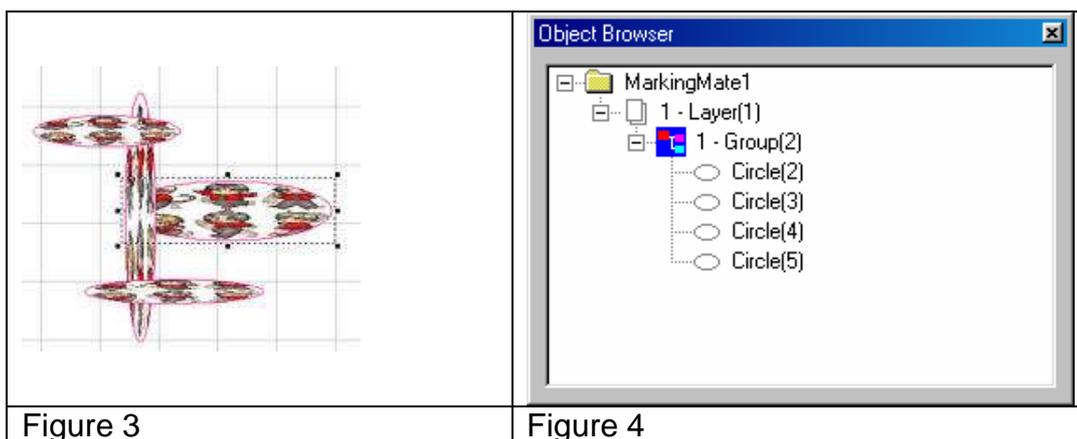
Step 1: Click “File – New” from Menu Bar, or click the  button from toolbar.

Step 2: Click “Draw – Circle” from Menu Bar, or click the  button from toolbar. Draw some circles in Work Area and fill colors in all objects (as Figure 1 below). You can see that all objects belong to circle in Object Browser (as Figure 2 below).

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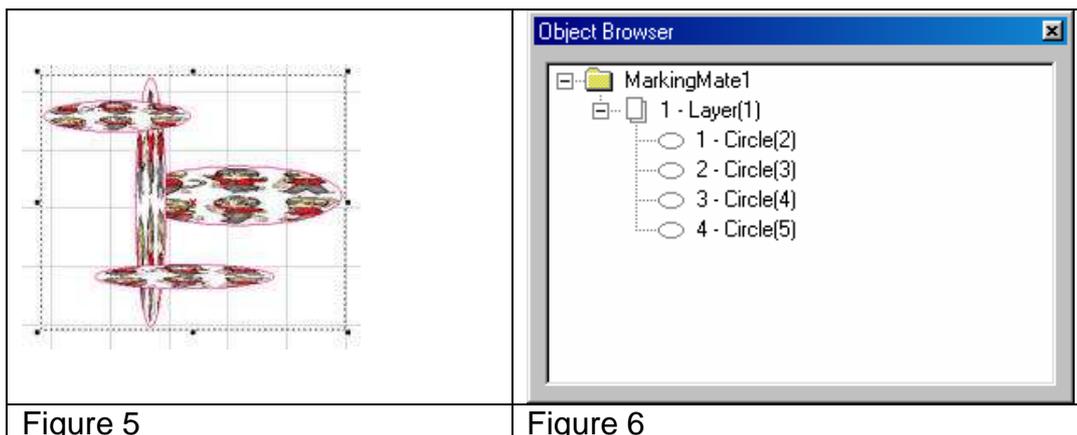
Step 3: Select the objects you want to edit, click “Edit – Group” from Menu Bar, or click the  button from toolbar. The selected objects have become a group. Use ctrl key and select the individual object still be able to edit objects by individual (as Figure 3 below). At this time, you can see the object type in Object Browser has become a group object; however, each individual object is still visible in Object Browser (as Figure 4 below).



UnGroup-

Step 1: Use Ungroup function is able to break up a group object. Click “Edit – UnGroup” from Menu Bar, or click the  button from toolbar, all objects will go back to their original look (as Figure 5 below), and their object type as well (as Figure 6 below).

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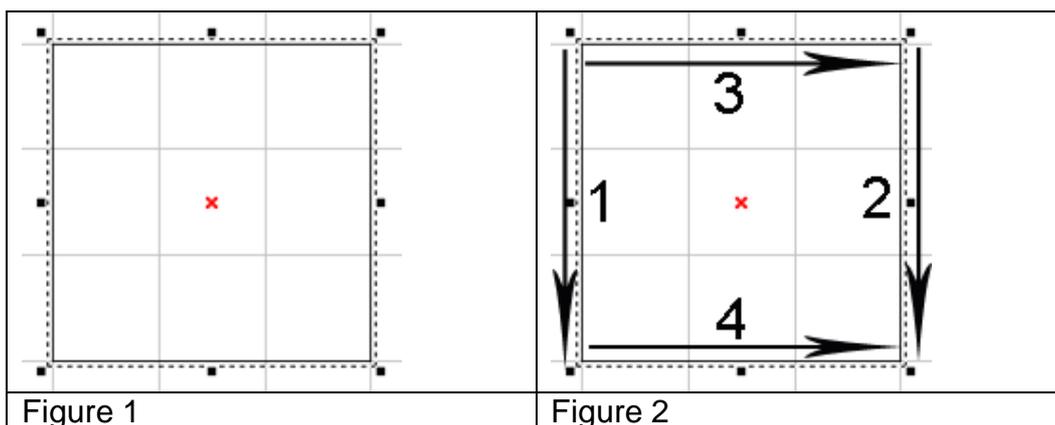


3.5.5 Sort

Step 1: Click “File – Import” from Menu Bar, or click the  button from the toolbar.

Step 2: Select the file you want to import and then press the “Open” button.

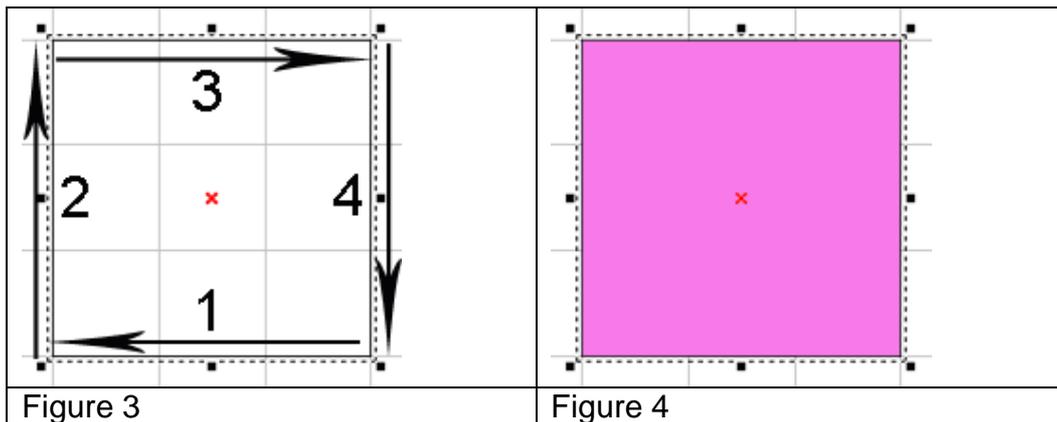
Step 3: The imported file will be as Figure 1 below. User is unable to fill color in this object because it is not a close-loop object (as Figure 2).



Step 4: Click “Edit – Sort” from Menu Bar or click the  button from the toolbar, the object path will be rearranged to be a close-loop object (as Figure 3 below).

Step 5: Select the object and go to the “Fill” page of the Property Table, choose the color you want and press “Apply” button, the object will be filled in the color you chose (as Figure 4 below).

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3.5.6 Rotary Axis Marking (optional)

Step 1: Click “File - Import” will appear the Import dialogue box.

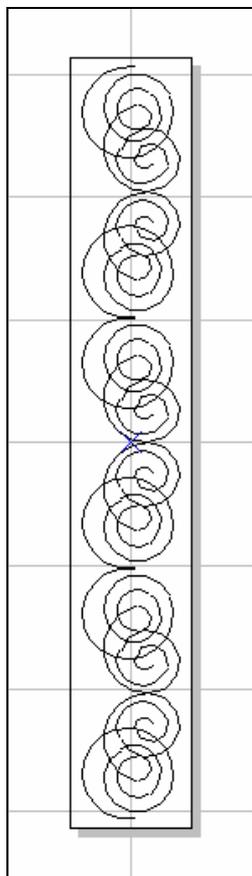
Step 2: Select the file you want to import then click “Open” button.

Step 3: Edit the object properties in Property Table:

(1) Frame/fill – Adjust the color of the border and interior shading of a selected object.

(2) Click  button on the Tool Bar to move the object to the center.

Step 4: Click the layer of the object in the Object Browser and go to the Rotary page of the Property Table for parameter settings.



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Enable: Enable the rotary axis function.

Method: the rotary axis mode.

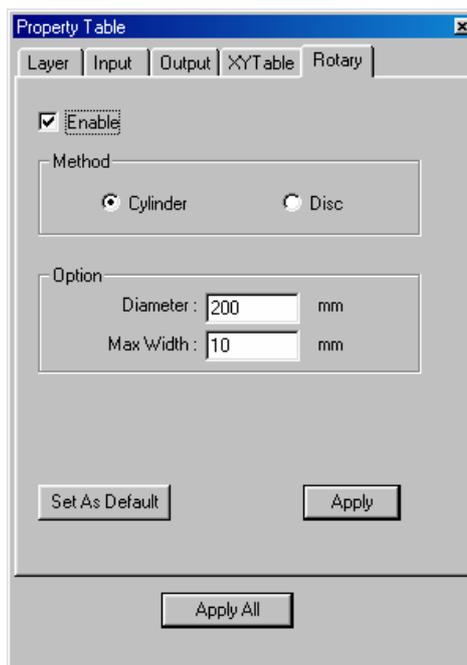
Cylinder: the cylinder mode.

Disc: the disc mode.

Option: parameter settings

Diameter: the double distance between the object to the axle center.

Max Width: the suitable marking range, the value should be changed depend on the diameter.



Step 5: Cancel the object selection and go to the motor setting page of the Property Table to do the Motor Setup.

(1) Select the axis you want:

Rotary or **X-Axis** or

Y-Axis or **Z-Axis**

Unit: angle or length

Acc. Time: the time for Rotary Axis to reach the speed you want. If the value is 5 sec and the speed is 10 degree/sec that means the rotary axis will reach 10 degree/sec in 5 seconds.

Speed: the speed of Rotary Axis. If the value is 10 degree/sec that means the Rotary Axis turns 10 degree per second.

Axis Unit: the pulse amount needed for one circle rotating

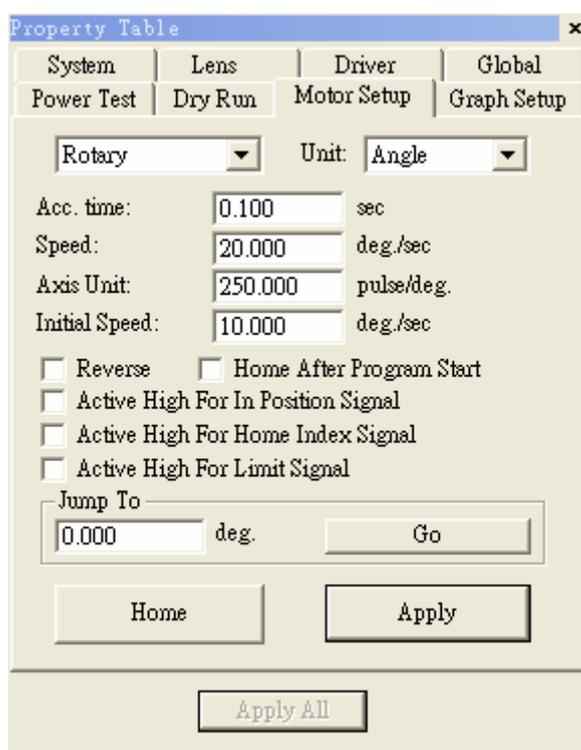
If the spec. of the motor is 20000 pulses; the value should be set as 20000 pulses/REV

Start Speed: Start speed of the motor

Reverse: The motor turns in the reverse direction.

Homing After Program Start: Automatically go home after program start

In Position High: Set the signal of In Position as High



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Home Index High: Set the signal of Home Index as High

Limit High: Set the signal of Limit as High

Jump to: Move to the assigned position

Home: Do the Home action immediately

Step 6: Marking Parameter Setting – Set the mark cycle to Single Pass.

Step 7: Click "Execute - Mark" will appear the Execute dialogue box; and then click "Exec" button, the current status of each Auto Text will be displayed.

Chapter 4 Menu Bar

4.1 File Menu

“File” Menu offers the below functions:

New	Create a new document.
Open	Open an existing mark (.ezm, .mrk, .mrs) file
Close	Close a file
Save	Save the current document using the existing file name
Save As...	Save the current document using an assigned file name
Option...	Edit the default work area, ruler, grid, and other settings
Import	Import a graphics files and convert it into the mark format
Export DXF	Export the file as .dxf file for other applications
Select TWAIN device...	Select the supported scanners
TWAIN acquire...	Scan an image
Import Configuration	Import a configuration (.ini) file
Export Configuration	Save the configuration as a *.ini file
Print	Print the file
Preview	Preview the current document before printing
Printer setting	Select the printer and edit the default printer and paper parameters
Exit	Exit MarkingMate

MarkingMate

4.1.1 New

Create a new document in MarkingMate.

Method:

Click “File” from Menu Bar and select “New” function.

Click the  button from the Toolbar

Press the [CTRL+N] key from keyboard.

4.1.2 Open

Open an existing mark file. The file name can be set in the dialogue box.

You can open several files and switch to different document by using window menu.

If you want to create a new document, please use ”New” function instead.

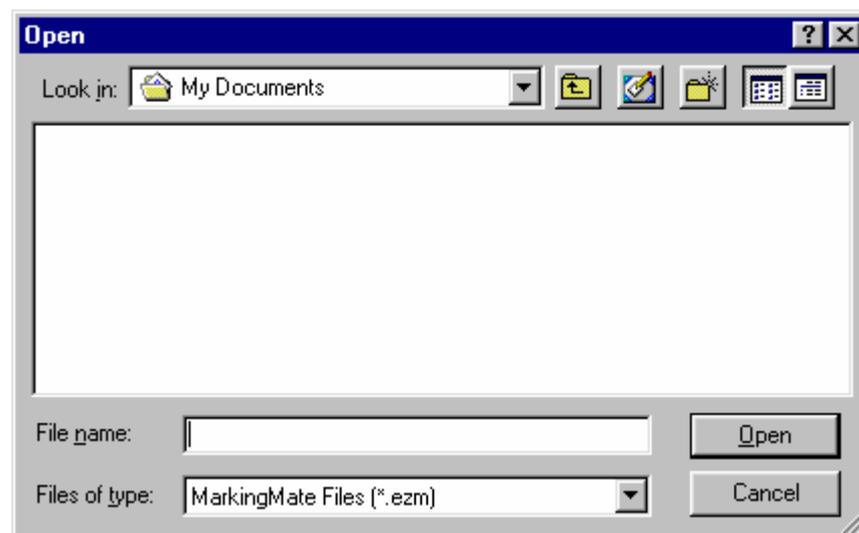
Method:

Click “File” from Menu Bar and select “Open” function.

Click the  button from the Toolbar

Press the [CTRL+O] key from keyboard

The default document of MarkingMate will be saved as .ezm file format as the below dialogue box.



4.1.3 Close

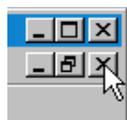
Close the windows in using. MarkingMate suggests you to save the modified file before closing, if you do not save before closing it, you will lose all the modification after last saving.

If close an unnamed file, MarkingMate will open a “Save As” dialogue box for you to named the file.

Method:

Click “File” from the Menu Bar and select “Close” function.

Click the top-right button as below to close the file:



MarkingMate

Click the top-left icon  as below to close the file:



Press the [CTRL+F4] key from keyboard

4.1.4 Save

Save the current document using the existing file name. If there is no file name yet, MarkingMate will open a dialog box of "Save" for you to assign. If you want to change file name or directory, use "Save As" function instead.

Method:

Click "File" from Menu Bar and select "Save" function.

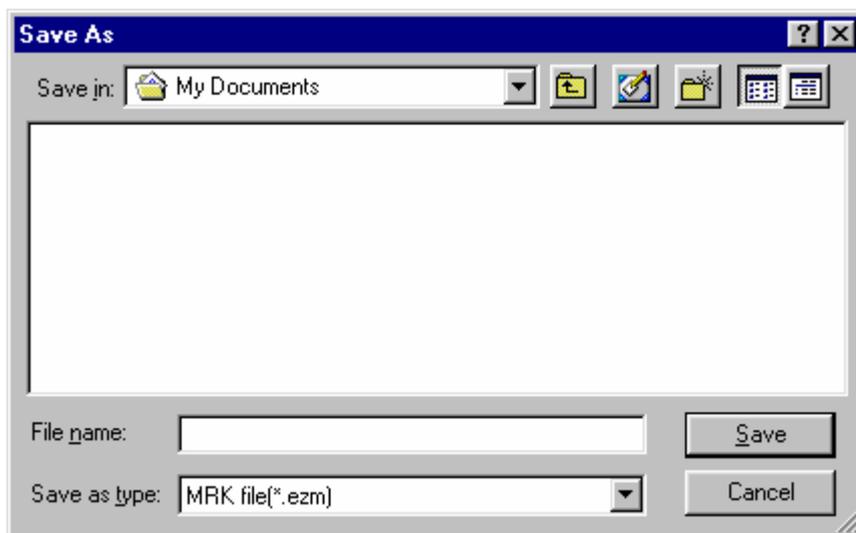
Click the  button from the Toolbar

Press the [CTRL+S] key from keyboard.

4.1.5 Save As

Save the current document using a new assigned file name.

If you want to save in its existing file name, use "Save As" function instead. ◦



The dialogue box of "Save As" allows you to assign the below items:

Save in: Select the directory you want to save.

File name: Type or select file name.

Save as type: The default file type is **EZM**.

MarkingMate

4.1.6 Option

The menu will allow you to edit the default work area, ruler, grid and other settings.

4.1.6.1 System



Enable the welcome dialog

4.1.6.2 Welcome

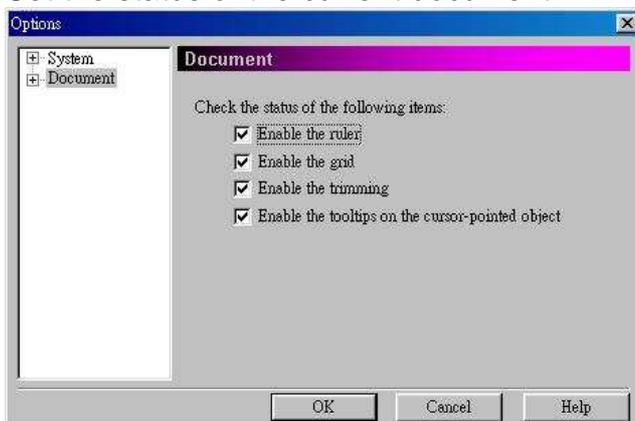
Enable/disable the welcome dialogue box.



Enable the welcome dialog box
Enable/disable the welcome dialog box.

4.1.6.3 Document

Set the status of the current document.

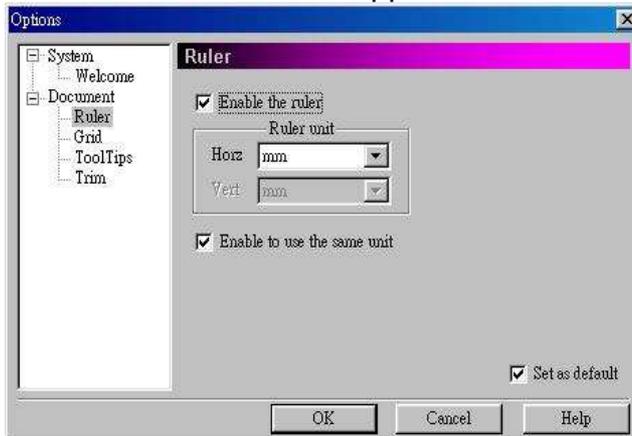


Check the status of the following items.
The setting will be the default setting for next open document.

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4.1.6.4 Ruler

Enable/disable the ruler appears on the work area.



Enable the ruler

Enable/disable the ruler.

Ruler Unit: mm or inch

Horz: Horizontal unit

Vert: Vertical unit

Enable to use the same unit

Enable/disable the

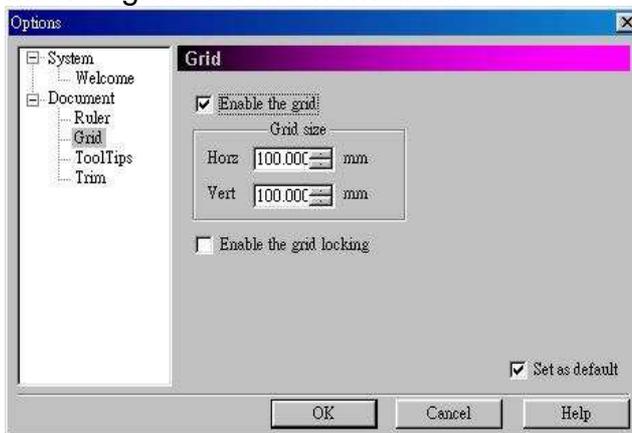
horizontal

and vertical ruler to use the

same unit.

4.1.6.5 Grid

Insert a grid over the work area.



Enable the grid

Enable/disable the grid

Grid size

Horz: Horizontal width

Vert: Vertical width

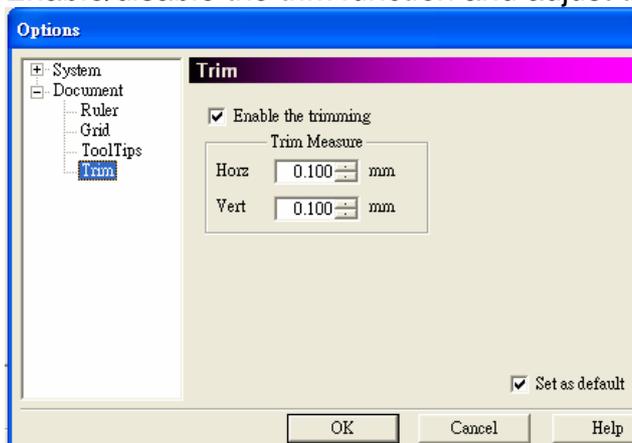
Enable the grid locking

Enable/disable the grid

locking

4.1.6.6 Trim

Enable/disable the trim function and adjust the standard unit of trimming.



Enable the trimming

Enable/disable the trimming

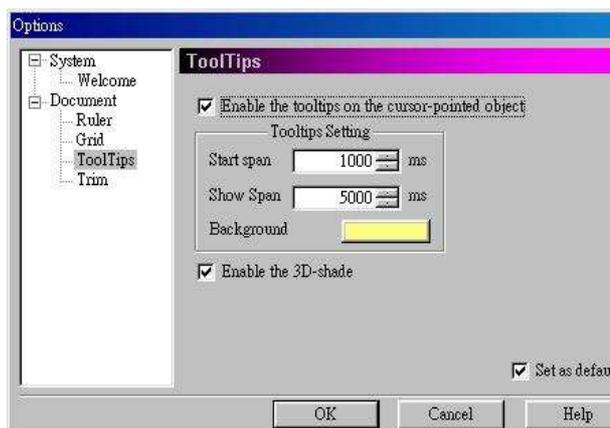
Trim measure

Adjust the trim measure.

4.1.6.7 ToolTips

ToolTips is a tool which shows the info of the selected objects.

MarkingMate



Enable the ToolTips on the cursor-pointed object

Enable/disable the ToolTips
ToolTips setting

Start span: Span for starting.
Show span: Span for showing.
Background: background color.

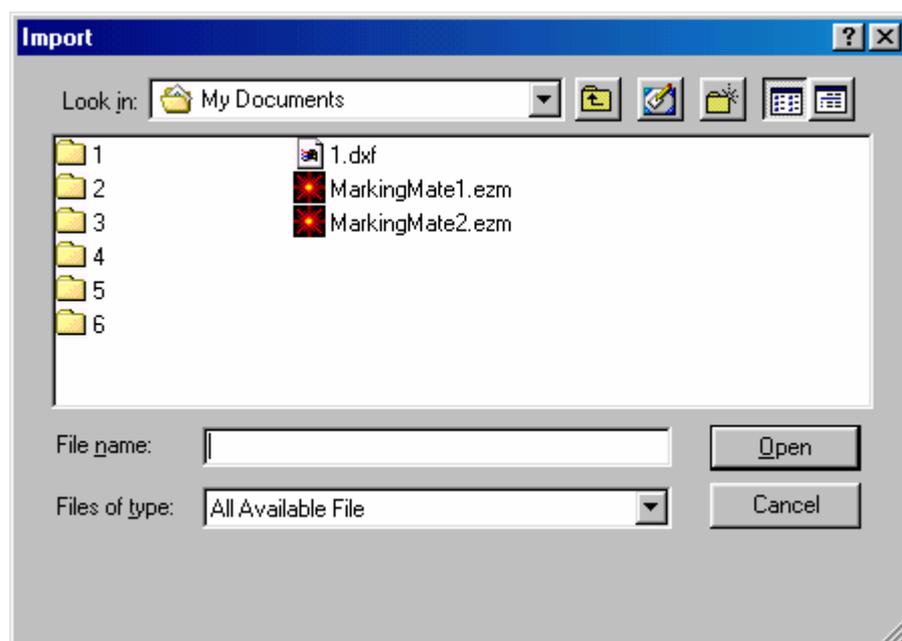
Enable the 3D-shade

Enable/disable the 3D-shade

4.1.7 Import

This allows you to import a file that was not originally created by MarkingMate. It will automatically convert the file into a mark format. If the import object is a group or combine object, you can use “UnGroup” or “Break” function to break the object into several individual objects.

The dialogue box of import is as below:



Method:

Click “File” from Menu Bar and select “Import” function.

Click the  button from the Toolbar

Press the [CTRL+I] key from keyboard.

Select the following items:

Look in: Select the directory you want to import from.

File name: type or select the file name to import.

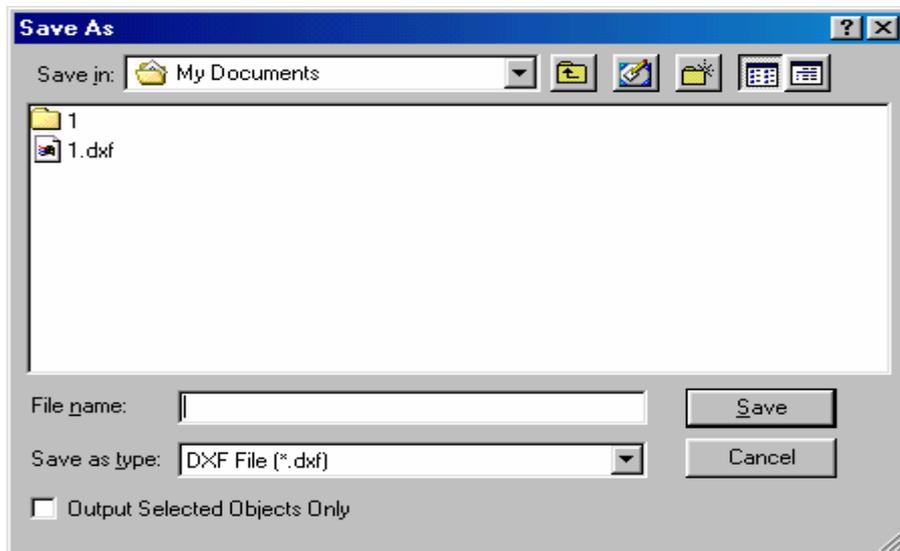
Files of type: MarkingMate allows you to import various file types such as: .EZM, .BMP, .EMF, .PNG, .PCX, .DXF, .CMP, .FPX, .PLT, .CAL, .ICO, .JPG, .PS, .EPS, .CLP, .WMF, .TIF, .CUR, .PSD, .TGA.

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4.1.8 Export DXF

This allows you to transfer the current document into .dxf file format for AutoCAD or similar applications.

Click “File” from Menu Bar and select “Export DXF” function, a dialogue box as below appeared.



This dialogue box allows you to input:

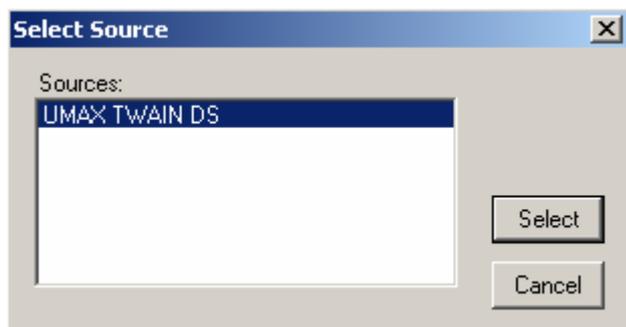
File Name: Input file name or select from the list.

Save as type: DXF File (*.dxf)

Output Selected Objects only: You can choose to output the selected object only or not.

4.1.9 Select TWAIN Device

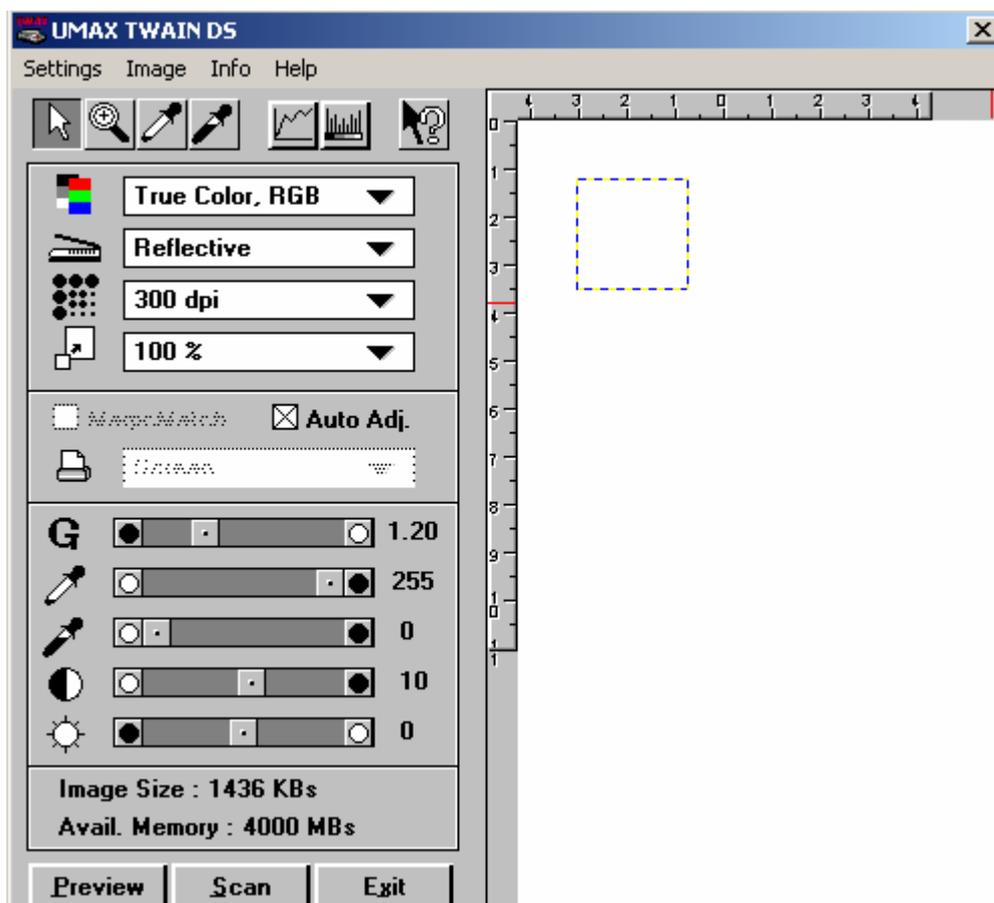
Select a supported scanner as below:



4.1.10 TWAIN Acquire

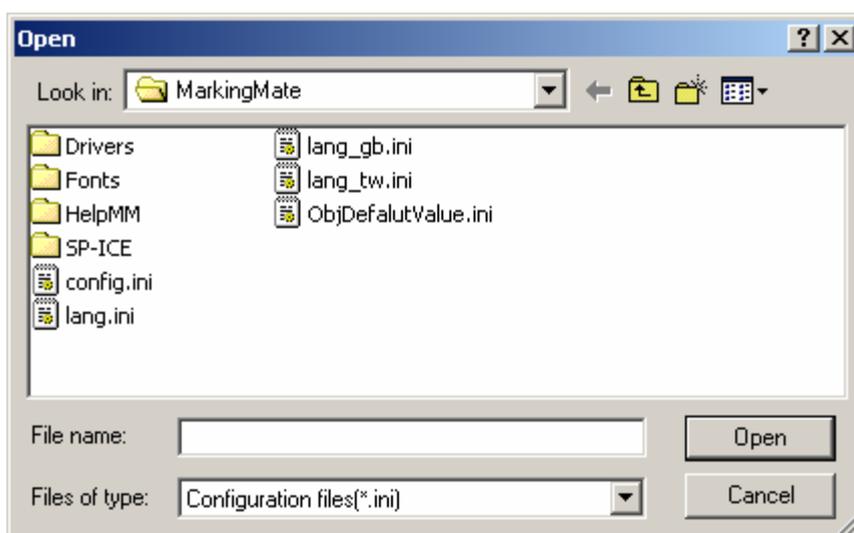
Use this function to setup image size, resolution, and etc. as below:

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4.1.11 Import Configuration

Use this function to read an existed MM.ini or config.ini file as below:



Method:

Select "File" from Menu Bar and click "Import Configuration"

Look in: Select the directory you want.

