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Cautions for Use

Please be sure to read and follow the instructions below for safety use.

- The instructions below are intended to prevent personal injury and property damages.
- Please read carefully and use the machine properly.



Caution

If you do not follow these instructions, injury or property damage may occur.



Waring

If you do not follow these instructions, users may be seriously injured.

■ Cautions related to power



Waring

Do not use damaged cord or loosened outlet.

➤ It may cause electric shock or fire.



Waring

Do not pull a plug by the cord. Do not touch a power plug with wet hands.



Waring

Do not put multiple power plugs into one inlet simultaneously. It may cause fire due to overheated inlet.



Caution

When the product is not in use for a long term, pull out the power plug.



Waring

If smoke comes out from the engraver during use, turn off the engraver immediately and call the sales agency or our service center.

■ Cautions related to use



Waring

Do not use this machine in a place with oil, smoke, humidity, dust or water.

➤ It may cause electric shock or fire.



Waring

Do not put a candle or cigarette butt on the engraver. Avoid any heating apparatus like heater when using this machine.

➤ It may cause failure or fire due to overheating.



Waring

Be sure to place the engraver body only on a stable level surface.

- The engraver weighs about 28kg, and it vibrates left and right during operation. Therefore, if you use this machine on an uneven surface, it may cause damage to the surface and products, and injury to users.

■ Cautions related to use



Waring

Do not allow any body parts or other objects onto the engraver.

- The cutter of engraver may cause serious injury during its operation.



Waring

Be sure not to be caught or jammed between the paths of each axis of the engraver, or scratched by the engraving cutter.

- It may cause serious injury, or damage or failure of the engraver.



Waring

Do not put water or small metal materials on the engraver.

- Due to negligence or vibration of the engraver, the materials may fall and cause injury, fire or failure by overheating or short circuiting.
- If water gets into the product, it may cause electric shock or fire.



Waring

Laser Radiation

Avoid eye or skin exposure to direct or scattered radiation.

Class IIIA laser product.



■ Other cautions



Waring

Do not disassemble or modify the engraver.

- It may cause fire, electric shock or failure. Please contact the sales agency or our service center for Inspection, calibration and repair.



Waring

Be sure to keep out of the reach of toddlers and children. Their curiosity or carelessness may cause injury.



When temperate falls below freezing point, the product may not normally perform. In this case, please sustain the room temperature in the place where you use this engraver for normal operation. Please make sure the temperature in the place where you use the engraver does not fall below the freezing point.



We will not be held responsible for damage caused to product by misuse or poor care.

Product parts and installation

1. Parts and Accessories

MAGIC-5S product box includes the engraver and following accessories.

Accessories	Photos	Qty	Purpose
Carbide Tip		1EA	Tool for marking steel. It is an expendable component. Addition to basic quantity should be separately purchased.
1.5mm L-wrench		1EA	For changing tools
Auxiliary Jig		1SET	Auxiliary jig for holding thick engraving materials
Chuck finger skin		6EA	For protect chuck fingers
Flat chuck finger		3EA	Jig for holding rings when marking ring's outer diameter or inner diameter of flat rings
Round chuck finger (Wide width)		3EA	Jig for holding rings when marking ring's inner diameter
Round chuck finger (Narrow width)		3EA	Jig for holding rings when marking ring's inner diameter
Chuck handle		2EA	Rotation clamp tightening handle
Finger spanner		1EA	Tool for tightening fingers
Pin		6EA	For holding of irregular shaped material.
Ruler		1EA	
Power adapter		1EA	DC 24V power supply (24V, 2.5A)

USB cable		1EA	For connecting to PCs
Program CD		1EA	MagicArt, design and engraving S/W
User's manual		1EA	User's manual

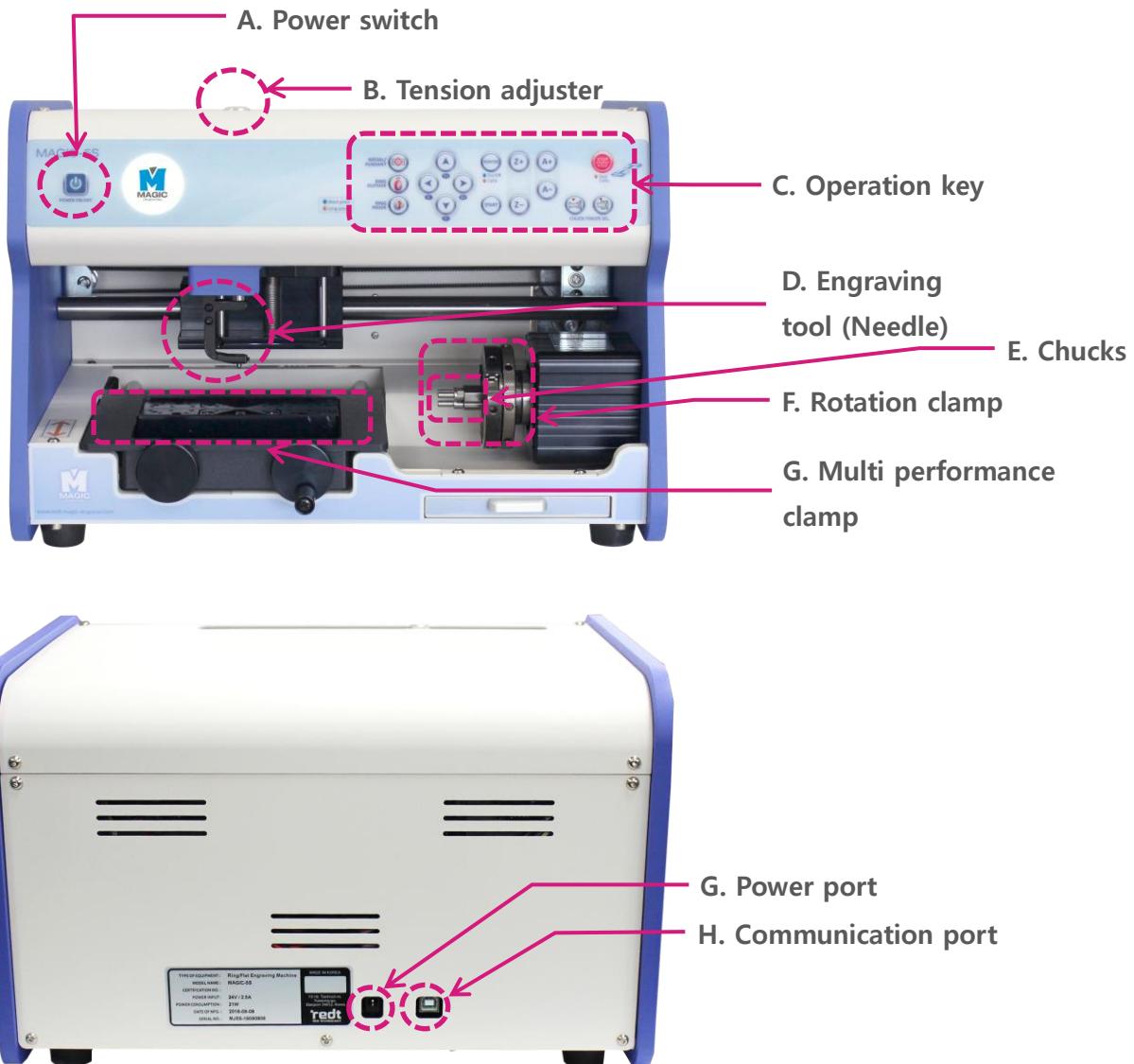
* Optional (Purchased separately)

Pen finger		3EA	For holding pen
Pen jig		1EA	For holding pen

2. Specifications

Power supply	AC 100~240V
Consumption voltage	21W
Operating range	Flat: 120mm(X) x 100 mm(Y) x 30mm(Z) Rotary: Cylinder outside diameter: 40mm Cylinder inside diameter: 40mm
Resolution	0.005mm (X), 0.0015(Z)
Weight	21kg
Transfer speed	1 – 36mm/sec (X), 1 – 18mm/sec (Z)
Temperature	5 – 40 °C
Humidity	10 - 90 %
Purposes	Flat material marking

3. Description of MAGIC-5S



◆ Description of each part

A	Power switch	Power on/off switch.
B	Tension adjustor	By rotating knob, tool tension is adjusted. <ul style="list-style-type: none"> • Clockwise: Gives more tension • Counter clockwise: Gives less tension
C	Operation key	Operates engraver's various functions.
D	Engraving tool(Tip)	Tool for engraving. *Tip is expendable.
E	Rotation clamp(Chuck)	Holds cylinder engraving materials such as rings.
F	Multi performance clamp	Holds engraving materials such as medals and pendants.
G	Power port	Supplies 24V to engraver by connecting to power adapter.
H	Communication port	Connects USB cable to computer.

◆ Description on keys

	Stop	Stop engraving during related operation
	Vise	If you press and hold the button, it enters into tool settings mode. If you lightly press the button, the clamp moves back and forth.
	Flat chuck finger	If the button is lightly pressed, the laser point will be moved to flat chuck finger origin. If the button is pressed and held for more than one second after the flat chuck finger origin is changed, then the changed origin will be saved.
	Round chuck finger	If the button is lightly pressed, the laser point is moved to round chuck finger origin. If the button is pressed and held for more than one second after the round chuck finger origin is changed, then the changed origin will be saved.
	Pointer	Turns laser pointer ON/OFF.
	Start	If this button is pressed and held for more than one second after engraving, then the data is sent and the area is designated, engraving will start.
	Save	If the button is pressed and held for more than one second after the tool setting is changed, then the changed setting value will be saved.
	Direction key (A)	Make rotation clamp rotate. During the rotation, it stops when it reach 0°, 90°, 180° or 270° location.
	Direction key (Z)	Move Z axis to up and down

	Direction key (X, Y)	<p>On stand-by state: X-/X+ moves X axis left or right. Y+/Y- moves Y axis up or down.</p> <p>On engraving state: Checks and moves the engraving position</p>
	Medal / Pendant	Moves the Multi performance clamp.
	Ring outer diameter	Moves the ring outer diameter marking position of the rotating clamp.
	Ring inner diameter	Moves the ring inner diameter marking position of rotating clamp

4. Installation

(1) MagicArt Program Installation

Place the CD in your computer's CD driver, and follow the below instructions to install the S/W. Installed program will be automatically executed and program installation will be progressed in the following order. If Install program is not automatically executed after CD is entered, execute Install program on My Computer's CD drive.

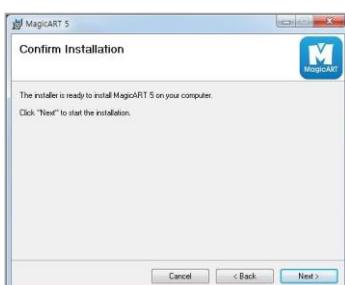
1. Setup wizard



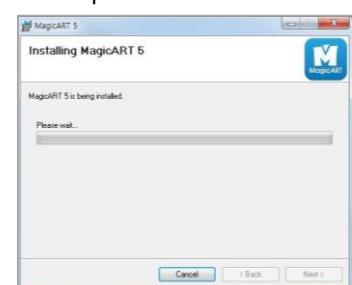
2. Select installation folder



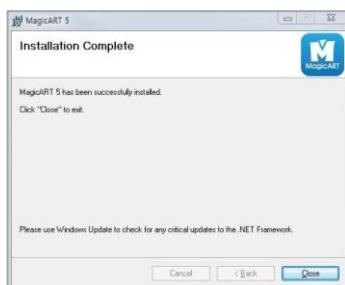
3. Confirm installation



4. The file is copied onto the hard disk.



5. Click "Close" button to complete program installation.



◆ Program description

Once the program is installed, the icon below will appear on the screen. The description of the icon is as follows.



This is software for design and engraving with features like engraving contents design, tool path creating and tool path data transfer.

(2) MAGIC-5S installation

MAGIC-5S is a desktop CNC engraver. This engraver cannot be operated independently. You need your machine to be connected to a PC and run with a provided program, in order to reform engraving work as you want.



Insert the provided USB cable into the port on the rear side of the engraver and the USB port of your computer respectively.

5. Engraver movement

When the engraver is turned on, the engraver begins the self-test in the following order, and it enters into waiting mode with confirmation sound if there is no problem.

(1) The order of self-test when the machine is turned on

- 1) If a certain axis is detected by the sensor, move to leave from the detected area.
- 2) Check Z-axis sensor and return to the starting point
- 3) Check Y-axis sensor and return to the starting point
- 4) Check X-axis sensor and return to the starting point
- 5) Wait for confirmation sound

(2) The sequence of instruction for engraving set up

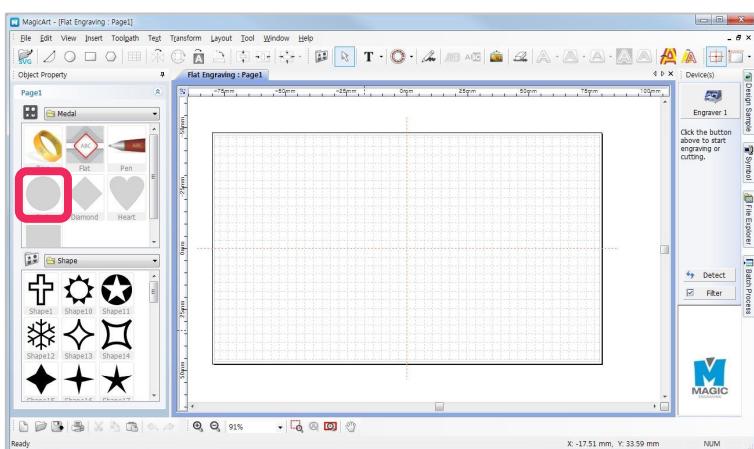
- 1) Turn on the engraver.



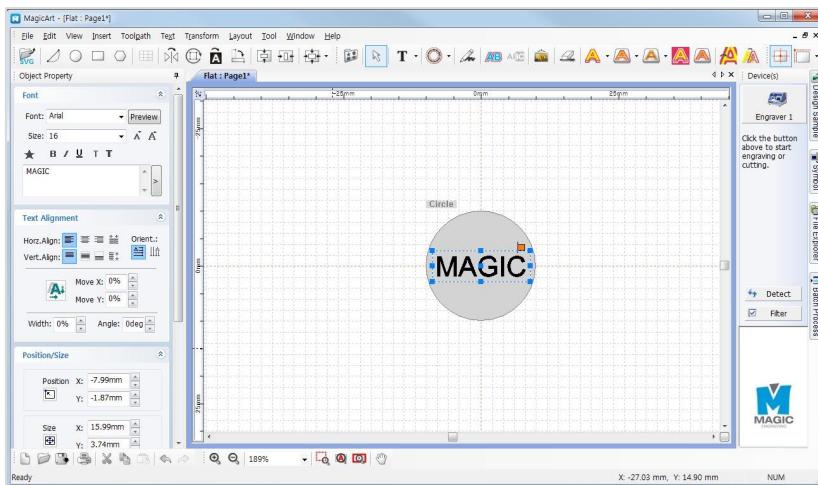
- 2) Place to secure the materials to be engraved on the clamp of the engraver.



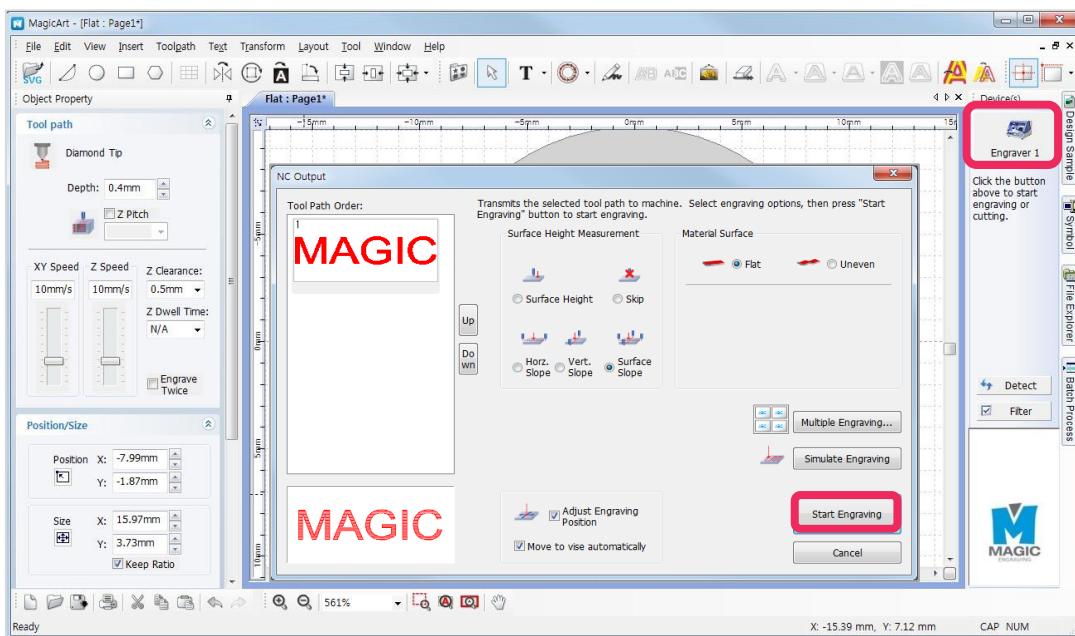
- 3) Run the design software (provided with the product).



4) Prepare the contents of engraving.



5) Press the engraving button on the program to transfer intended data to the machine.



6) Press the start button on the machine to begin the engraving process.



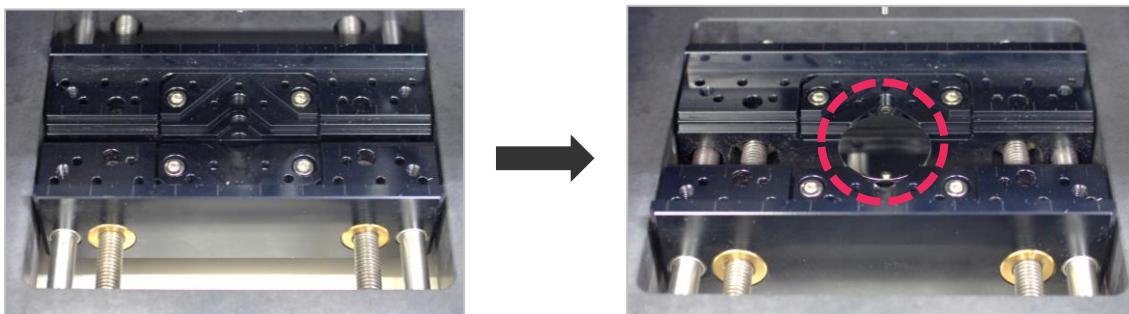
6. How to use the clamp

(1) Hold engraving materials

The holding part of clamp is step type, so set the clamp to the step to match the size and thickness are matched. If you turn the clamp handle to the left, then the clamp will be loosed and turn it to the right, then the clamp will be tightened.

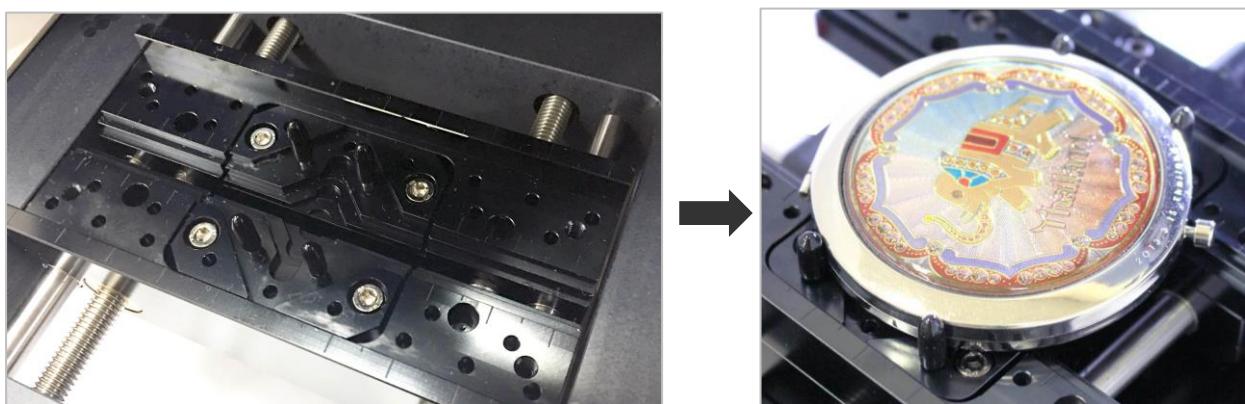


Notice When holding the materials by turning the clamp tightening handle, a mark may be left on the materials.



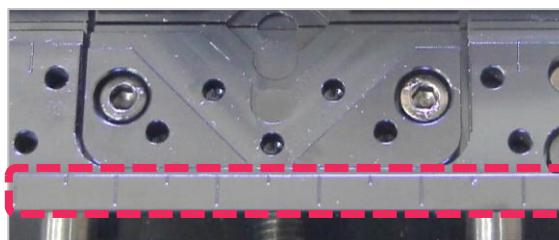
(2) How to use the pin

Pin holes on the clamp ensures easier holding of irregular shaped material.



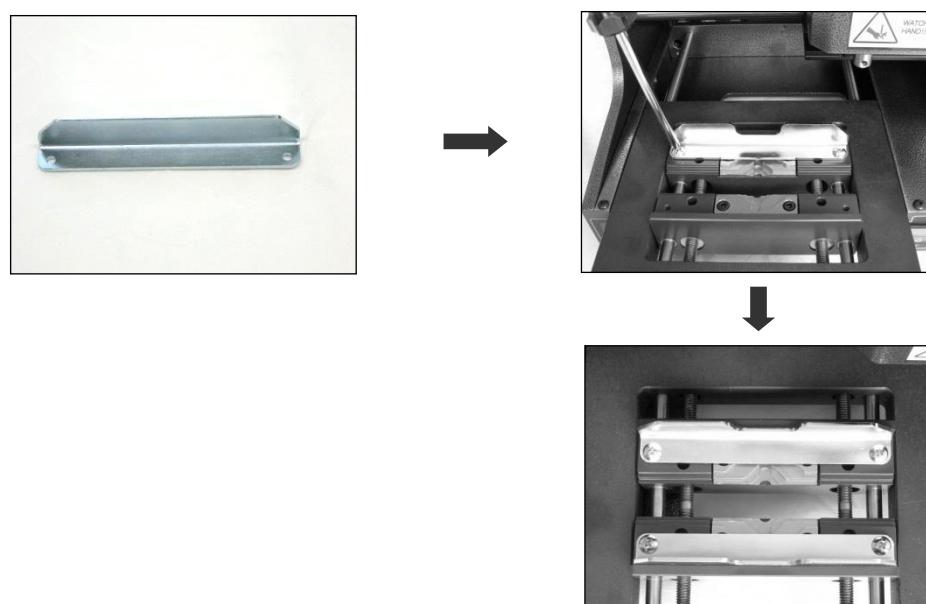
(3) How to use the gradation on the clamp

Gradation on the clamp also helps easier positioning of material on the clamp.



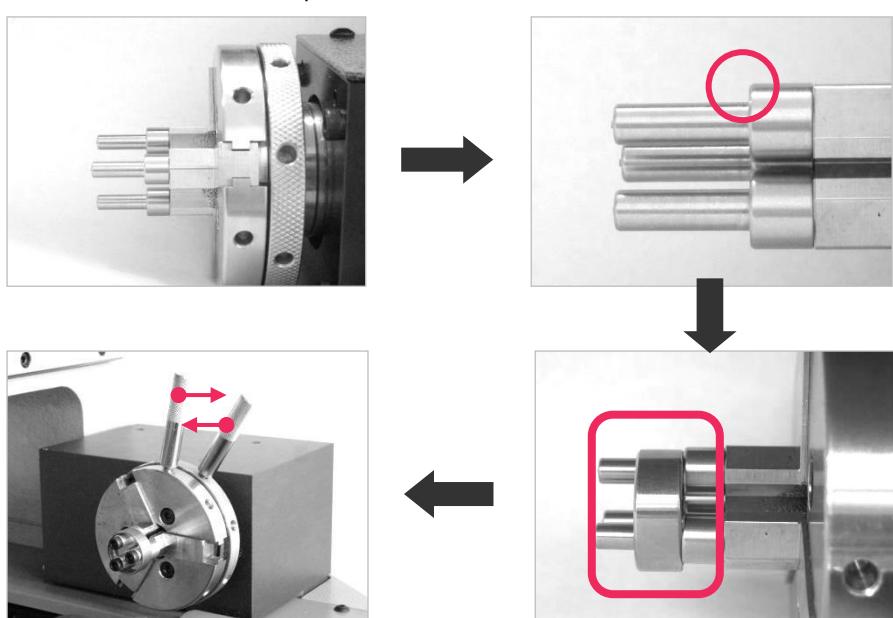
(4) How to attach the auxiliary jig

The auxiliary jig helps to hold thick materials like a beer bottle. As a pair, the support clamps are held by bolts on each hole.



(5) Holding method for outer diameter engraving

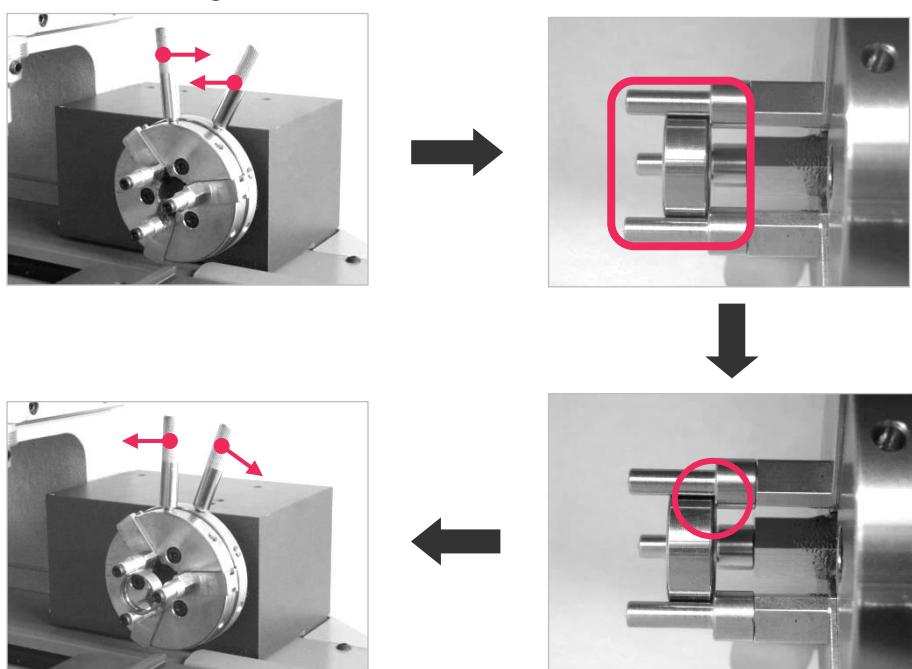
Insert the ring until it clicks into the flat chuck finger and turn the chuck handle to hold the ring and not to allow it come out or spin.



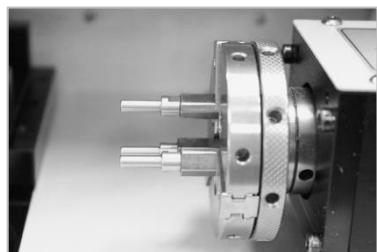
(6) Holding method for ring inner diameter engraving

Open the chuck finger of the rotation clamp and insert the ring, and use the chuck handle to hold it not to allow it to come out or slip.

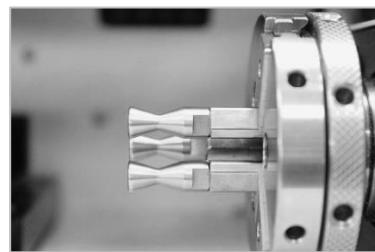
Ex) Flat chuck finger



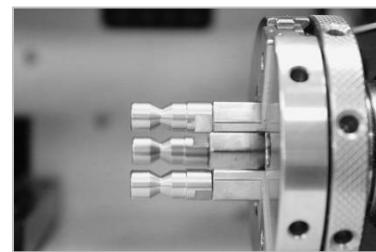
There are three types of chuck fingers. According to the shape of ring, use chuck finger appropriately to hold the ring and not allow it to become loose or fall.



Flat chuck finger



Round chuck finger (wide width)



Round chuck finger (narrow width)

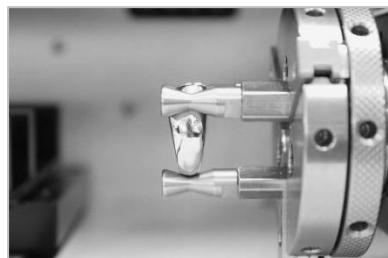
(7) Chuck finger changing method

Use the chuck finger spanner provided along with the product to release or tighten the chuck finger.





If the thickness of ring is not even, mix different sized chuck fingers to hold it.



(8) Materials holding methods for engraving bracelets

Place three bangle adapters in the rotation clamp, and tighten the chuck finger in front of the bangle adapters. Open the rotation clamp to match it to the bracelet size, and insert the bracelet until it clicks into the chuck finger. Use the chuck handle not to make bracelet come out or spin.

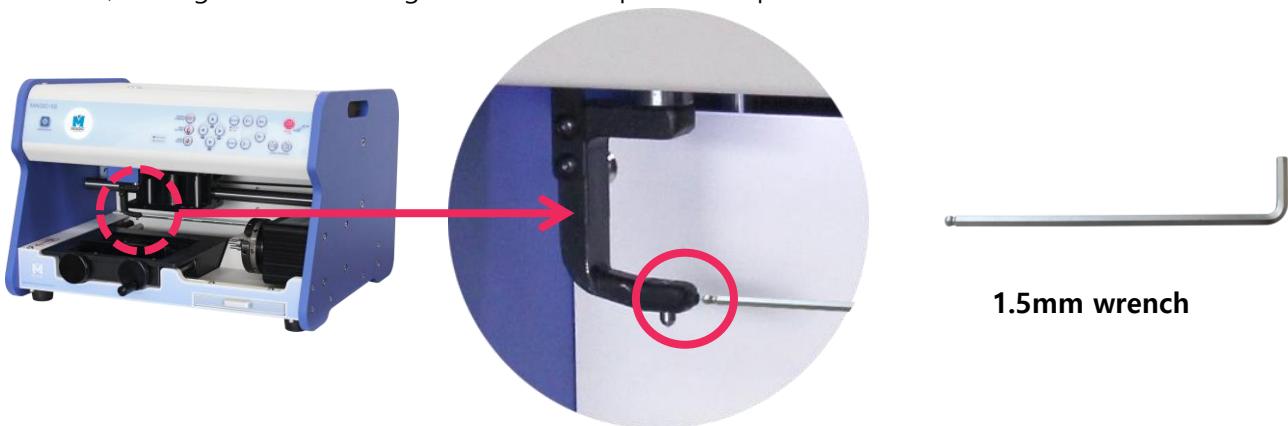


7. Changing tools

◆ Changing engraving tools

Press  button, then Insert 1.5mm wrench into the tool fixing bolts as shown in the picture below and turn it to the left to release the bolts. Pull down the tool to take it out, and insert the new

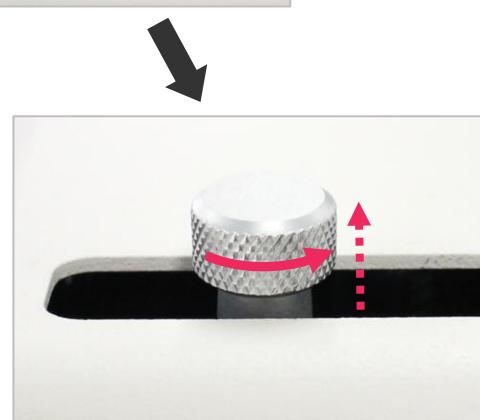
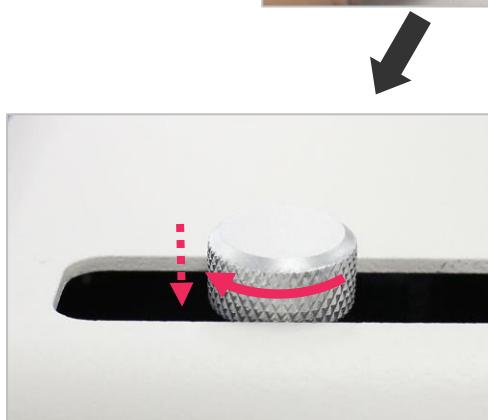
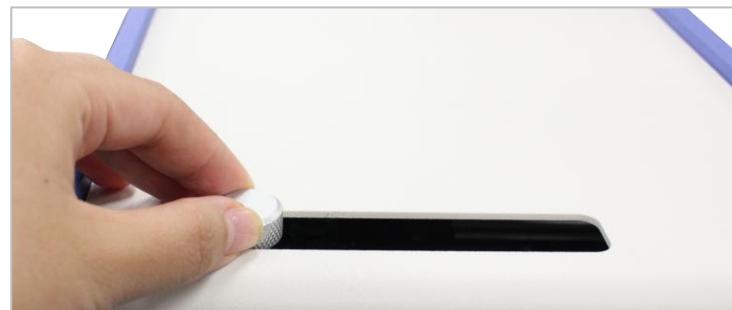
tool, and tighten the bolts again to hold it in place. And press  button.



Do not allow any part of body or other objects onto the engraver when the tool spinning.

8. Adjusting tension

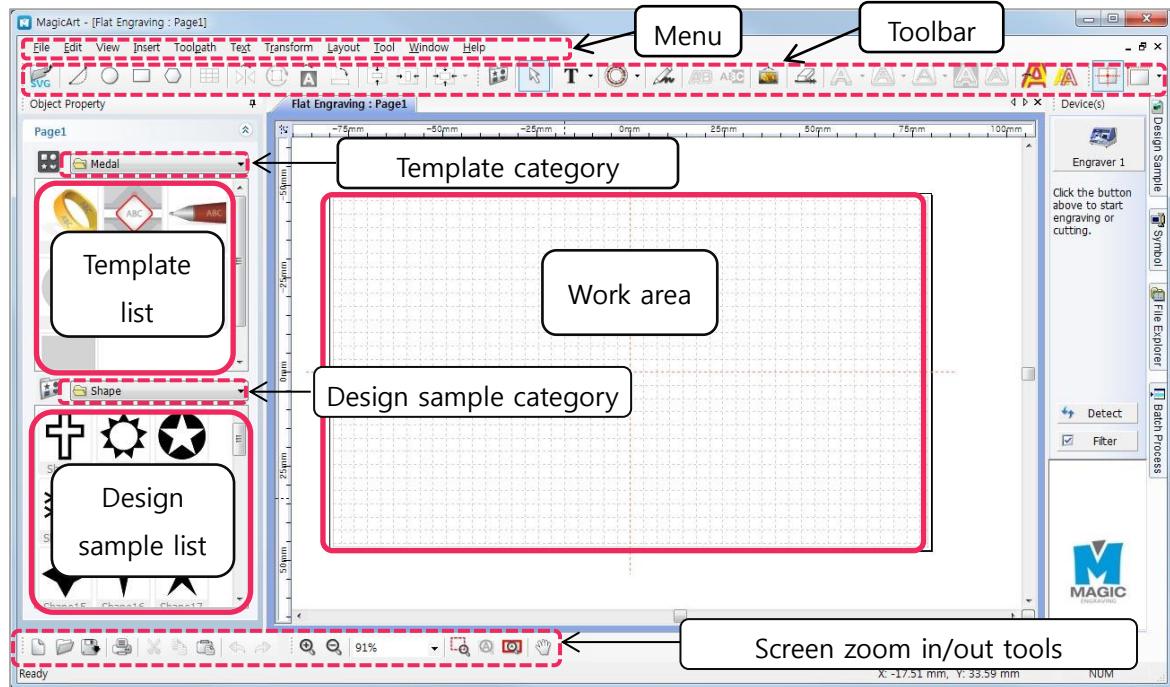
When marking with a tool, the engraving depth is adjusted with pressure. This is the same as the engraving depth selection when creating the tool path. If you turn the tension adjustment knob to the right, the pressure increases stronger, and turning it to the left, decreases the pressure.



