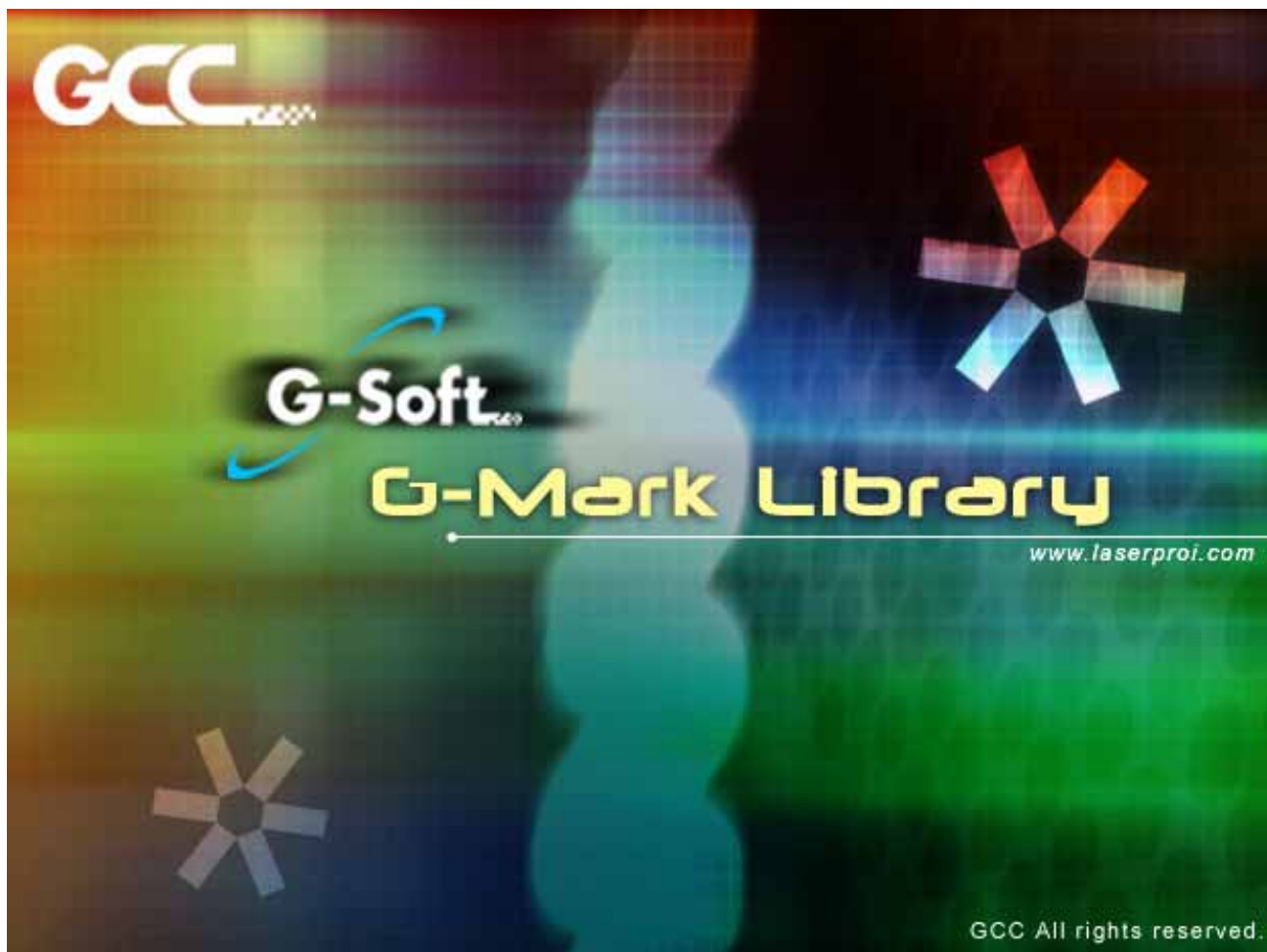


## G-Mark Library



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# Chapter 1 System Installation

Welcome to the world of G-Mark Library!

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

## 1.1 Installation Notice

Please make sure your computer meets the following requirements before installing G-Mark Library :

Windows 98/2000/XP operating system.

Hardware equipment compatible with Windows 98/2000/XP Operating System.

Monitor resolution is 1024\*768

Plug in PCNCIO card or PCMark card, or MC-1 laser controller.

The PCNCIO card can only be used in Windows 98 system.

Before installation, remember to remove the old version of G-Mark Library 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 G-Mark Library program, the old settings can be used already.

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

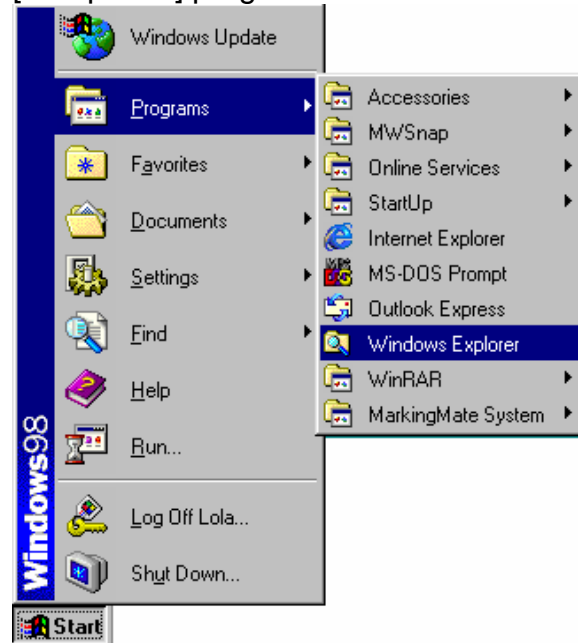
## G-Mark Library

### 1.2 G-Mark Library Installation

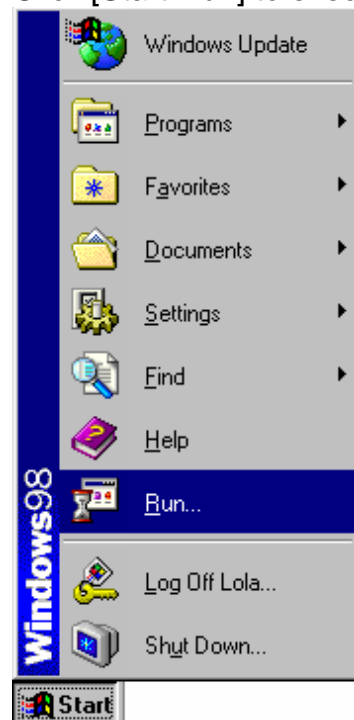
G-Mark Library offers a very user-friendly installation interface. It will copy all system related files to the directory you assigned to and prompt you with the necessary information step by step.

How to enter the G-Mark Library installation:

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



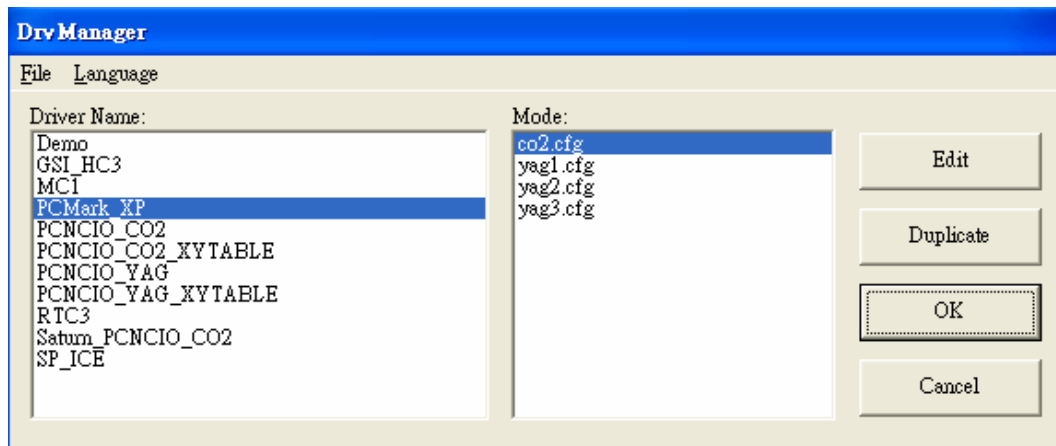
Click [Start-Run] to execute the [Setup.exe] program in CD-ROM.



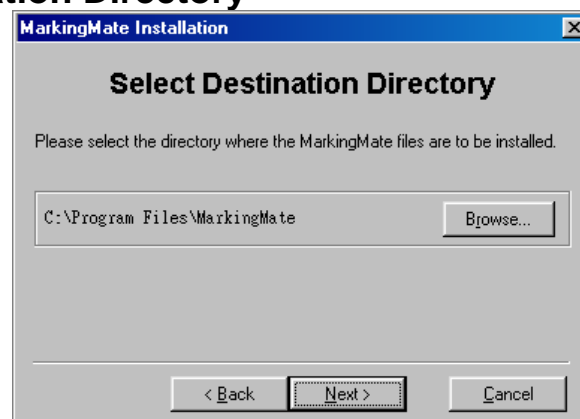
When you get into the G-Mark Library installation, the following frame appears:

## G-Mark Library

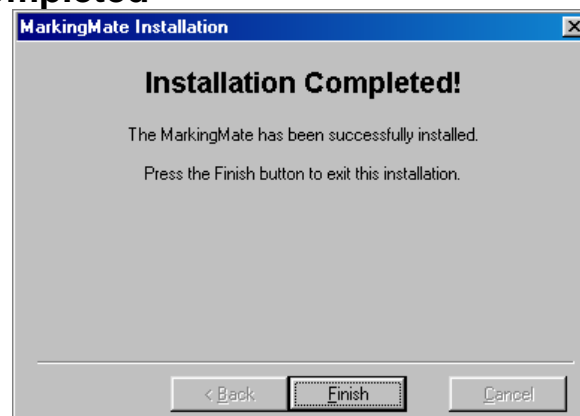
### Select Laser Driver



### Select Destination Directory



### Installation Completed



### 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 G-Mark Library 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 G-Mark Library 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 G-Mark Library 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

G-Mark Library 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:

<b>Composition Function</b>	Allow users to arrange various objects in suitable position
<b>Object Path Arrangement</b>	After the path settled, the system will control the GALVO motor through the D/A signals
<b>Control Laser Source</b>	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 rotate angle is  $\pm 20$  degree, its acceptable voltage arrange is  $\pm 10V$ . If the input voltage is  $-10V$ , motor degree is  $-20$  degree; when the input voltage turns

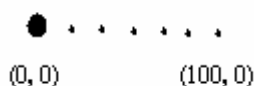
## G-Mark Library

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 at time 1, and output (10V, 0V) at 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?  $\text{Time} = \text{Distance} / \text{Speed}$ .

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.

G-Mark Library 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 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



## G-Mark Library

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.

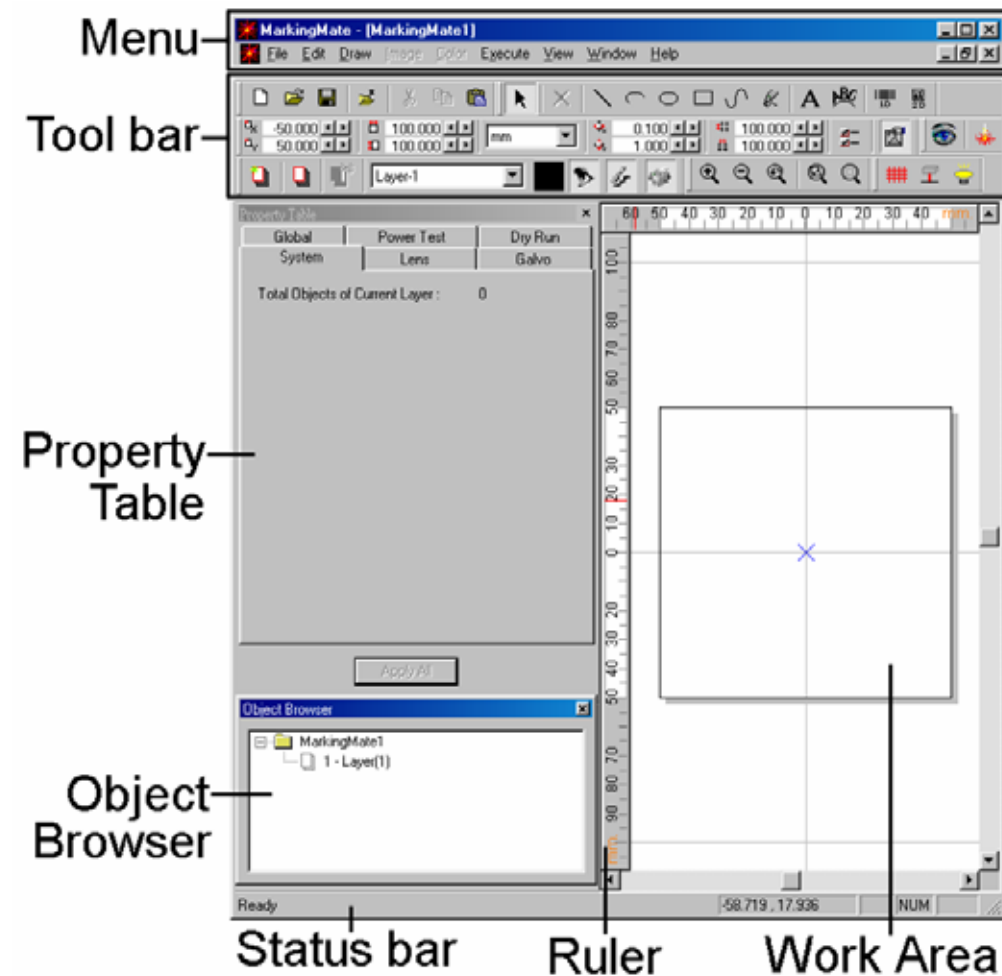
In CW mode, the laser will continuously shooting when the gate is open and receiving a trigger current; while in Q-Switch mode, even the gate is open, laser is not shooting until the Q-Switch receive a signal. (Maybe open the Q-Switch gate in the edge of rising pulse, and close the gate in the edge of 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 $\mu$ s.

The principal part of G-Mark Library is its drawing editing function. There are many tools include toolbox, ruler, grid, zoom in and G-Mark Library 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:

## 2.2 User Interface

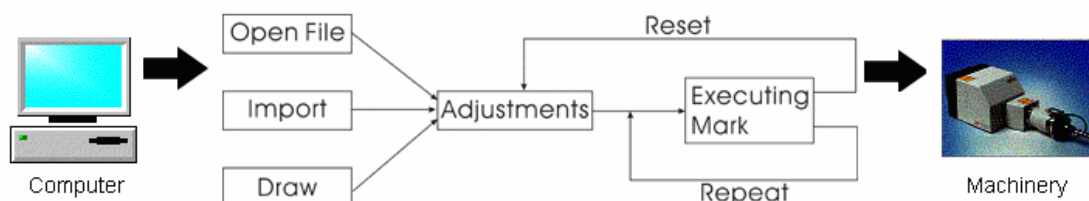


The user interface of G-Mark Library are listed as below:	
<b>Menu Bar</b>	Menu Bar contains main function of this program, click each function will drop a list of related items.
<b>Toolbar</b>	The most common use function will be listed in the toolbar. Click and drag the toolbar can move it to any place 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.
<b>Property Table</b>	Display the properties and related settings of the selected object.
<b>Object Browser</b>	Display all objects in the Work Area.
<b>Ruler</b>	Help users to realize the dimension of the object.
<b>Status Bar</b>	Display the function comment and coordinates of mouse.
<b>Work Area</b>	The area allows users to draw and edit.

# Chapter 3 Quick Guide to Newcomers

G-Mark Library 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.

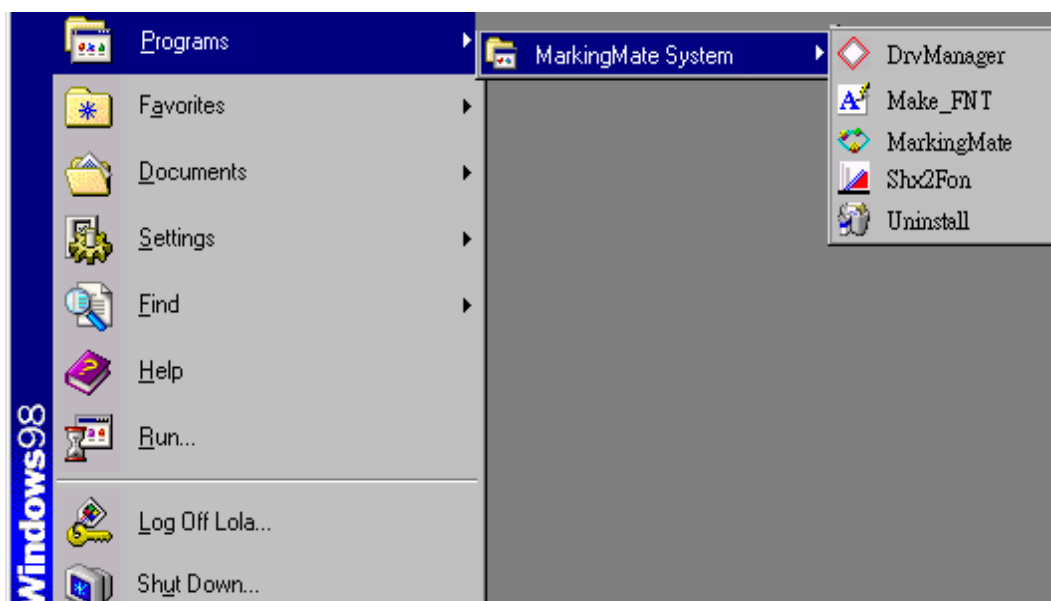
The import graphics will be maintained their shapes and scales so there is no need for any modifications that G-Mark Library can use those graphics directly. Its operation is as below:



## 3.1 Start Program

There are two ways to start the program.

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




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

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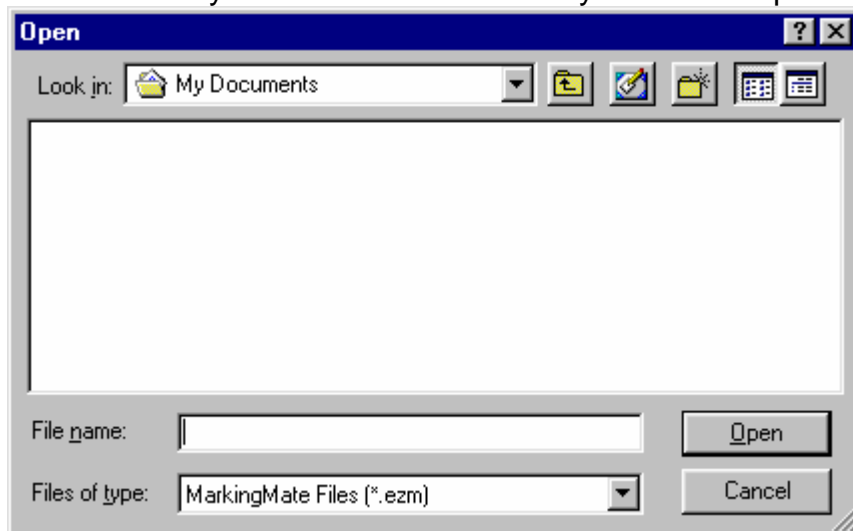
### 3.2 Read Files

In G-Mark Library 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.

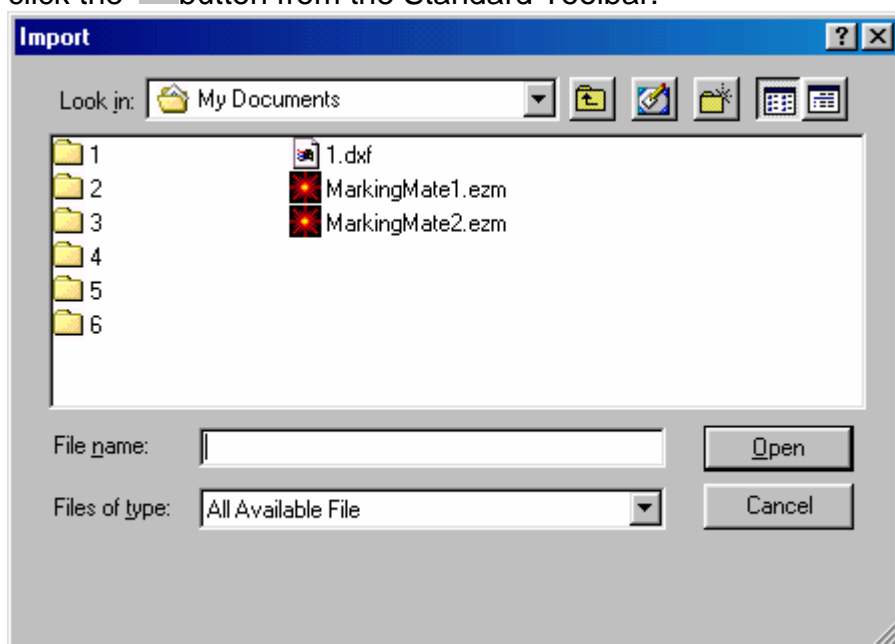
Select the file you want from the directory and click "Open" button.



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.

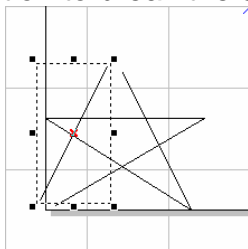


Select the file you want to import, and then click the "Open" button. The selected picture will be displayed on the left-down corner of the work area.


## G-Mark Library



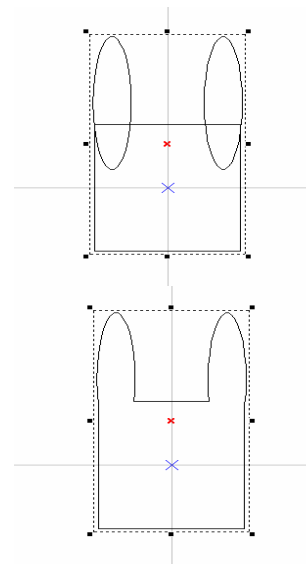
When import a graphic object (like a DXF file), users can use “Edit – Break” function to break the selected object into several objects.



### 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.

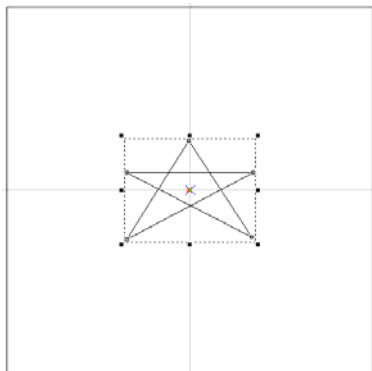
### 3.3 Parameters Settings

#### 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:

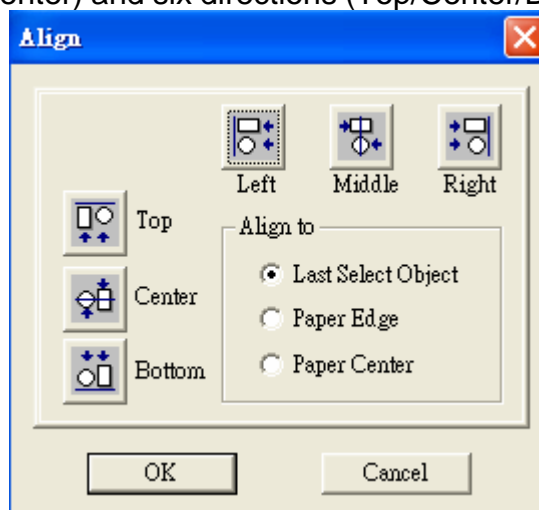
Click the  button on the Property Bar, the picture will be put in the center of the work area.



##### 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, Left/Middle/Right) to choose.

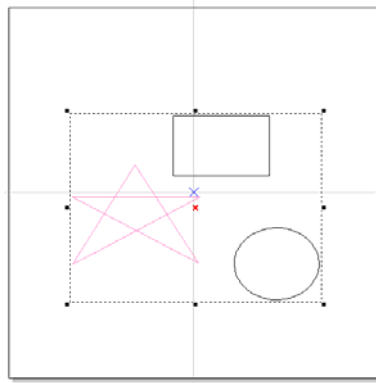


and Left/Middle/Right) to choose.

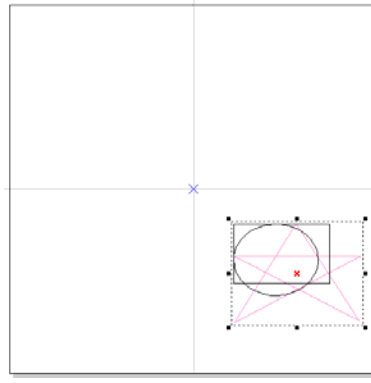
##### Examples:

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).

## G-Mark Library







(Figure 1)





(Figure 2)

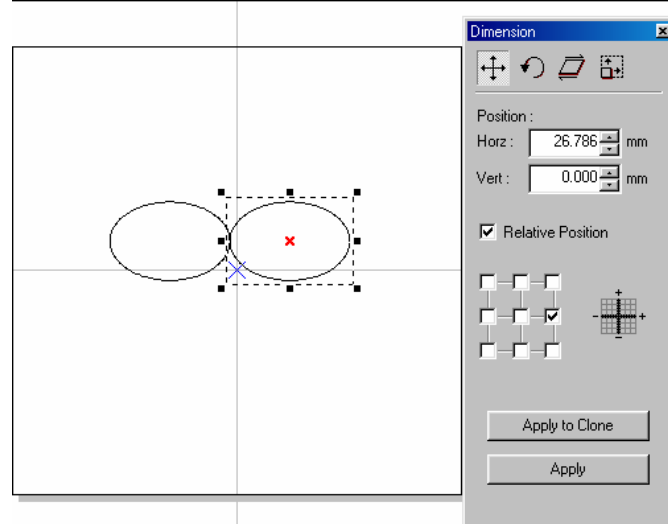
## Dimensional Bar

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:

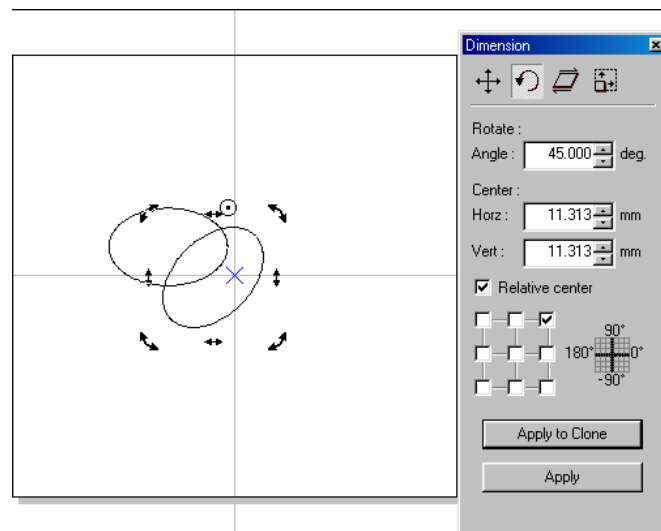


### Rotate :


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.

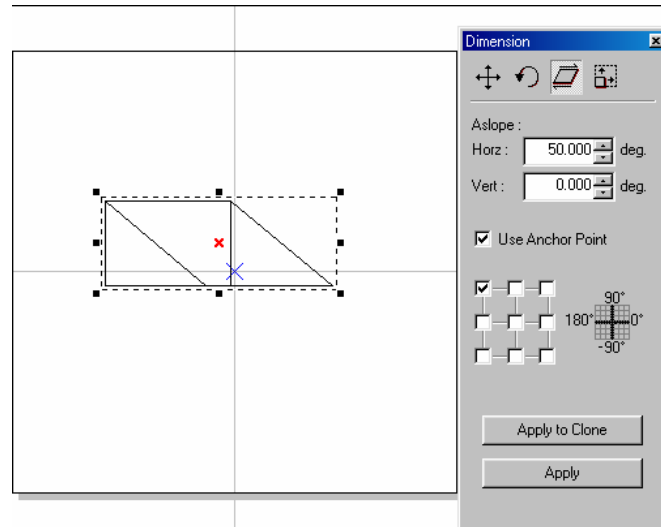
## G-Mark Library




### 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:



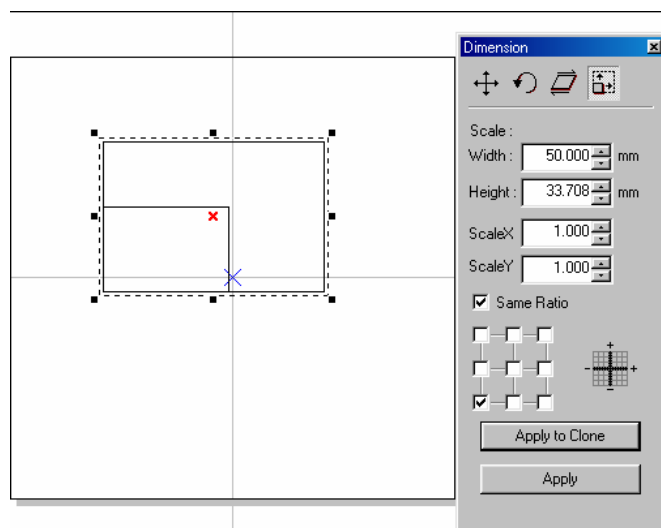
### Scale :

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

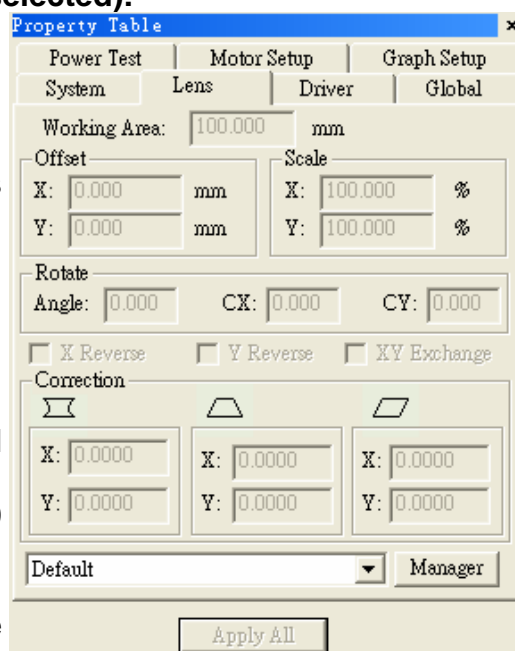
We recommend users to do test marking first before setting marking parameters.

**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.



## G-Mark Library

**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

Add to edit the lens parameters

Modify to edit the lens parameters

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### 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 conveyor 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 checkboxes for 'X Axis' and 'Y Axis', both of which are unchecked. Below these are 'X Encoder' and 'Y Encoder' checkboxes, also unchecked. For both X and Y axes, the 'Speed' is set to 0.00000 mm/sec and the 'Delay' is set to 0 us. There are buttons for 'Set Default', 'Apply', and 'Apply All'.

**X/Y Encoder (not checked):**

**Speed:** the speed of conveyor.

**Delay:** delay a giving count pulse then start marking.

### 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.

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**Property Table** x

Delay	Array Copy	Motion
Text	Mark Parameter	Frame/Fill
3 Passes	Pass--2	
<input checked="" type="checkbox"/> Frame <input type="checkbox"/> Fill	Times :	
Speed: 800.0 mm/sec	1	
Power: 20.0 %	Spot Delay :	
Freq: 20.00 kHz	0.100 ms	
<input type="checkbox"/> Wobble		
Set Default		Load...
		Apply
Apply All		

**Mark Parameter List**

Parameter Path: C:\Program Files\MarkingMate\MarkParam

Item Name	Item-0				
Pass	3-1	3-2	3-3		
Speed	800.0	800.0	800.0		
Power	20.0	20.0	20.0		
Freq	20.00	20.00	20.00		
Times	1	1	1		
Spot Delay	0.100	0.100	0.100		
Pulse width	50	50	50		
Start Point Delay	0.000	----	----		
Midpoint Delay	0.100	----	----		
End Point Delay	0.300	----	----		
Jump Speed	3000.0	----	----		
Jump Delay	0.200	----	----		

Advanced Operation

## G-Mark Library

### 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.

The screenshot shows a 'Property Table' dialog box with a tabbed interface. The 'Delay' tab is selected. The 'Rectangle' tab is also visible. The 'Mark Parameter' section contains two sub-sections: 'Delay Param' and 'Jump Param'. The 'Delay Param' section has three input fields: 'Start Point Delay' (0.000 ms), 'Midpoint Delay' (0.100 ms), and 'End Point Delay' (0.300 ms). The 'Jump Param' section has two input fields: 'Speed' (3000.0 mm/sec) and 'Delay' (0.200 ms). At the bottom, there are three buttons: 'Set Default', 'Apply', and 'Apply All'.

Rectangle	Mark Parameter
Frame/Fill	Delay
Array Copy	Motion

Delay Param

Start Point Delay: 0.000 ms

Midpoint Delay: 0.100 ms

End Point Delay: 0.300 ms

Jump Param


Speed: 3000.0 mm/sec

Delay: 0.200 ms

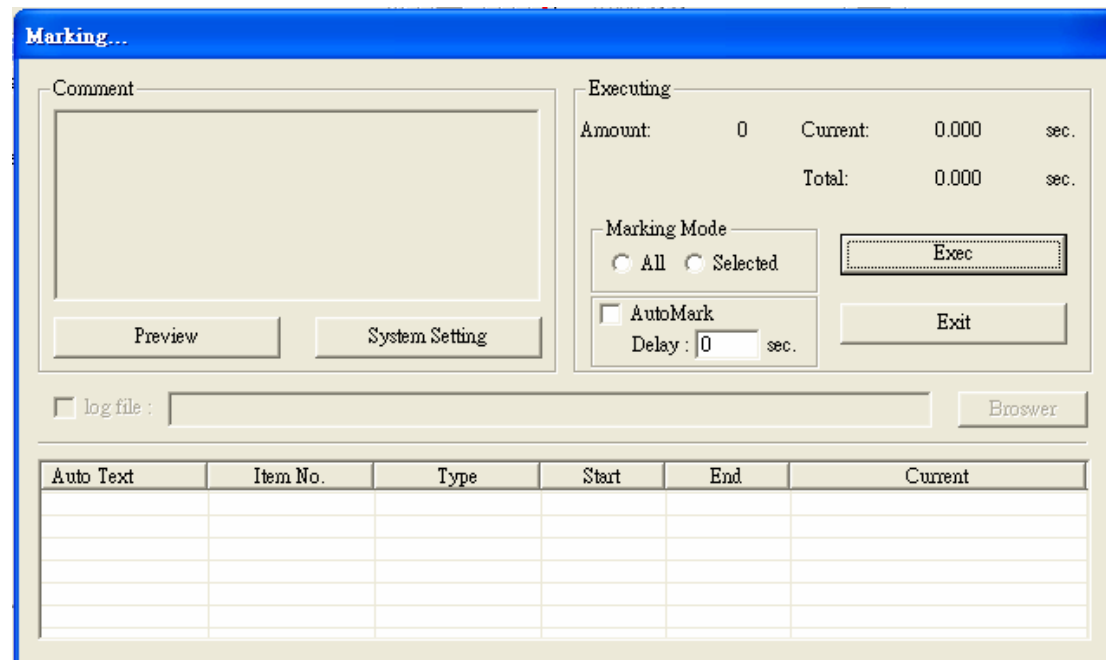
Set Default Apply Apply All

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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:

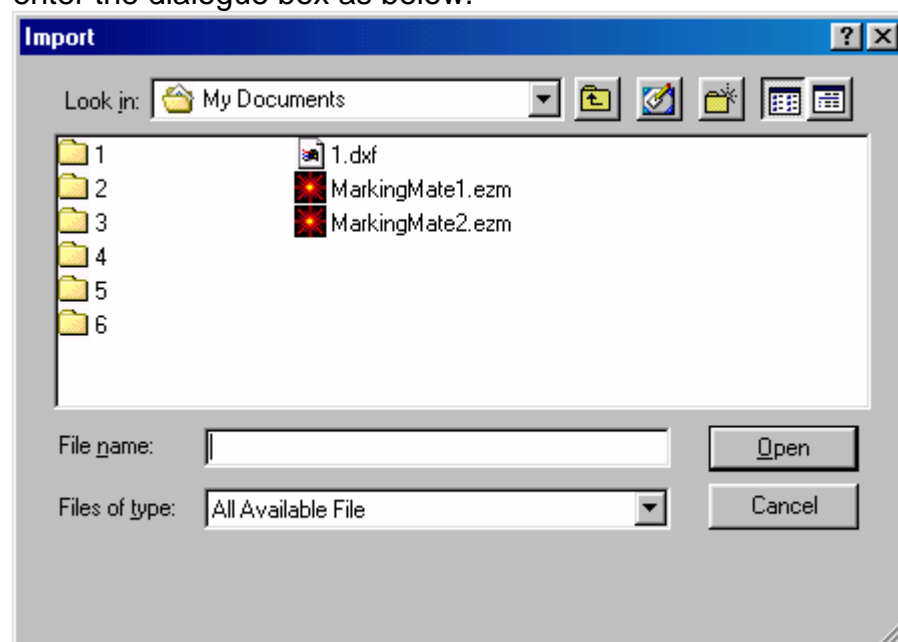
Click the “Mark” button in the dialogue box to execute marking.