File Name: Key in or select the file name.

Files of type: Configuration files (*.ini)

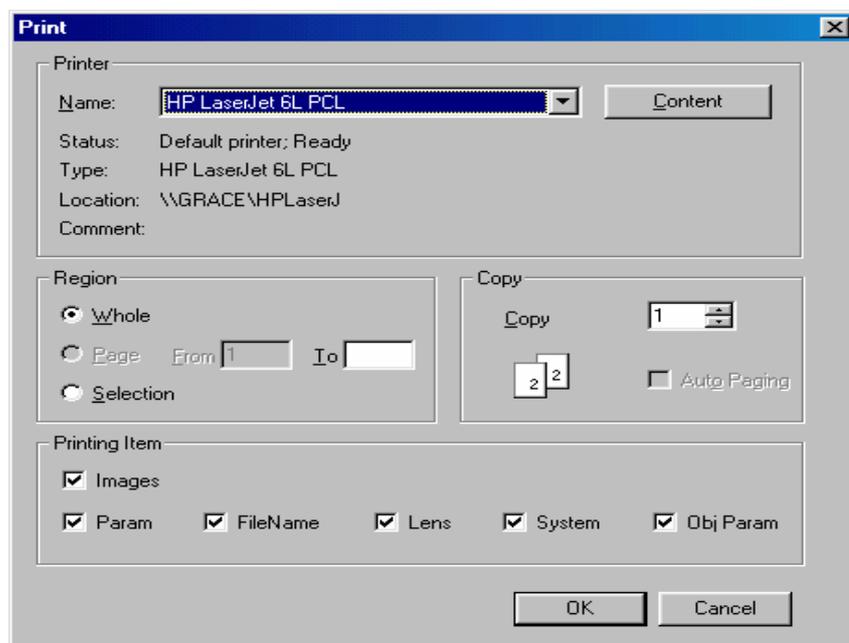
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4.1.12 Export Configuration

Use this function to save the current Config.ini as another file name. Key in the file name you want.

4.1.13 Print

Print the current document. This function will allow you to:



Name	Select the printer
Region	Select the region you want to print
Whole	Print all of the data in the work area
Selection	Print only the selected data
Copy	Select the number of copies you want to print
Auto Paging	Automatically adjust the document or selected data to fit the selected paper size.
Printing Item	Select the items you want to print (image, parameter, file name, lens, system, or object parameter)

If you need more detail printer setting, please go to the printer setting in the file menu.

Method:

Click "File" from Menu Bar and select "Print" function.

Press the [CTRL+P] key from keyboard.

4.1.14 Preview

Preview the current document before printing



Print – Go directly to the Print menu and begin printing

Zoom In – Magnify the current image to get a close up view

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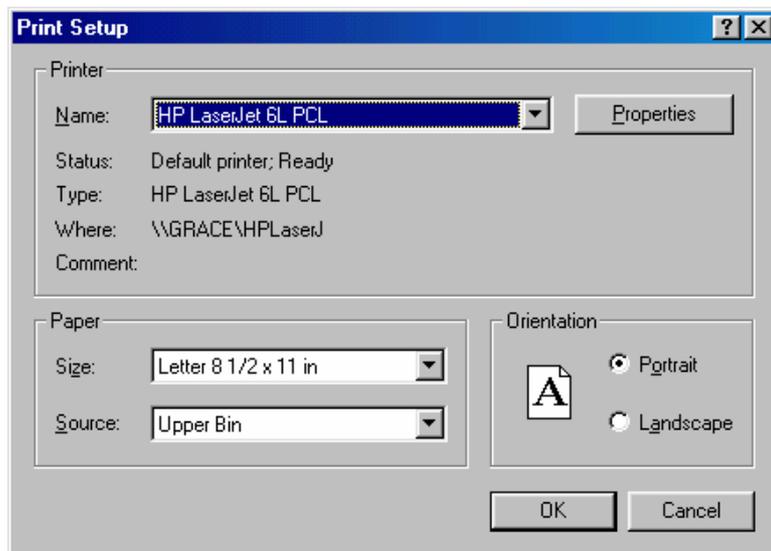
Zoom Out – Get a border view of the current image

Images, Param, File Name, Lens, System, Obj Param – When the check box is selected, its setting page will be displayed while start printing.

Close – Return to the edit menu

4.1.15 Printer setting

Select the printer and edit the default printer and paper parameters.



Printer

Select the printer

Paper

Select the paper source

Direction

Select horizontal or vertical print

Content

Detail printer setting

4.1.16 Exit

Exit the MarkingMate system.

Method:

Click "File" from Menu Bar and select "Exit" function.

Click the top-right button as below to close the system.



Click the top-left icon  as below to exit the system.



Press the [ALT+F4] key from keyboard.

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4.2 Edit Menu

“Edit” menu offers the following functions:

Redo	Replace a cancelled action
Undo	Cancel an unwanted action
Cut	Remove selected data and store it in the clipboard for future use
Copy	Duplicate selected data and store it in the clipboard for future use
Paste	Attach data from the clipboard to the current document
Delete	Delete and remove the selected data
Combine	Combine two or more objects into one. This function will allow several objects to share the same property settings
Break	Do the inversion of Combine function
Group	Combine two or more objects into one. This function will allow several objects to move together while allowing their individual property settings to remain intact
UnGroup	Do the inversion of Group function
Sort	Sort the connected parts of the selected object
Mirror Horz	Invert an image on its horizontal axis. Left will become right and vice-versa
Mirror Vert	Invert an image on its vertical axis. Up will become down and vice-versa
Baseline	Align selected text along a designated path
Split	Do the inversion of baseline function
Trans-Curve	Transfer a curved line into a series of individual angled lines. Allows these single lines to be manipulated individually
Trim	Allow selected object to be moved at set increments when the direction keys are pressed
Welding	Combine two objects so that the outline remains while eliminating the overlapping lines
Contour	This function will create an outline a selected bitmap image
Transfer to Image	Allows the resolution, color quality and black and white effects to be adjusted. And transfer the selected objects to be an image
Align	Use this function to align the selected objects to the last selected object, paper edge, or paper center
Distribute	This function will adjust how the distance between a series of objects is calculated

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4.2.1 Redo

Replace a cancelled action. If this function was grayed means disable.

* The maximum times of “Redo” is 20.

Method:

Click “Edit” from Menu Bar and select “Redo” function.

Press the [CTRL+Y] key from keyboard

4.2.2 Undo

Cancel an unwanted action. If this function was grayed means disable.

* The maximum times of “Undo” is 20.

Method:

Click “Edit” from Menu Bar and select “Undo” function.

Press the [CTRL+Z] key from keyboard

4.2.3 Cut

Remove selected data and store it in the clipboard for future use. If no data or object being selected, this function is disabled.

Method:

Click “Edit” from Menu Bar and select “Cut” function.

Click the  button from the Toolbar.

Press the [CTRL+X] key from keyboard

4.2.4 Copy

Duplicate selected data and store it in the clipboard for future use. If no data or object being selected, this function is disabled.

Method:

Click “Edit” from Menu Bar and select “Copy” function.

Click the  button from the Toolbar.

Press the [CTRL+C] key from keyboard

4.2.5 Paste

Attach data from the clipboard to the current document. If nothing stored in clipboard, this function is disabled.

Method:

Click “Edit” from Menu Bar and select “Paste” function.

Click the  button from the Toolbar.

Press the [CTRL+V] key from keyboard

4.2.6 Delete

Delete and remove the selected data, and the data will not be stored in the clipboard.

Method:

Click “Edit” from Menu Bar and select “Delete” function.

Press the [Del] key from keyboard.

4.2.7 Combine

Combine two or more objects into one. This function will allow several objects to share the same property settings. If fill in a combined object, the overlapping of odd numbers of objects will be filled in color, while the even

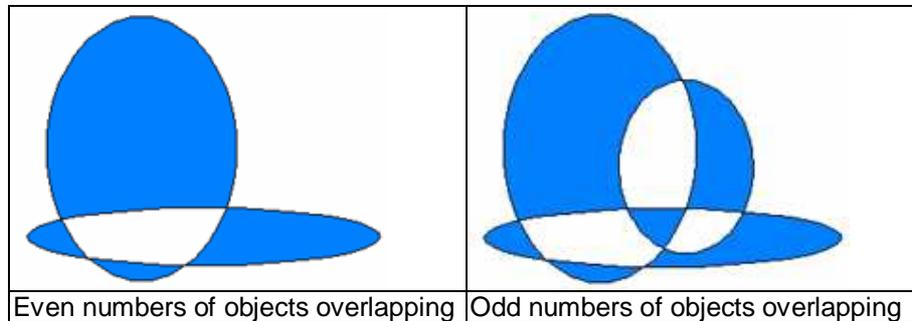
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numbers parts will not.

Method:

Click “Edit” from Menu Bar and select “Combine” function.
Press the [CTRL+K] key from keyboard.

Example:



4.2.8 Break

Do the inversion of Combine function.

Method:

Click “Edit” from Menu Bar and select “Break” function.
Press the [CTRL+B] key from keyboard.

4.2.9 Group

Combine two or more objects into one. This function will allow several objects to move together while allowing their individual property settings to remain intact. This is different with “Combine” function.

Method:

Click “Edit” from Menu Bar and select “Group” function.

Click the  button from the Toolbar.

Press the [CTRL+M] key from keyboard.

4.2.10 UnGroup

Do the inversion of Group function

Method:

Click “Edit” from Menu Bar and select “UnGroup” function.

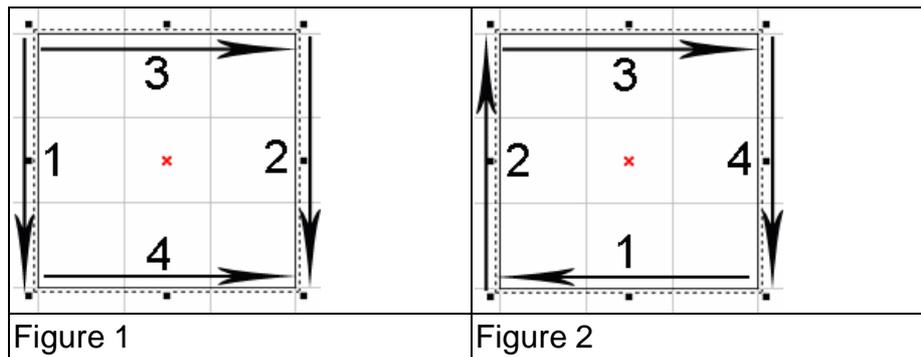
Click the  button from the Toolbar.

Press the [CTRL+Q] key from keyboard.

4.2.11 Sort

Sort the connected parts of the selected object. The confuse segments as figure 1 can be sort to be as figure 2.

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Method:

Click “Edit” from Menu Bar and select “Sort” function.
Press the [F5] key from keyboard.

4.2.12 Mirror Horizontal

Invert an image on its horizontal axis. Left will become right and vice-versa

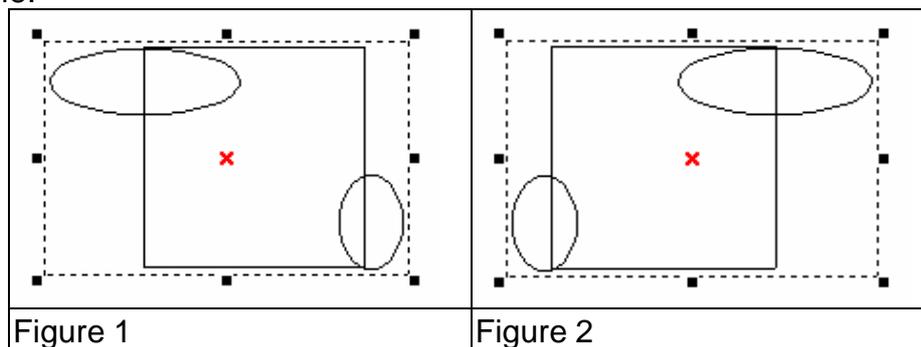
Method:

Click “Edit” from Menu Bar and select “Mirror Horizontal” function.

Click the  button from the Toolbar.

Press the [CTRL+H] key from keyboard.

Example:



4.2.13 Mirror Vertical

Invert an image on its vertical axis. Up will become down and vice-versa

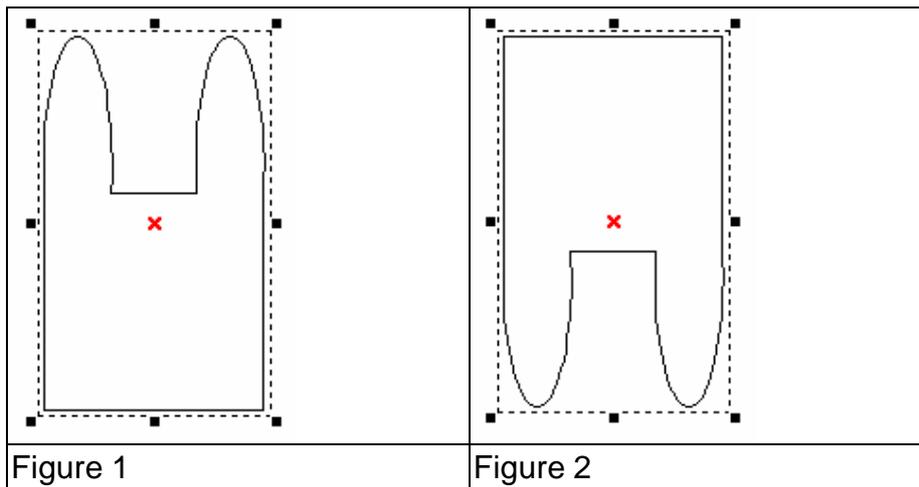
Method:

Click “Edit” from Menu Bar and select “Mirror Vertical” function.

Click the  button from the Toolbar.

Press the [CTRL+L] key from keyboard

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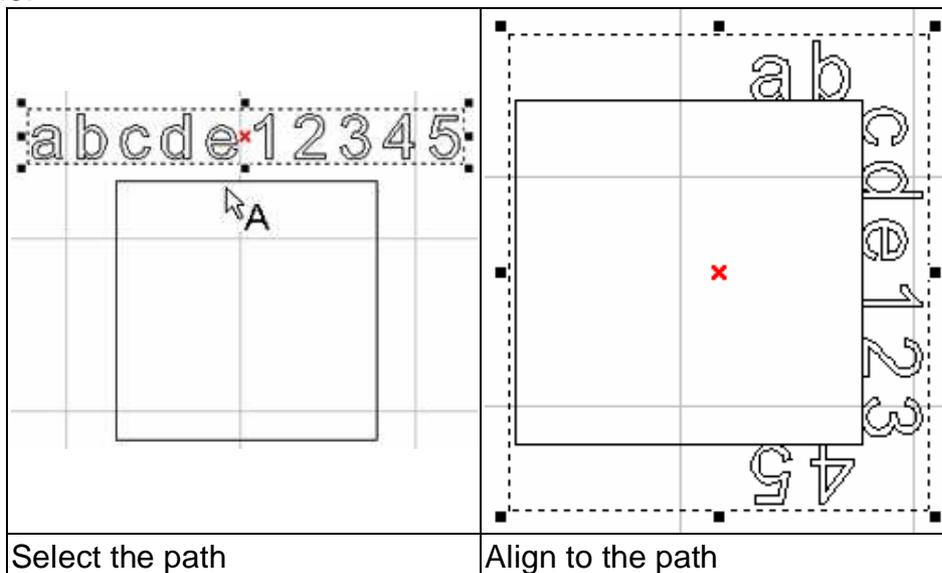
4.2.14 Baseline

Align selected text along a designated path. First select the text, then click “Edit –Baseline” from Menu Bar, the mouse pointer will become as , and then select the path such as line, arc, curve, or the others.

Method:

Click “Edit” from Menu Bar and select “Baseline” function.
Press the [CTRL+E] key from keyboard

Example:



4.2.15 Split

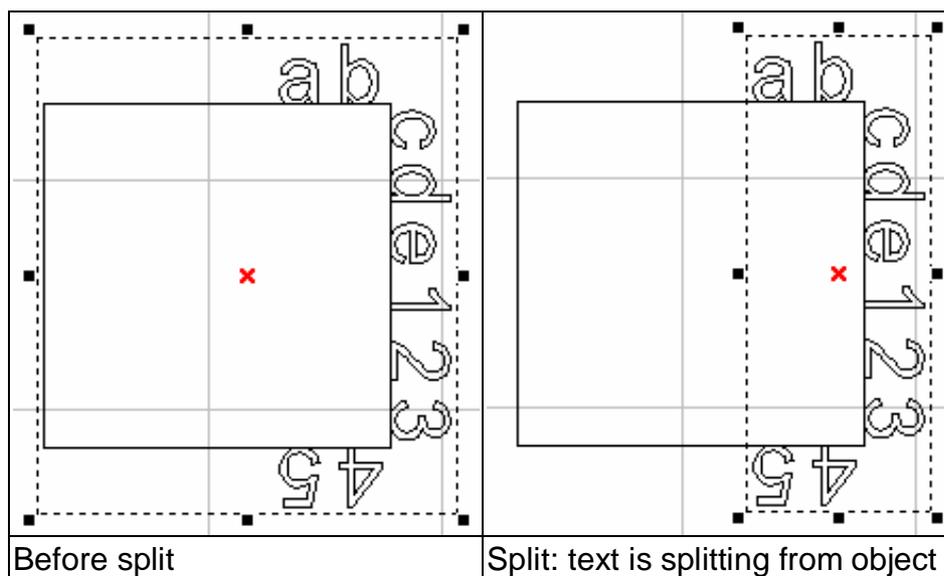
Do the inversion of baseline function

Method:

Click “Edit” from Menu Bar and select “Split” function.
Press the [CTRL+D] key from keyboard

Example:

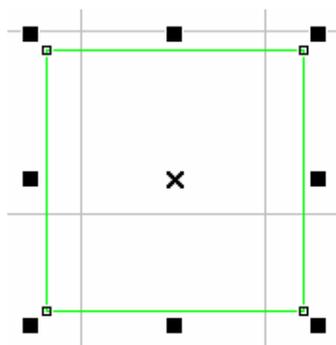
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4.2.16 Trans-Curve

Transfer a curved line into a series of individual angled lines. Allows these single lines to be manipulated individually

* Only curve objects are able to use “Add Vertex” function.



Method:

Click “Edit” from Menu Bar and select “Trans-curve” function.

Click the  button from the Toolbar.

Press the [CTRL+U] key from keyboard

4.2.17 Welding

Combine two objects so that the outline remains while eliminating the overlapping lines.

* This function is only work for the none-text and none-image objects. If you want to do this for texts, you have to break the text into several segments first.

Method:

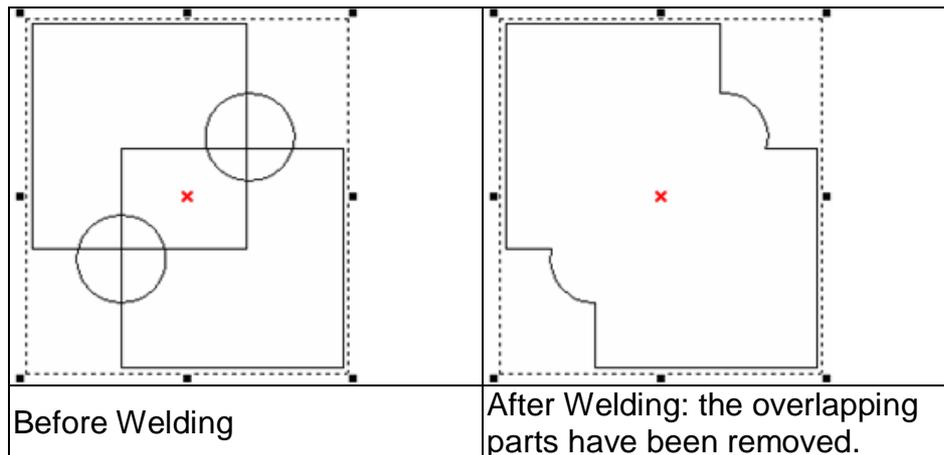
Click “Edit” from Menu Bar and select “Welding” function.

Click the  button from the Toolbar.

Press the [CTRL+G] key from keyboard

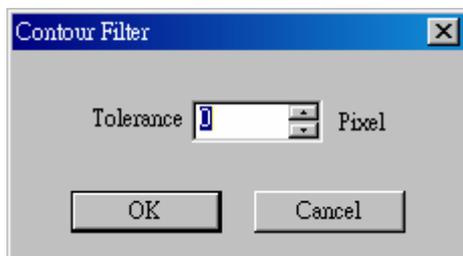
Example:

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4.2.18 Contour

This function will create an outline a selected bitmap image.



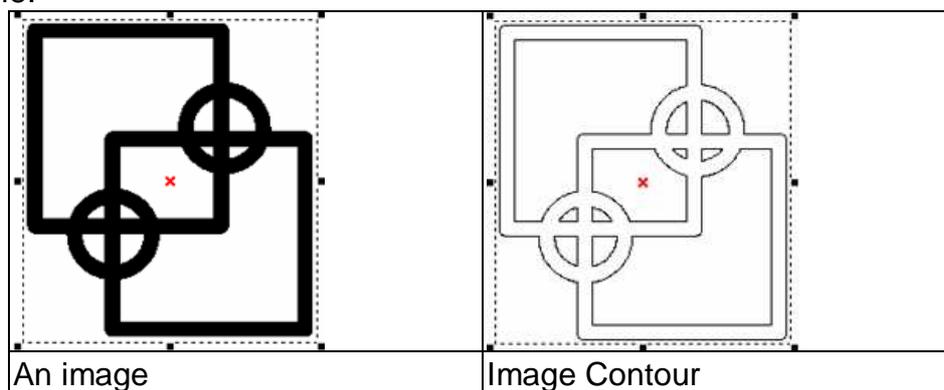
* You have to input the tolerance value (maximum is 0) to get the correct figure. After done, this image has become a normal figure. You will see a lot of segments instead of the original image, and you have to use “break” function before “contour”.

Method:

Click “Edit” from Menu Bar and select “Contour” function.

Press the [CTRL+W] key from keyboard

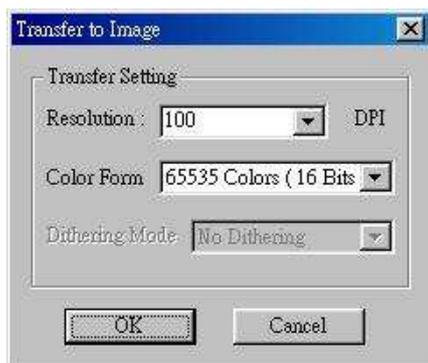
Example:



4.2.19 Transfer to Image

Allow the resolution, color quality and black and white effects to be adjusted. And transfer the selected objects to be an image.

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The above dialogue box will allow you to set up resolution, color, and dithering mode.

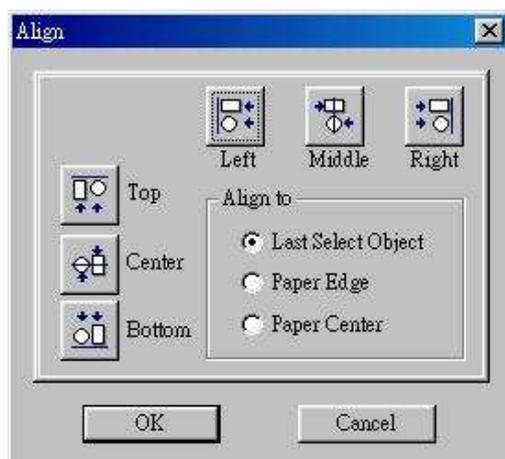
Method:

Click “Edit” from Menu Bar and select “Trans to Image” function.

Press the [CTRL+T] key from keyboard

4.2.20 Align

Use this function to align the selected objects to the last selected object, paper edge, or paper center.



Left – align to the left

Middle – align to the middle

Right – align to the right

Top – align to the top

Center – align to the center

Bottom – align to the bottom

Align to:

Last Select Object – align to the last selected object

Paper Edge – align to the paper edge

Paper Center – align to the paper center

Method:

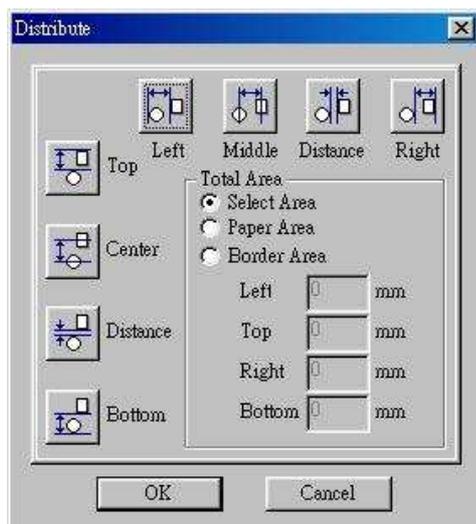
Click “Edit” from Menu Bar and select “Align” function.

Click the  button from the Toolbar.

4.2.21 Distribute

This will adjust how the distance between a series of objects is calculated.

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Left – adjust the distance between the left-edge of each object

Middle – adjust the distance between the middle of each object

Distance – adjust the distance between the space of each object

Right – adjust the distance between the right-edge of each object

Top – adjust the distance between the top of each object

Center – adjust the distance between the center of each object

Distance – adjust the distance between the space of each object

Bottom – adjust the distance between the bottom of each object

Total Area - The distribute area is according to a selected area, paper area, or an adjustable border area.

Method:

Click "Edit" from Menu Bar and select "Distribute" function.

Click the  button from the Toolbar.

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4.3 Draw Menu

“Draw” menu offers the following functions:

Selection	Selects or deselects objects in the Work Area
Vertex	Creates vertexes
Line	Inserts straight lines from point-to-point-to-point
Arc	Creates arcs, circles, and spirals
Circle	Creates circles and ovals
Rectangle	Creates squares and rectangles
Curve	Creates a curve using three points of reference
Curve Brush	Draws freehand lines by the mouse
Text	Inserts text in the Work Area
Arc Text	Inserts text based on an arc
1D Barcode	Creates 1D barcode
2D Barcode	Creates 2D barcode
Control	Inserts a control object into the output sequence

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4.3.1 Selection

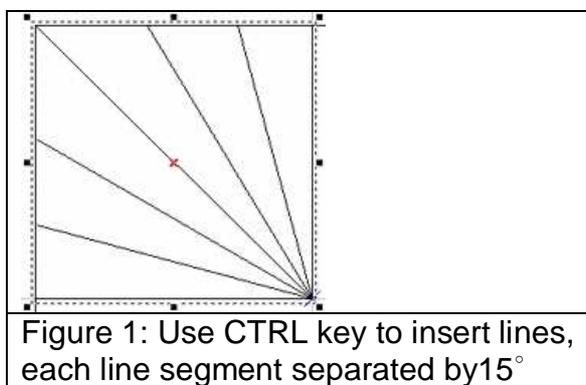
Selects or deselects objects in the Work Area

Tool Box : 

4.3.2 Line

Insert straight lines from point-to-point-to-point. Click on the line tool and click on a designated starting point in the Work Area, click on a second point and straight line will appear between the points. When you select three points two lines will appear. Press the right mouse button to stop the line tool function. If you press **C** key, the continuous line segments will become a close path and stop the line tool function.

* **Tips:** Use CTRL key to insert straight lines, the next line will move 15° to the previous line as figure 1 below



Method:

Click "Draw" from Menu Bar and select "Line" function.

Click the  button from the Toolbar.

Property Table:

Property Table - Curve

The continuous line segments can be set to a closed path.

* Transfer the object to curve before using this Property Table.



4.3.3 Arc

Create arcs, circles and spirals. Click on the arc tool and select a starting point on the Work Area. Click on a second point. By moving the mouse you

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still see all the possible arcs that can pass through your two designated points. Press the right mouse button to stop drawing. Users can press **C** key to make the continuous arcs become a closed loop and end this function.

Method:

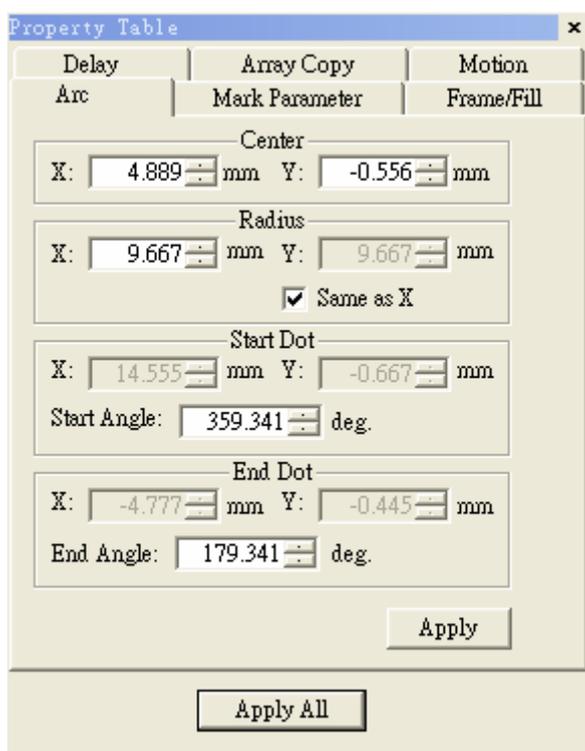
Click "Draw" from Menu Bar and select "Arc" function.

Click the  button from the Toolbar.

Property Table

Property Table – Arc

Adjust the center of X- and Y-axis, radius, and position of start dot and end dot.

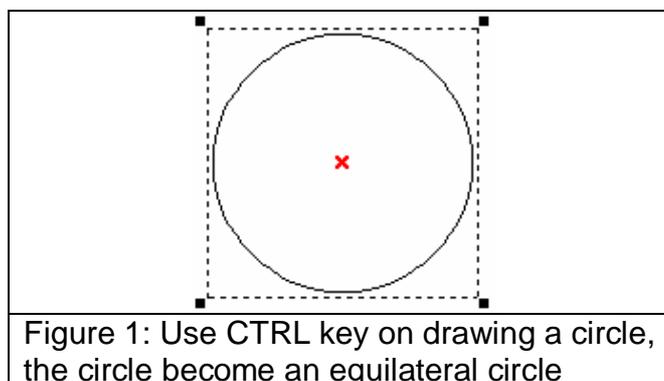


Delay	Array Copy	Motion
Arc	Mark Parameter	Frame/Fill
Center		
X:	4.889 mm	Y: -0.556 mm
Radius		
X:	9.667 mm	Y: 9.667 mm
<input checked="" type="checkbox"/> Same as X		
Start Dot		
X:	14.555 mm	Y: -0.667 mm
Start Angle:	359.341 deg.	
End Dot		
X:	-4.777 mm	Y: -0.445 mm
End Angle:	179.341 deg.	
Apply		
Apply All		

4.3.4 Circle

Create circles and ovals. Click on the circle tool and select a starting point on the Work Area. Press the left mouse button and moving the mouse to the other point, a circle is finished. Press the right mouse button to stop this function.

- * **Tips:** Use CTRL key on drawing a circle, the circle will become an equilateral circle as figure 1 below.



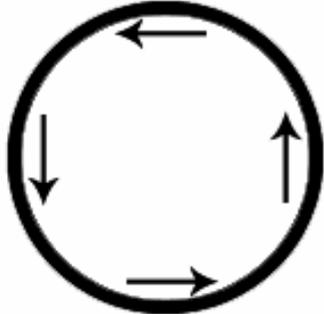
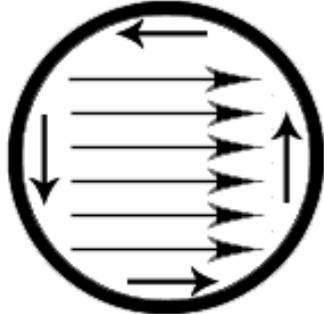
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Method:

Click "Draw" from Menu Bar and select "Circle" function.

Click the  button from the Toolbar.