Program Usage Description

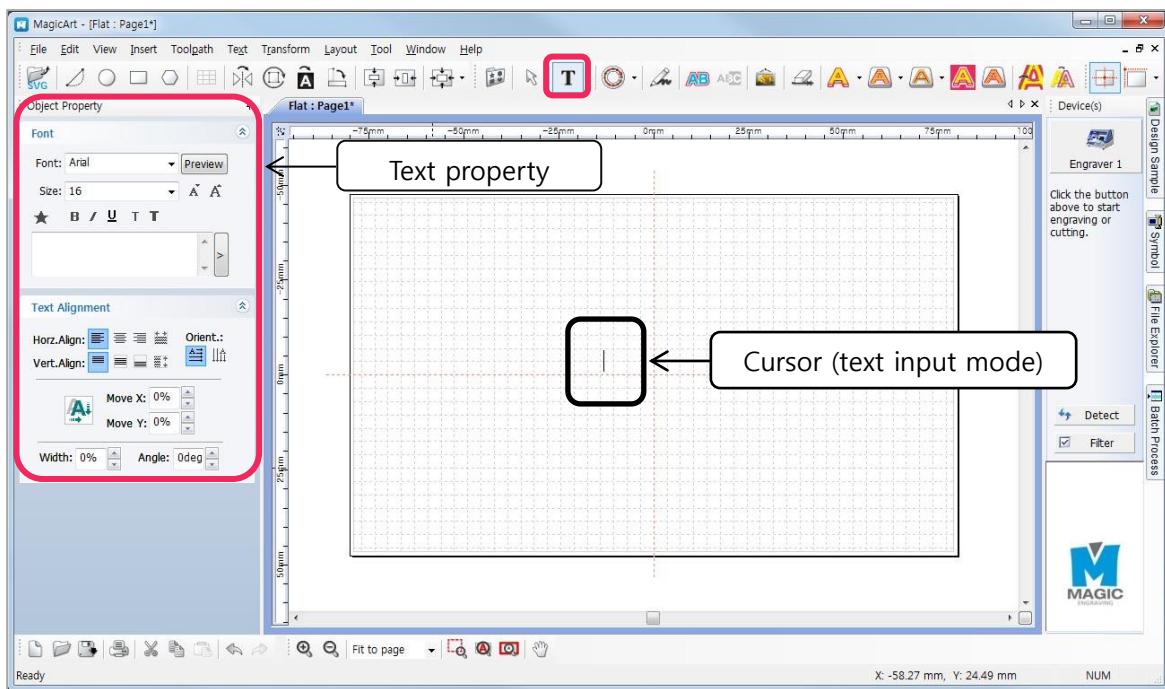
Run the program, then a window will show up as below. The program window is different in accordance with modes. The names of parts for each case are as follows.

◆ Program screen



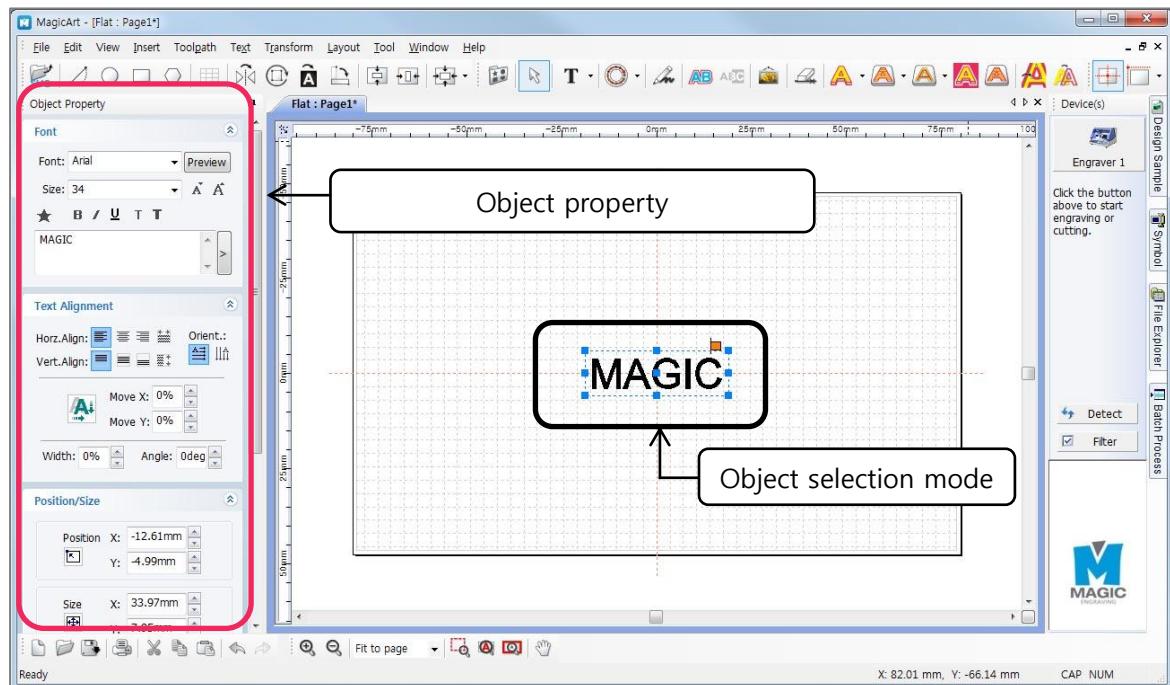
◆ Text input mode

Press **T** [Text Input] button and click the screen or double click on the selection mode to switch to text input mode.



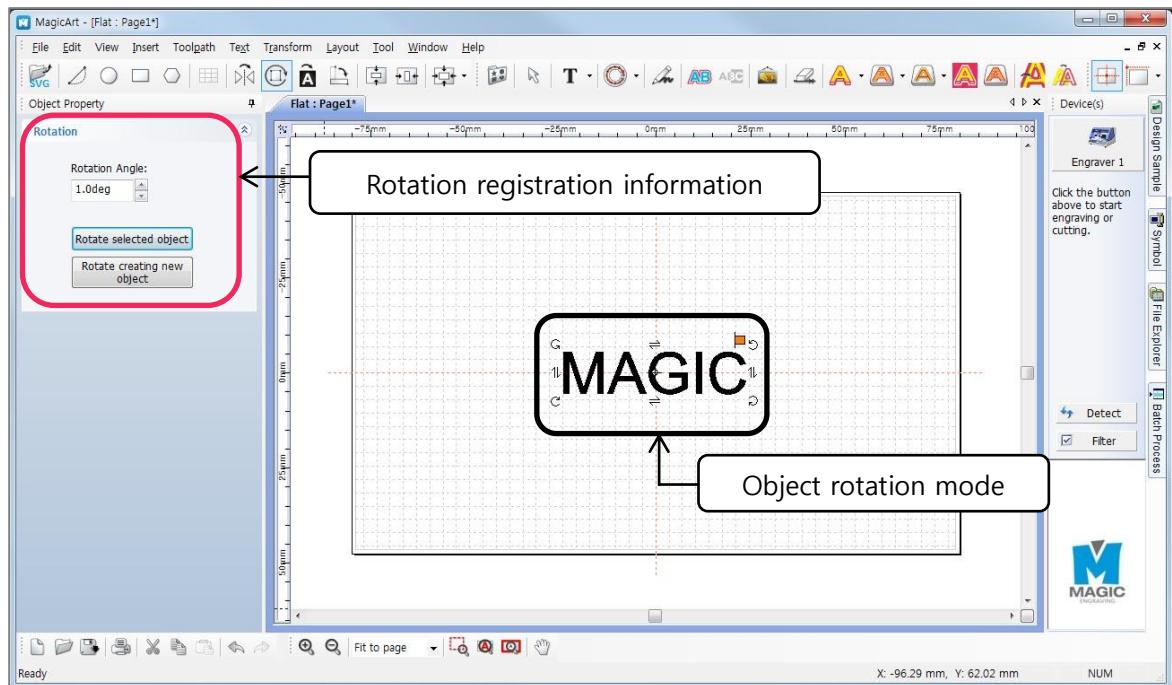
◆ Object selection mode

After entering text, click [Selection] button with a mouse or right-click the work area. Then, the entered text object is selected and it turns into selection mode. Double click the selection mode to convert it into text input mode.



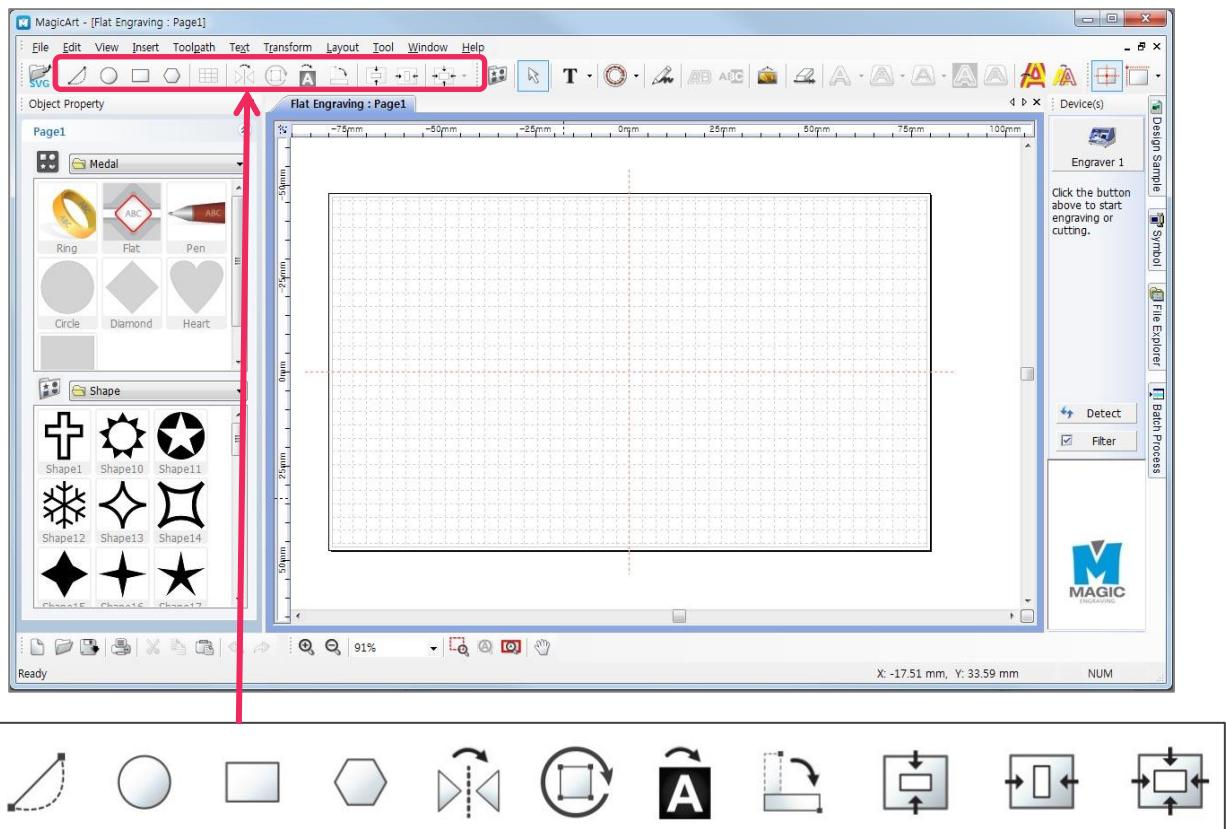
◆ Object rotation mode

If the selected object is clicked once more, the mode will be converted to the object rotation mode.



1. Toolbar

◆ Alignment tools



[Line/Curve]

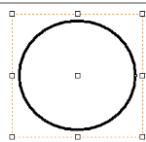
Click a certain point and drag it to make a dot line appear. Designate the distance and click with the mouse and then right-click to create a straight line. At this time, press "Ctrl" key on the keyboard and move the mouse to create a horizontal line or a vertical line.



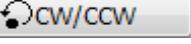
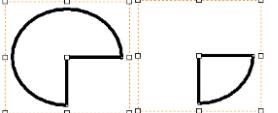
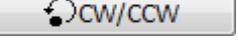
Click on a certain point and designate a distance. Drag while clicking and holding the mouse to make a curve appear. Right-click to create the curve.

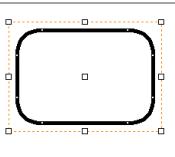
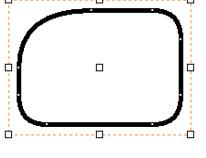


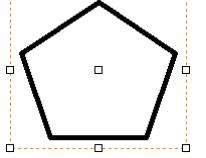
[Circle/Ellipse/Pie]



Click and hold the work area with the mouse and drag it to designate the size of a circle. At this time, press "Shift" key and drag it to create a perfect circle.

	<p>Click  Arc button on the circle object property window to transform into an arc. The starting/ending degree can be designated and those degrees can be adjusted by dragging the starting/ending degree of the arc with the mouse. At this time, click  CW/CCW button to create a reversed image.</p>
	<p>Click  Pie button on the circle object property window to transform into a pie (a filled arc). The starting/ending degree can be designated and those degrees can be adjusted by dragging the starting/ending degree of the pie with the mouse. At this time, click  CW/CCW button to create a reversed image.</p>

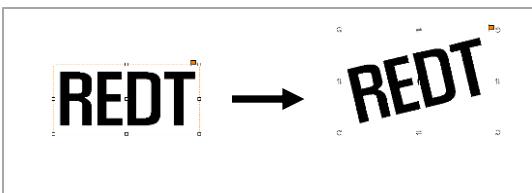
	<p>[Rectangle]</p> <p>Click and hold the work area with the mouse and drag it to designate the size of a rectangle. At this time, press "Shift" key and drag it to create a square.</p>
	<p>Determine the curvature of each edge on the rectangle object property window or drag the rectangular edge with the mouse to transform it into a rectangle with round corners.</p>
	<p>Click <input checked="" type="checkbox"/> Independent Corner button on the rectangle object property window and adjust the curvature of each corner individually.</p>

	<p>[Polygon]</p> <p>Click and hold the work area with the mouse and drag it to designate the size of a polygon.</p>
	<p>At this time, specify the number of vertical on the polygon object property window to change it.</p>

	<p>[Mirror]</p> <p> Left/right reverse the selected object.</p>
---	---



[Rotation]



If the selected object is clicked once more with the mouse, it will convert to the object rotation mode. Then, rotate the object by dragging it with the mouse or arrow keys on the keyboard.



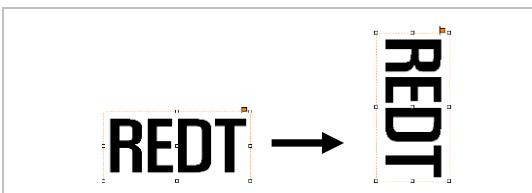
[Invert color]



Reverse the color of the selected object.



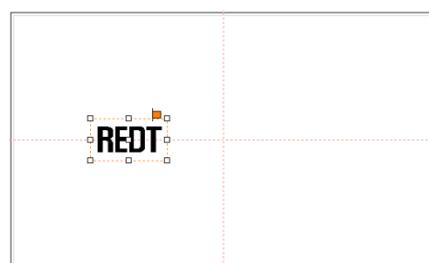
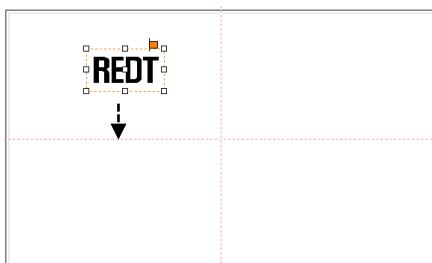
[90°CW]



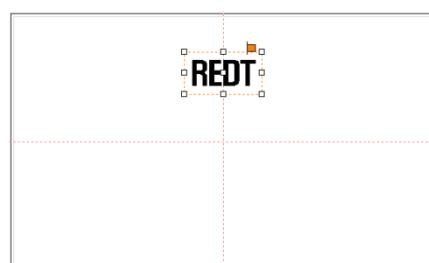
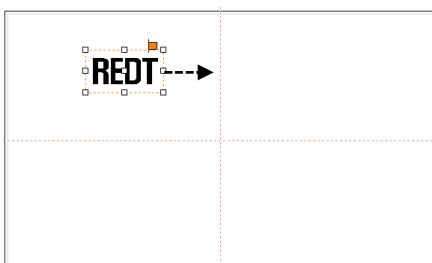
Rotate the selected object by 90°.



[Vertical center in page]

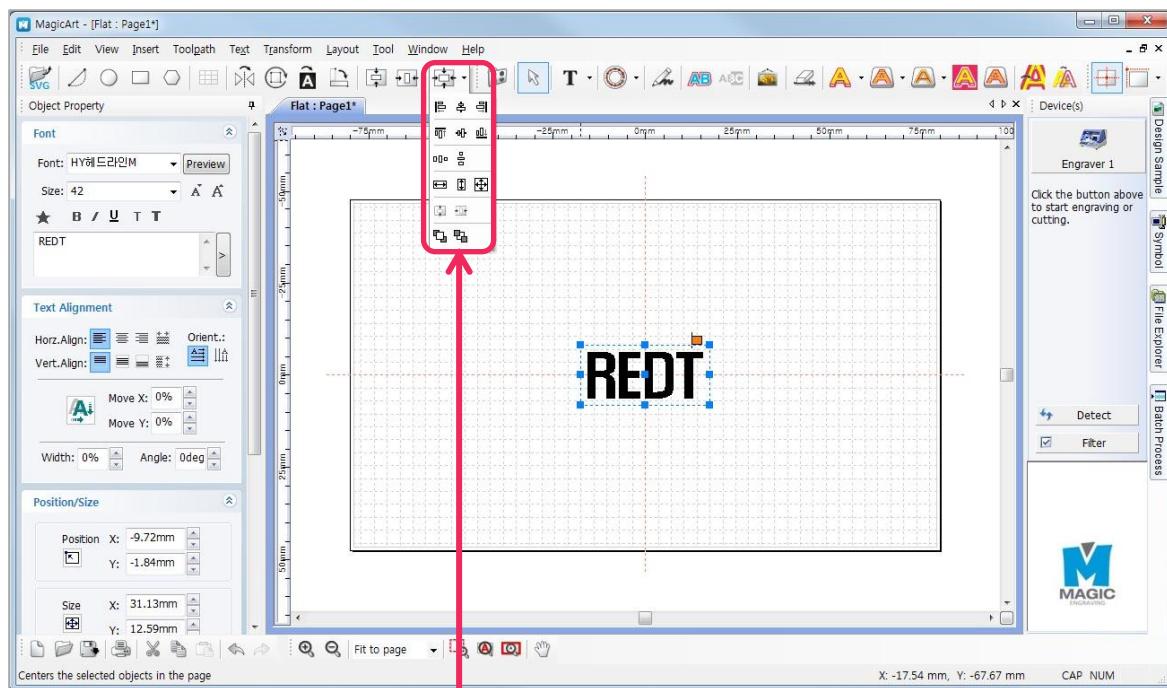
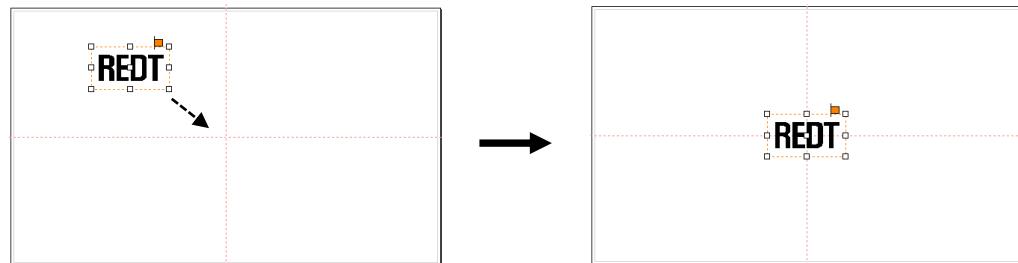


[Horizontal center in page]





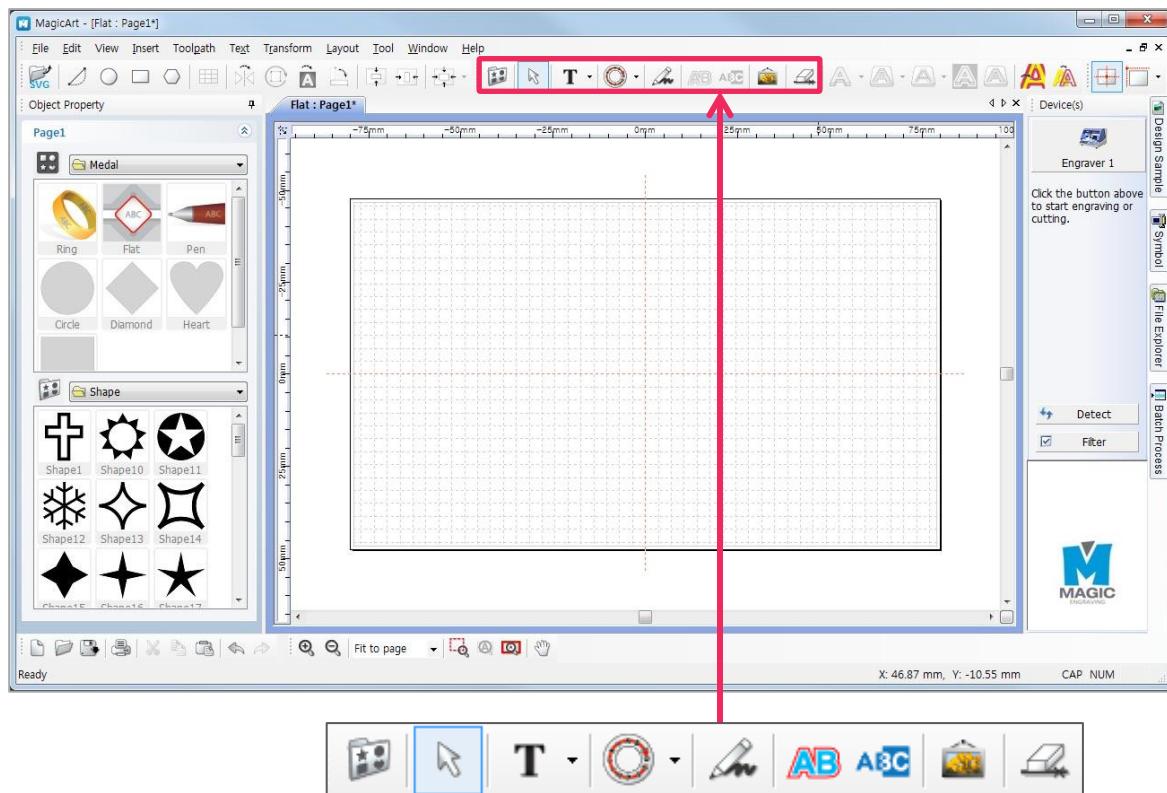
[Center in page]



Alignment		Align to the center of base object
		Align to the right of base object
		Align to the top of base object
		Align to the center of base object
		Align to the bottom of base object
		Align to the left of base object

Adjust horizontal gap		Expand horizontal gap
Adjust vertical gap		Expand vertical gap
Same size		Make same width
		Make same height
		Make same size
Order		Bring to front
		Send to back

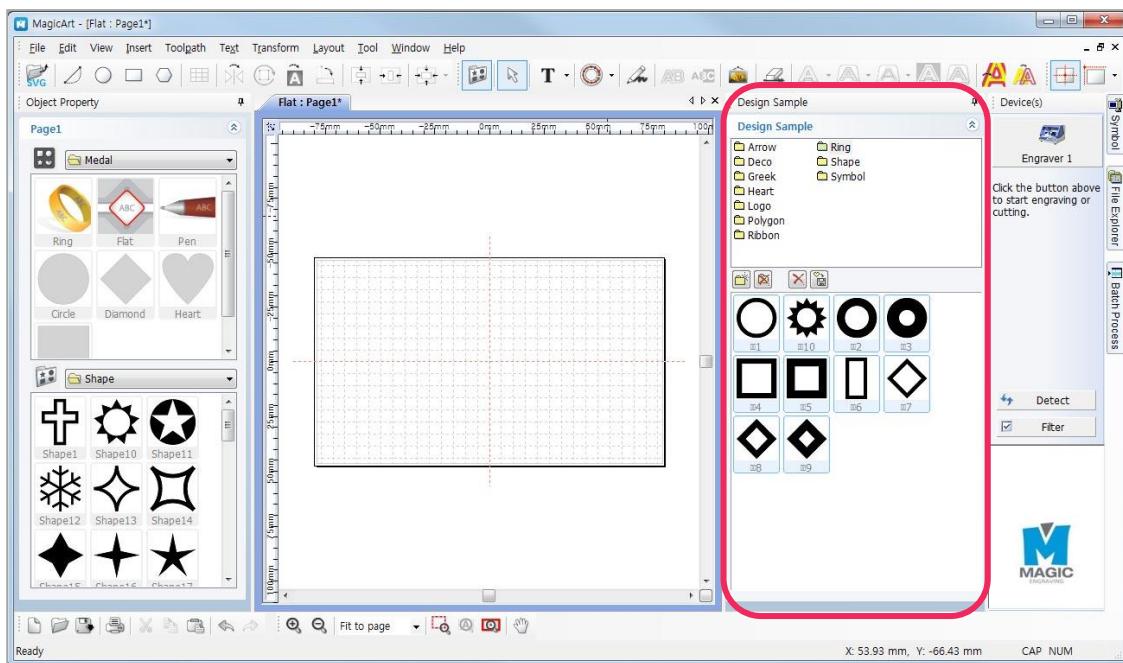
◆ Object tools





[Design sample]

Import design sample or save current object as design sample.



What is a design sample?



Note It means design objects saved in the design sample library. The design sample is easily and quickly imported from the design sample library and freely edited.



[Selection]

It is available either to select the object created in the work area to adjust its size and location or to change the object's property. Only the selected objects are subject to change their options such as location, size, etc. In the text input mode, convert to selection mode easily by right-clicking the work area.



[Object selected]



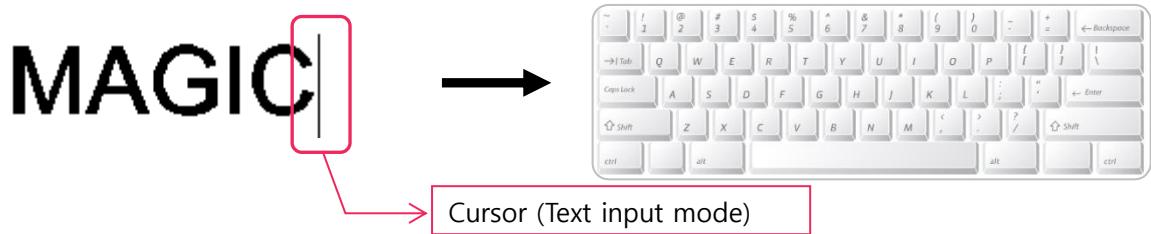
[No object selected]



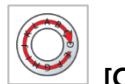
[Text input]

If **T** button is pressed and the work area is clicked with the mouse, then characters can be entered.

Double clicking in the selection mode is an easier way to convert into the text input mode.

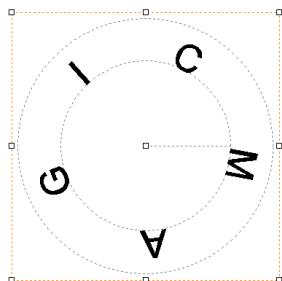


Press **T** button and drag a character to edit with the mouse for partly selection. Then, adjust its font and size.



[Circular text]

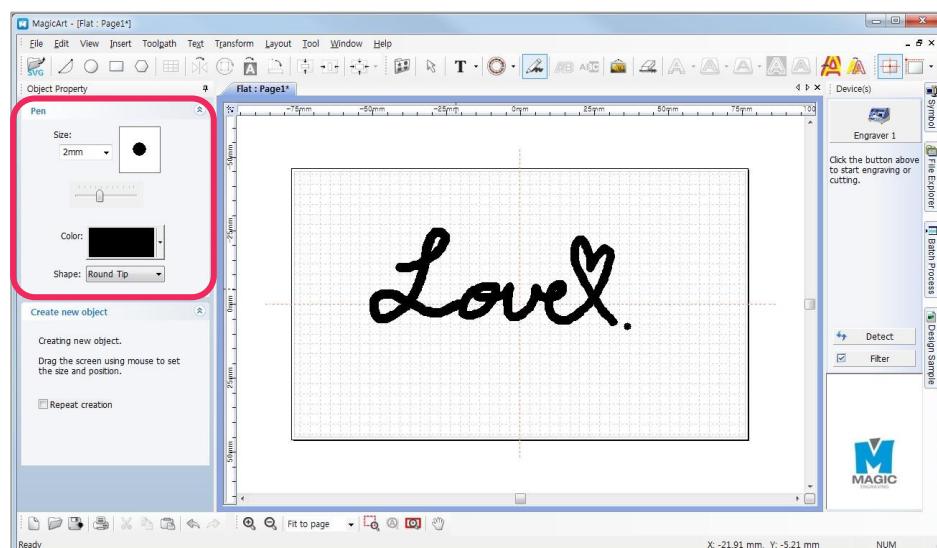
Create text objects along a circle.



[Drawing pen]

Subject can be drawn by dragging the mouse.

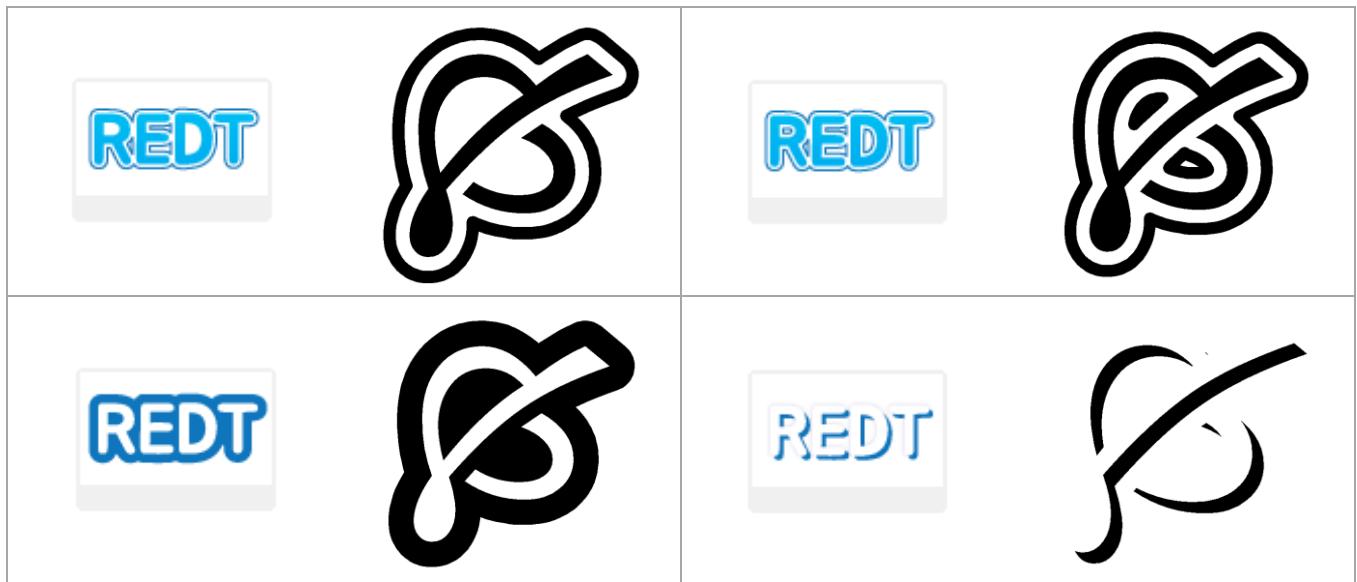
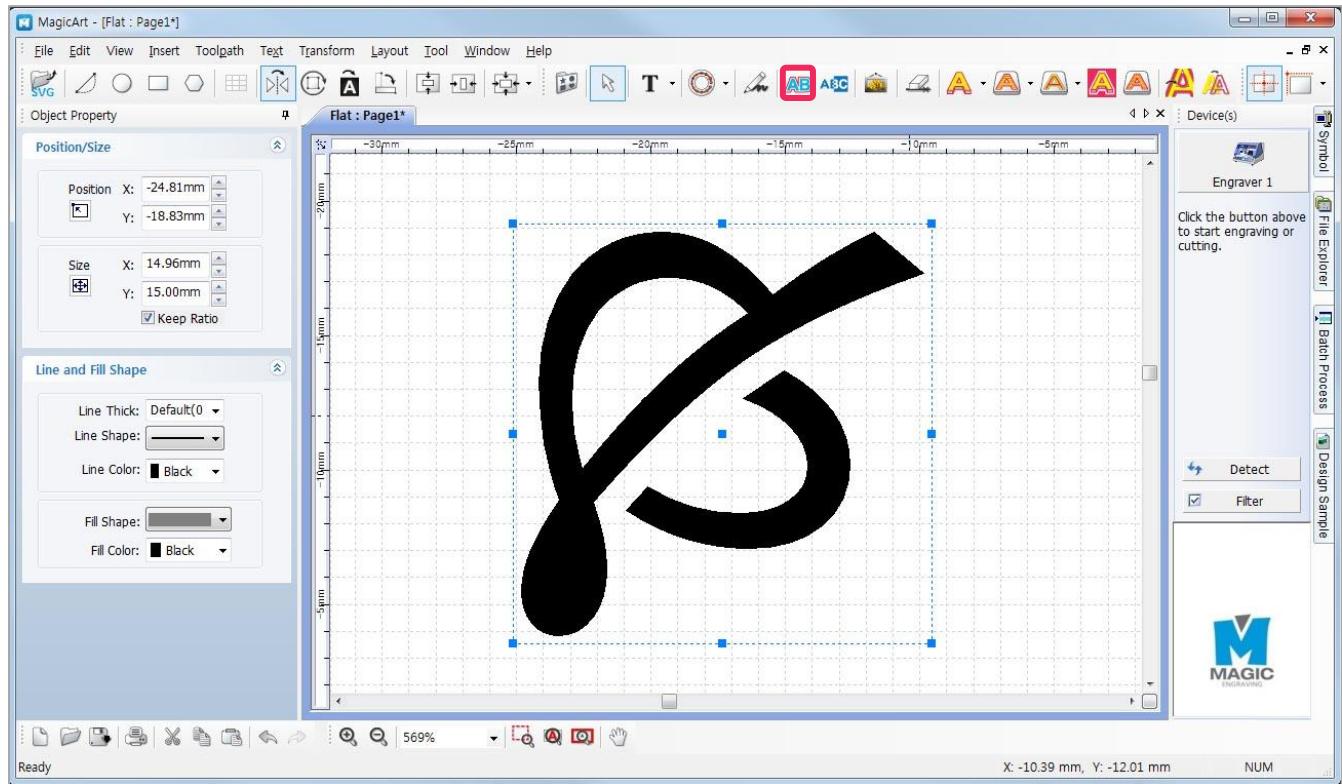
The thickness of drawing line can be adjusted in the drawing object property window.