### 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.

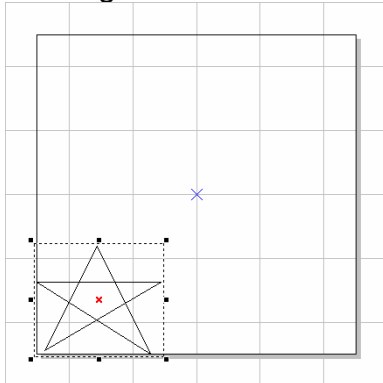


Step 2: Select the DXF file you want, and then click the “Open” button.

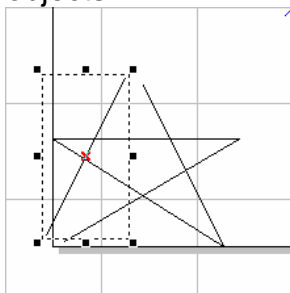
Step 3: The selected DXF file will appear in the left-down corner of the

## G-Mark Library

working area.



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



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

Property Table

Delay

Array Copy

Motion

Curve

Mark Parameter

Frame/Fill

Frame Color:

Fill Color:

Fill Param

Border:

Style:

Pitch:

Times:

Loops:

Angle Start:

Angle Step:

Set Default

Apply

Apply All



65 60 55 50 45 40 35 30 25 20 15 10 5 0

65 60 55 50 45 40 35 30 25 20 15 10 5 0

35 30 25 20 15 10 5 0

0 5 10 15 20 25 30 35 40 45 50 55 60 65

object.

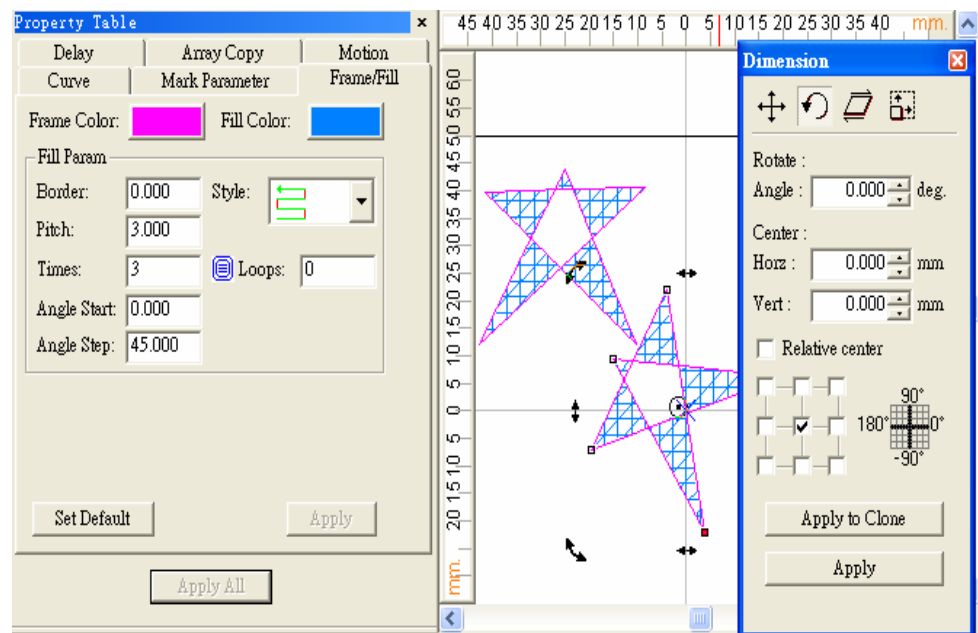
Click the  button on the Property Bar to move the object to the center of working area. Next, click the  button to set the rotate angle to 60 degree

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## G-Mark Library

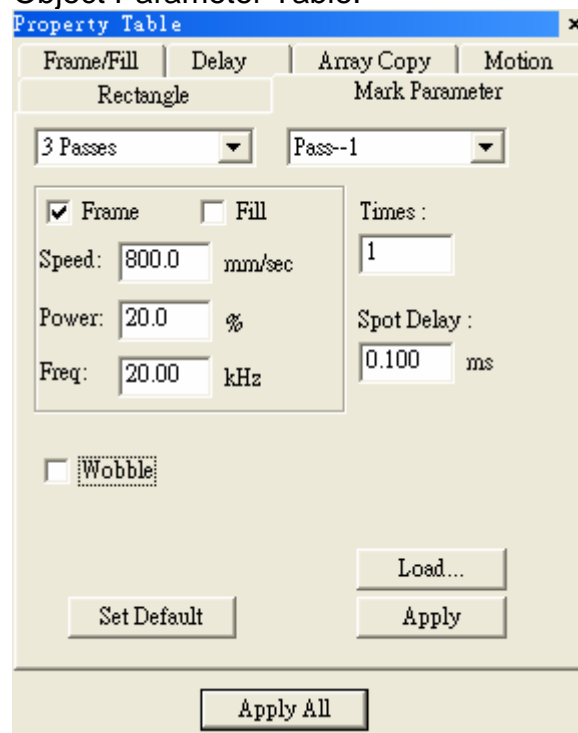
and the relative position to the “top-right”.

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



(4) Marking Parameters Settings

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





## G-Mark Library

**Mark Parameter List**

Parameter Path: C:\Program Files\MarkingMate\MarkParam

Item Name	Item-0							
	3-1	3-2	3-3					
Pass	3-1	3-2	3-3					
Speed	800.0	800.0	800.0					
Power	20.0	20.0	20.0					
Freq	20.00	20.00	20.00					
Times	1	1	1					
Spot Delay	0.100	0.100	0.100					
Pulse width	50	50	50					
Start Point Delay	0.000	----	----					
Midpoint Delay	0.100	----	----					
End Point Delay	0.300	----	----					
Jump Speed	3000.0	----	----					
Jump Delay	0.200	----	----					

Advanced Operation

(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.

**Marking...**

Comment

Preview System Setting

Executing

Amount: 0 Current: 0.000 sec.

Total: 0.000 sec.

Marking Mode

☐ All ☐ Selected

☐ AutoMark

Delay : 0 sec.

☐ log file :

Auto Text	Item No.	Type	Start	End	Current

### 3.5.2 Auto Text

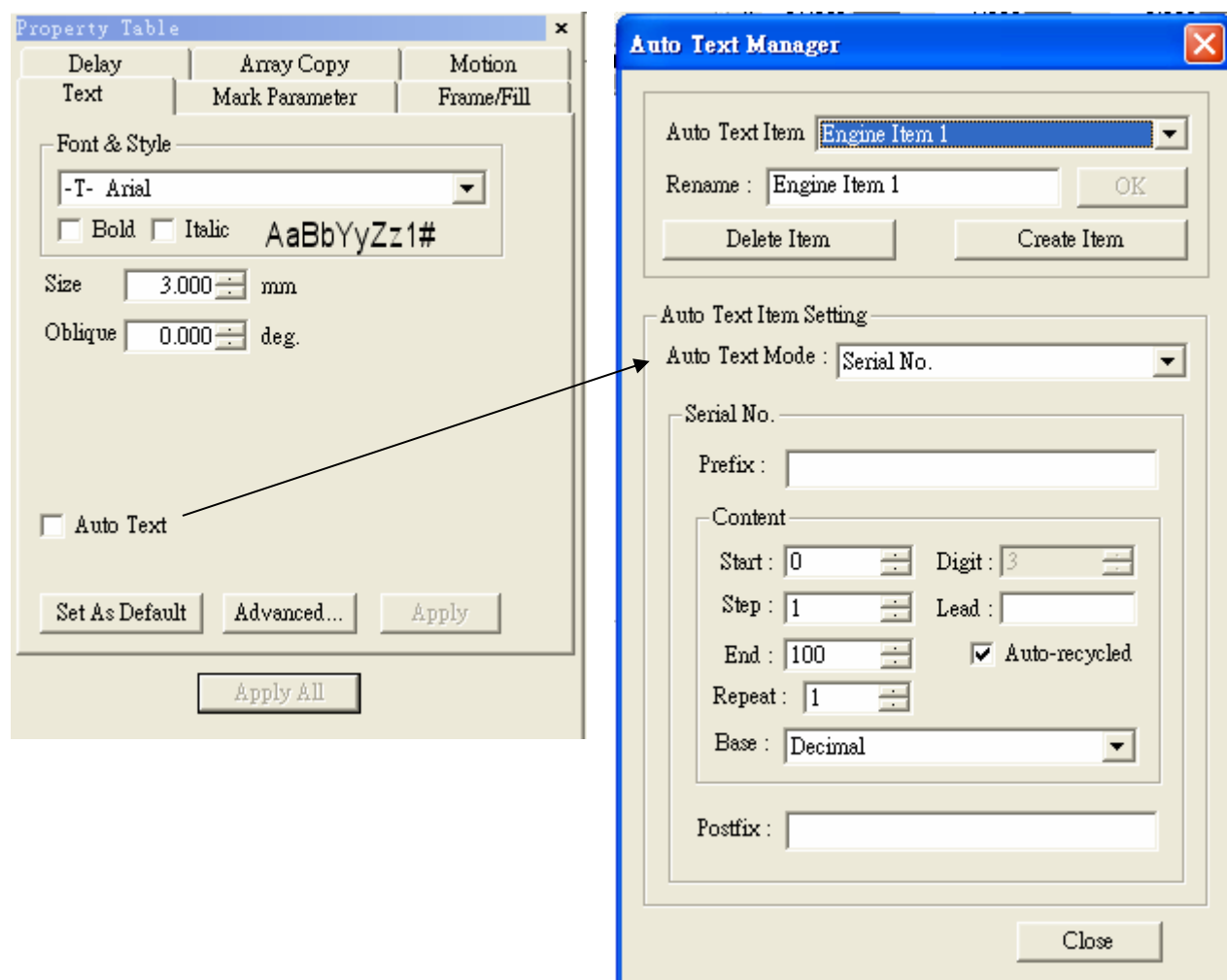
**Step 1:** Click “Draw – Text” from Menu Bar, or click the **A** button from toolbar.

**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.

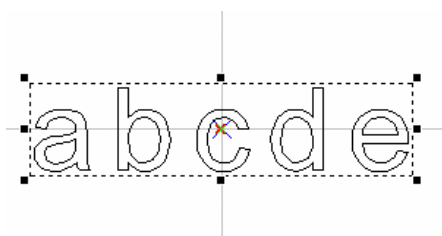
**Step 3:** Go to the Text page in Property Table (as below), check the box of

## G-Mark Library

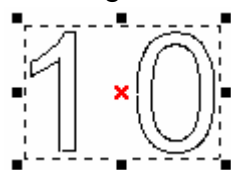
“Auto Text”, the “Auto Text Manager” will appear as below.



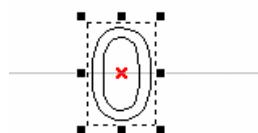
**Step 4:** Set the Auto Text Mode as Serial No., content start from 0, step 1, and end at 100 (users can define by themselves). Click “Close” and “Apply” buttons, the text will be changed as setting as figure below, the value has become the initial value of the Auto Text (see the right figure below).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



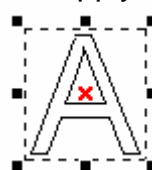
The original text



10 based on decimal



After applying Auto Text – Serial No.




10 based on hexadecimal

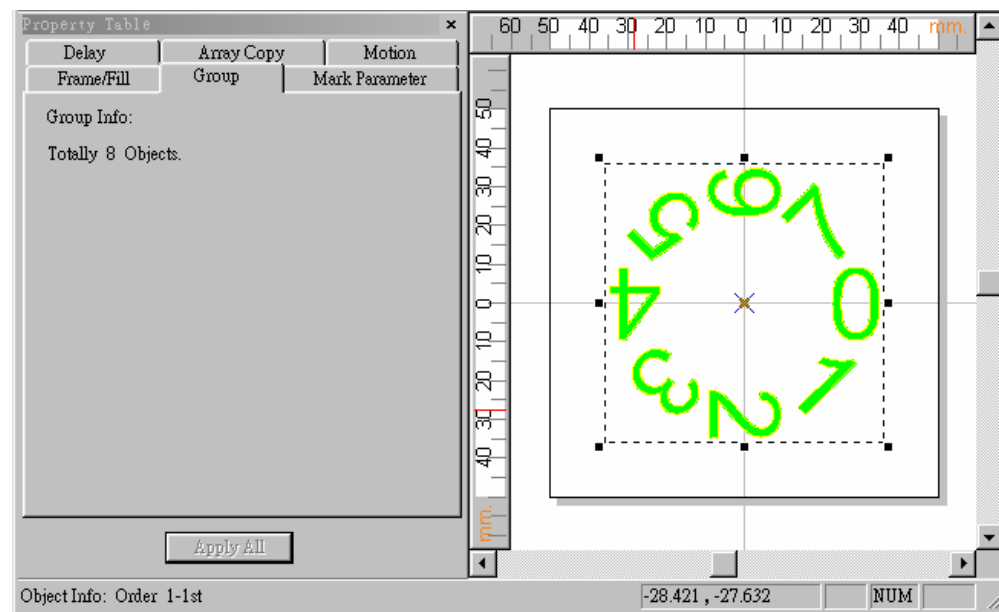
## G-Mark Library

**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.

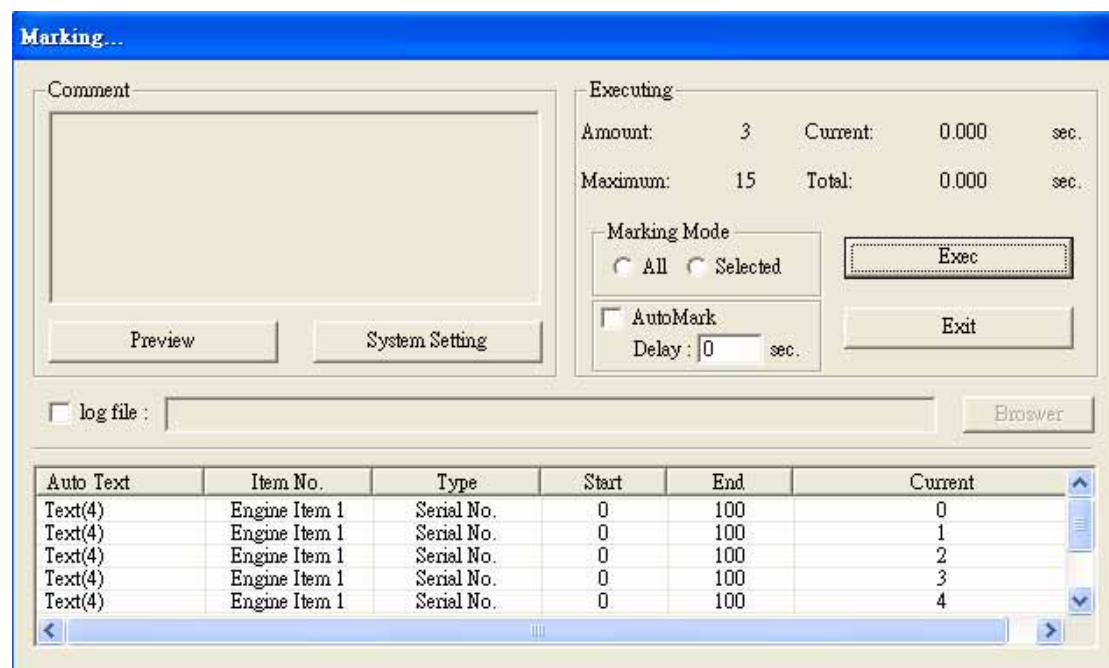
(3) Select Array Copy Mode: By Circle, set circle radius as 10mm, object count 8, and check the checkbox of “Auto Angle”, “Rotate Obj”, “CCW Copy”, and “Serialized Auto Text” and click “OK” button, then the content will be changed as below:



(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:


## G-Mark Library



### 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).

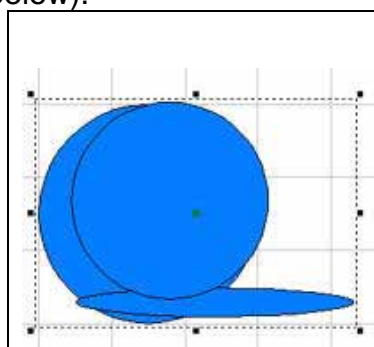


Figure 1

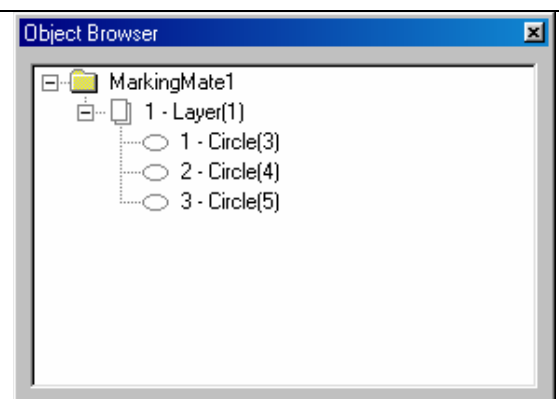


Figure 2

**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).

## G-Mark Library

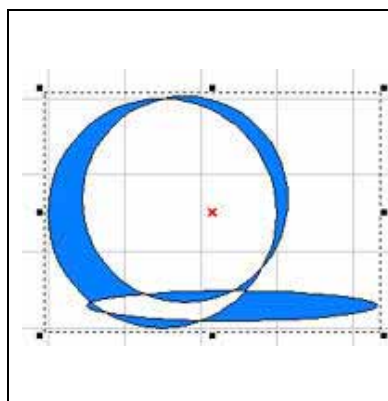


Figure 3

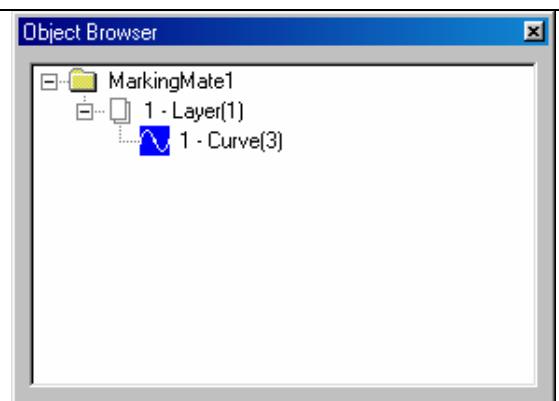


Figure 4

### 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).

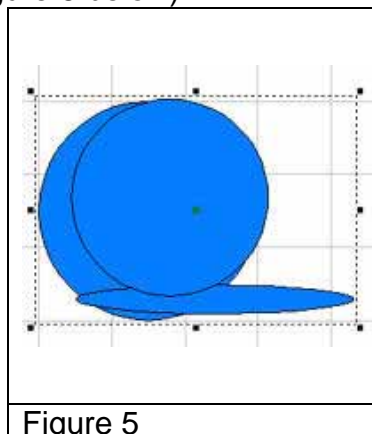


Figure 5

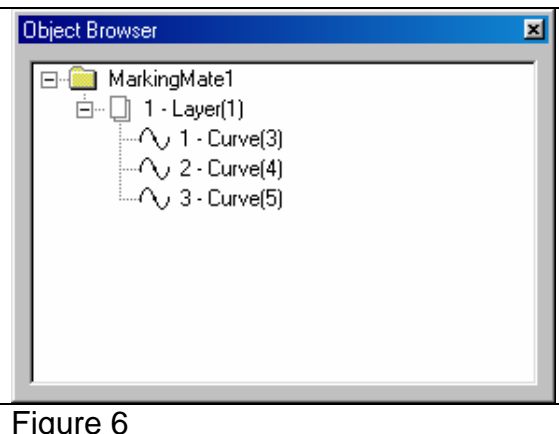



Figure 6

## 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).

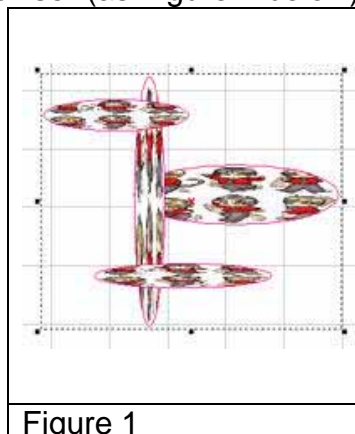


Figure 1

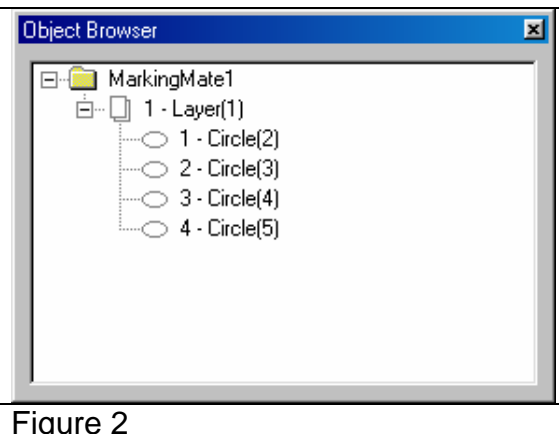

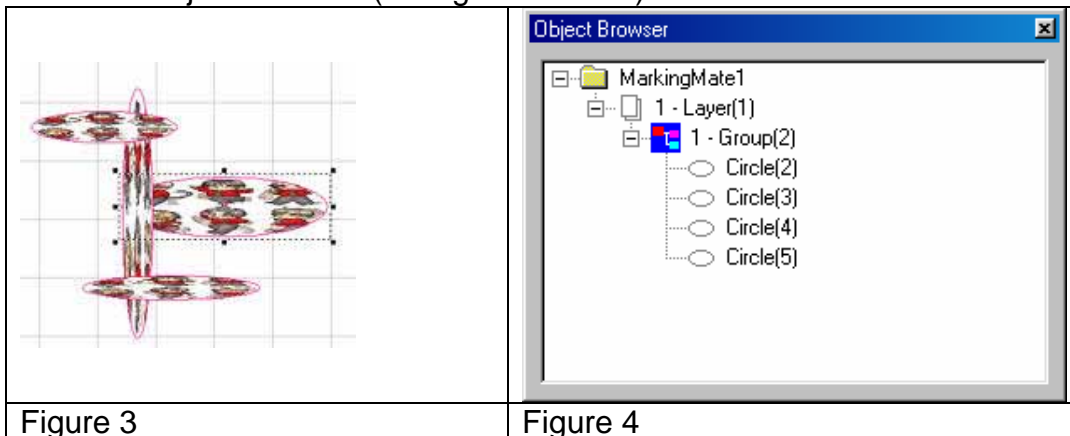


Figure 2


**Step 3:** Select the objects you want to edit, click “Edit – Group” from Menu Bar,

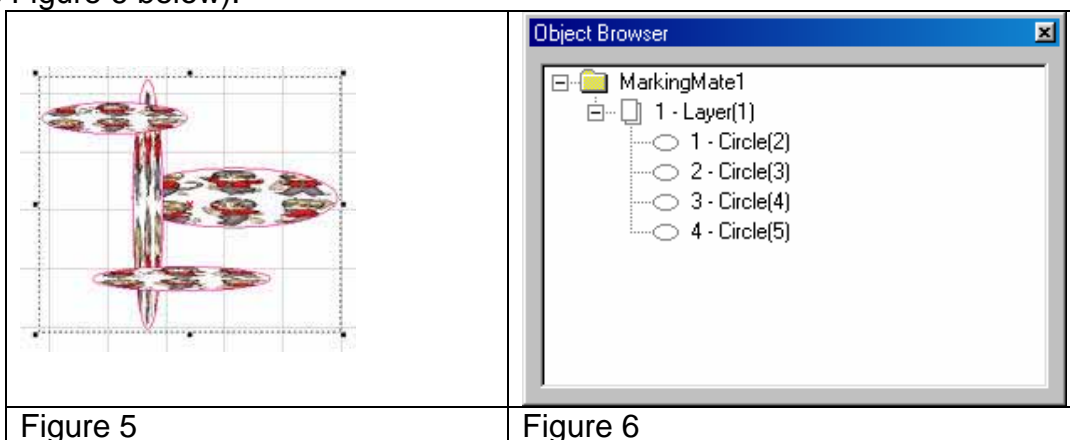
## G-Mark Library

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).



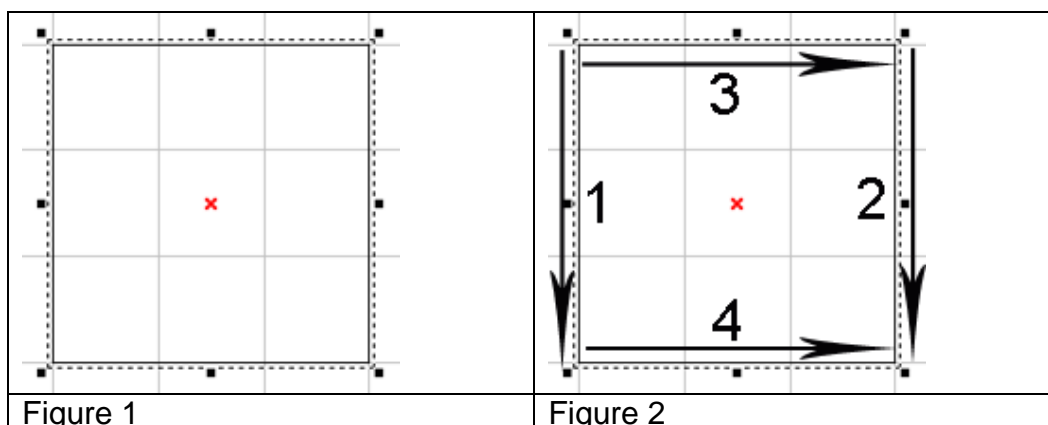
### 3.5.5 Sort


**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.

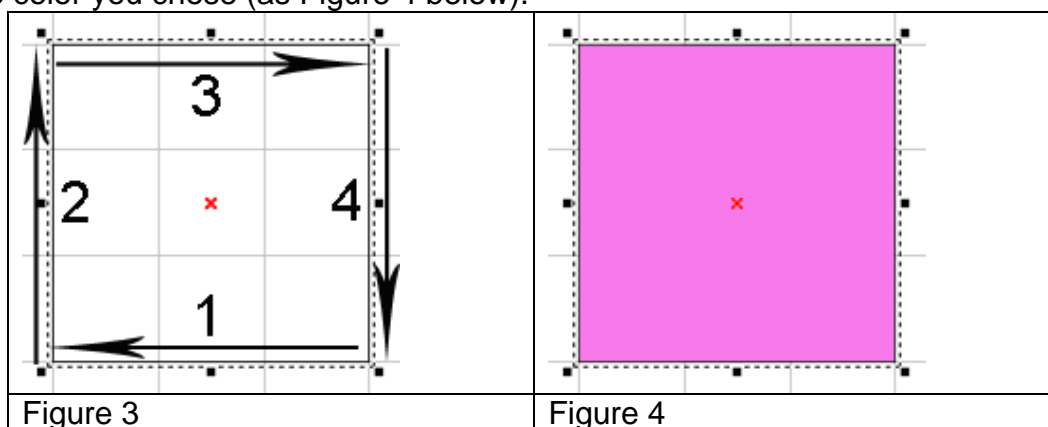
**Step 3:** The imported file will be as Figure 1 below. User is unable to fill color in this object because it is not a close-loop object (as Figure 2).

## G-Mark Library



**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).



### 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.

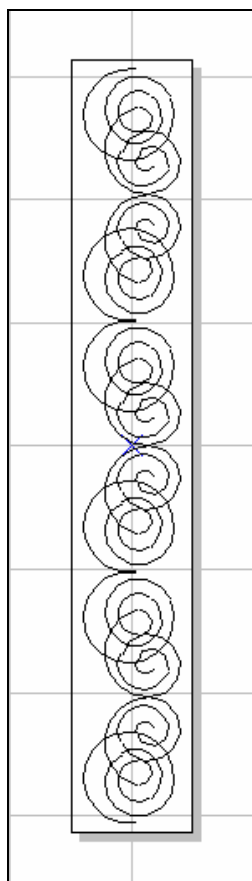
Step 3: Edit the object properties in Property Table:

(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.

## G-Mark Library



**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.

A screenshot of a software window titled "Property Table". It has several tabs: "Layer", "Input", "Output", "XYTable", and "Rotary". The "Rotary" tab is selected. Inside the window, there is a section labeled "Enable" with a checked checkbox. Below it is a section labeled "Method" with two radio buttons: "Cylinder" (selected) and "Disc". Below that is a section labeled "Option" with two input fields: "Diameter" with the value "200" and "Max Width" with the value "10", both followed by "mm". At the bottom of the window, there are three buttons: "Set As Default", "Apply", and "Apply All".

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



## G-Mark Library

(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

**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

The screenshot shows the 'Property Table' dialog box with the 'Motor Setup' tab selected. The 'System' tab is also visible. The 'Rotary' axis is selected, and the unit is set to 'Angle'. The parameters are as follows:

Parameter	Value	Unit
Acc. time:	0.100	sec
Speed:	20.000	deg./sec
Axis Unit:	250.000	pulse/deg.
Initial Speed:	10.000	deg./sec

Checkboxes for configuration:

- ☐ Reverse
- ☐ Home After Program Start
- ☐ Is Active High For In Position Signal
- ☐ Is Active High For Home Index Signal
- ☐ Is Active High For Limit Signal

Jump To: 0.000 deg. [Go]

[Home] [Apply]

[Apply All]

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:

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

## G-Mark Library

### 4.1.1 New

Create a new document in G-Mark Library.

**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.

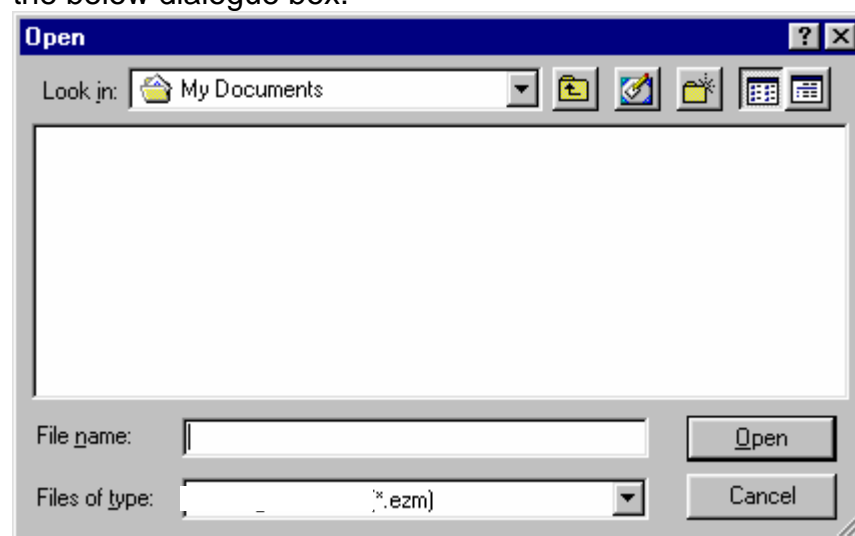
**Method:**

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 G-Mark Library will be saved as .ezm file format as the below dialogue box.



### 4.1.3 Close

Close the windows in using. G-Mark Library 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, G-Mark Library will open a “Save As” dialogue box for you to named the file.

**Method:**

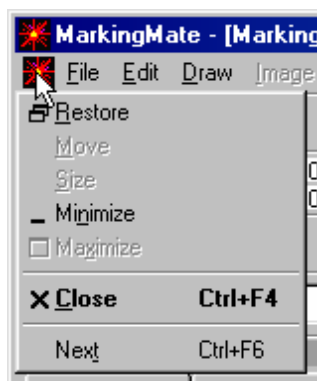
Click “File” from the Menu Bar and select “Close” function.

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



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

## G-Mark Library



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, G-Mark Library 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.

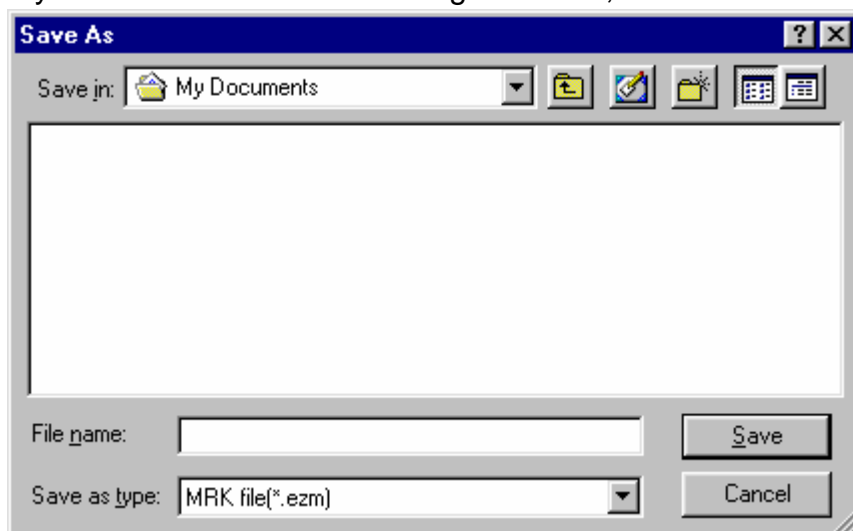
Click the  button from the Toolbar

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.

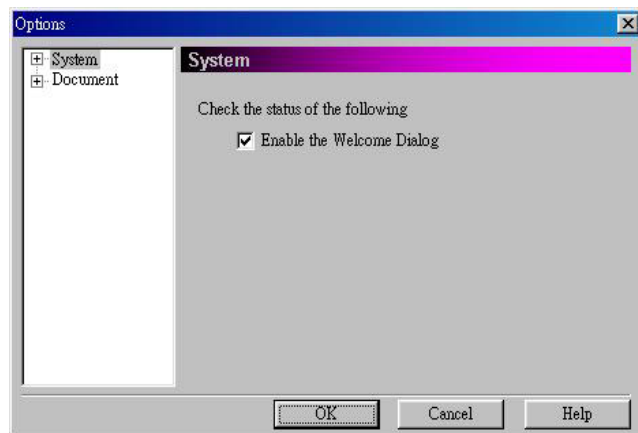
**Save as type:** The default file type is **EZM**.