Marking Way:

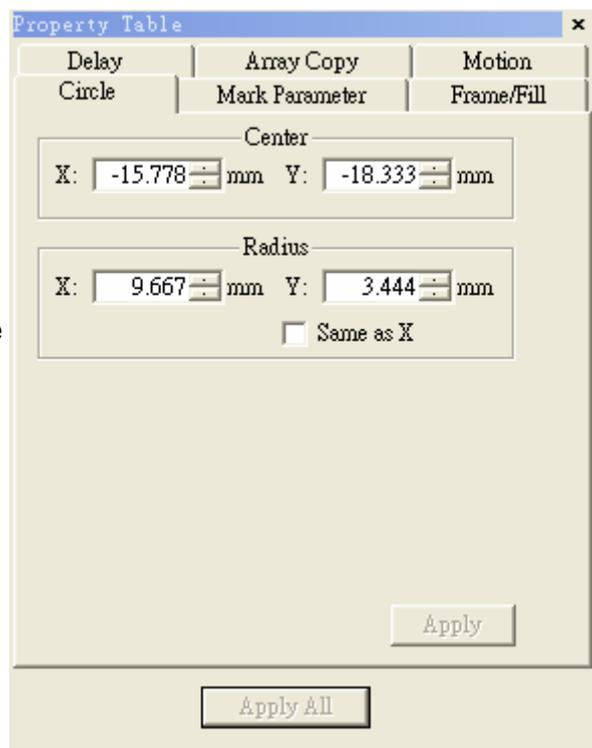
No Fill	Fill
Marking starting from 0 degree in counterclockwise direction.	Marking starting from left to right and then the external frame.
	

Property Table:

Property Table - Circle

Adjust the center and radius of the circle.

Mark on "Same as X Radius", the circle will become an equilateral circle.



Delay	Array Copy	Motion
Circle	Mark Parameter	Frame/Fill
Center		
X: -15.778 mm	Y: -18.333 mm	
Radius		
X: 9.667 mm	Y: 3.444 mm	
<input type="checkbox"/> Same as X		
Apply		
Apply All		

4.3.5 Rectangle

Create squares and rectangles. Click on the circle tool and select a starting point on the Work Area. Press the left mouse button and moving the mouse to the other point, a rectangle is finished. Press the right mouse button to stop this function.

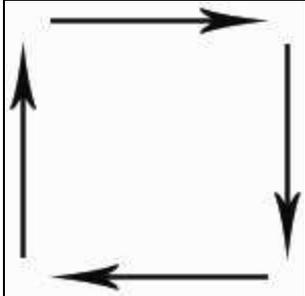
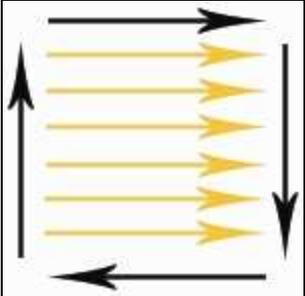
Method:

Click "Draw" from Menu Bar and select "Rectangle" function.

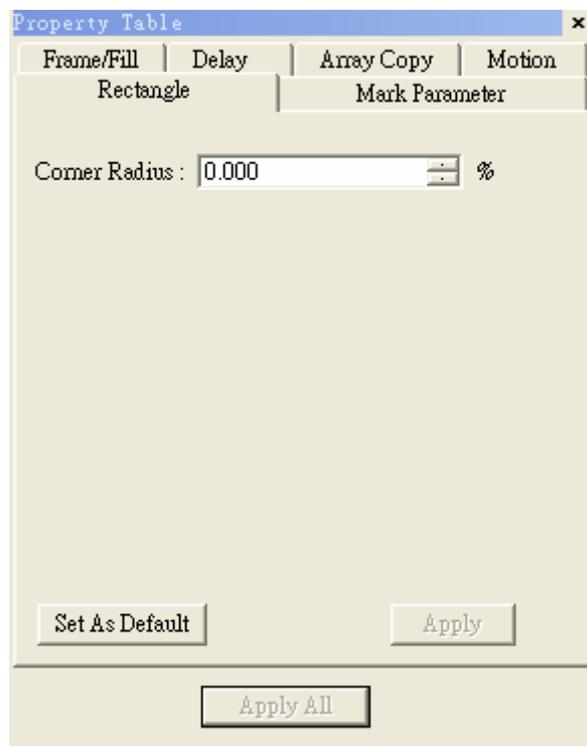
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Click the  button from the Toolbar.

Marking Way:

No Fill	Fill
Marking starting from the upper left corner	Marking starting from left to right and then the external frame.
	

Property Table:



Property Table - Rectangle

Adjust the radius of the rectangle.

* The shape may be different depend on the default value**.

****Default** – means the object without any modification.

4.3.6 Curve

Create a curve using three points of reference. Click on the curve tool and select a starting point on the Work Area. Click on a second point to designate the center point of the curve. Click on a third point to complete the curve. Each future click will continue the curve to a new point. Press the right mouse button to stop drawing. If users press **C key**, the curve will become a closed path and stop the function.

Method:

Click “Draw” from Menu Bar and select “Curve” function.

Click the  button from the Toolbar.

Property Table

Curve: The continuous curve can be set to a closed path.

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4.3.7 Curve Brush

Create a curve by moving mouse. Click on the curve brush tool and select a start point on the Work Area. Press the left mouse button, moving the mouse until let go the mouse will stop the curve. Press the right mouse button to end this function.

Method:

Click “Draw” from Menu Bar and select “Curve Brush” function.

Click the  button from the Toolbar.

Property Table:

Curve Brush: the continuous curve can be set to a closed path.

4.3.8 Text

Insert text in the Work Area. Enter the text you want then click OK. Click on a selected point in the Work Area to insert the text. After the text is inserted, you can edit the text properties using the editing functions of the Property Table.

Method:

Click “Draw” from Menu Bar and select “Text” function.

Click the  button from the Toolbar.

Property Table:

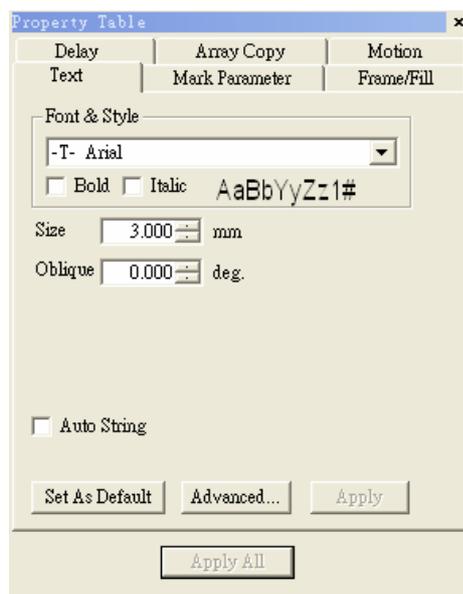
Property Table - Text

Select font and style.

Set font size and oblique angle.

Mark on “Auto String”, the text will transfer to auto text mode. (Please refer to “Auto Text”)

Press “Advanced” button to do more detail setting (as below).



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Text Advanced setting

Text pitch

Spacing between characters

Line pitch

Spacing between lines

Arrange

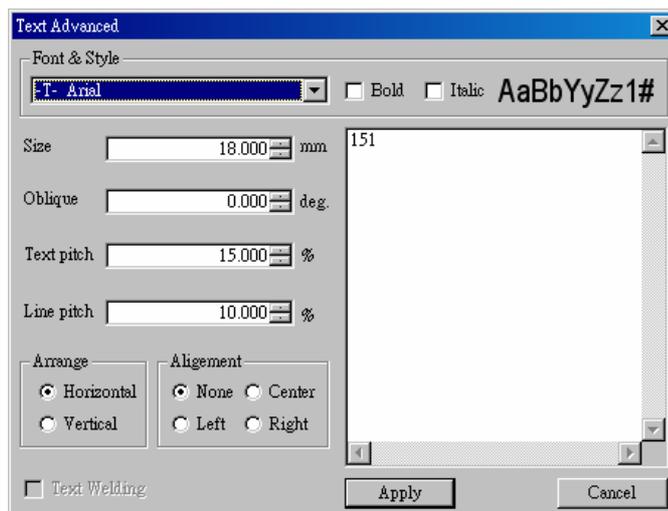
Horizontal or Vertical

Alignment

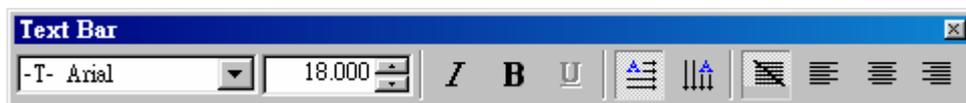
Alignment direction

Text Welding: Add "Welding" function to the overlapping part of the text

Text Content: Add the text content on the blank area



Enable or disable the Text Bar



Font		Select font
Size		Adjust font size
Italic		<i>Adjust text in italic</i>
Boldface		Adjust text in boldface
Underline		<u>Add underline to text</u>
Horizontal Text		Horizontal text
Vertical Text		Vertical text
None alignment		None alignment
Left alignment		Left alignment
Center alignment		Center alignment
Right alignment		Right alignment

4.3.9 Arc Text

Insert text based on an arc in the Work Area. Enter the text you want then click OK. Click on twp selected point in the Work Area to insert the text. After the text is inserted, you can edit the arc text properties using the editing functions of the Property Table.

Method:

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Click “Draw” from Menu Bar and select “Arc Text” function.

Click the  button from the Toolbar.

Property Table:

Property Table – Arc Text

Center : set center position

Radius : set radius scale

Show Arc : show the path of arc text

Same as X Radius : make it as a equilateral circle

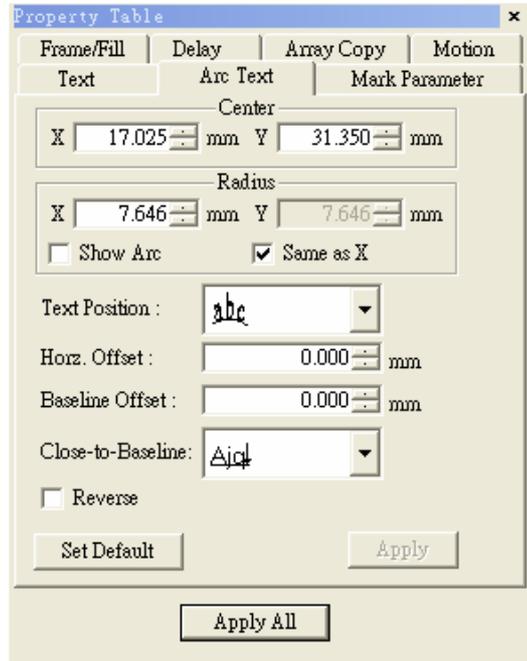
Text Position : text position on the path

Horz. Offset : offset value of text

Baseline Offset : spacing between text and baseline

Close-to-Baseline : text facing baseline

Reverse : reverse text



Property Table

Frame/Fill | Delay | Array Copy | Motion

Text | Arc Text | Mark Parameter

Center

X 17.025 mm Y 31.350 mm

Radius

X 7.646 mm Y 7.646 mm

Show Arc Same as X

Text Position : abc

Horz. Offset : 0.000 mm

Baseline Offset : 0.000 mm

Close-to-Baseline: A|c|

Reverse

Set Default Apply

Apply All

4.3.10 1D Barcode

Select the 1D Barcode Tool from Tool Box or the Draw Menu. A dialog box will open for user to enter the data. When all of the barcode information is entered, select OK. Click on an insertion point to place the barcode in the Work Area. All barcode properties can be edited later using the Property Table.

Method:

Click “Draw” from Menu Bar and select “1D Barcode” function.

Click the  button from the Toolbar.

Property Table

Code Type: Code 39 、 Code 128 、 Code 93 、 Code Bar 、 ITF 、 MSI Code 、 Us PosNet 、 UPC-A 、 UPC-E 、 EAN 8 、 EAN 13 、 UCC 128 、 EAN 128 、 FIM 。

Show Text: Checked the box, the text content will be displayed under barcode.

Invert: When the background is black, you need to use this function.

EX: The barcode reader is not easy to read the barcode marked on black work piece, use invert function will make it more readable.

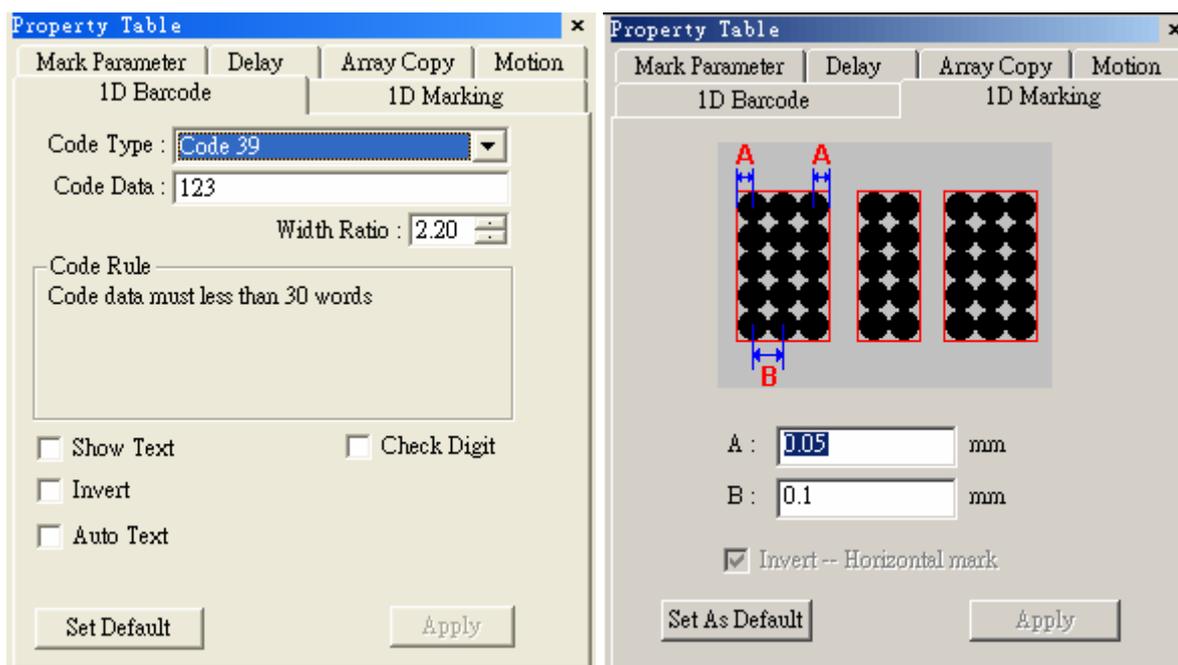
Auto Text: The barcode data will be changed as an auto text.

Check Digit: A check digit is calculated automatically and added.

A: The distance between laser spot center and the edge of barcode.

B: The space between the next two laser spots

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4.3.11 2D Barcode

Select the 2D Barcode Tool from the Tool Box or the Draw Menu. A dialog box will appear for user to enter the data. When all of the barcode information is entered, select OK. Click on an insertion point to place the barcode in the Work Area. All barcode properties can be edited later using the Property Table.

Method:

Click "Draw" from Menu Bar and select "2D Barcode" function.

Click the  button from the Toolbar.

Property Table:

2D Barcode Type

ECC 000~140, ECC 200, PDF417, QR Code, and Maxi Code

Style

The barcode is divided into many cells, each cell has three style options as below:

Overlapped Spot	Non-overlapped Spot	Rectangle
The spot can be overlapped	The spot can not be overlapped	From outside to inside marked as rectangles
		

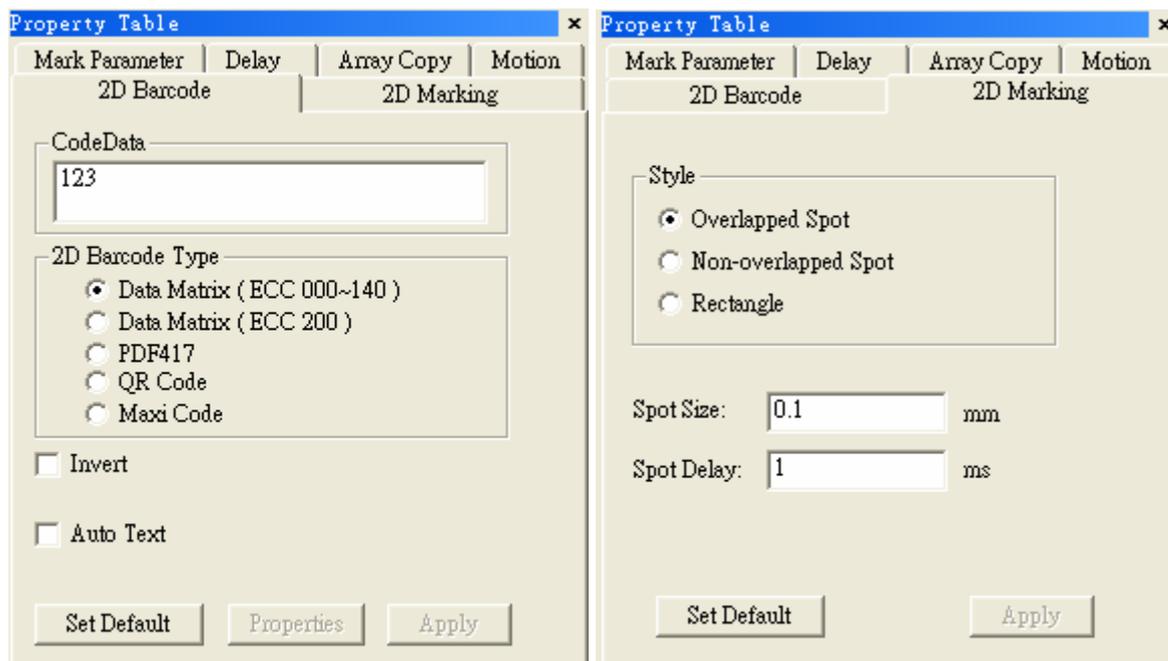
Spot Size

Size of laser spot

Spot Delay

The longer the spot delay, the mark effect will be stronger

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4.3.12 Control

Select the Objview bar from the View Menu will activate the Object Browser. It will appear on the left side of the screen. The object order is shown in the Object Browser will also be the output sequence during marking. The numbers in parentheses indicates the order in which the different objects were created.

Select Control from the Draw Menu can insert a control object into the output sequence. Control objects include delays and pauses, and digital input/digital output signals to auxiliary equipment.

Digital_Out & Digital_In

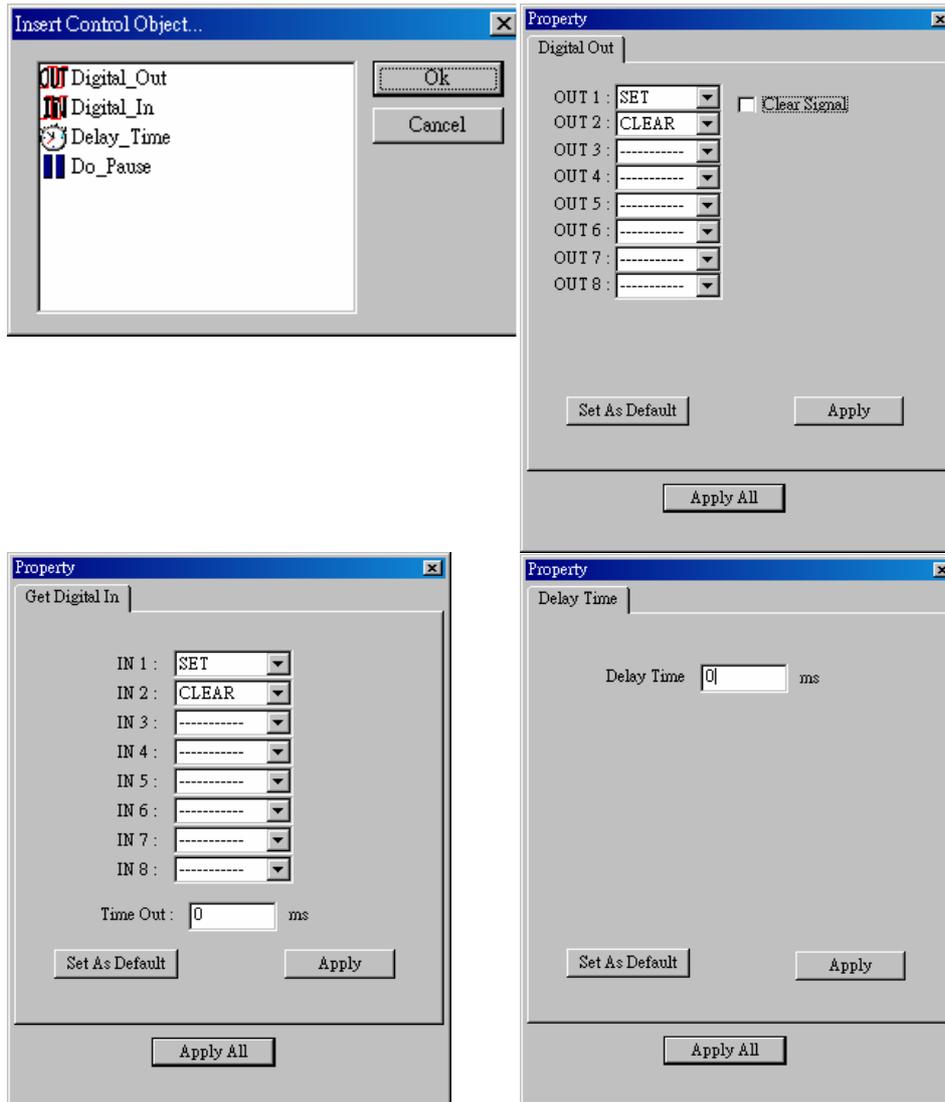
Digital_Out tells your computer to wait for a signal response. To adjust the information contained in each incoming and outgoing pulse selects "Digital Out" or "Digital In" in the Object Browser. Using the right mouse button, click on Property Table. The Property Table should reveal the eight-input/output positions that can be modified. Select SET to input a value of one or CLEAR to input a value of zero. To send or receive a pulse that has a signature code of 10101100 you should input SET CLEAR SET CLEAR SET SET CLEAR CLEAR.

Do_Pause & Delay_Time

Do_Pause is to insert a pause into the marking sequence. When the marking sequence reaches this step, the system will stop and wait for next marking progress.

Delay_Time allows you to insert a delay into the marking sequence. You can adjust the duration of the delay by using the right mouse button to click on Delay Time in the Object Browser. Use this to display the Property Table. The Property Table will allow you to increase the delay time.

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4.4 Image Menu

“Image” menu offers the following functions:

Effects	Modify the image effects Posterize Mosaic Average Median Sharpen Add Noise Emboss Edge Enhance Oilify
Spatial Filters	Use different filters Gradient Laplacian Sobel Prewitt Shift & Difference Line Segment

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4.4.1 Effects

4.4.1.1 Posterize

Click "Image – Effects - Posterize"

This effect will expand or limit the amount of colors on the spectrum that is made available to the selected image. If you choose 2 levels per color plane there will be two shades of red available to the image. If you choose 64 levels per color plane then the image will have more detailed color.

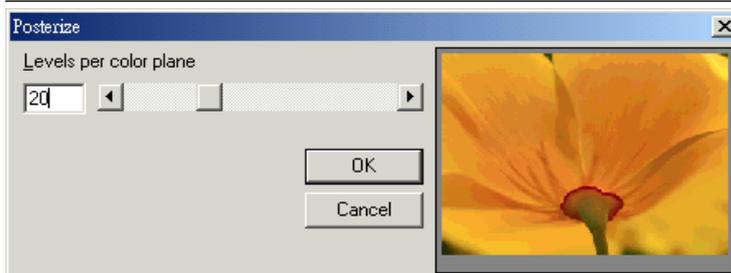
The original image:



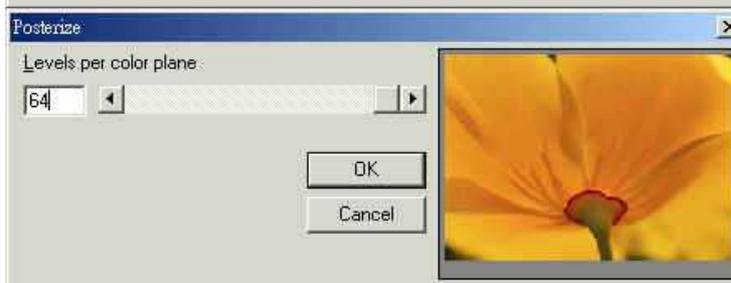
When choose 2 levels per color plane:



When choose 20 levels per color plane:



When choose 64 levels per color plane:



4.4.1.2 Mosaic

Click "Image – Effects - Mosaic"

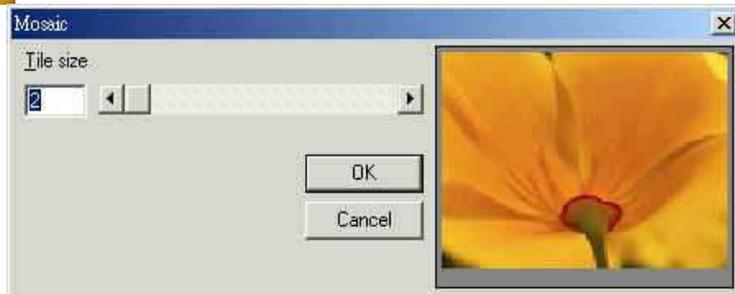
This effect will increase the size of the pixels in the graphic image. The tile size of 4 will magnify each pixel by four creating a blurred effect.

The original image:

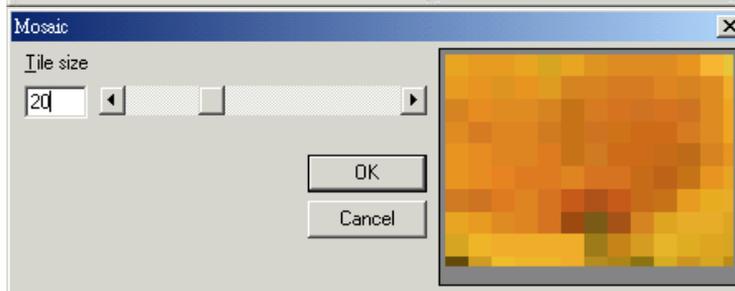
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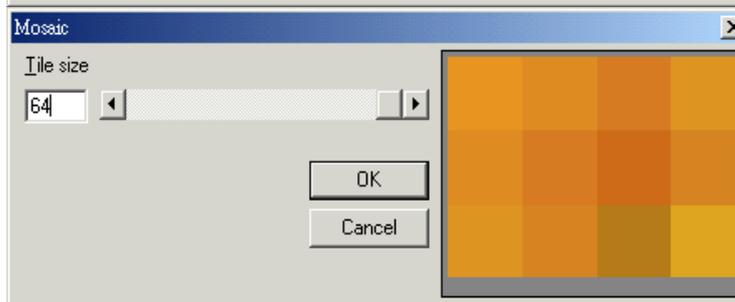
When the tile size is 2:



When the tile size is 20:



When the tile size is 64:



4.4.1.3 Average

Click "Image – Effects - Average"

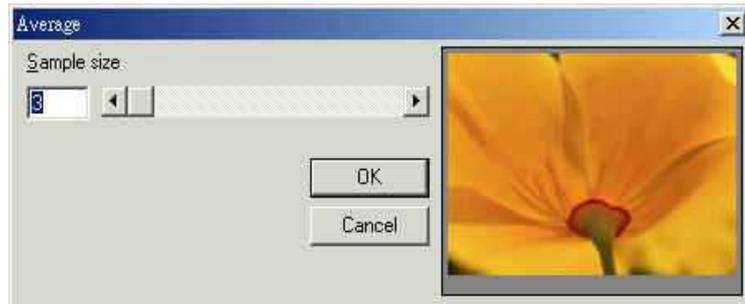
Each pixel is affected by the average property within a 3x3 to 11x11 area.
Create a blurred effect.

The original image:



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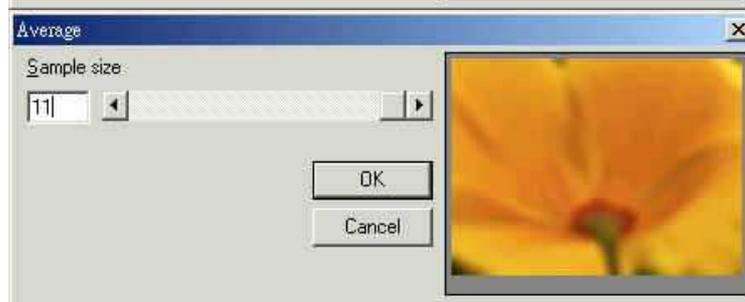
When the sample size is 3:



When the sample size is 7:



When the sample size is 11:



4.4.1.4 Median

Click "Image – Effects - Median"

Create a "median effect" in a 3x3 to 11x11 area. Image becomes "claylike."
The original image:



When the sample size is 3:

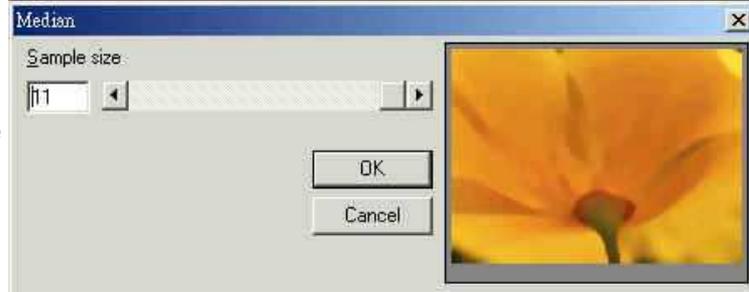


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When the sample size is 7:



When the sample size is 11:



4.4.1.5 Sharpen

Click "Image – Effects - Sharpen"

Resolution increased, contrast is emphasized. Increase to +100% for maximum contrast or decrease to -100% for a blurring effect.

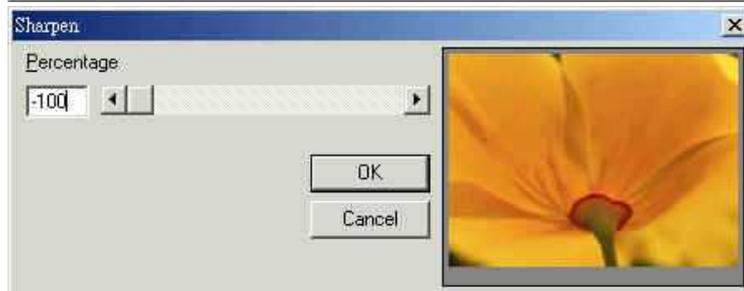
The original image:



When sharpen percentage is 0:

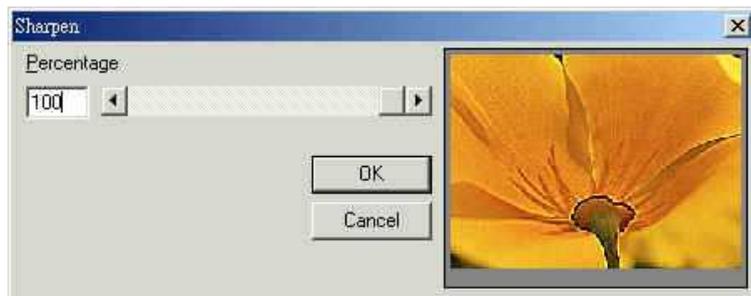


When sharpen percentage is -100:



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When sharpen percentage is 100:



4.4.1.6 Add Noise

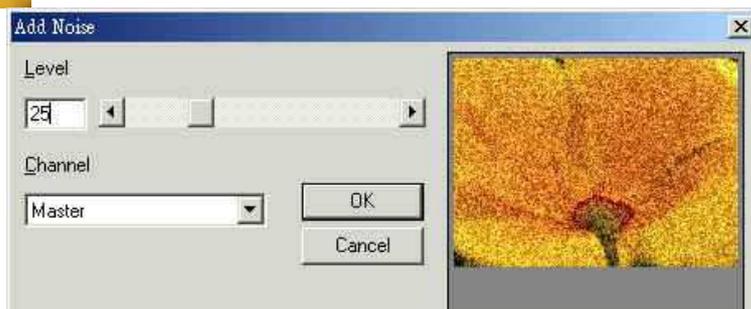
Click "Image – Effects – Add Noise"

Add Red, Green or Blue "snow" to the image.