[Outline stroke of object]

The image in a rounding box can be inserted into the target page





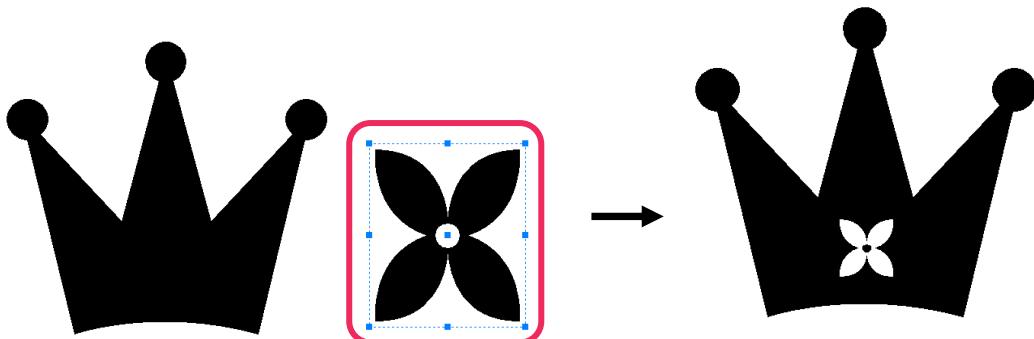
[Invert color of overlapped area]



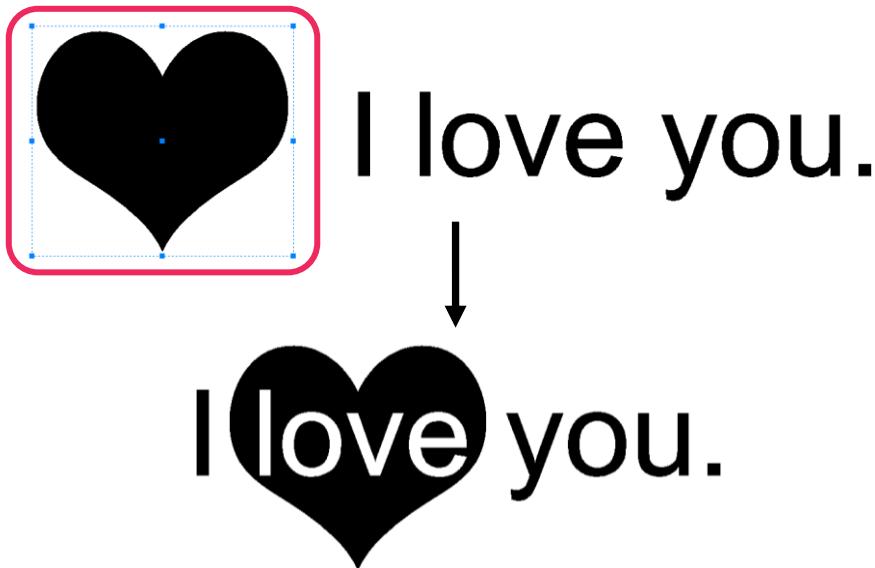
When two or more objects are overlapped, the color in overlapped area can be inverted.



Move the target object over the first object after clicking button, then overlapped area's color will be converted.



When converting text, drag the target object over the text after clicking button.



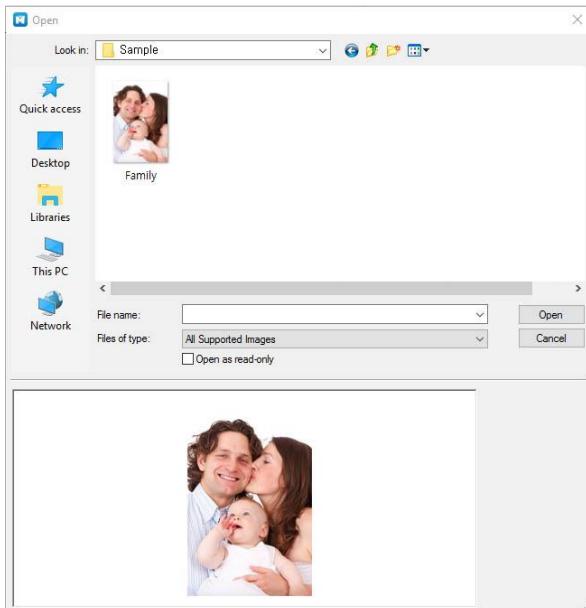
- [Invert color in overlapped area] function is only applied to straight lines, curved lines, circle, rectangle, polygon, design sample and uploaded SVG file, not texts and images.
- [Invert color in overlapped area] function inverts the color of underlaid object.
If the color is not converted, select [Layout menu → Z Order → Top Most] and place the underlaid object above the other object.



Notice

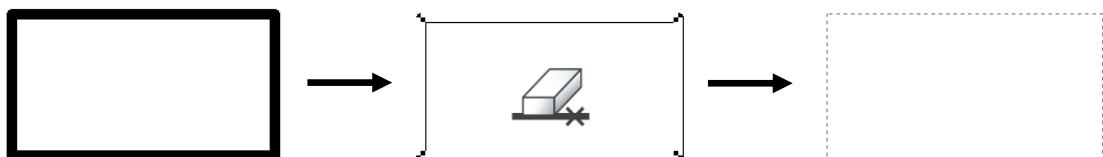
**[Image]**

Import image (bmp, jpeg, gif, png ... etc.).

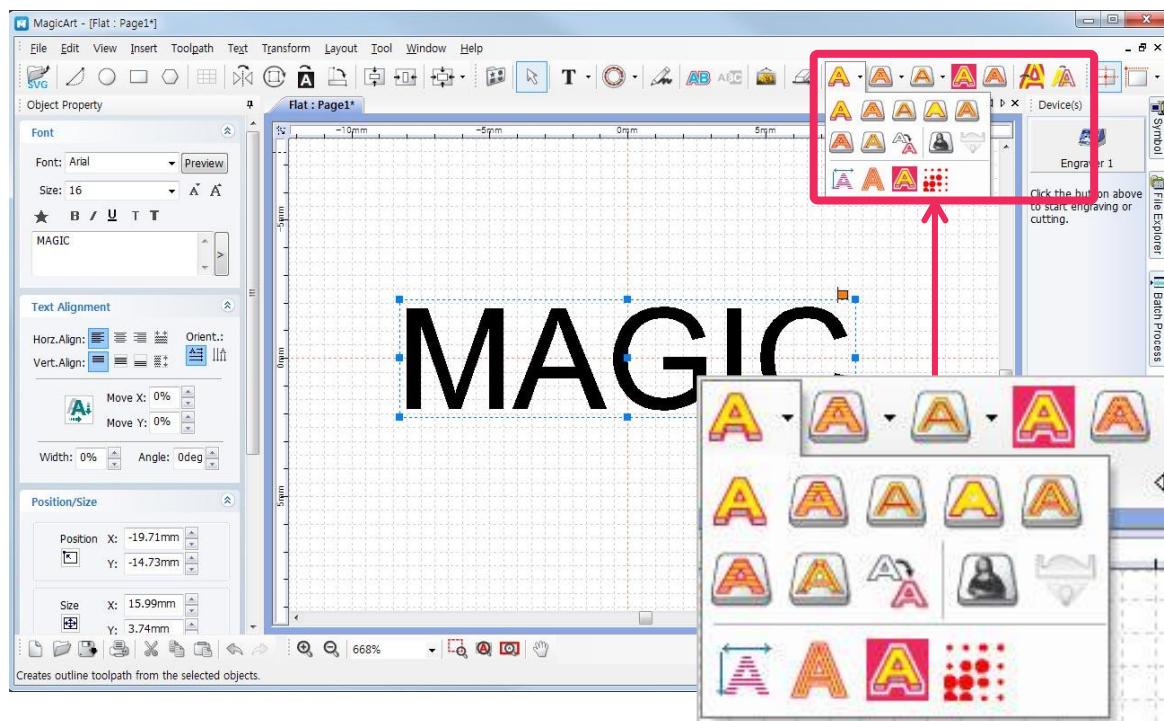
**[Line eraser]**

Clear the line of object.

Move the mouse over the line of object, then click the line. The line will be erased (Some objects cannot be erased with the Line eraser tool).



◆ Toolpath



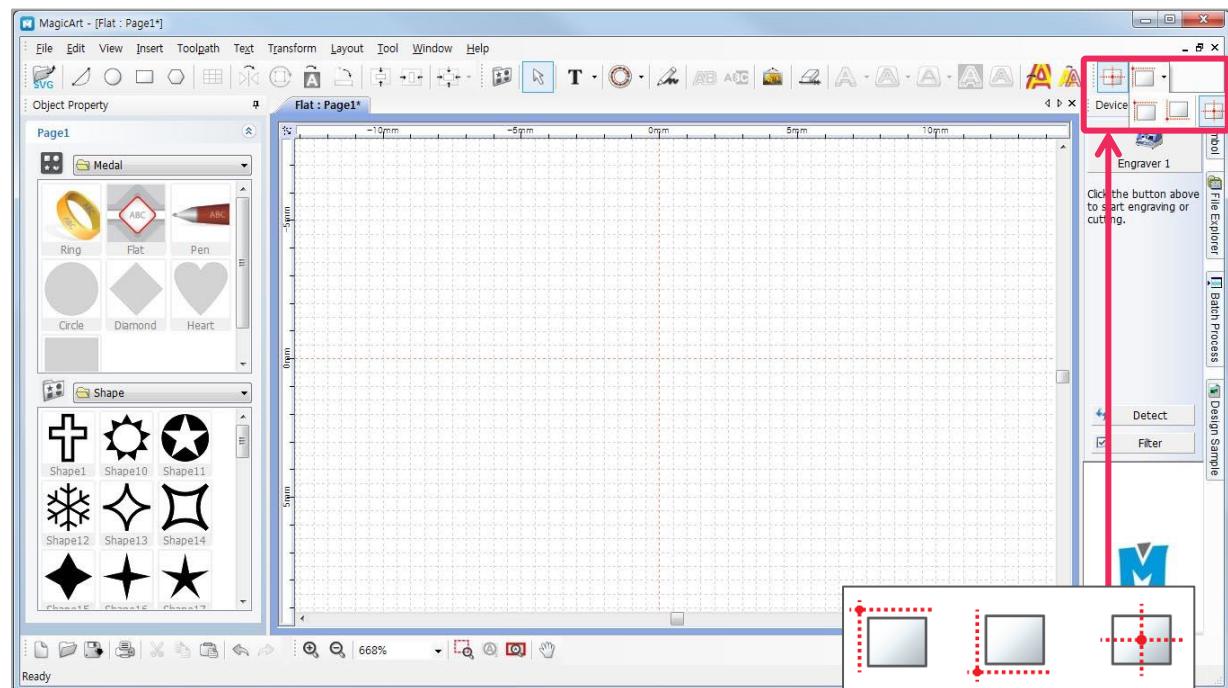
Toolpath?



Toolpath is a pathway where tool goes by for engraving.

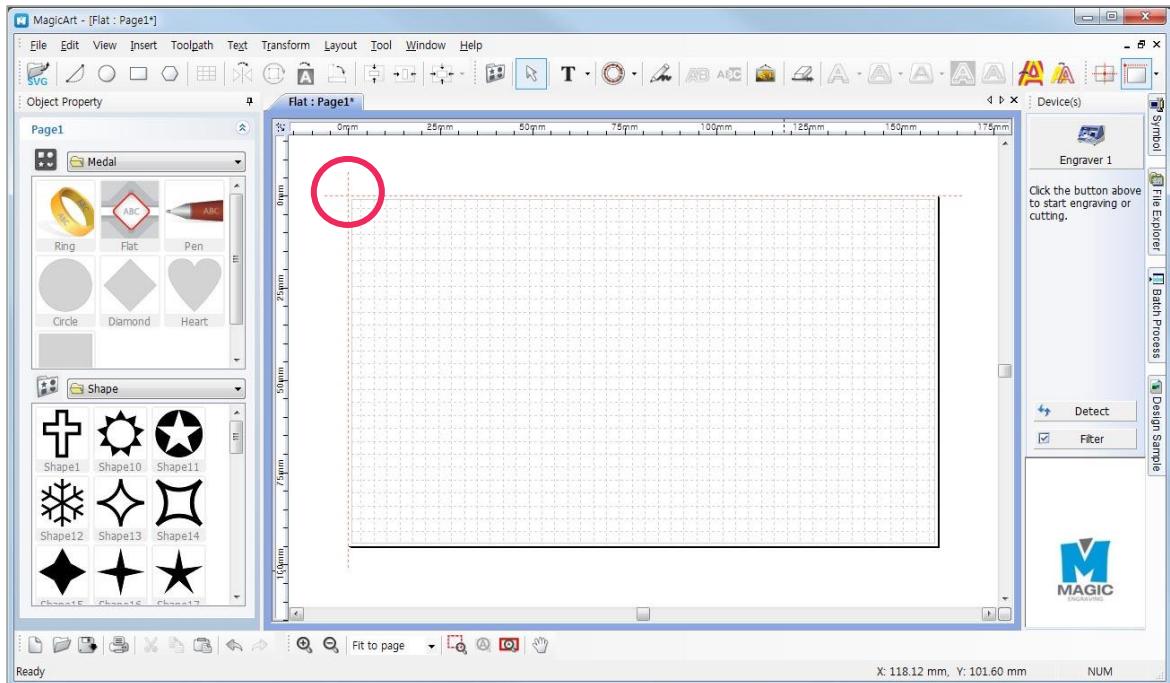
Toolpath is usually displayed in red color and engraving tool goes on the pathway as it engraves.

◆ Origin point tools

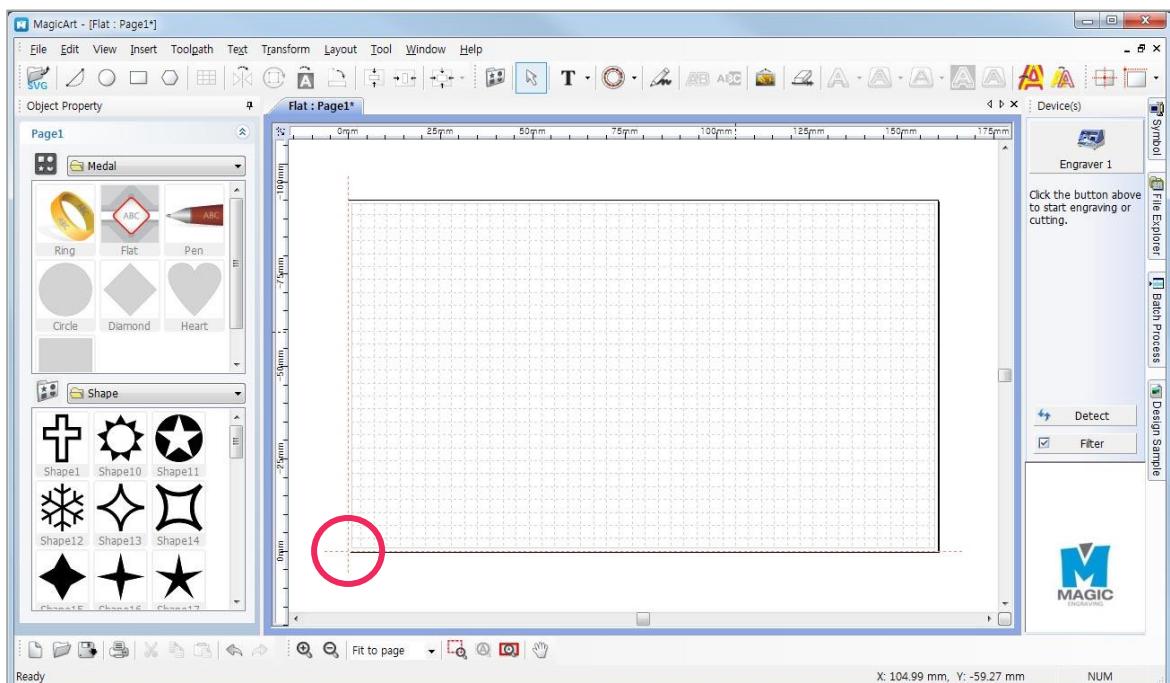




[Left top origin point]

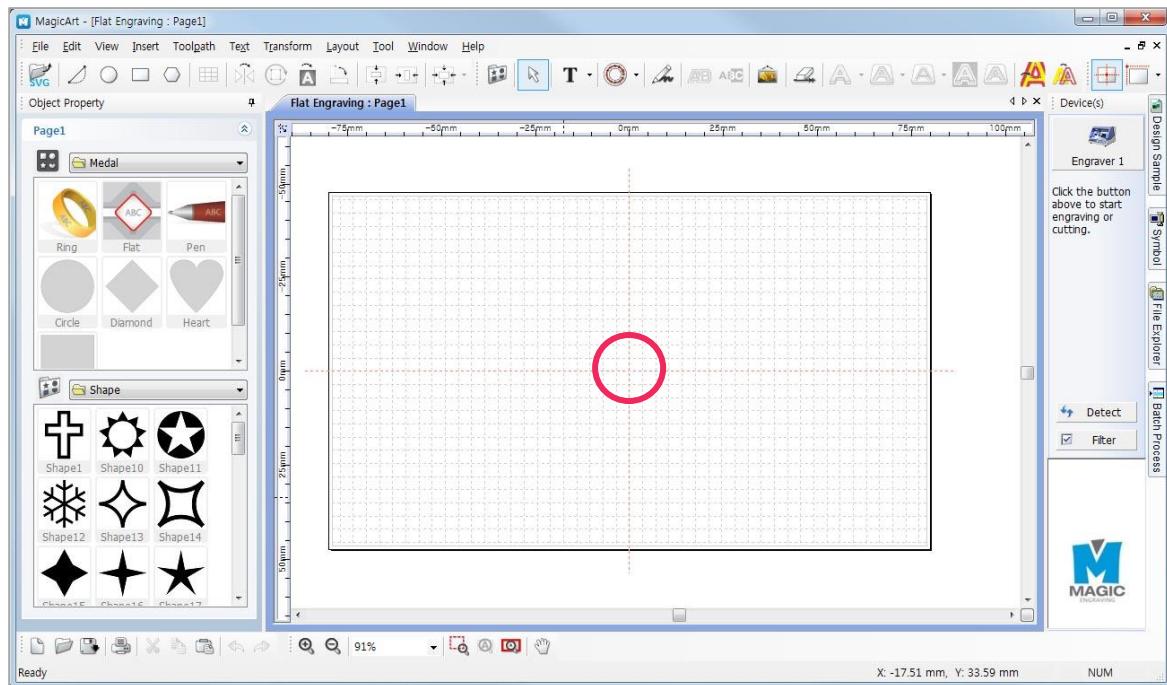


[Left bottom origin point]

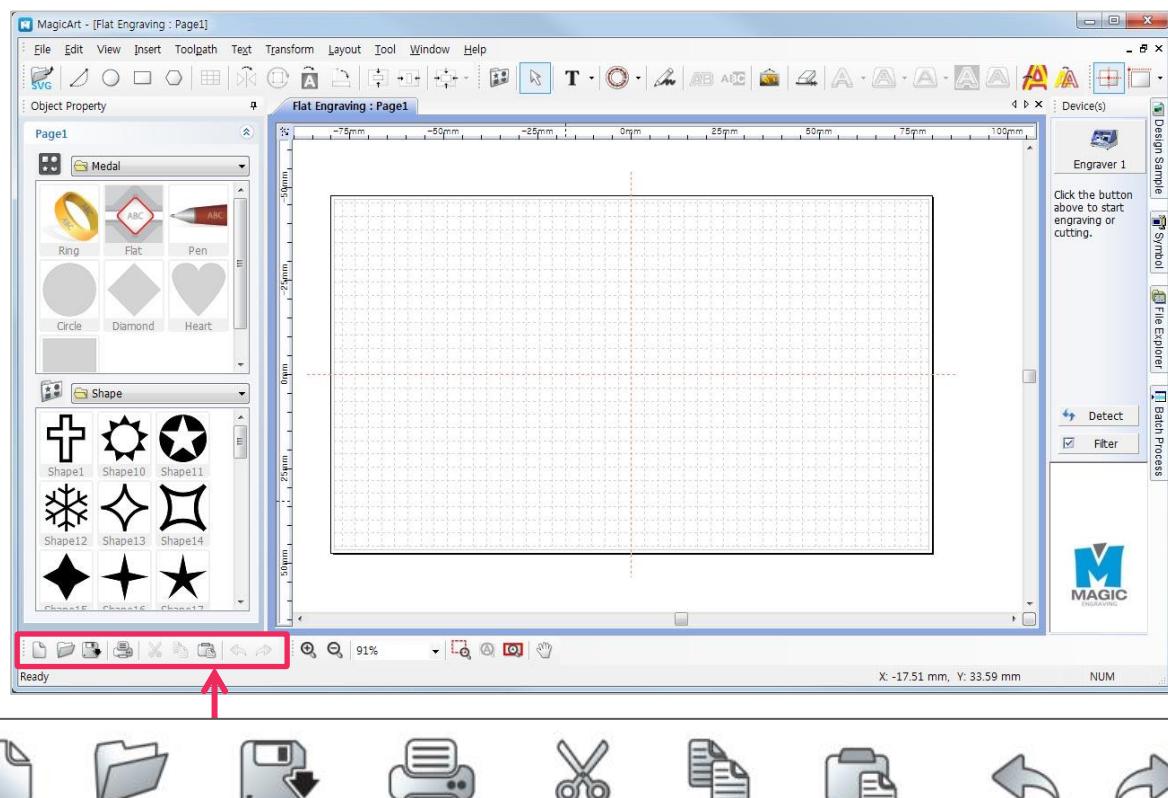




[Center origin point]



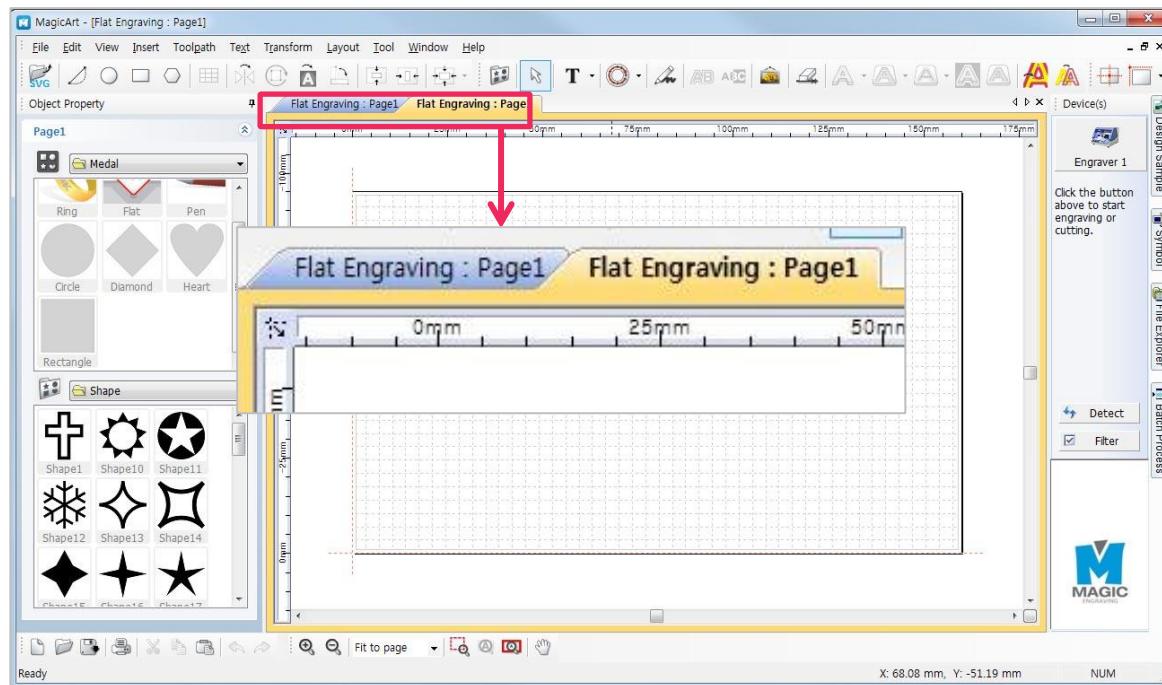
◆ Basic tools





[New document]

Open a new file.



[Open]

Open a file in “*.dgn” file format.

Select a file on the “Open” window and click “Open” button.



[Save document]

Save the design drawn on program by “*.dgn”.

Choose the location(folder) in which the file will be saved and enter the file name before clicking “Save” button.



[Print]

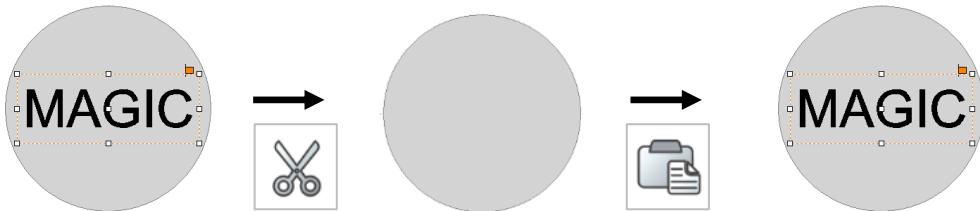
Print the design drawn on program.



[Cut]

Cut the selected object.

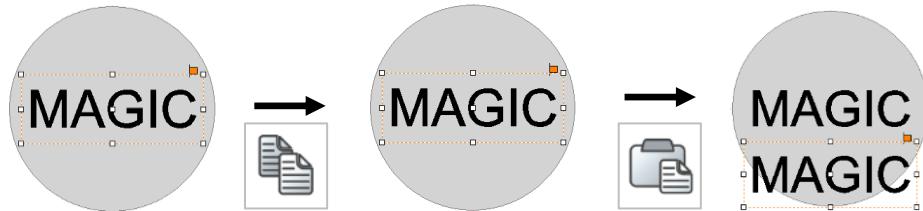
If Ctrl+X is pressed on the keyboard, the same function will be executed.



[Copy]

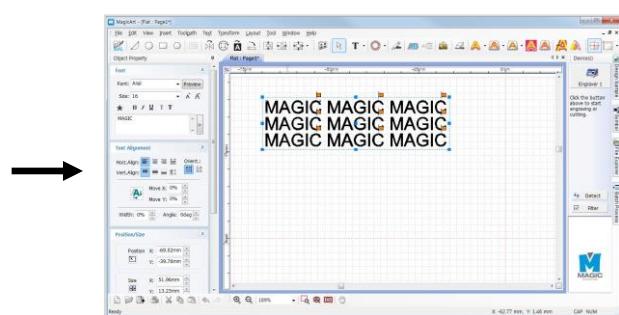
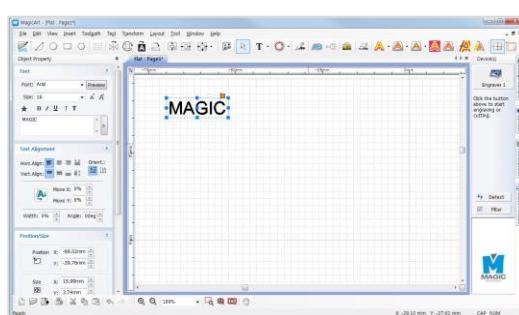
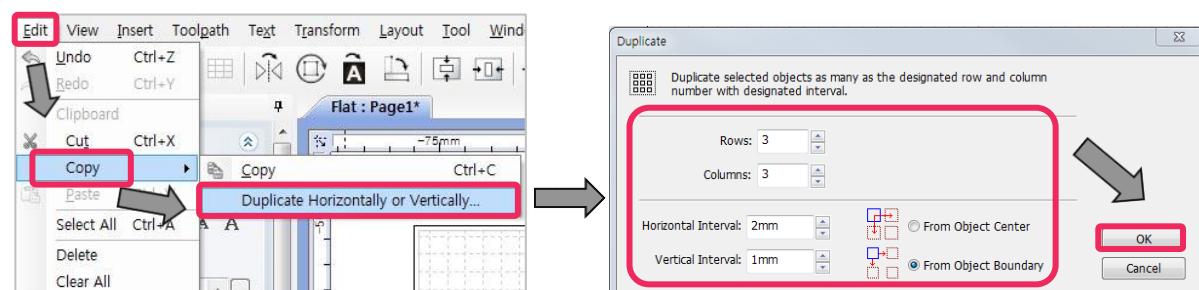
Copy the selected object.

If Ctrl+C is pressed on the keyboard, the same function will be executed.



[Multiple paste]

If more than one of the same objects is needed, multi-copy the object in several constant gaps by clicking Edit menu → Copy → Multiple Paste....



**[Paste]**

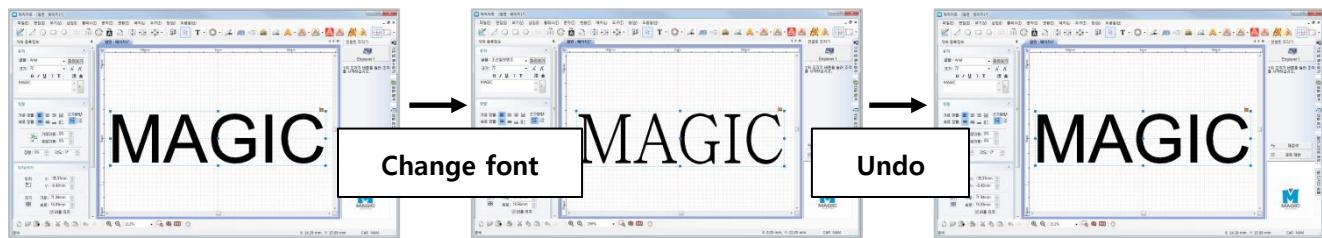
Paste the cut or copied object.

If Ctrl+V is pressed on the keyboard, the same function will be executed.

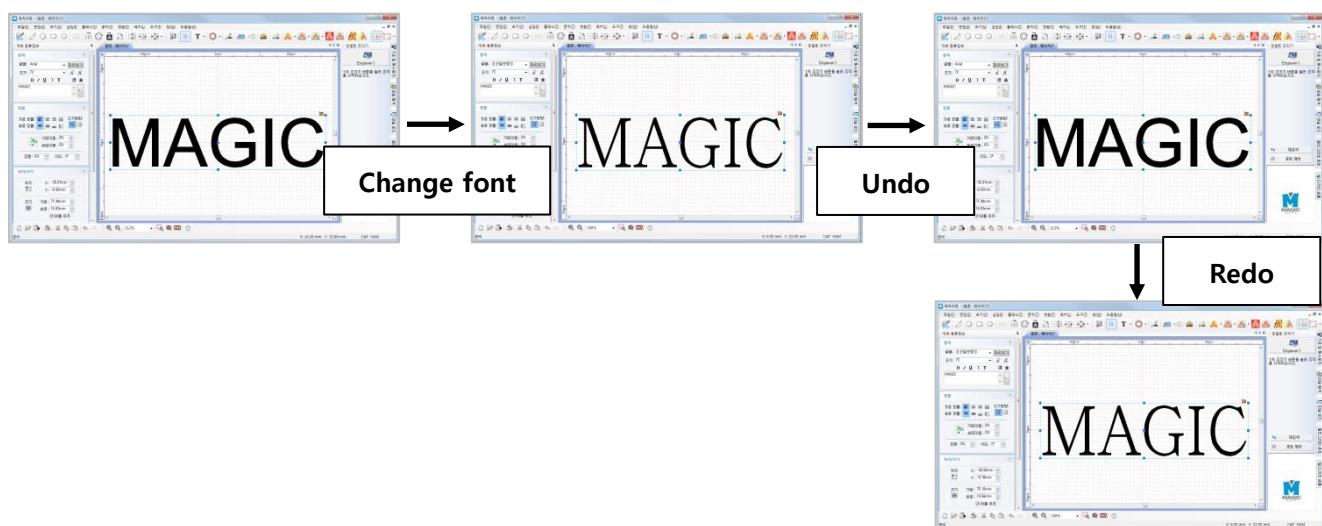
**[Undo]**

Return the work recently done to its previous state.

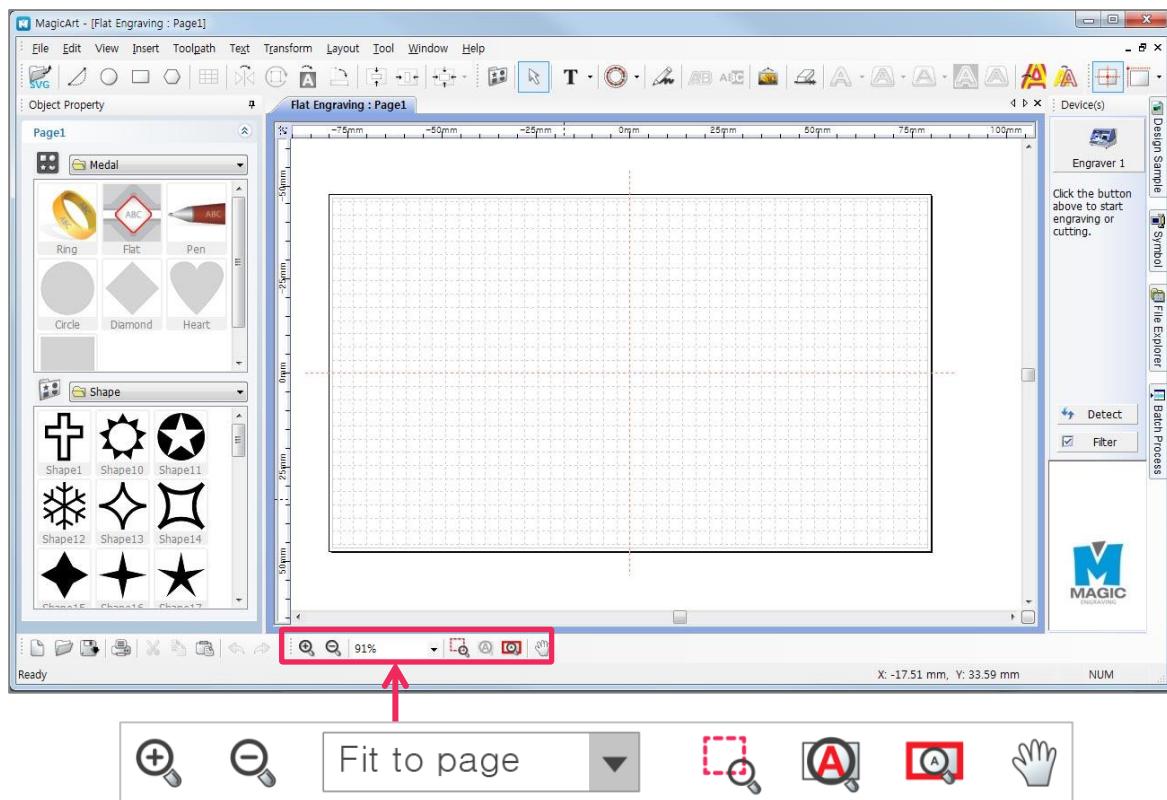
The number of undo stage can be adjusted with Tool menu → Option → General.

**[Redo]**

Re-execute the undone work.

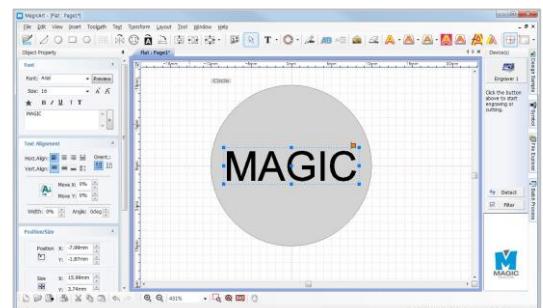
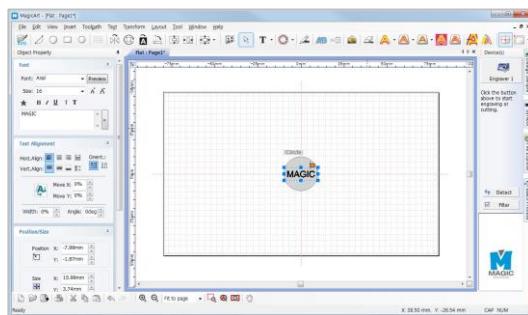


◆ Screen zoom in/out/move tools



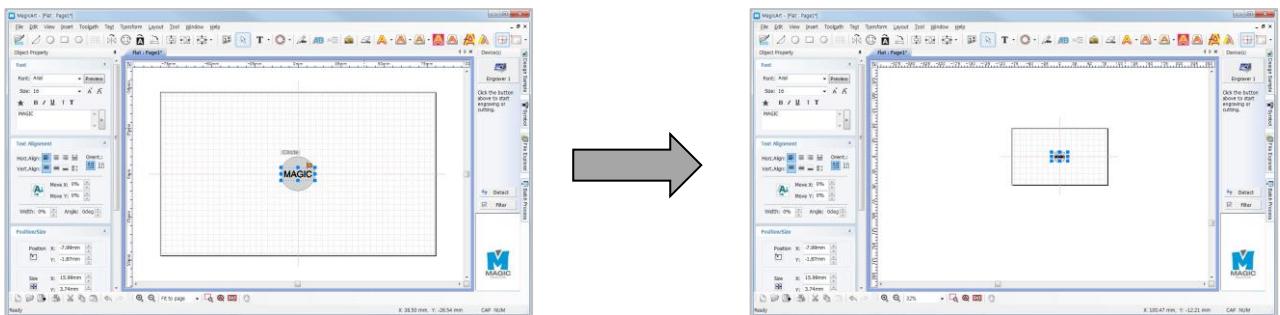
[Zoom in]

The screen is zoomed in by one level.