### 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

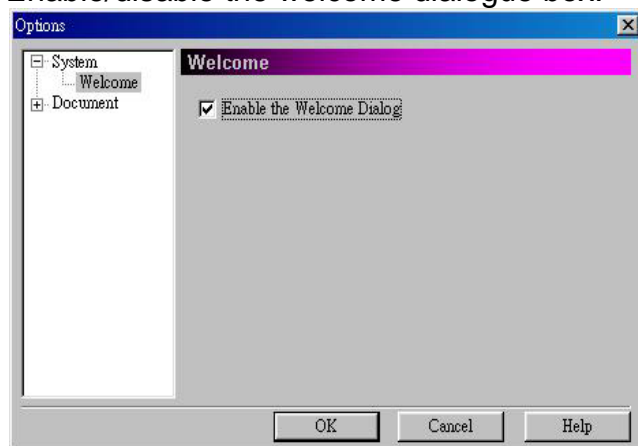
## G-Mark Library



**Enable the welcome dialog**

### 4.1.6.2 Welcome

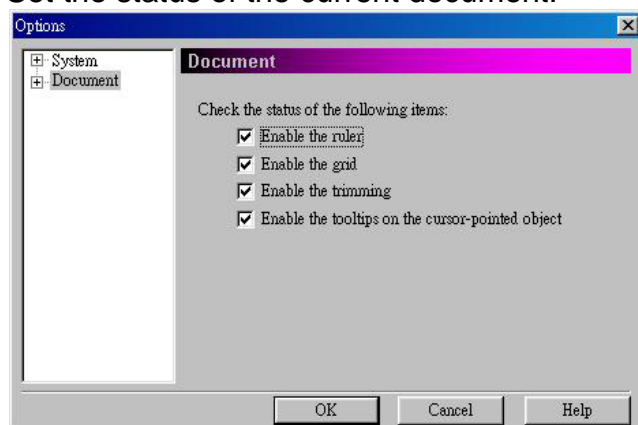
Enable/disable the welcome dialogue box.



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

### 4.1.6.3 Document

Set the status of the current document.

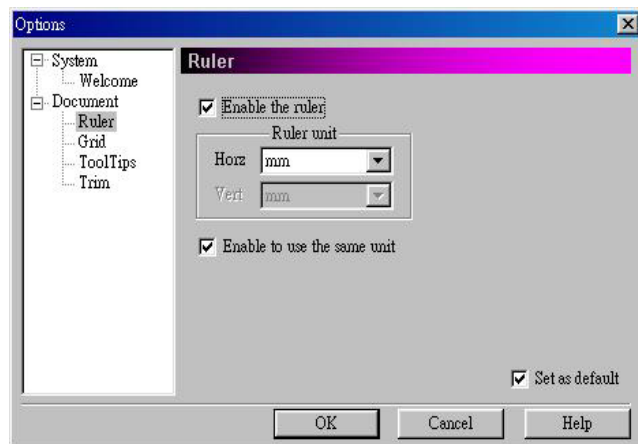


**Check the status of the following items.**  
The setting will be the default setting for next open document.

### 4.1.6.4 Ruler

Enable/disable the ruler appears on the work area.

## G-Mark Library



### Enable the ruler

Enable/disable the ruler.

### Ruler Unit: mm or inch

Horz: Horizontal unit

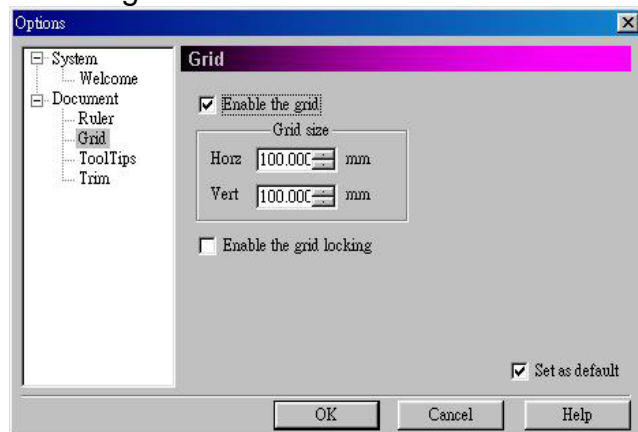
Vert: Vertical unit

### 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

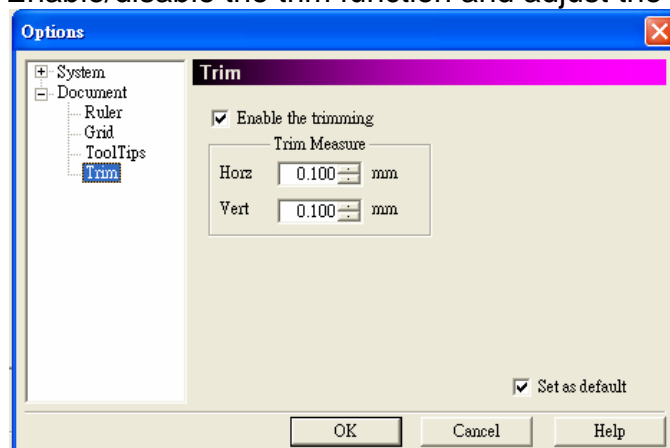
Vert: Vertical width

### 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

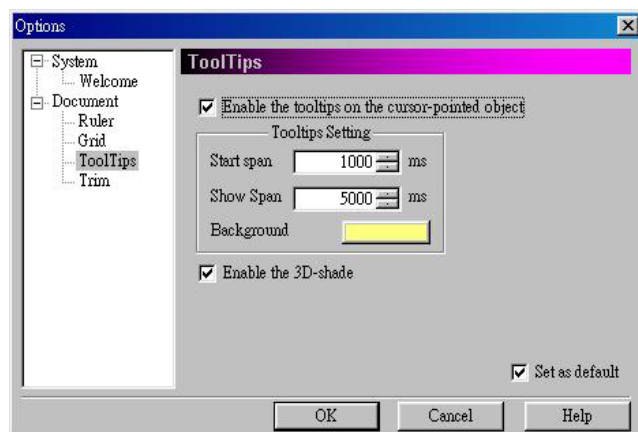
### Trim measure

Adjust the trim measure.

### 4.1.6.7 ToolTips

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

## G-Mark Library



**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.

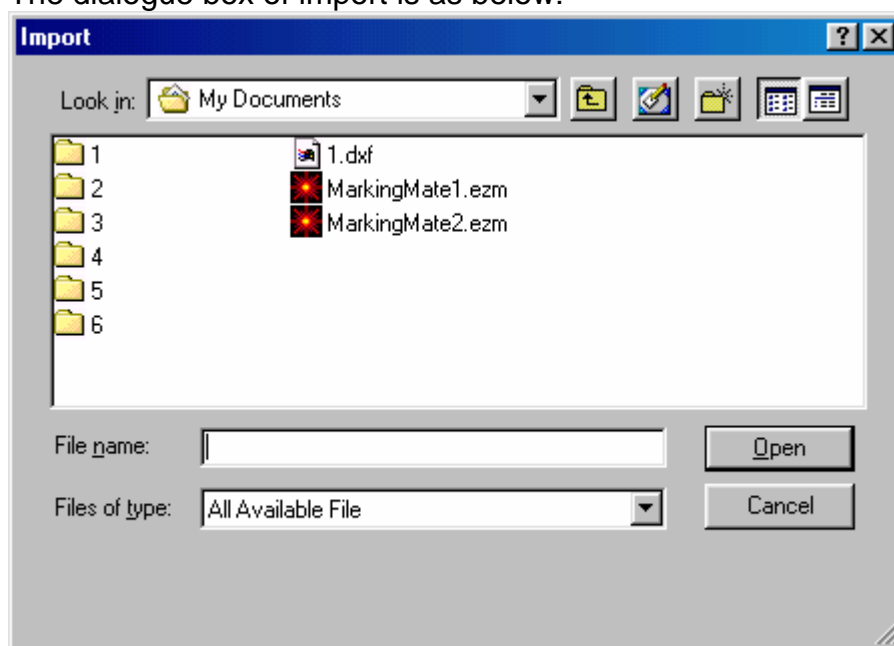
### **Enable the 3D-shade**

Enable/disable the 3D-shade

### 4.1.7 Import


This allows you to import a file that was not originally created by G-Mark Library. 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.

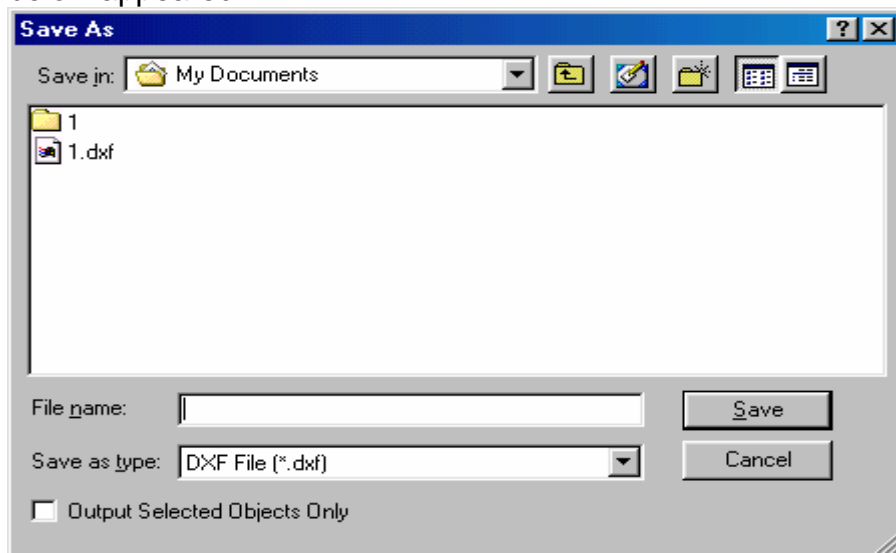
**Files of type:** G-Mark Library allows you to import various file types such as: .EZM, .BMP, .EMF, .PNG, .PCX, .DXF, .CMP, .FPX, .PLT, .CAL, .ICO, .JPG, .PS, .EPS, .CLP, .WMF, .TIF, .CUR, .PSD, .TGA.

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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:

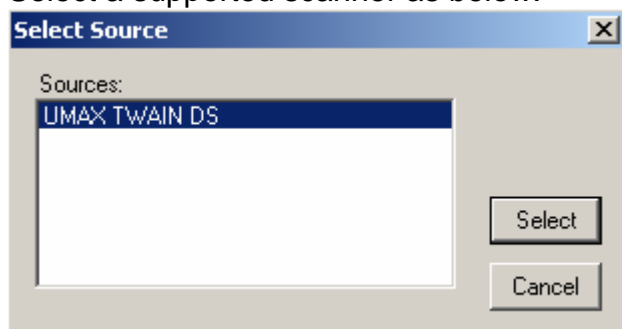
**File Name:** Input file name or select from the list.

**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:

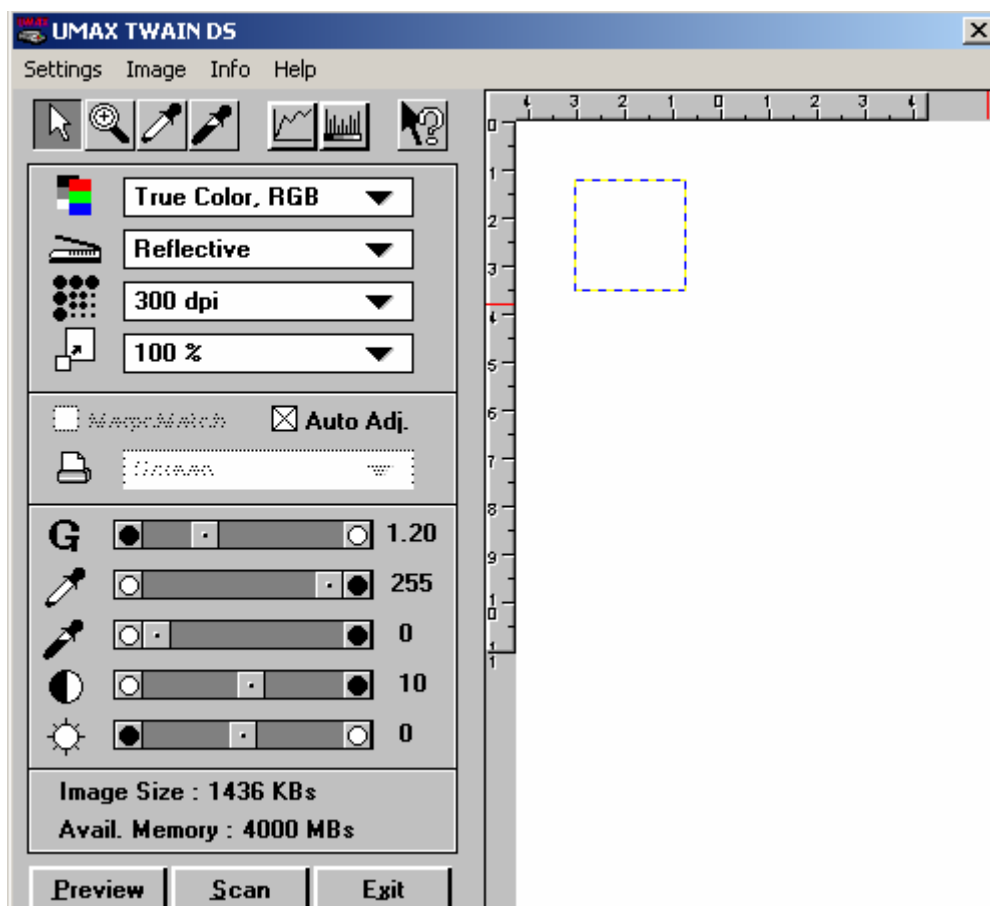


### 4.1.10 TWAIN Acquire

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

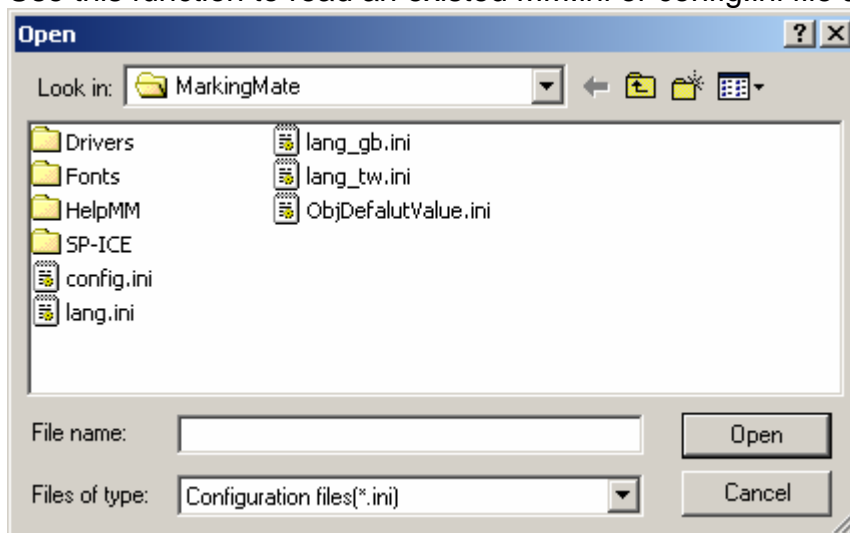


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### 4.1.11 Import Configuration

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)

### 4.1.12 Export Configuration

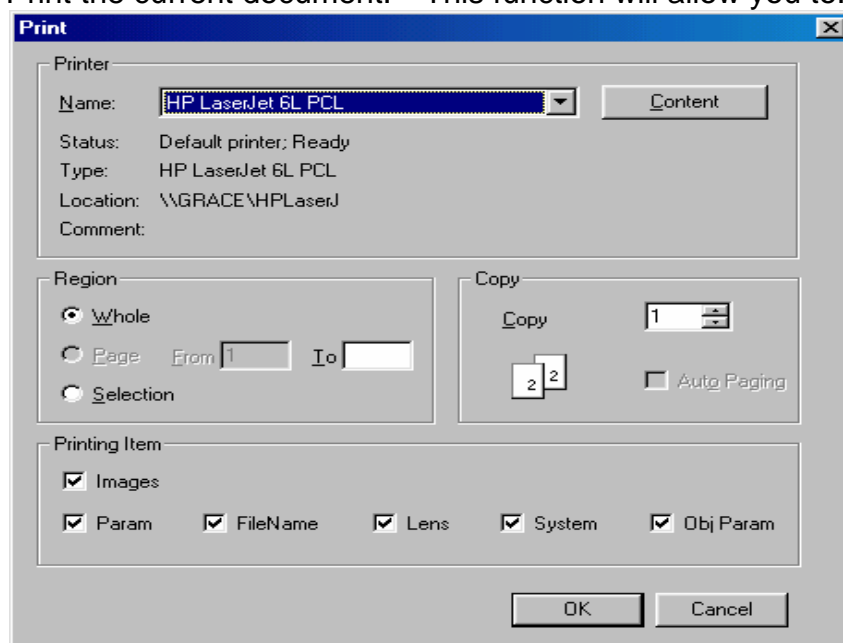
Use this function to save the current Config.ini as another file name.

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Key in the file name you want.

### 4.1.13 Print

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



<b>Name</b>	Select the printer
<b>Region</b>	Select the region you want to print
<b>Whole</b>	Print all of the data in the work area
<b>Selection</b>	Print only the selected data
<b>Copy</b>	Select the number of copies you want to print
<b>Auto Paging</b>	Automatically adjust the document or selected data to fit the selected paper size.
<b>Printing Item</b>	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.

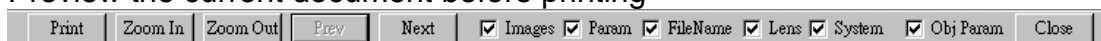
#### Method:

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

**Zoom Out** – Get a border view of the current image

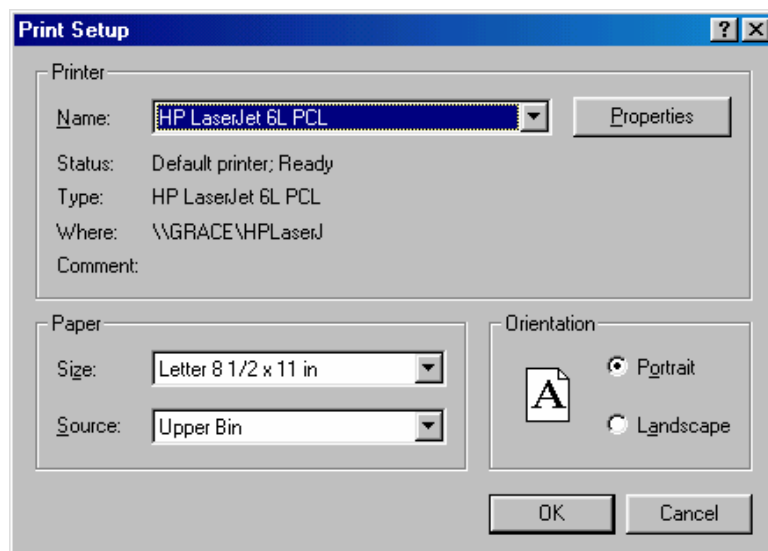
**Images, Param, File Name, Lens, System, Obj Param** – When the check box is selected, its setting page will be displayed while start printing.

**Close** – Return to the edit menu

### 4.1.15 Printer setting

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

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### Printer

Select the printer

### Paper

Select the paper source

### Direction

Select horizontal or vertical print

### Content

Detail printer setting

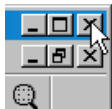
### 4.1.16 Exit


Exit the G-Mark Library 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.

## 4.2 Edit Menu

"Edit" menu offers the following functions:

<b>Redo</b>	Replace a cancelled action
<b>Undo</b>	Cancel an unwanted action
<b>Cut</b>	Remove selected data and store it in the clipboard for future use
<b>Copy</b>	Duplicate selected data and store it in the clipboard for future use
<b>Paste</b>	Attach data from the clipboard to the current document
<b>Delete</b>	Delete and remove the selected data
<b>Combine</b>	Combine two or more objects into one. This function will allow several objects to share the same property settings

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<b>Break</b>	Do the inversion of Combine function
<b>Group</b>	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
<b>UnGroup</b>	Do the inversion of Group function
<b>Sort</b>	Sort the connected parts of the selected object
<b>Mirror Horz</b>	Invert an image on its horizontal axis. Left will become right and vice-versa
<b>Mirror Vert</b>	Invert an image on its vertical axis. Up will become down and vice-versa
<b>Baseline</b>	Align selected text along a designated path
<b>Split</b>	Do the inversion of baseline function
<b>Trans-Curve</b>	Transfer a curved line into a series of individual angled lines. Allows these single lines to be manipulated individually
<b>Trim</b>	Allow selected object to be moved at set increments when the direction keys are pressed
<b>Welding</b>	Combine two objects so that the outline remains while eliminating the overlapping lines
<b>Contour</b>	This function will create an outline a selected bitmap image
<b>Transfer to Image</b>	Allows the resolution, color quality and black and white effects to be adjusted. And transfer the selected objects to be an image
<b>Align</b>	Use this function to align the selected objects to the last selected object, paper edge, or paper center
<b>Distribute</b>	This function will adjust how the distance between a series of objects is calculated

### 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:

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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

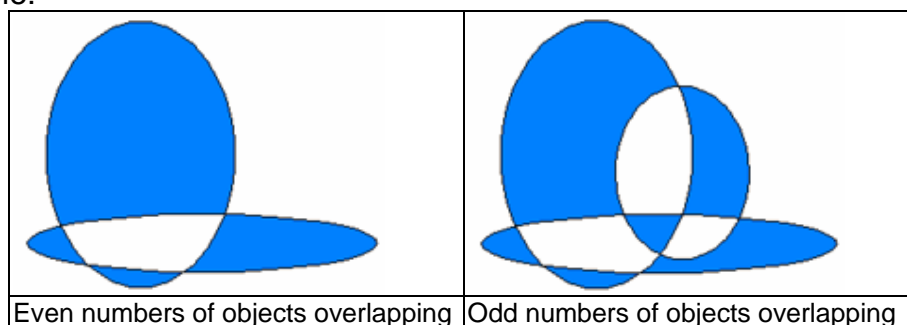
Combine two or more objects into one. This function will allow several objects to share the same property settings. If fill in a combined object, the overlapping of odd numbers of objects will be filled in color, while the even numbers parts will not.

**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:**

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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:

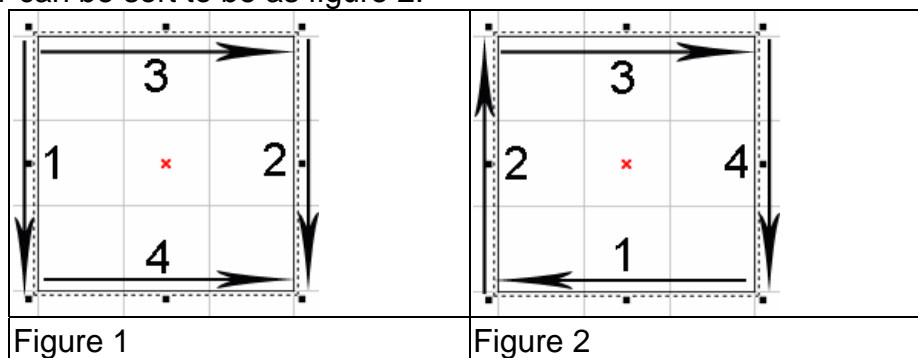
Click “Edit” from Menu Bar and select “Ungroup” function.

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.



#### 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:

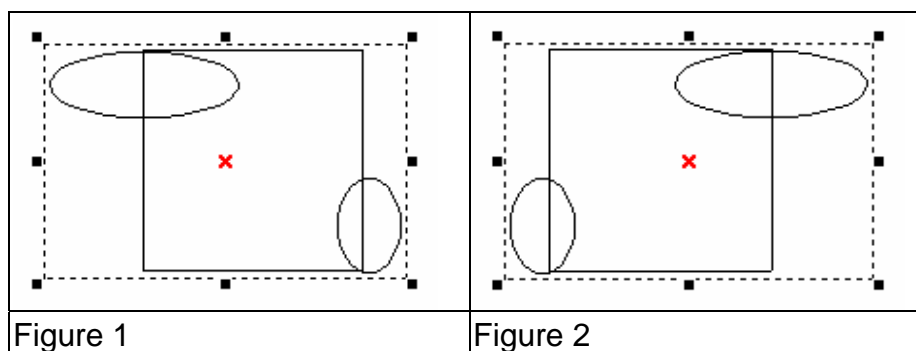
Click “Edit” from Menu Bar and select “Mirror Horizontal” function.

Click the  button from the Toolbar.

Press the [CTRL+H] key from keyboard.

Example:

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### 4.2.13 Mirror Vertical

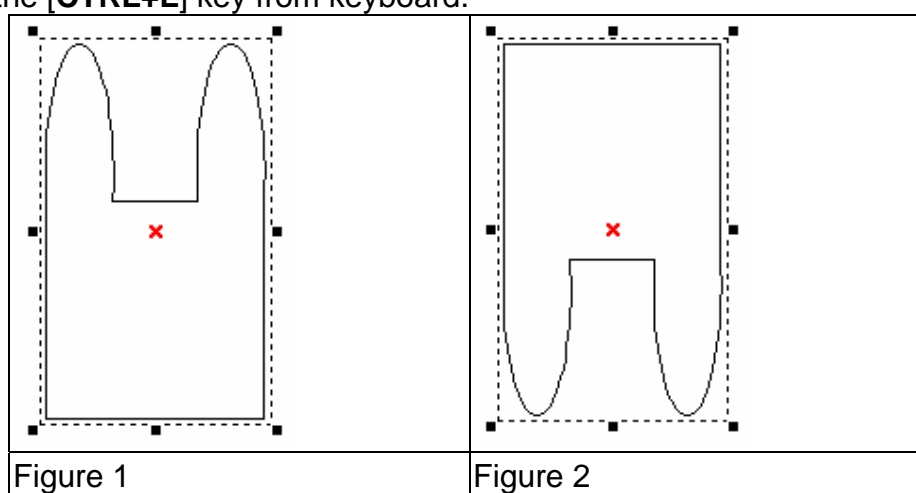
Invert an image on its vertical axis. Up will become down and vice-versa

**Method:**


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

Click the  button from the Toolbar.

Press the [CTRL+L] key from keyboard.



### 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  A, and then select the path such as line, arc, curve, or the others.

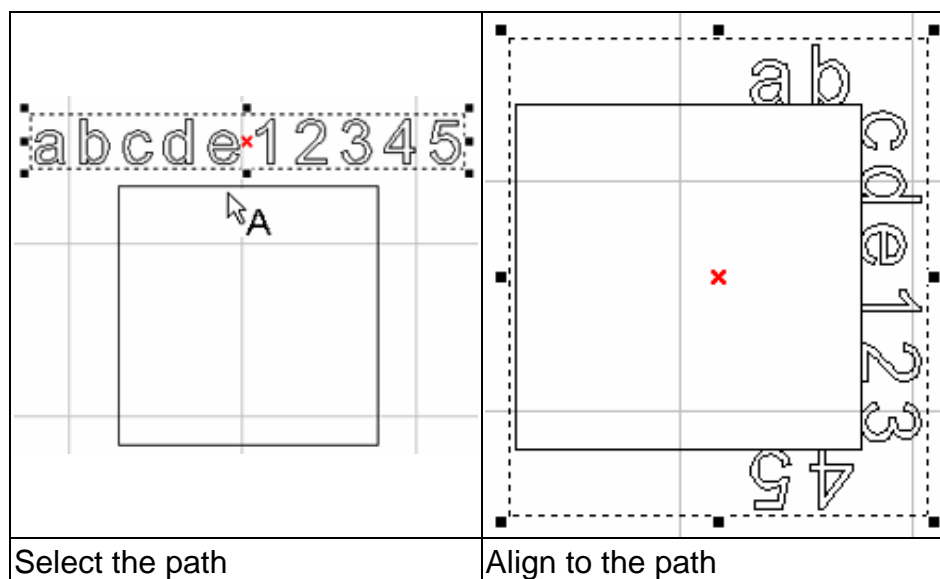
**Method:**

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

Press the [CTRL+E] key from keyboard.

Example:

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### 4.2.15 Split

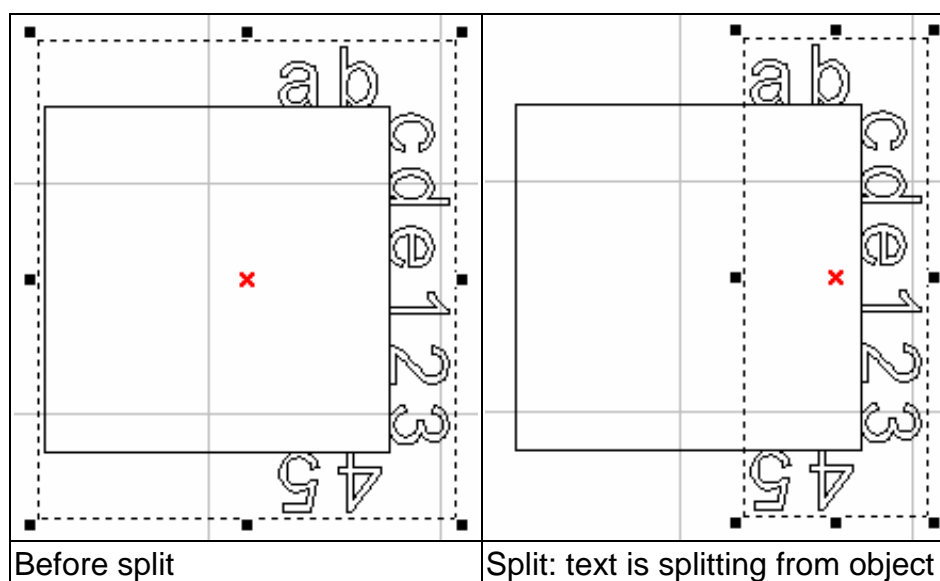
Do the inversion of baseline function

#### Method:

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

Press the [CTRL+D] key from keyboard.

Example:



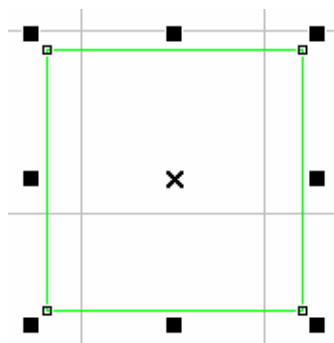
### 4.2.16 Trans-Curve

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.



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### 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.

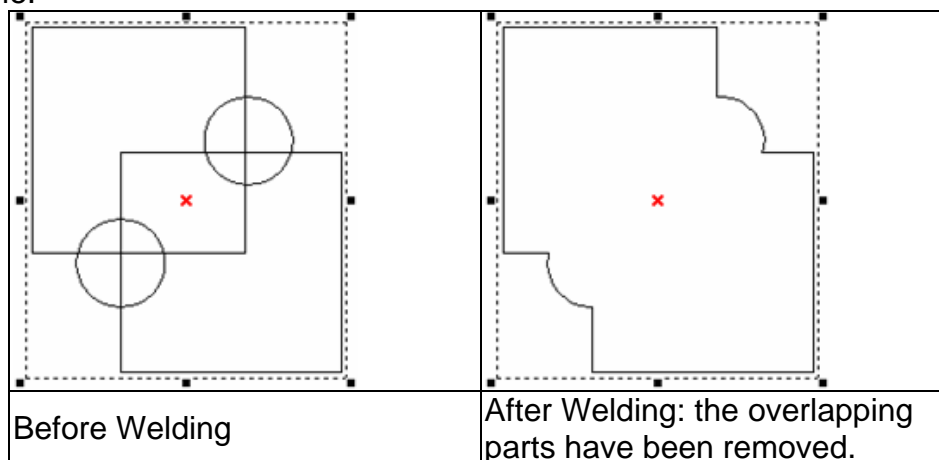
### Method:

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

Click the  button from the Toolbar.

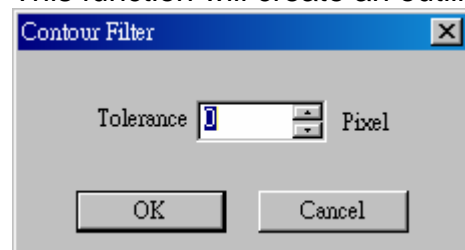
Press the [CTRL+G] key from keyboard.

Example:



### 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

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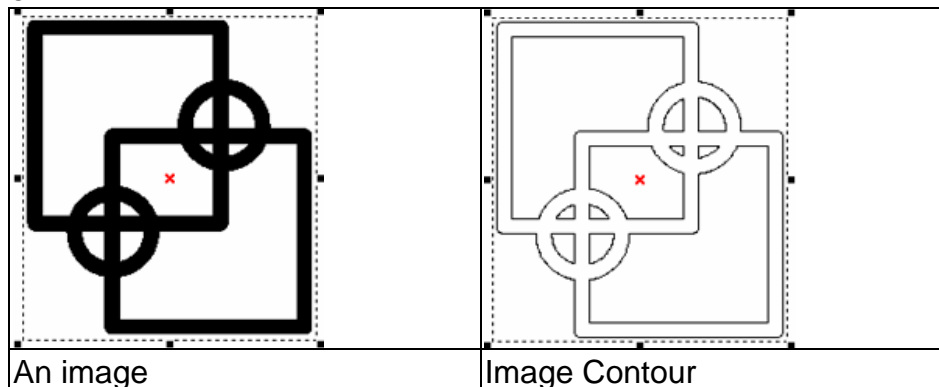
of segments instead of the original image, and you have to use “break” function before “contour”.

### Method:

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

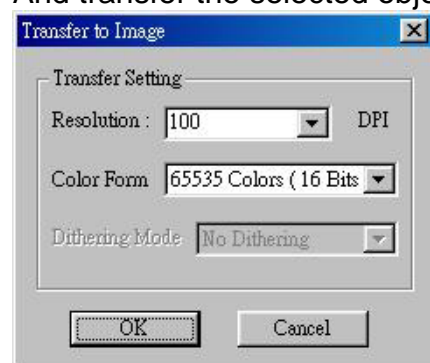
Press the [CTRL+W] key from keyboard.

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.



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

### Method:

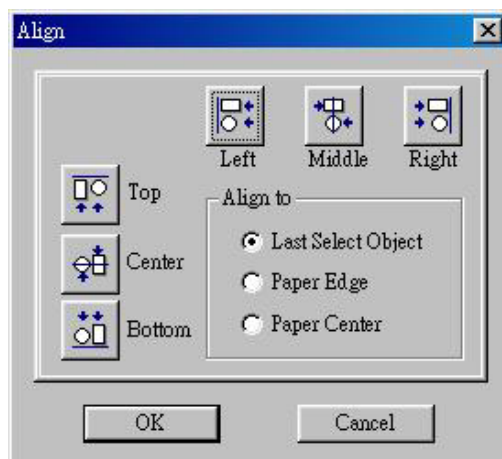
Click “Edit” from Menu Bar and select “Trans to Image” function.

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.

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**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

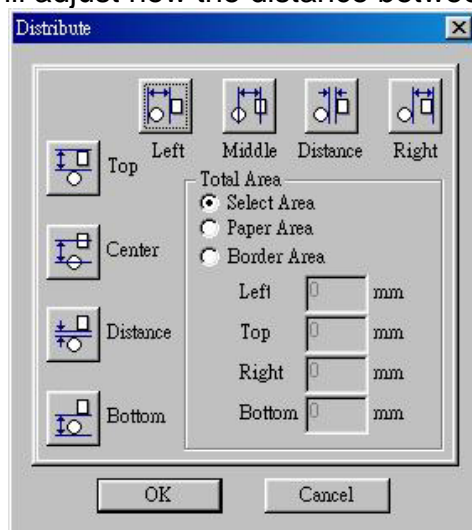
**Method:**

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.