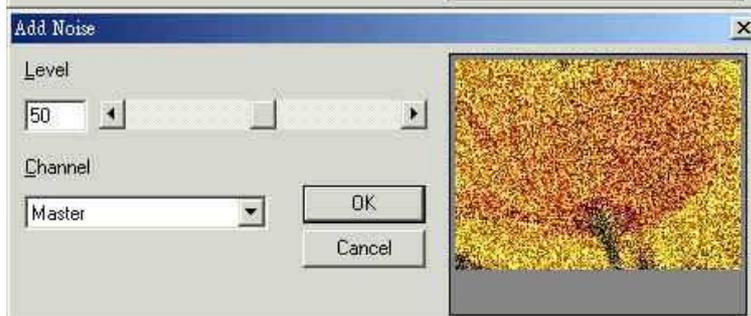
The original image:



When 25 level noise is added:



When 50 level noise is added:



4.4.1.7 Emboss

Click "Image – Effects - Emboss"

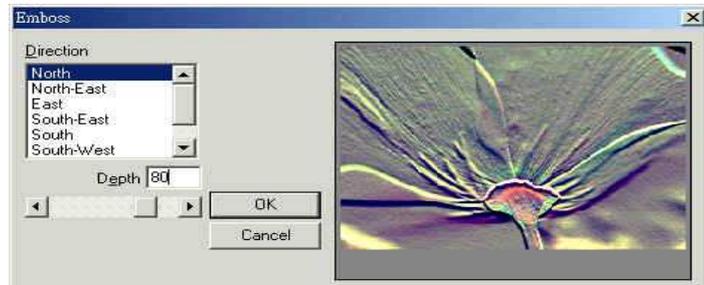
Create an exaggerated 3-D effect. Choose from different directions to give character to the depth of the image.

The original image:

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When the emboss direction is North, and the depth is 80:



4.4.1.8 Edge Enhance

Click "Image – Effects – Edge Enhance"

Automatically creates an enhanced outline of the image.

The original image:



After use this function:



4.4.1.9 Oilify

Click "Image – Effects - Oilify"

Transform the image into an "oil painting." Create an exaggerated blurred effect.

The original image:



When the sample size is 3:

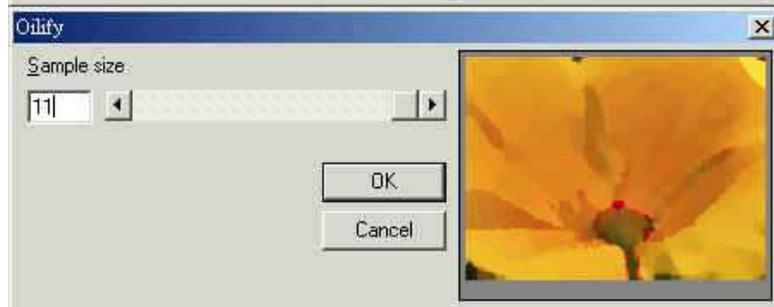


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When the sample size is 7:



When the sample size is 11:



4.4.2 Special Filters

4.4.2.1 Gradient

Click "Image – Special Filters - Gradient"

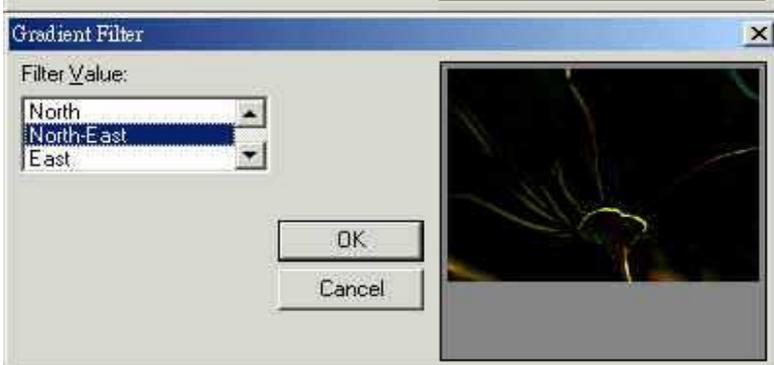
The original image:



When the Filter Value is North:



When the Filter Value is North-East:



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4.4.2.2 Laplacian

Click "Image – Special Filters - Laplacian"

The original image:



When the Filter Value is Filter 1:



When the Filter Value is Filter 2:



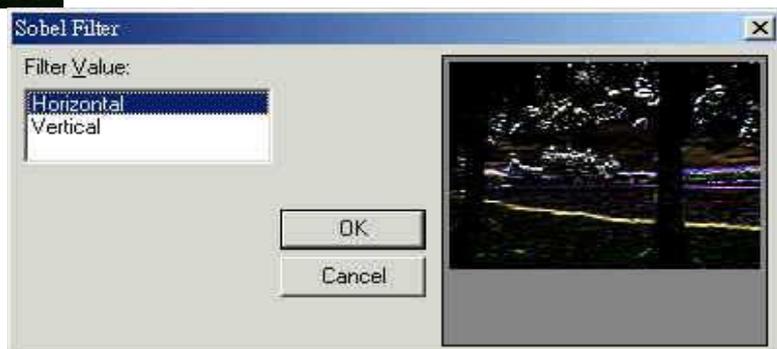
4.4.2.3 Sobel

Click "Image – Special Filters - Sobel"

The original image:

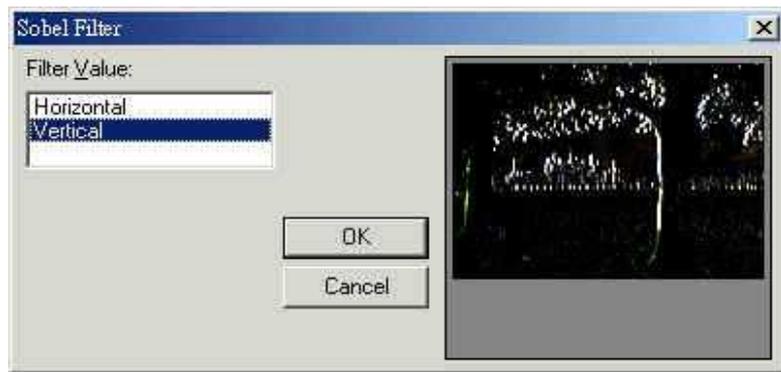


When the Filter Value is Horizontal:



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When the Filter Value is Vertical:



4.4.2.4 Prewitt

Click "Image – Special Filters - Prewitt"

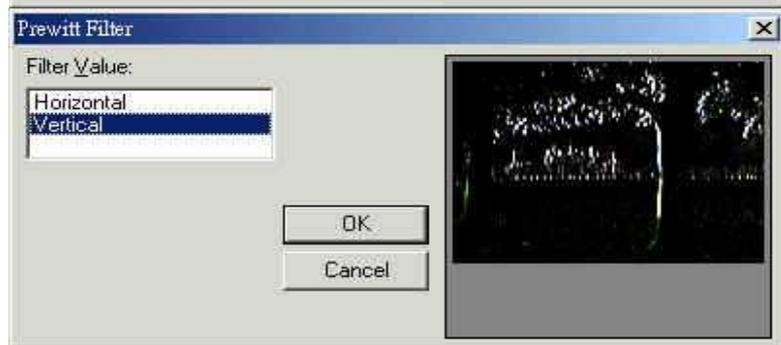
The original image:



When the Filter Value is Horizontal:



When the Filter Value is Vertical:



4.4.2.5 Shift Difference

Click "Image – Special Filters – Shift Difference"

The original image:

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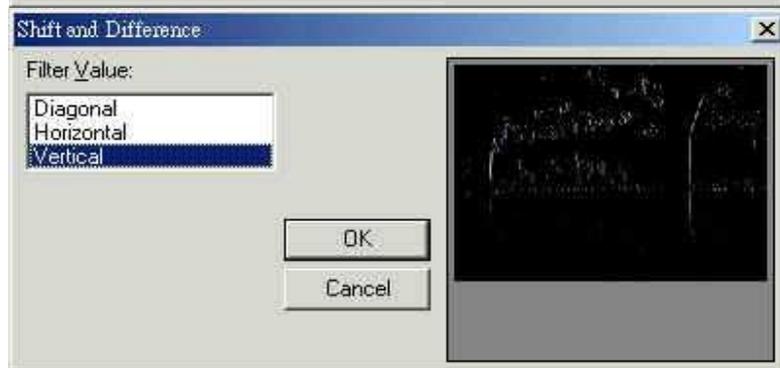
When the Filter Value is Diagonal:



When the Filter Value is Horizontal:



When the Filter Value is Vertical:



4.4.2.6 Line Segment

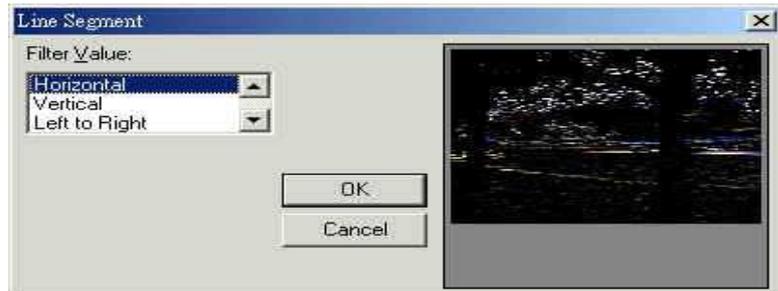
Click "Image – Special Filters – Line Segment"

The original image:



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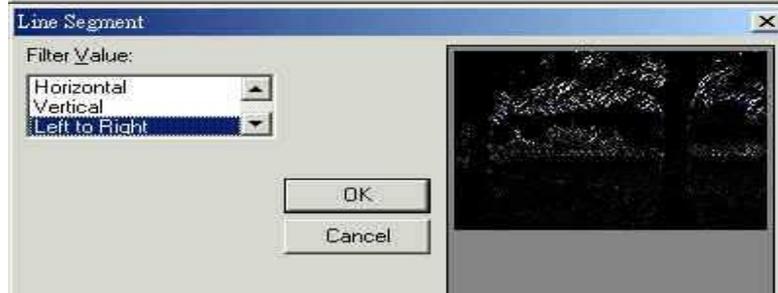
When the Filter Value is Horizontal:



When the Filter Value is Vertical:



When the Filter Value is Left to Right:



When the Filter Value is Right to Left:



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4.5 Color Menu

“Color” menu offers the following functions:

- Gray Scale**
- Color Resolution**
- Brightness**
- Contrast**
- Hue**
- Saturation**
- Gamma Correct**
- Intensity**
- Histogram**
- Invert**
- Solarize**

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4.5.1 Gray Scale

Click "Color – Gray Scale"

Automatically transforms a colored image into an 8-bit grayscale image.

The original image:



After use the function:



4.5.2 Color Resolution

Click "Color – Color Resolution"

Edit the bits per pixel ratio and the type of palette used on the image. If 1 bit per pixel is chosen, you will need to select a type of dithering method.

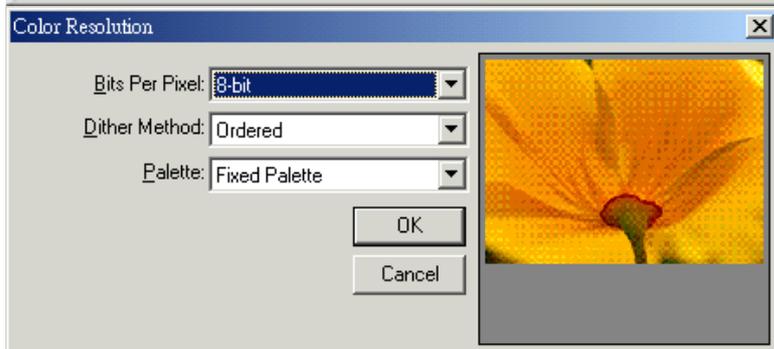
The original image:



When the Bits Per Pixel is set to 32-bit, and the Color Order is Blue-Green-Red (BGR):



When the Bits Per Pixel is set to 8-bit, and the Dither Method is Ordered, and the Palette is Fixed Palette:



4.5.3 Brightness

Click "Color - Brightness"

Increase the brightness from +100% (bright white) to -100% (pitch black).

The original image:

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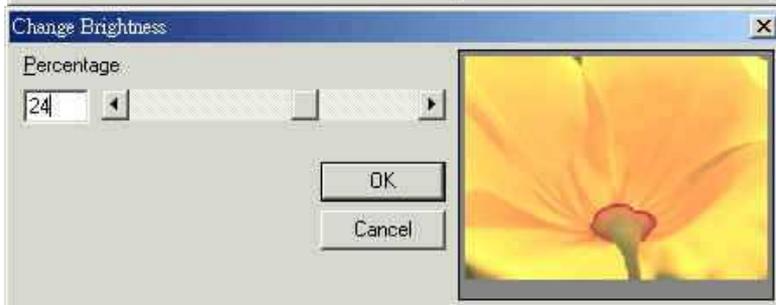
When the Brightness percentage is -36:



When the Brightness percentage is 0:



When the Brightness percentage is 24:



4.5.4 Contrast

Click "Color - Contrast"

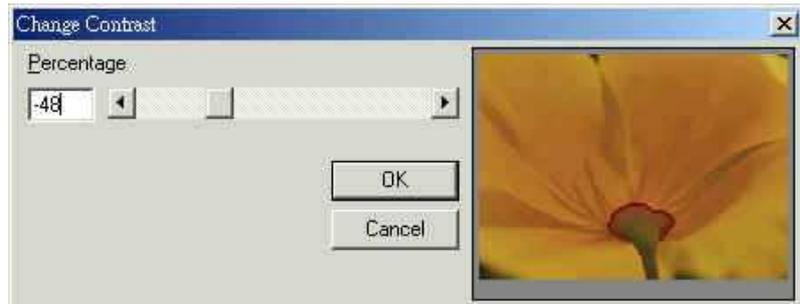
Adjust the contrast levels from +100% (bright) to -100% (dark).

The original image:



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When Contrast Percentage is -48:



When Contrast Percentage is 0:



When Contrast Percentage is 30:



4.5.5 Hue

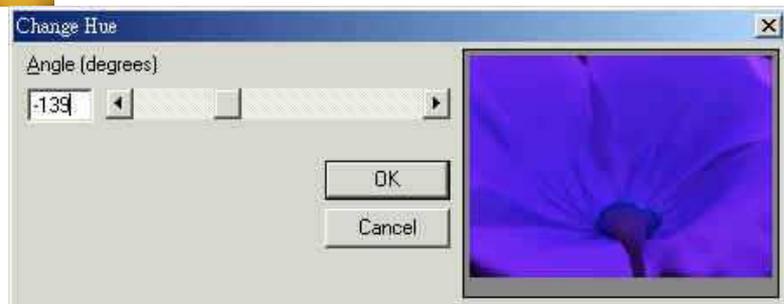
Click "Color - Hue"

Change the hue of the image to equal 360° of the color spectrum.

The original image:



When the Hue Angle is -139:

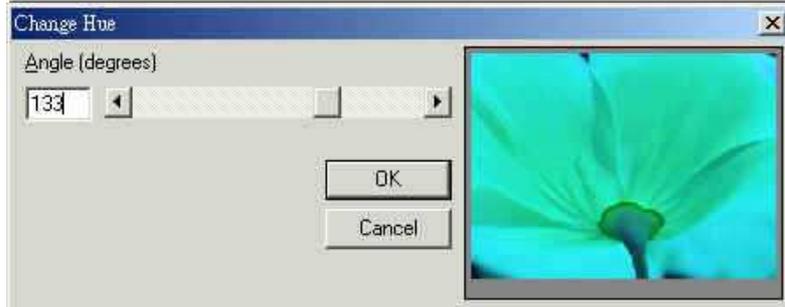


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When the Hue Angle is 0:



When the Hue Angle is 133:



4.5.6 Saturation

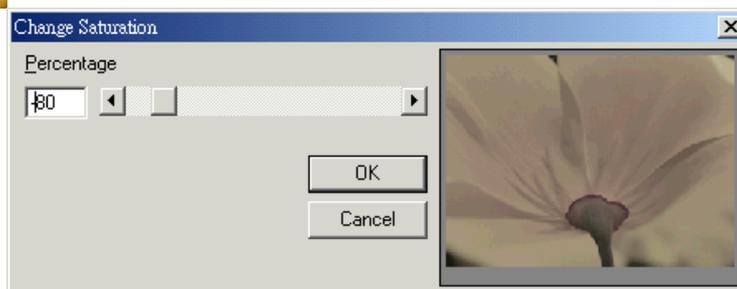
Click "Color - Saturation"

Add or remove color.

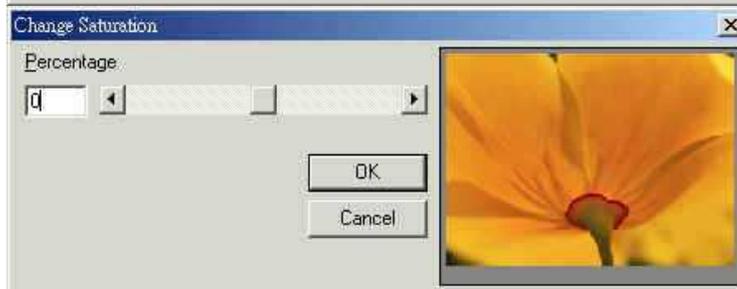
The original image:



When the Saturation Percentage is -80:

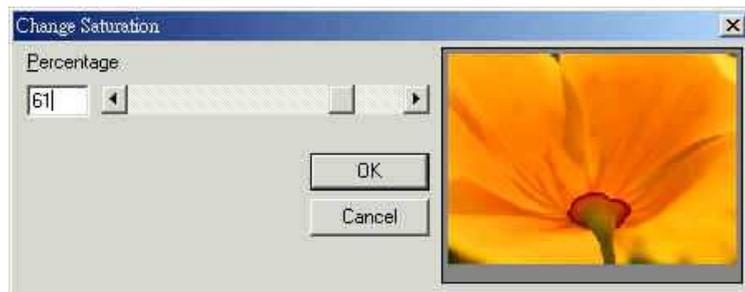


When the Saturation Percentage is 0:



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When the Saturation Percentage is 61:

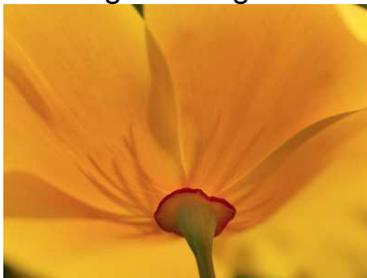


4.5.7 Gamma Correct

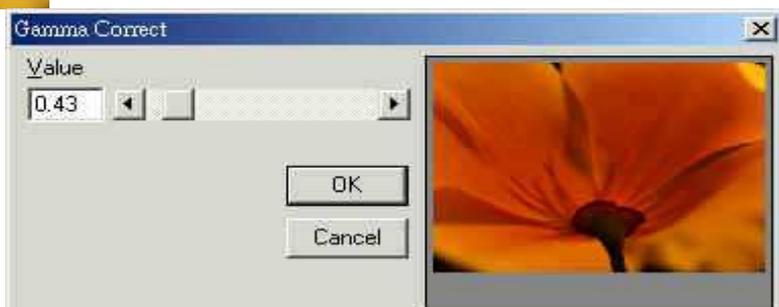
Click "Color – Gamma Correct"

Correction for image management. Adjust the levels of bright and dark inside the image.

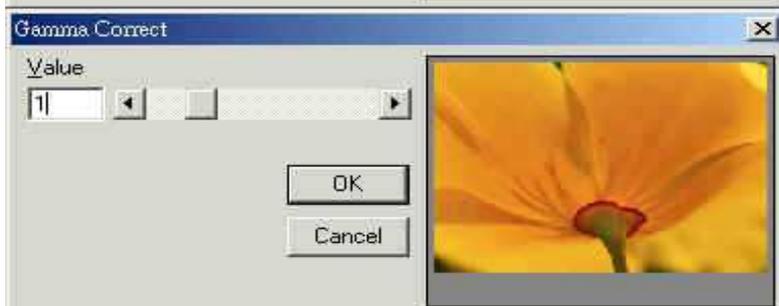
The original image:



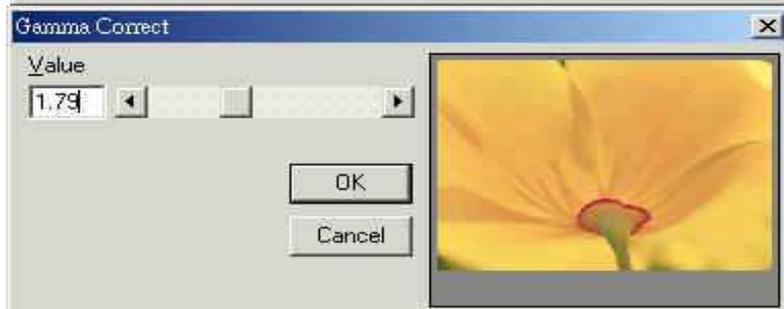
When the Gamma Correct Value is 0.43:



When the Gamma Correct Value is 1:



When the Gamma Correct Value is 1.79:



4.5.8 Intensity

Click "Color - Intensity"

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Detect

This function is used to detect the image intensity.

Spread

This function is used to change the image intensity according to the previous settings.

4.5.9 Histogram

Click "Color - Histogram"

Equalize

Use this function to equalize the image.

The original image:



After use this function:



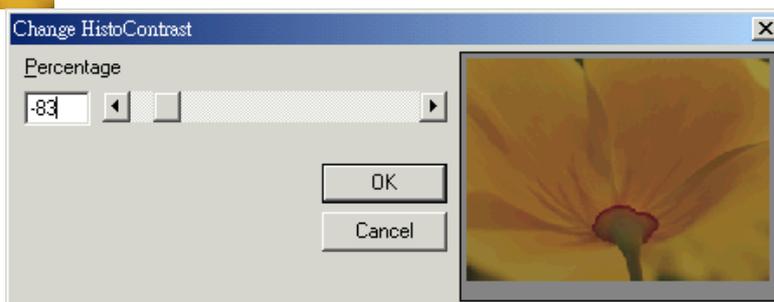
HistoContrast

Use this function to the the HistoContrast of the image:

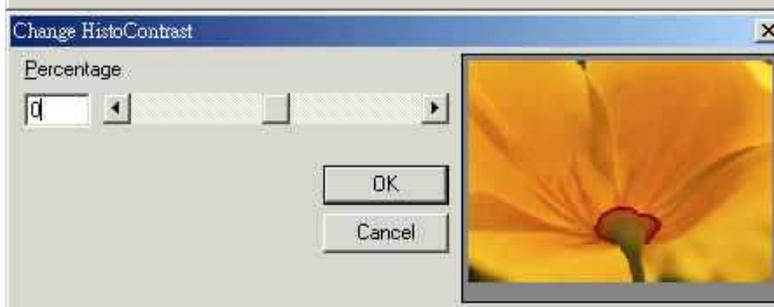
The original image:



When the
HistoContrast
Percentage is -83:



When the
HistoContrast
Percentage is 0:



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When the
HistoContrast
Percentage is 79:



4.5.10 Invert

Click "Color - Invert"

Invert the Colors of the image. Black will become white; white will become black, etc.

The original image:



After use this function:



4.5.11 Solarize

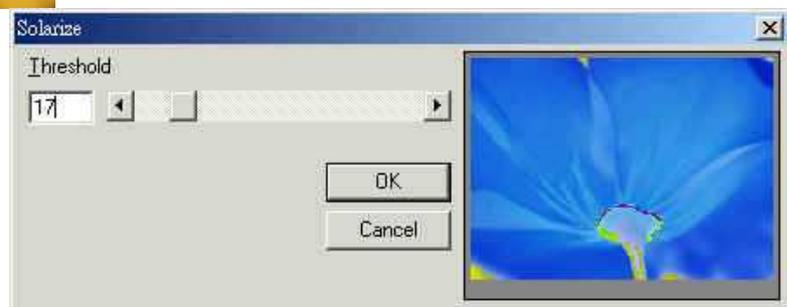
Click "Color - Solarize"

Create a "midnight" effect. Change the level of shadows that are cast on the image.

The original image:



When the Solarize
Threshold is 17:

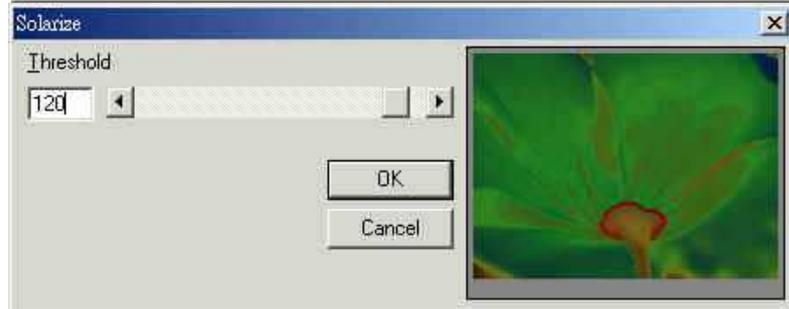


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When the Solarize
Threshold is 61:



When the Solarize
Threshold is 120:



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4.6 Execute Menu

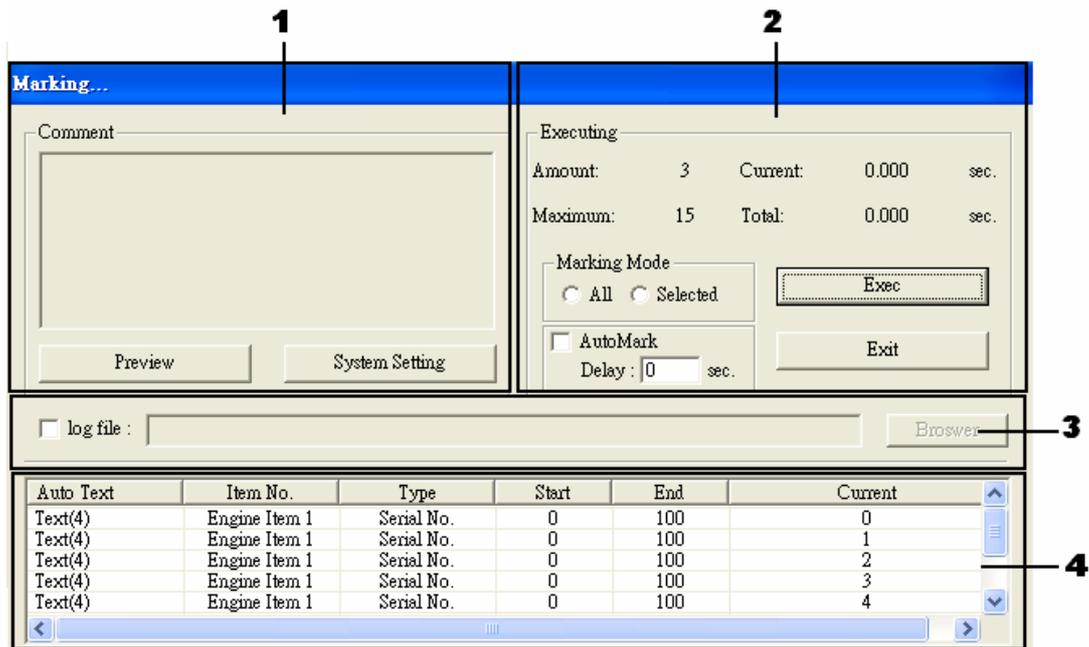
"Execute" menu offers the following function:

Marking	Set the object parameters and execute the marking sequence.
Quick Mark	Execute marking.
Align Test	Allow users to examine the mark position is correct or not.
User Level	User Level can be divided into Operator, Programmer, and Administrator to separate user's authorities.
Param List	Allow users to name, file, and reuse the marking parameters.
Rotary Marking	Provide three common used rotary marking functions.

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4.6.1 Marking

Mark the objects and adjust the related settings.



Comment: Write down some notes about this file's functions and points for attention over here. To modify the comments, just push the button of "System Setting", a dialogue box of "Global Parameters" will be displayed as below:

Executing: Amount – Display the current mark times.

Maximum – Display the total mark times you have done.

Current – The current time of marking.

Total – The total time of marking.

Exec – Start executing marking.

Exit – Exit the executing dialogue box and stop marking.

Log file: If the object contains auto text, check the "log file" checkbox will be able to export the object with auto text contents into a file.

Footnote: If the object contains auto text, the auto text related setting will be displayed over here.

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Global Parameters...

Marking Max : 0

Marking Amount : 0

Trigger Max 0

Show MSG

Comment

Mark On Fly

X Axis
 X Encoder
Factor : 0 mm/cnt
Delay : 0 pulse

Y Axis
 Y Encoder
Factor : 0 mm/cnt
Delay : 0 pulse

Set As Default

Ok Cancel

Marking Maximum: The desired total working times

This function will allow you to avoid the unwilling excess working pieces.

Marking Amount: It enables you to take down how many work pieces you have already done

Trigger Max: Specify the counts of marking for trigger. Show the message for trigger.

Show MSG: If checked, the system will show a warning message of "Trigger count is over limit" while the marking amount reaching the Trigger Max value.

Comment: Input a summary of the file.

Mark on Fly: It enables you to mark while the working pieces are moving. You can choose to use this function on X or Y Axis.

X/Y Encoder checked:

Factor: the value of conveyer moving per encoder count.

Delay: delay a giving count pulse then start marking.

X/Y Encoder not checked:

Speed: the speed of conveyer.

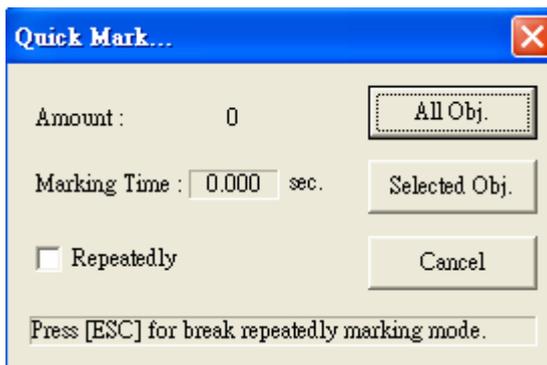
Delay: delay a giving count pulse then start marking.

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4.6.2 Quick Mark

Different from Marking, Quick Mark can:

1. Select to mark repeatedly, and press **ESC** to stop.
2. Choose all objects or the selected objects.
3. When use this function, the system will neglect the setting of the drawing objects.



4.6.3 Align Test

Speed

Speed: Represent the speed of the align light. Modify it by key in the value or move the scrollbar directly.

X: Click "X" button, the align light will shift toward the X direction.

Y: Click "Y" button, the align light will shift toward the Y direction.

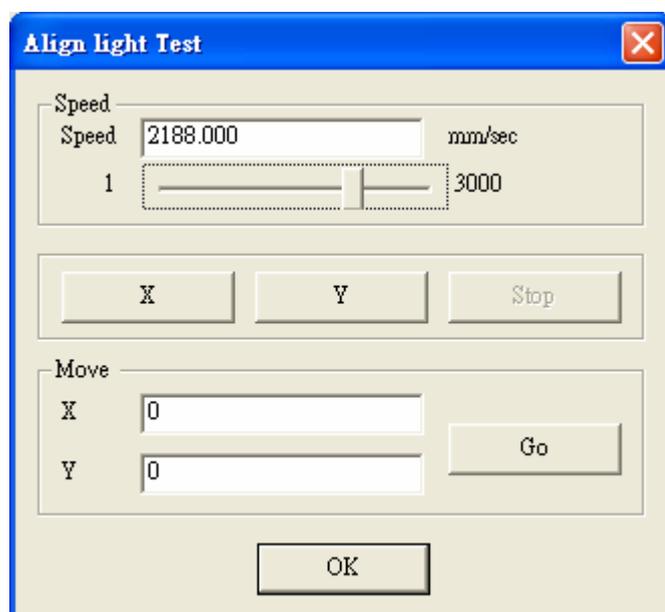
Stop: Click "Stop" button, the align light will stop.

Move

X: Displacement to X direction (unit: mm)

Y: Displacement to Y direction (unit: mm)

Go: Click "Go" button, the align light will adjust the X/Y position according to the X/Y displacement.



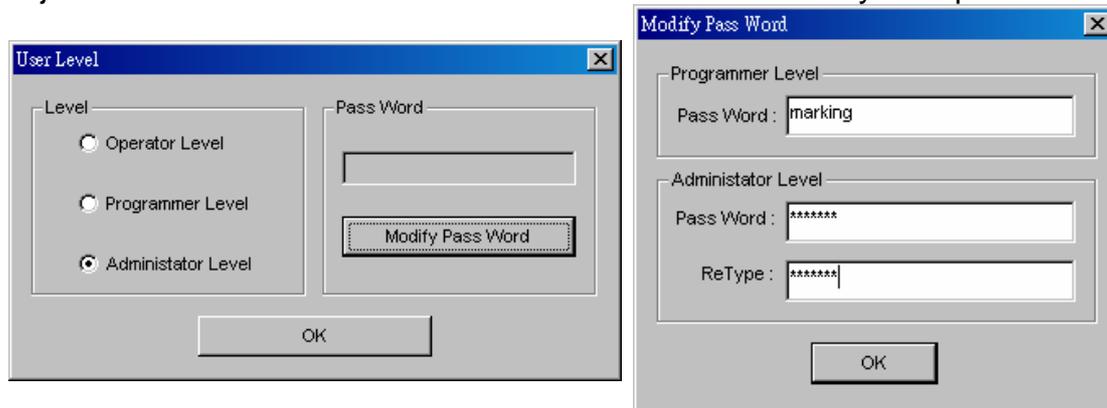
4.6.4 User Level

Users are allowed to execute different functions according to their authorities.
Operator: Operator level users can only read files and output files and use limited functions.