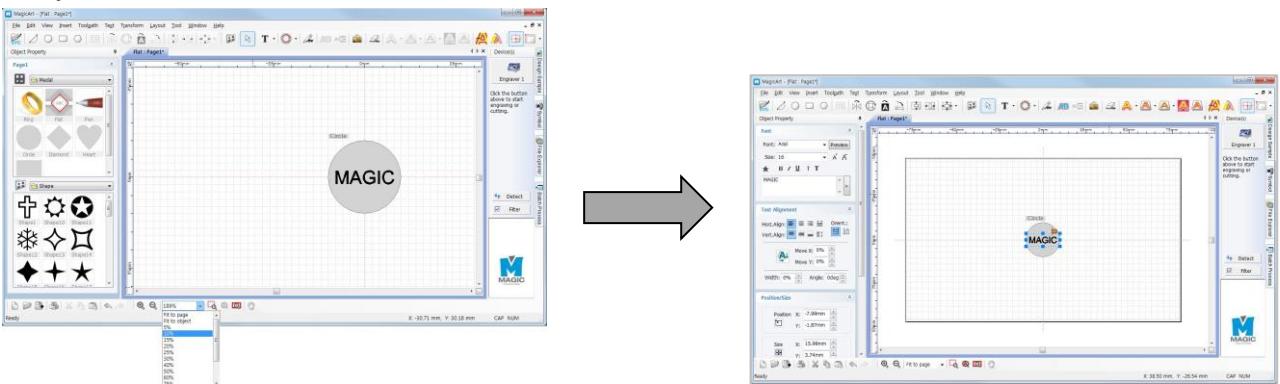
[Zoom out]

The screen is zoomed out by one level.



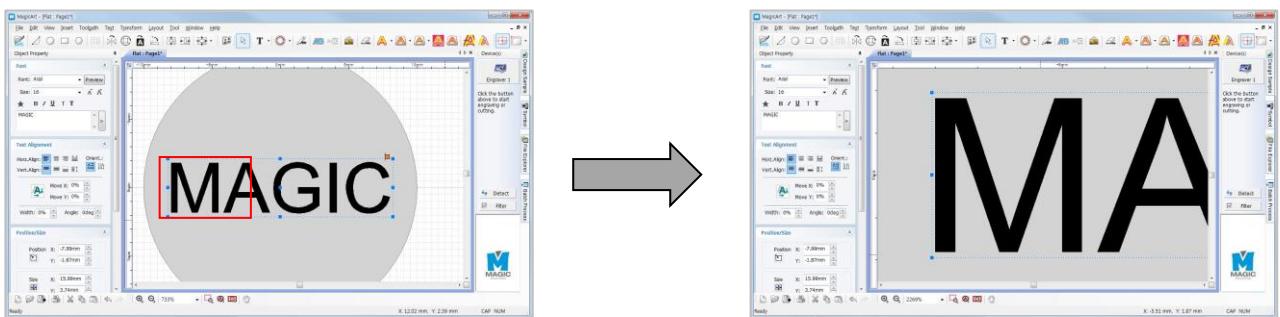
Fit to page [Zoom in/out ratio]

If any screen ratio is selected, the screen in the size of the selected ratio will be seen.



 [Magnifier]

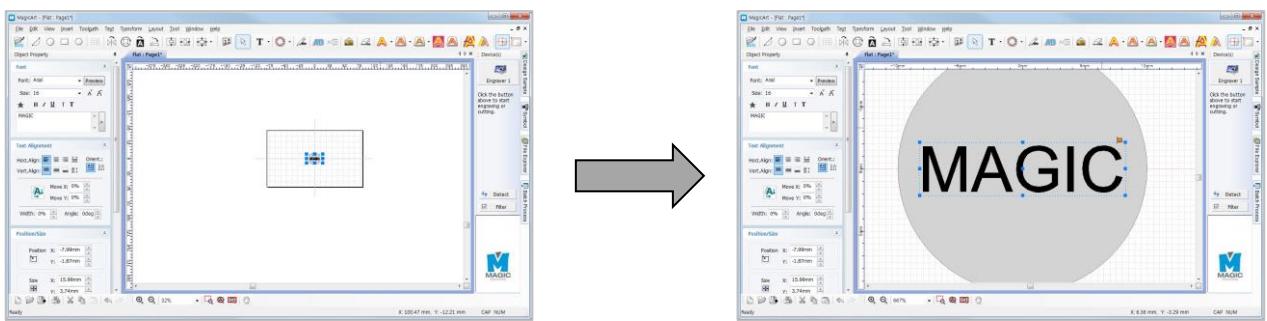
Drag a certain spot with the mouse to enlarge it.



 [Fit to object]

Enlarge the selected object to make it filled in the screen.

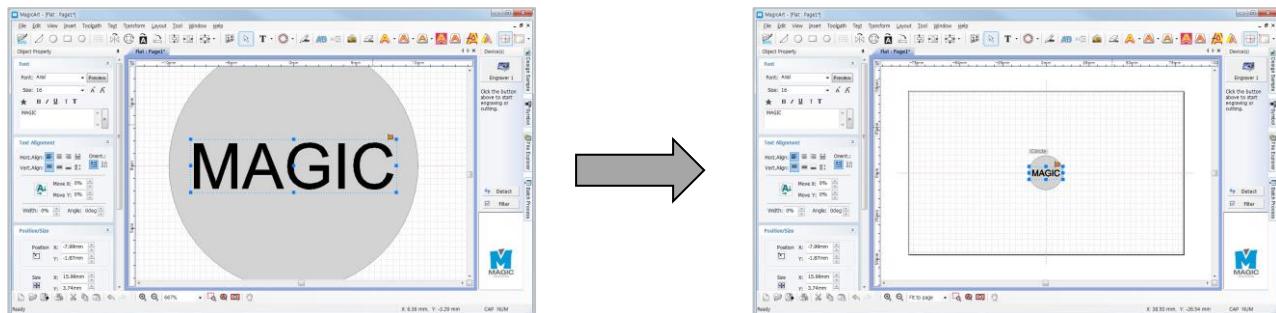
MAGIC ENGRAVING





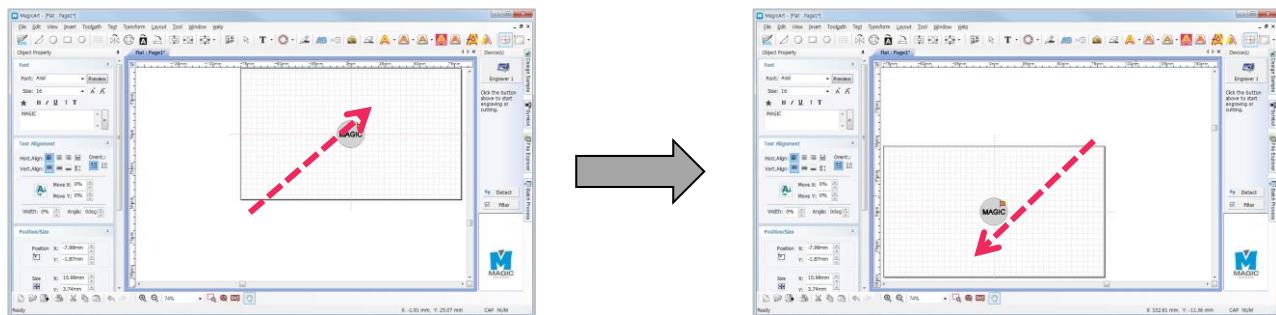
[Fit to page]

Adjust the page size to see the whole work area.



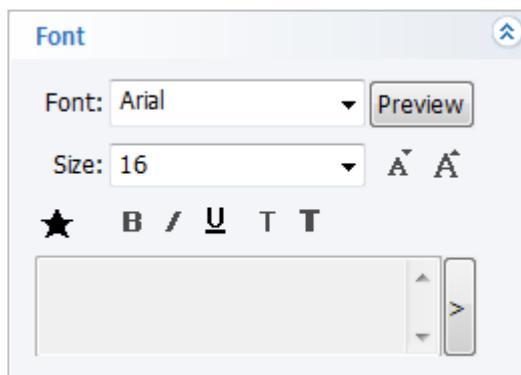
[Panning]

Drag the screen with the mouse to move it.

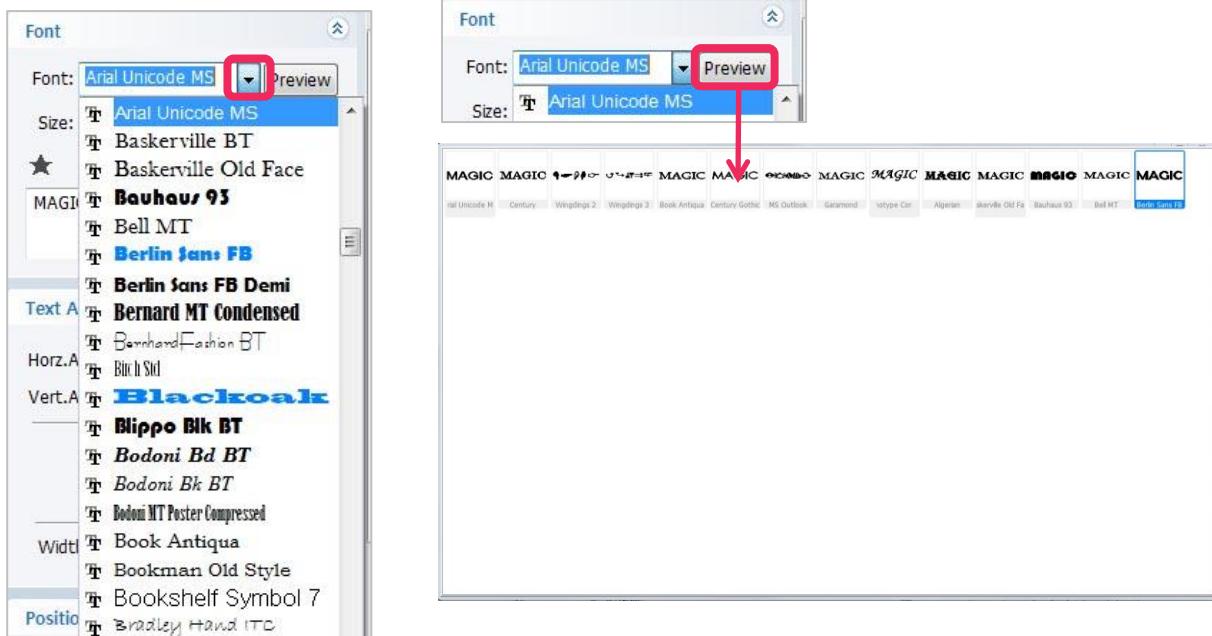


2. Text object property

If any text object is selected, the property of the text object will appear on the left of the screen.



Designate font. Either click the font's arrow or click "Preview" button to designate font.

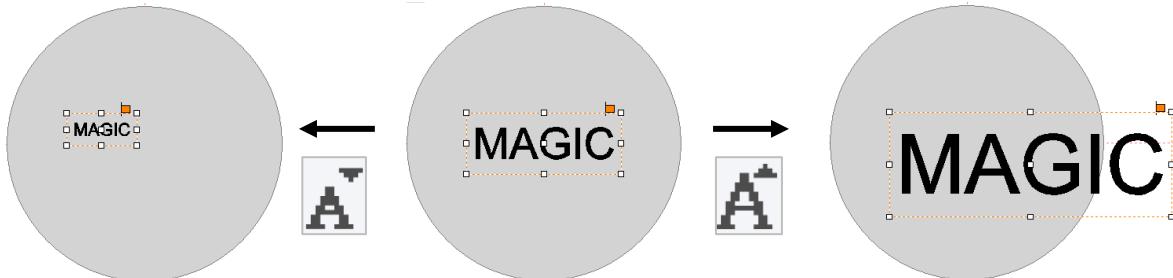


Right click to display menu on font preview window. Click "Show Font List", then you can designate the fonts that will be used in preview.

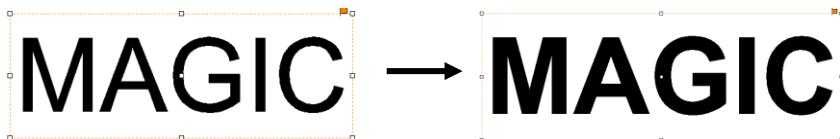




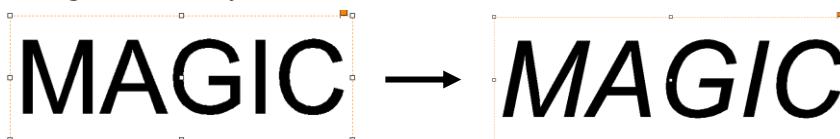
Adjust the size of the selected text. Either press the size arrow button to select or press **A A** [size] button to adjust the size by one level.



Change text style to bold.



Change the text style to italic.



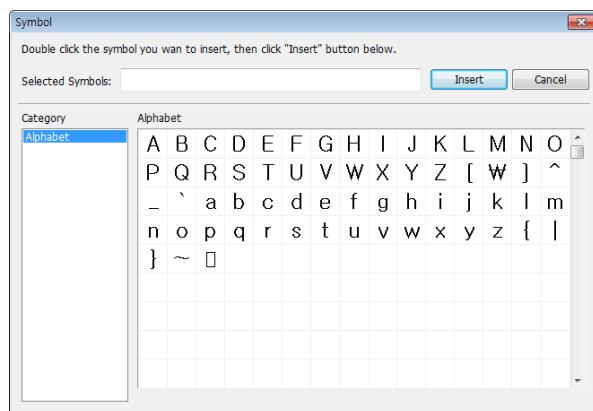
Adjust the weight of font.





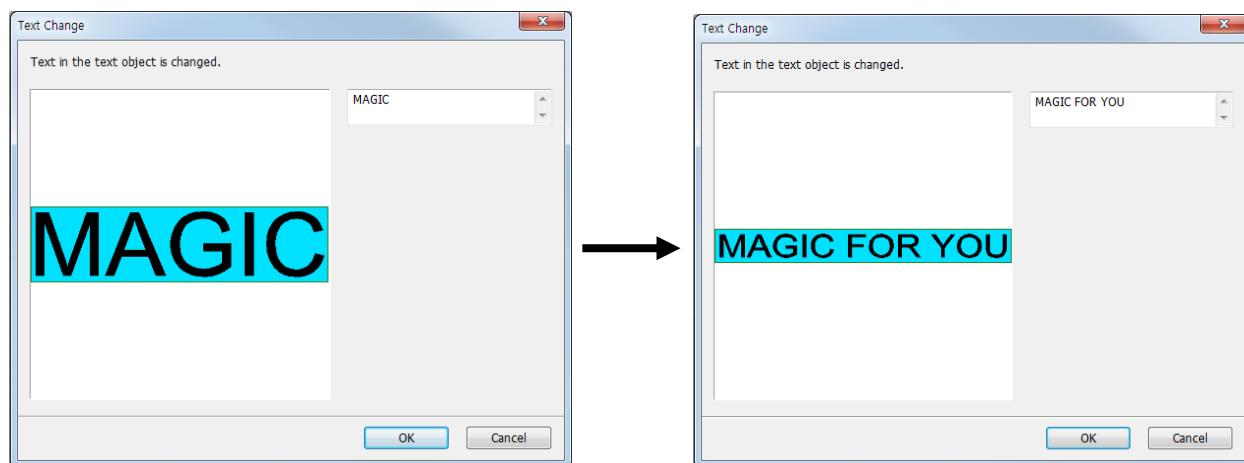
[Symbol]

Insert symbols.

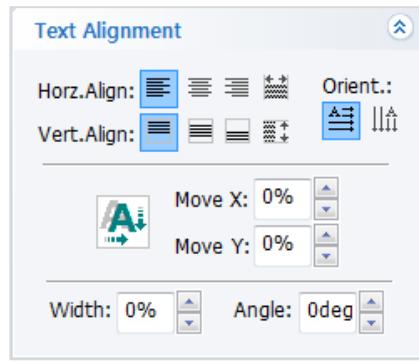


The entered text of the selected object can be displayed and changed. Edit the text on the text field or

press  button to change the text more easily when several text objects are selected.

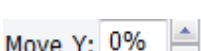
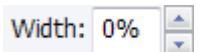
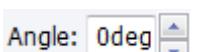


MAGIC FOR YOU



[Align]

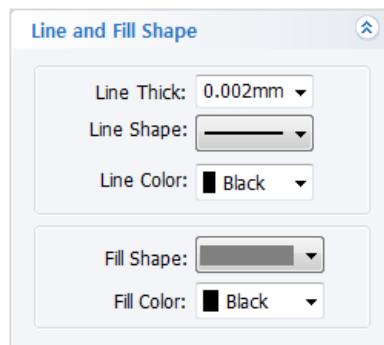
	Align characters to the left in the text box.
[Align to left]	
[Align to center]	
[Align to right]	
[Both]	
[Align to top]	
[Align to center]	

 [Align to bottom]	<p>Align characters to the bottom in the text box.</p> 
 [Horizontal text]	<p>Arrange characters horizontally.</p> 
 [Vertical text]	<p>Arrange characters vertically.</p> 
 Move X: 0%	<p>Move the selected character horizontally (left, right).</p> 
 Move Y: 0%	<p>Move the selected character vertically (up, down).</p> 
 Width: 0%	<p>Adjust the width of the selected character.</p> 
 Angle: 0deg	<p>Rotate the selected character.</p> 



[Position/Size]

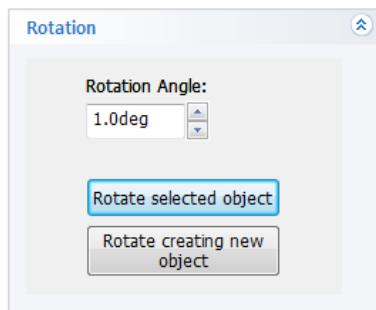
X: -50.09mm Y: -15.18mm	Location of the selected object
X: 40.20mm Y: 3.74mm	Size of the selected object
<input checked="" type="checkbox"/> Keep Ratio	When "Keep Ratio" is checked, width and height of the selected object is maintained at the same rate. When "Keep Ratio" is un-checked, width and height of the selected object is adjusted separately.



[Line and Fill Shape]

0.002mm	Line thickness of the selected object
—	Line type of the selected object
■ Black	Line color of the selected object
■	Color filled inside of the selected object
■ Black	Type filled inside of the selected object

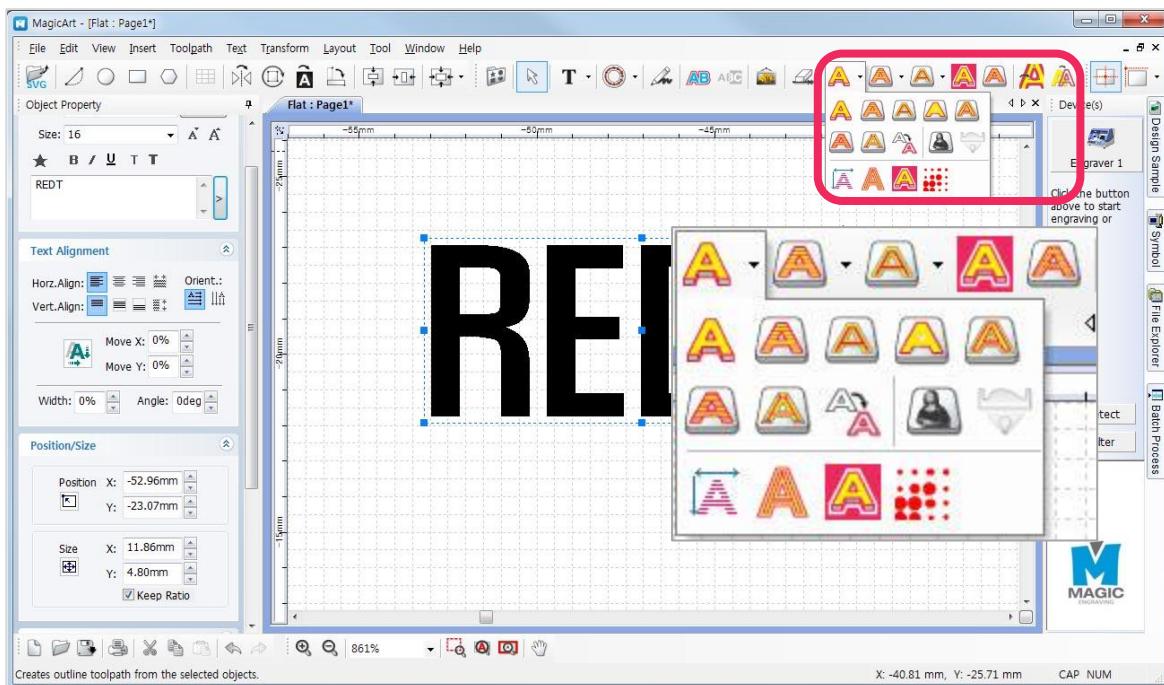
3. Rotation tool property



[Rotation]

<input type="text" value="1.0°"/>	Rotate the selected object by designated degree. Enter the desired angle of rotation, and then press arrow button. The object is rotated by the angle entered.
<input type="button" value="Rotate selected object"/>	Rotate the selected object at the same degree as entered.
<input type="button" value="Rotate creating new object"/>	Rotate and add a new object at the same degree as entered

4. How to engrave for each toolpath



Toolpath?

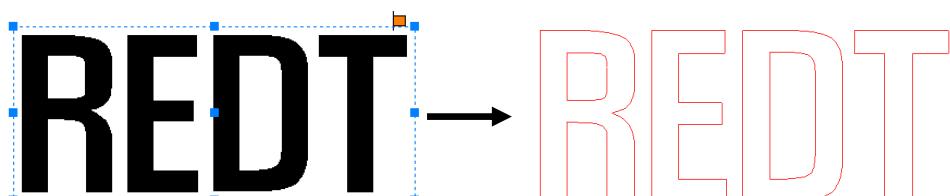
Toolpath is a pathway where tool goes by for engraving.

Toolpath is usually displayed in red color and engraving tool moves on the pathway as it engravess.



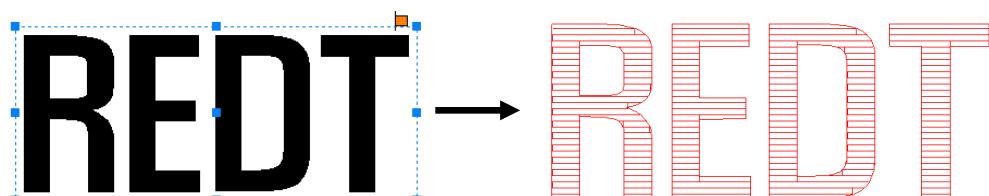
[Outline toolpath]

Creates a toolpath that will engrave the selected object's border.



[Hatching toolpath]

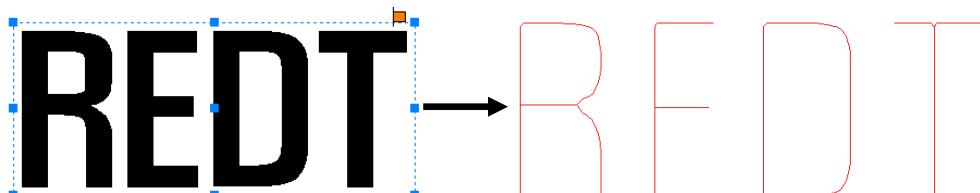
Creates a toolpath that will engrave inside of the selected object.





[Single line toolpath]

Creates a toolpath that will engrave the center line of the selected object.

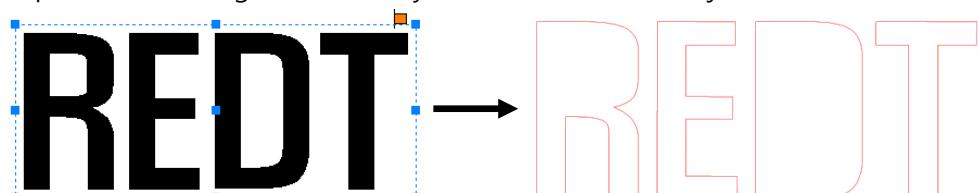


**"Single line toolpath" process may cause the line deviated.
Thus, it is recommended to use thinner lined font to reduce the deviation.**



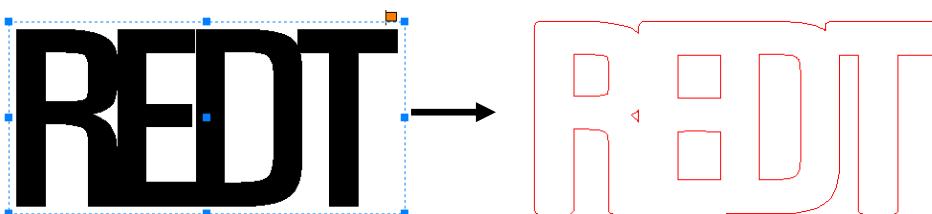
[Boundary-line toolpath]

Creates a toolpath that will engrave boundary line of the selected object.



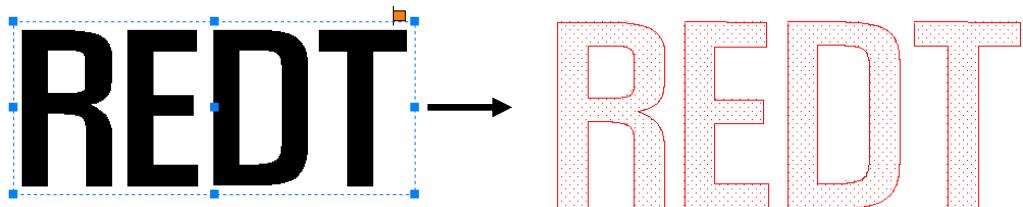
[Cut-out toolpath]

Creates a toolpath that will cut out the selected object. The toolpath boundary will be wider than the selected object's boundary depending on the diameter of tool.



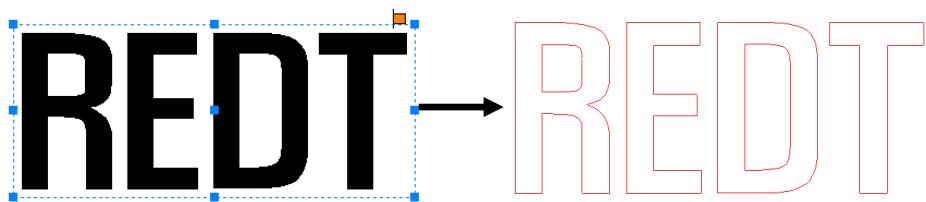
[Text impact engraving toolpath]

Creates a toolpath that will engrave inside of the selected object with dots.

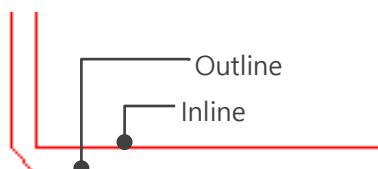


[Inline toolpath]

Creates toolpath that will engrave boundaries inside the selected object.

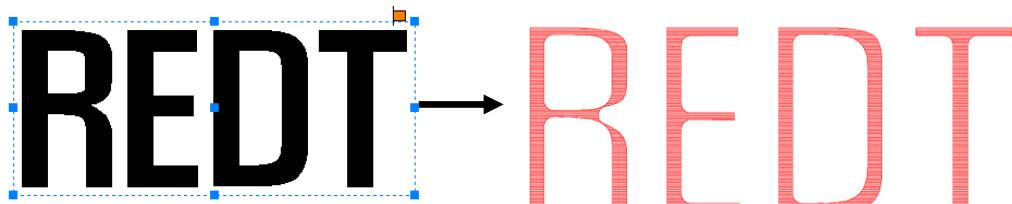


Notice The toolpath is created on inner line that is placed within boundary of the selected object.



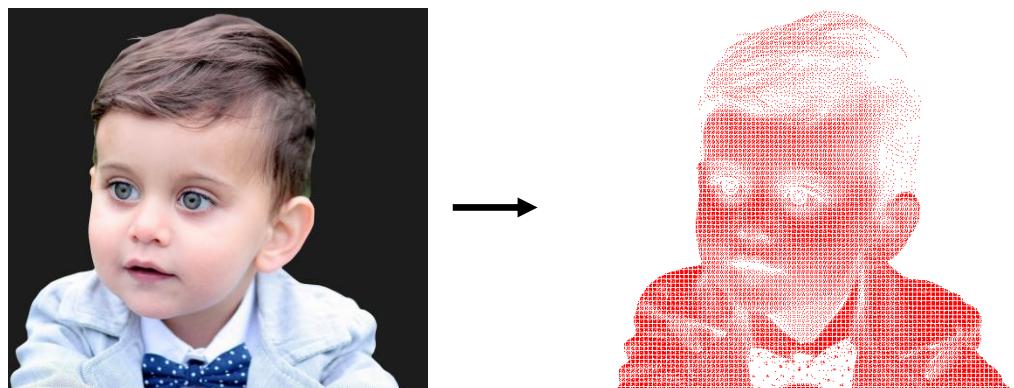
[V-cut toolpath]

Creates toolpath that will engrave using V-cut tool.



[Photo impact engraving toolpath]

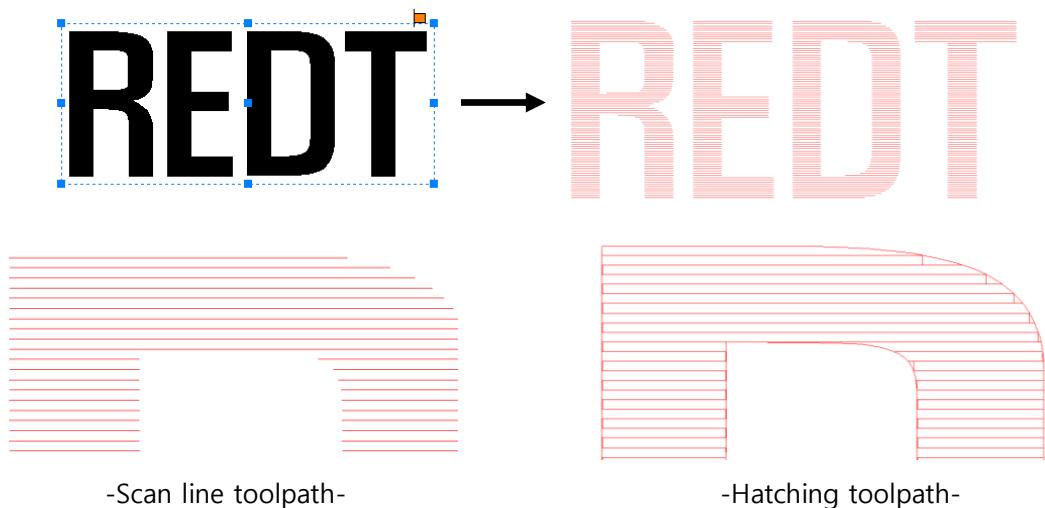
Creates a toolpath that will engrave image with dots.



[Scan line toolpath]

Creates toolpath that will engrave inside area of the target object's boundary.

"Scan line toolpath" might be similar to "Hatching toolpath", but it is rather used for logos, patterns or objects with larger area.

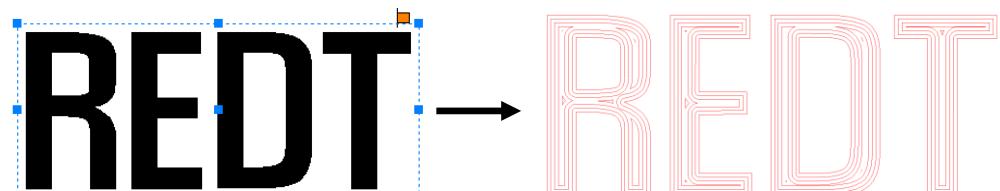


Better engraving quality is achieved by "Scan line toolpath" when engraving large area, but this may require more time in process.



[Contour line toolpath]

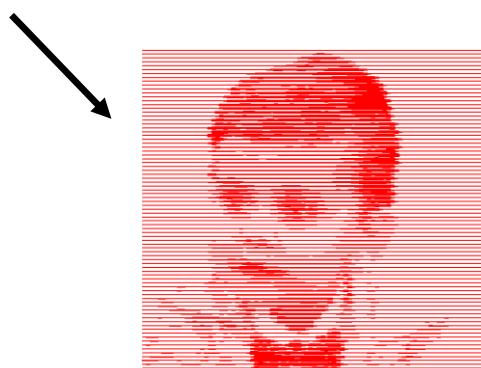
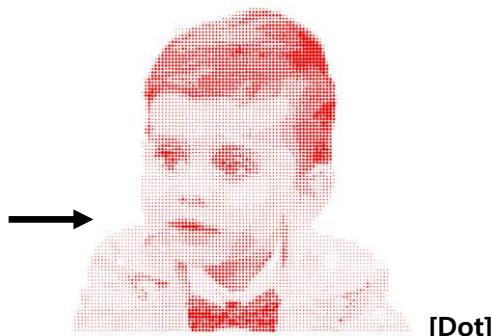
Creates a toolpath that will engrave the selected object with contour lines.





[Photo halftone engraving toolpath]

This converts an image into half-toned and engraves the object in dots or horizontal lines using V-cut tool. This process is only applied to models with rotating-spindle function like Magic 70, F350P, etc.



Half-toned engraving?

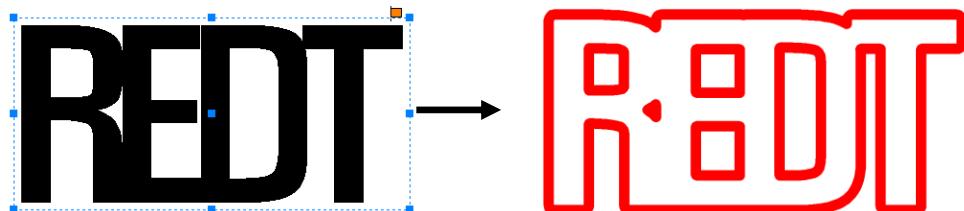
Note Half-toned engraving converts light and dark area of a picture or image into lines or dots with different sizes to express fine image.



[Simulate toolpath cut]

The prospected image of the toolpath outcome processed by the selected tool is shown.

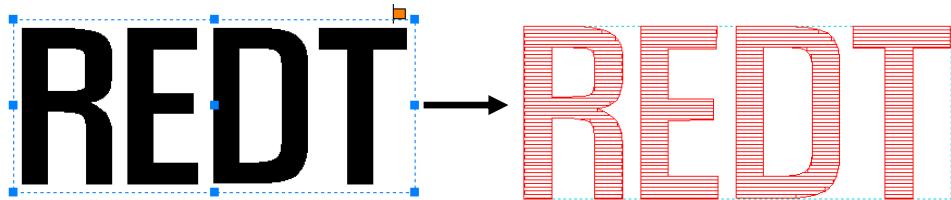
The following is an example of the cutting toolpath that uses 0.6mm endmill cutter.