**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.

### 4.3 Draw Menu

“Draw” menu offers the following functions:

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

#### 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

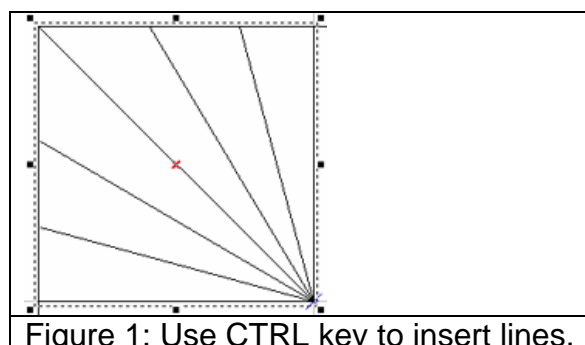


Figure 1: Use CTRL key to insert lines,

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each line segment separated by  $15^\circ$

### Method:

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

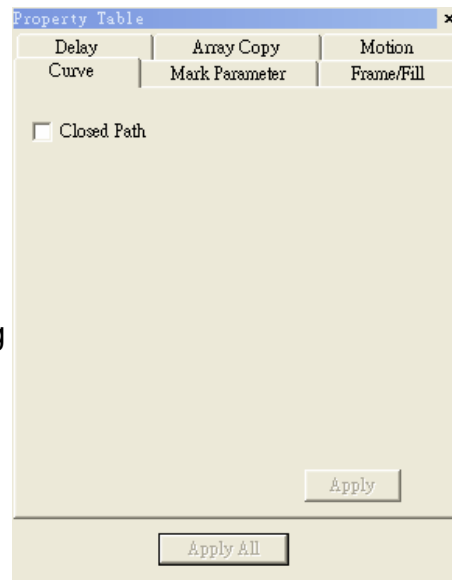
Click the  button from the Toolbar.

### 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 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

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### Property Table – Arc

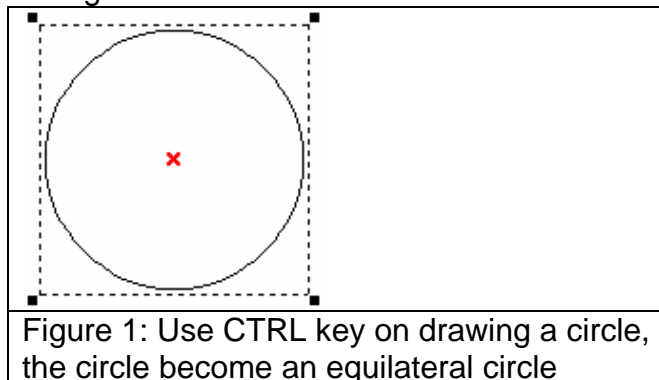
Adjust the center of X- and Y-axis, radius, and position of start dot and end dot.

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.



#### Method:

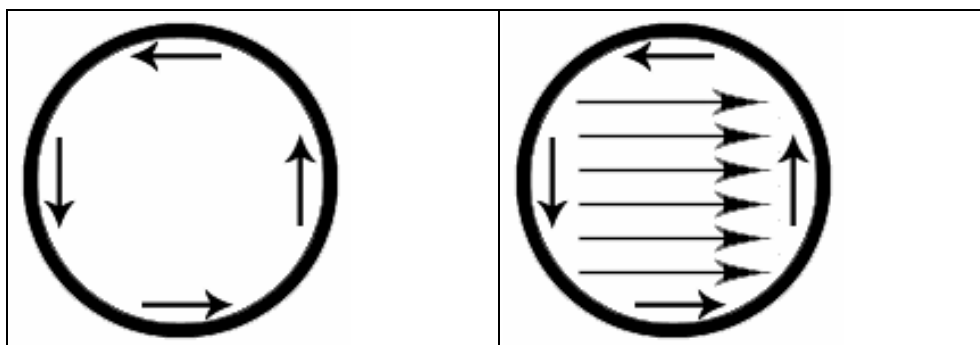
Click "Draw" from Menu Bar and select "Circle" function.

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.

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### Property Table:

#### Property Table - Circle

Adjust the center and radius of the circle.

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

### 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:

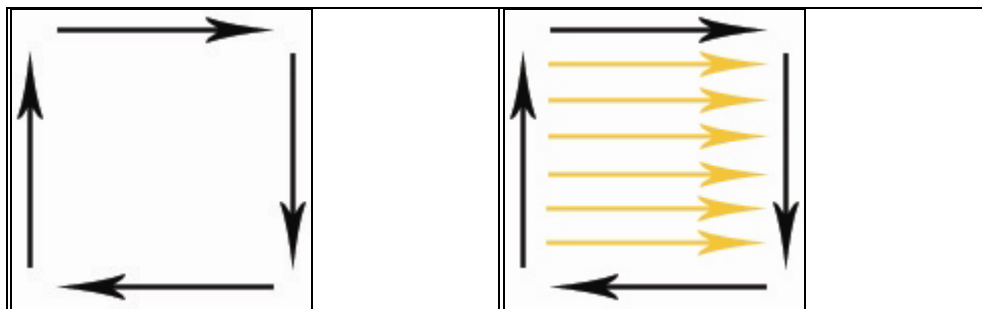
Click "Draw" from Menu Bar and select "Rectangle" function.

Click the  button from the Toolbar.

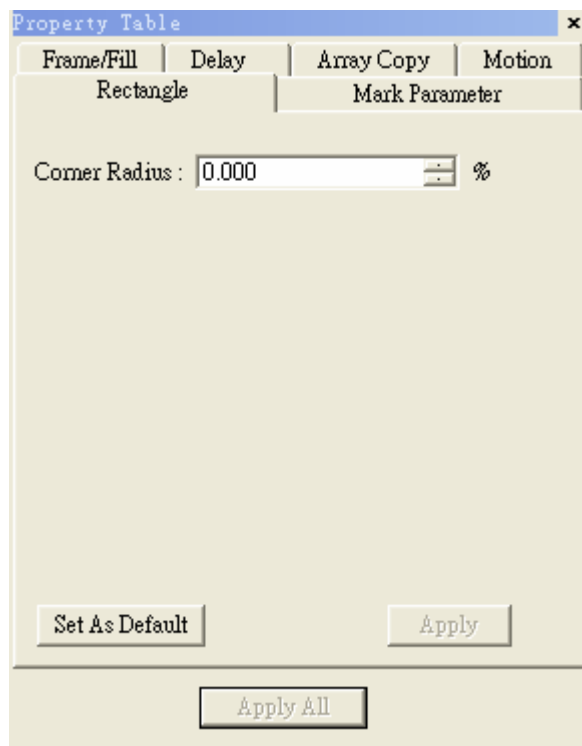
#### Marking Way:

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

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### 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.

### 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:



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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:

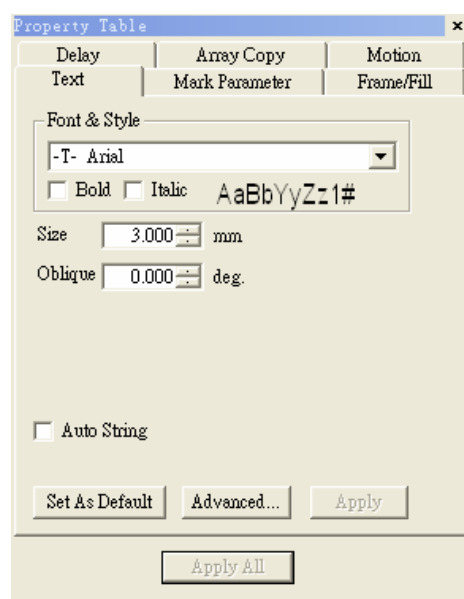
#### Property Table - Text

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).



#### Text Advanced setting

##### Text pitch

Spacing between characters

##### Line pitch

Spacing between lines

##### Arrange

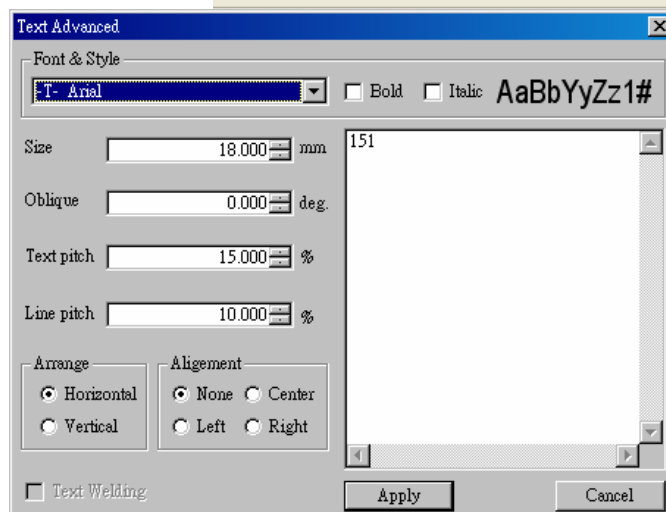
Horizontal or Vertical

##### Alignment

Alignment direction

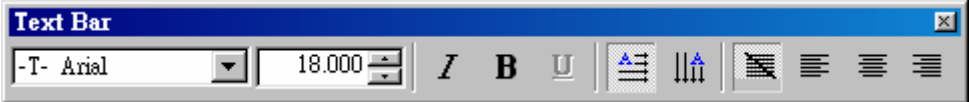

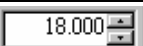









**Text Welding:** Add “Welding” function to the overlapping part of the text

**Text Content:** Add the text content on the blank area



Enable or disable the Text Bar

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Text Bar		
		
Font		Select font
Size		Adjust font size
Italic		<i>Adjust text in italic</i>
Boldface		<b>Adjust text in boldface</b>
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 two selected points 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:

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

Click the  button from the Toolbar.

#### Property Table:

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### 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

### 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.

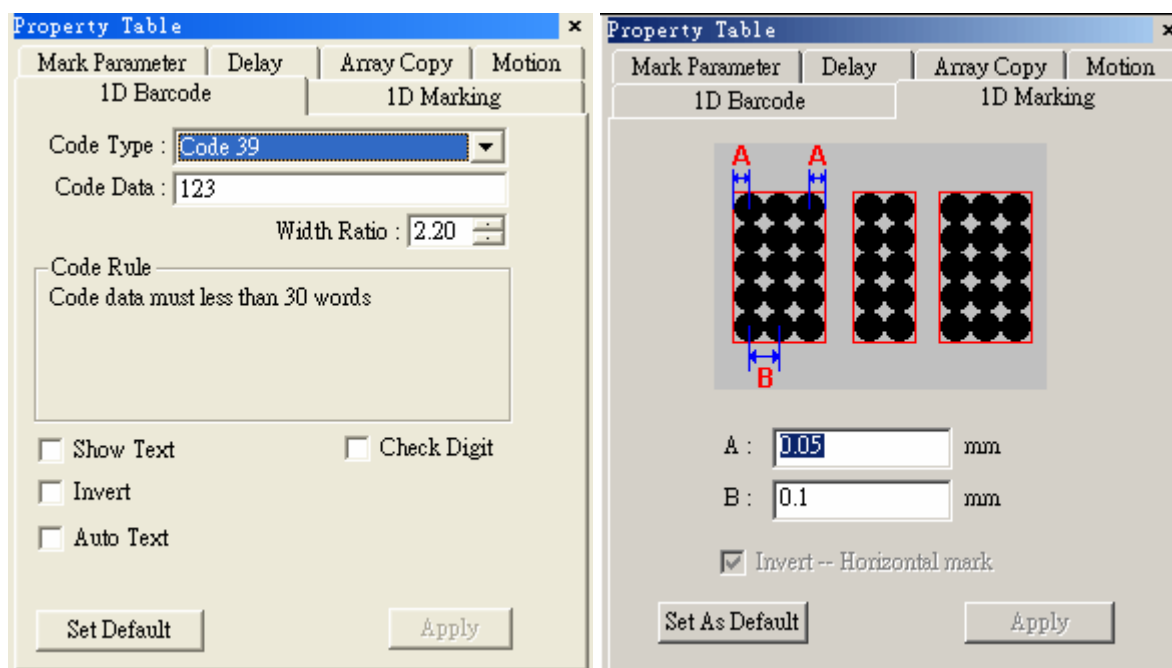
**Auto Text:** The barcode data will be changed as an auto text.

**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

## G-Mark Library



### 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:

Spot	Line	Rectangle
The spot can not be overlapped	Mark as lines	From outside to inside marked as rectangles
		

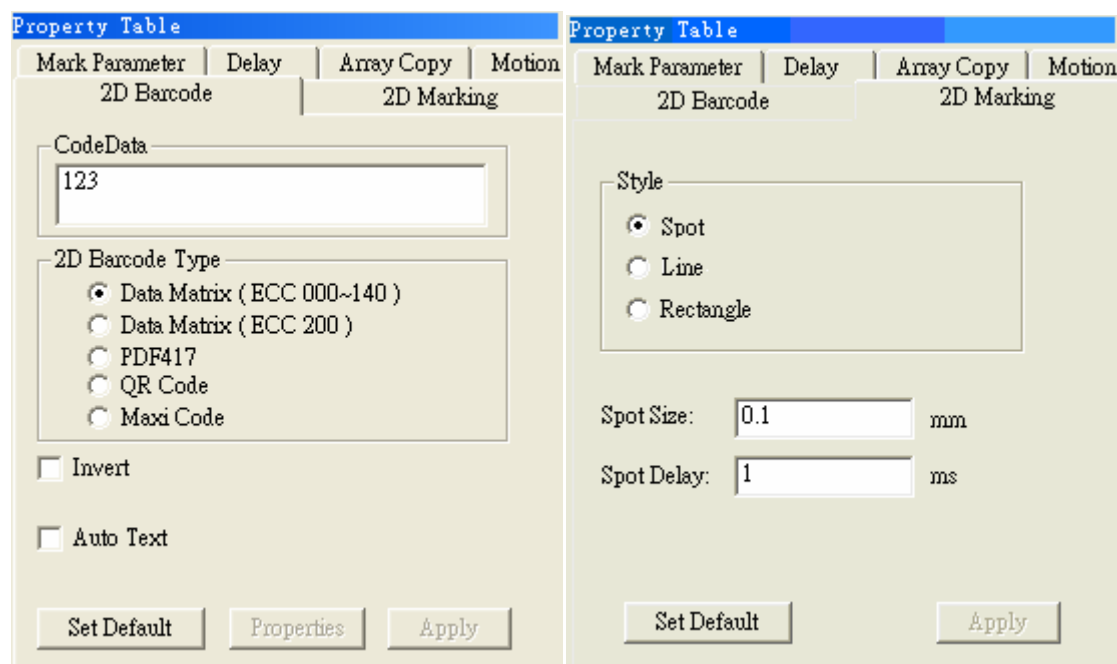
#### Spot Size

Size of laser spot

#### Spot Delay

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

## G-Mark Library



### 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 Digital\_Out, Digital\_In, Delay\_Time, Do\_Pause, Move To, Reset, Loop Begin, and Loop End 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.

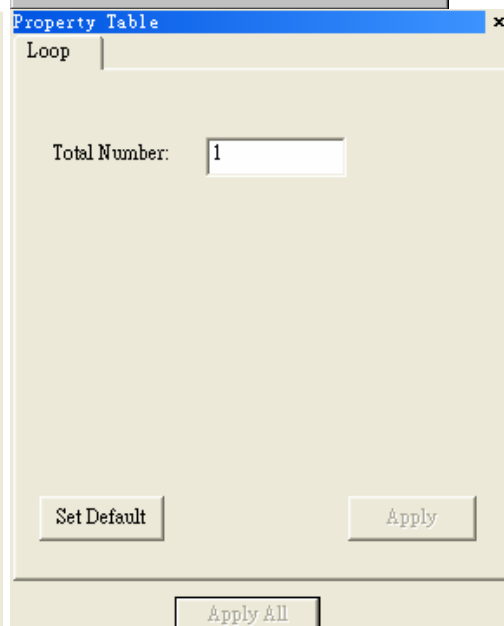
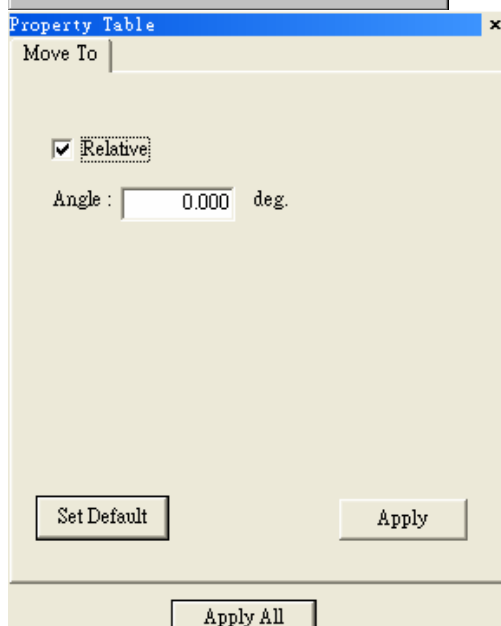
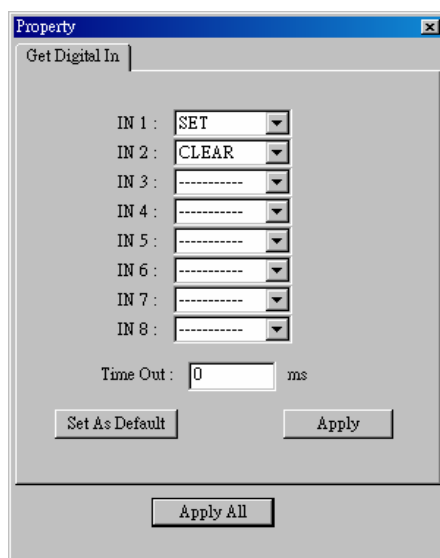
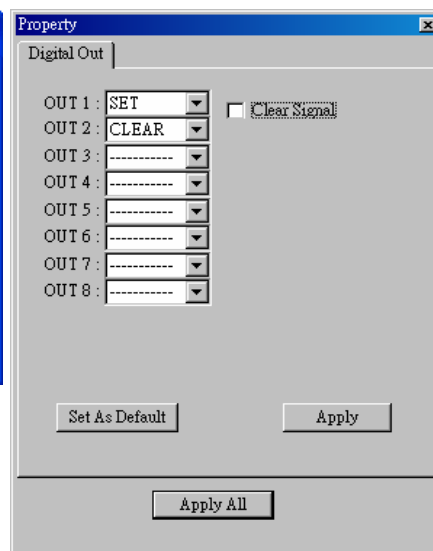
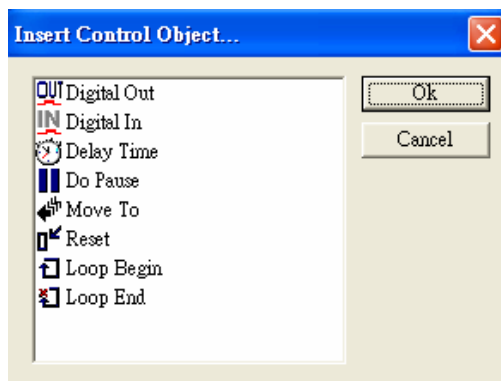
#### Move To & Reset

Move To allows you to move an angle you need, and Reset can clear settings.

#### Loop Begin & Loop End

Loop Begin and Loop End are used to set up the mark loops.

## G-Mark Library



### 4.4 Image Menu

“Image” menu offers the following functions:

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

## G-Mark Library

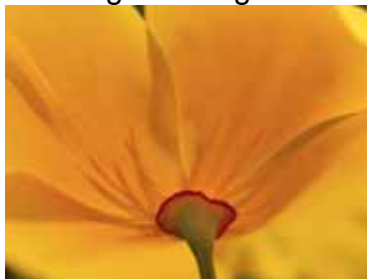
### 4.4.1 Effects

#### 4.4.1.1 Posterize

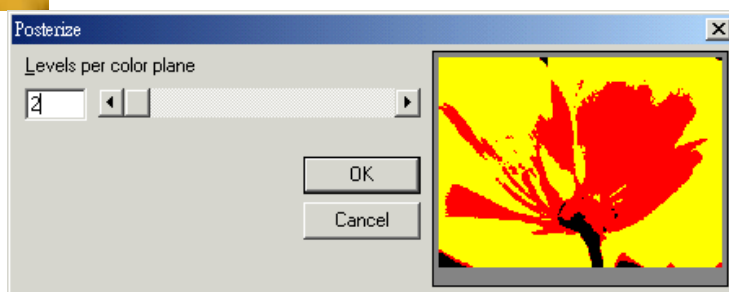
##### Click "Image – Effects - Posterize"

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.

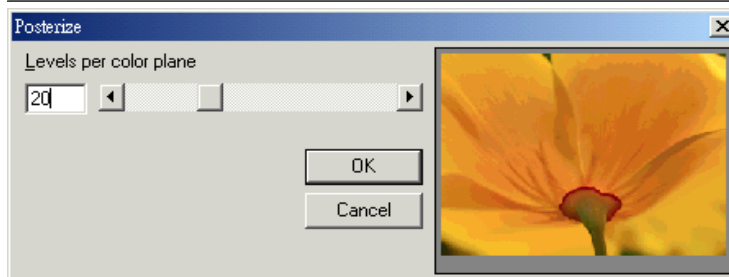
The original image:



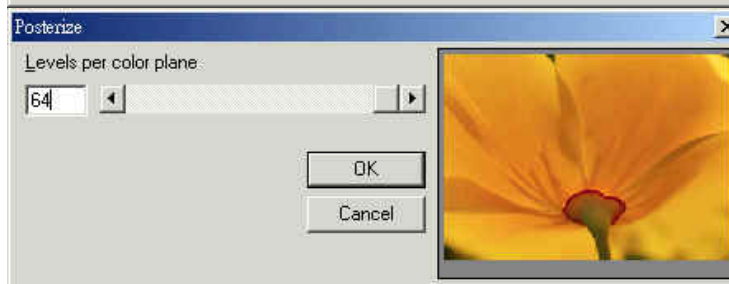
When choose 2 levels per color plane:



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.

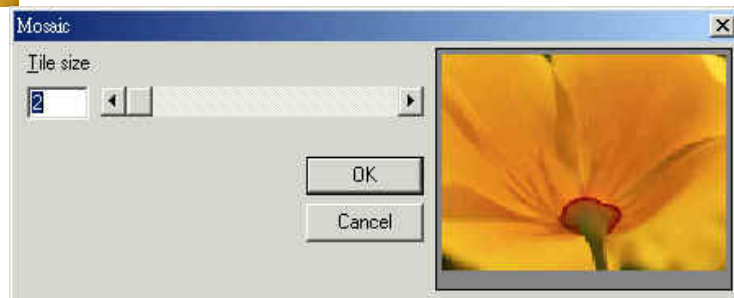
The original image:



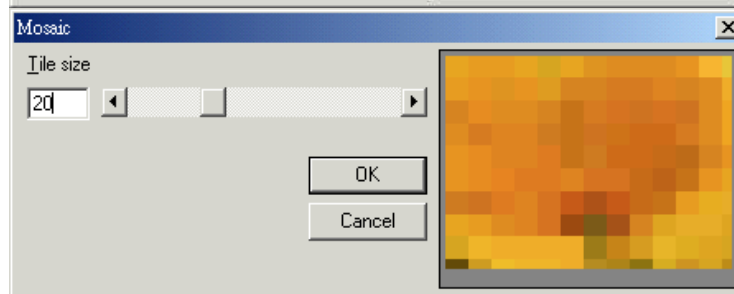
## G-Mark Library



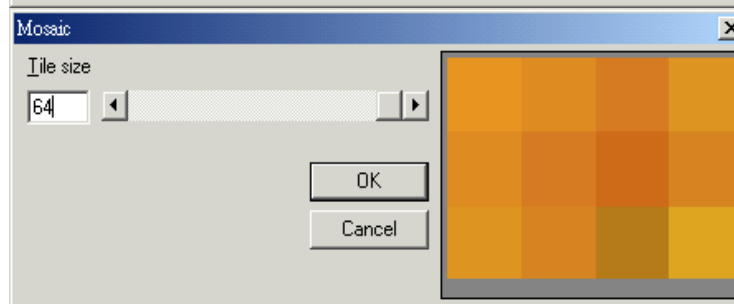
When the tile size is 2:



When the tile size is 20:



When the tile size is 64:

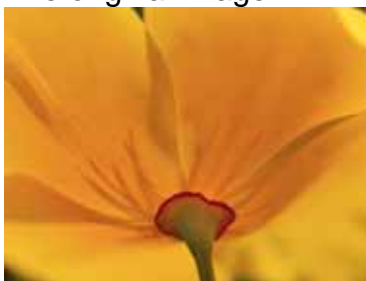


### 4.4.1.3 Average

**Click "Image – Effects - Average"**

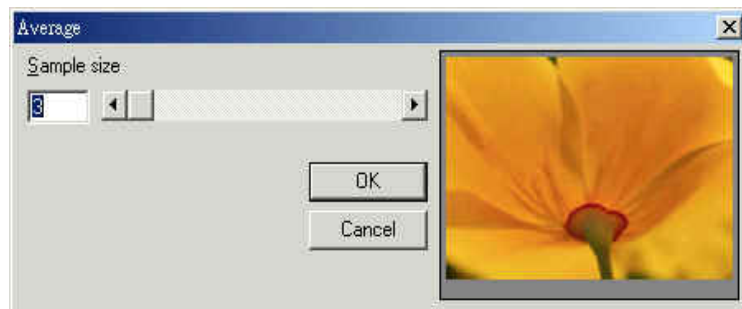
Each pixel is affected by the average property within a 3x3 to 11x11 area.  
Create a blurred effect.

The original image:

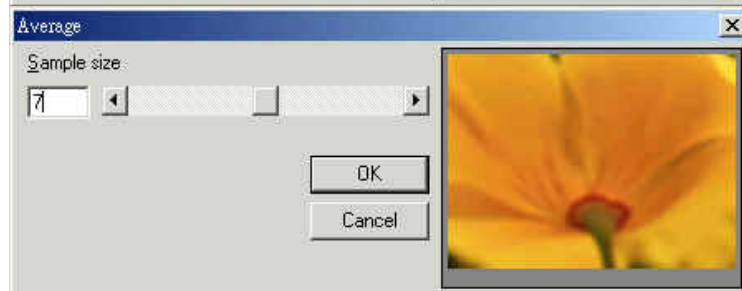


## G-Mark Library

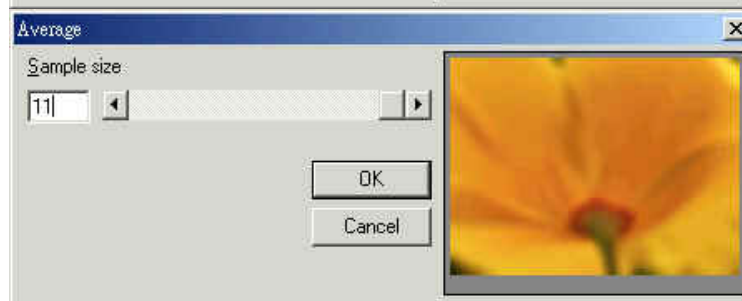
When the sample size is 3:



When the sample size is 7:



When the sample size is 11:



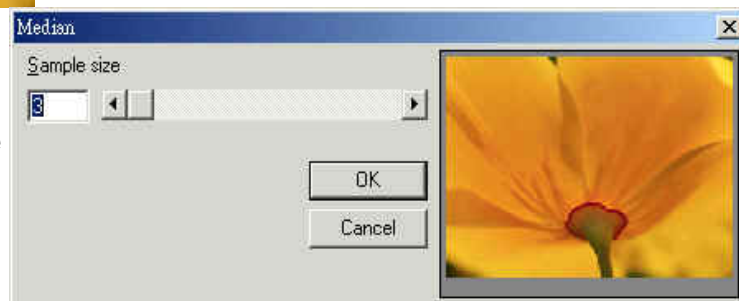
### 4.4.1.4 Median

Click "Image – Effects - Median"

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

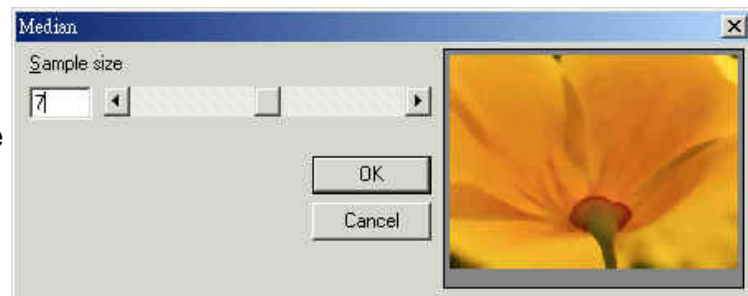


When the sample size is 3:

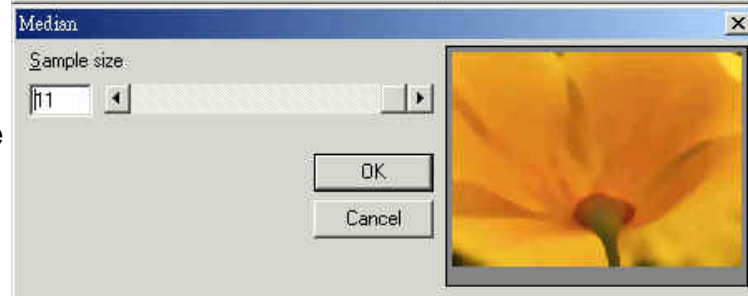


## G-Mark Library

When the sample size is 7:



When the sample size is 11:

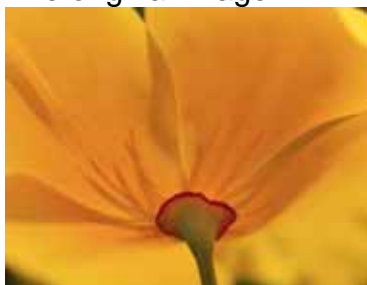


### 4.4.1.5 Sharpen

#### Click "Image – Effects - Sharpen"

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

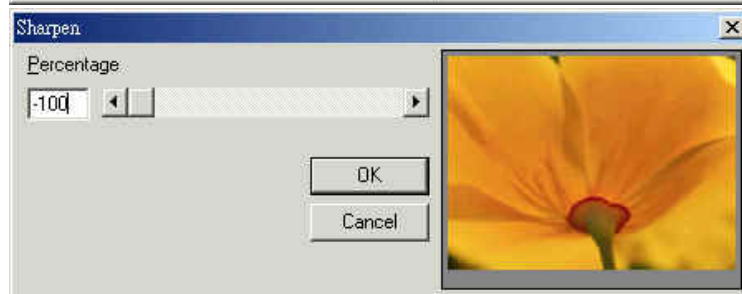
The original image:



When sharpen percentage is 0:

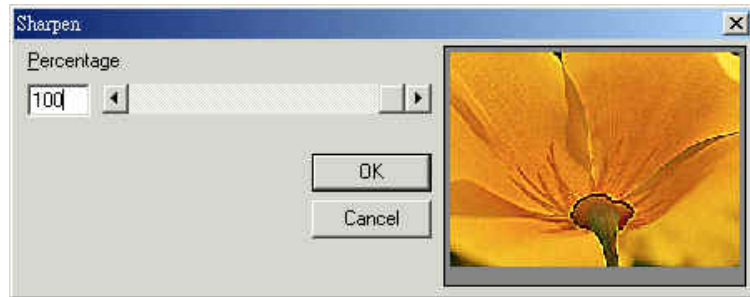


When sharpen percentage is –100:



## G-Mark Library

When sharpen  
percentage is 100:

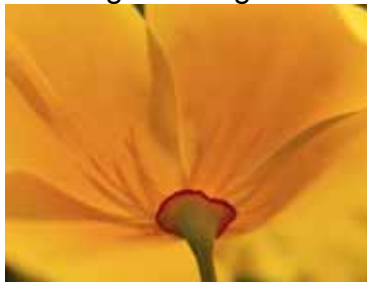


### 4.4.1.6 Add Noise

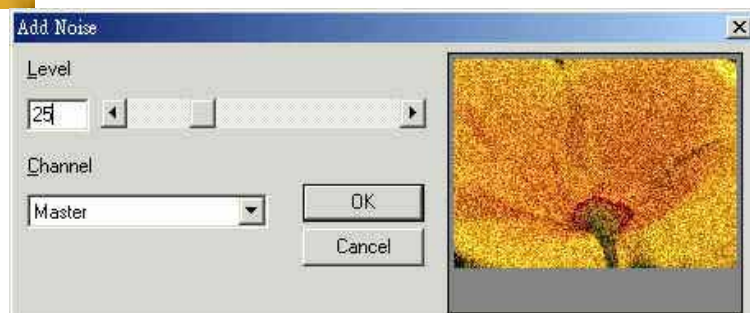
**Click "Image – Effects – Add Noise"**

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"**

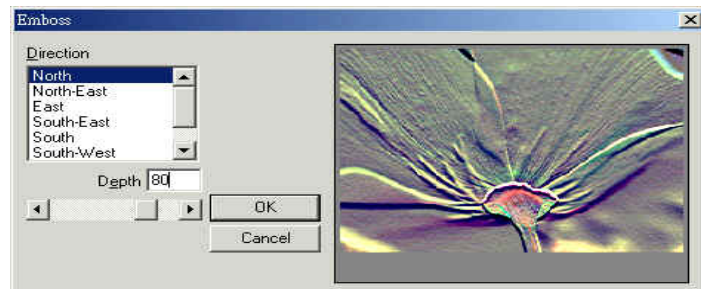
Create an exaggerated 3-D effect. Choose from different directions to give character to the depth of the image.