Programmer: Programmer level users are allowed to draw and edit objects and

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can only use limited functions which is not include system parameter settings. Administrator: Administrator level users are able to draw and edit the setting of objects and use all the functions. Administrators can modify their passwords.



4.6.5 Mark Parameter List

This list is shown all the marking parameters for your purpose. You can name, sort, and store these marking parameters for future use.

Item Name	Pass	Speed	Power	Freq	Times	Spot ...	Pulse ...	Delay...	Delay...	Delay...	Jump ...	Jump ...
First	3	500	10	33	1	0.1	10	0.01	0.01	0.01	1500	0.5
		500	10	33	1	0.1	10					
		500	10	33	1	0.1	10					
Second	1	500	10	10	1	0.1	10	0.01	0.01	0.01	1500	0.5
Third	1	500	10	10	1	0.1	10	0.01	0.01	0.01	1500	0.5

<p>Left column</p>	<p>The directory of parameter list. Move the mouse to the directory and click the left button of mouse can rename the directory. New Dir – Create a new directory Delete Dir – Delete the selected directory Load Dir – Load directory Save Dir – Save directory</p>
<p>Right column</p>	<p>Item Name – the name of this item Pass – cycle (maximum 5, if the number is larger than 1, the times below can only set to be 1) Speed – mark speed Power – mark power (maximum 100) Freq – mark frequency Times – mark times Spot delay – spot marking delay time</p>

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	<p>Pulse width – the width of pulse (only for YAG)</p> <p>Delay Start –The time difference between start laser order and laser hit time. This value is adjustable to get better marking quality.</p> <p>Delay Middle – This value will affect the quality of joins.</p> <p>Delay End – This value will affect the quality of end points.</p> <p>Jump Speed – laser jump speed</p> <p>Jump Delay – When laser reached the assigned position, it will shoot after this delay time.</p>
New Item	Create a new item
Delete Item	Delete the selected item
Set Default	Save the setting of the selected item as default value
Apply	Apply the setting to the selected item
Close	Close this window

Example:

Create a new directory and new item:

Click “Execute – Marking Param List” in the menu, when the dialogue box appeared, click the “New Dir” button and a new directory will appear in the left column. Move the mouse to the new directory and hit it to enter the name you want for the directory.

Click “New Item” button and start entering the parameters of the new item.

(The default item name is “NONE”, click it is able to change name. So are the others.)

Using the mark parameters you created:

Select an object, then go to the Mark Parameter of the Property Table, and then click “.Load Parameter” button will enter the object parameter page.

Select the mark parameter you need and click “Apply” button, the object will be marked as the mark parameter setting.

4.6.6 Rotary Marking

The system provides three common used rotary marking functions as below. Users can refer to the user manual of “**Rotary Axis of MarkingMate**” to see the detail descriptions.

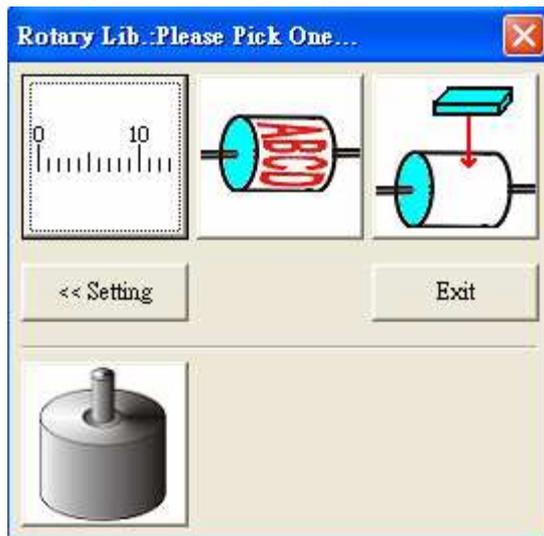
Calibration Marking

Ring Text Marking

Cylinder Marking

Motor Setting

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4.7 View Menu

“View” menu offers the following function:

Standard Bar	Enable/disable Standard Bar
Zoom Bar	Enable/disable Zoom Bar
Draw Bar	Enable/disable Draw Bar
Layer Bar	Enable/disable Layer Bar
Object Browser	Enable/disable Object Browser
Modify Bar	Enable/disable Modify Bar
Dimension Bar	Enable/disable Dimension Bar
Obj Property Bar	Enable/disable Object Property Bar
Laser Mark	Enable/disable Laser Mark
Laser Panel	Enable/disable Laser Panel
Status Bar	Enable/disable Status Bar
Welcome	Enable/disable Welcome screen
Show Order	Show the mark order
Tooltips	Enable/disable Tooltips
Tooltips Setting	Go to the Tooltips setting page of Options
Ruler	Enable/disable Ruler
Ruler Setting	Go to the ruler setting page of Options
Grid	Enable/disable Grid
Grid Lock	Enable/disable Grid Locking
Grid Parameter	Grid Parameter setting
Zoom In	Enlarge a specific area
Zoom Out	Shrink a specific area
Zoom Previous	Go back to the previous view
Zoom All	Show the whole Work Area
Zoom Extend	Show all graphics
Show Hatch Line	Show the hatch line

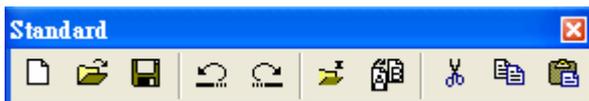
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4.7.1 Tool Bar

The toolbar allow users to use a lot of common use tools more conveniently. You can move the toolbar to any places you like by clicking and moving it. Click "View" from Menu Bar will see a list of toolbars, the toolbar with a "v" mark means opened. Following is the introduction to the toolbar.

4.7.1.1 Standard Bar

Enable or disable the Standard Bar.



New		Create a new document.
Open		Open an existing mark file.
Save		Save the current document using the existing file name.
Undo		Cancel an unwanted action.
Redo		Repeat a cancelled action.
Import		Import a graphics files and convert it into the mark format.
Replace		Replace the selected object by a new object
Cut		Remove selected data and store it in the clipboard for future use.
Copy		Duplicate selected data and store it in the clipboard for future use.
Paste		Attach data from the clipboard to the current document.

4.7.1.2 Zoom Bar

Enable or disable the Zoom Bar



Zoom in		Enlarge a specific area.
Zoom out		Shrink a specific area.
Zoom previous		Go back to the previous view.
Zoom all		Show the whole Work Area.
Zoom extend		Show all graphics in the Work Area.

4.7.1.3 Draw Bar

Enable or disable the Draw Bar



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Selection		Selects or deselects objects in the Work Area.
Line		Inserts straight lines from point-to-point-to-point.
Arc		Creates arcs, circles, and spirals.
Circle		Creates circles and ovals.
Rectangle		Creates squares and rectangles.
Curve		Creates a curve using three points of reference.
Curve Brush		Draws freehand lines by the mouse.
Text		Inserts text in the Work Area.
Arc Text		Inserts text based on an arc.
1D Barcode		Creates 1D barcode.
2D Barcode		Creates 2D barcode.

4.7.1.4 Layer Bar

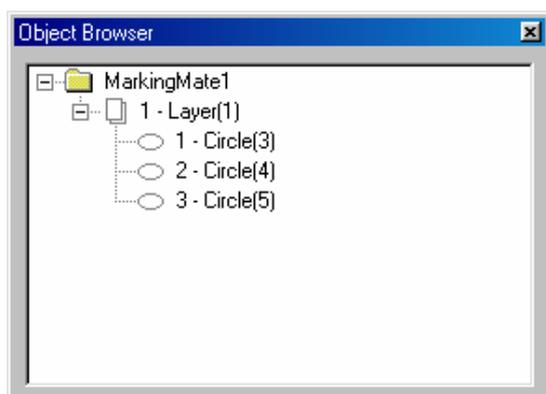
Enable or disable the Layer Bar.



Layer Manager		The layer page of Property Table will show up for editing
New Layer		Create a new layer
Delete the Active Layer		The active layer will be deleted
Current Layer	Layer-1	Select the current layer
Layer Color		Layer color settings
View Layer		Enable or disable view layer
Edit Layer		Enable or disable edit layer
Output Layer		Enable or disable output layer

4.7.1.5 Object Browser

Enable or disable the Object Browser



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4.7.1.6 Modify Bar

Enable or disable the Modify Bar

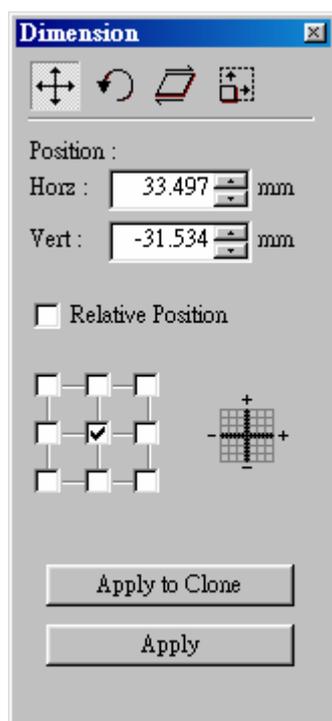


X of Center		The X-axis value of the center of the object
Y of Center		The Y-axis value of the center of the object
Width		The width of the selected object
Height		The height of the selected object
X of Scale		The scale of the width of the selected object
Y of Scale		The scale of the height of the selected object
Lock to Same Ratio		The width and height will be adjusted in the same ratio.
Mirror Horizontally		Invert an image on its horizontal axis. Left will become right and vice-versa.
Mirror Vertically		Invert an image on its vertical axis. Up will become down and vice-versa.
Angle of Rotating		The rotate angle of the selected object
X of Rotating Center		The X-axis value of rotating center
Y of Rotating Center		The Y-axis value of rotating center
Move to the Center		Move the position to the center

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4.7.1.7 Dimension Bar

Enable or disable the Dimension Bar



Position 

Set the absolute or relative position

Rotate 

Set the rotate angle and rotate center position

Aslope 

Set the aslope angle

Scale 

Set the scale of the object

4.7.1.8 Object Property Bar

Enable or disable the Object Property Bar

When there is no object being selected, the Object Property Bar will be as below:

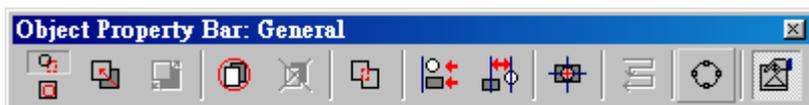


Origin X		The X-axis value of origin
Origin Y		The Y-axis value of origin
Page Width		The width of the page
Page Height		The height of the page
Change the Unit		The unit can be changed to mm or inch
Trim X		Edit the X trimming base
Trim Y		Edit the Y trimming base
Grid X		Edit the X grid line
Grid Y		Edit the Y grid line

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Open the Options Dialogue		Click this button can open the Options dialogue
Show or Hide the Property Table		Click this button will show or hide the Property Table

When there is an object being selected, the Object Property Bar will be as below:



General Selection		A general situation
Transparent Selection		The selection of a group object
Combine		Combine two or more objects into one. This function will allow several objects to share the same property settings
Break		Do the inversion of Combine function
Group		Combine two or more objects into one. This function will allow several objects to move together while allowing their individual property settings to remain intact
UnGroup		Do the inversion of Group function
Welding		Combine two objects so that the outline remains while eliminating the overlapping lines
Alignment		Use this function to align the selected objects to the last selected object, paper edge, or paper center
Distribute		This function will adjust how the distance between a series of objects is calculated
Move to the Center		Move the selected object to the center of the Work Area.
Sort		Sort the connected parts of the selected object.
Trans-Curve		Transfer a curved line into a series of individual angled lines. Allows these single lines to be manipulated individually
Show or Hide the Property Table		Click this button will show or hide the Property Table

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4.7.1.9 Control Object

Enable or disable the Control Object Panel



Digital In		Setting digital in signals
Digital Out		Setting digital out signals
Do Pause		Insert a pause into the marking sequence
Delay Time		Insert a delay into the marking sequence

4.7.1.10 Laser Mark

Enable or disable the Laser Mark buttons



Dry Run		Allow users to reposition the object well
Marking		Execute the marking function

4.7.1.11 Laser Panel (optional)

Enable or disable the Laser Panel



Shutter ON/OFF		Control the shutter
Align ON/OFF		Control the align light
Lamp ON/OFF		Control the lamp

4.7.2 Status Bar

Enable or disable the Status Bar



Function description

The X, Y-axis value of the mouse position

When press the **Caps Lock** key, the **CAP** will appear.

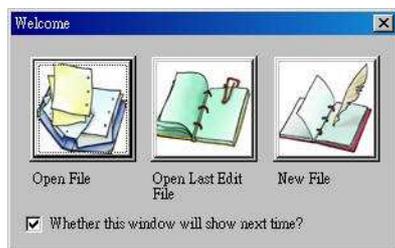
When press the **Num Lock** key, the **NUM** will appear.

When press the **Scroll Lock** key, the **SCRL** will appear.

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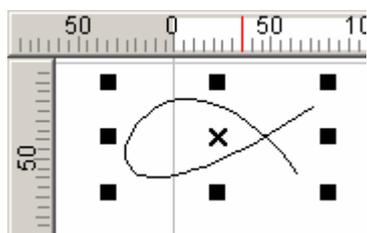
4.7.3 Welcome

Enable or disable the Welcome screen



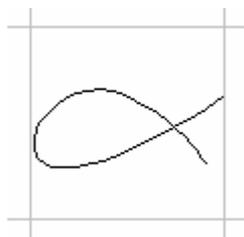
4.7.4 Ruler

Enable or disable the Ruler



4.7.5 Grid

Enable or disable the Grid



4.7.6 Grid Lock

Enable or disable Grid Lock

4.7.7 Zoom In

Enlarge a specific area

Tool Box : 

4.7.8 Zoom Out

Shrink a specific area

Tool Box : 

4.7.9 Zoom Previous

Go back to the previous view

Tool Box : 

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4.7.10 Zoom All

Show the whole Work Area

Tool Box : 

4.7.11 Zoom Extend

Show all graphics in the Work Area

Tool Box : 

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4.8 Window Menu

“Window” menu offers the following functions:

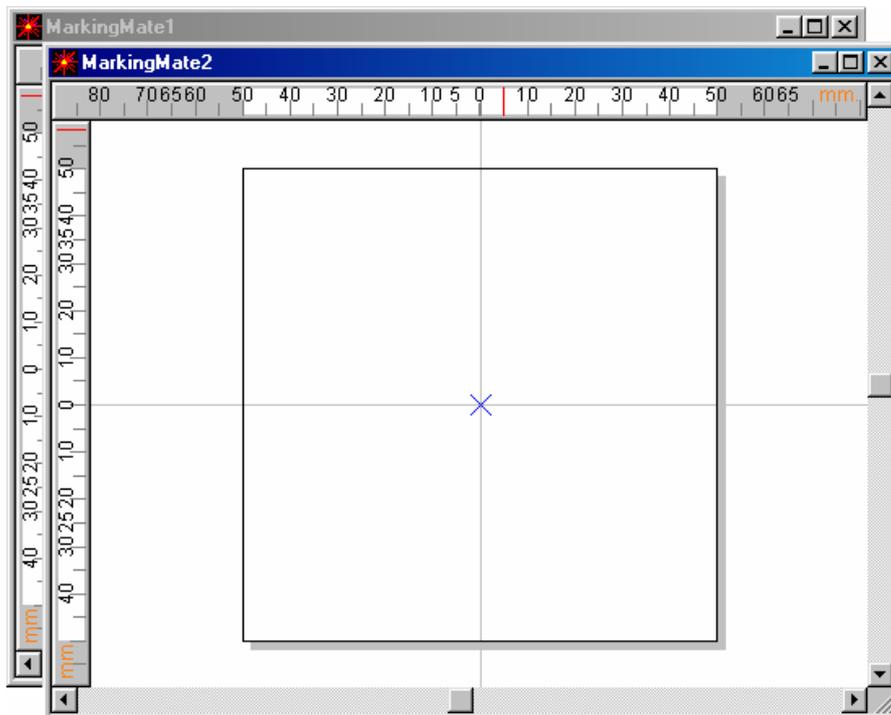
New	Create new window
Cascade	Allow all open windows overlapping
Tile	Show all open windows without overlapping
Arrange	Rearrange the windows
Close All	Close all windows

New

Create new window. Use this function to create a new window; the content of the new window will be the same with the one you was using. You can create multiple windows to view the different parts of your content. The modifications in any one of the window will also be displayed in the other windows.

Cascade

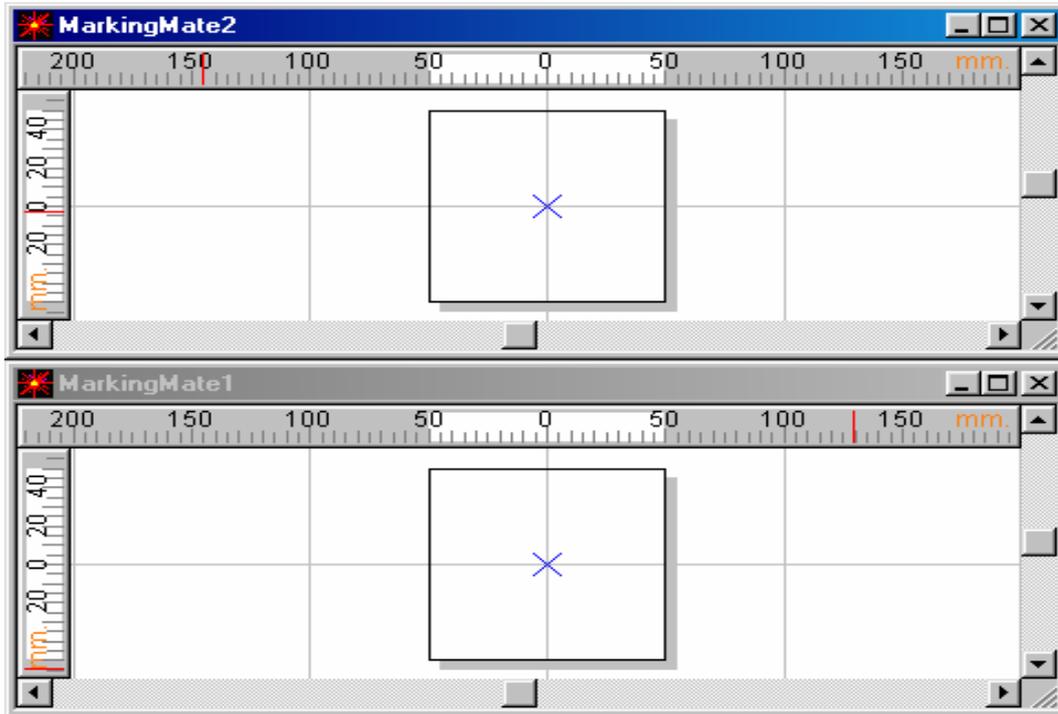
Allow all open windows overlapping as below:



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Tile

Show all open windows without overlapping as below:



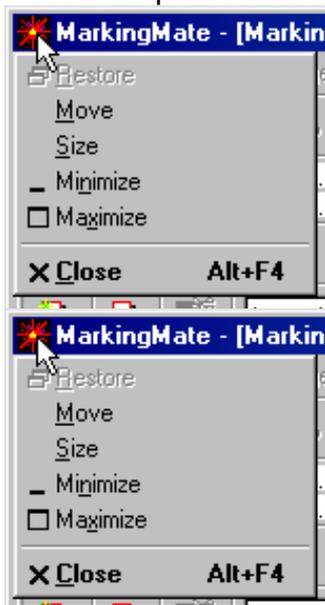
Arrange

Rearrange the windows. The shrink window will be list in the bottom as below:



Close All

Close all opened windows.



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4.9 Help Menu

“**Help**” menu will assist you to use this software

Help Topic

The related information of the software

About MarkingMate

The version information of the software

Help Topic

Click the Help Topic to search all information you need about this software

About MarkingMate



Chapter 5 Objects

The function for users to draw graphics, texts, and barcodes are so-called "Object Function". These functions include dot, line, arc, circle, rectangle, curve, curve brush, text, arc text, 1D barcode, and 2D barcode. Whatever an object being selected, its related property table will be displayed for setting.

Besides, click the right button of mouse after selecting an object will display a popup menu providing the normal use functions and additional functions. For example, select a curve, click right mouse button, a function of edit vertex will be added in the popup menu.

Select the Curve object.

The property table of the Curve object will be displayed as the left side of the picture below.

Click the mouse right button will see the popup menu include the "Add Vertex" function.

5.1 Common Settings

This section will discuss the common setting page of the Property Table that includes Frame/Fill, Output Parameter, CAM Parameter, and the Popup Menu.

5.1.1 Property Table

When an object in the Work Area being selected, the property table of this object will be displayed. Users can set up some marking related parameters over the dialogue box; mainly include the object's frame/fill, marking parameter, and delay.

Frame/Fill	Adjust the color of the border and interior shading of a selected object.
Mark Parameter	This menu in the Property Table will allow you to edit the assigned speed, power, and frequency output of the laser machine.
Delay	Setting some parameters about marking speed and quality.

(Please refer to section 6.2 Mark Parameter)

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5.1.2 Popup Menu

Select a general object and click the right button of the mouse, you will see a popup menu as below:

C <u>u</u> t	Ctrl+X
C <u>o</u> py	Ctrl+C
P <u>a</u> ste	Ctrl+V
D <u>e</u> lete	Del
<hr/>	
A <u>rr</u> ay Copy...	
<hr/>	
P <u>ro</u> perty Table...	
<hr/>	
Dimension Bar	
O <u>b</u> ject Browser	F2

Cut	Remove selected data and store it in the clipboard for future use	Refer to section 4.2.3
Copy	Duplicate selected data and store it in the clipboard for future use	Refer to section 4.2.4
Paste	Attach data from the clipboard to the current document	Refer to section 4.2.5
Delete	Delete and remove the selected data	Refer to section 4.2.6
Array Copy	Execute the array copy function	Refer to section 6.2.4
Property Table	Show the Property Table of the object	Refer to section 6.2
Dimension Bar	Enable/disable Dimension bar	Refer to section 4.7.1.7
Object Browser	Enable/disable Object Browser	Refer to section 4.7.1.5

5.2 Create Objects

Regarding how to create objects like a vertex, line, arc, circle, rectangle, curve, curve brush, text, arc text, 1D barcode, or 2D barcode, **please refer to section 4.3.2 to section 4.3.11.**

Line	Inserts straight lines from point-to-point-to-point	Refer to section 4.3.2
Arc	Creates arcs, circles, and spirals	Refer to section 4.3.3
Circle	Creates circles and ovals	Refer to section 4.3.4
Rectangle	Creates squares and rectangles	Refer to section 4.3.5
Curve	Creates a curve using three points of reference	Refer to section 4.3.6
Curve Brush	Draws freehand lines by the mouse	Refer to section 4.3.7
Text	Inserts text in the Work Area	Refer to section 4.3.8
Arc Text	Inserts text based on an arc	Refer to section 4.3.9
1D Barcode	Creates 1D barcode	Refer to section 4.3.10
2D Barcode	Creates 2D barcode	Refer to section 4.3.11

Chapter 6 Property Table

All objects created or imported on the Work Area have their own unique sets of properties. These properties define how each specific object or groups of objects are displayed on the Work Area or how they being marked by MarkingMate. To display the properties of an object or a group, simply highlight it and the specific property details should reveal themselves on the Property Table. If the Property Table is not currently active, press the right mouse button and click on Property Table's editing capabilities.

NOTE: Any modifying of the property will be effective only if you press "Apply" button. You can also click "Apply All" after all property pages being finished to make sure every change are effective.

Below will see the more detail description of the four portions of the Property Table:

Marking System	Settings for all parameters needed for the system.
Mark Parameter	Settings for all parameters needed for a specific object.
General Property	Settings for all general properties of the objects.
Layer	Settings for the layer-related parameters.

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6.1 Marking System

When there is no object in the Work Area being selected, it means the system object be selected in concept. Therefore the system property page will appear at this time. You are able to set the characteristics of laser machine such as lens dimension, curve correction, and testing.

6.1.1 Lens

Lens means f-theta lens, lens' dimension will effect the work area; if it is not properly adjusted will cause center drifting and distortion. To mark an object as perfect as your design in computer, you have to adjust the parameters carefully.

Working Area : The software system uses voltage signals to control GALVO motor, it is unable to know how big the working area is unless user input the correct value. If the work area is 100mm, user should enter 100mm over here. If it is mistaken to be 50mm, the

Power Test	Dry Run	Motor Setup	Graph Setup
System	Lens	Driver	Global
Working Area: 100.000 mm			
Offset		Scale	
X: 0.000 mm	Y: 0.000 mm	X: 100.000 %	Y: 100.000 %
Rotate			
Angle: 0.000	CX: 0.000	CY: 0.000	
<input type="checkbox"/> X Reverse	<input type="checkbox"/> Y Reverse	<input type="checkbox"/> XY Exchange	
Correction			
X: 0.0000	X: 0.0000	X: 0.0000	
Y: 0.0000	Y: 0.0000	Y: 0.0000	
Default			Manager
Apply All			

finished goods will be doubly enlarged; on the other hand, if it is mistaken to be 200mm, the finished goods will become half size.

Offset – Normally set X=0 and Y=0 will be fine. However, if system output 0V to X, Y GALVO motor and the laser did not shoot from the center of the f-theta lens, we strongly recommend user to regulate your hardware first, only if you can not succeed from regulating hardware will you try to adjust offset from here. If the mark position is right shift 5mm, you can enter -5mm in the X column. So are the others.

Scale – Even though every adjustment is correct, still many reasons to cause abnormal scale of the marking goods. Some special item needs to be marked under unfocused situation to create special effects will also result in scale enlarged or shrink. If the scale is too small, please enter a number bigger than 100 (because unit is percentage); on the contrary please enter a value smaller than 100.

Rotate – the mechanism problem will also cause rotate. If so, please fix it to avoid this problem. If hardware is OK, user can rotate an angle of the image to resolve the limitation problem of the Work Area

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X Reverse/ Y Reverse/ XY Exchange

It is possible that user has to adjust the coordinates of the Work Area for his local condition. Our system provides X reverse, Y reverse, and XY exchange for users to choose or combine as their requirements.

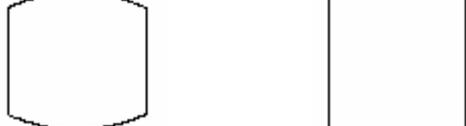
Correction

Except barrel distortion, every distortion is result from hardware. Therefore, DO NOT expect on software correction before hardware adjustment, because software correction is based on hardware is correct. If hardware is not property settled, even software can control well, the performance will not be good anyway.

Barrel Correction

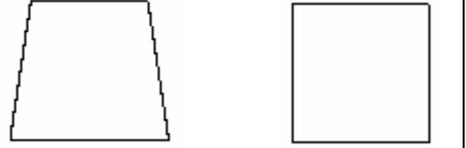
A normal f-Theta Lens system will result in barrel distortion because its naturals. The system initial value here is (0.000), if the figure become protuberant in X-axis, the X value will need to be increased like 0.002; while if now it become indentation, the X value will have to be reduced to as 0.0014. Keep adjusting the value until it is acceptable.

Input a square, the output become as below:

X value is positive	X value is negative
	
Y value is positive	Y value is negative
	

Trapezoid Correction

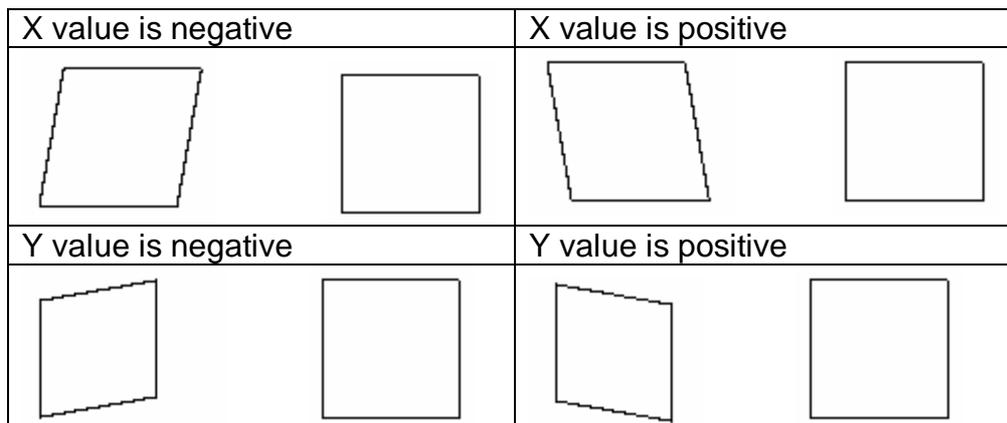
Input a square, the output become as below:

X value is negative	X value is positive
	
Y value is negative	Y value is positive
	

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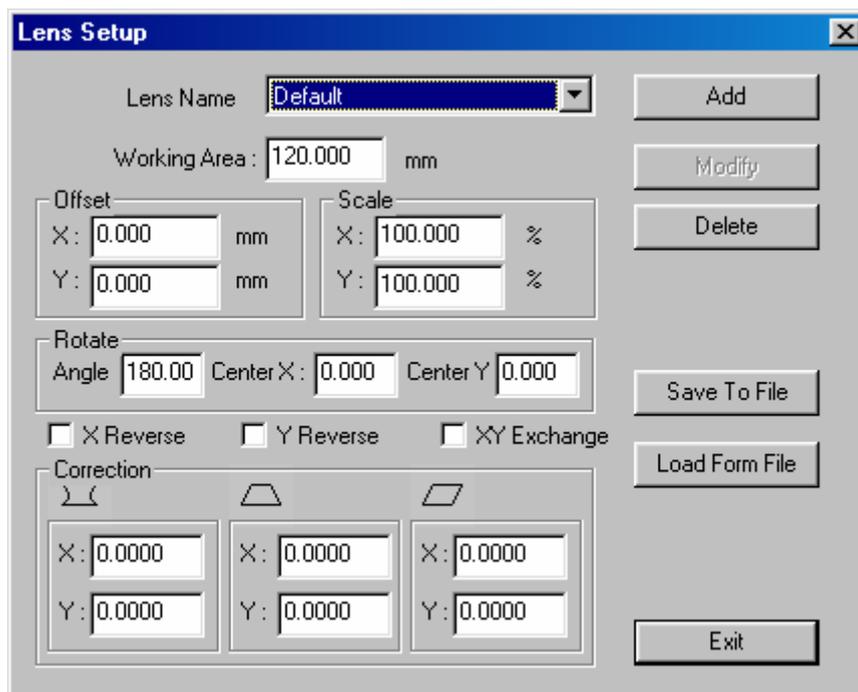
Parallelogram Correction

Input a square, the output become as below:



Lens Name

The name of the lens parameters. If you want to add other lens parameters, just press the “Manager” button, the Lens Setup page will be displayed as below:



Save To File – Allow users to save the lens parameters as a file named of *.len

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6.1.2 Driver

Driver

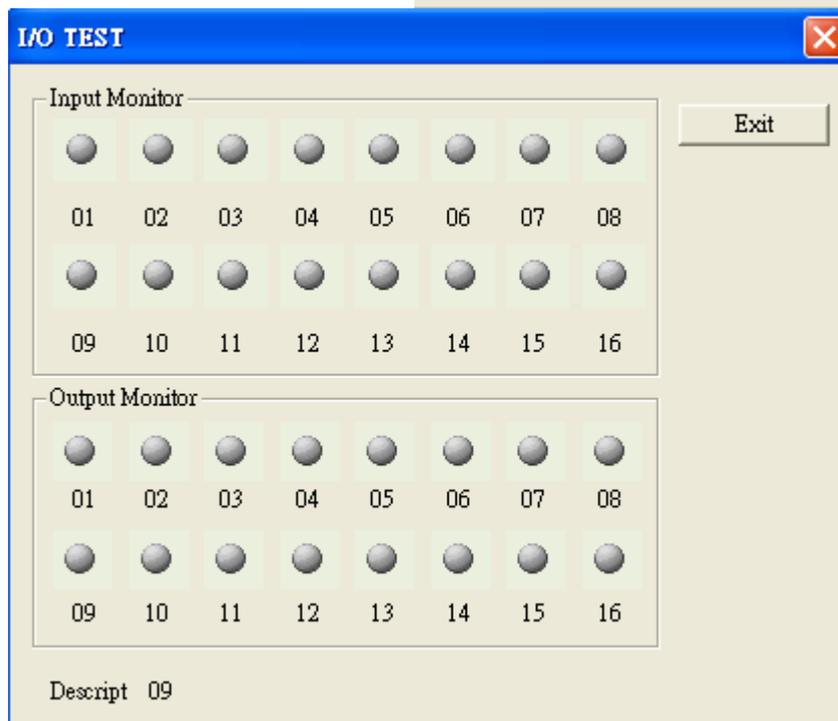
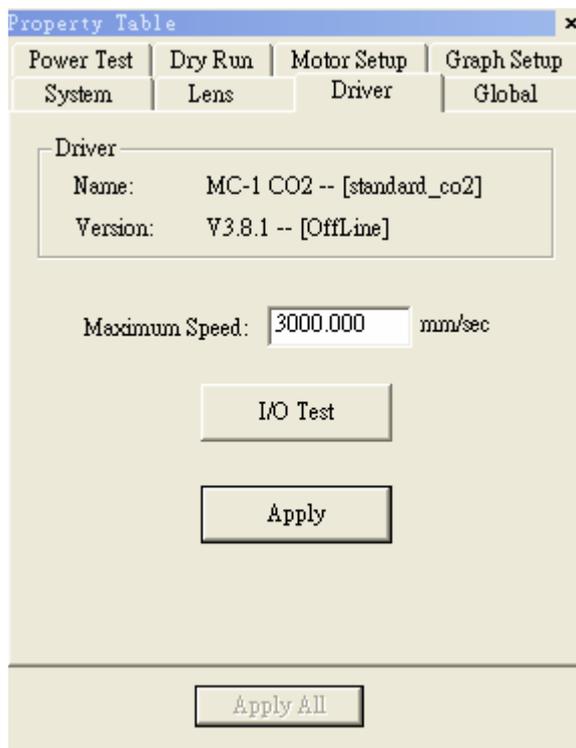
Here is the information of driver name and version.