[Show toolpath only]

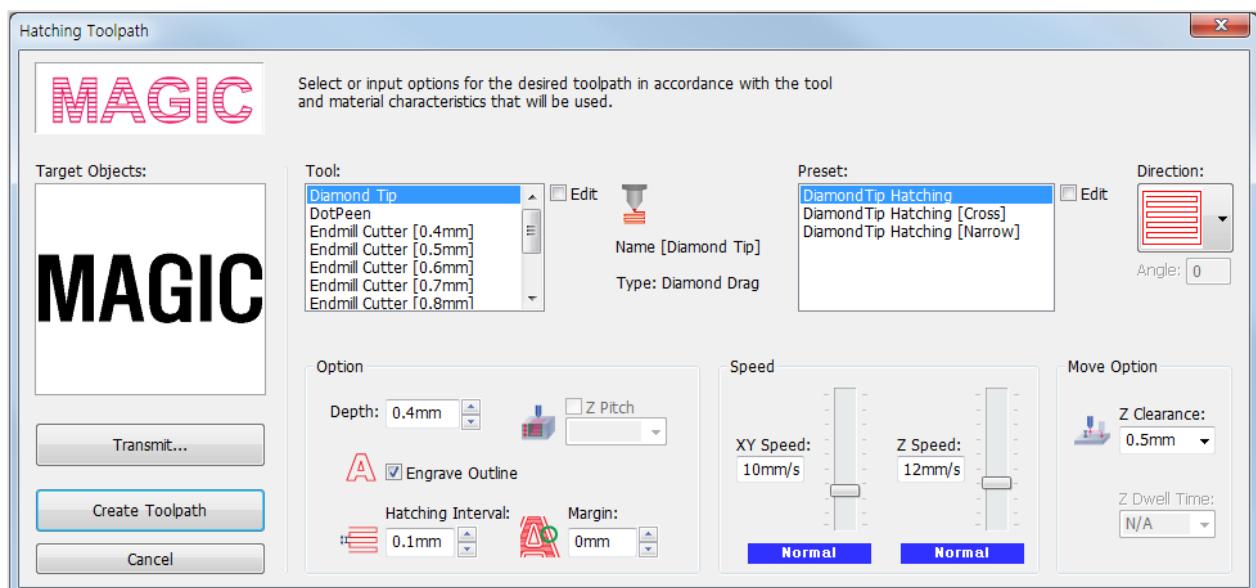
Only toolpath is shown on the screen with temperately masking all of other objects. If this button is

pressed once again, all objects will be seen again.



5. Create Toolpath

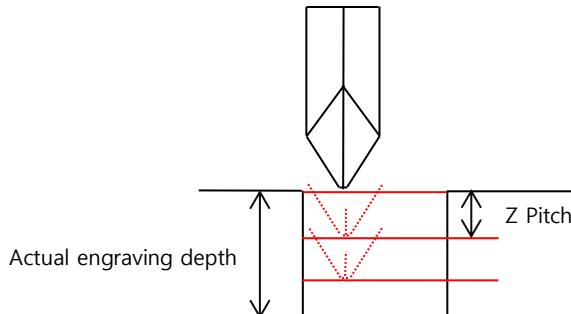
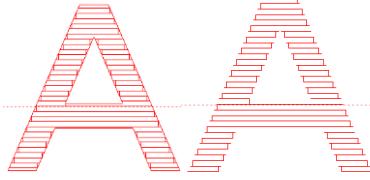
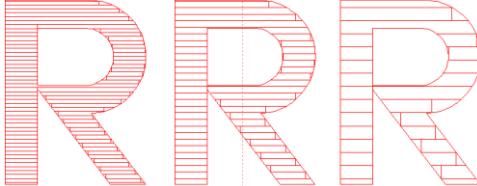
Hidden Object [Toolpath View]



Tools in [Tool] option may differ according to types of models.

Tool	Designate a tool to be used for engraving. Each tool setting value can be changed by pressing Edit or Add button.
Preset	Hatching gap, depth, engraving speed and others are pre-set for each engraving option. Therefore, it is not necessary to designate hatching gap, depth, engraving speed and others every time and they will be automatically set with their pre-set values. Each engraving option value can be changed by pressing Edit or Add button.
Direction	The followings are shown only on hatching tool path.  A tool path is created in the horizontal direction

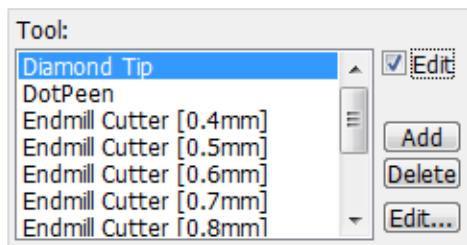
	   	A tool path is created in the vertical direction A tool path is created in the left diagonal direction A tool path is created in the right diagonal direction A tool path is created in the cross hatched direction * This toolpath is not recommended due to possible damage to materials with plated surface.
--	--	--

Option	Depth	<p>Engraving: It does not mean the actual engraving depth but refers to "applied pressure" and the higher depth value is, the bigger the applied pressure is.</p> <p>Cutting: Designate an engraving depth actually used for using rotation tools.</p>
	Z Pitch	When cutting the engraving depth little by little, designate the depth. When cutting thick materials with a thin tool, this option is necessary. 
	Engrave outline	If this option is un-checked, a toolpath for only the inside of the selected object is created. 
	Hatching interval	Designate hatching gap.  0.1mm 0.2mm 0.3mm
	Margin	Designate a margin between object outline and toolpath.

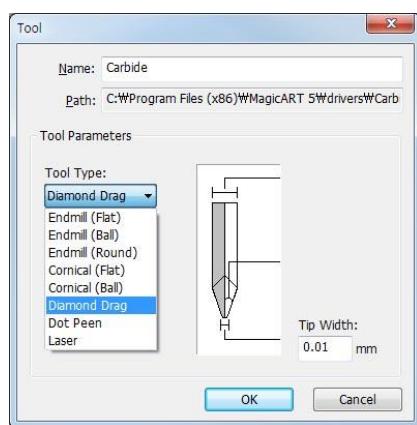
		<p>0.1mm 0.2mm 0.3mm</p>
Speed	XY speed	Designate a speed at which XY axis will move during the engraving.
	Z speed	Designate a speed at which Z axis will move during the engraving.
	Engraving speed is displayed in colors according to tools or engraving options.	
Fast Normal Slow		
Move Option	Z clearance	<p>This designates the height to be applied for the clearance between the tool and the surface of material when moving to other engraving location.</p> <p>When moving to another engraving location, it is necessary to lift Z axis to prevent the tool from contacting with the material surface before moving. For this, designate the height to be applied at this time.</p>
	Z dwell time	<p>This designates no-load rotation time of end-mill and V-cutter after they reach the target depth and before move to X, Y axis point.</p> <p>It is possible to damage the tool as rotation speed reduces while engraving, so set up the Z-dwell time to recover the full rotation speed before engraving.</p> <p>* Recommended time: 0.5 ~1 second.</p>
Transmit		Toolpath output window is displayed

(1) Tool: Add/Delete/Edit

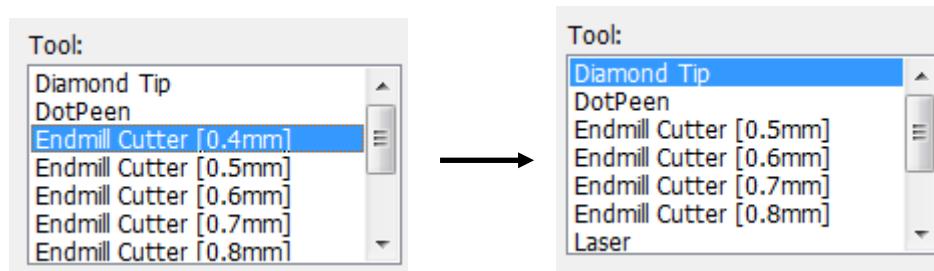
If "Edit" button is checked, Add/Delete/Edit buttons will appear.



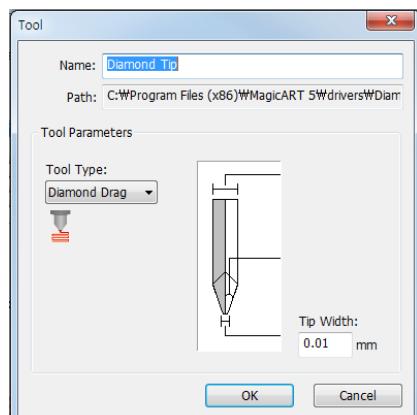
Add Designate the name of a tool to be added along with its type and other options like tip width, then click "OK" button. The tool will be added to the tool selection list.



Delete Select a tool from the list and click "Delete" button to delete the selected tool from the list.

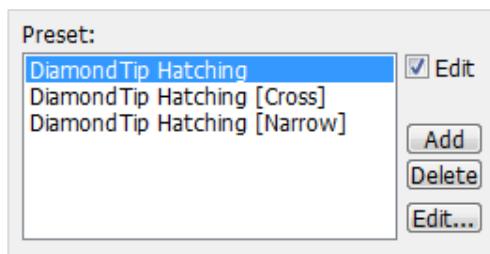


Edit... Select a tool for modifying and click "Edit" button. If "OK" button is clicked after option is modified, the modified value will be saved.

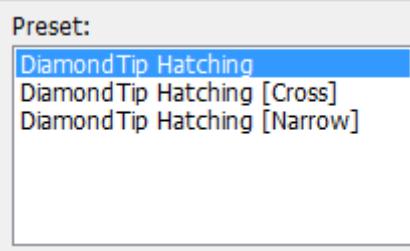
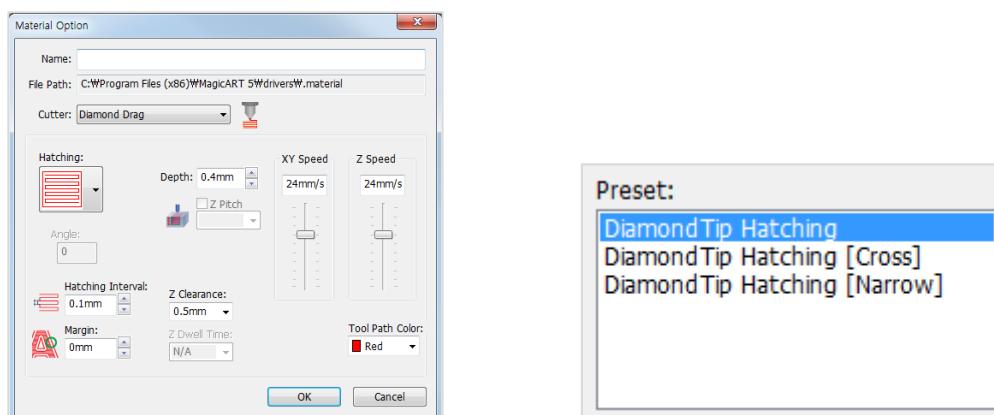


(2) Engraving Option: Add/Delete/Edit

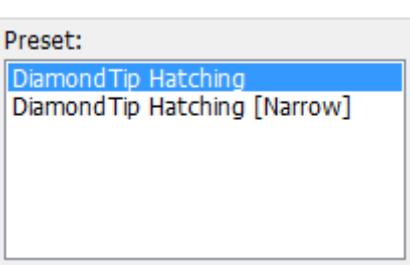
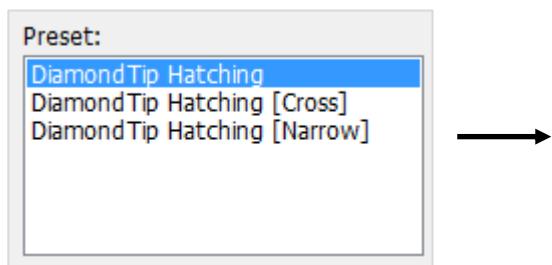
If "Edit" button is checked, Add/Delete/Edit buttons will appear.



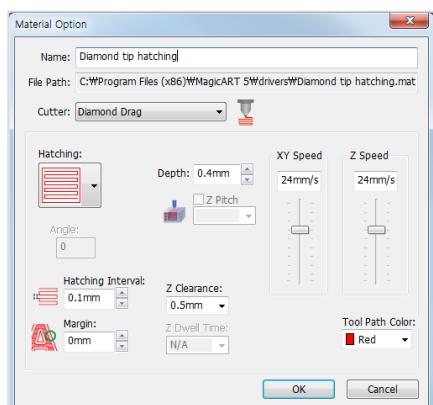
Add Enter a name to the engraving option setting window and designate hatching gap, engraving depth and speed before clicking "OK" button. The option will be added to the engraving option selection list.



Delete Select an option to be deleted and click "Delete" button to delete the option from the list.

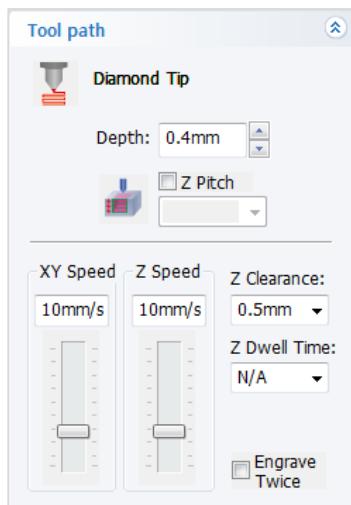


Edit... Select an option to be modified and click "Edit" button. If "OK" button is clicked after option is modified, the modified setting value will be saved.



6. Toolpath object property

If toolpath object is selected, the toolpath object property window will appear on the left of the screen to allow the user to adjust its depth and speed once again.

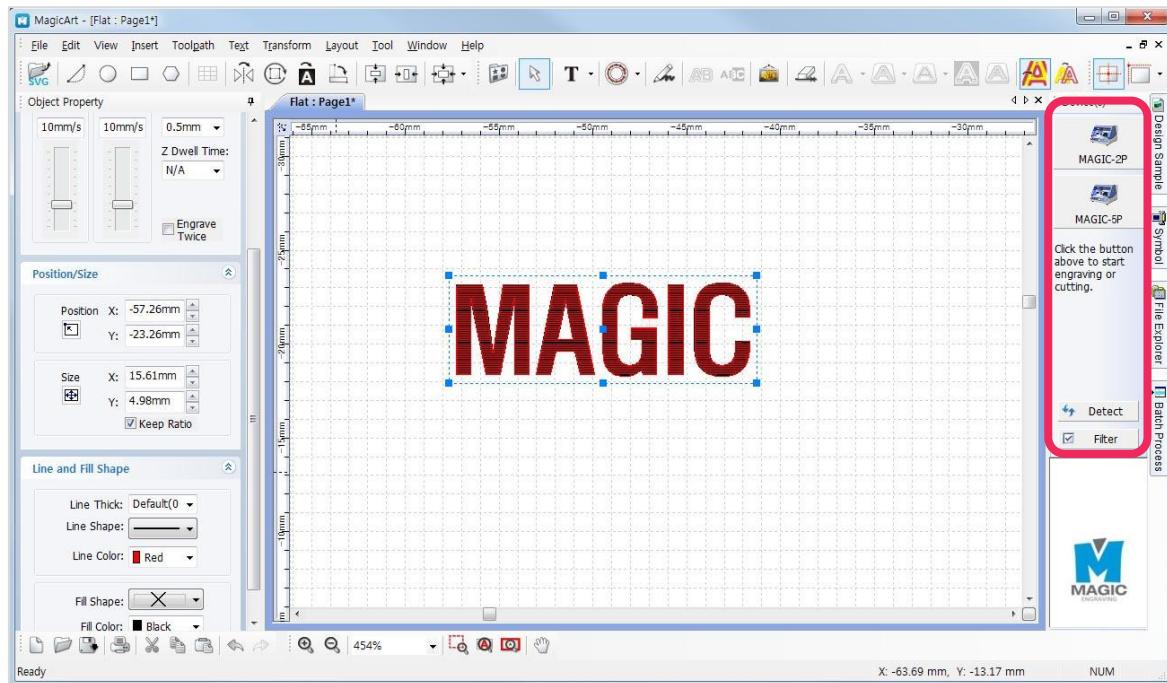


Depth	<p>Engraving: It does not mean the actual engraving depth but refers to "applied pressure" and the higher depth value is, the bigger the applied pressure is.</p> <p>Cutting: Designate an engraving depth actually used for using rotation tools.</p>
Z pitch	<p>When cutting the engraving depth little by little, designate the depth. When cutting thick materials with a thin tool, this option is necessary.</p>
XY speed	Designate a speed at which XY axis will move during the engraving.
Z speed	Designate a speed at which Z axis will move during the engraving.
Z clearance	<p>This designates the height to be applied for the clearance between the tool and the surface of material when moving to other engraving location.</p> <p>When moving to another engraving location, it is necessary to lift Z axis to prevent the tool from contacting with the material surface before moving. For this, designate the height to be applied at this time.</p>

Z dwell time	<p>This designates no-load rotation time of end-mill and V-cutter after they reach the target depth and before move to X, Y axis point.</p> <p>It is possible to damage the tool as rotation speed reduces while engraving, so set up the Z-dwell time to recover the full rotation speed before engraving.</p> <p>*Recommended time: 0.5 ~1 second.</p>
Engrave twice	Engrave the design twice.

7. NC data output

Select toolpath and click engraver button on the top-right of screen to transfer the selected toolpath to the engraver.

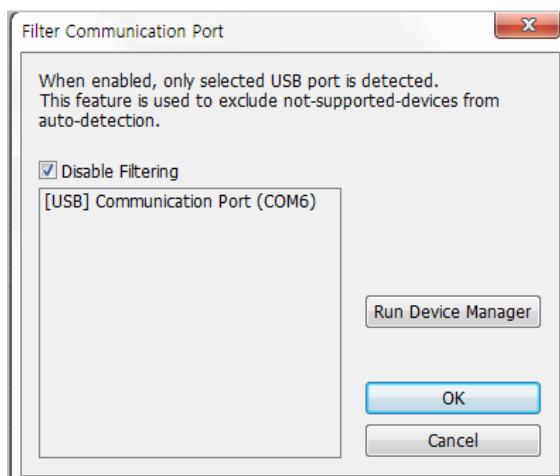


When the engraver is identified, the model name will appear on the button.

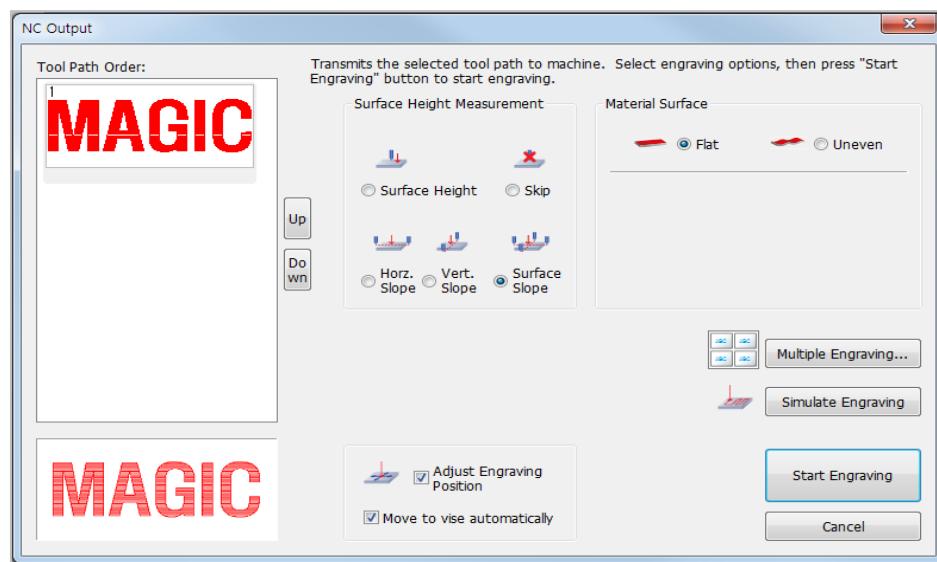
"NC output" window appears when this engraver button is clicked.

When engraver detection problem is met, click this button to retry the detection.

This button is to exclude other models connected to the computer. Select the communication port to be excluded and click OK.



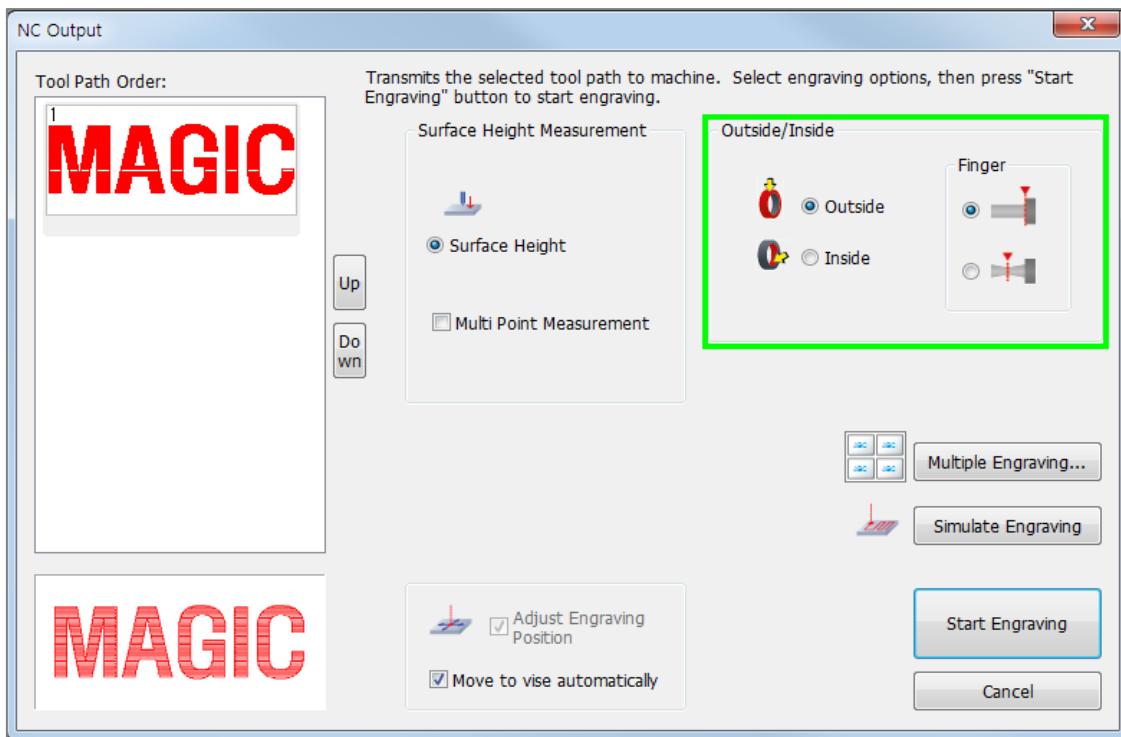
On the NC output window, select a measuring method and other options, then click "Start Engraving" button to start transferring the toolpath to the selected engraver.



Toolpath order		When two or more toolpaths are selected for engraving, they will be placed in order. The order can be adjusted by [Up], [Down] button on the right.
	Surface height	Measure material height only.
	Horizontal slope	Measure material's horizontal gradient.
Surface height measurement	Vertical slope	Measure material's vertical gradient.
	Surface slope	Measure material's top, bottom, left and right gradient.
	Skip	Do not measure its height. In this case, the previously measured height is used. If the material is not removed from the clamp during the previous engraving work, the measuring time can be saved with this option.

Material surface	Flat	Engraves flat-surfaced materials.
	Uneven	Engraves uneven-surfaced materials.
Multiple engraving		Engraves materials repeatedly in constant vertical/horizontal gap. * Usually optional vise is used for this automatic engraving.
Simulate engraving		This displays engraving simulation on the material by using laser pointer to assure its correct pathway.
Adjust engraving position		Designate whether to re-adjust the engraving location. If this option is selected, the laser pointer will be turned on to allow the user to adjust the engraving location before engraving. If this option is not used, engraving will initiate immediately.
Move to vise automatically		Automatically moves to the flat or rotating vise in accordance with selected template.

* "NC output" window when selecting ring template.



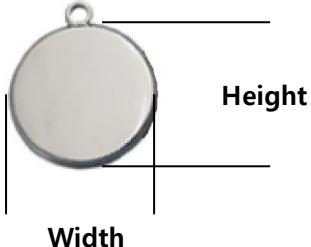
Surface height	Measure material height.
Multi-point-measurement	Measure material height by dividing the whole material into several parts(up to 5 times)
Outside	Engrave on the ring's outer diameter.
Inside	Engrave on the ring's inner diameter.
	Place the material to the flat chuck finger.
	Place the material to the round chuck finger.

Engraving Process

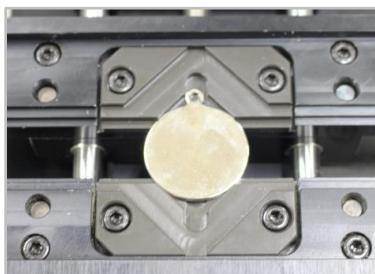


Tool: Tip

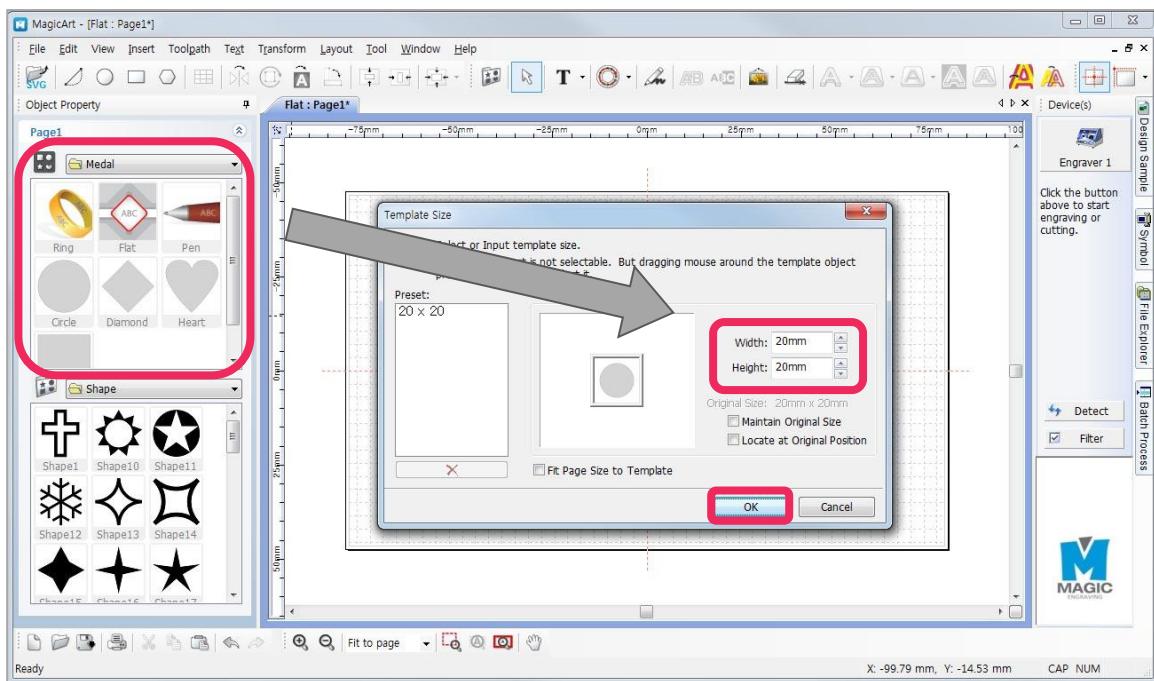
1. Measure material to be engraved.

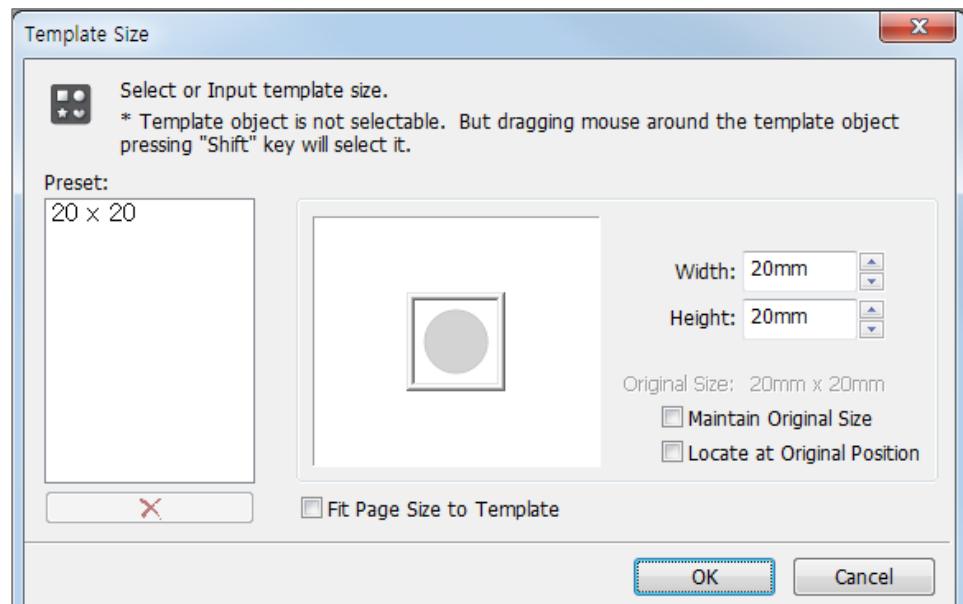


2. Fix a material to be engraved to the center of clamp.



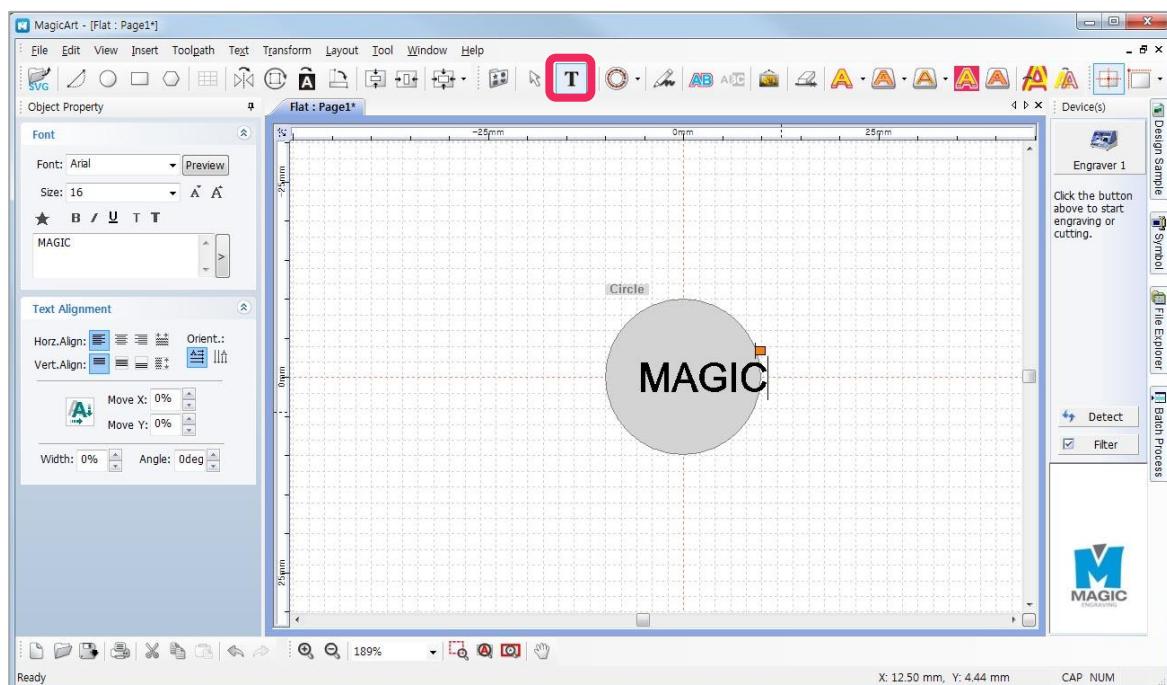
3. Select the template, the most similar to the material to be engraved from the template category and enter the size of the material before clicking "OK" button.



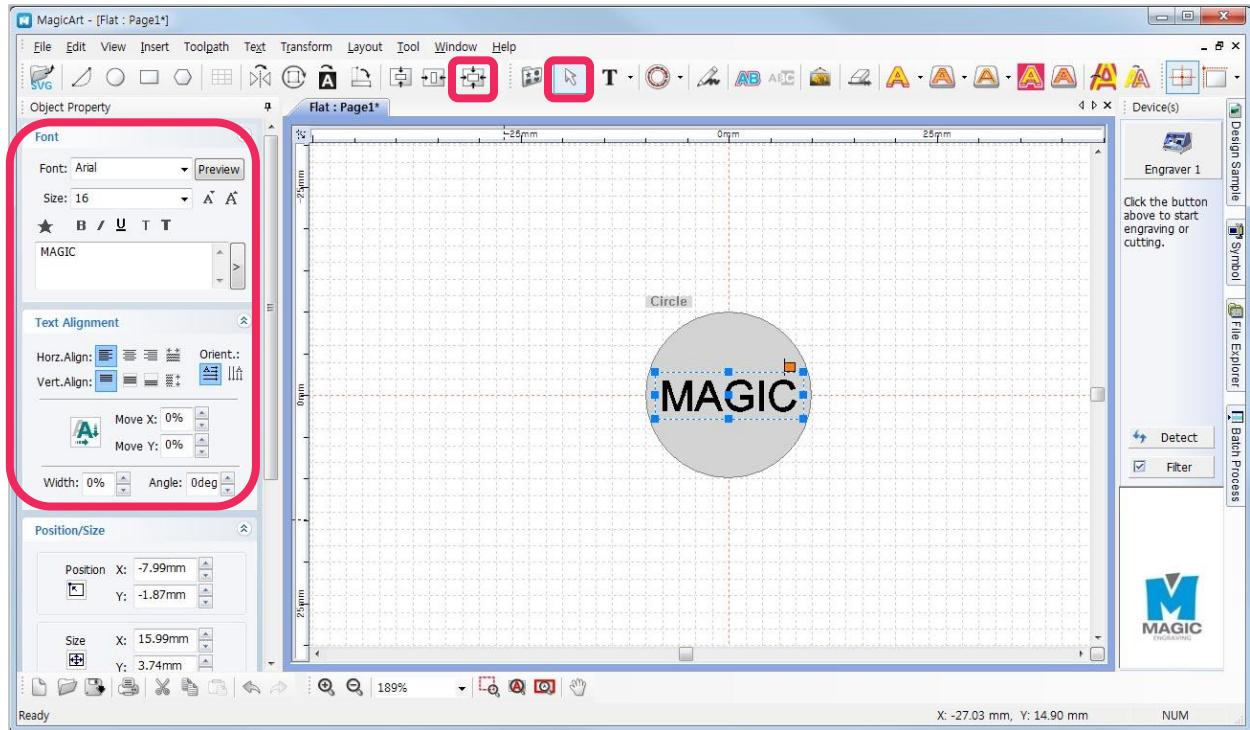


Maintain original size	Uploads actual size of registered template, not the size input by the user.
Locate at original position	The template is uploaded where it was initially created. Without this option, the template is uploaded at the center of work area.
Fit page size to template	Adjust the size of page same as the template.