The original image:

## G-Mark Library



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:

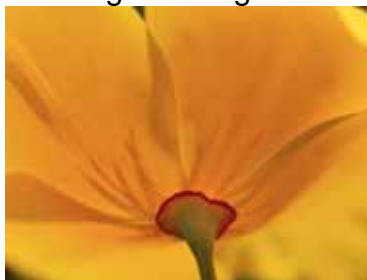


### 4.4.1.9 Oilify

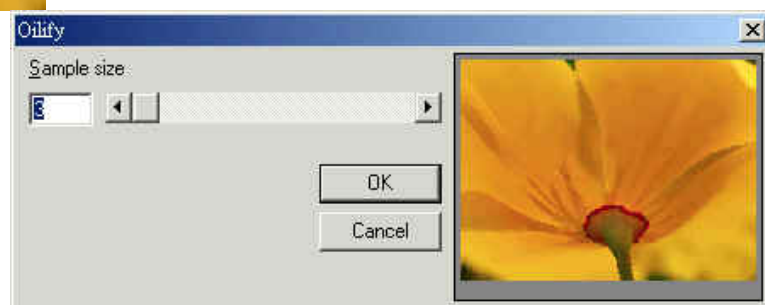
**Click "Image – Effects - Oilify"**

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

The original image:

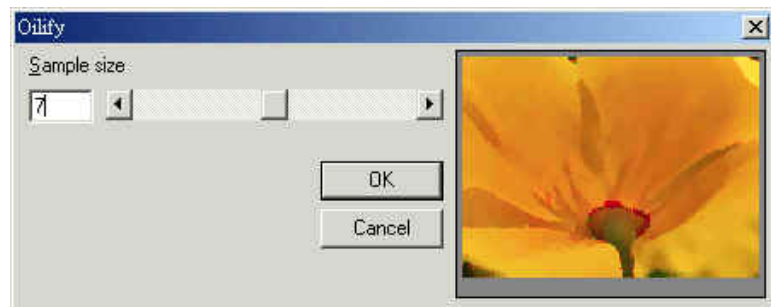


When the sample size is 3:

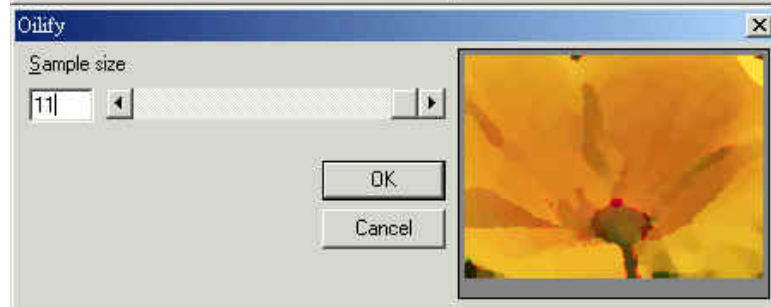


## G-Mark Library

When the sample size is 7:



When the sample size is 11:

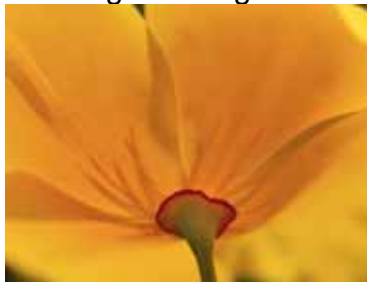


### 4.4.2 Special Filters

#### 4.4.2.1 Gradient

Click "Image – Special Filters - Gradient"

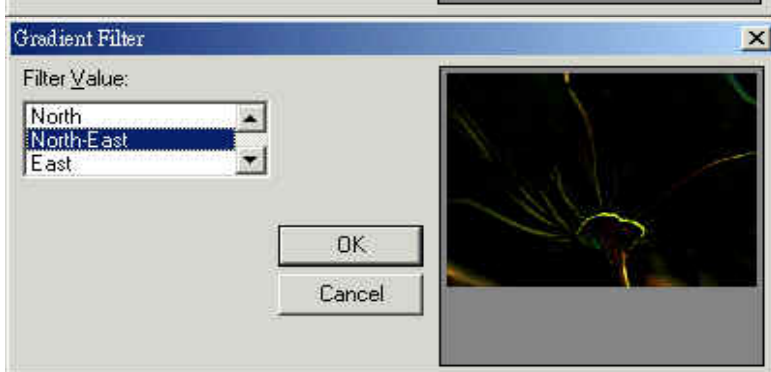
The original image:



When the Filter Value is North:



When the Filter Value is North-East:



#### 4.4.2.2 Laplacian



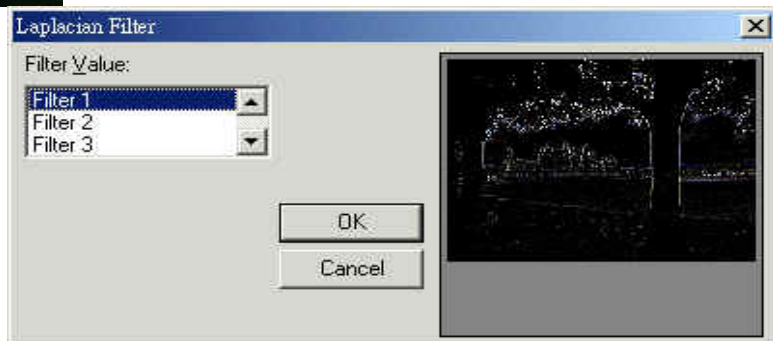
## G-Mark Library

Click "Image – Special Filters - Laplacian"

The original image:



When the Filter Value is Filter 1:



When the Filter Value is Filter 2:



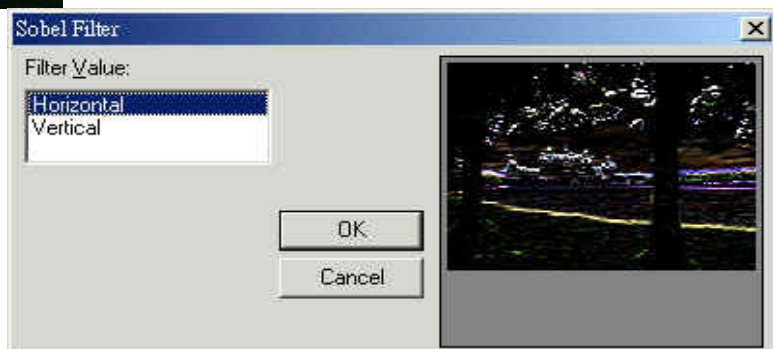
### 4.4.2.3 Sobel

Click "Image – Special Filters - Sobel"

The original image:

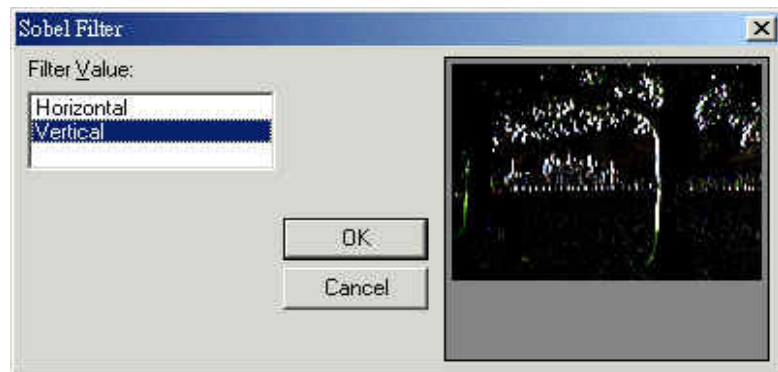


When the Filter Value is Horizontal:



## G-Mark Library

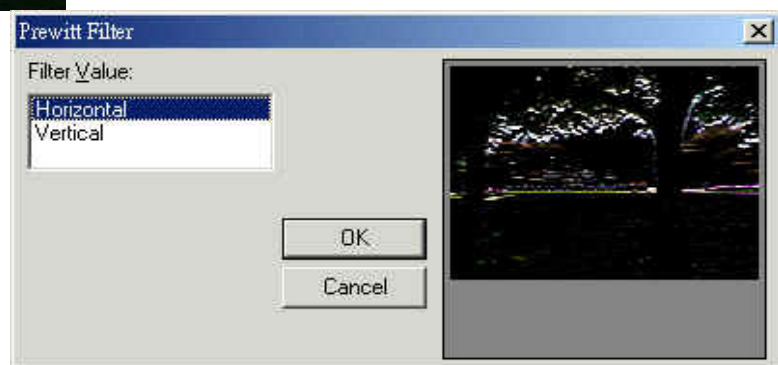
When the Filter Value is Vertical:



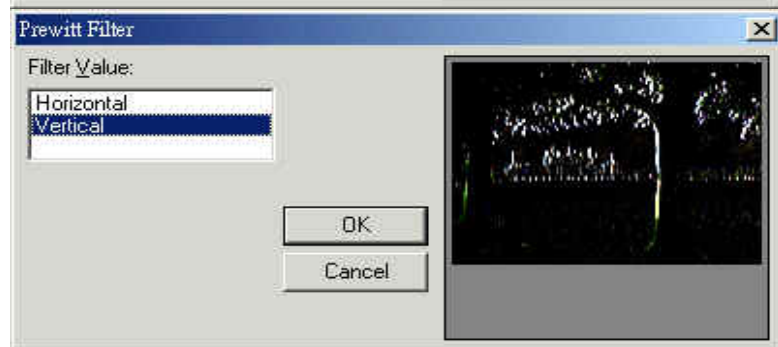
**4.4.2.4 Prewitt**  
**Click "Image – Special Filters - Prewitt"**  
The original image:



When the Filter Value is Horizontal:



When the Filter Value is Vertical:



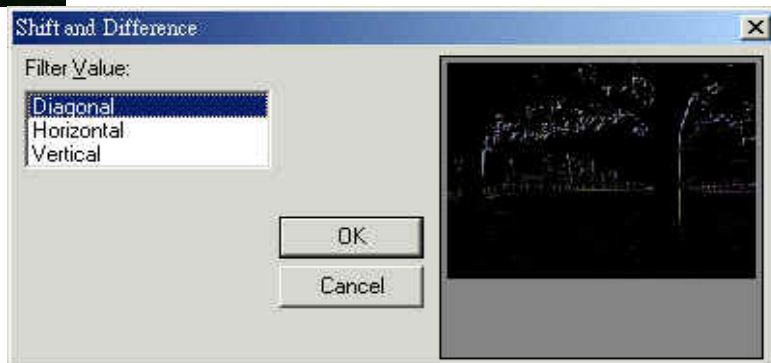
**4.4.2.5 Shift Difference**  
**Click "Image – Special Filters – Shift Difference"**  
The original image:



## G-Mark Library



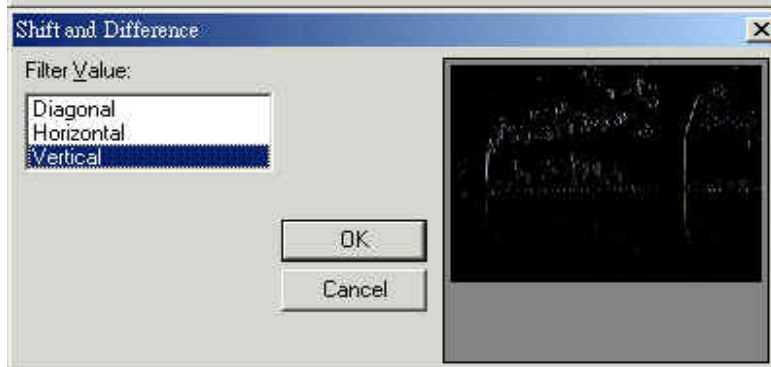
When the Filter Value is Diagonal:



When the Filter Value is Horizontal:



When the Filter Value is Vertical:



### 4.4.2.6 Line Segment

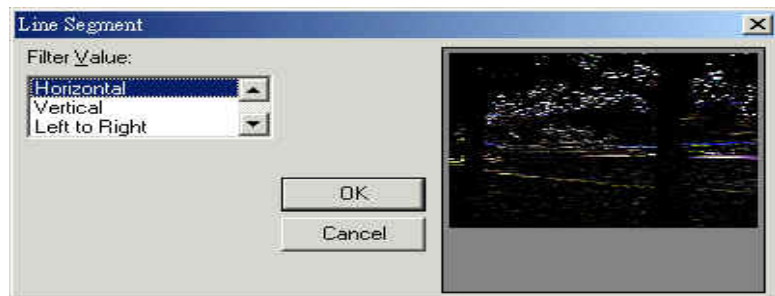
Click "Image – Special Filters – Line Segment"

The original image:

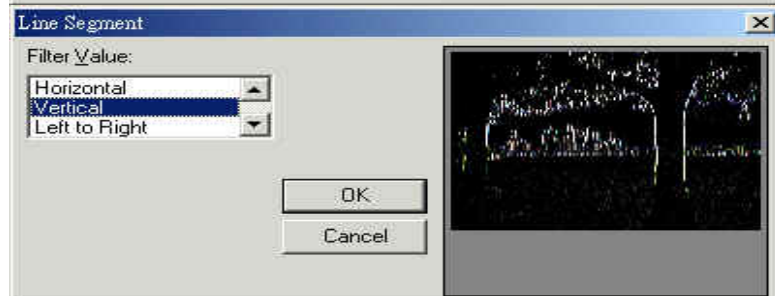


## G-Mark Library

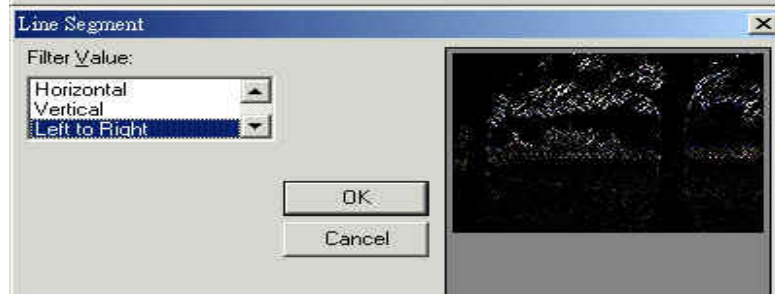
When the Filter Value is Horizontal:



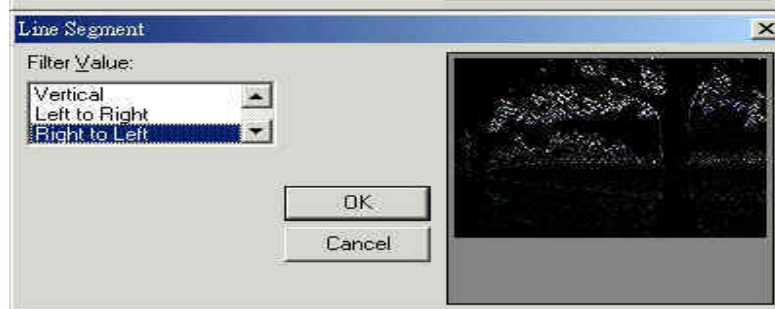
When the Filter Value is Vertical:



When the Filter Value is Left to Right:



When the Filter Value is Right to Left:



## **G-Mark Library**

### **4.5 Color Menu**

“**Color**” menu offers the following functions:

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

## G-Mark Library

### 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.

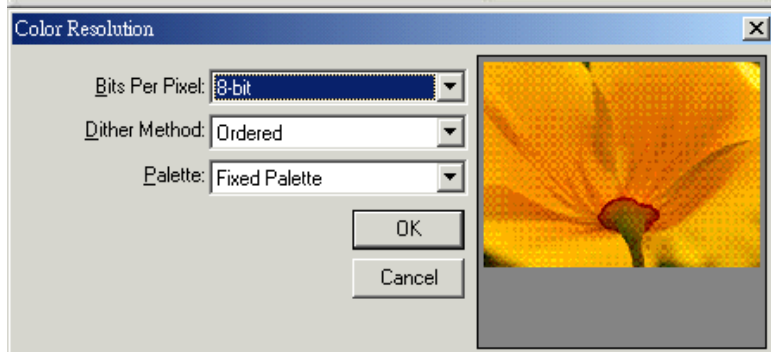
The original image:



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"

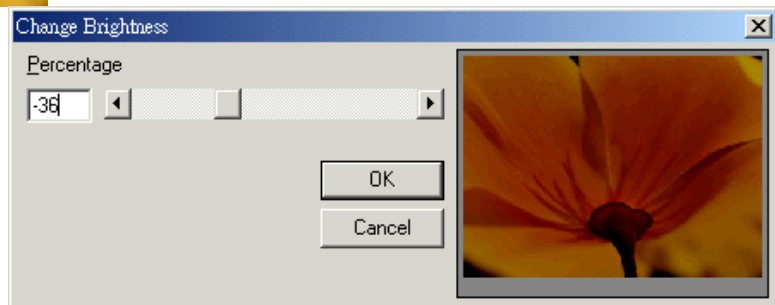
Increase the brightness from +100% (bright white) to –100% (pitch black).

The original image:

## G-Mark Library



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"

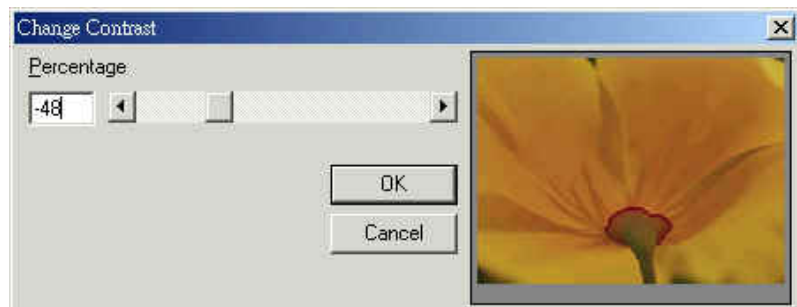
Adjust the contrast levels from +100% (bright) to -100% (dark).

The original image:



## G-Mark Library

When Contrast  
Percentage is -48:



When Contrast  
Percentage is 0:



When Contrast  
Percentage is 30:

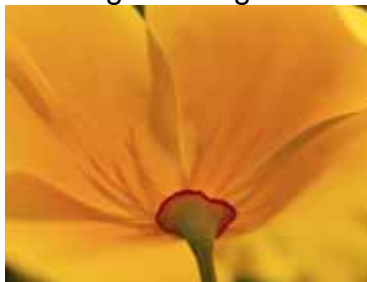


### 4.5.5 Hue

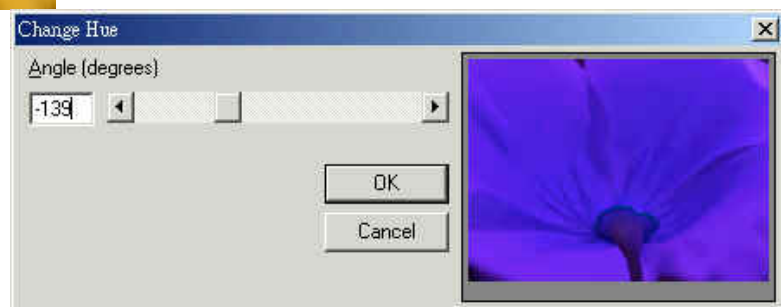
Click "Color - Hue"

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

The original image:



When the Hue  
Angle is -139:

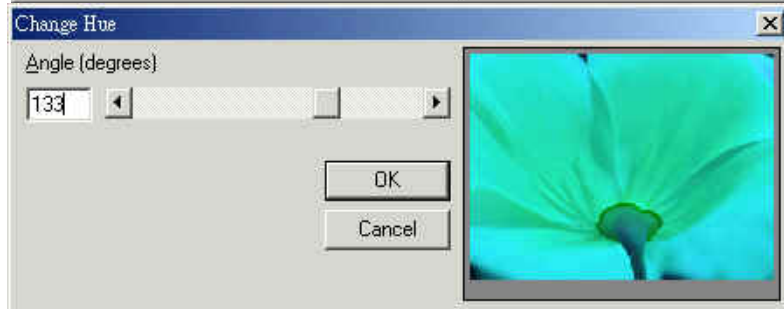


## G-Mark Library

When the Hue  
Angle is 0:



When the Hue  
Angle is 133:



### 4.5.6 Saturation

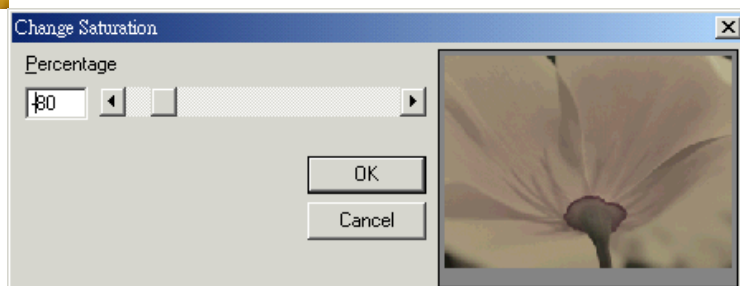
Click "Color - Saturation"

Add or remove color.

The original image:



When the Saturation  
Percentage is -80:



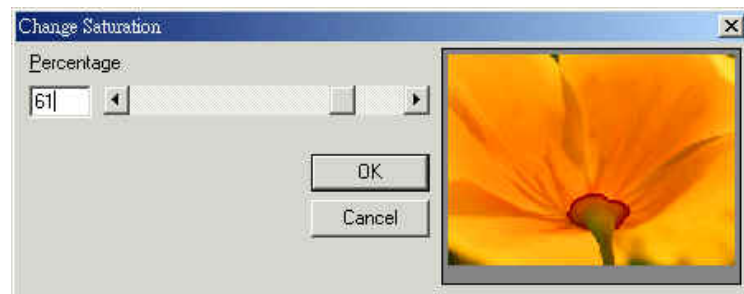
When the Saturation  
Percentage is 0:





## G-Mark Library

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:



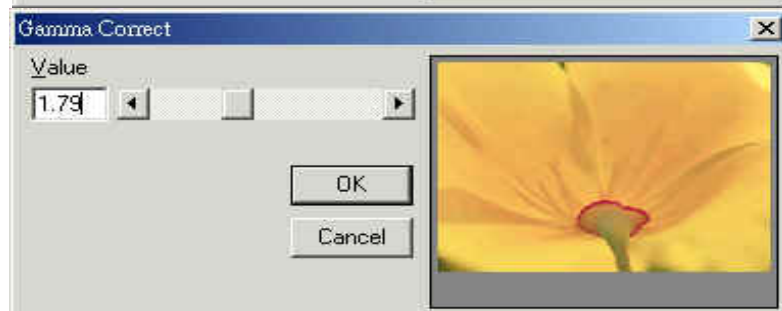
When the Gamma Correct Value is 0.43:



When the Gamma Correct Value is 1:



When the Gamma Correct Value is 1.79:



### 4.5.8 Intensity

Click "Color - Intensity"



## G-Mark Library

### 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"

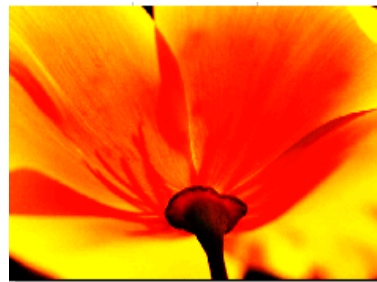
### Equalize

Use this function to equalize the image.

The original image:



After use this function:



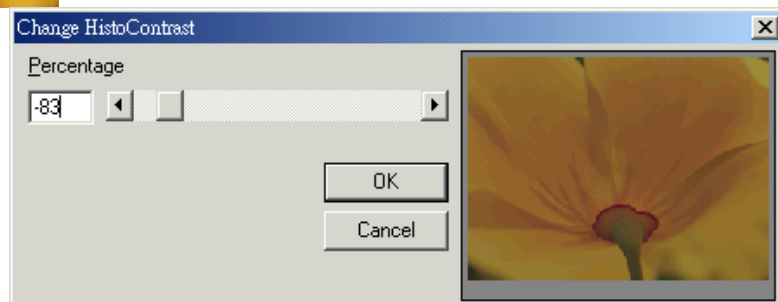
### HistoContrast

Use this function to the the HistoContrast of the image:

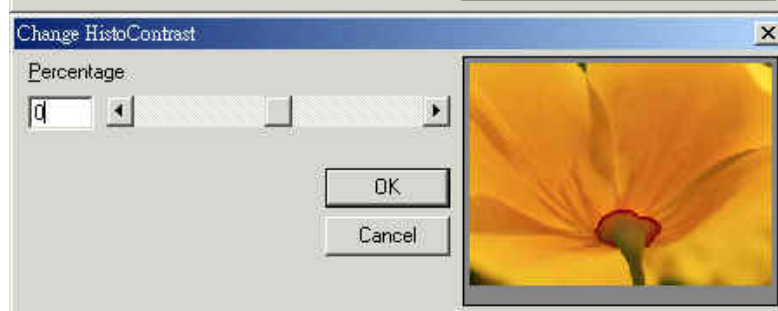
The original image:



When the  
HistoContrast  
Percentage is -83:

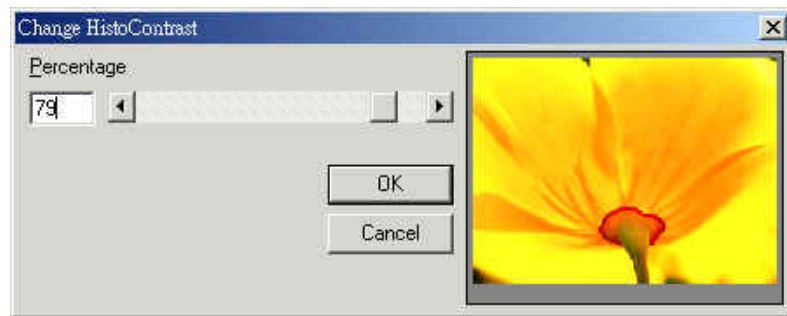


When the  
HistoContrast  
Percentage is 0:



## G-Mark Library

When the  
HistoContrast  
Percentage is 79:

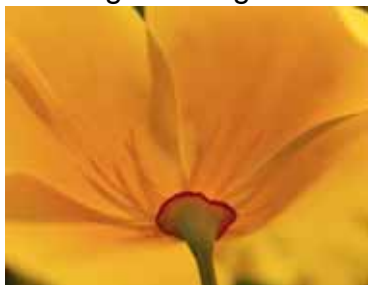


### 4.5.10 Invert

**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:

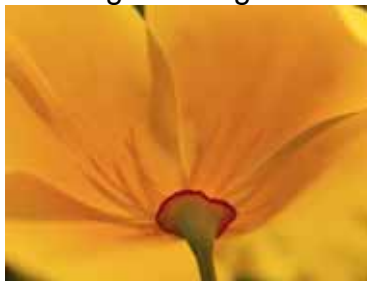


### 4.5.11 Solarize

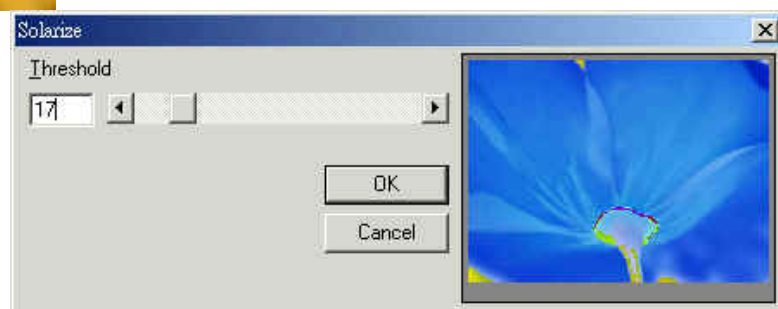
**Click "Color - Solarize"**

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

The original image:

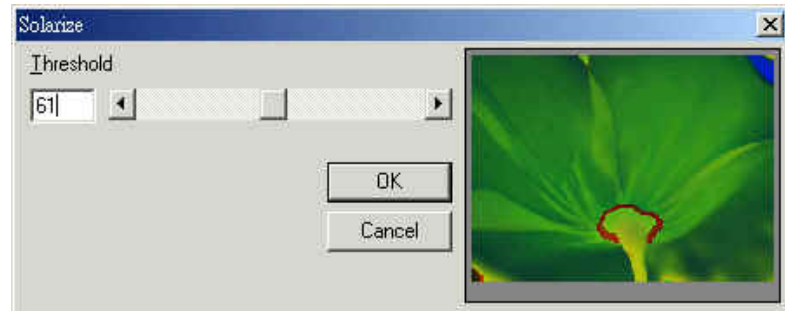


When the Solarize  
Threshold is 17:

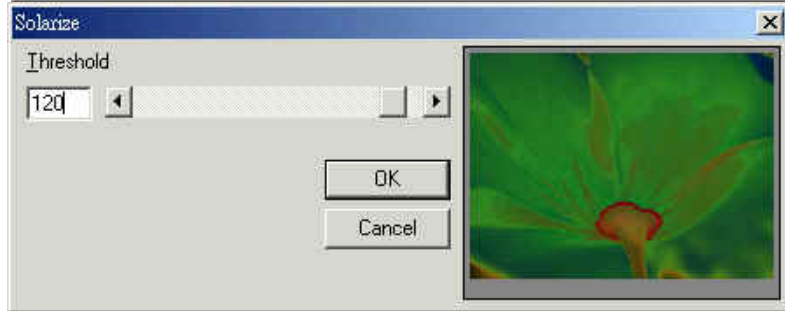


## G-Mark Library

When the Solarize  
Threshold is 61:



When the Solarize  
Threshold is 120:



### 4.6 Execute Menu

"Execute" menu offers the following function:

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

## G-Mark Library

### 4.6.1 Marking

Mark the objects and adjust the related settings.

Auto Text	Item No.	Type	Start	End	Current
Text(4)	Engine Item 1	Serial No.	0	100	0
Text(4)	Engine Item 1	Serial No.	0	100	1
Text(4)	Engine Item 1	Serial No.	0	100	2
Text(4)	Engine Item 1	Serial No.	0	100	3
Text(4)	Engine Item 1	Serial No.	0	100	4

**Comment:** Write down some notes about this file's functions and points for attention over here. You can push the "Preview" button to see the mark preview (see below). As 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.

#### Preview

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

## G-Mark Library

this button.

**Dry Run...**

Speed: 1000.000 mm/sec  
1 ————— 3000

Position  
Unit: 0.010 mm

X: 0.000  
Y: 0.000

Scale: 100.000 %

Run Mode  
☒ Bounding  
☐ Full Path  
☐ Selected Only

Run  
Modify Objects  
Go To Execute  
Exit

**Global Parameters...**

Marking Max: 0  
Marking Amount: 0  
Trigger Max: 0  
☐ Show MSG

Comment

FPK : 10 us

Mark On Fly  
☒ X Axis  
☒ X Encoder  
Factor : 0.000 mm/cnt  
Delay: 0 pulse

☒ Y Axis  
☐ Y Encoder  
Speed : 0.000 mm/sec  
Delay: 0 us

☐ Set Default

OK Cancel

TPL file  
Load TPL file Remove TPL file  
No selected TPL file.

Select	X	Y	Angle
--------	---	---	-------

## System Setting

### Global Parameters

**Marking Maximum:** The desired total working times

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

## G-Mark Library

**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.

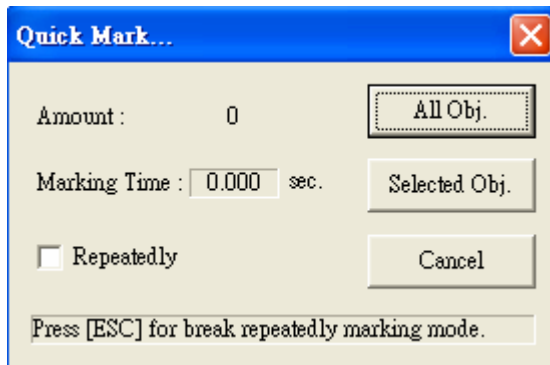
**TPL File**

Load or Remove TPL files

### 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.

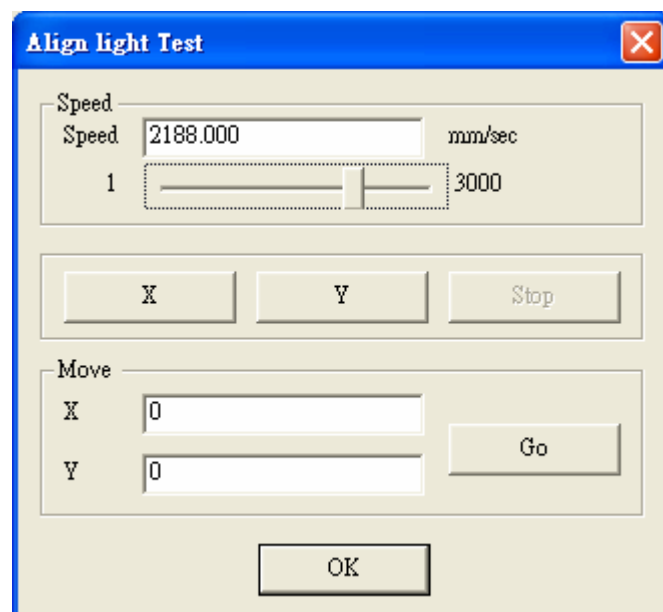
**Move**

**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.

## G-Mark Library

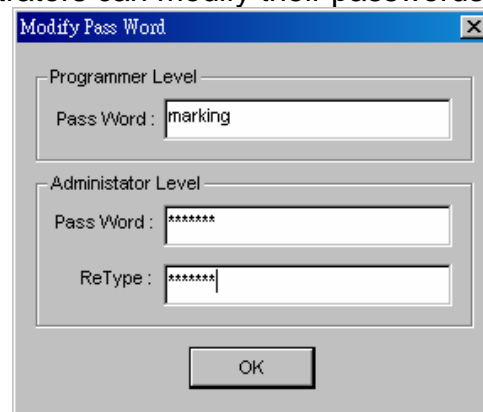
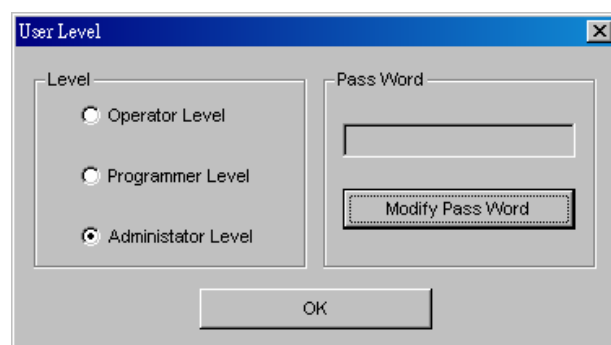


### 4.6.4 User Level

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 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.



## G-Mark Library

**Mark Parameter List**

Parameter Path: C:\Program Files\MarkingMate\MarkParam

Item Name	Item-0							
Pass	3-1	3-2	3-3					
Speed	800.0	800.0	800.0					
Power	20.0	20.0	20.0					
Freq	20.00	20.00	20.00					
Times	1	1	1					
Spot Delay	0.100	0.100	0.100					
Pulse width	50	50	50					
Start Point Delay	0.000	-----	-----					
Midpoint Delay	0.100	-----	-----					
End Point Delay	0.300	-----	-----					
Jump Speed	3000.0	-----	-----					
Jump Delay	0.200	-----	-----					

Advanced Operation

<b>Parameter Path</b>	The directory of parameter list.
<b>Item Name</b>	The name of this item
<b>Pass</b>	Cycle (maximum 5, if the number is larger than 1, the times below can only set to be 1)
<b>Speed</b>	Mark speed
<b>Power</b>	Mark power (maximum 100)
<b>Freq</b>	Mark frequency
<b>Times</b>	Mark times
<b>Spot delay</b>	Spot marking delay time
<b>Pulse width</b>	The width of pulse (only for YAG)
<b>Start Point Delay</b>	The time difference between start laser order and laser hit time. This value is adjustable to get better marking quality.
<b>Mid Point Delay</b>	This value will affect the quality of joins.
<b>End Point Delay</b>	This value will affect the quality of end points.
<b>Jump Speed</b>	Laser jump speed
<b>Jump Delay</b>	When laser reached the assigned position, it will shoot after this delay time.
<b>New Item</b>	Create a new item
<b>Delete Item</b>	Delete the selected item
<b>Copy to a New Item</b>	Copy the selected item to a new item
<b>Save Modify</b>	Save the data you modified
<b>Restore Modify</b>	Back to the item without modified
<b>Exit with Save</b>	Use the select item and save and exit

## G-Mark Library

<b>and Use this Item</b>	
<b>Exit with Save</b>	Save and exit
<b>Exit without Save</b>	Exit without save

### Example:

Create a new directory and new item:

Click “Execute – Marking Param List” in the menu, when the dialogue box appeared, click the “New Item” button and a default setting will appear. The default item name is “Item-0”, click it is able to change name. So are the others.

Using the mark parameters you created:

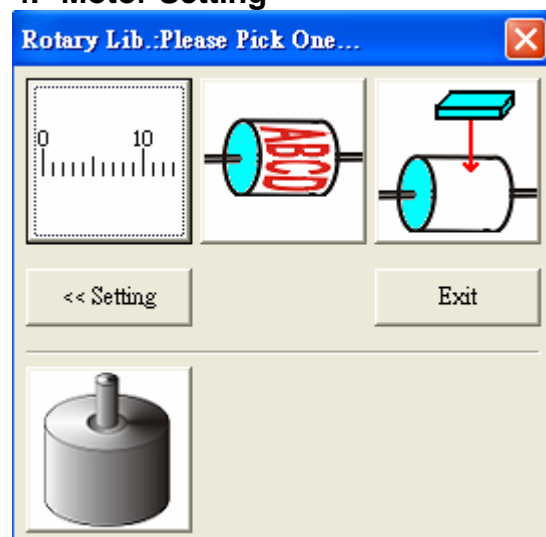
Select an object, then go to the Mark Parameter of the Property Table, and then click “.Load Parameter” button will enter the object parameter page.

Select the mark parameter you need and click “Exit with Save and Use this Item” 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 G-Mark Library” to see the detail descriptions.