Maximum Speed

This editing function is used to adjust the maximum speed of the GALVO. The default maximum speed is 3000 mm/sec.

I/O Test

Press the button of I/O Test, a dialogue box as below will be displayed to monitor the input and output status.



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6.1.3 Global

Marking Maximum: Set up desired total working times. This function will allow you to avoid the unwilling excess working pieces.

Marking Amount: It enables you to take down how many work pieces you have already done.

Trigger Max: Specify the counts of marking for trigger. Show message for trigger.

Show MSG: If checked, the system will show message while the marking amount reaching Trigger Max value.

Comment: Input a summary of the file.

Mark On Fly: It enables you to mark while the working pieces are moving. You can choose to use this function on X or Y Axis.

X/Y Encoder (no-checked):

Speed: speed of conveyer.

Delay: delay a giving count pulse then start marking.

The screenshot shows a software window titled "Property Table" with a close button (x) in the top right corner. The window has a tabbed interface with four tabs: "Power Test", "Dry Run", "Motor Setup", and "Graph Setup". The "Global" tab is currently selected. Below the tabs, there are four sub-sections: "System", "Lens", "Driver", and "Global". The "Global" section contains the following controls:

- "Marking Max:" with a numeric input field set to "0" and a small up/down arrow icon.
- "Marking Amount:" with a numeric input field set to "0" and a small up/down arrow icon.
- "Trigger Max:" with a numeric input field set to "0" and a small up/down arrow icon.
- A checkbox labeled "Show MSG" which is currently unchecked.
- A "Comment" text area.
- A "Mark On Fly" section containing two columns of controls:
 - X Axis:** Includes checkboxes for "X Axis" and "X Encoder" (unchecked). Below are "Speed:" and "Delay:" input fields, both set to "0". The speed unit is "mm/sec" and the delay unit is "us".
 - Y Axis:** Includes checkboxes for "Y Axis" and "Y Encoder" (unchecked). Below are "Speed:" and "Delay:" input fields, both set to "0". The speed unit is "mm/sec" and the delay unit is "us".

At the bottom of the dialog, there are three buttons: "Set Default", "Apply", and "Apply All".

X/Y Encoder (checked):

Factor: the value of conveyer moving per encoder count.

Delay: delay a giving count pulse then start marking.

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6.1.4 Power Test

This function will enable you to conduct a laser test. You can adjust the power, duration and frequency of the laser pulse. Laser tests are useful to identify which settings are best for different materials.

NOTE: Applying too much power may engrave or cut the materials too deeply or cause unwanted burning. Certain plastics can easily be marked using a low power setting.

The screenshot shows a software window titled "Property Table" with a close button (X) in the top right corner. The window has a tabbed interface with four tabs: "System", "Lens", "Driver", and "Global". The "Power Test" tab is currently selected. Below the tabs, there are three rows of settings, each with a label, a numeric input field with up/down arrows, and a unit:

- Power: 30 %
- Duration: 10 sec
- Freq: 20 kHz

Below these settings is a large button labeled "Laser On". At the bottom of the window is a button labeled "Apply All".

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6.1.5 Dry Run

This function is useful to reposition the designated center of the marked object. When you push “Run” button, a red light instead of laser shooting can help you find if it is reposition well. If the material to be marked is fixed under the machine and the desired center point of the object is 3 mm below the actual center point, then change the Unit value to 1 mm and click DOWN arrow button three times to move the center point down.

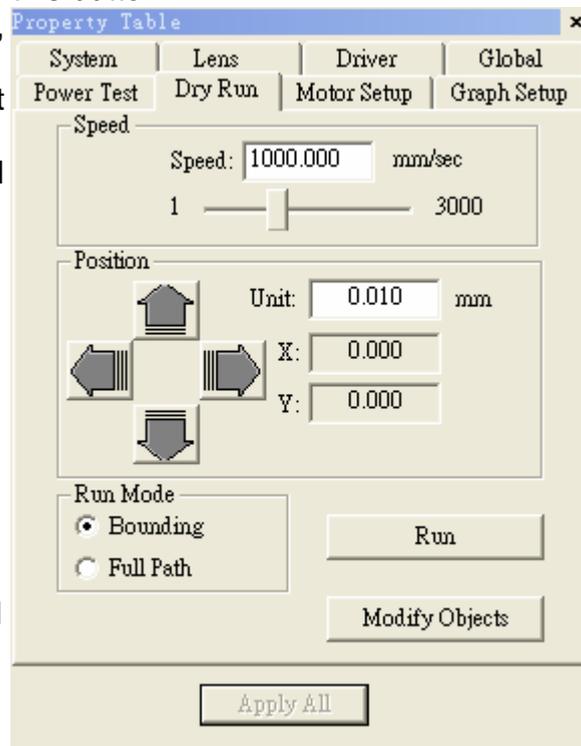
Speed: speed of red light.

Unit: the shifting unit

Run Mode: you can choose to run in bounding path or full path

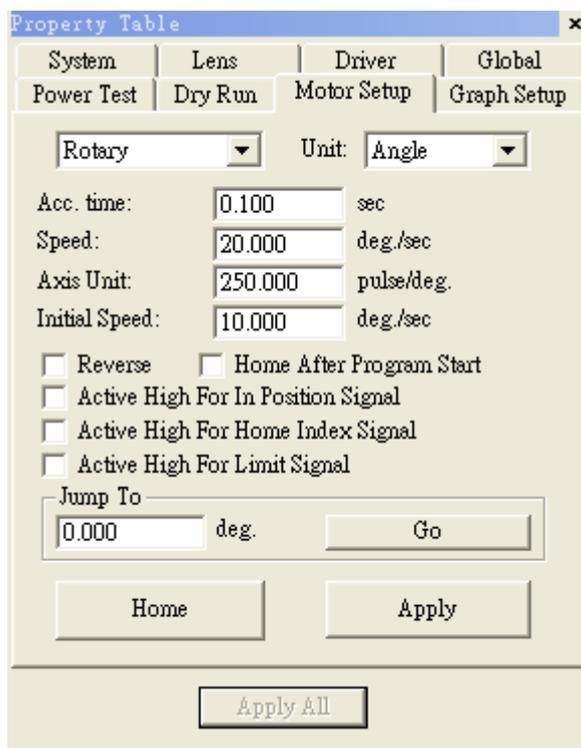
Run: start executing this function

Modify Objects: the real object data does not being modified until you push this button.



6.1.6 Motor Setup (optional)

This marking software can be set up to mark materials that are rounded not flat. For example, if you want to mark a serial number on a bowling ball, you would need to enable the Rotary Marking function and edit the levels to accommodate the radius of the portion to be engraved and the angle of the round object. For larger marking areas, the round object would need to be marked, turned slightly, and then marked again. The turning of the object can be done by hand or by an auxiliary machine.



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If a machine is used to turn the object, be sure to insert a Digital Out control object to active the machine.

Selection: Rotary or X-Axis or Y-Axis or Z-Axis

Unit: Length or Angle

Acc. Time: the accelerate speed of the motor

Speed: the rotary speed of the rotary axis

Axis Unit: the rotate pulse for each rotating

Initial Speed: the initial velocity of motor

Reverse: The motor turns in the reverse direction

Homing After Program Start: when it is checked, the program will start from Home

Active High For In Position Signal: if checked, the In Position signal of motor is active high

Active High For Home Index Signal: if checked, the Home Index signal of motor is active high

Active High For Limit Signal: if checked, the Limit signal of motor is active high

Jump to: Move directly to the position you assigned

Home: execute Home action

6.1.7 Graph Setup (optional)

Rotary Direction

In the direction of X Axis –
The rotary is set in the direction of X Axis.

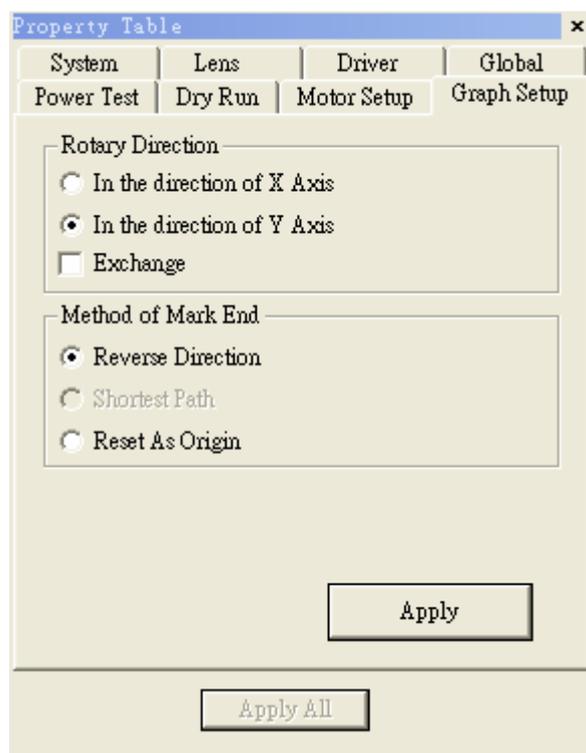
In the direction of Y Axis –
The rotary is set in the direction of Y Axis.

Exchange – If the rotary is not in the expected direction and unable to change by hardware, then you can check this checkbox.

Method of Mark End

Reverse Direction – Back to the origin in reverse direction

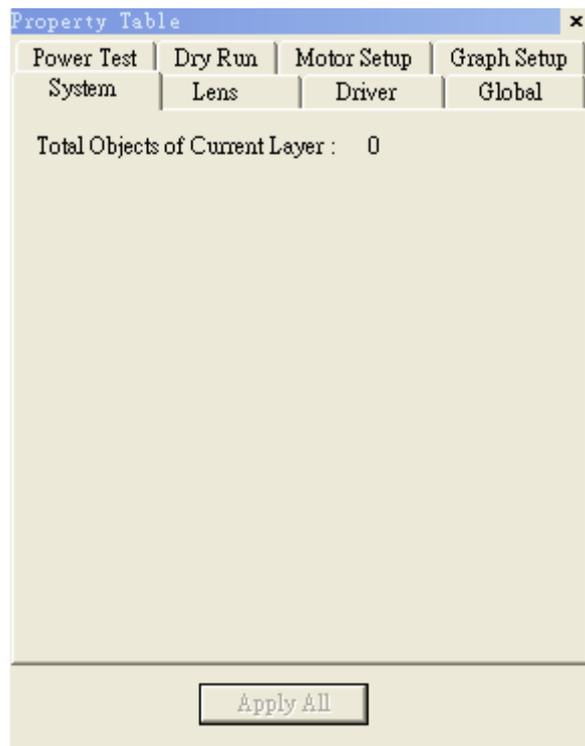
Reset As Origin – The end-point being reset as origin



MarkingMate

6.1.8 System

If no object being selected, will display the system page.



MarkingMate

6.2 Mark Parameter

When an object in the Work Area being selected, the property table of this object will be displayed. Users can set up some marking related parameters over the dialogue box; mainly include the object's frame/fill, mark parameter, delay, array copy, and motion setup.

MarkingMate

6.2.1 Mark Parameter

This menu in the Property Table will allow you to edit the assigned speed, power, and frequency output of the laser machine. The slower the speed and more prominent the marking will be. Different speed, power, frequencies and materials will produce different results. Different objects in the Work Area may be assigned with different speed, power, and frequency settings. We offer multiple Mark Parameter from 1 Pass to maximum 5 Passes.

Speed: Marking speed. This value can't be faster than the system's maximum speed.

Power: current percentage (in YAG) or percentage of PWM high signal (in CO2)

Freq: Laser trigger cycle (this item is useless in some CO2 system that controlled by voltage)

Times: When select Single Pass, Times value is able to input how many times for marking repeat. If Times is 0, means no marking.

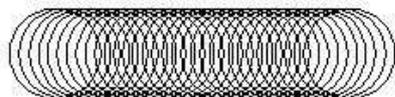
Spot delay: the mark time for each pixel of the image object. If this value is 0.5ms that means the spot will mark for 0.5ms.

Pulse Width (YAG)

Pulse width for YAG driver only.

Wobble

Mark by spiral type as below, this way can make the line segment become thicker.



Thick The diameter of the circle

Freq. When speed become quicker, and the frequency higher, the line segment will be thicker.

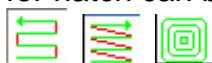
MarkingMate

6.2.2 Frame/Fill

Adjust the color of the border and interior shading of a selected object. To fill an enclosed area simply selects the object and select Fill and Apply.

Fill Param: when the object is filled by Hatch mode, the below parameters are able to be modified

Style: there are three modes for hatch can be selected:



Loops: draw some circles inside the object first and then fill the object by the above selected hatch mode.

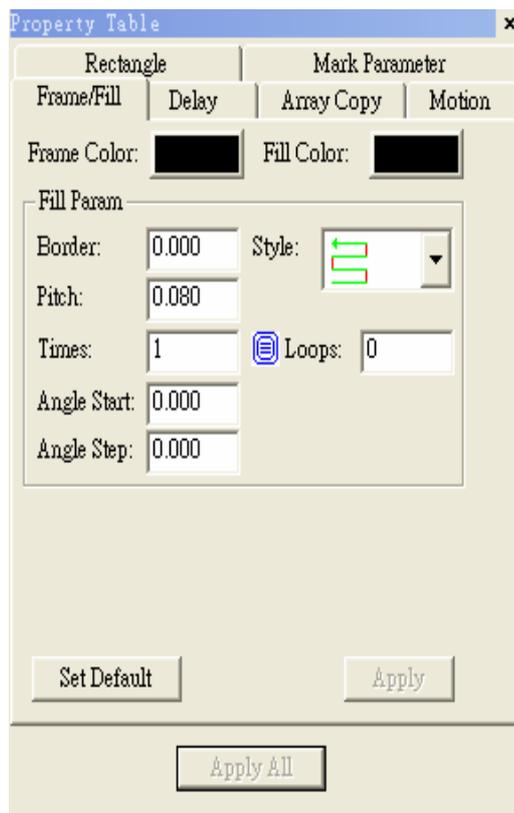
Border: the distance between hatch line and the frame

Pitch: the spacing between each hatch line

Times: process frequency

Angle Start: the first hatch angle

Angle Step: each angle step for hatch

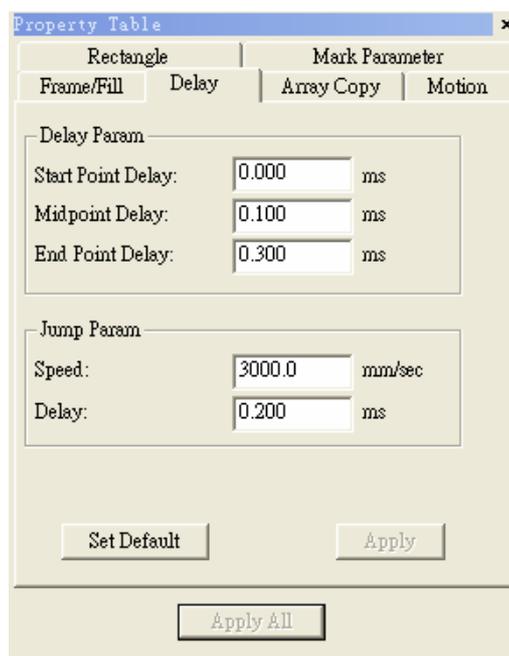


* If choose  mode, then you can only set up pitch for the fill parameter.

6.2.3 Delay

Setting some parameters related to marking speed and quality. The parameter will be saved in the file.

A dialogue frame as right-hand will appear after executing this function.



MarkingMate

(1) Start Point Delay:

The time difference between start laser order and laser hit time. Generally, the default value is 0; however, some other laser marking machines may take some time, so this value is adjustable to get the highest marking quality.

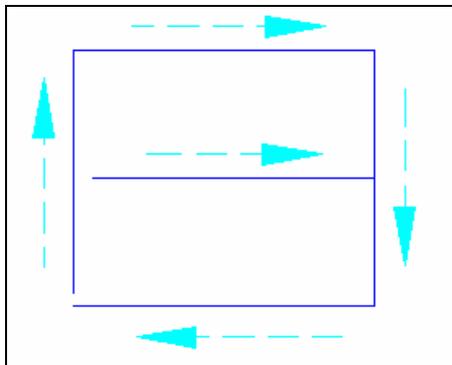


Figure 1. : The delay time is too short that caused some line segments being unmarked.

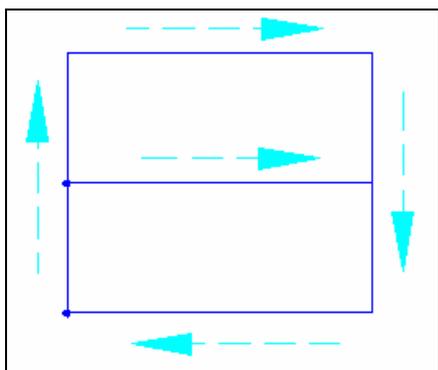


Figure 2. : The delay time is too long that caused some line segments being over marked.

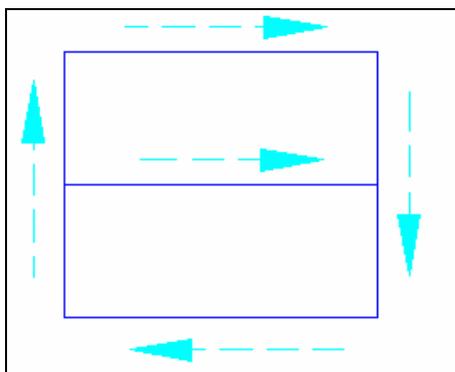


Figure 3. : When the delay time is proper, the beginning of the line segment will be smooth going.

MarkingMate

(2)End Point Delay:

The time value may effects the accuracy on the ending of the line segments.

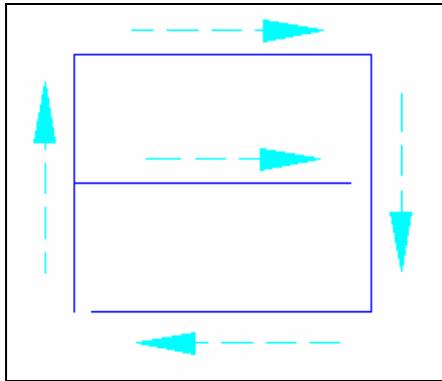


Figure 1. : When the delay ending time is too short, the ending of line segments will be unmarked.

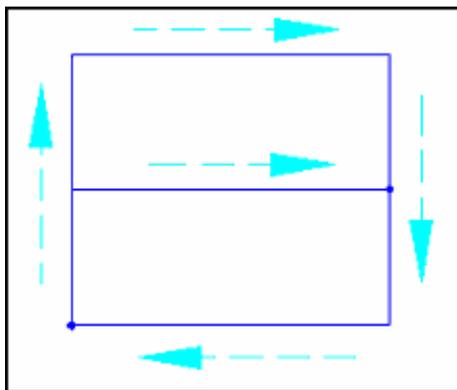


Figure 2. : When the delay ending time is too long, the ending of line segments will be over marked.

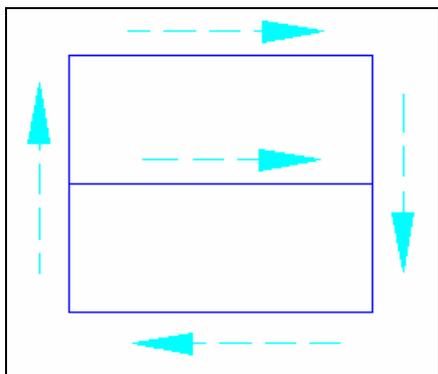


Figure 3. : When the delay ending time is proper, the ending of line segment is smooth going.

MarkingMate

(3)Mid Point Delay:

The time value may effects the marking quality of the corner or the cross of two line segments

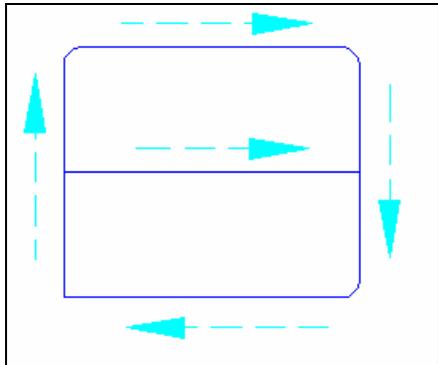


Figure 1. : When the suspending time is too short, the corner will become an arc.

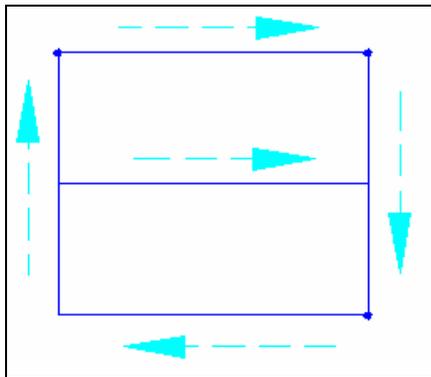


Figure 2. : When the suspending time is too long, the corner may be over marked.

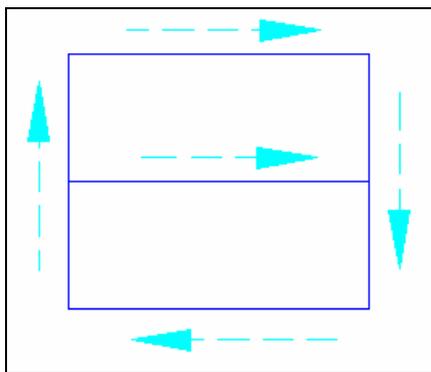


Figure 3. : When the suspending time is proper, the corner is smooth going.

MarkingMate

6.2.4 Array Copy

Array Copy Mode: By Matrix

This function will allow you to copy an individual object into an ordered series. Begin with a selected object in the lower left corner of the Work Area. Click on By Matrix and select the number of repeated objects you wish to include in a select amount of rows and columns. You also must adjust the vertical and horizontal gap between the objects, if the gap is not wide enough, the objects will overlap.

The screenshot shows the 'Property Table' dialog box with the 'Array Copy' tab selected. The 'Array Copy Mode' is set to 'By Matrix'. The 'Row' is set to 1 and the 'Col' is set to 1. The 'Row Gap' and 'Col Gap' are both set to 0.000 mm. The 'Copy Order' is set to 'By Row' (indicated by a red 'S' icon). There are 'Set Default' and 'Apply' buttons at the bottom, and an 'Apply All' button at the very bottom.

Array Copy Mode: By Circle

This variation of the Circle Copy allows you to arrange a series of copied objects in a circle. This function allows you to adjust the following:

- * **Circle Radius** – edit the size of the circle
- * **Object Counts** – edit the number of copied objects
- * **Object Start Angle** – adjust the starting point of the circle from 0-360 degrees
- * **Object Angle Pitch** – adjust the spacing between the copied objects

The screenshot shows the 'Property Table' dialog box with the 'Array Copy' tab selected. The 'Array Copy Mode' is set to 'By Circle'. The 'Circle Radius' is set to 0.000 mm, 'Obj Counts' is 1, 'Obj Start Angle' is 0.000, and 'Obj Angle Pitch' is 0.000. There are checkboxes for 'Auto Angle' and 'Rotate Obj', both of which are currently unchecked. There are 'Set Default' and 'Apply' buttons at the bottom, and an 'Apply All' button at the very bottom.

* **Auto Angle** – automatically space the objects to complete one whole circle

* **Rotate Object** – select between objects that remain vertical or ones that follow the baseline of the circle

* **CCW Copy** – select between clockwise or counter-clockwise. This will affect the directional order of the copied objects.

MarkingMate

6.2.5 Motion (optional)

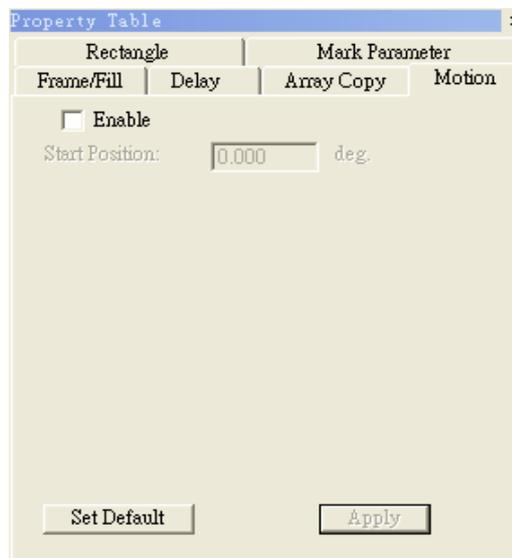
When a non-text object being selected, the Motion page of Property Table allows users to do the settings as below:

Enable

Allow users to enable or disable the rotary axis function.

Start Position

The start position of the rotary axis



When a text object being selected, the Motion page of Property Table allows users to do more settings

Text option

Separate To Character

Separate the selected text to characters

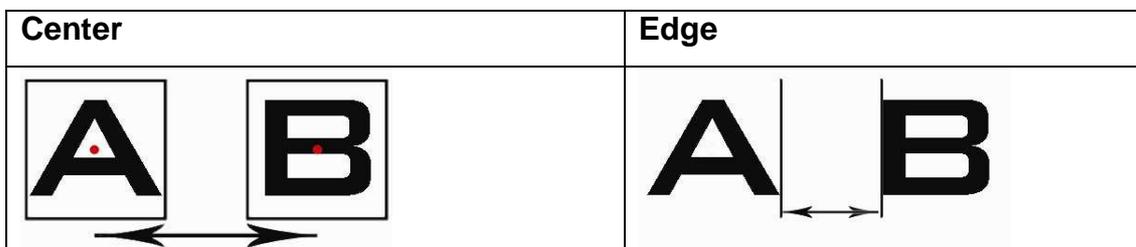
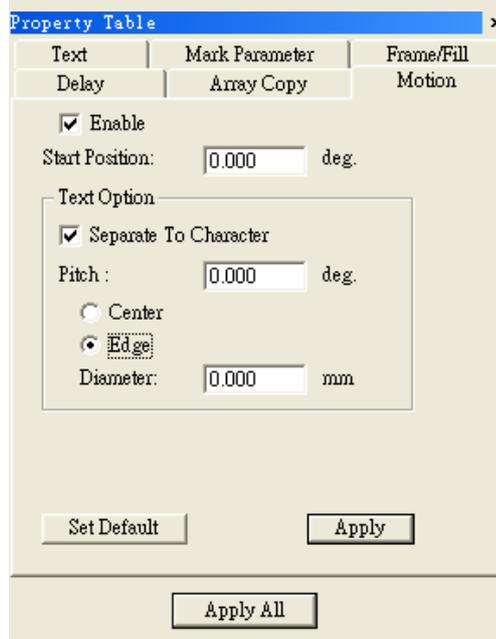
Pitch

The distance between characters

Center – based on the center of the character

Edge – based on the edge of the character

Diameter – the diameter of the rotary axis



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6.3 Property Table of Objects

When an object in Work Area being selected, the Property Table of this object will be displayed. Users are allowed to edit the parameters of this object over these pages such as curve, arc, circle, rectangle, 1D barcode, 2D barcode, image, text, arc text, and baseline.

6.3.1 Curve

This function applies to curves or other linear objects. Click on Closed Path to join the nearest ends of the curve or line. For example, if you create only 320° of a circle, the Closed Path function would automatically fill in the remaining 40°.



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6.3.2 Arc

Adjust the center position, radius, start dot and end dot position of the Arc.

Delay	Array Copy	Motion
Arc	Mark Parameter	Frame/Fill
Center		
X:	<input type="text" value="4.889"/>	mm Y: <input type="text" value="-0.556"/>
Radius		
X:	<input type="text" value="9.667"/>	mm Y: <input type="text" value="9.667"/>
<input checked="" type="checkbox"/> Same as X		
Start Dot		
X:	<input type="text" value="14.556"/>	mm Y: <input type="text" value="-0.667"/>
Start Angle:	<input type="text" value="359.341"/>	deg.
End Dot		
X:	<input type="text" value="-4.778"/>	mm Y: <input type="text" value="-0.444"/>
End Angle:	<input type="text" value="179.341"/>	deg.
<input type="button" value="Apply"/>		
<input type="button" value="Apply All"/>		

6.3.3 Circle

Adjust the Circle's center position and radius.

Delay	Array Copy	Motion
Circle	Mark Parameter	Frame/Fill
Center		
X:	<input type="text" value="-15.778"/>	mm Y: <input type="text" value="-18.333"/>
Radius		
X:	<input type="text" value="9.667"/>	mm Y: <input type="text" value="3.444"/>
<input type="checkbox"/> Same as X		
<input type="button" value="Apply"/>		
<input type="button" value="Apply All"/>		

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6.3.4 Rectangle

Adjust the round radius of the rectangle from 0% to 100%.



6.3.5 1D Barcode

Allow you to edit the properties of an existing 1D barcode

Code Type

Code 39, Code 128, Code 93, Code Bar, ITF, MSI Code, Us PosNet, UPC-A, UPC-E, EAN 8, EAN 13, UCC 128, EAN 128, FIM

Code Data: Input the code data here.

Show Text: Checked the box, the text content will be displayed under barcode.

Invert: When the background is black, you need to use this function.

EX: The barcode reader is not easy to read the barcode marked on black work piece, use invert function will make it more readable.

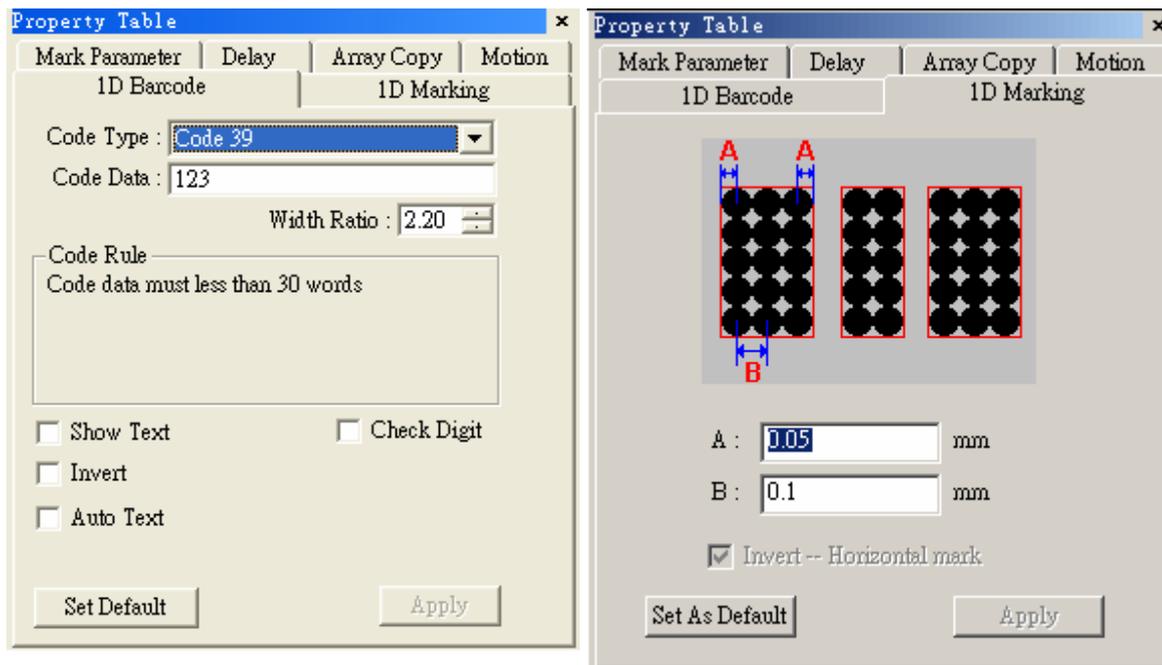
Auto Text: The barcode data will be changed as an auto text.