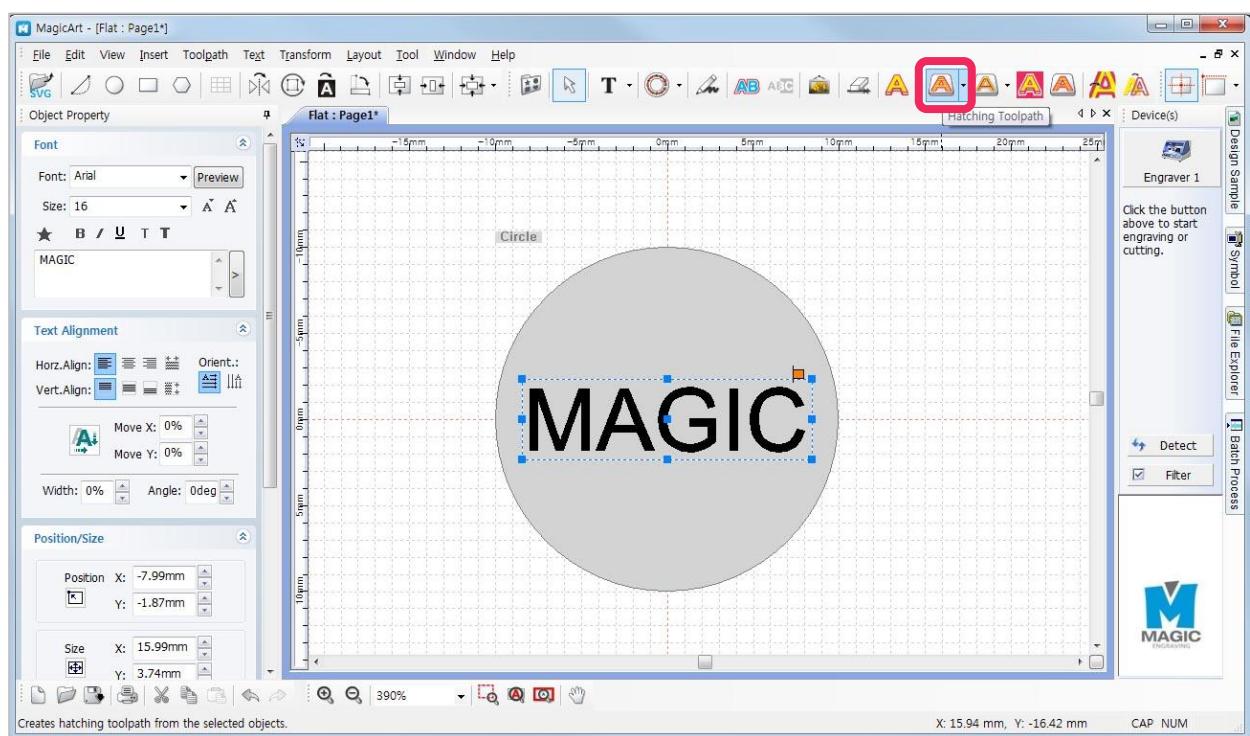
4. Once the template appears, press [Text input] and click any target location with the mouse to enter text.



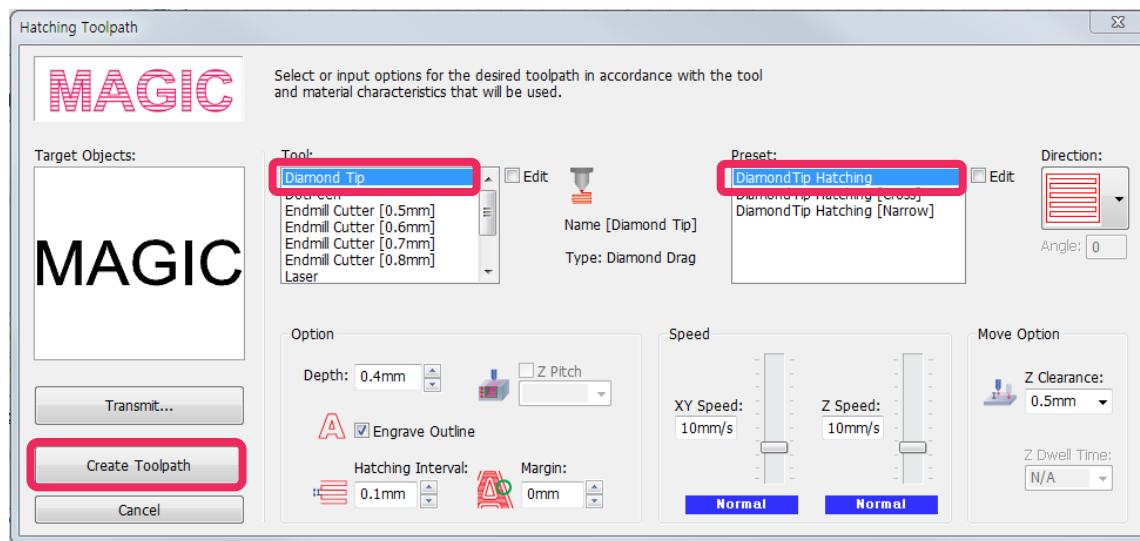
5. Once entering text is completed, press [Selection] on toolbar and enter the object selection mode to select the entered text. Then, edit the size, font and thickness of the object. If you want to allocate the object at the center of the work area, click [Center in page] button.



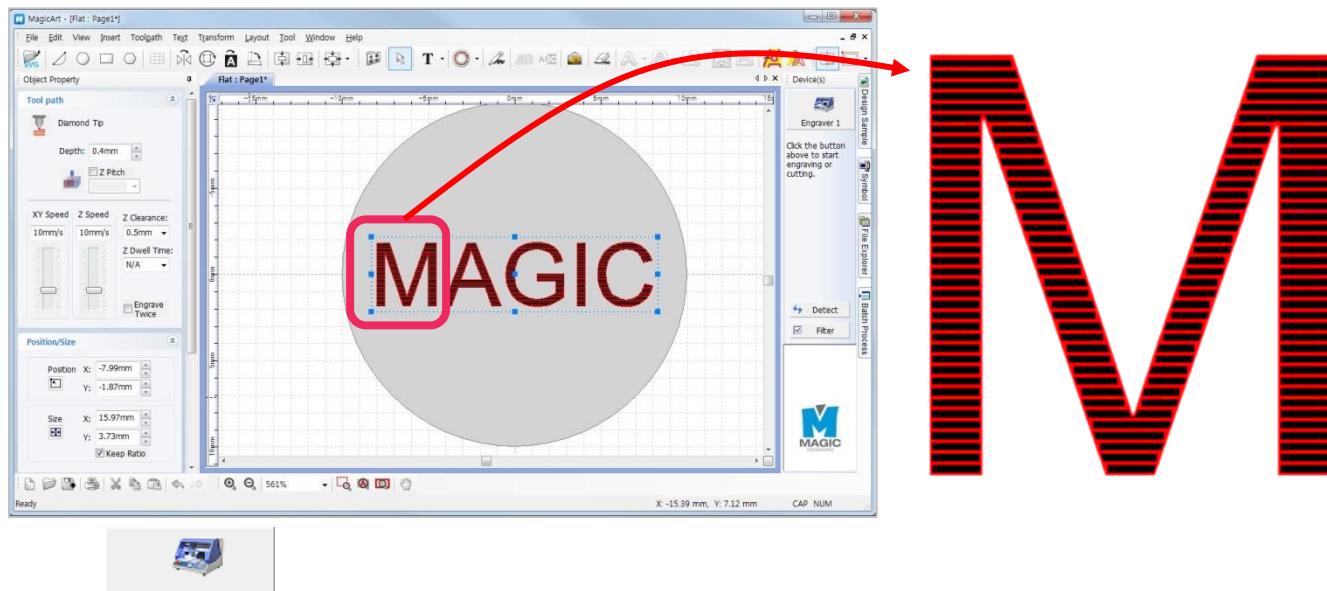
6. Once the design is completed, click [Hatching toolpath].



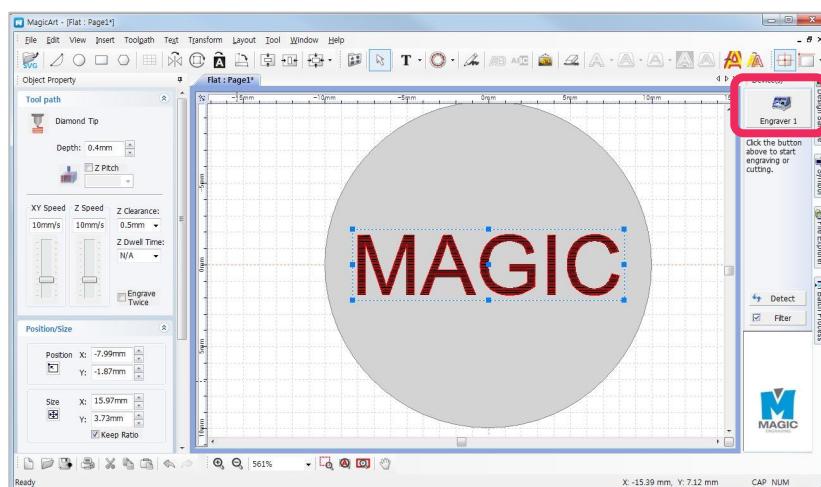
7. Select an engraving option and tool from "Hatching Toolpath" window and if necessary, designate gap and depth before clicking "Create Toolpath" button.



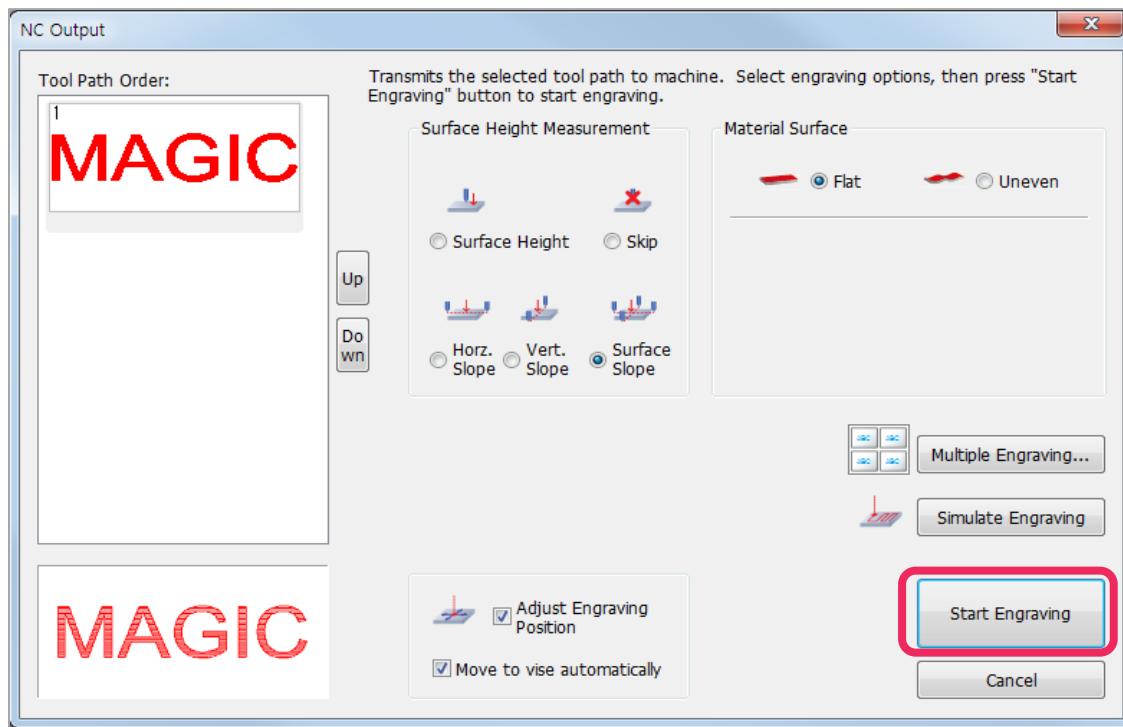
8. Toolpath object is created.



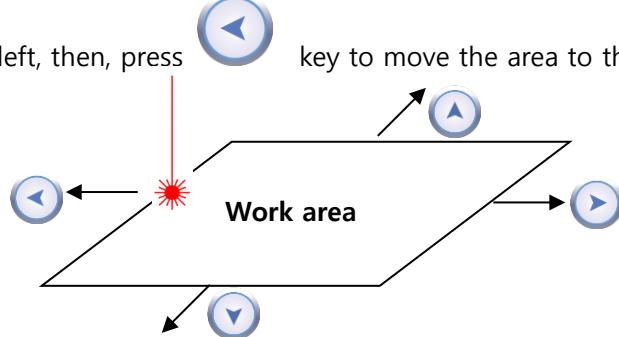
9. Click _____ button.



10. Once "NC Output" window appears, specify how to measure the engraving materials. And then, click "Start Engraving" button.



11. Once the tool is moved to the center of the material and located, the engraving area can be verified and adjusted by using the direction key button. At this time, check the laser pointer while moving it for easier measurement and adjustment.

	<p>Whenever the direction key is pressed, move the laser pointer to the left, top, right and bottom of the engraving area to show the area to be engraved. Check whether the area to be engraved is outside of the materials surface. If so, adjust the location by using the direction key.</p>
	<p>The laser pointer moves the area to be engraved to the left, top, right or bottom according to current location. If the current location of the laser pointer is left, then, press  key to move the area to the left.</p> <div style="text-align: center;">  </div>

12. After the location of engraving is decided, press and hold  button until it beeps (more than 3 seconds) to start the engraving and close the engraver cover.

Engraving Process of Ring inner/outer Diameter

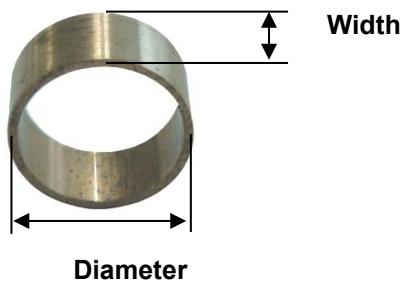


Tool: Tip

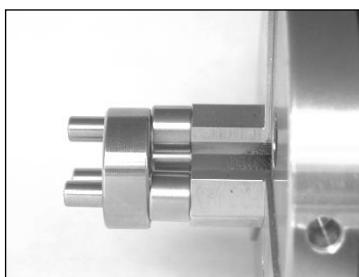
Clamp: Rotation clamp

◆ Preparation

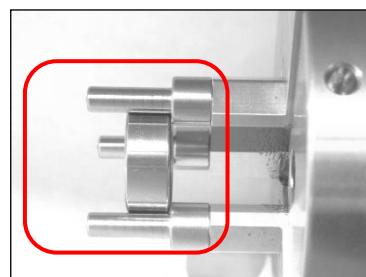
1. Measure the width and diameter of a ring to be engraved.



2. Insert the ring into the chuck finger as below, and tighten the rotation clamp to set it.



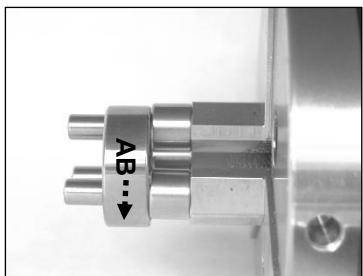
[Outer diameter engraving]



[Inner diameter engraving]

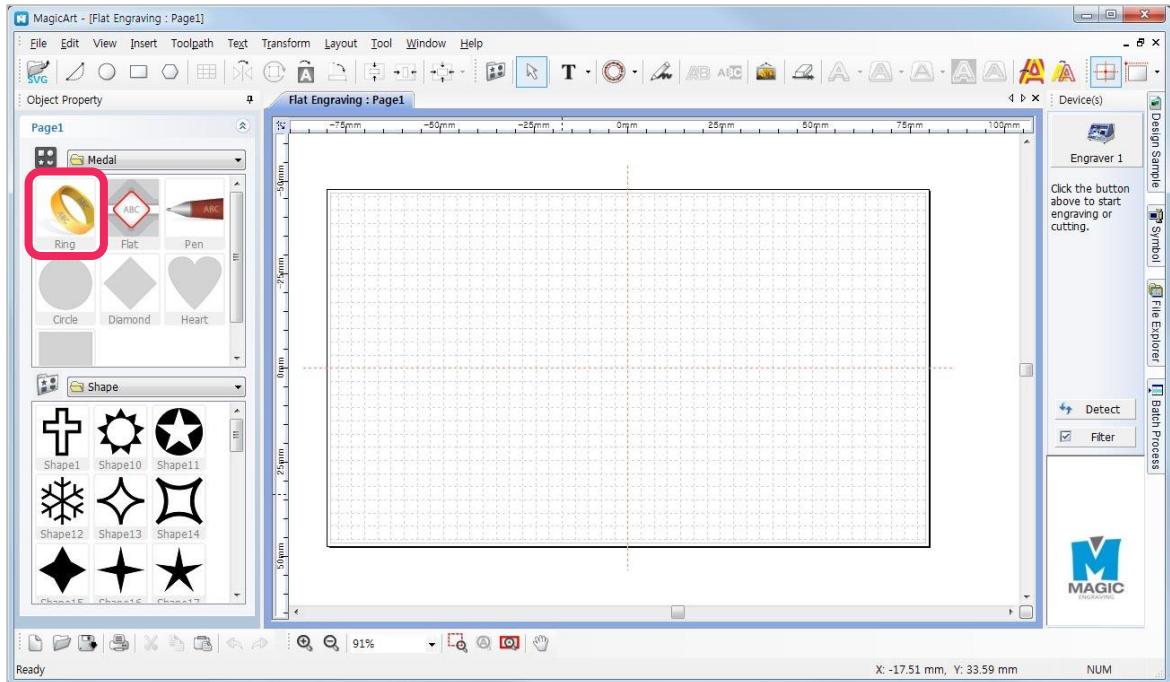


Since the engraving direction is as shown in the picture below, mind the direction of the material and set it.

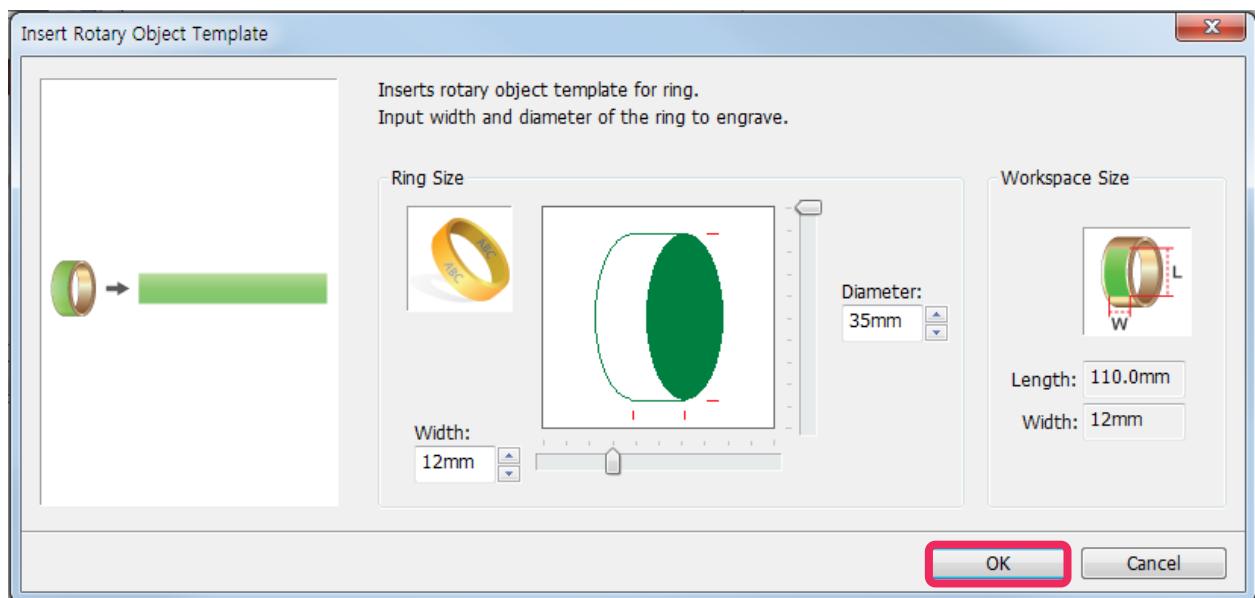


◆ Program Process

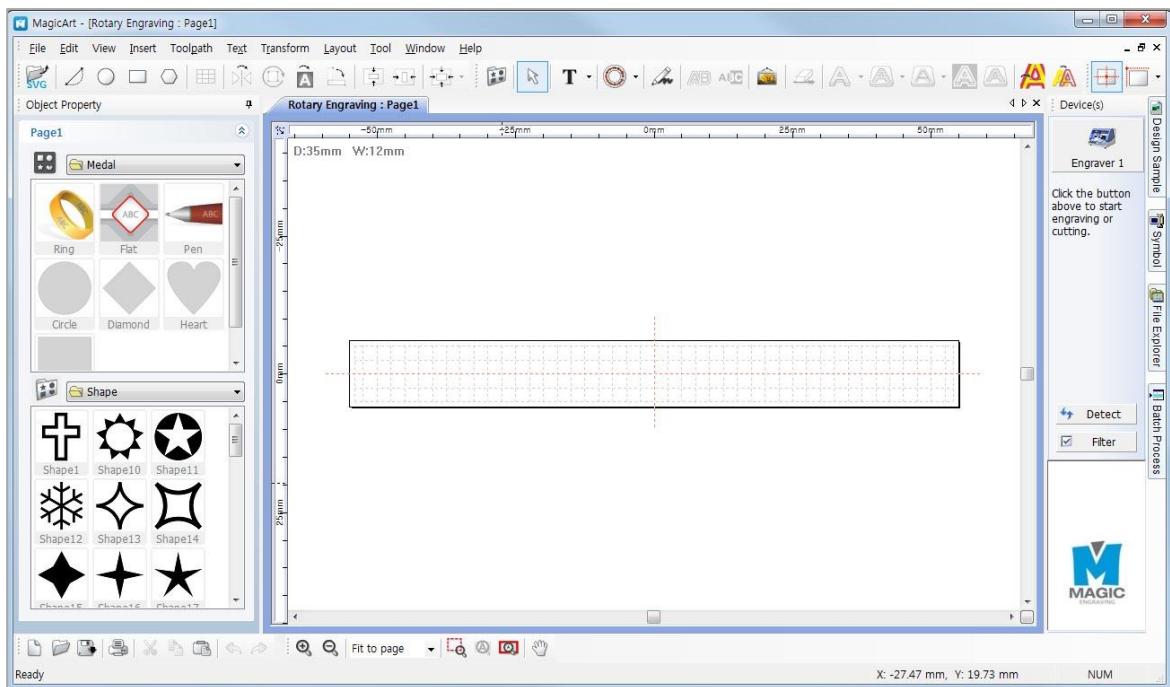
1. Double click "Ring" template in the object property window.



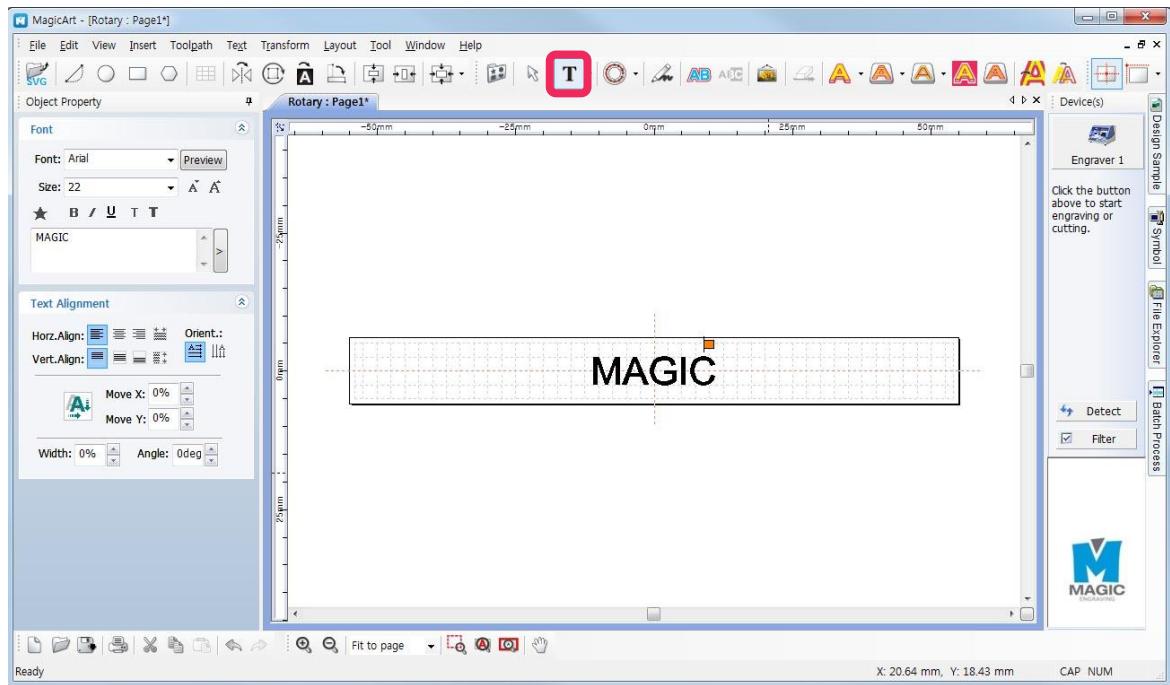
2. When "Insert Rotary Object Template" window appears, enter the measured width and diameter of the ring and click "OK."



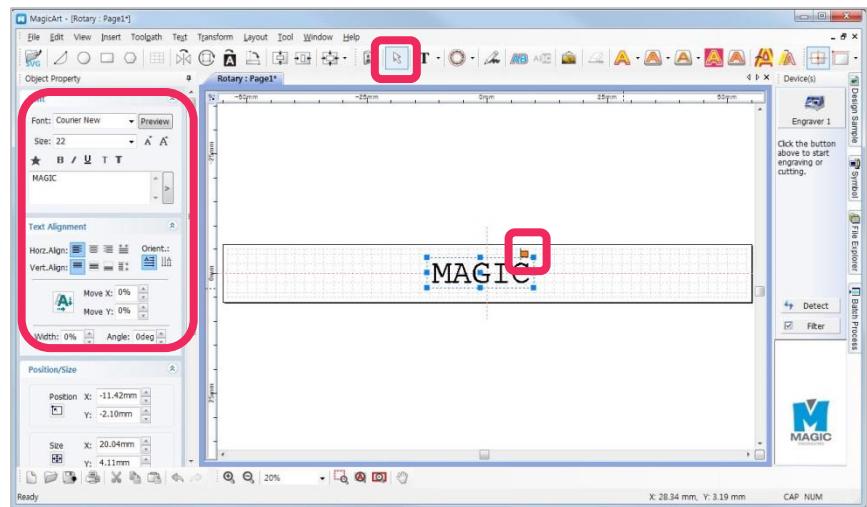
3. The template appears at the center of the screen.



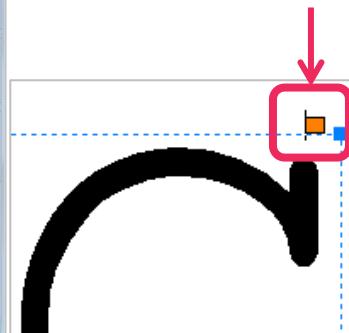
4. Select **T** [Text Input] on the toolbar, and click the work area using mouse and enter text to be engraved.



5. After entering text, press [Selection] on the toolbar to enter the object selection mode. Select the text, and edit the size and font of the object. To place the object at the center of the work area, click [Center in Page] button.



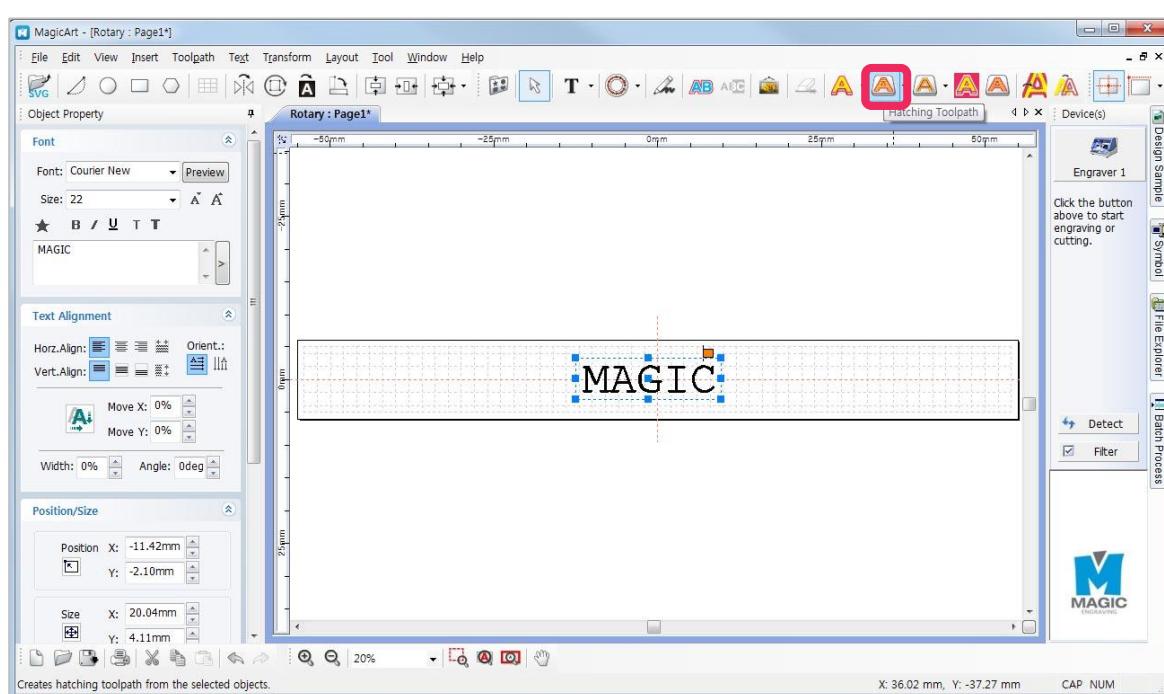
Handle to adjust character gap



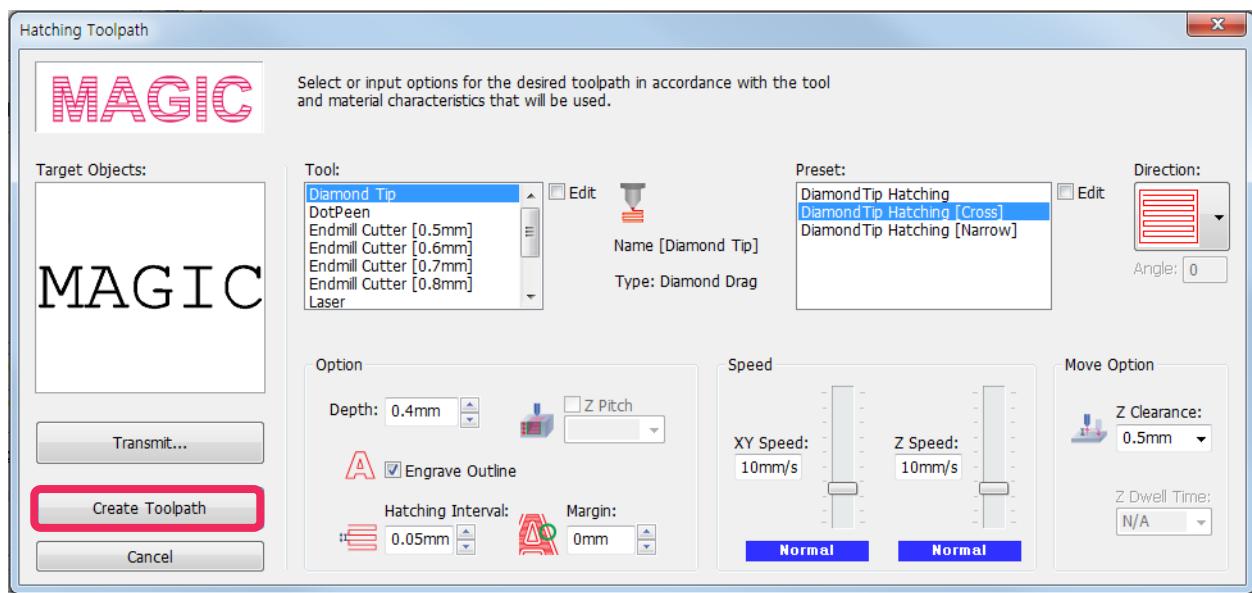
Handle adjusting gaps between characters?

A function adjusting gaps between characters by dragging characters to target positions.

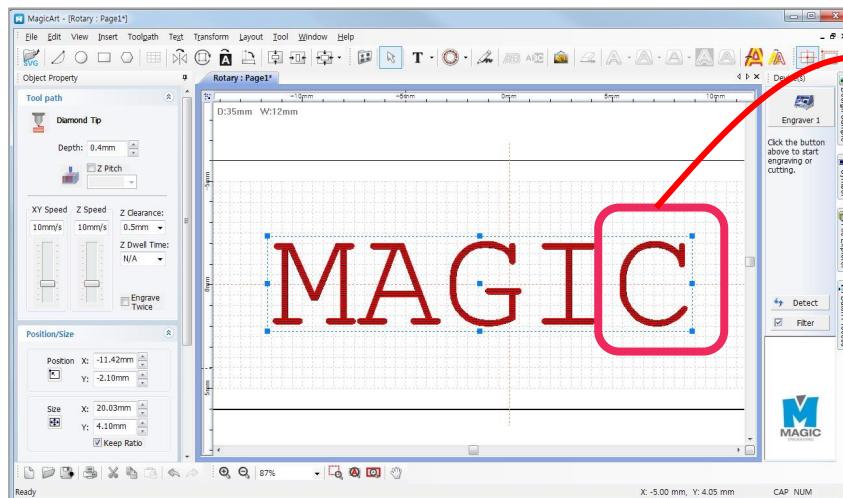
6. Once design is completed, click [Hatching Toolpath] button.



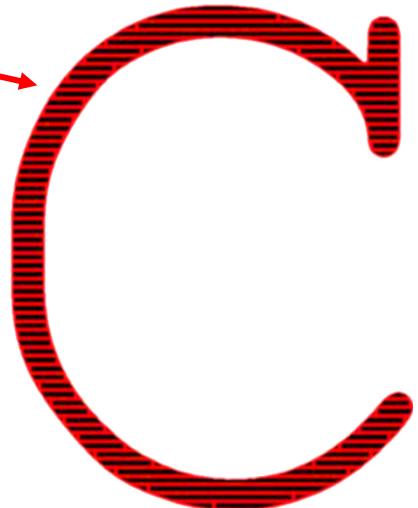
7. Once "Hatching Toolpath" window appears as shown in the picture below, select tool, toolpath gap and depth, and click "Create Toolpath" button.



8. The "Toolpath" object is created as below and usually marked with red line on the screen. Scroll the mouse wheel to enlarge the toolpath object, and if it is not the desired toolpath, delete the toolpath and create it again by adjusting the toolpath option.