1. **Calibration Marking**
2. **Ring Text Marking**
3. **Cylinder Marking**
4. **Motor Setting**



### 4.7 View Menu

“View” menu offers the following function:

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








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

#### 4.7.1.2 Zoom Bar

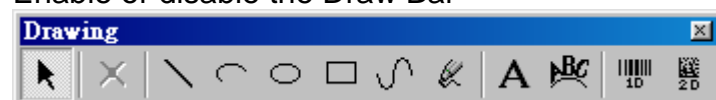
Enable or disable the Zoom Bar







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








#### 4.7.1.3 Draw Bar

Enable or disable the Draw Bar



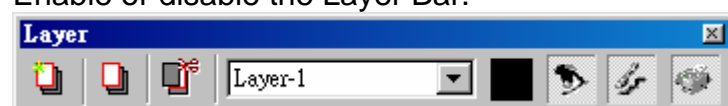
<b>Selection</b>		Selects or deselects objects in the Work Area.
<b>Line</b>		Inserts straight lines from point-to-point-to-point.
<b>Arc</b>		Creates arcs, circles, and spirals.
<b>Circle</b>		Creates circles and ovals.









## G-Mark Library

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

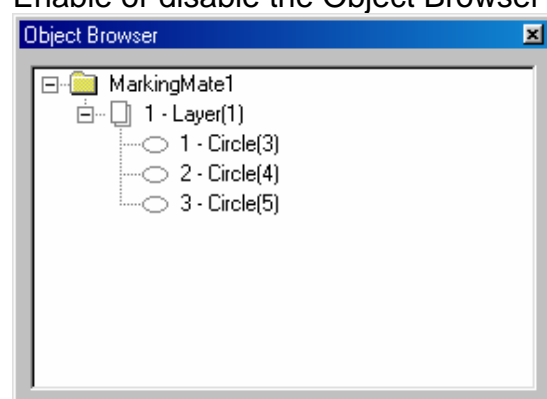
Enable or disable the Layer Bar.



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



### 4.7.1.5 Object Browser

Enable or disable the Object Browser















### 4.7.1.6 Modify Bar

Enable or disable the Modify Bar

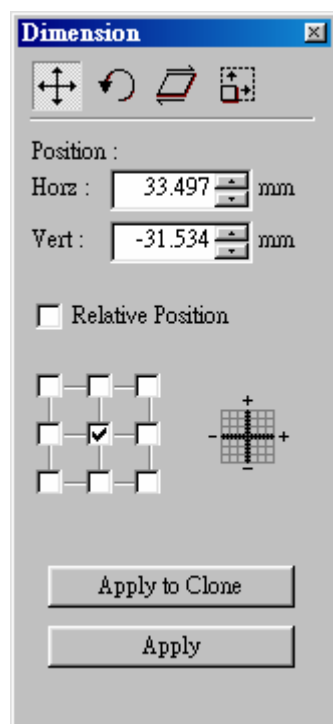
		
<b>X of Center</b>		The X-axis value of the center of the object

## G-Mark Library

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

### 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

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



Enable or disable the Object Property Bar

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








Object Property Bar: Page																			
	<input type="text" value="-50.000"/>		<input type="text" value="50.000"/>		<input type="text" value="100.000"/>		<input type="text" value="100.000"/>		<input type="text" value="mm"/>		<input type="text" value="0.100"/>		<input type="text" value="1.000"/>		<input type="text" value="100.000"/>		<input type="text" value="100.000"/>		
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																	
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:

below:

Object Property Bar: General		
      		
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









## G-Mark Library

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

### 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
Move To		Move the object to a position
Reset		Reset the setting
Loop Begin		Start a loop
Loop End		Loop stop

### 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



## G-Mark Library



<b>Shutter ON/OFF</b>		Control the shutter
<b>Align ON/OFF</b>		Control the align light
<b>Lamp ON/OFF</b>		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**

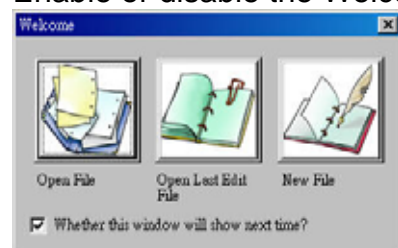
When press the **Caps Lock** key, the **CAP** will appear.

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

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

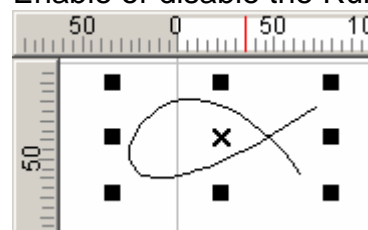
### 4.7.3 Welcome

Enable or disable the Welcome screen



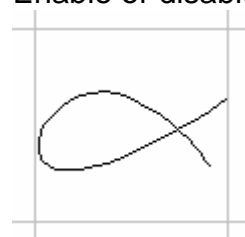
### 4.7.4 Ruler

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


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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 : 


### 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 : 

### 4.8 Window Menu

“Window” menu offers the following functions:

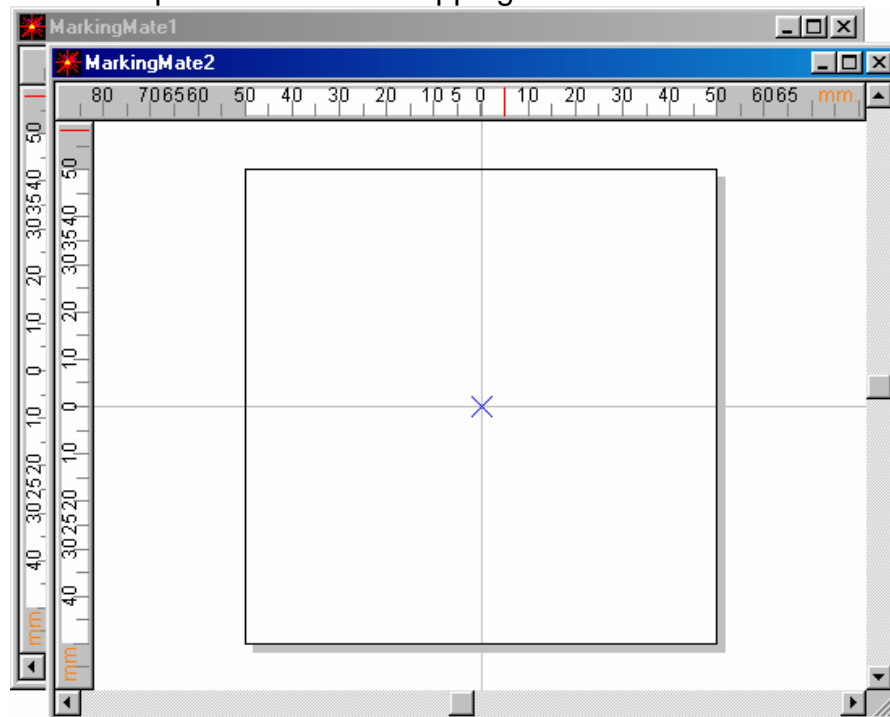
<b>New</b>	Create new window
<b>Cascade</b>	Allow all open windows overlapping
<b>Tile</b>	Show all open windows without overlapping
<b>Arrange</b>	Rearrange the windows
<b>Close All</b>	Close all windows

#### 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

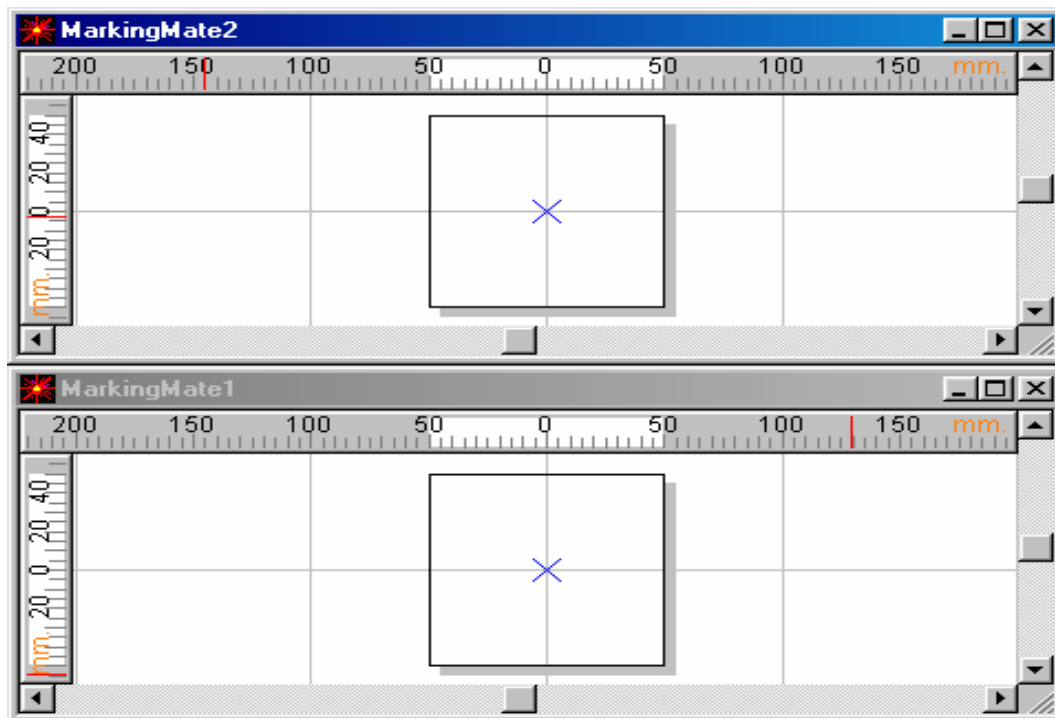
Allow all open windows overlapping as below:



#### Tile

Show all open windows without overlapping as below:

## G-Mark Library



### Arrange

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



### Close All



Close all opened windows.

## G-Mark Library

### 4.9 Help Menu

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

**Help Topic**                      The related information of the software

**About** G-Mark Library      The version information of the software

#### Help Topic

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

#### About G-Mark Library



# 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.

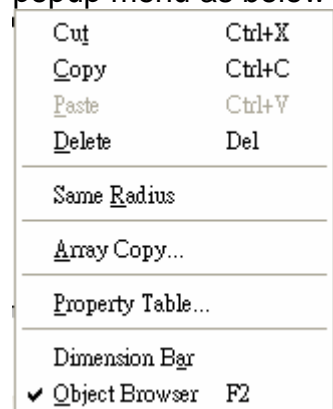
<b>Frame/Fill</b>	Adjust the color of the border and interior shading of a selected object.
<b>Mark Parameter</b>	This menu in the Property Table will allow you to edit the assigned speed, power, and frequency output of the laser machine.
<b>Delay</b>	Setting some parameters about marking speed and quality.

(Please refer to section 6.2 Mark Parameter)

## G-Mark Library

### 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 (select different object will see different popup menu):



<b>Cut</b>	Remove selected data and store it in the clipboard for future use	<b>Refer to section 4.2.3</b>
<b>Copy</b>	Duplicate selected data and store it in the clipboard for future use	<b>Refer to section 4.2.4</b>
<b>Paste</b>	Attach data from the clipboard to the current document	<b>Refer to section 4.2.5</b>
<b>Delete</b>	Delete and remove the selected data	<b>Refer to section 4.2.6</b>
<b>Same Radius</b>	Make the circle become the same radius	<b>Refer to section 4.3.4</b>
<b>Array Copy</b>	Execute the array copy function	<b>Refer to section 6.2.4</b>
<b>Property Table</b>	Show the Property Table of the object	<b>Refer to section 6.2</b>
<b>Dimension Bar</b>	Enable/disable Dimension bar	<b>Refer to section 4.7.1.7</b>
<b>Object Browser</b>	Enable/disable Object Browser	<b>Refer to section 4.7.1.5</b>

## 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.**

<b>Line</b>	Inserts straight lines from point-to-point-to-point	<b>Refer to section 4.3.2</b>
<b>Arc</b>	Creates arcs, circles, and spirals	<b>Refer to section 4.3.3</b>
<b>Circle</b>	Creates circles and ovals	<b>Refer to section 4.3.4</b>
<b>Rectangle</b>	Creates squares and rectangles	<b>Refer to section 4.3.5</b>
<b>Curve</b>	Creates a curve using three points of	<b>Refer to section 4.3.6</b>

## G-Mark Library

	reference	
<b>Curve Brush</b>	Draws freehand lines by the mouse	<b>Refer to section 4.3.7</b>
<b>Text</b>	Inserts text in the Work Area	<b>Refer to section 4.3.8</b>
<b>Arc Text</b>	Inserts text based on an arc	<b>Refer to section 4.3.9</b>
<b>1D Barcode</b>	Creates 1D barcode	<b>Refer to section 4.3.10</b>
<b>2D Barcode</b>	Creates 2D barcode	<b>Refer to section 4.3.11</b>



## 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 G-Mark Library. 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:

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

### 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

The screenshot shows the 'Property Table' dialog box with the 'Lens' tab selected. The 'Working Area' is set to 100.000 mm. The 'Offset' section has X and Y values of 0.000 mm. The 'Scale' section has X and Y values of 100.000 %. The 'Rotate' section has an Angle of 0.000, CX of 0.000, and CY of 0.000. The 'Correction' section includes checkboxes for 'X Reverse', 'Y Reverse', and 'XY Exchange', and three sets of X and Y coordinate fields for different correction shapes. At the bottom, there is a 'Default' dropdown menu, a 'Manager' button, and an 'Apply All' button.

## G-Mark Library

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

### 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.

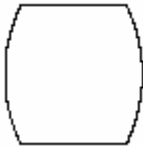

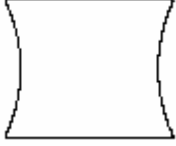

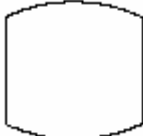

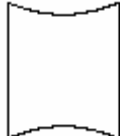

### Correction

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.


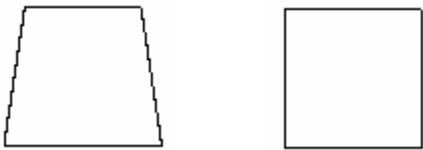


Input a square, the output become as below:

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

G-Mark Library

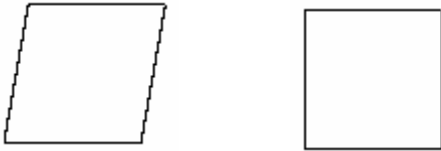



Trapezoid Correction

Input a square, the output become as below:

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

Parallelogram 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
	

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:

## G-Mark Library

The **Lens Setup** dialog box contains the following fields and controls:

- Lens Name:** A dropdown menu currently showing "Default".
- Working Area:** A text field with "120.000" and a unit label "mm".
- Offset:** Two text fields for "X" and "Y", both set to "0.000" with "mm" units.
- Scale:** Two text fields for "X" and "Y", both set to "100.000" with "%" units.
- Rotate:** A text field for "Angle" set to "180.00", and text fields for "Center X" and "Center Y", both set to "0.000".
- Correction:** Three groups of text fields for "X" and "Y" values, each set to "0.0000". Above each group is a small icon representing a different correction type (cylindrical, spherical, and astigmatic).
- Buttons:** "Add", "Modify", "Delete", "Save To File", "Load Form File", and "Exit".
- Checkboxes:** "X Reverse", "Y Reverse", and "XY Exchange", all currently unchecked.

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

### 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.

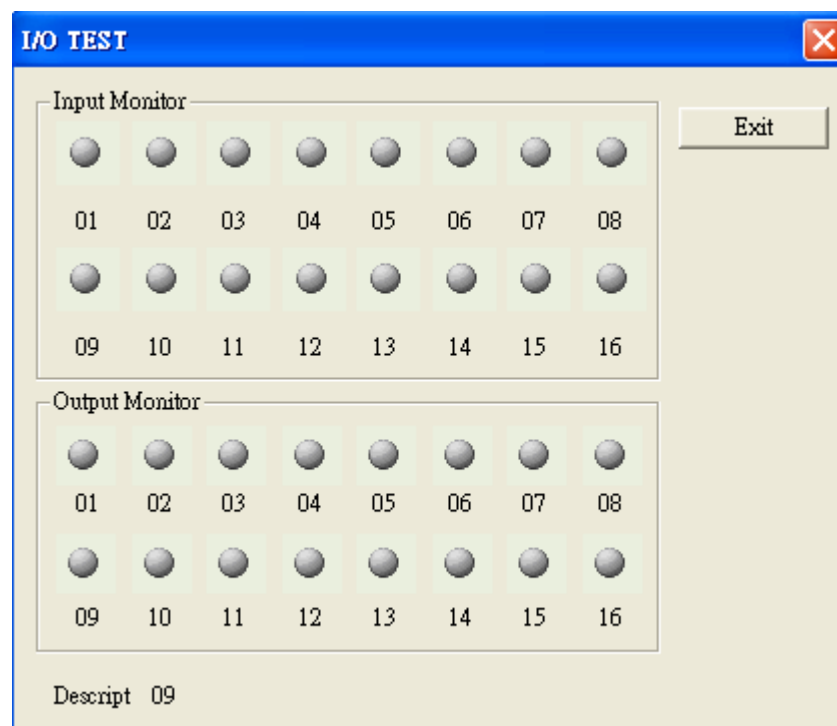
#### I/O Test

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

The **Property Table** dialog box has tabs for "Power Test", "Motor Setup", "Graph Setup", "System", "Lens", "Driver", and "Global". The "Driver" tab is active, showing the following information:

- Driver Name:** MC-1 YAG 1 -- [GSI\_YAG]
- Version:** V4.0.1 -- [OffLine]
- Maximum Speed:** A text field with "3000.000" and a unit label "mm/sec".
- Buttons:** "I/O Test", "Apply", and "Apply All".

## G-Mark Library



### 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.

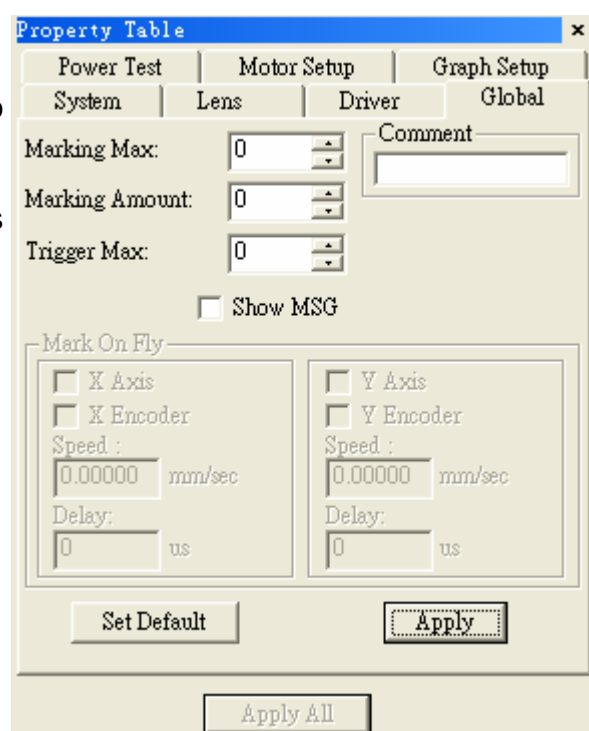
**Comment:** Input a summary of the file.

**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.



**X/Y Encoder (checked):**

**Factor:** the value of conveyer moving per encoder count.

**Delay:** delay a giving count pulse then start marking.

## G-Mark Library

### 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 three tabs: 'System', 'Lens', and 'Driver'. The 'System' tab is selected, and within it, the 'Power Test' sub-tab is active. The 'Motor Setup' and 'Graph Setup' sub-tabs are also visible. The 'Power Test' sub-tab contains three adjustable parameters: 'Power' set to 30%, 'Duration' set to 10 seconds, and 'Freq' set to 20 kHz. Each parameter is represented by a text box with a numeric value and a unit, and a small up/down arrow icon to its right. Below these settings is a large button labeled 'Laser On'. At the bottom of the window is an 'Apply All' button.

System	Lens	Driver	Global
Power Test	Motor Setup	Graph Setup	
Power:	30	%	
Duration:	10	sec	
Freq:	20	kHz	

Laser On

Apply All

## G-Mark Library

### 6.1.5 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.

The screenshot shows the 'Property Table' dialog box with the 'Motor Setup' tab selected. The 'System' tab is also visible. The 'Motor Setup' tab contains the following settings:

System	Lens	Driver	Global
Power Test	Motor Setup	Graph Setup	

Rotary Unit: Angle

Acc. time: 0.100 sec

Speed: 20.000 deg./sec

Axis Unit: 250.000 pulse/deg.

Initial Speed: 10.000 deg./sec

☐ Reverse ☐ Home After Program Start

☐ Is Active High For In Position Signal

☐ Is Active High For Home Index Signal

☐ Is Active High For Limit Signal

Jump To: 0.000 deg. Go

Home Apply

Apply All

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

### 6.1.6 Graph Setup (optional)

## G-Mark Library

### 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

The screenshot shows a software window titled "Property Table" with a close button (X) in the top right corner. The window has four tabs: "System", "Lens", "Driver", and "Global". The "Motor Setup" tab is selected and highlighted. Below the tabs, there are three sub-sections: "Power Test", "Motor Setup", and "Graph Setup". The "Motor Setup" section contains two groups of radio buttons and one checkbox. The first group, labeled "Rotary Direction", has three options: "In the direction of X Axis", "In the direction of Y Axis" (which is selected with a black dot), and "Exchange" (which is unchecked). The second group, labeled "Method of Mark End", has three options: "Reverse Direction" (selected with a black dot), "Shortest Path", and "Reset As Origin". At the bottom right of the "Motor Setup" section is an "Apply" button. At the very bottom of the window is an "Apply All" button.

System	Lens	Driver	Global
Power Test	Motor Setup	Graph Setup	

Rotary Direction

☐ In the direction of X Axis

☒ In the direction of Y Axis

☐ Exchange

Method of Mark End

☒ Reverse Direction

☐ Shortest Path

☐ Reset As Origin

Apply

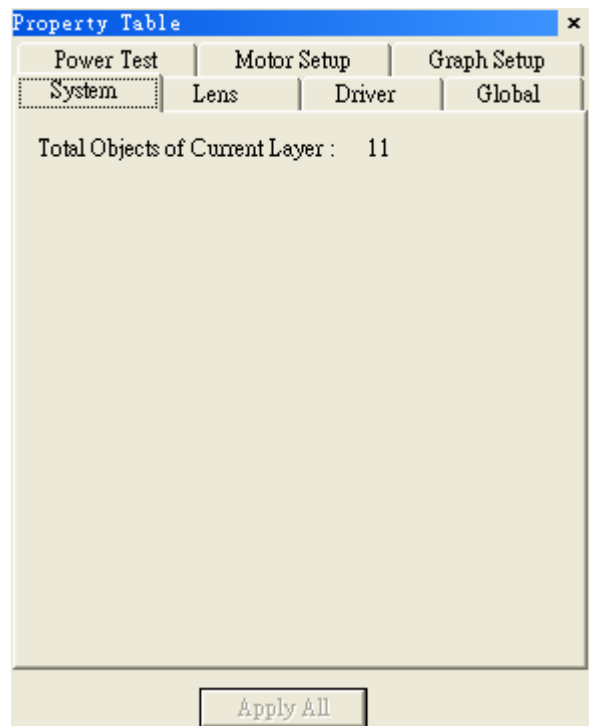
Apply All



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### 6.1.7 System

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



### 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.

#### 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.

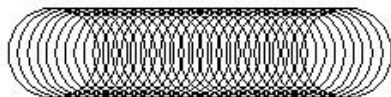
**Spot delay:** the mark time for each pixel of the image object. If this value is 0.5ms that means the spot will mark for 0.5ms.

#### **Pulse Width (YAG)**

Pulse width for YAG driver only.

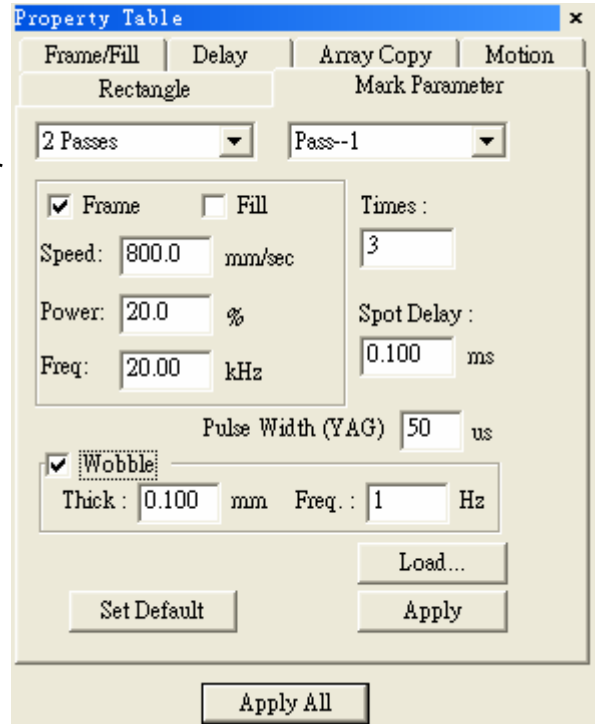
#### **Wobble**

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.



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### 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.

#### (1) Start Point Delay:

## G-Mark Library

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.

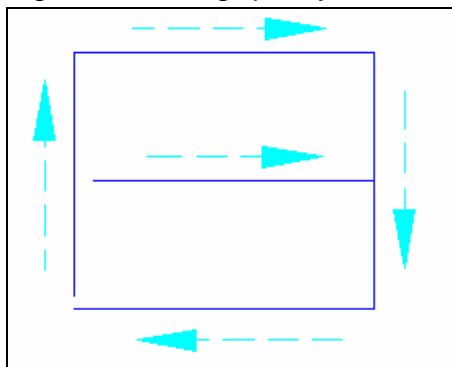


Figure 1. : The delay time is too short that caused some line segments being unmarked.

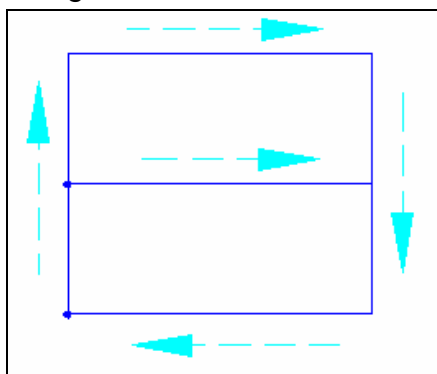


Figure 2. : The delay time is too long that caused some line segments being over marked.

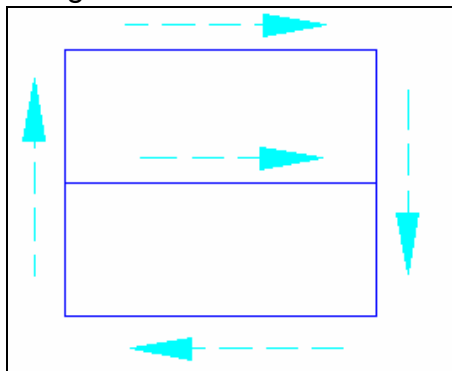


Figure 3. : When the delay time is proper, the beginning of the line segment will be smooth going.

### (2)End Point Delay:

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

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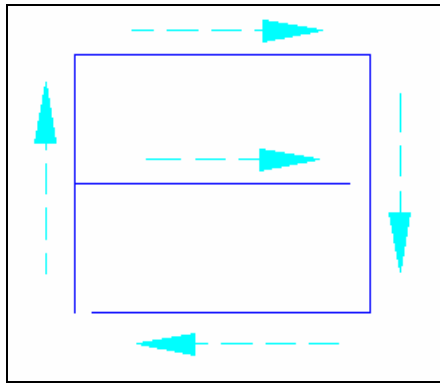


Figure 1. : When the delay ending time is too short, the ending of line segments will be unmarked.

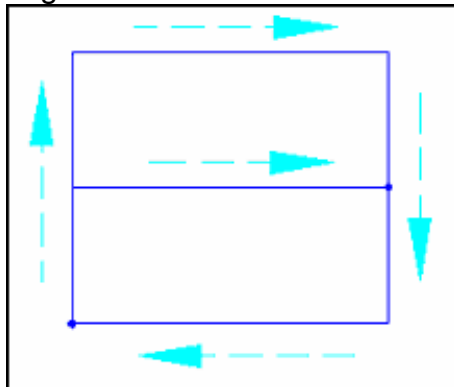


Figure 2. : When the delay ending time is too long, the ending of line segments will be over marked.

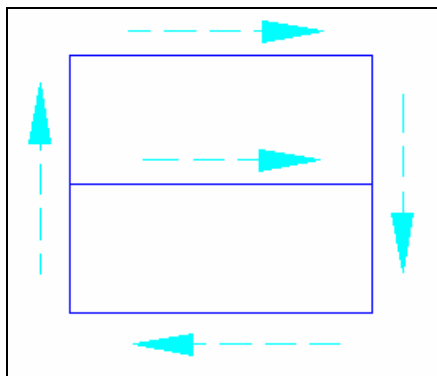


Figure 3. : When the delay ending time is proper, the ending of line segment is smooth going.

### (3)Mid Point Delay:

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

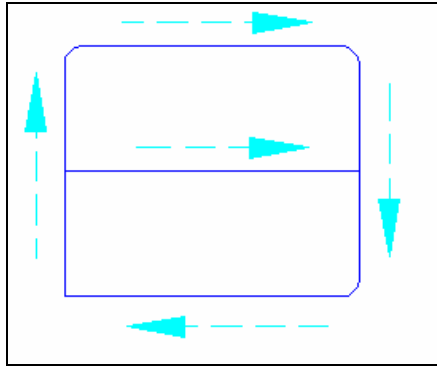


Figure 1. : When the suspending time is too short, the corner will become an arc.

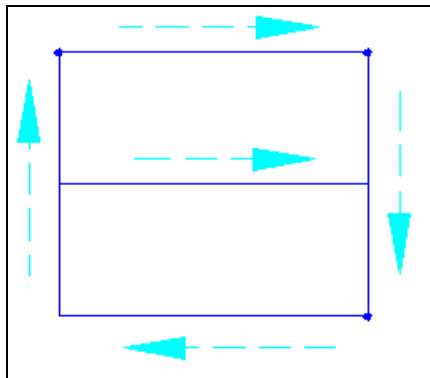


Figure 2. : When the suspending time is too long, the corner may be over marked.

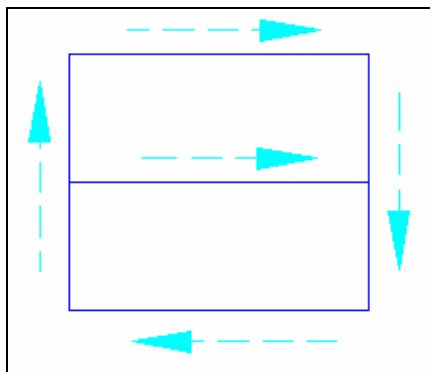


Figure 3. : When the suspending time is proper, the corner is smooth going.

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### 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' is 0.000 mm and the 'Col Gap' is 0.000 mm. The 'Copy Order' is set to a default icon. There are 'Set Default', 'Apply', and 'Apply All' buttons.

#### 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 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', 'Rotate Obj', and 'CCW Copy' (which is checked). There are 'Set Default', 'Apply', and 'Apply All' buttons.

- \* **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.

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### 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

Property Table

Rectangle | Mark Parameter

Frame/Fill | Delay | Array Copy | Motion

☐ Enable

Start Position: 0.000 deg.

Set Default Apply

Apply All

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

Property Table

Text | Mark Parameter | Frame/Fill

Delay | Array Copy | Motion

☒ Enable

Start Position: 0.000 deg.

Text Option

☒ Separate To Character

Pitch: 0.000 deg.

☐ Center

☒ Edge

Diameter: 0.000 mm

Set Default Apply

Apply All

#### Center



#### Edge





### 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°.

The screenshot shows a 'Property Table' dialog box with a title bar and a close button. The dialog is divided into three main sections: 'Delay', 'Array Copy', and 'Motion'. The 'Curve' section is active, showing a 'Closed Path' checkbox which is currently unchecked. At the bottom right of the dialog is an 'Apply' button, and at the very bottom center is an 'Apply All' button.

Delay	Array Copy	Motion
Curve	Mark Parameter	Frame/Fill

☐ Closed Path

Apply

Apply All

## G-Mark Library

### 6.3.2 Arc

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

Property Table		
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:	14.556 mm	Y: -0.667 mm
Start Angle: 359.341 deg.		
End Dot		
X:	-4.778 mm	Y: -0.444 mm
End Angle: 179.341 deg.		
<input type="button" value="Apply"/>		
<input type="button" value="Apply All"/>		

### 6.3.3 Circle

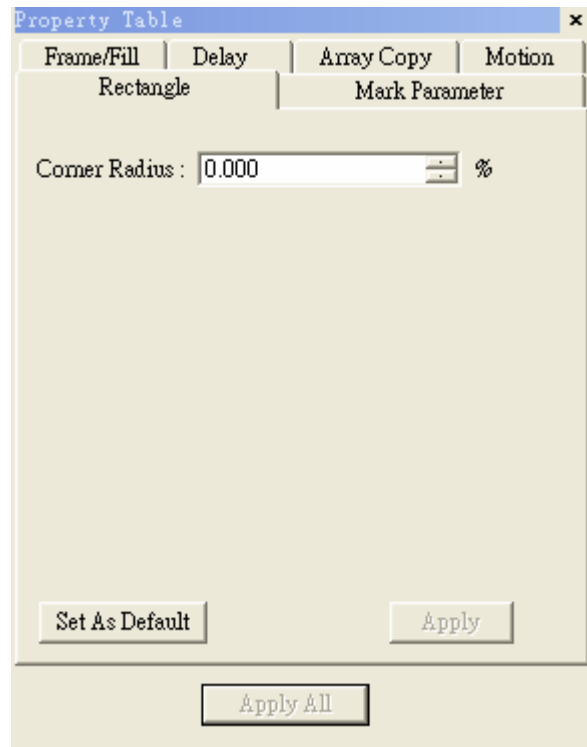
Adjust the Circle's center position and radius.

Property Table		
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		
<input type="button" value="Apply"/>		
<input type="button" value="Apply All"/>		

## G-Mark Library

### 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.

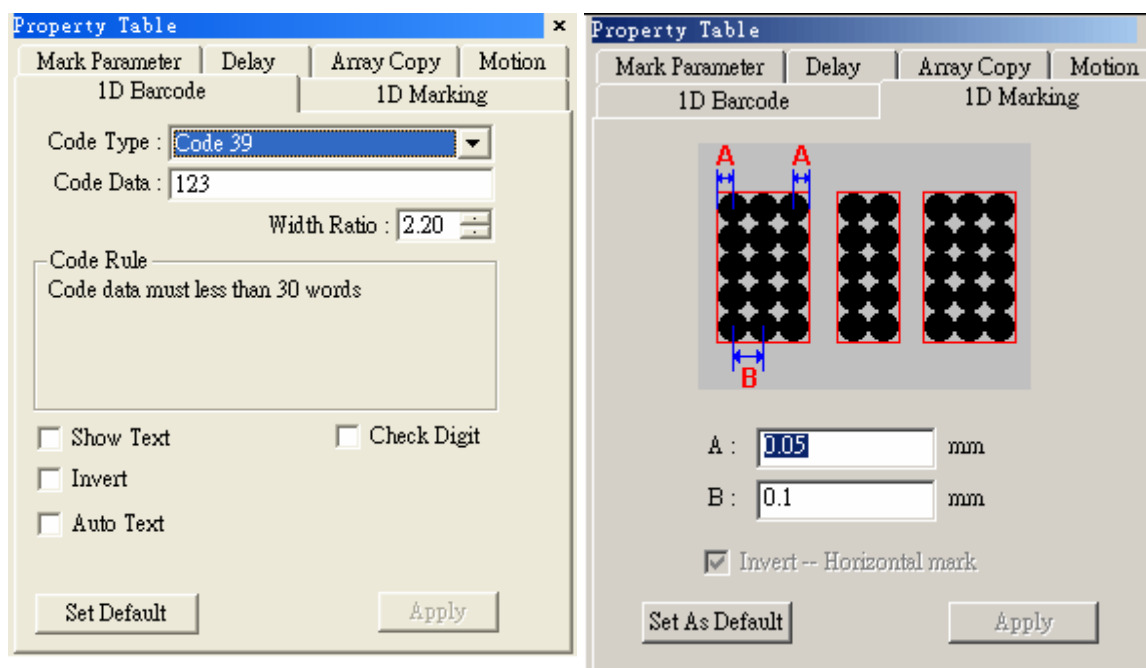
**Auto Text:** The barcode data will be changed as an auto text.