Check Digit: A check digit is calculated automatically and added.

A: The distance between laser spot center and the edge of barcode.

B: The space between the next two laser spots

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6.3.6 2D Barcode

Allow you to edit the properties of an existing 2D barcode on the Work Area

2D Barcode Type

ECC 000~140, ECC 200, PDF417, QR Code, and Maxi Code

Style

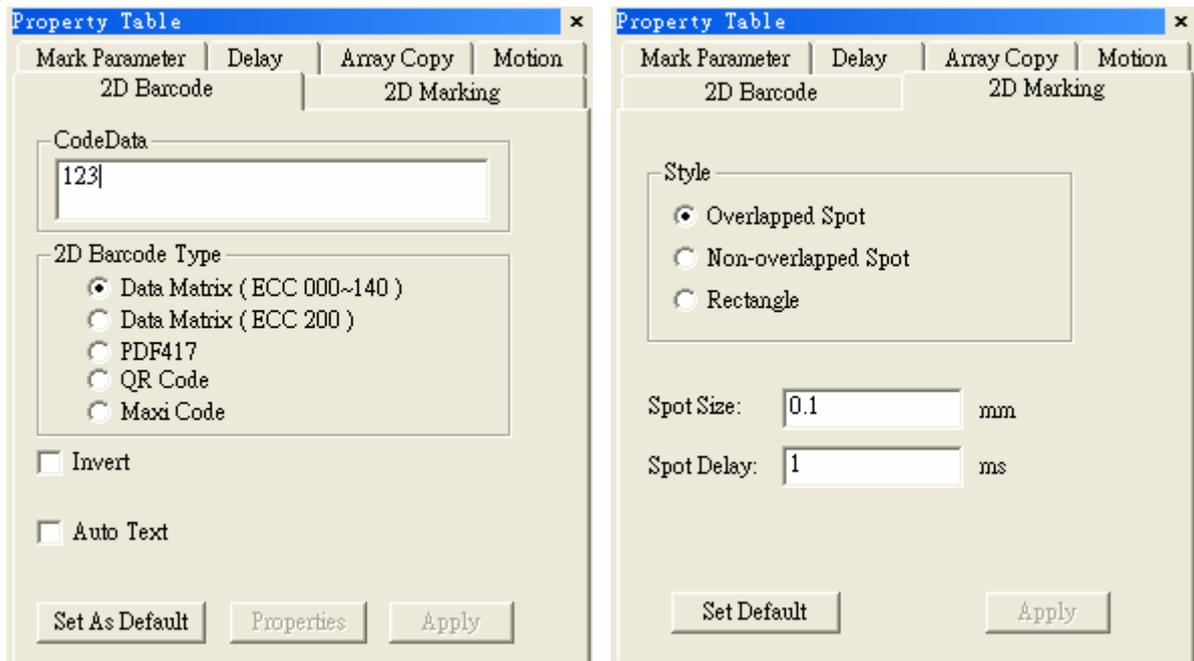
The barcode is divided into many cells, each cell has three style options as below:

Overlapped Spot	Non-overlapped Spot	Rectangle
The spot can be overlapped	The spot can not be overlapped	From inside to outside marked as rectangles
		

Spot Delay

The longer the spot delay, the mark effect will be stronger

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6.3.7 Image

Image properties setting

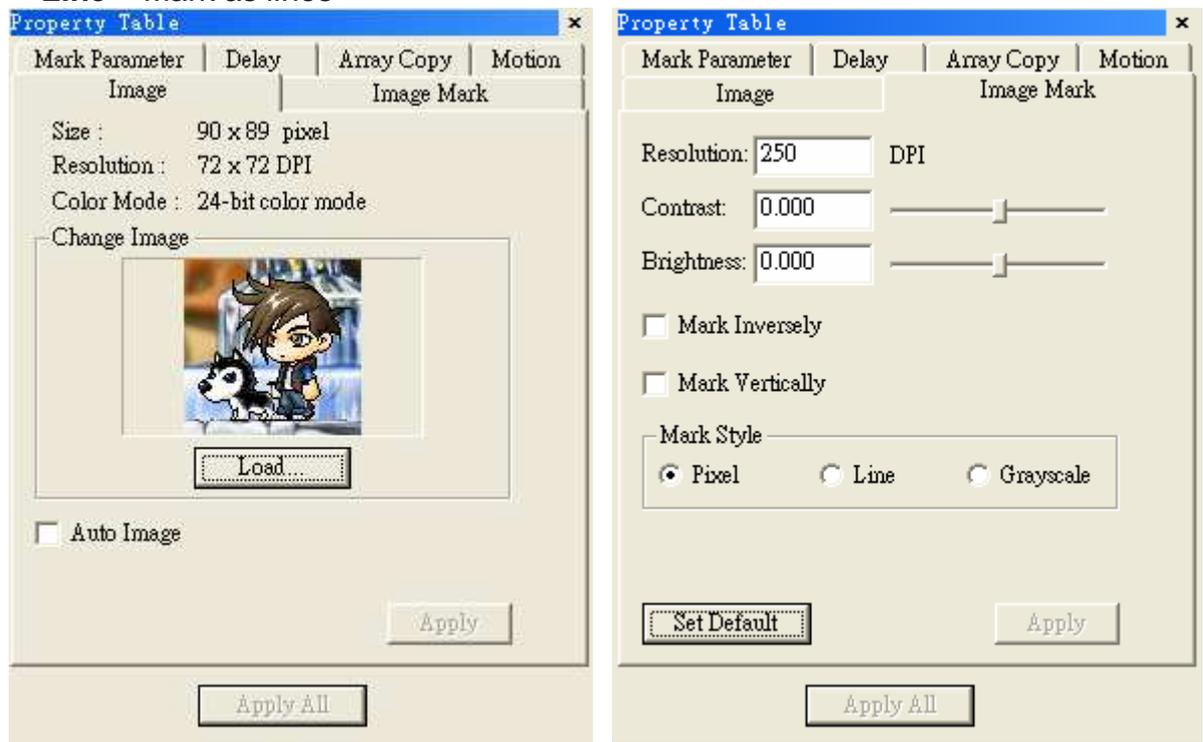
Resolution

The resolution of the image

Style

Pixel – Mark as pixels

Line – Mark as lines

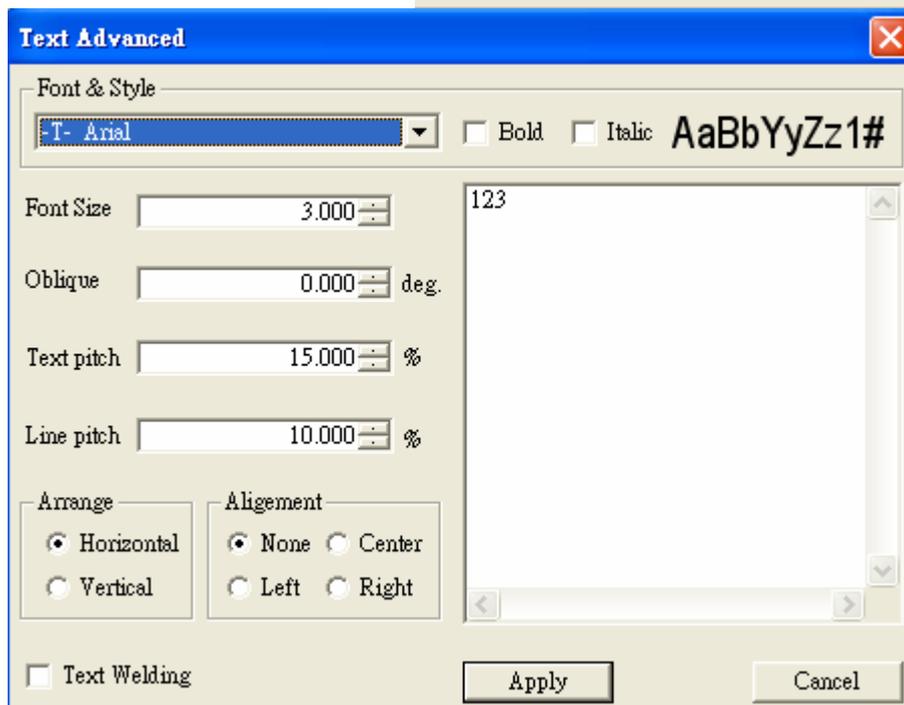
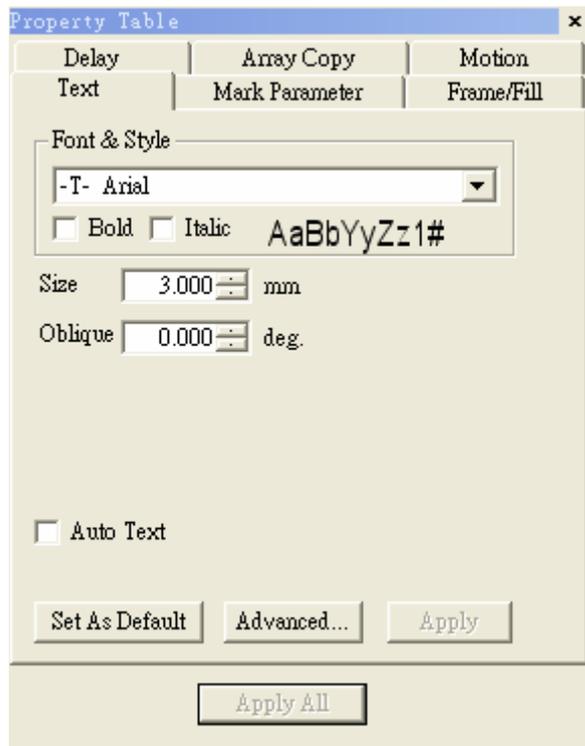


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6.3.8 Text

Adjust the font style, font size and the oblique of the text.

Click on the Advanced button can do more settings like text pitch, line pitch, arrange type, alignment as below:



Click on Auto String and then the Manager button, will active the Auto Text Manager. The Auto Text Manager can insert Serial numbers, File, Keyboard, and Date entries as below.

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Serial No.

This function will engrave fixed and increasing numbers onto the marked object. Numbers inserted as prefixes and postfixes will represent the constant numbers engraved at the beginning and end of the serial number. The content numbers will begin at the starting number you specify and end at the ending number. Step will adjust the increment level of the increasing numbers. Digit stands for the total number of fixed number to be applied to the content portion. For example if 4 digits were selected, then 1 would be represented by 0001. Auto-recycled will repeat make the serial numbers return to the starting number once the end number has been completed.

Auto Text Manager

Auto Text Item: Engine Item 1

Rename: Engine Item 1 OK

Delete Item Create Item

Auto Text Item Setting

Auto Text Mode: Serial No.

Serial No.

Prefix:

Content

Start: 0 Digit: 3

Step: 1 Lead:

End: 100 Auto-recycled

Repeat: 1

Base: Decimal

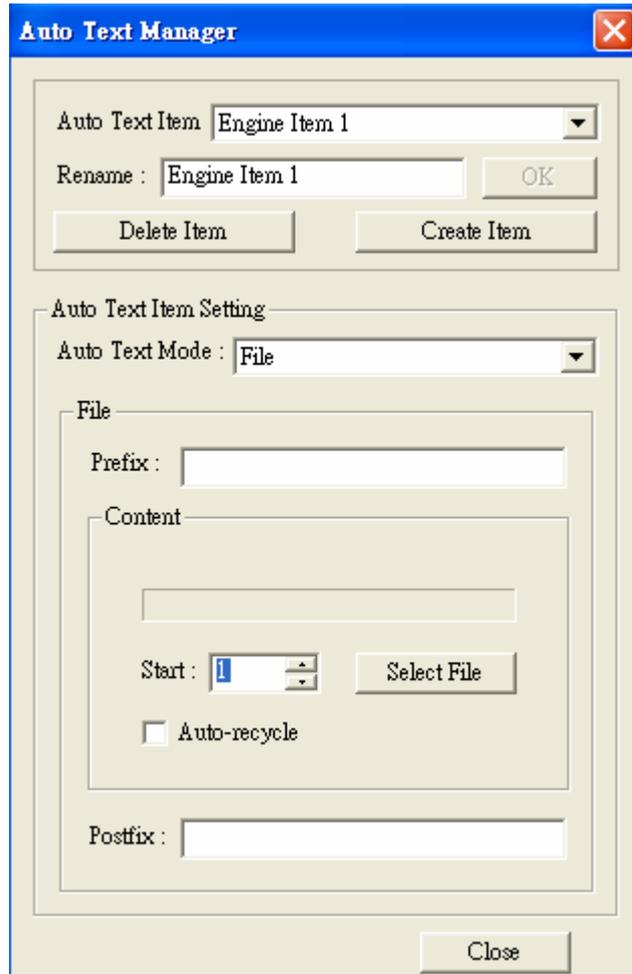
Postfix:

Close

MarkingMate

File

Using File as a function of Auto String, you can build up a text format file in advance. You can insert a name list or address list, etc. Choose Select File to designate the source of your information.



The screenshot shows the 'Auto Text Manager' dialog box. At the top, the title bar reads 'Auto Text Manager' with a close button. Below the title bar, there is a section for 'Auto Text Item' with a dropdown menu set to 'Engine Item 1'. To the right of this dropdown is a 'Rename' button with 'Engine Item 1' in a text field and an 'OK' button. Below these are two buttons: 'Delete Item' and 'Create Item'. The main section is titled 'Auto Text Item Setting' and contains an 'Auto Text Mode' dropdown set to 'File'. Underneath, there is a 'File' section with a 'Prefix' text field. Below that is a 'Content' section with a large text area. At the bottom of the content area is a 'Start' spinner set to '1' and a 'Select File' button. Below the content area is an 'Auto-recycle' checkbox, which is currently unchecked. At the very bottom of the dialog is a 'Postfix' text field and a 'Close' button.

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Keyboard

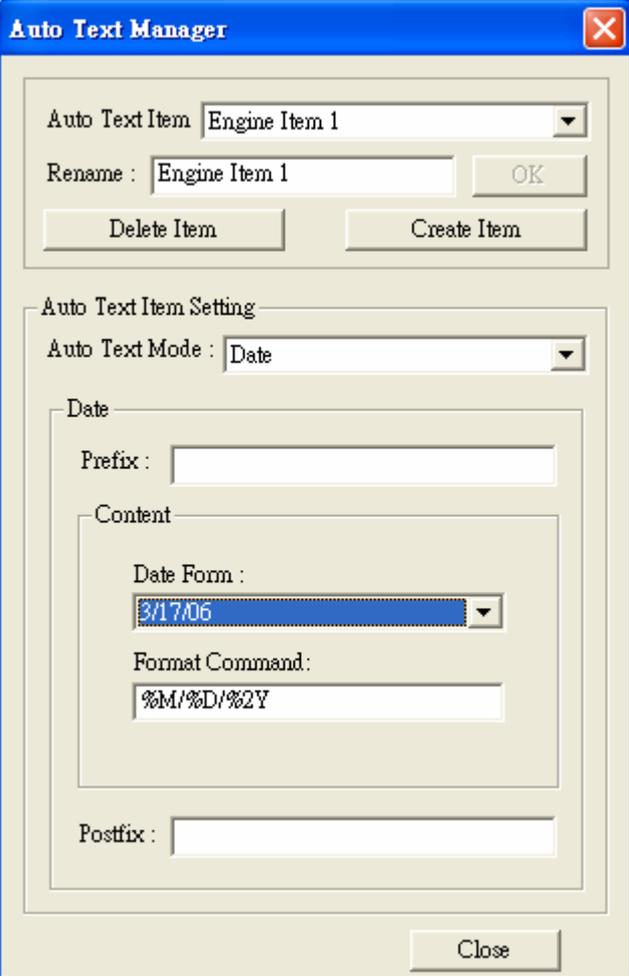
Directly type in the text you want by the keyboard.

The screenshot shows the 'Auto Text Manager' dialog box. At the top, the title bar reads 'Auto Text Manager' with a close button. Below the title bar, there is a section for 'Auto Text Item' with a dropdown menu showing 'Engine Item 1'. Below this is a 'Rename' field containing 'Engine Item 1' and an 'OK' button. There are also 'Delete Item' and 'Create Item' buttons. The main section is titled 'Auto Text Item Setting' and contains an 'Auto Text Mode' dropdown menu set to 'Keyboard'. Underneath, there is a 'Keyboard' section with a 'Prefix' field, a 'Content' section with a 'Prompt' field, and a 'Postfix' field. A 'Close' button is located at the bottom right of the dialog.

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Data

In addition to prefix and postfix settings, this will allow you to insert various date formats into the content of the Auto String number.



The screenshot shows the 'Auto Text Manager' dialog box. At the top, the title bar reads 'Auto Text Manager' with a close button. Below the title bar, there is a section for 'Auto Text Item' with a dropdown menu set to 'Engine Item 1'. To the right of this dropdown is a 'Rename' button with the text 'Engine Item 1' and an 'OK' button. Below these are two buttons: 'Delete Item' and 'Create Item'. The main section is titled 'Auto Text Item Setting'. It contains an 'Auto Text Mode' dropdown menu set to 'Date'. Below this is a 'Date' section with a 'Prefix' text box. Underneath is a 'Content' section containing a 'Date Form' dropdown menu set to '3/17/06' and a 'Format Command' text box containing '%M/%D/%2Y'. At the bottom of the 'Content' section is a 'Postfix' text box. A 'Close' button is located at the bottom right of the dialog box.

MarkingMate

6.3.9 Arc Text

Set the properties of the Arc Text

Center: center position

Radius: radius

Show Arc: show the path

Same as X Radius: the path will become a circle

Text Position: arrange the text position

Horz Offset: offset on horizontal direction

Baseline Offset: offset of the baseline

Close-to-Baseline: the text position related to the baseline

Reverse: the text will be arranged in reverse order

The image shows a software dialog box titled "Property Table" with a close button (x) in the top right corner. The dialog has several tabs: "Frame/Fill", "Delay", "Array Copy", "Motion", "Text", "Arc Text", and "Mark Parameter". The "Arc Text" tab is currently selected. The dialog is divided into several sections:

- Center:** Two input fields for X and Y coordinates. X is 12.333 mm and Y is -23.778 mm.
- Radius:** Two input fields for X and Y radii. Both are 4.576 mm.
- Show Arc:** A checkbox that is currently unchecked.
- Same as X:** A checkbox that is currently checked.
- Text Position:** A dropdown menu showing "abc".
- Horz. Offset:** An input field set to 0.000 mm.
- Baseline Offset:** An input field set to 0.000 mm.
- Close-to-Baseline:** A dropdown menu showing "A|c|".
- Reverse:** A checkbox that is currently unchecked.

At the bottom of the dialog, there are three buttons: "Set As Default", "Apply", and "Apply All".

MarkingMate

6.3.10 Baseline

There are two baseline types when the selected text is arranged along a designated path. When you finished the editing, you have to press the Apply button.

Baseline-type: closed

For example: Rectangle

The screenshot shows the 'Property Table' dialog box with the 'Baseline' tab selected. The 'Baseline-type' is set to 'closed'. The 'Position' dropdown shows 'abc'. The 'Horz. Offset' and 'Baseline Offset' are both set to 0.000 mm. The 'Close-to-Baseline' dropdown shows 'A|c|'. There is an unchecked 'Reverse' checkbox. At the bottom, there are 'Set As Default', 'Apply', and 'Apply All' buttons.

Baseline-type: open

For example: Curve

The screenshot shows the 'Property Table' dialog box with the 'Baseline' tab selected. The 'Baseline-type' is set to 'open'. The 'Position' dropdown shows '→abc'. The 'Horz. Offset' and 'Baseline Offset' are both set to 0.000 mm. The 'Close-to-Baseline' dropdown shows 'A|c|'. There is an unchecked 'Reverse' checkbox. At the bottom, there are 'Set As Default', 'Apply', and 'Apply All' buttons.

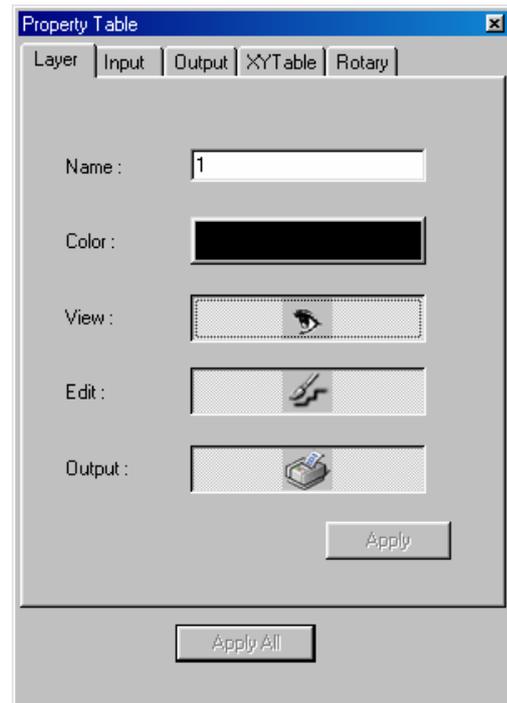
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6.4 Layer

When a layer object in the Object View being selected, the property table of this layer object will be displayed. Users can set up some output related parameters in the dialogue box; mainly include the I/O signal and etc.

6.4.1 Layer

This function allows you to set up the parameters of the layer include its name, color, view enable, edit enable, and output enable.



MarkingMate

6.4.2 Input

This function allows you to set up the input status of the layer. The system will first check the Input settings and then the Graph Setup.

Input Status

High or low voltage of the input points

Timeout

Waiting time

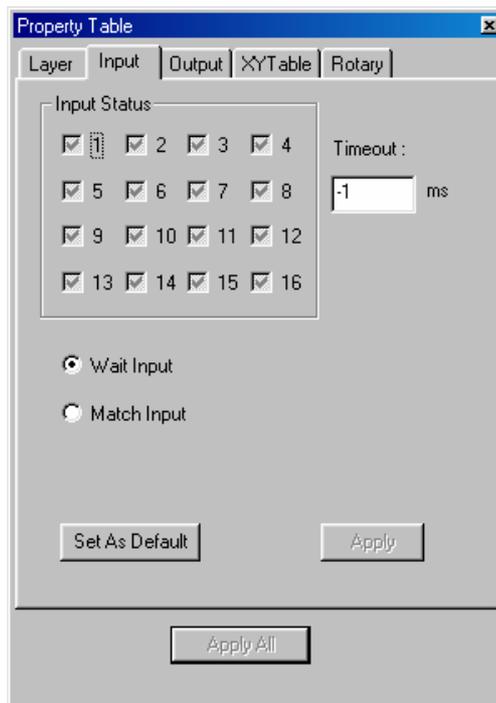
-1 means no limitation

Wait Input

Wait until all input status exist, otherwise wait for Timeout

Match Input

Wait until all input status exist, otherwise skip the layer



6.4.3 Output

Use this function to set up the output status of the layer.

The system will first handle the graph and then the output status.

Output Status

High or low voltage of the output points

Auto Clear Signal

Auto clear signal after the voltage settings are done



MarkingMate

6.4.4 XY Table (optional)

Enable

Enable the XY Table

Y Disable

Single axis marking

XY Coordinates

The coordinates value of XY

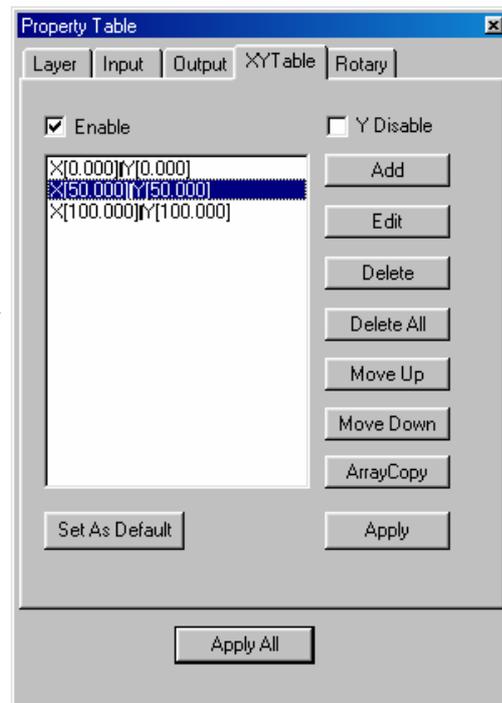
Table position

Add/Edit/Delete/Delete

All/Move Up/Move Down/Array

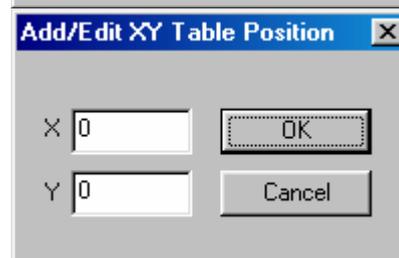
Copy

Allow users to edit the XY coordinate value



Add/Edit XY Table Position

Add or edit the XY table position which will be marked



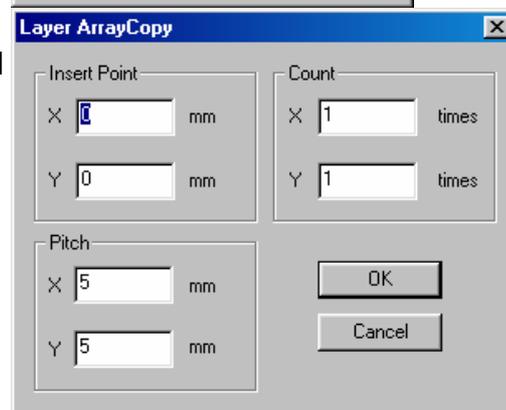
Layer Array Copy

This function allows users to add multiple points at one time

Insert Point: the position starting array copy

Count: copy amount

Pitch: the interval between the two points



MarkingMate

6.4.5 Rotary (optional)

Enable

Enable the Rotary function

Method

Cylinder

Option –

Diameter: the diameter of the object

Max Width: the max acceptable width for rotary

Disc

Option –

Step Angle: the rotary angle per step

The image shows a 'Property Table' dialog box with a blue title bar and a close button. It has four tabs: 'Layer', 'Input', 'Output', and 'Rotary'. The 'Rotary' tab is selected. Inside the dialog, there is a checked checkbox labeled 'Enable'. Below it is a 'Method' section with two radio buttons: 'Cylinder' (selected) and 'Disc'. Underneath is an 'Option' section with two input fields: 'Diameter : 200 mm' and 'Max Width : 10 mm'. At the bottom of the dialog are three buttons: 'Set As Default', 'Apply', and 'Apply All'.

Chapter 7 Popup Menu

Click the right button of the mouse will display a quick view menu. When Show Order in View Menu is activated, user can change the mark order. And when the object has been transferred to curve (in Edit Menu), user is able to Add Vertex to the object.

The popup menu is different when you select different objects.

7.1 General object

Select a general object and click the right button of the mouse, you will see the popup menu as below:

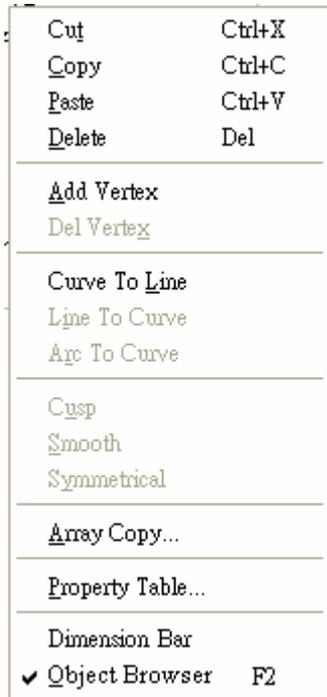
C <u>u</u> t	Ctrl+X
C <u>o</u> py	Ctrl+C
P <u>a</u> ste	Ctrl+V
D <u>e</u> lete	Del
<hr/>	
A <u>rr</u> ay Copy...	
<hr/>	
P <u>ro</u> perty Table...	
<hr/>	
Dimension Bar	
O <u>bj</u> ect Browser	F2

Cut	Remove selected data and store it in the clipboard for future use	Refer to section 4.2.3
Copy	Duplicate selected data and store it in the clipboard for future use	Refer to section 4.2.4
Paste	Attach data from the clipboard to the current document	Refer to section 4.2.5
Delete	Delete and remove the selected data	Refer to section 4.2.6
Array Copy	Execute the array copy function	Refer to section 6.2.4
Property Table	Show the Property Table of the object	Refer to section 6.2
Dimensional Bar	Enable/disable Dimension bar	Refer to section 4.7.7
ObjView Bar	Enable/disable Object Browser	Refer to section 4.7.4

MarkingMate

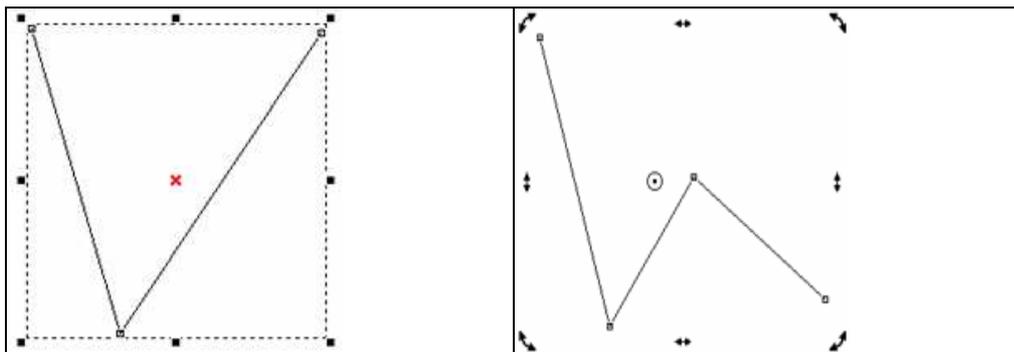
7.2 Curve

Select a curve you drew or the curve transferred from objects, and click the right button of the mouse; you will see the popup menu as below:



7.2.1 Add Vertex

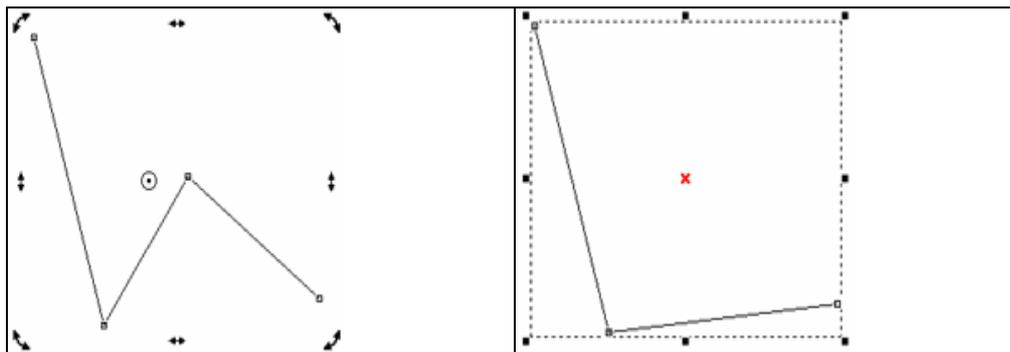
This function allows you to modify a curve object; more vertexes will be more convenient to change the shape of the curve.