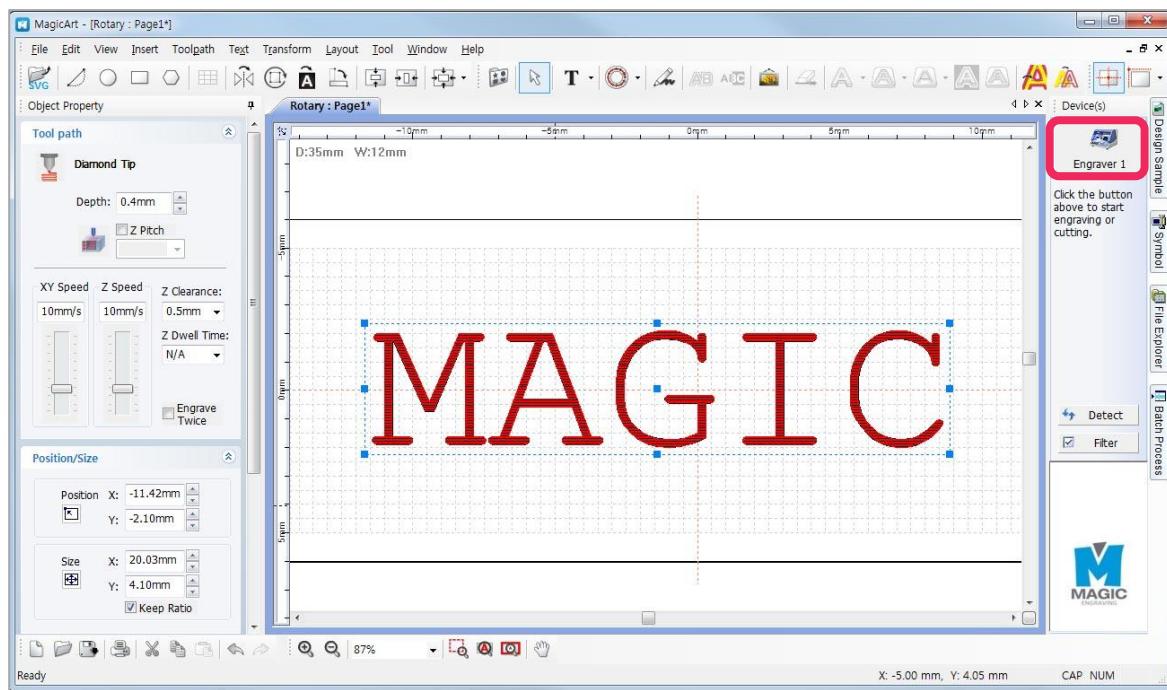


[Toolpath creation]

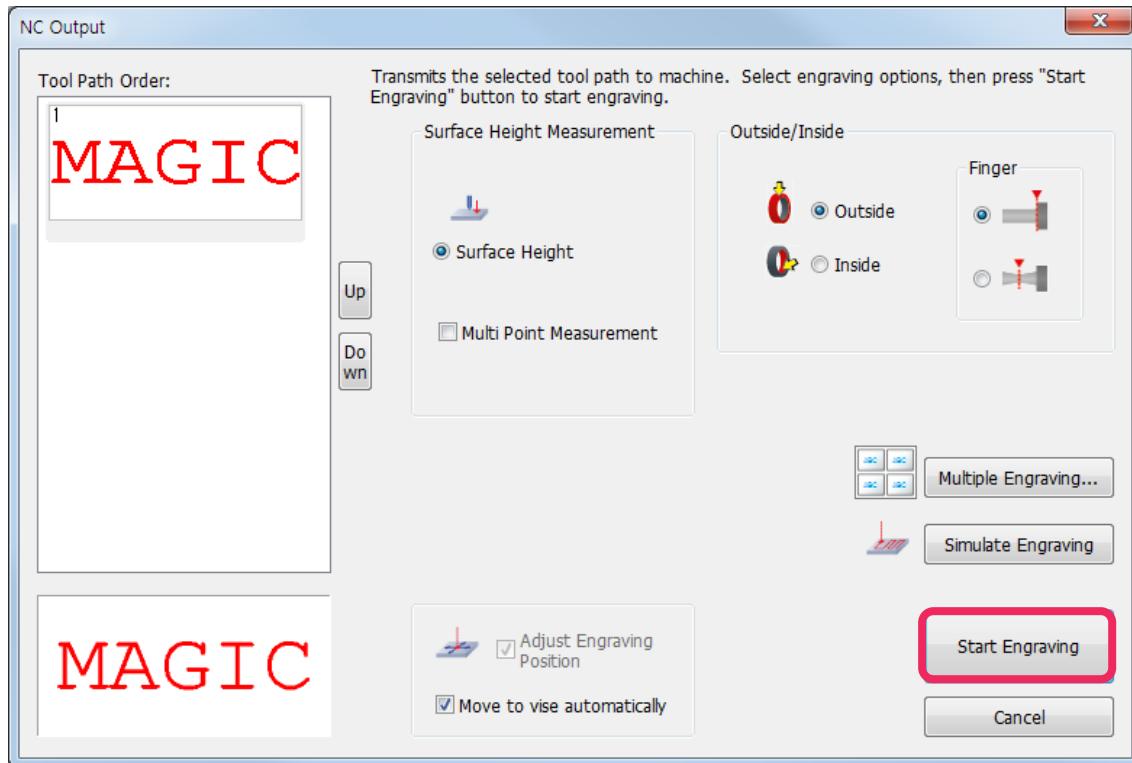




9. After selecting one or more created toolpaths, click _____ button.

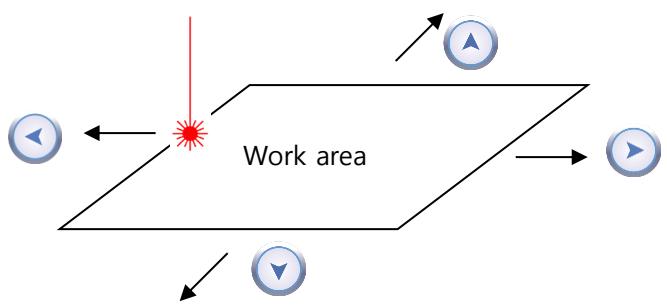


10. Once "NC Output" window appears, specify how to measure the engraving materials. And then, click "Start Engraving" button.



	Measure material height.
Surface height	
Multi point measurement	Measure material height by dividing the whole material into several parts(up to 5 times)
Outside	Engrave on the ring's outer diameter.
Inside	Engrave on the ring's inner diameter.
	Set the material to the flat chuck finger.
	Set the material to the round chuck finger.

11. Once the tool is moved to the center of the material and stopped, the engraving area can be verified and adjusted by using the direction key button. At this time, check the laser pointer while moving it for easier measurement and adjustment.

	Whenever the direction key is pressed, move the laser pointer to the left, top, right and bottom of the area to show the area to be engraved. Check out whether the area to be engraved is out of the materials surface. If so, adjust the location by using the direction key.
	The laser pointer moves the area to be engraved to the left, top, right or bottom according to current location. If the current location of the laser pointer is on the left, then, press  key to move the area to the left. If you want to check the engraving area on the ring inner diameter, the laser pointer shows the outside of the ring for the ring engraved inside. 

12. After location of engraving is designated, press and hold  button until it beeps (more than 3 seconds) to start the engraving and close the engraver cover.

Photo Engraving



What is photo engraving?

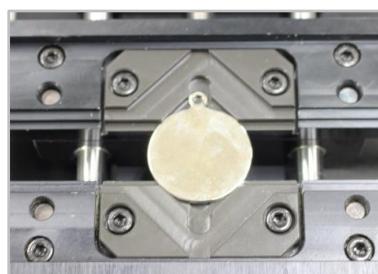
This is an engraving method to display the shade of image with dots.



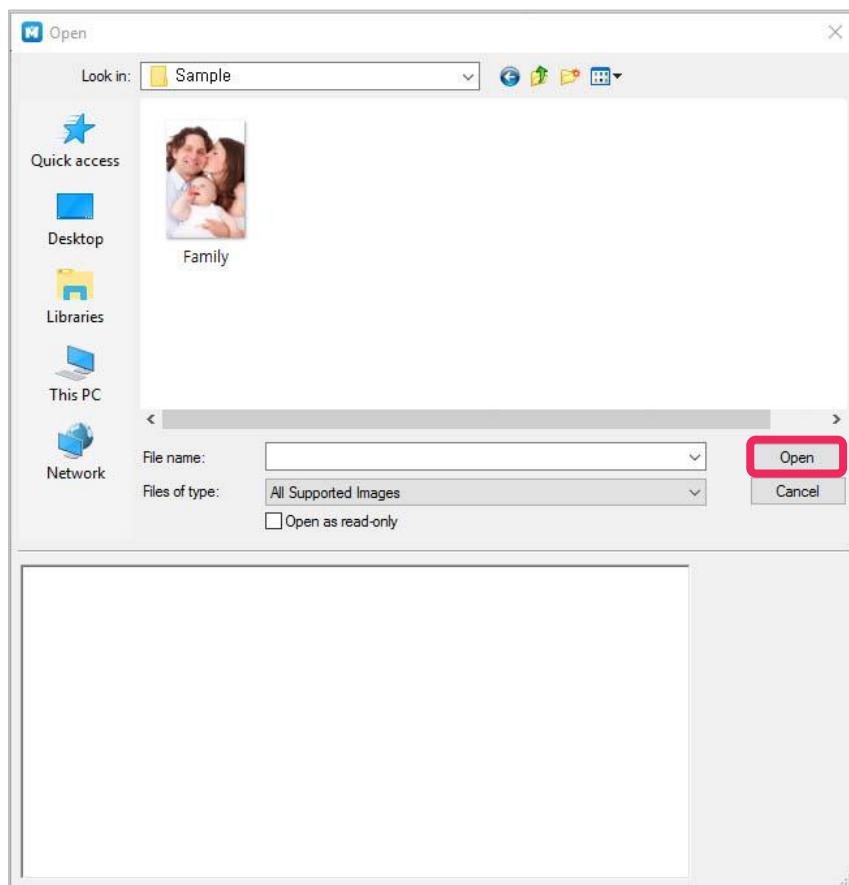
Tool: Tip

Clamp: Multi performance clamp

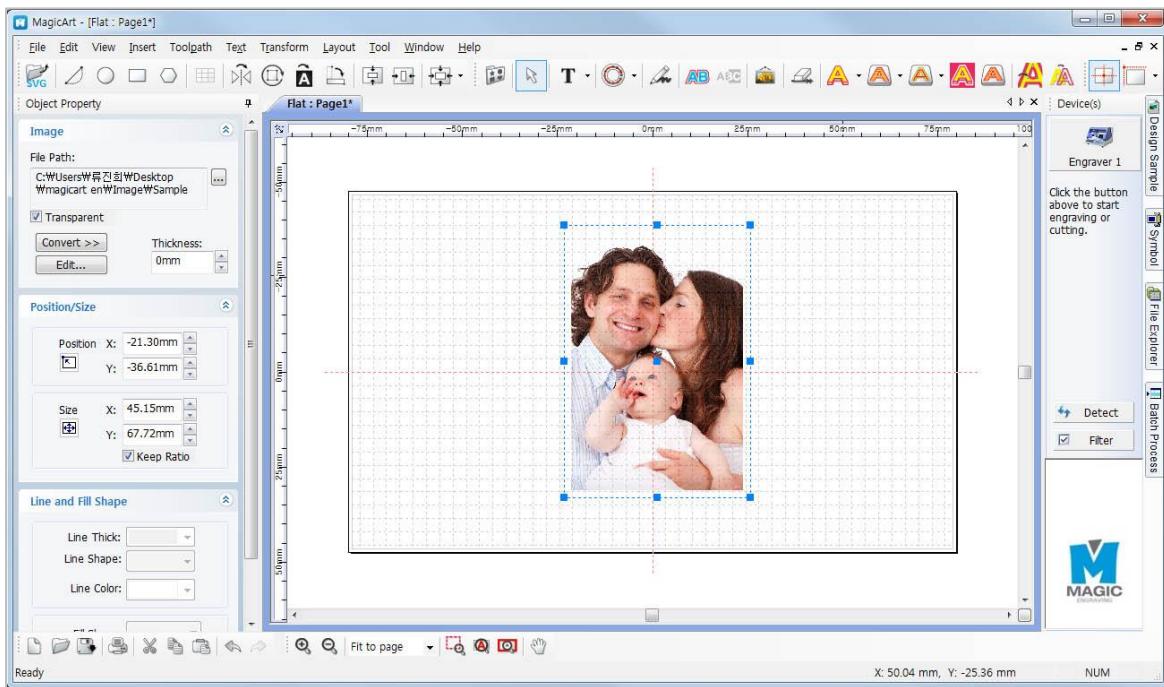
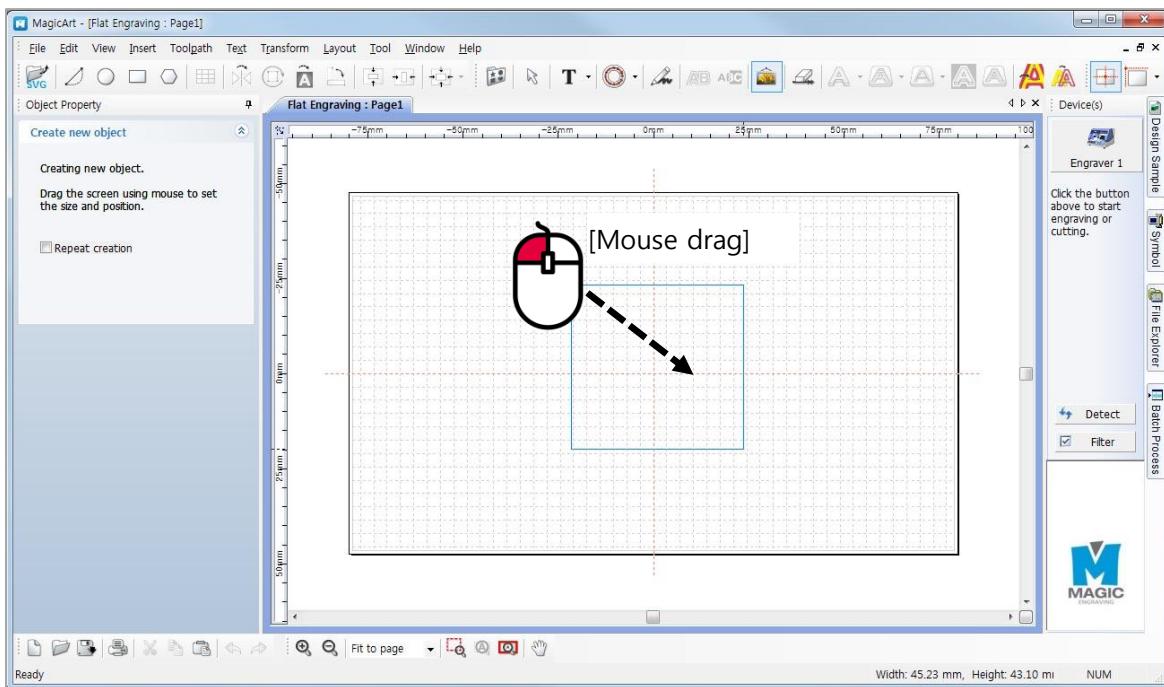
1. Fix a material to be engraved to the clamp.



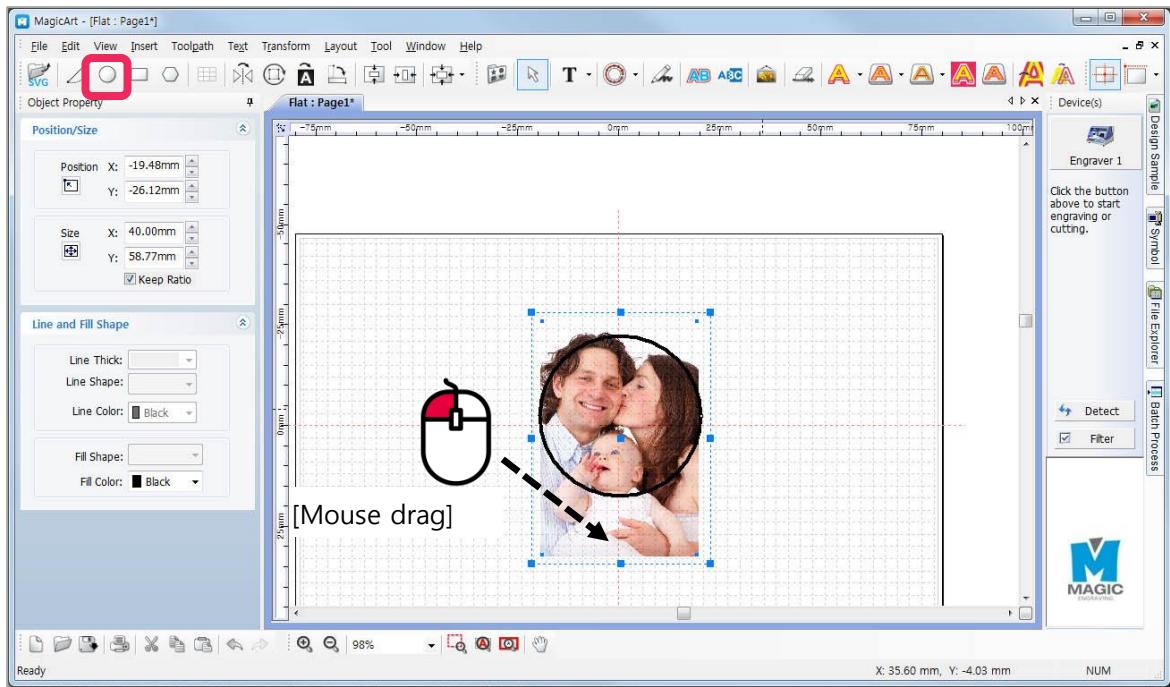
2. Click [Image] to import an image for engraving.



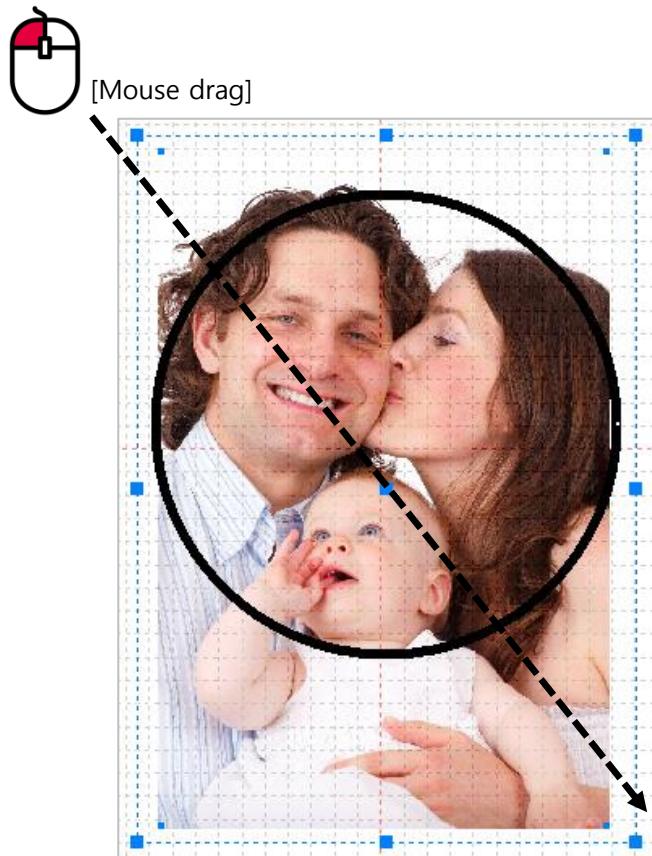
3. Adjust the size and location of the image.



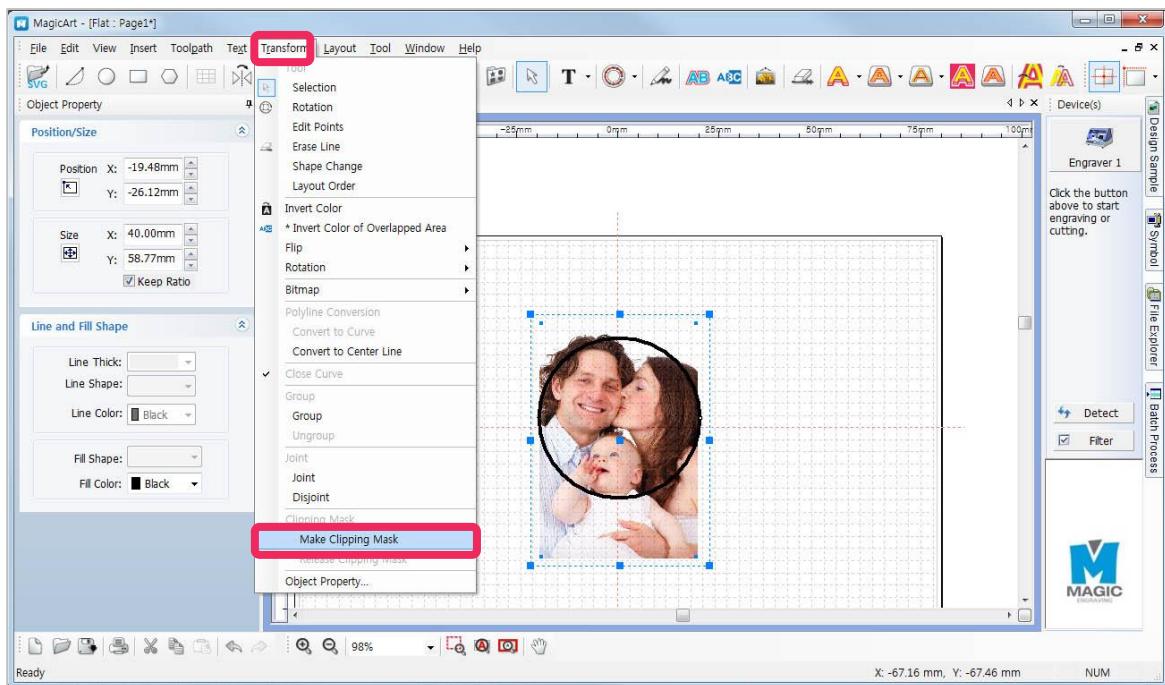
4. [Clipping Mask] function enables cutting out target area extracted from the image. Create a shape to designate the target area and drag it on to the image.



5. Drag a mouse to select the target area and the whole image.



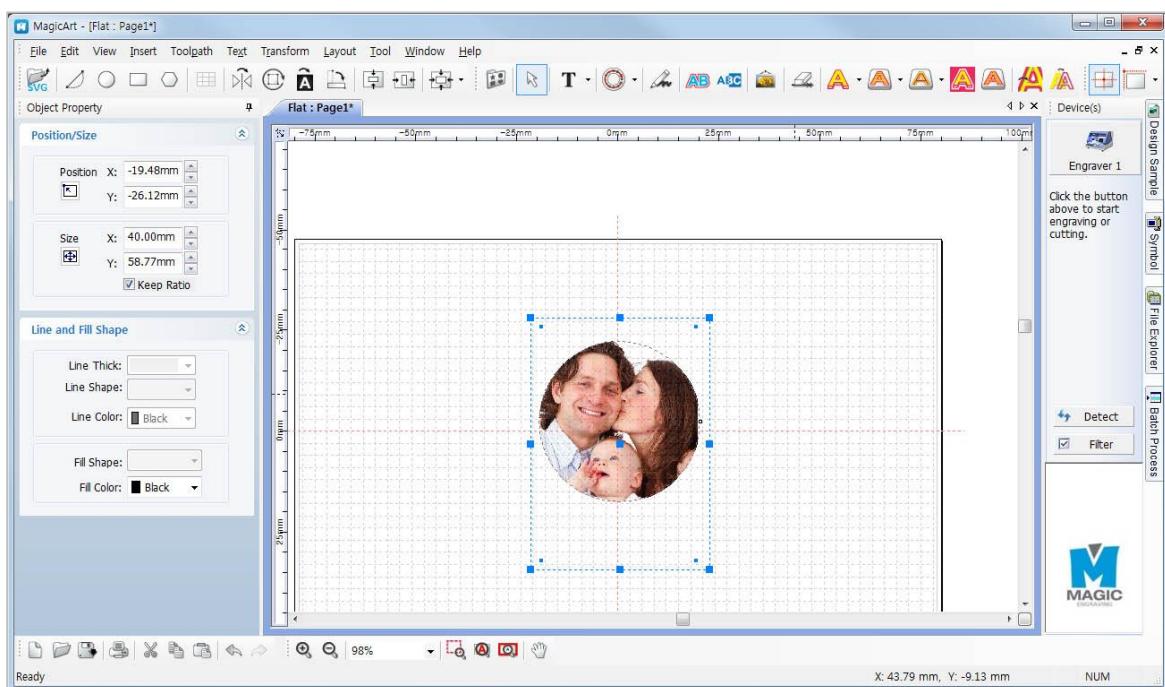
6. Select [Transform] menu → [Make Clipping Mask].



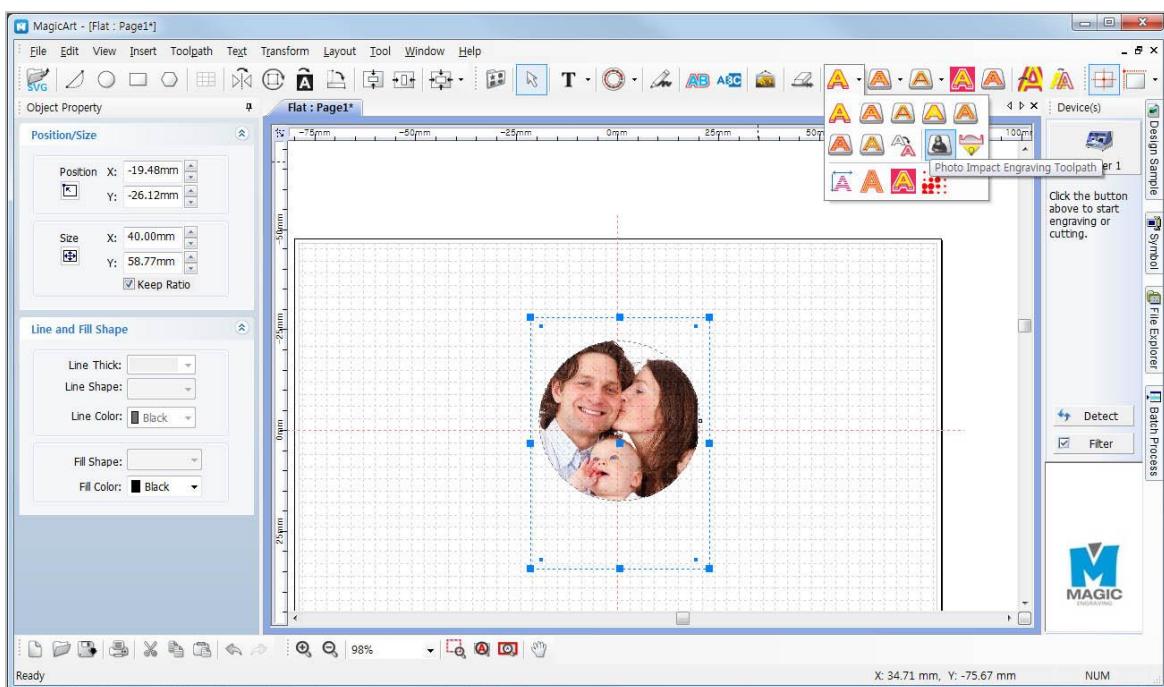
7. The target image remains except the outer image.



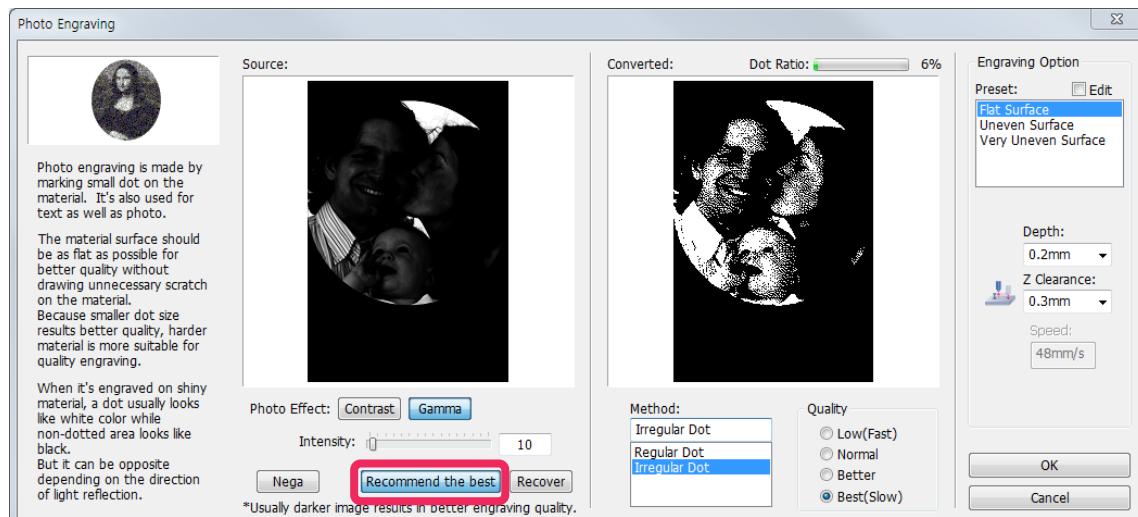
The whole actual image is already saved in the file, not erased.



8. Click [Photo Impact Engraving Toolpath] button.



9. Adjust engraving option in photo engraving option window.



* The black area cut by clipping mask is not being engraved.

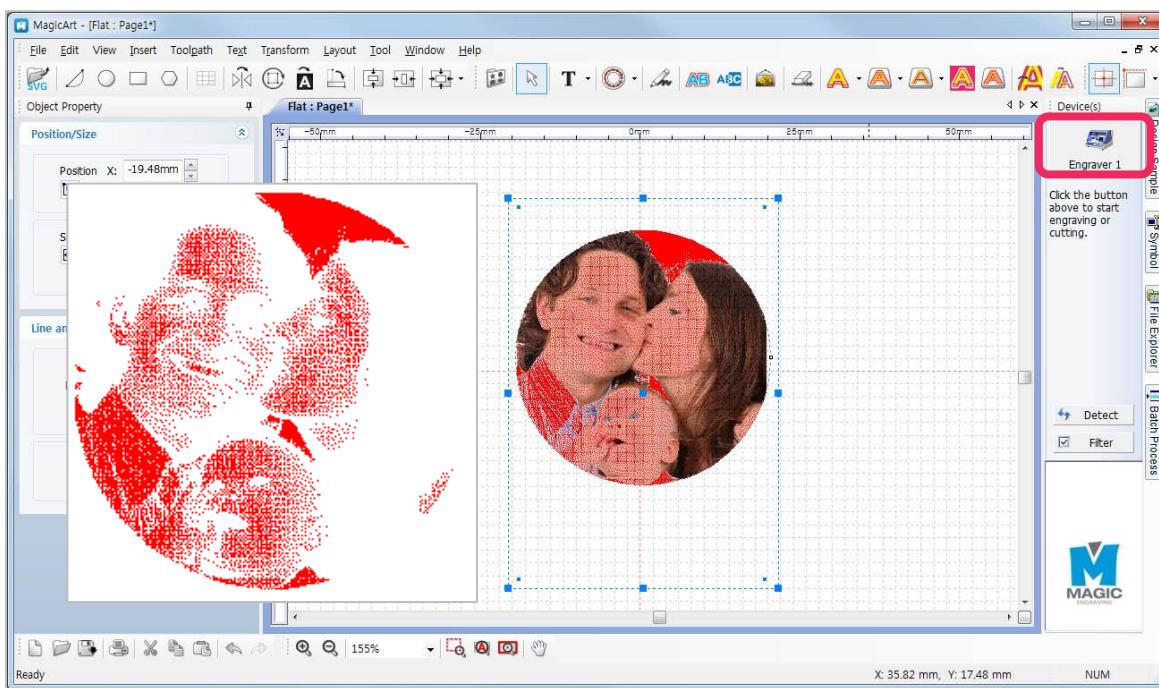
When engraving a photo, bright part (white area) of image is expressed in dots. Since darker image shows higher quality, adjust the brightness darker. Normally, dot ratio 10-20% shows the best engraving quality for a portrait. The optimal image condition depends on the brightness of background of the image. Adjust the image monitoring the image preview and the dot ratio. If 'image adjustment' is confusing, click "Recommend the best" button to automatically adjust the image.



10. Click "OK" button to create toolpath for photo engraving. Double check the created toolpath and click



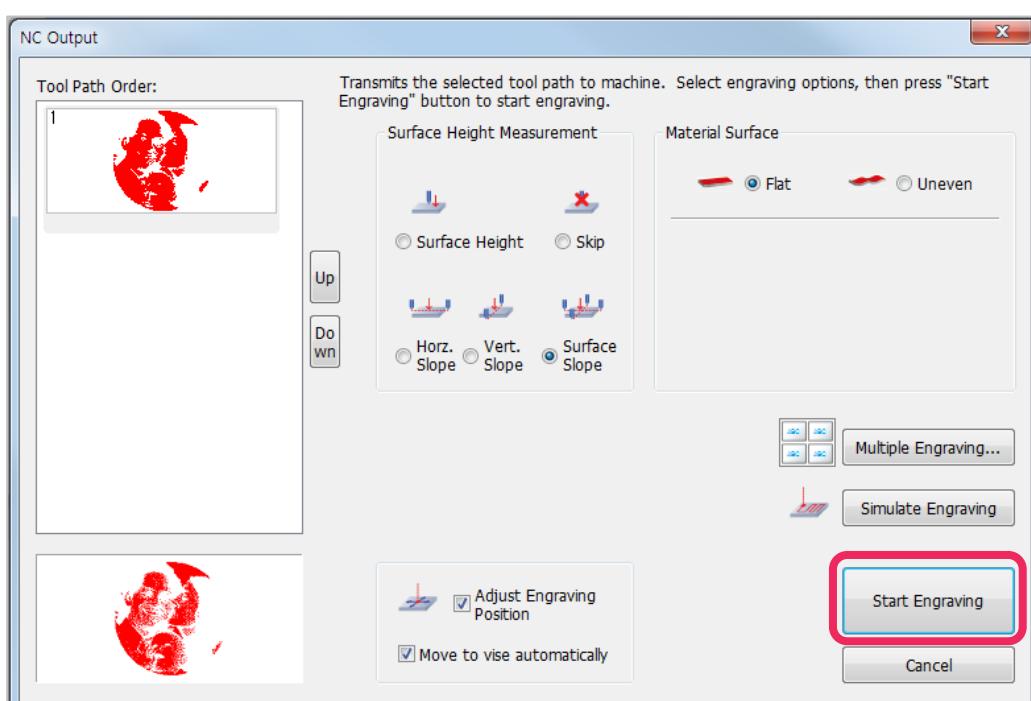
button.



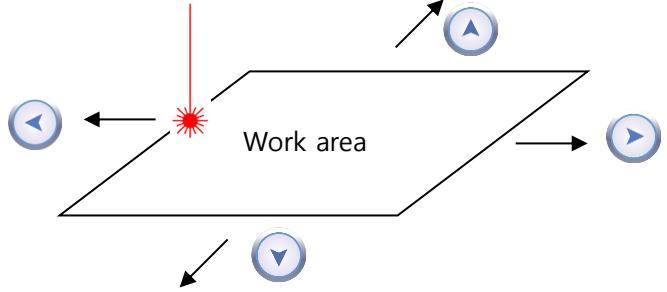
When engraving a photo, white area of image appears as a dot. So the result of the toolpath is shown as negative image.

11. Once "NC Output" window appears, specify how to measure the engraving material. "Surface Slope" measurement is strongly recommended for photo engraving.

Click "Start Engraving" button to start transferring the toolpath to the selected engraver.



12. Once the tool is moved to the center of the material and stopped, the engraving area can be verified and adjusted by using the direction key button. At this time, check the laser pointer while moving it for easier measurement and adjustment.

	<p>Whenever the direction key is pressed, move the laser pointer to the left, top, right and bottom of the area to show the area to be engraved. Check out whether the area to be engraved is out of the materials surface. If so, adjust the location by using the direction key.</p>
	<p>The laser pointer moves the area to be engraved to the left, top, right or bottom according to current location. If the current location of the laser pointer is on the left, then, press  key to move the area to the left. If you want to check the engraving area on the ring inner diameter, the laser pointer shows the outside of the ring for the ring engraved inside.</p> 

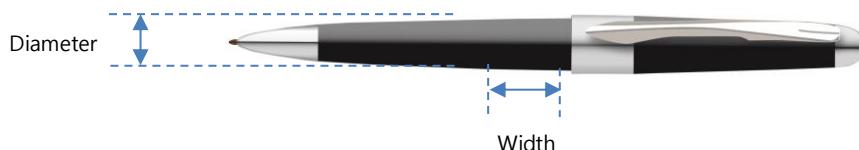
13. After location of engraving is designated, press and hold  button until it beeps (more than 3 seconds) to start the engraving and close the engraver cover.

Pen Engraving Process



Tool: Tip
Clamp: Pen clamp, Rotation clamp
*Optional (Purchased separately)

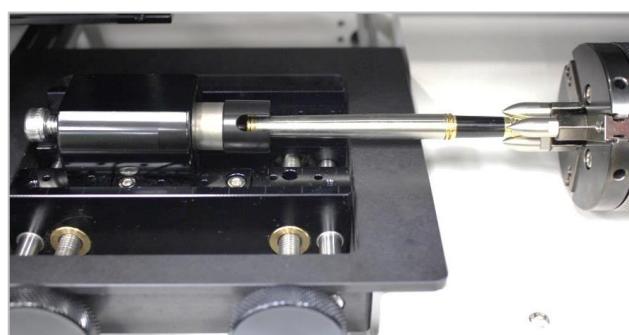
1. Measure the width and diameter of the pen to be engraved.