**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

## G-Mark Library



### 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

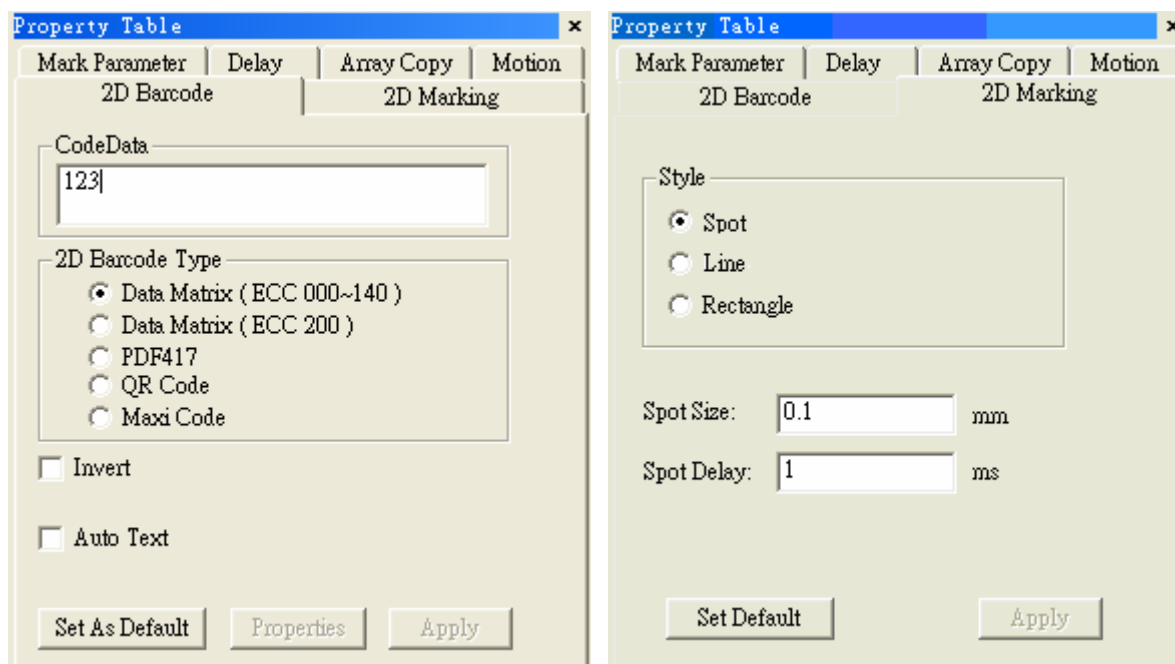
The barcode is divided into many cells, each cell has three style options as below:

Spot	Line	Rectangle
The spot can not be overlapped	Marked as lines	From outside to inside marked as rectangles
		

#### Spot Delay

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

## G-Mark Library



### 6.3.7 Image

Image properties setting

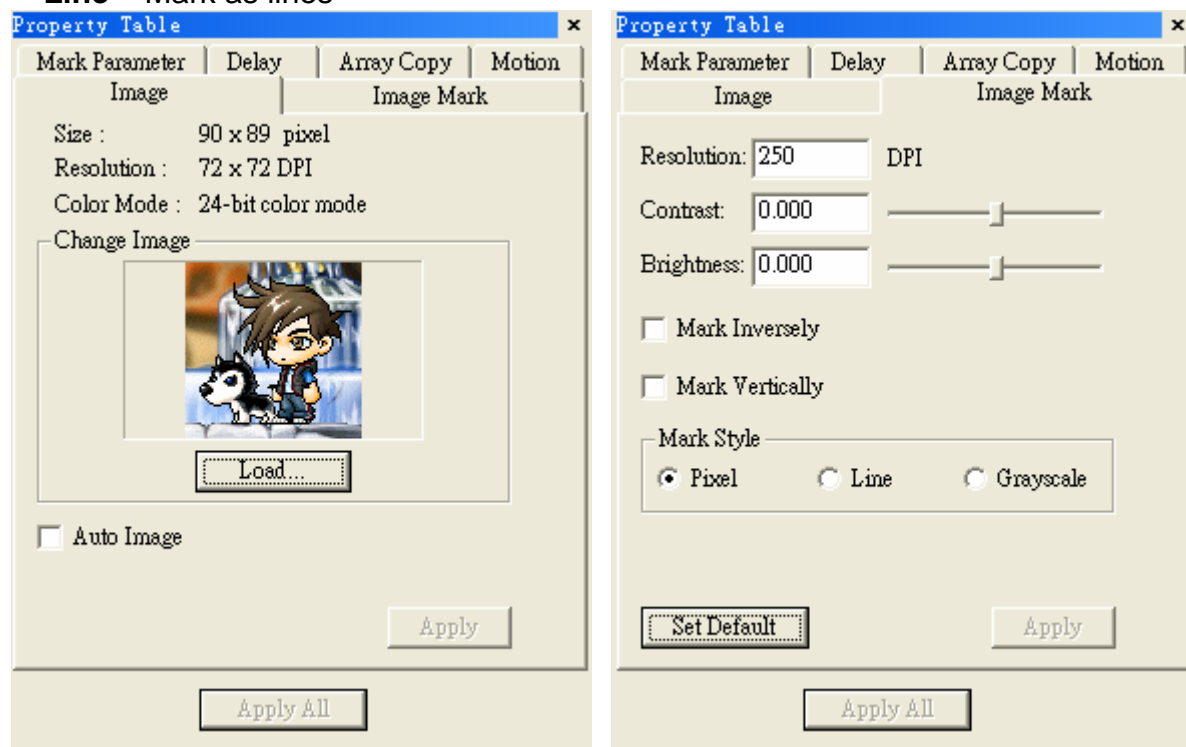
#### Resolution

The resolution of the image

#### Style

**Pixel** – Mark as pixels

**Line** – Mark as lines

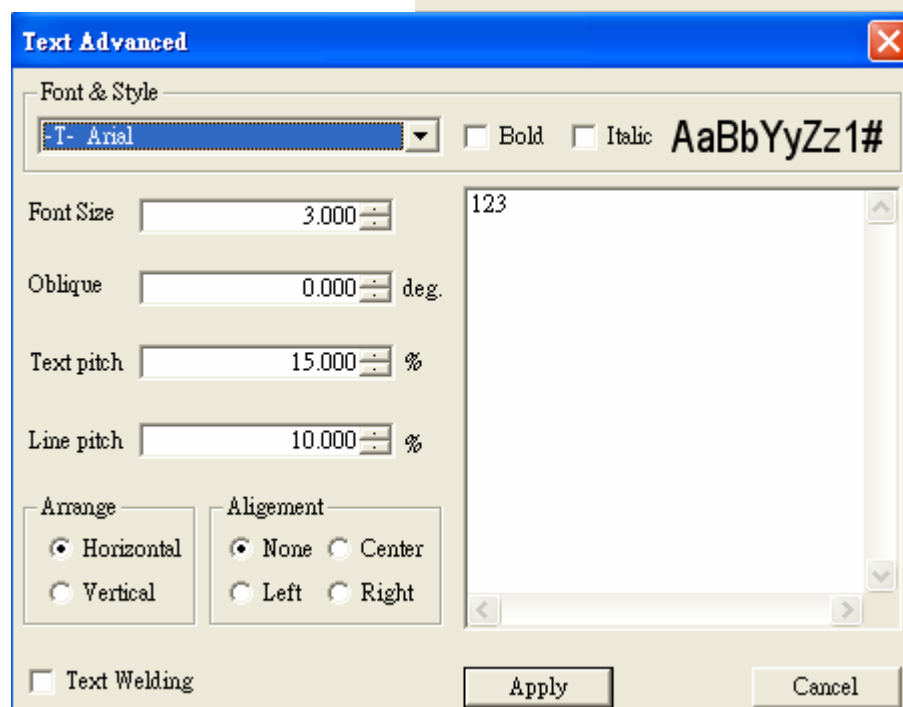
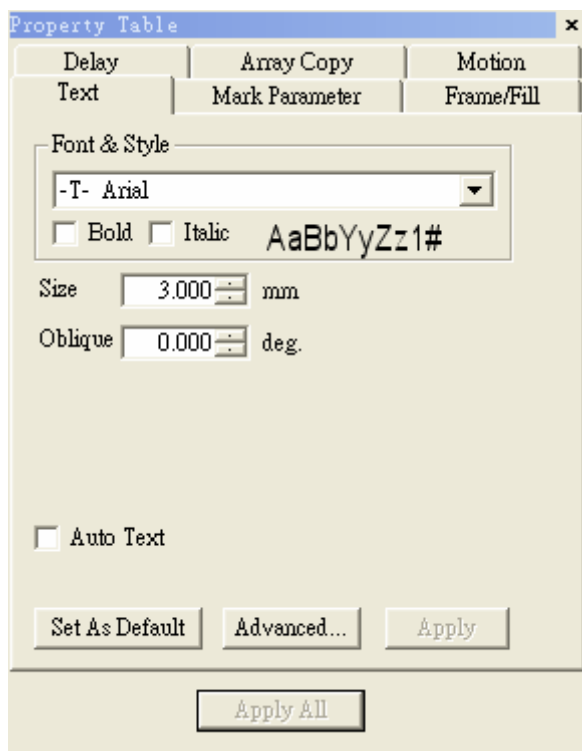


## G-Mark Library

### 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.

## G-Mark Library

### 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**

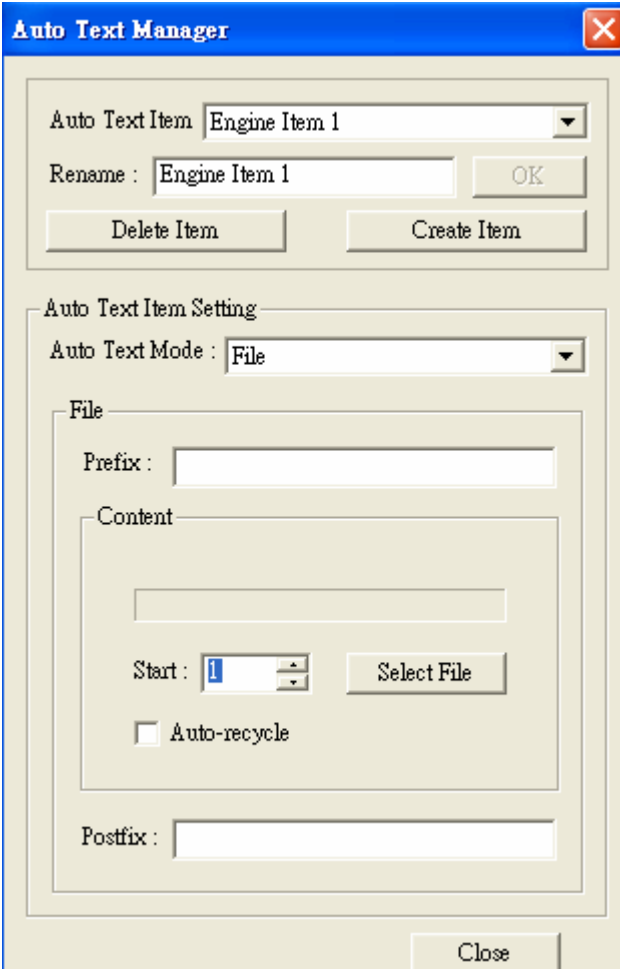
Postfix:

**Close**

## G-Mark Library

### 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 with a blue title bar and a close button. The main area is divided into two sections. The top section, 'Auto Text Item', contains a dropdown menu set to 'Engine Item 1', a 'Rename' field also containing 'Engine Item 1', and buttons for 'Delete Item', 'Create Item', and 'OK'. The bottom section, 'Auto Text Item Setting', contains a dropdown menu for 'Auto Text Mode' set to 'File'. Below this is a 'File' section with a 'Prefix' field, a 'Content' section with a large text area, a 'Start' field with a spinner set to '1', a 'Select File' button, an 'Auto-recycle' checkbox, and a 'Postfix' field. A 'Close' button is at the bottom right.

Auto Text Manager

Auto Text Item: Engine Item 1

Rename: Engine Item 1

Delete Item Create Item OK

Auto Text Item Setting

Auto Text Mode: File

File

Prefix:

Content

Start: 1 Select File

☐ Auto-recycle

Postfix:

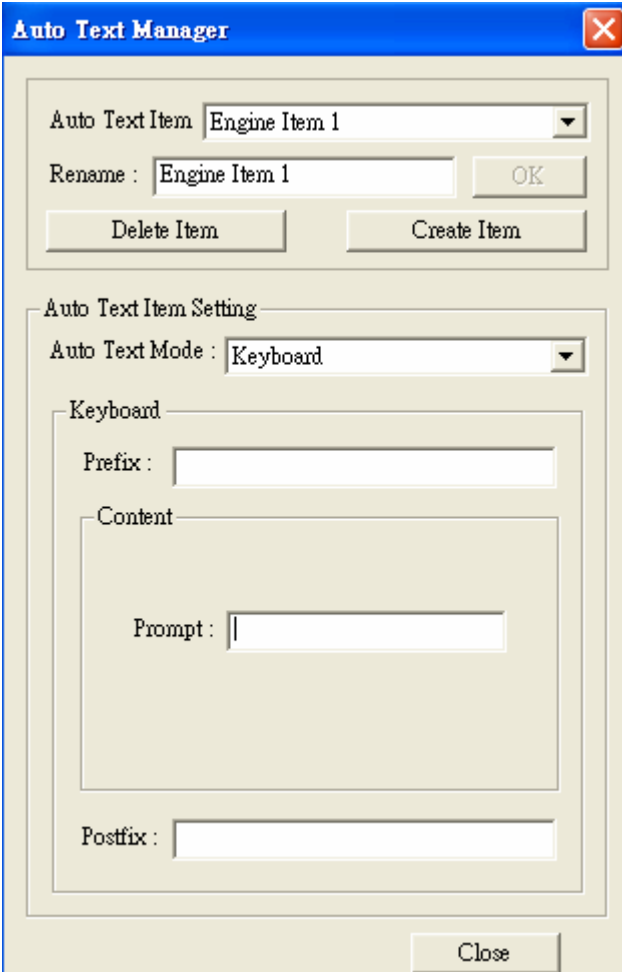
Close



## G-Mark Library

### Keyboard

Directly type in the text you want by the keyboard.



The screenshot shows the 'Auto Text Manager' dialog box. It has a blue title bar with the text 'Auto Text Manager' and a close button. The main area is divided into two sections. The top section is for managing items, with a dropdown menu for 'Auto Text Item' set to 'Engine Item 1', a text field for 'Rename' also containing 'Engine Item 1', and buttons for 'Delete Item', 'Create Item', and 'OK'. The bottom section is titled 'Auto Text Item Setting' and contains a dropdown for 'Auto Text Mode' set to 'Keyboard'. Below this, there is a 'Keyboard' section with a 'Prefix' text field, a 'Content' section with a 'Prompt' text field, and a 'Postfix' text field. A 'Close' button is located at the bottom right of the dialog.

Auto Text Manager

Auto Text Item: Engine Item 1

Rename: Engine Item 1

Buttons: Delete Item, Create Item, OK

Auto Text Item Setting

Auto Text Mode: Keyboard

Keyboard

Prefix:

Content

Prompt:

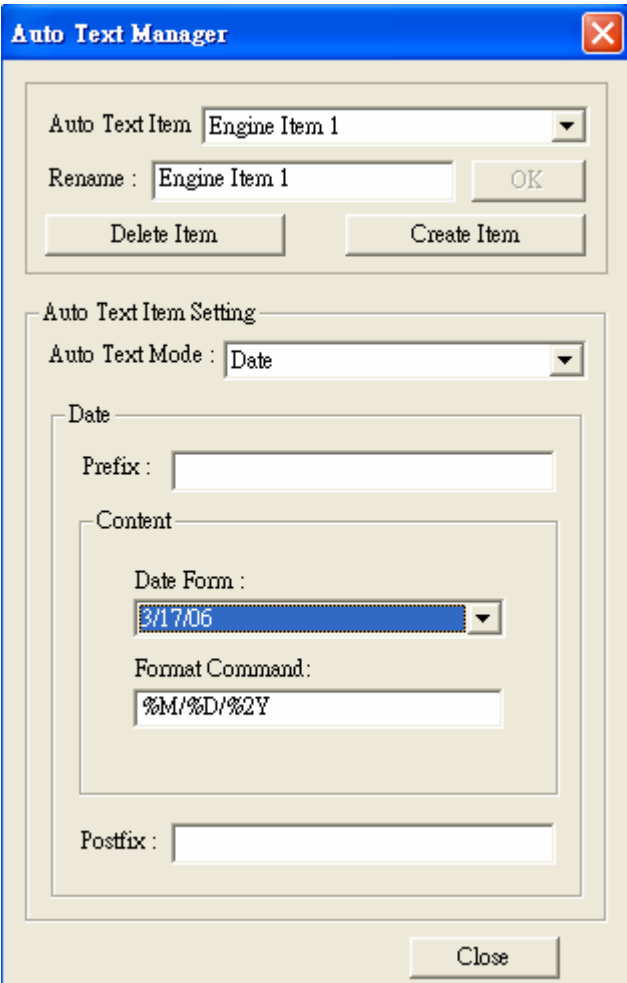
Postfix:

Close

## G-Mark Library

### 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, there's a title bar with the text 'Auto Text Manager' and a close button. Below the title bar, there's a section for 'Auto Text Item' with a dropdown menu showing 'Engine Item 1'. To the right of this dropdown is a 'Rename' button. Below the dropdown is a text field containing 'Engine Item 1' and an 'OK' button. Below the text field are two buttons: 'Delete Item' and 'Create Item'. Below this section is a section titled 'Auto Text Item Setting'. Inside this section, there's a dropdown menu for 'Auto Text Mode' set to 'Date'. Below this is a 'Date' section with a 'Prefix' text field. Below the 'Prefix' field is a 'Content' section. Inside the 'Content' section, there's a 'Date Form' dropdown menu showing '3/17/06'. Below the 'Date Form' dropdown is a 'Format Command' text field containing '%M/%D/%2Y'. Below the 'Content' section is a 'Postfix' text field. At the bottom right of the dialog is a 'Close' button.

## G-Mark Library

### 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 screenshot shows a 'Property Table' dialog box with a tabbed interface. The 'Arc Text' tab is selected. The 'Center' section has X: 12.333 mm and Y: -23.778 mm. The 'Radius' section has X: 4.576 mm and Y: 4.576 mm. There are checkboxes for 'Show Arc' (unchecked) and 'Same as X' (checked). The 'Text Position' dropdown shows 'abc'. 'Horz. Offset' and 'Baseline Offset' are both 0.000 mm. The 'Close-to-Baseline' dropdown shows 'Aja'. There is a 'Reverse' checkbox (unchecked). At the bottom are buttons for 'Set As Default', 'Apply', and 'Apply All'.

Frame/Fill	Delay	Array Copy	Motion
Text	Arc Text	Mark Parameter	

Center

X: 12.333 mm Y: -23.778 mm

Radius

X: 4.576 mm Y: 4.576 mm

☐ Show Arc ☒ Same as X

Text Position : abc

Horz. Offset : 0.000 mm

Baseline Offset : 0.000 mm

Close-to-Baseline: Aja

☐ Reverse

Set As Default Apply

Apply All

## G-Mark Library

### 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|'. The 'Reverse' checkbox is unchecked. At the bottom, there are buttons for 'Set As Default', 'Apply', and 'Apply All'.

Frame/Fill	Delay	Array Copy	Motion
Text	Baseline	Mark Parameter	

Baseline-type: closed

Position : abc

Horz. Offset : 0.000 mm

Baseline Offset : 0.000 mm

Close-to-Baseline: A|c|

☐ Reverse

Set As Default Apply

Apply All

#### 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 '→ab←'. The 'Horz. Offset' and 'Baseline Offset' are both set to 0.000 mm. The 'Close-to-Baseline' dropdown shows 'A|c|'. The 'Reverse' checkbox is unchecked. At the bottom, there are buttons for 'Set As Default', 'Apply', and 'Apply All'.

Frame/Fill	Delay	Array Copy	Motion
Text	Baseline	Mark Parameter	

Baseline-type: open

Position : →ab←

Horz. Offset : 0.000 mm

Baseline Offset : 0.000 mm

Close-to-Baseline: A|c|

☐ Reverse

Set As Default Apply

Apply All

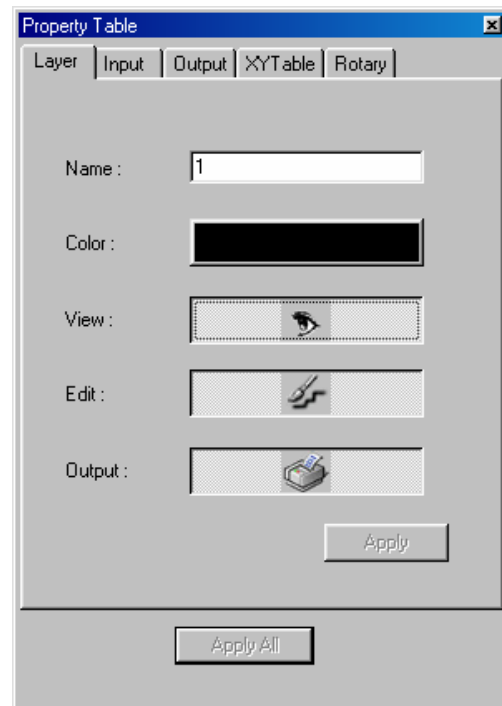
## G-Mark Library

### 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.



## G-Mark Library

### 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

The screenshot shows the 'Property Table' dialog box with the 'Input' tab selected. The 'Input Status' section contains a 4x4 grid of checkboxes for points 1 through 16, all of which are checked. To the right of this grid is a 'Timeout' field with the value '-1' and a unit 'ms'. Below the grid are two radio buttons: 'Wait Input' (selected) and 'Match Input'. At the bottom of the dialog are three buttons: 'Set As Default', 'Apply', and 'Apply All'.

### 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

The screenshot shows the 'Property Table' dialog box with the 'Output' tab selected. The 'Output Status' section contains a 4x4 grid of checkboxes for points 1 through 16, all of which are checked. Below this grid is an 'Auto Clear Signal' checkbox, which is currently unchecked. At the bottom of the dialog are three buttons: 'Set Default', 'Apply', and 'Apply All'.

## G-Mark Library

### 6.4.4 XY Table (optional)

#### Enable

Enable the XY Table

#### Y Disable

Single axis marking

#### XY Coordinates

The coordinates value of XY

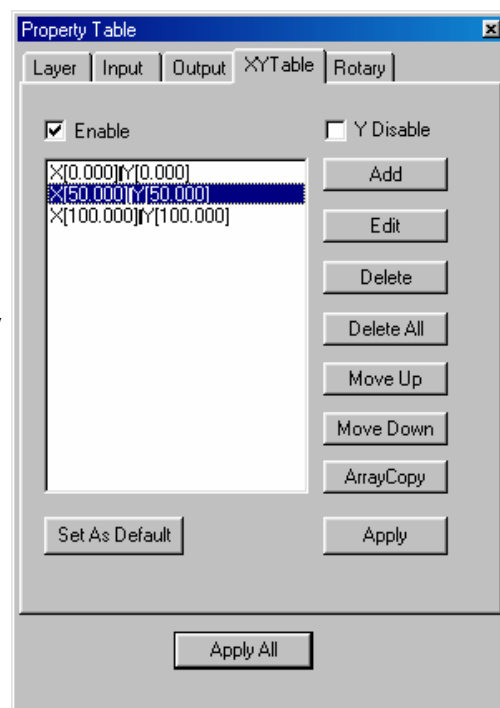
Table position

#### Add/Edit/Delete/Delete

All/Move Up/Move Down/Array

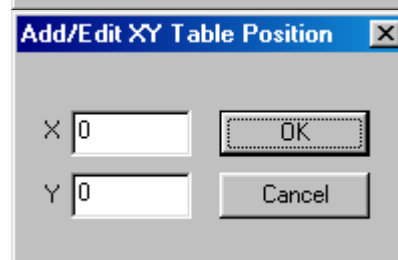
#### Copy

Allow users to edit the XY coordinate value



#### Add/Edit XY Table Position

Add or edit the XY table position which will be marked



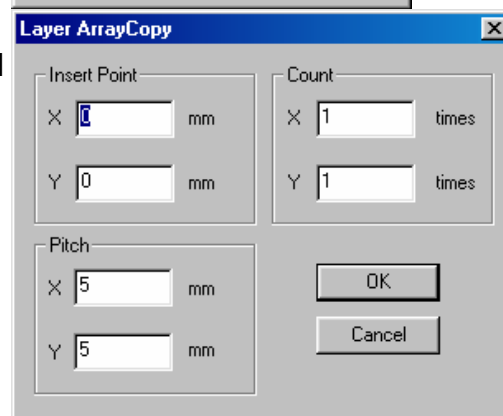
#### Layer Array Copy

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



## G-Mark Library

### 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 software window titled "Property Table" with a tabbed interface. The "Rotary" tab is selected. Inside the tab, 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 containing two input fields: "Diameter : 200 mm" and "Max Width : 10 mm". At the bottom of the tab are two buttons: "Set As Default" and "Apply". Below the entire tabbed area is a single button labeled "Apply All".



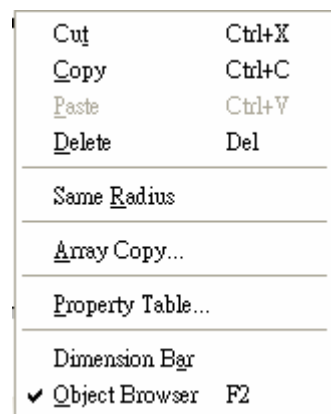
## Chapter 7 Popup Menu

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:



<b>Cut</b>	Remove selected data and store it in the clipboard for future use	<b>Refer to section 4.2.3</b>
<b>Copy</b>	Duplicate selected data and store it in the clipboard for future use	<b>Refer to section 4.2.4</b>
<b>Paste</b>	Attach data from the clipboard to the current document	<b>Refer to section 4.2.5</b>
<b>Delete</b>	Delete and remove the selected data	<b>Refer to section 4.2.6</b>
<b>Same Radius</b>	Make the circle object become the same radius	<b>Refer to section 4.3.4</b>
<b>Array Copy</b>	Execute the array copy function	<b>Refer to section 6.2.4</b>
<b>Property Table</b>	Show the Property Table of the object	<b>Refer to section 6.2</b>
<b>Dimensional Bar</b>	Enable/disable Dimension bar	<b>Refer to section 4.7.7</b>
<b>ObjView Bar</b>	Enable/disable Object Browser	<b>Refer to section 4.7.4</b>

### 7.2 Curve

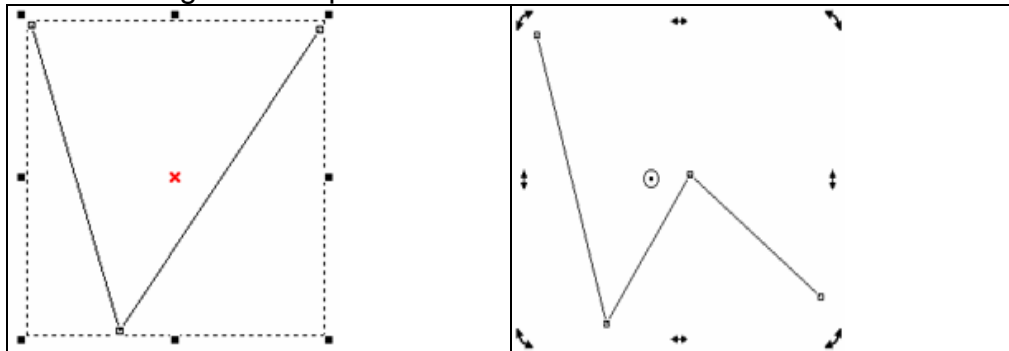
Select a curve you drew or the curve transferred from objects, and click the right button of the mouse; you will see the popup menu as below:

## G-Mark Library

Cut	Ctrl+X
Copy	Ctrl+C
Paste	Ctrl+V
Delete	Del
<hr/>	
Add Vertex	
Del Vertex	
<hr/>	
Curve To Line	
Line To Curve	
Arc To Curve	
<hr/>	
Cusp	
Smooth	
Symmetrical	
<hr/>	
Array Copy...	
<hr/>	
Property Table...	
<hr/>	
Dimension Bar	
✓ Object Browser	F2

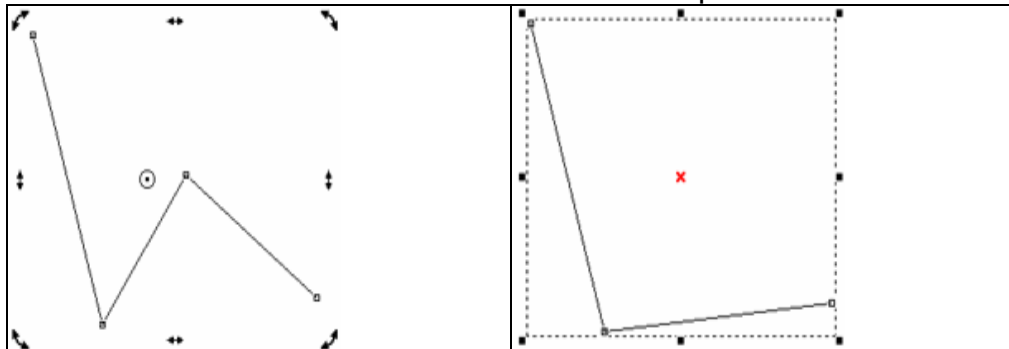
### 7.2.1 Add Vertex

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

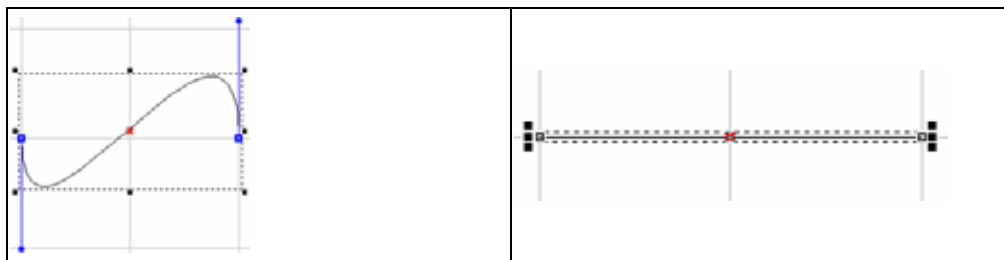
Using "Delete Vertex" function will decrease the control points as below:



### 7.2.3 Curve to Line

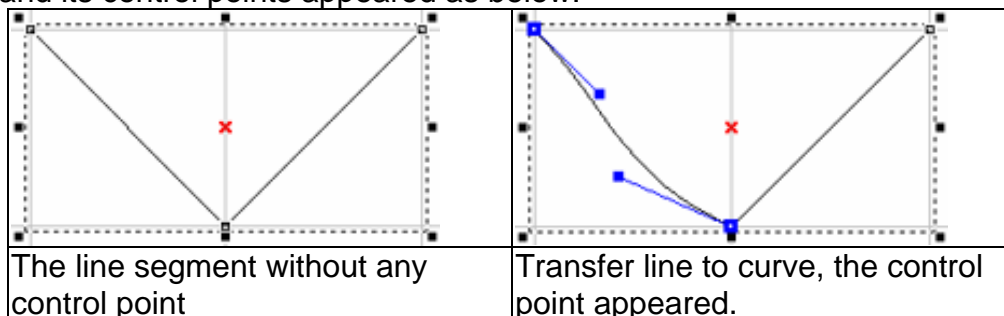
Select "Curve to Line" function; the curve has been transferred to a line segment and lost its control points as below:

## G-Mark Library



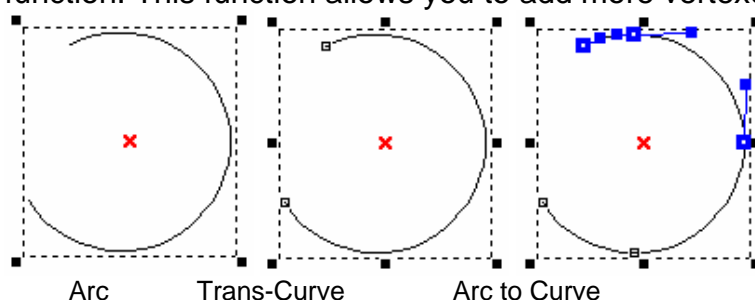
### 7.2.4 Line to Curve

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



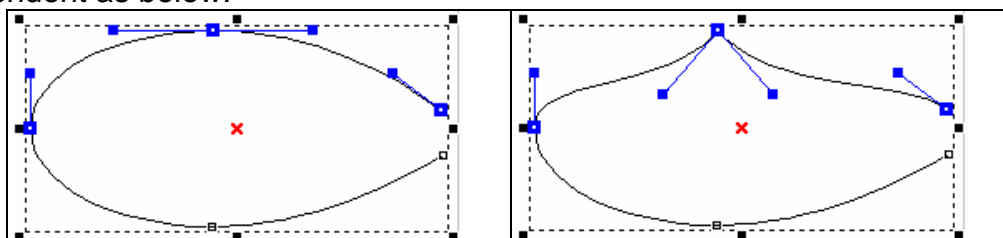
### 7.2.5 Arc to Curve

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:



### 7.2.6 Cusp

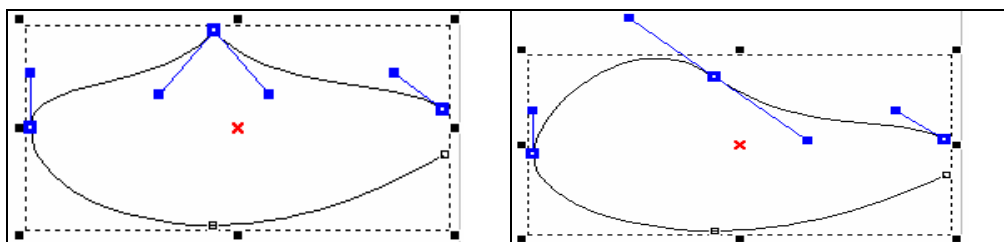
The control points of the curve were smooth at the beginning; select “Cusp” function on the popup menu; the two sides of control points become independent as below:



### 7.2.7 Smooth

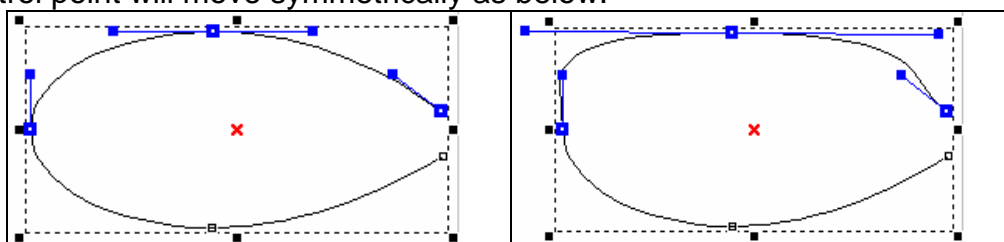
The control points of the curve were cusp at the beginning; select “Smooth” function on the popup menu; the two sides of control points become smooth and dependent on each other as below:

## G-Mark Library



### 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:



## 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:

## G-Mark Library

Cu <u>t</u>	Ctrl+X
<u>C</u> opy	Ctrl+C
<u>P</u> aste	Ctrl+V
<u>D</u> elete	Del
<u>T</u> op	
<u>U</u> ndermost	
<u>U</u> pper	
<u>L</u> ower	
In Front Of...	
In <u>B</u> ack Of...	
<u>R</u> everse	
Shortest <u>H</u> orizontal	
Shortest <u>V</u> ertical	
Shortest Distance	
<u>A</u> dd Vertex	
Del Vertex <u>x</u>	
Curve To <u>L</u> ine	
<u>L</u> ine To Curve	
<u>A</u> rc To Curve	
<u>C</u> usp	
<u>S</u> mooth	
Symmetrical	
<u>A</u> rray Copy...	
<u>P</u> roperty Table...	
Dimension Bar	
✓ <u>O</u> bject Browser	F2

## Chapter 8 Hot Key

<b>File Menu</b>	
<b>Ctrl + N</b>	Create a new document
<b>Ctrl + O</b>	Open an existing document
<b>Ctrl + S</b>	Save the current document using the existing file name
<b>Ctrl + I</b>	Import
<b>Ctrl + P</b>	Print
<b>Edit Menu</b>	
<b>Ctrl + Y</b>	Replace a cancelled action
<b>Ctrl + Z</b>	Cancel an unwanted action
<b>Ctrl + X</b>	Remove the selected object and place it in the clipboard
<b>Ctrl + C</b>	Duplicate the selected object and place it in the clipboard
<b>Ctrl + V</b>	Place the data on the clipboard on to the document
<b>DEL</b>	Delete the selected object
<b>Ctrl + K</b>	Combine
<b>Ctrl + B</b>	Break
<b>Ctrl + M</b>	Group
<b>Ctrl + Q</b>	UnGroup
<b>F5</b>	Sort
<b>Ctrl + H</b>	Mirror Horizontal
<b>Ctrl + L</b>	Mirror Vertical
<b>Ctrl + E</b>	Baseline
<b>Ctrl + D</b>	Split
<b>Ctrl + U</b>	Transfer to a curve
<b>Ctrl + G</b>	Welding
<b>Ctrl + W</b>	Contour
<b>Right Key</b>	
<b>Ctrl + T</b>	Open the Property Table
<b>F2</b>	Open the Object Browser
<b>Others</b>	
<b>Ctrl + A</b>	Trimming
<b>Ctrl + F4</b>	Close the current file
<b>Ctrl + F6</b>	Switch to another opened file
<b>Ctrl</b>	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
<b>Shift</b>	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

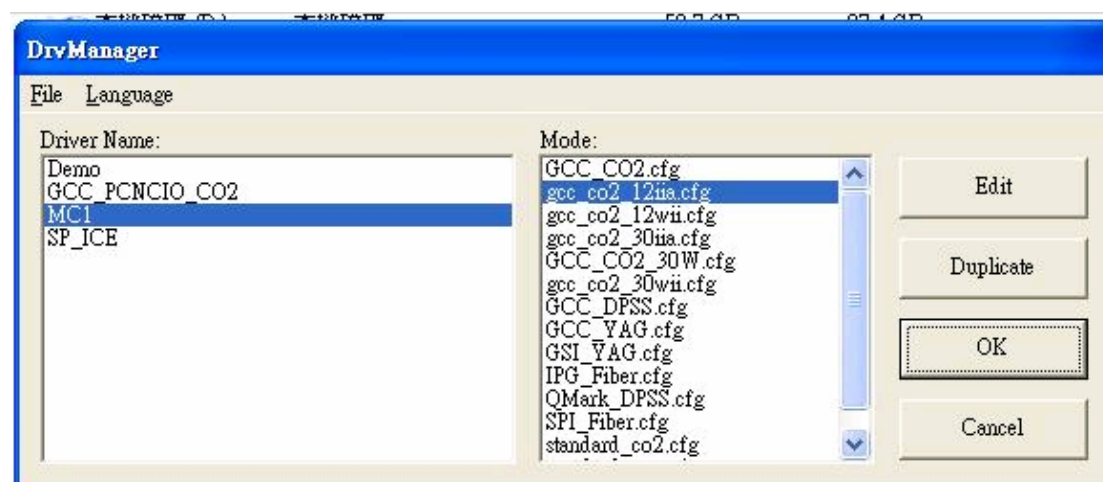
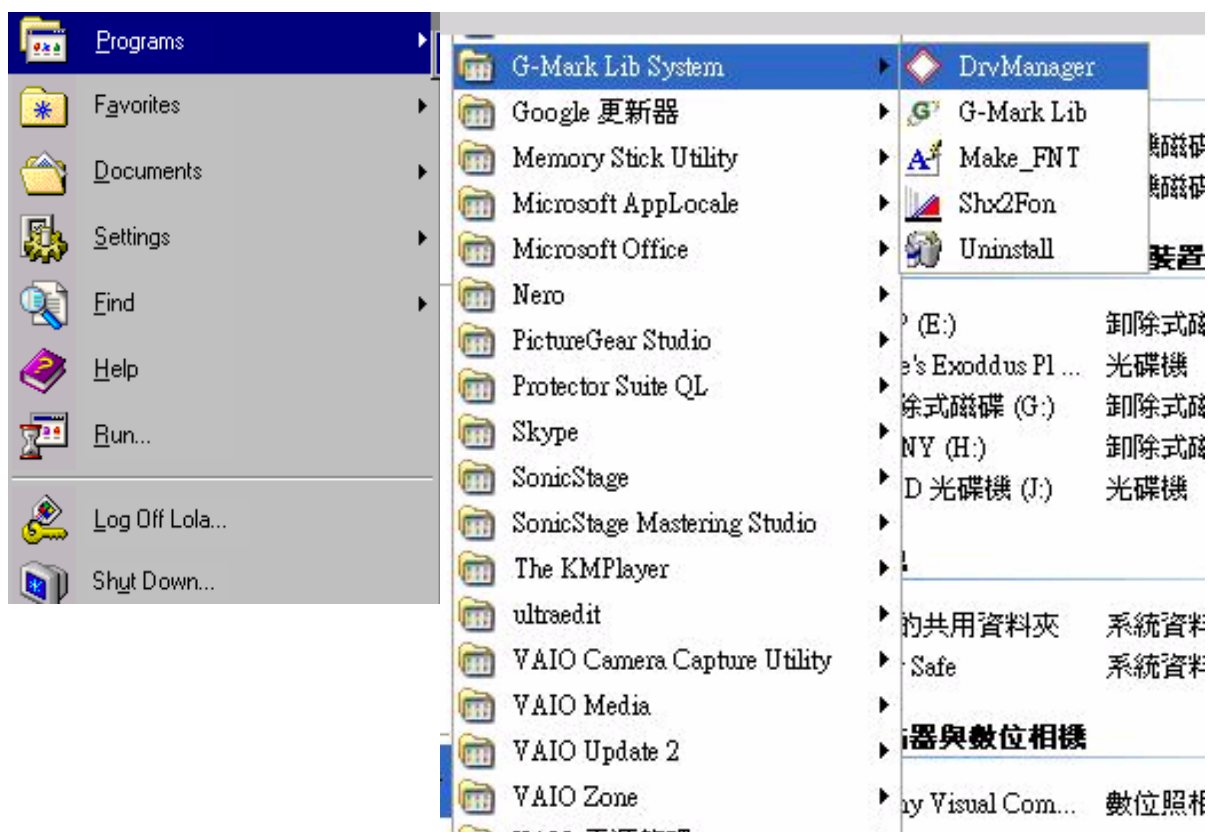
## G-Mark Library

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

# 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 G-Mark Library System directory as below to change the driver you want.



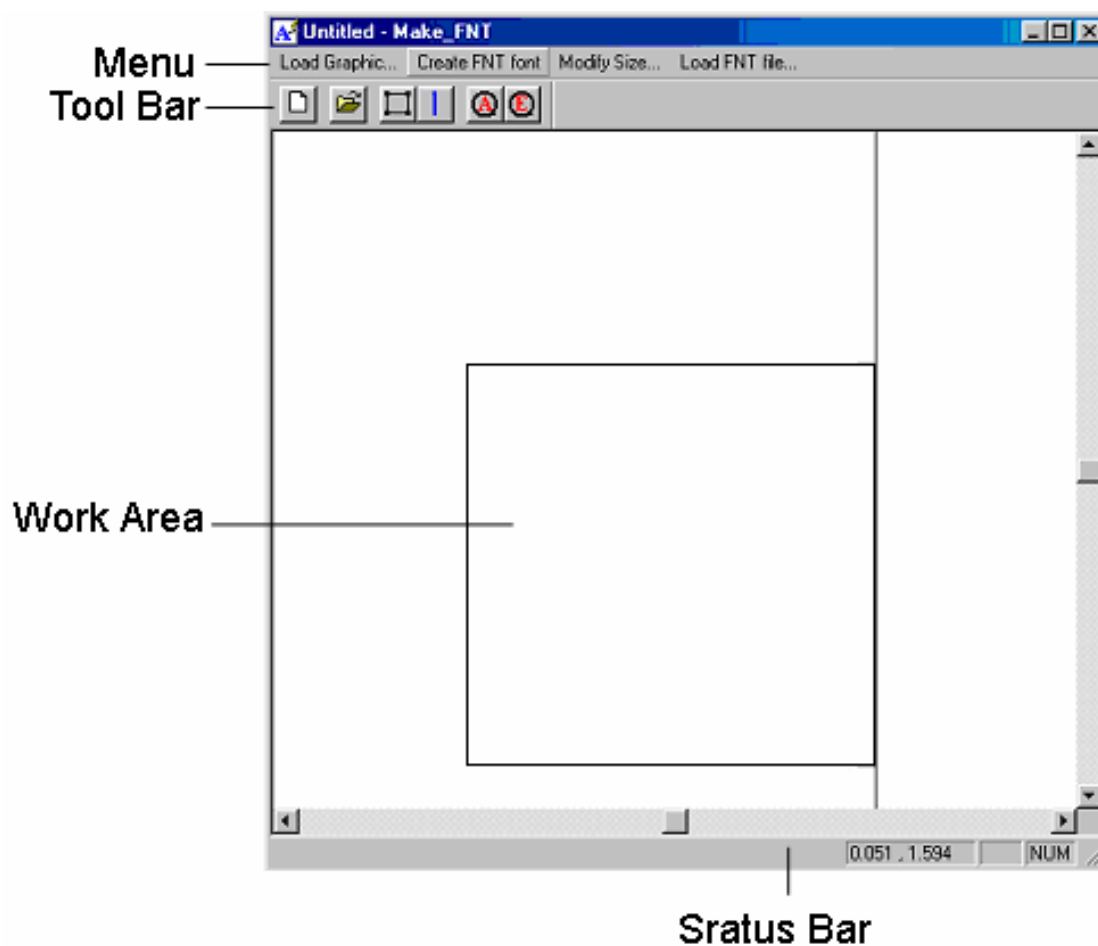


## Make\_FNT







# Appendix B: Make\_FNT

**Make\_FNT** is a subsidiary program of G-Mark Library. After finishing G-Mark Library installation, the Make\_FNT program is available to use. **Make\_FNT** is a program allowing users to create fonts for G-Mark Library. Users can copy the fonts created in **Make\_FNT** to the directory of G-Mark Lib\fonts, and the fonts are ready for G-Mark Library.

## 1. User Interface



## Make\_FNT

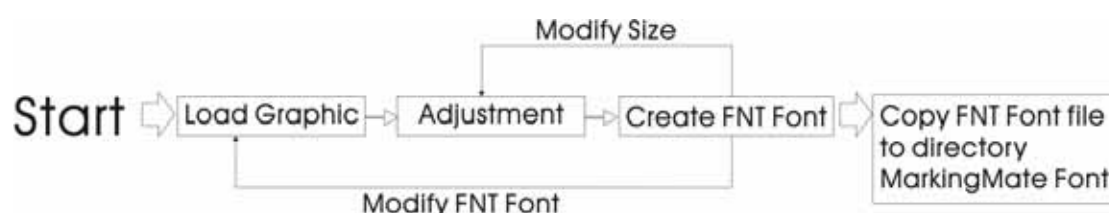
Introduction of Make_FNT interface:			
Menu Bar	Load Graphic		Load a DXF file for editing.
	Create FNT font		Create new FNT font files.
	Modify Size		Modify the position and size of the font file you loaded.
	Load FNT file		Load a FNT file for editing.
Toolbar		Load Graphic	Load a DXF file for editing.
		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

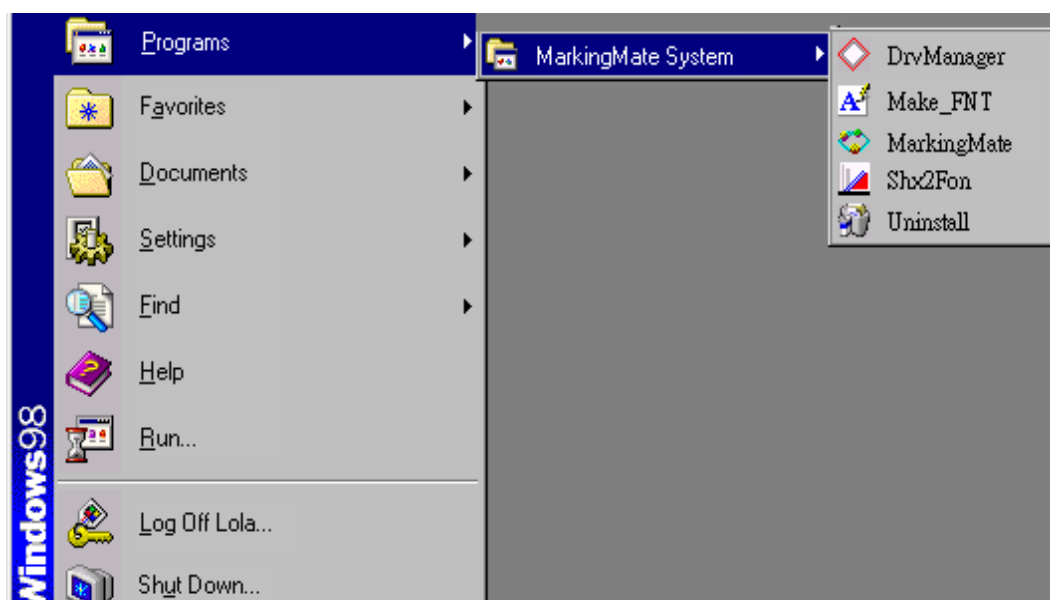
To create fonts in **Make\_FNT**, users have to prepare some DXF files first. You can use AutoCAD or CorelDRAW to create a DXF file, import the DXF file into Make\_FNT program, adjust its size, spacing, or other changes you need and then save it as a FNT font file.

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.

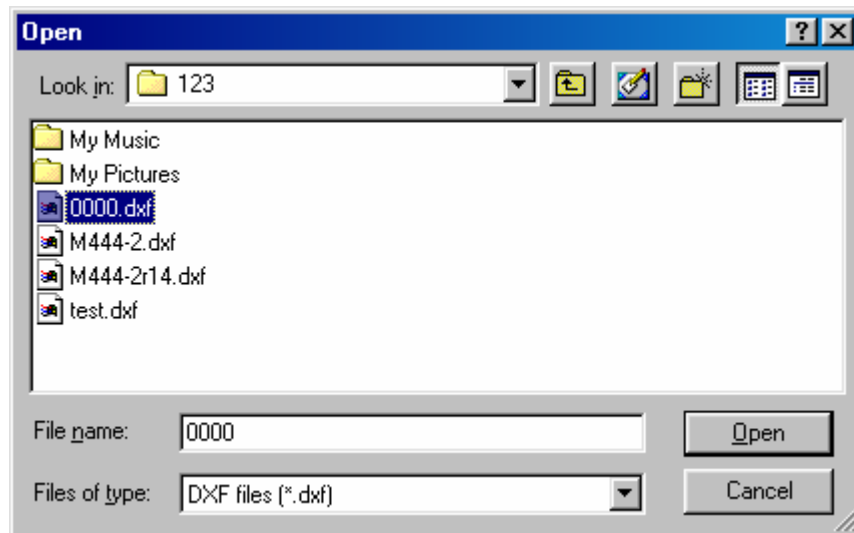


### 2.2 Load Graphic

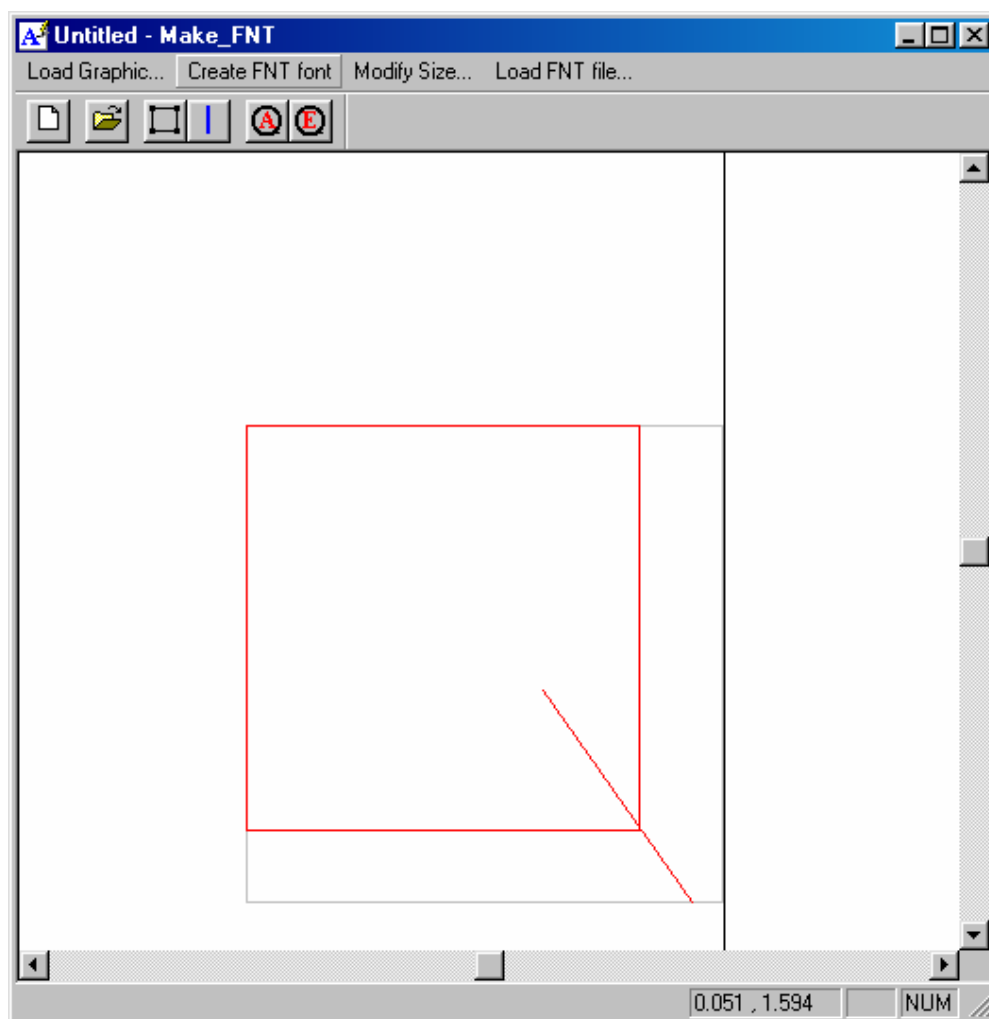
Use AutoCAD or CorelDRAW to create some DXF files you need.

Click “Load Graphic” from the Menu Bar or click the  button from the toolbox, a dialogue box will be displayed.

## Make\_FNT





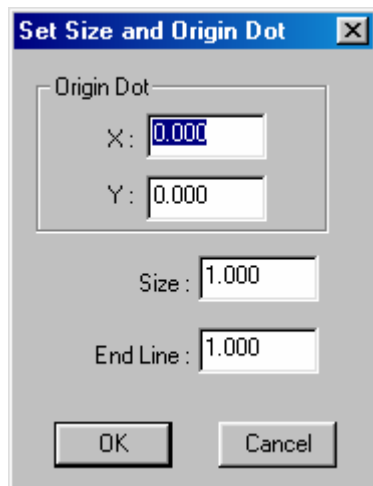
Select the DXF file you want and then click the “Open” button.  
The selected picture will be displayed in the Work Area.



## 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.




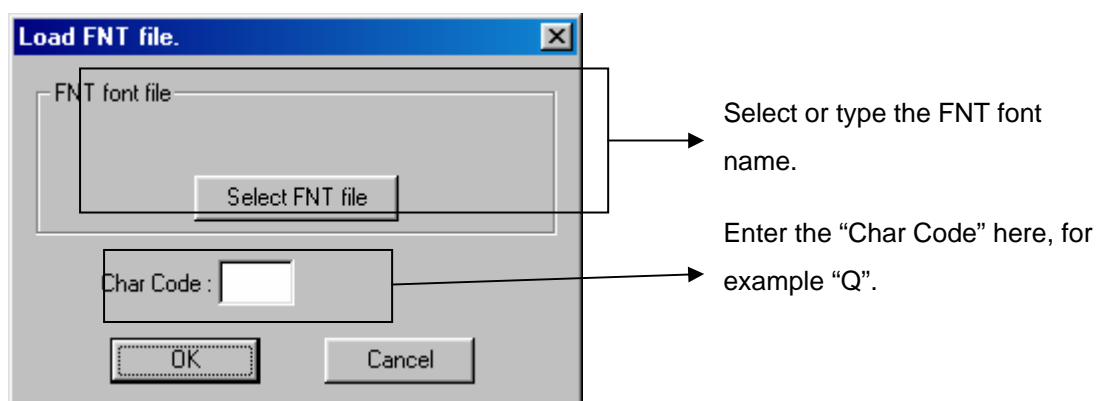
**Origin dot** Set the position of the origin dot

**Size** Set the object size

**End Line** Set the end line of the object

### 2.4 Create FNT Font

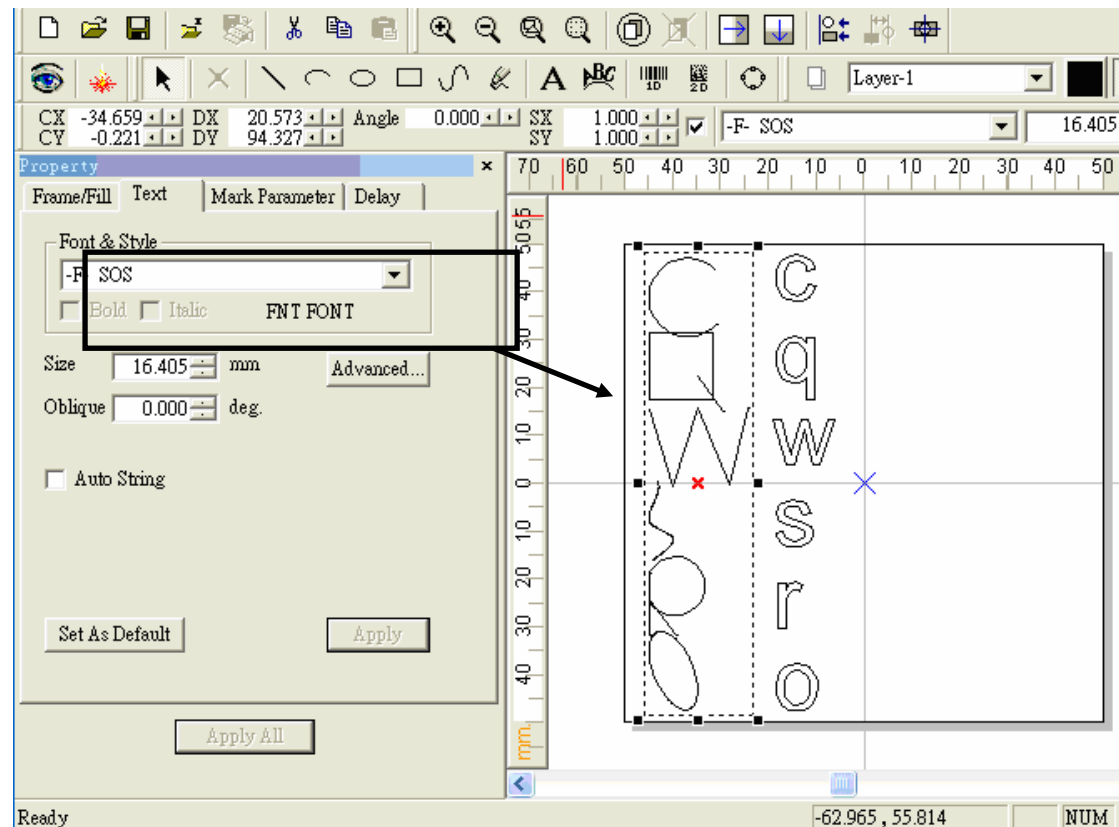
After finishing the adjustment, click “Create FNT Font” from the Menu Bar or click the  button from the Toolbar, a dialogue box will be displayed as below:



## Make\_FNT

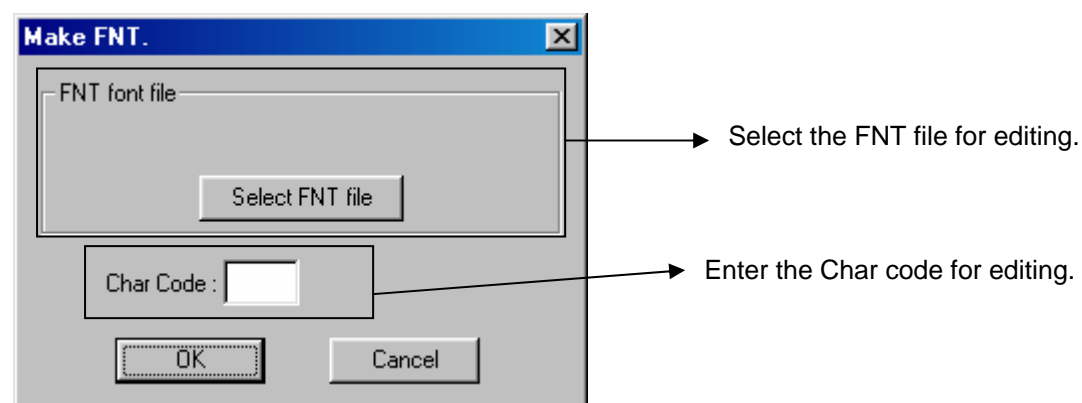
Click the “Select FNT Font” button, select or enter the file name you want. Enter the character code you want in the box of “Char Code” and then press “OK”.

Move or copy the new FNT font file to the directory of G-Mark Lib\Font and then this new font is available for G-Mark Library 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:



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

## **Make\_FNT**

Enter the Char Code you want and press “OK”, and then you are able to do the adjustments as the description on section 1.3.

After finishing the adjustments, repeat the action as section 1.4 to save the file.

# Appendix C: SHX to FON

**SHX to FON** is another subsidiary program of G-Mark Library. This program is able to convert the font format from **SHX** to **FON**.

### Method:

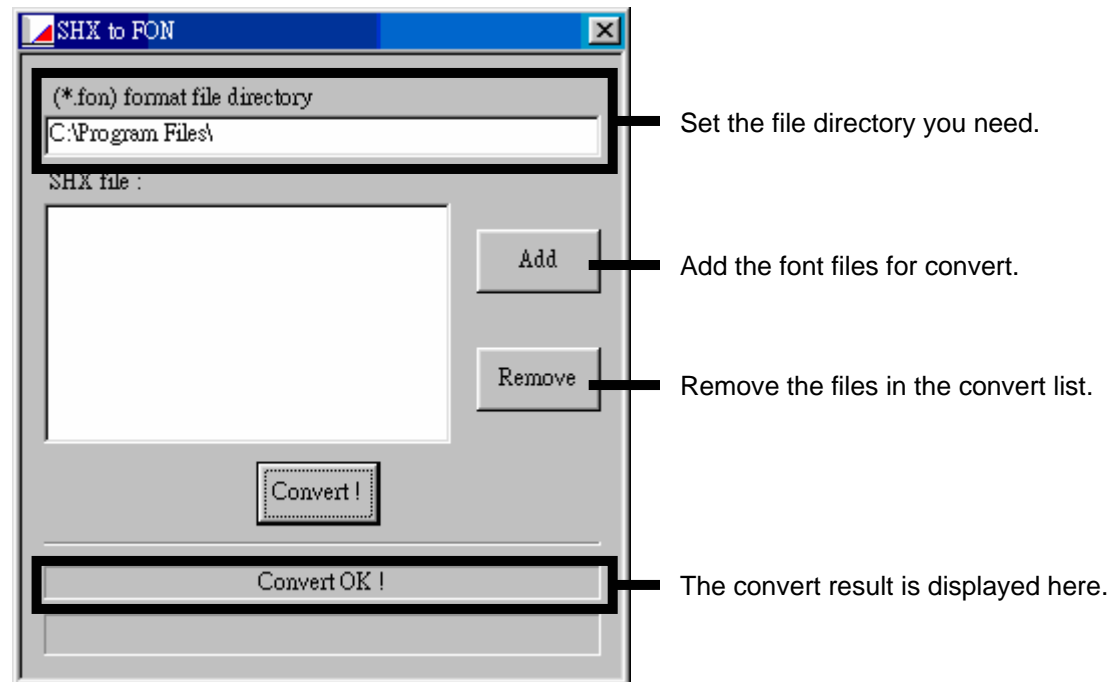
Click “Start – Program” and select “SHX to FON” to enter this program as below.

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.





# Appendix D: Signal Time Sequence

### Program Ready/Mark Ready

Program Ready and Mark Ready signals are programmable. System integrators are able to plan the signal as Program Ready or Mark Ready signal depending on their requirements.

If set as **Program Ready**, the signal will be “OFF” as computer on, and will become “ON” when entering the program and keeping as “ON” until exiting the software. This signal is mainly planned to tell that the marking program is ready.

When set as **Mark Ready**, the signal will be “ON” when executing “Mark” function, and will be changed to “OFF” if exit the executing dialogue.

### Ready for Start Signal

Ready for Start Signal was called “Mark Ready” before. This signal is initially set as “OFF”, when executing Mark function (entering “Exec” dialogue, waiting for “START” signal), the signal become “ON”; after receiving “START” signal, this signal changed to be “OFF”. When an object finished marking, the system go back to the status of waiting “START” signal, then this signal become “ON” again. If users add a control object “DO PAUSE” into their marking files, this signal will also be “ON” and waiting for “START” signal when executing the “DO PAUSE” object. Therefore, as long as this signal become “ON”, it means that the system can sent “START” signal safely.

### Stop/Error

This signal is also programmable. In Normal Mode, this signal can be planned as “**Stop**” signal, while in Automation Mode, it can be planned as “**Error**” signal.

In Normal Mode, users press “STOP” button to break down the marking process, then the “Ready for Start Signal” will be “ON” and waiting for “START” signal to continue the marking process.

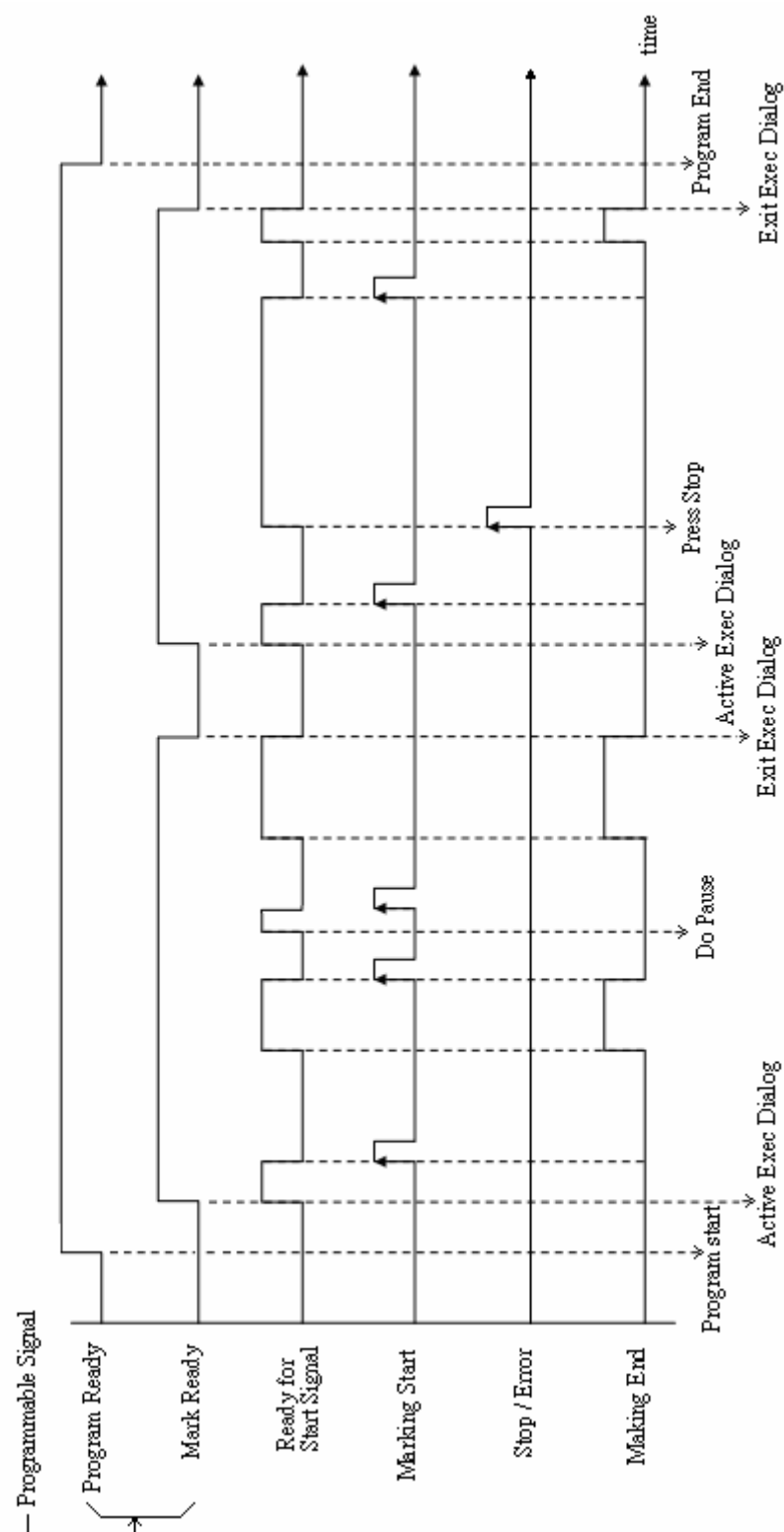
If under Automation Mode, once the program detecting the “Error” signal and exiting the “Exec” dialogue, the “Mark Ready” signal become “OFF” as well as the “Ready for Start Signal” and “Marking End” signals. Only if trouble eliminated and reentering “Exec” dialogue, the “Mark Ready” and “Ready for Start Signal” will be changed to be “ON”.

### Marking End

This signal is “OFF” originally, when it become “ON” that means the marking process has been finished. The signal can be “OFF” again when the system receives a “START” signal. If the system suspend because of “DO PAUSE” (Ready for Start Signal is ON), and even receive “START” signal again and continue mark process (Ready for Start Signal is OFF), the “Marking End” signal is keeping “OFF” until the marking job finished.

## Signal Time Sequence

### Signal Time Sequence (Normal Mode)



## Signal Time Sequence

### Signal Time Sequence (Automation Mode)