7.2.2 Delete Vertex

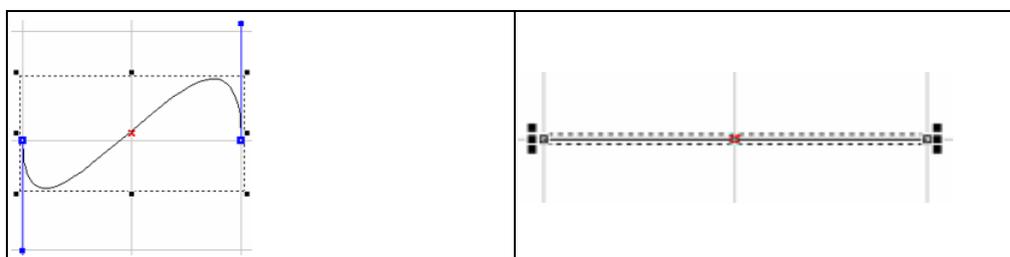
Using "Delete Vertex" function will decrease the control points as below:

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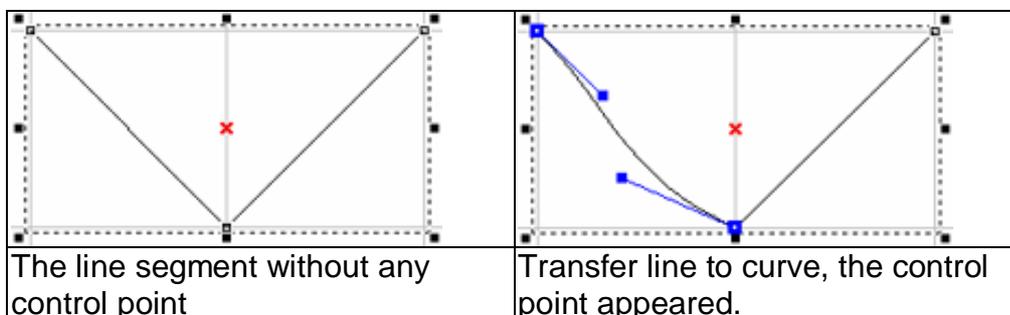
7.2.3 Curve to Line

Select “Curve to Line” function; the curve has been transferred to a line segment and lost its control points as below:



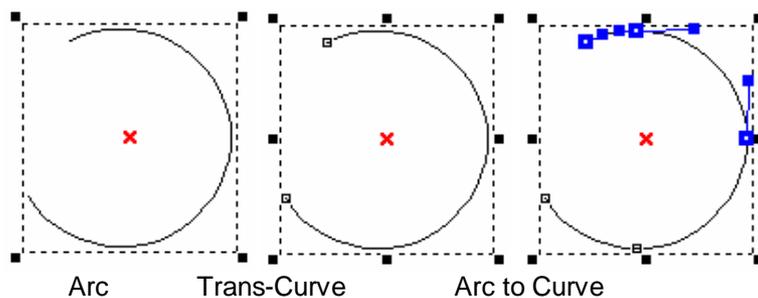
7.2.4 Line to Curve

Select “Line to Curve” function; the line segment has been transferred to a curve and its control points appeared as below:



7.2.5 Arc to Curve

To use this function, you must first create an object and transfer the object to curve, and then click right button of the mouse to select the “Arc to Curve” function. This function allows you to add more vertexes to the curve as below:



Arc

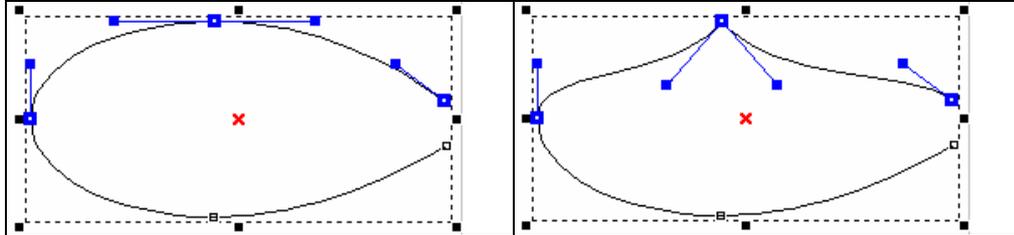
Trans-Curve

Arc to Curve

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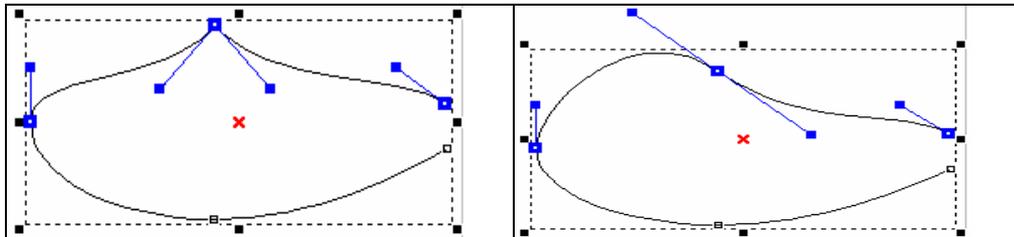
7.2.6 Cusp

The control points of the curve were smooth at the beginning; select “Cusp” function on the popup menu; the two sides of control points become independent as below:



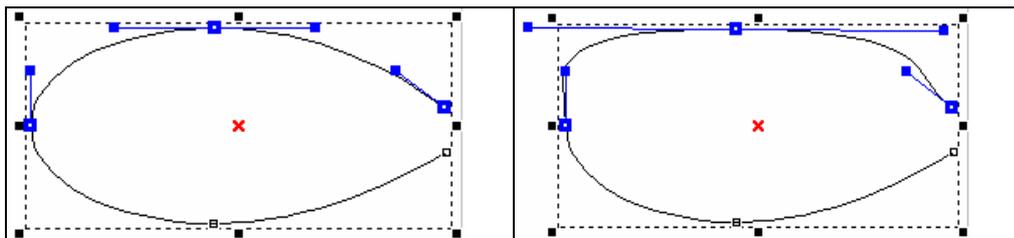
7.2.7 Smooth

The control points of the curve were cusp at the beginning; select “Smooth” function on the popup menu; the two sides of control points become smooth and dependent on each other as below:



7.2.8 Symmetrical

The control point was smooth but not symmetrical; select “Symmetrical” function on the popup menu and move one of the control point; the other side of control point will move symmetrically as below:



7.3 Show Mark Order of a General Object

If the “Show Order” function in View Menu is activated, select a general object, and click the right button of the mouse, you will see as below:

MarkingMate

C <u>u</u> t	Ctrl+X
C <u>o</u> py	Ctrl+C
P <u>a</u> ste	Ctrl+V
D <u>e</u> lete	Del
<hr/>	
R <u>e</u> verse	
Shortest H <u>o</u> rizontal	
Shortest V <u>e</u> rtical	
Shortest D <u>i</u> stance	
<hr/>	
A <u>a</u> rray Copy...	
<hr/>	
P <u>r</u> operty Table...	
<hr/>	
Dimension Bar	
✓ O <u>b</u> ject Browser	F2

7.4 Show Mark Order of a Curve

If the “Show Order” function in View Menu is activated, select a curve you drew or the curve transferred from objects, and you will see the below popup menu as you click the right button of the mouse:

C <u>u</u> t	Ctrl+X
C <u>o</u> py	Ctrl+C
P <u>a</u> ste	Ctrl+V
D <u>e</u> lete	Del
<hr/>	
T <u>o</u> p	
U <u>n</u> dermost	
U <u>u</u> pper	
L <u>o</u> wer	
<hr/>	
I <u>n</u> Front Of...	
I <u>n</u> B <u>e</u> ck Of...	
<hr/>	
R <u>e</u> verse	
Shortest H <u>o</u> rizontal	
Shortest V <u>e</u> rtical	
Shortest D <u>i</u> stance	
<hr/>	
A <u>a</u> dd Vertex	
D <u>e</u> l Vertex	
<hr/>	
C <u>u</u> rve To L <u>l</u> ine	
L <u>l</u> ine To C <u>u</u> rve	
A <u>u</u> rc To Curve	
<hr/>	
C <u>u</u> sp	
S <u>u</u> ooth	
S <u>u</u> mmetrical	
<hr/>	
A <u>a</u> rray Copy...	
<hr/>	
P <u>r</u> operty Table...	
<hr/>	
Dimension Bar	
✓ O <u>b</u> ject Browser	F2

Chapter 8 Hot Key

File Menu	
Ctrl + N	Create a new document
Ctrl + O	Open an existing document
Ctrl + S	Save the current document using the existing file name
Ctrl + I	Import
Ctrl + P	Print
Edit Menu	
Ctrl + Y	Replace a cancelled action
Ctrl + Z	Cancel un unwanted action
Ctrl + X	Remove the selected object and place it in the clipboard
Ctrl + C	Duplicate the selected object and place it in the clipboard
Ctrl + V	Place the data on the clipboard on to the document
DEL	Delete the selected object
Ctrl + K	Combine
Ctrl + B	Break
Ctrl + M	Group
Ctrl + Q	UnGroup
F5	Sort
Ctrl + H	Mirror Horizontal
Ctrl + L	Mirror Vertical
Ctrl + E	Baseline
Ctrl + D	Split
Ctrl + U	Transfer to a curve
Ctrl + G	Welding
Ctrl + W	Contour
Right Key	
Ctrl + T	Open the Property Table
F2	Open the Object Browser
Others	
Ctrl + A	Trimming
Ctrl + F4	Close the current file
Ctrl + F6	Switch to another opened file
Ctrl	1. Force the angle of a line segment to be 15°when drawing a line, and force the width equal to the height when drawing an arc, circle, or rectangle. 2. The XY axis of the object will be adjusted simultaneously
Shift	The center of a circle or rectangle will be the center of the initial axis The XY axis of the object will be adjusted simultaneously

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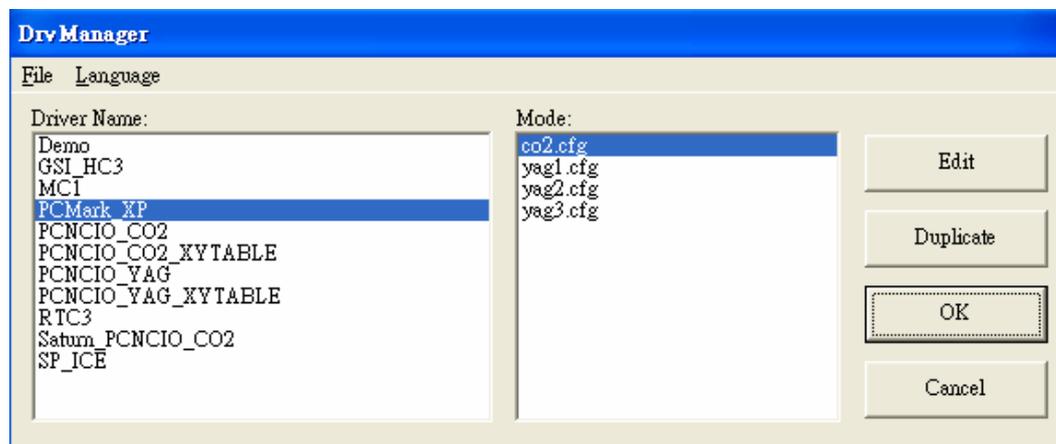
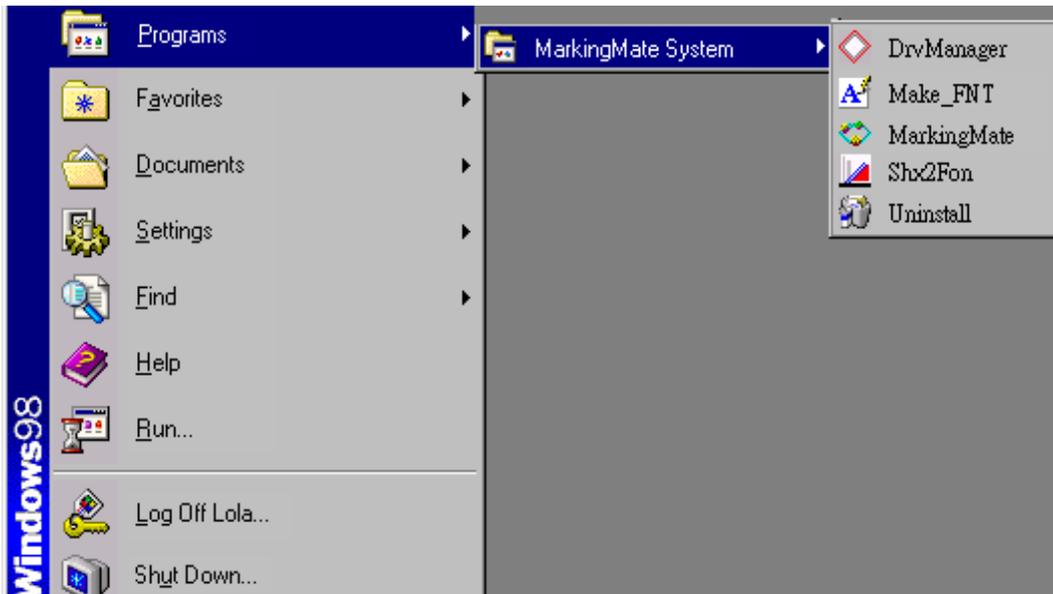
F1	Open HELP
Tab	Select object by marking order
C	When you are drawing lines, arcs, and curves, press C key will make the continuous segments become a closed loop.
X/Y	Set the start point or end point of the object

MarkingMate

Appendix A: Driver Manager

Users are allowed to change drivers they need as their motion card changed. Whenever driver being changed, the system must be restart.

Click [Start - Program] from the left-bottom of the window and select **Driver Manager** from the MarkingMate System directory as below to change the driver you want.



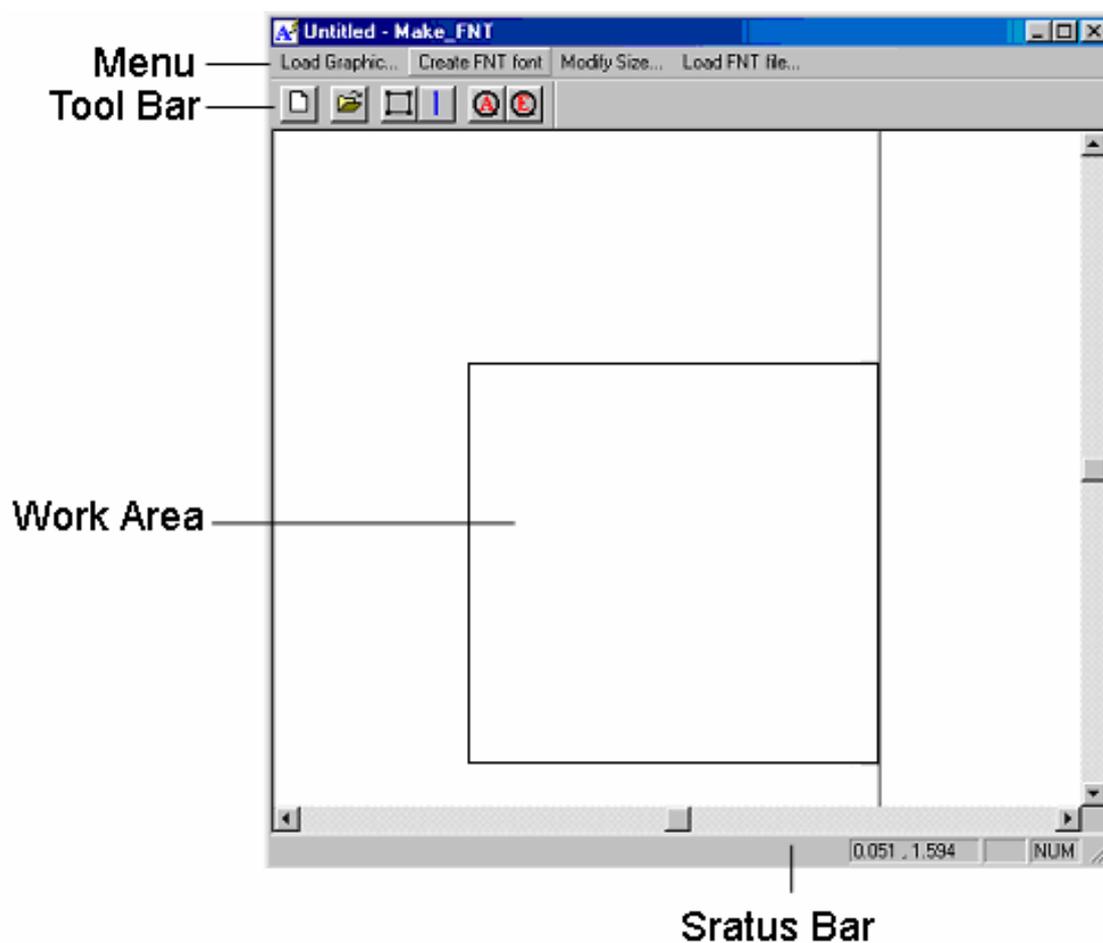
Make_FNT

Appendix B: Make_FNT

Make_FNT is a subsidiary program of MarkingMate. After finishing MarkingMate installation, the Make_FNT program is available to use.

Make_FNT is a program allowing users to create fonts for MarkingMate. Users can copy the fonts created in **Make_FNT** to the directory of MarkingMate\fonts, and the fonts are ready for MarkingMate.

1. User Interface



Make_FNT

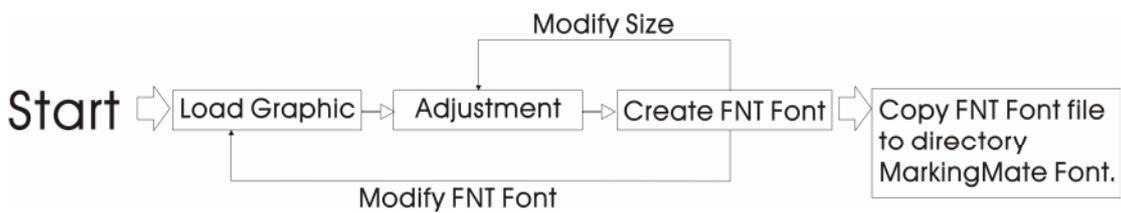
Introduction of Make_FNT interface:		
Menu Bar	Load Graphic	Load a DXF file for editing.
	Create FNT font	Create new FNT font files.
	Modify Size	Modify the position and size of the font file you loaded.
	Load FNT file	Load a FNT file for editing.
Toolbar	 Load Graphic	Load a DXF file for editing.
	 Create FNT font	Create new FNT font files.
	 Modify Size	Modify the position and size of the font file you loaded.
	 End Line	The end position of the character.
	 Zoom All	See all of the Work Area.
	 Zoom Extend	See all of the objects.
Work Area	The area for editing.	
Status Bar	The command notes and mouse position will be displayed in the Status Bar.	

Make_FNT

2. How to use Make_FNT

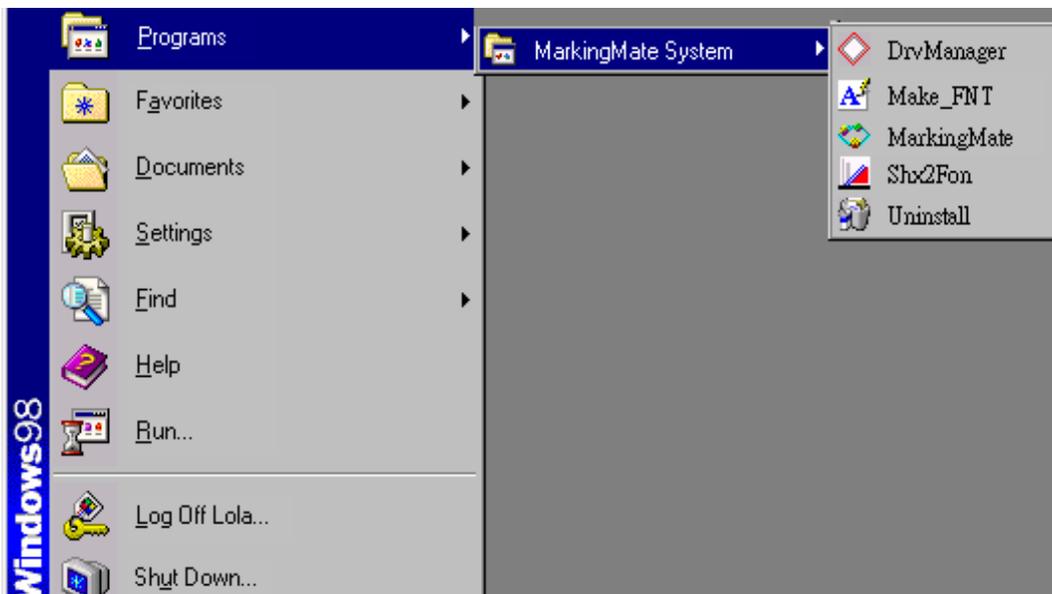
To create fonts in **Make_FNT**, users have to prepare some DXF files first. You can use AutoCAD or CorelDRAW to create a DXF file, import the DXF file into Make_FNT program, adjust its size, spacing, or other changes you need and then save it as a FNT font file.

The flow chart of executing the program is as below:



2.1 Start the program

You can start the program by clicking “Start – Program” and select the Make_FNT program as below.



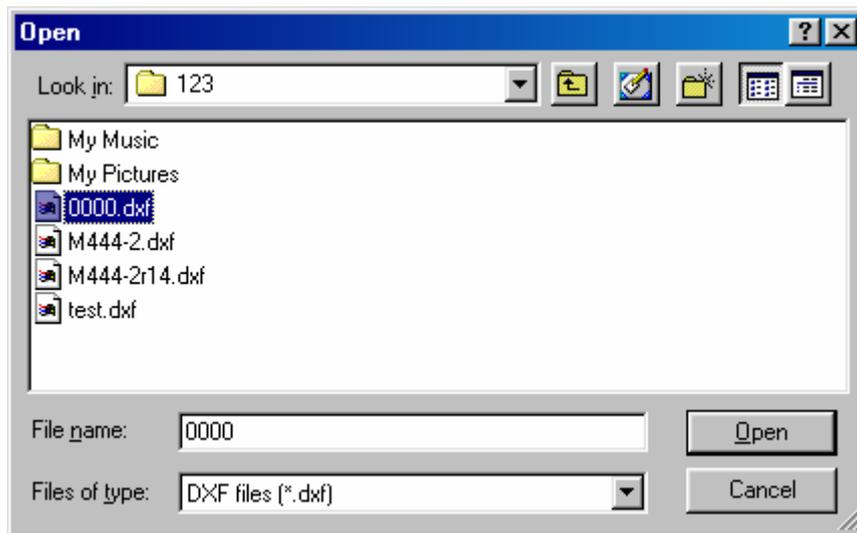
2.2 Load Graphic

Use AutoCAD or CorelDRAW to create some DXF files you need.

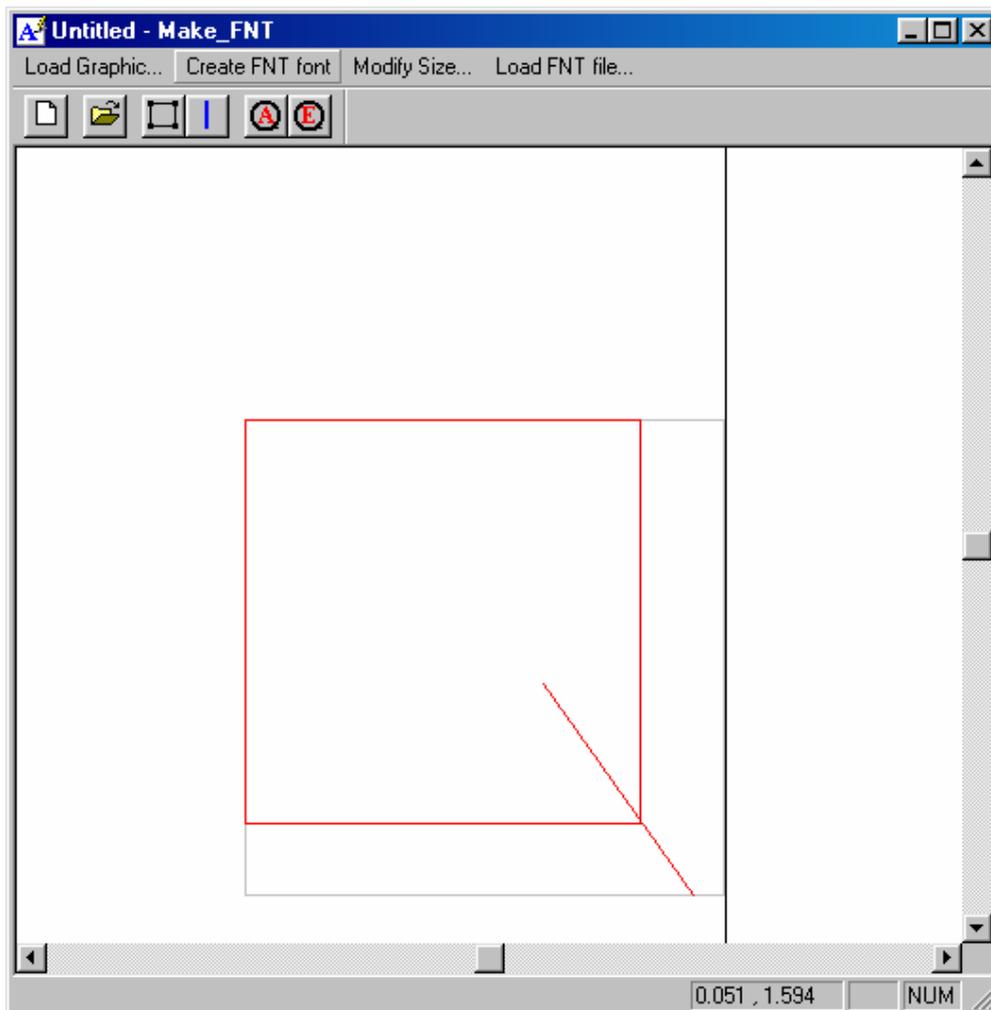
Click “Load Graphic” from the Menu Bar or click the  button from the

Make_FNT

toolbox, a dialogue box will be displayed.



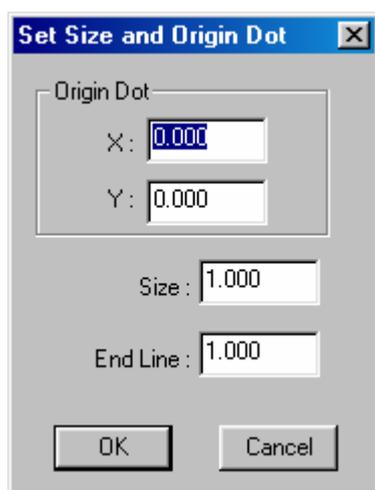
Select the DXF file you want and then click the “Open” button.
The selected picture will be displayed in the Work Area.



Make_FNT

2.3 Adjustments

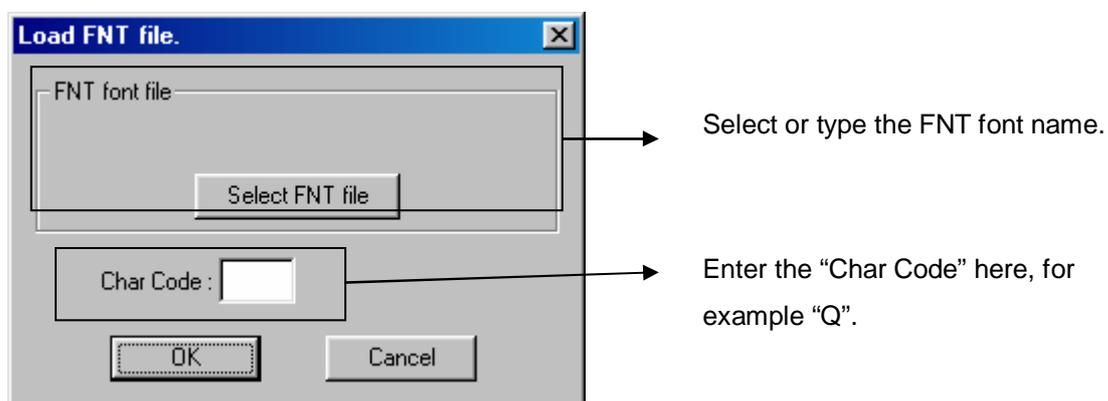
Click “Modify Size” from the Menu Bar or click  button from the Toolbar to adjust the position and scale of the font. And then click the  button from the Toolbar to adjust the end line of the character.



- Origin dot** Set the position of the origin dot
- Size** Set the object size
- End Line** Set the end line of the object

2.4 Create FNT Font

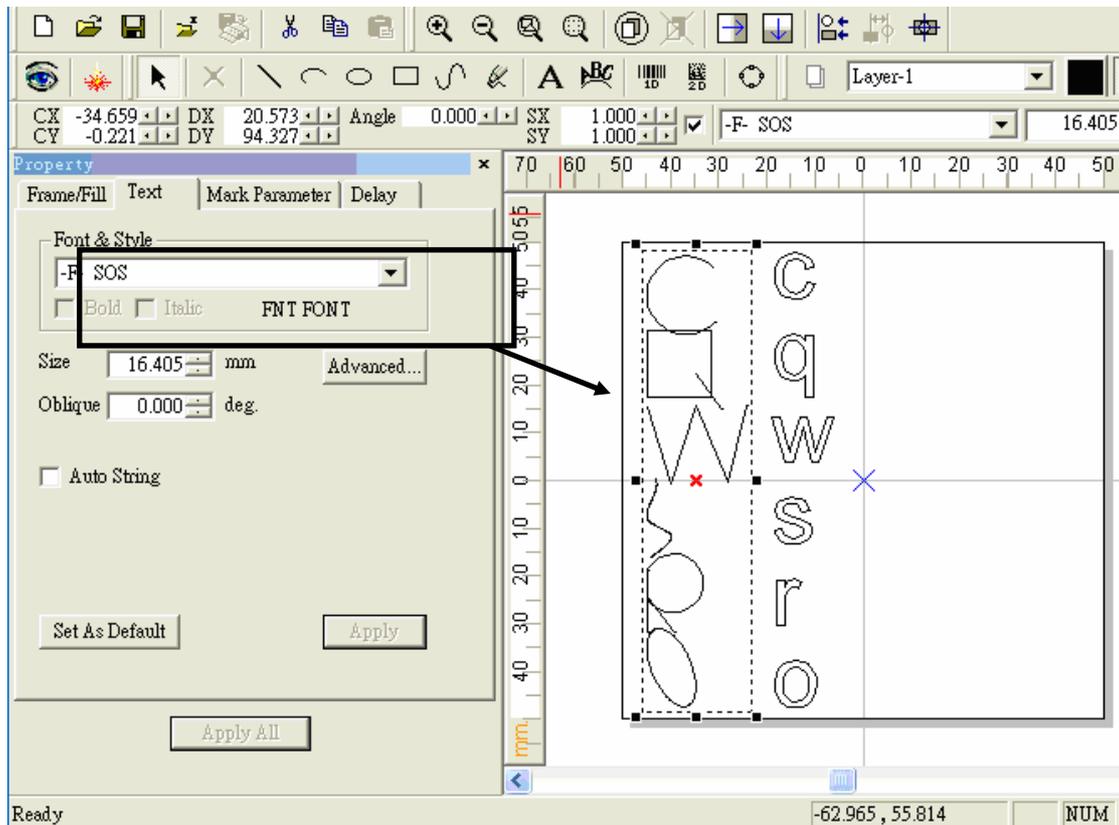
After finishing the adjustment, click “Create FNT Font” from the Menu Bar or click the  button from the Toolbar, a dialogue box will be displayed as below:



Make_FNT

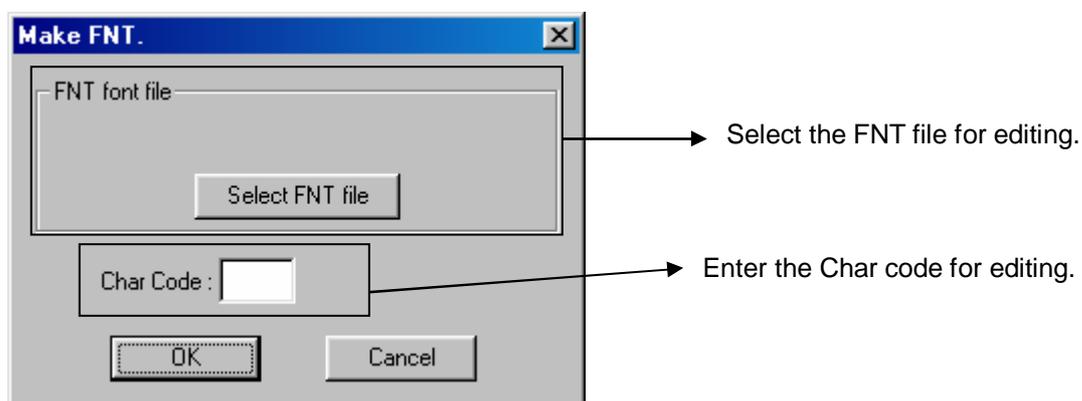
Click the “Select FNT Font” button, select or enter the file name you want. Enter the character code you want in the box of “Char Code” and then press “OK”.

Move or copy the new FNT font file to the directory of MarkingMate\Font and then this new font is available for MarkingMate program.



2.5 Modify FNT Font

If you want to modify the FNT font you have created, click “Load FNT font” from the Menu Bar, a dialogue box as below will be displayed:



Make_FNT

Click the button of “Select FNT file” and select the file you want.

Enter the Char Code you want and press “OK”, and then you are able to do the adjustments as the description on section 2.3.

After finishing the adjustments, repeat the action as section 2.4 to save the file.

SHX to FON

Appendix C: SHX to FON

SHX to FON is another subsidiary program of MarkingMate. This program is able to convert the font format from **SHX** to **FON**.

Method:

Click “Start – Program” and select “SHX to FON” to enter this program as below.

Set the file directory path of FON fonts.

Click the “Add” button to select the files for convert. You can convert many files at the same time.

If you want to remove some files from the convert list, select the file first and then click the “Remove” button to delete it.

After all the SHX files for convert have been added in the list, press the “Convert” button and the convert result will be displayed in the bottom of this dialogue box.