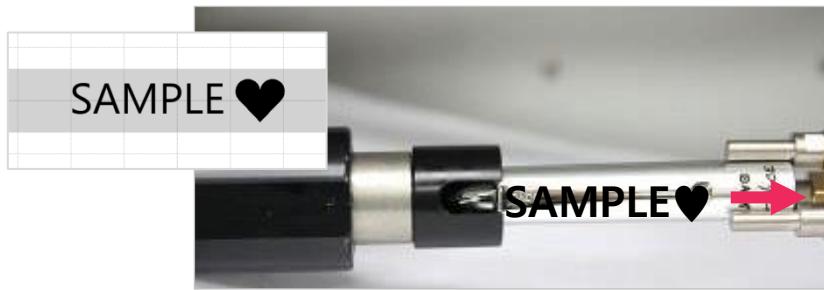
2. Set the pen in the engraver by using a pen clamp.



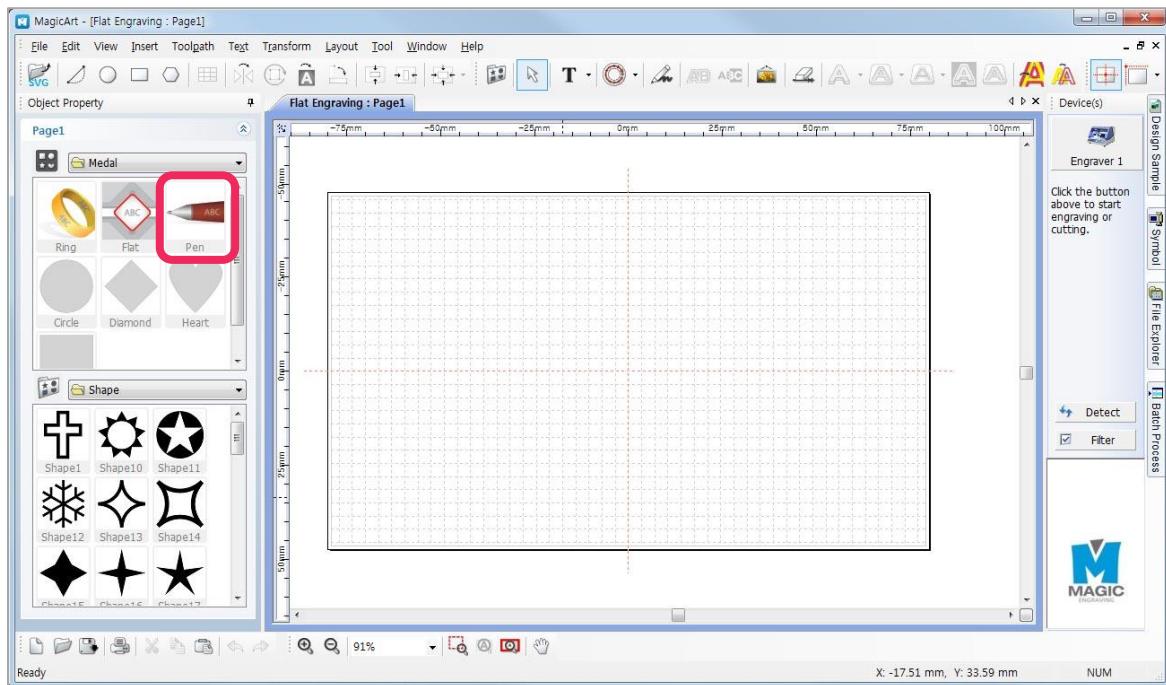
<Pen clamp >



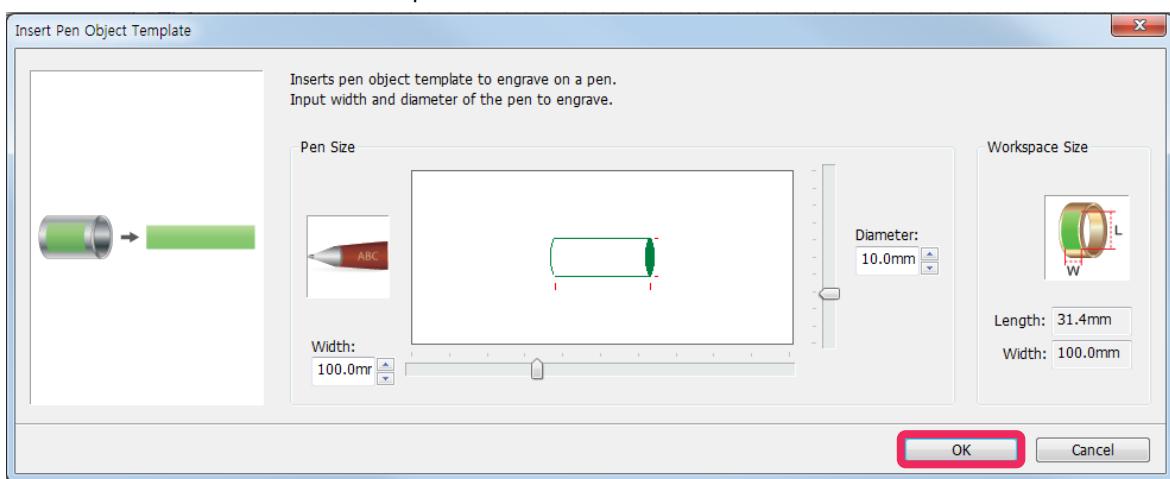
Notice Though the pen jig may differ according to model types, manual is almost the same for all types of engravers. Engraving direction is as below, so be sure of the direction after confirming the direction of target object.



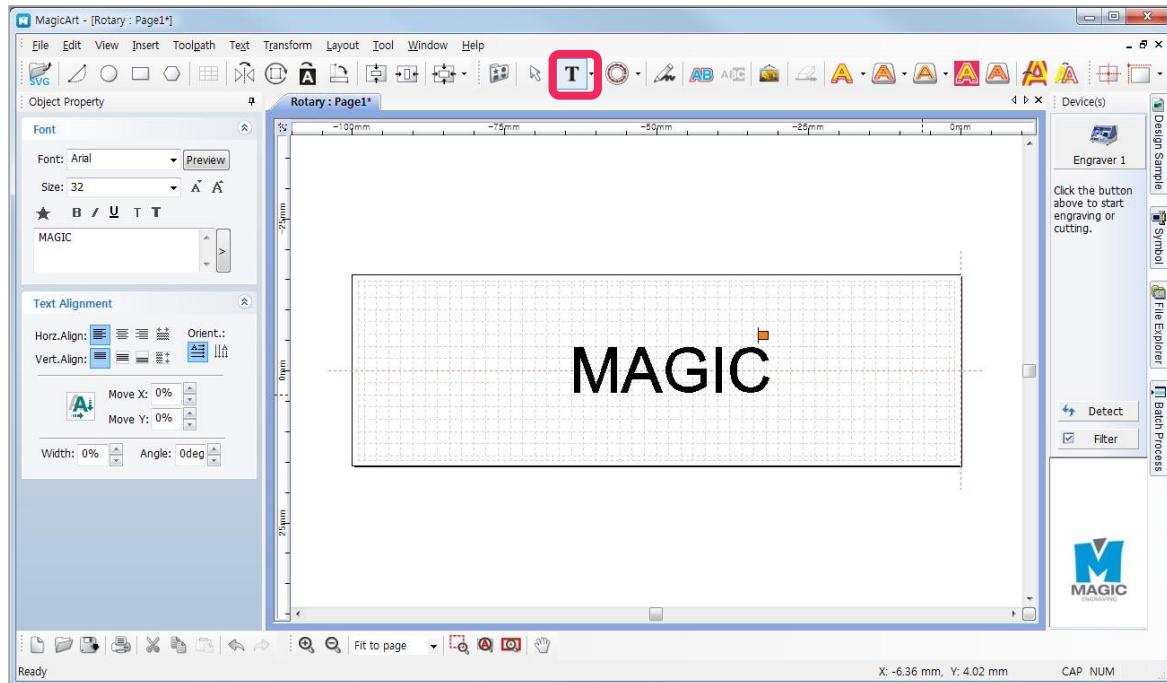
3. Select pen template in the object property window.



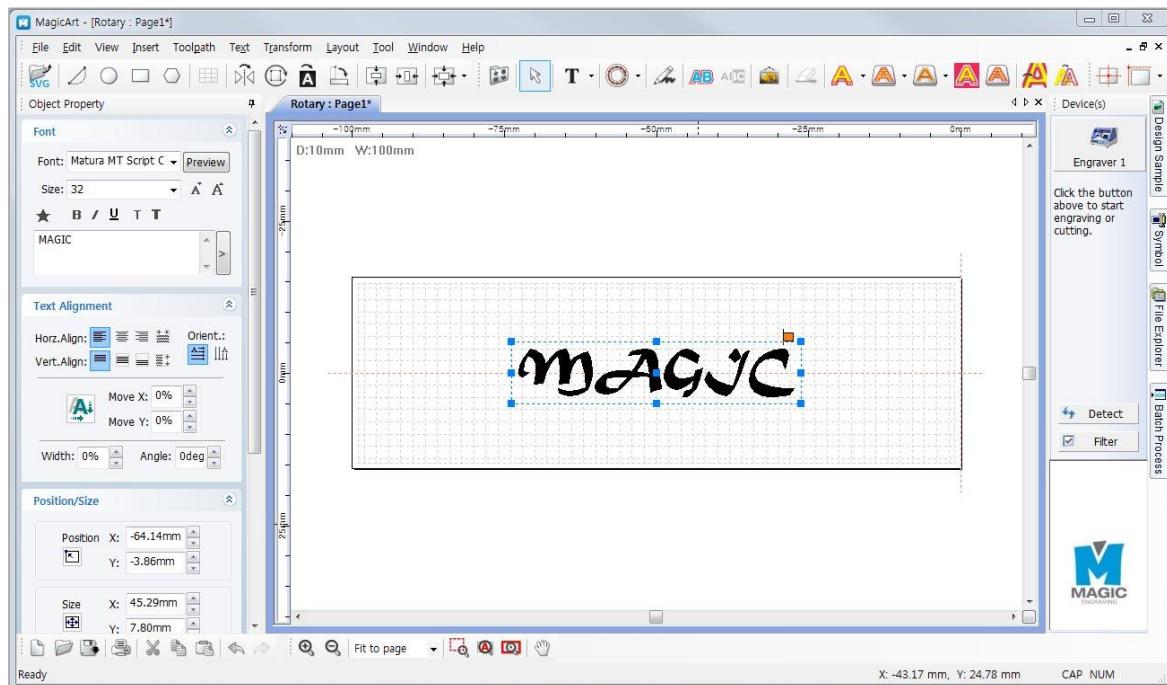
4. Enter the width and diameter of the pen, and click "OK" button.



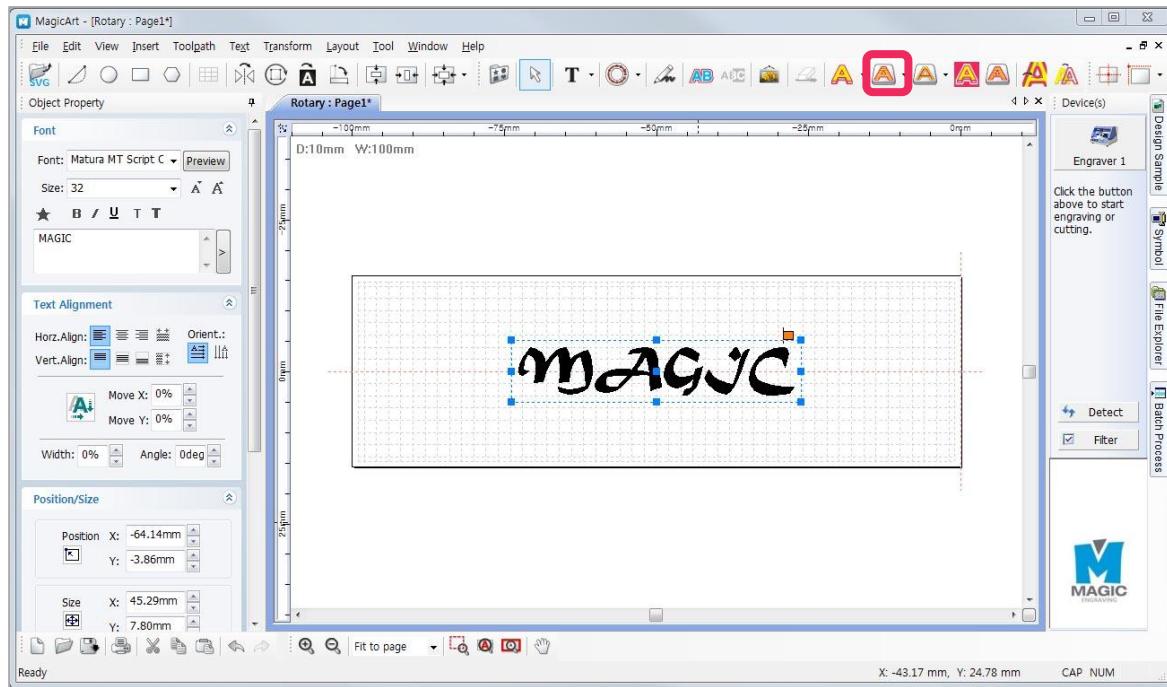
5. Once the template appears, press **T** [Text Input] on the toolbar. Click the work area with the mouse and enter text.



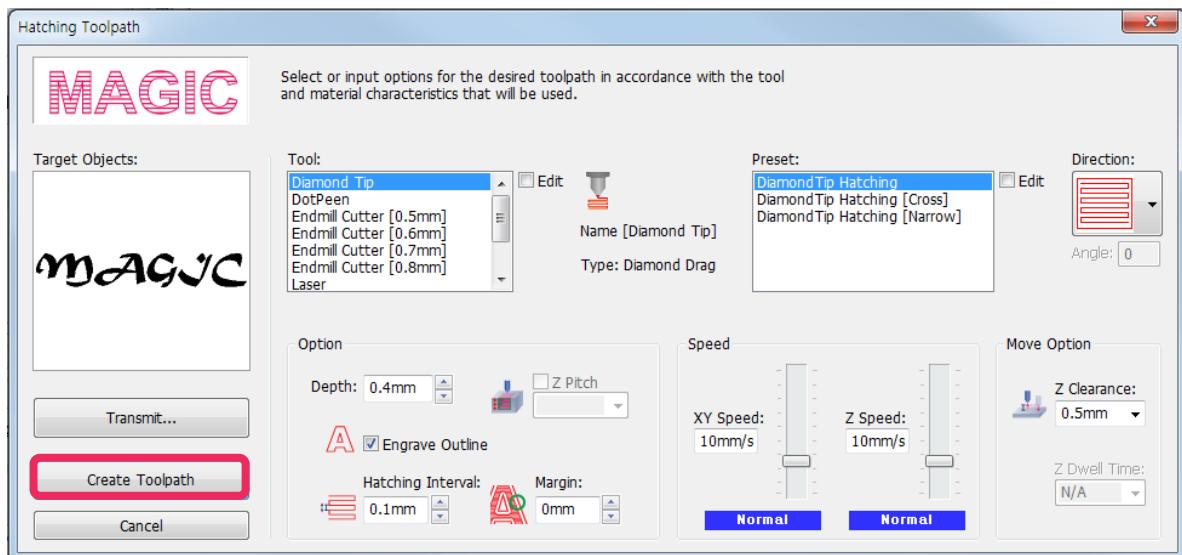
6. After text is entered, press [Selection] on the toolbar to enter object selection mode. After selecting entered text, adjust the size and font of the text. Click [Center in Page] button to place the object at the center of the work area.



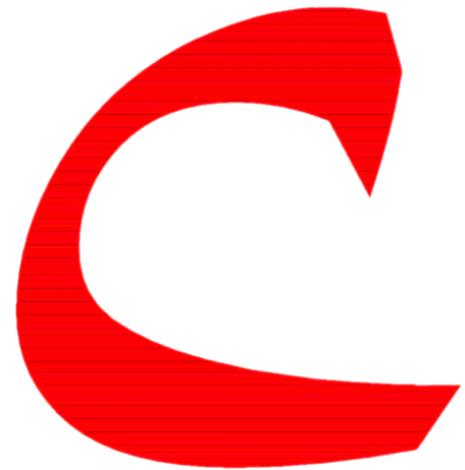
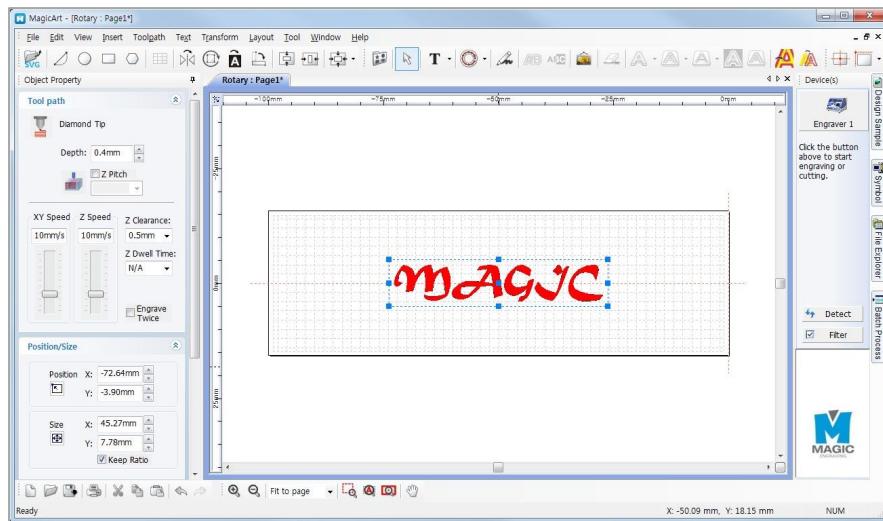
7. Once the design is completed, click [Hatching Tool path].



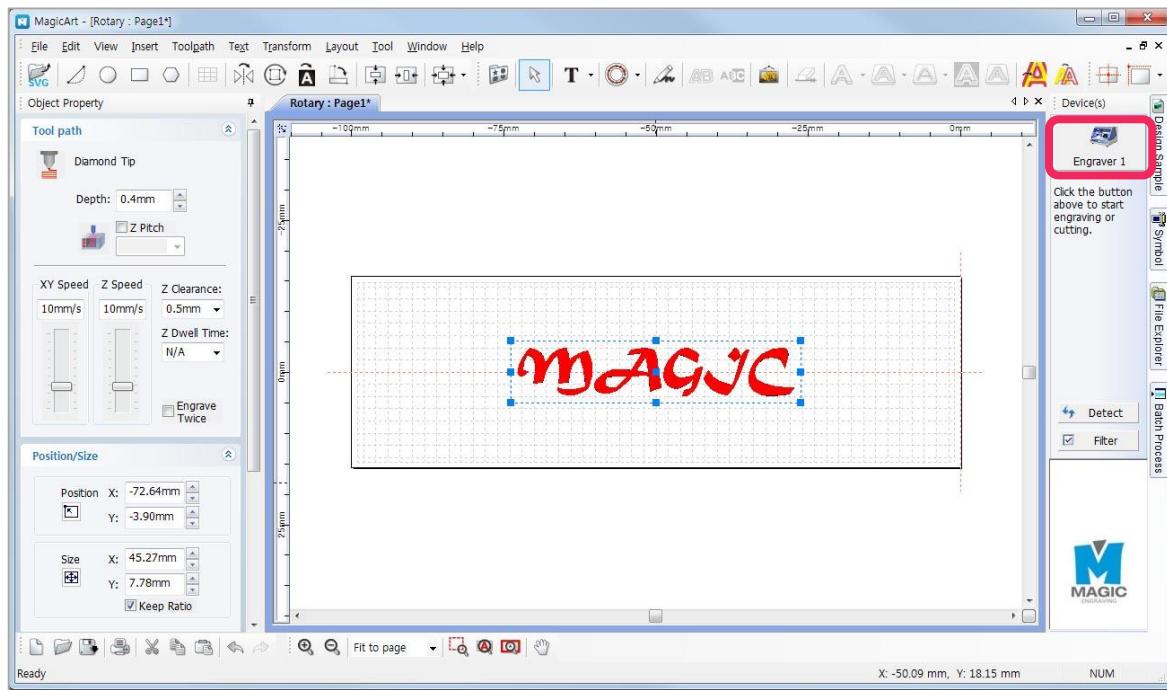
8. Select engraving option and tool from the "Hatching Toolpath" window, and designate hatching gap and depth when necessary and click "Create Toolpath" button.



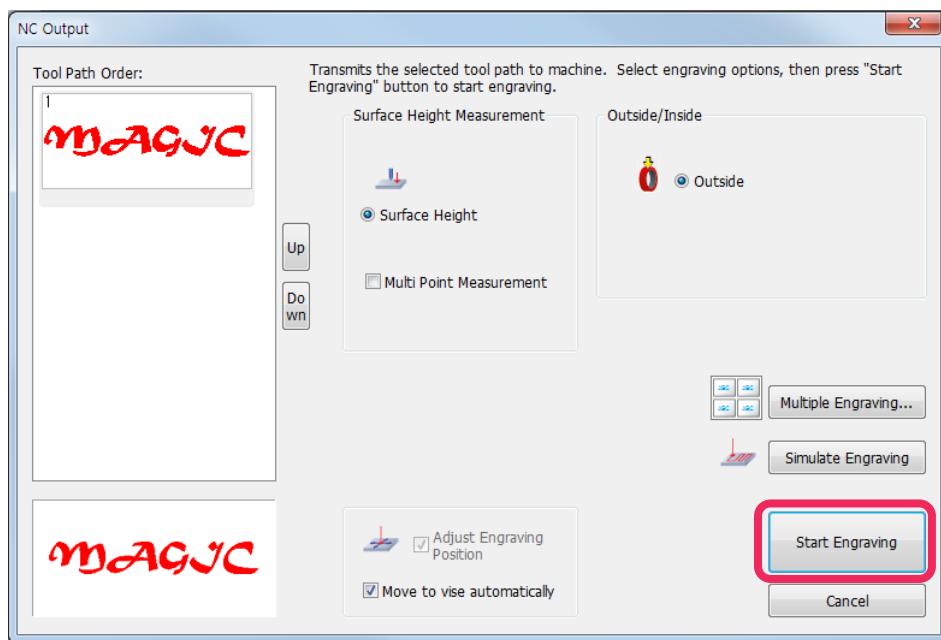
9. "Toolpath" object is created.



10. Click  button.



11. Once "NC Output" window appears, specify how to measure engraving material. And then, click "Start Engraving" button.



12. Once the tool is moved to the center of the material and stopped, the engraving area can be verified and adjusted by using the direction key button. At this time, check the laser pointer while moving it for easier measurement and adjustment.

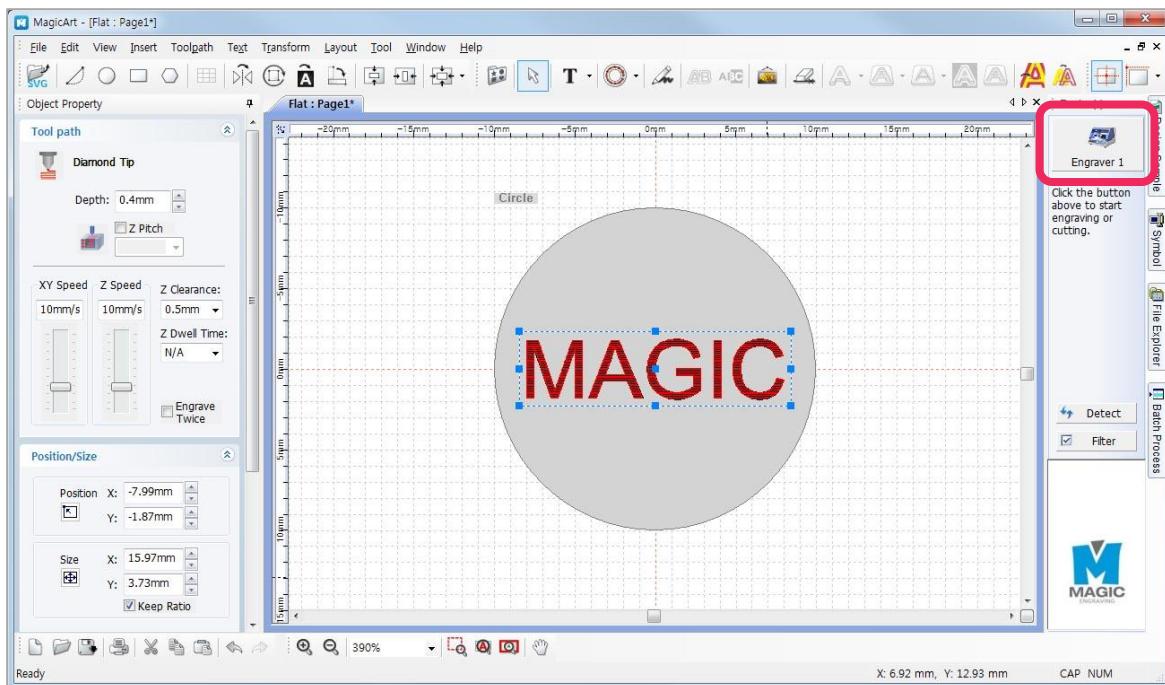
	<p>Whenever the direction key is pressed, move the laser pointer to the left, top, right and bottom of the area to show the area to be engraved. Check out whether the area to be engraved is out of the materials surface. If so, adjust the location by using the direction key.</p>
	<p>The laser pointer moves the area to be engraved to the left, top, right or bottom according to current location. If the current location of the laser pointer is on the left, then, press key to move the area to the left. If you want to check the engraving area on the ring inner diameter, the laser pointer shows the outside of the ring for the ring engraved inside.</p>

13. After location of engraving is designated, press and hold button until it beeps (more than 3 seconds) to start the engraving and close the engraver cover

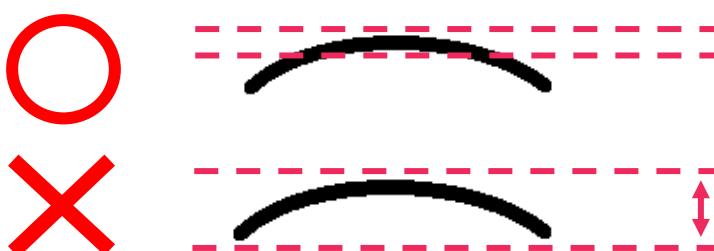
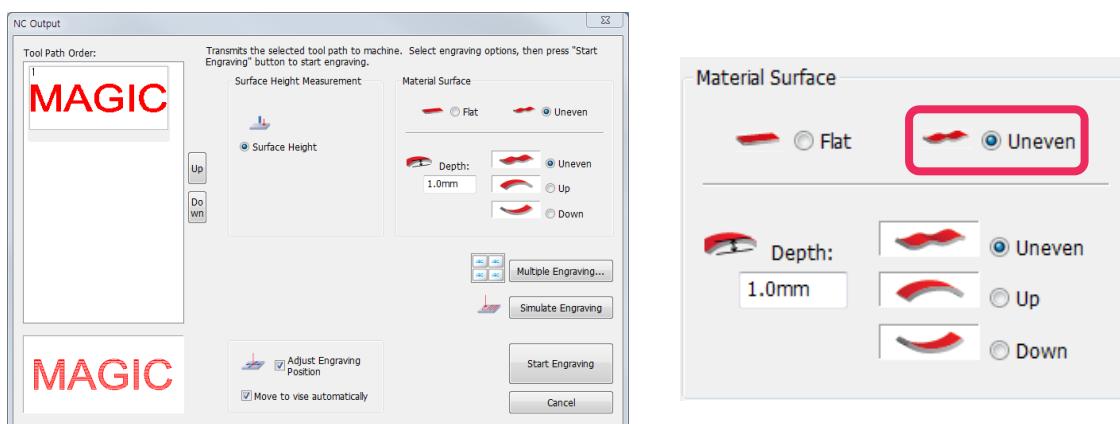
Engraving Curved Materials

When a material to be engraved is curved, engraving process may scratch the surface of the material. Entering the thickness of curved surface to be engraved to automatically set up the Z moving height can prevent from scratching the surface.

1. Create a toolpath and Click  button.

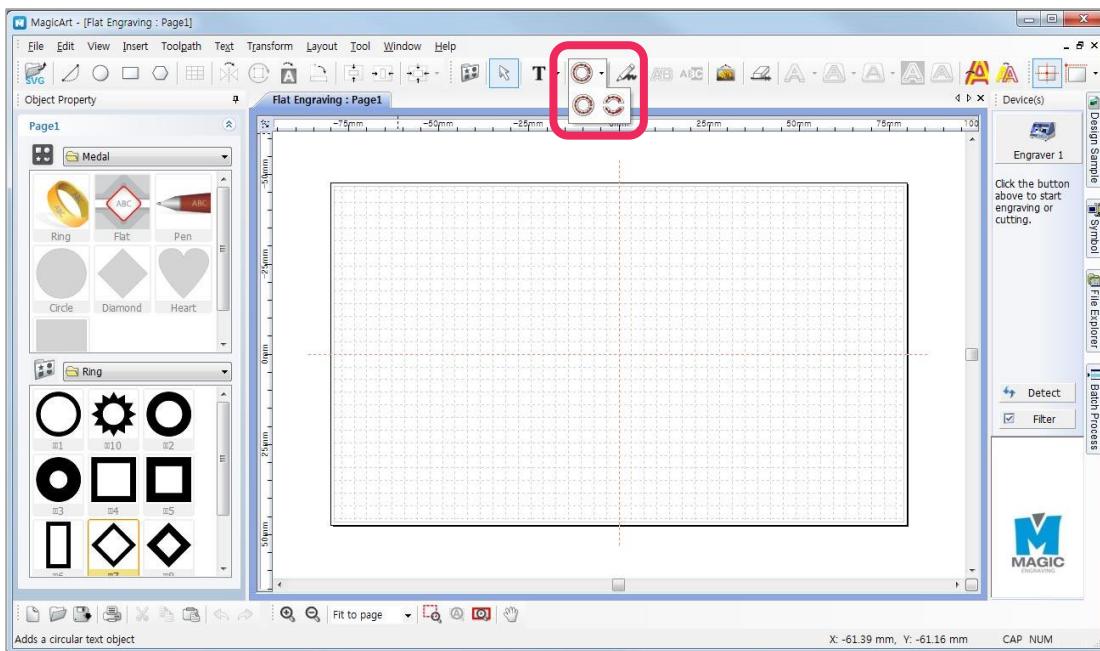


2. Once "NC Output" window appears, click "Uneven" to show various kinds of the curved material. Select a shape that is the most similar to that of the material to be used and enter the thickness (thickness of the area to which the engraving is applied) of the material's round part.



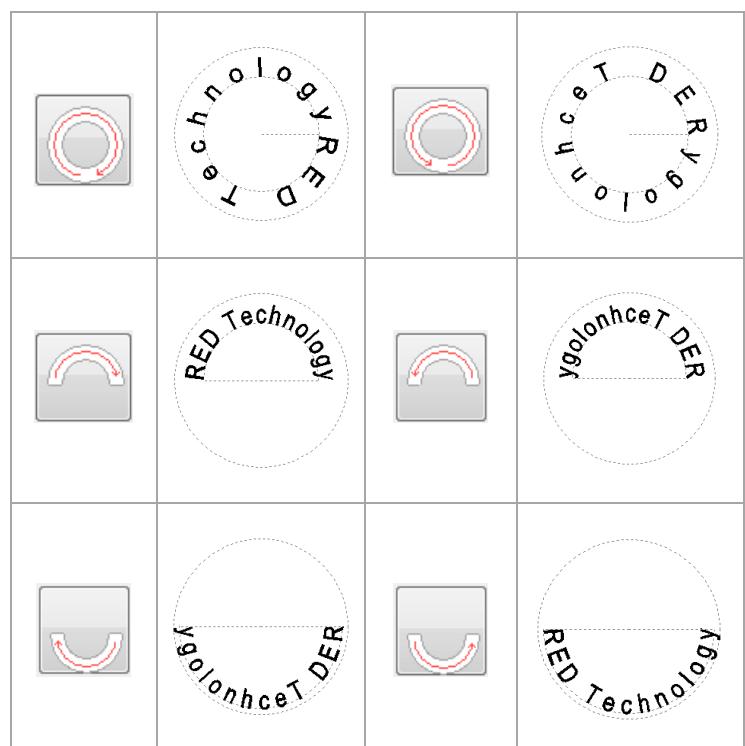
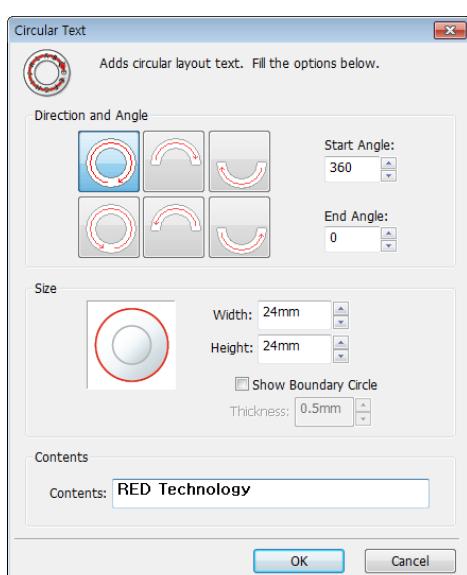
Layout of Text in a Circle

Text can be laid out in a circle by using circular text object.



[Circular Text]

Click button to display "Circular Text" window. Designate direction and angle, enter size and text, then click "OK" button.

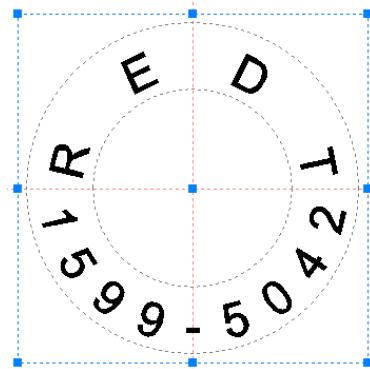
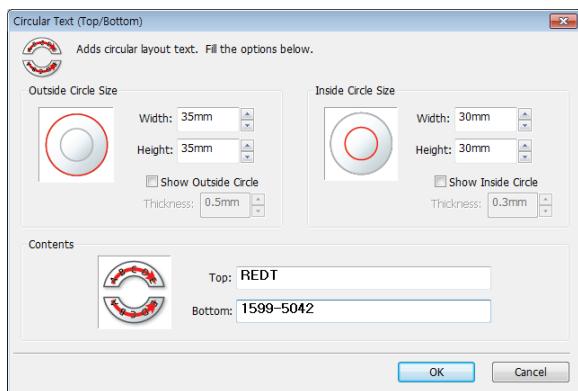




[Circular Text (Top/Bottom)]

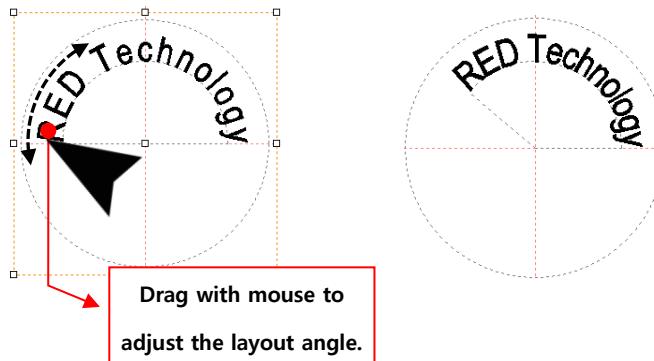


Click button to display "Circular Text (Top/Bottom)" window. Enter the size of outer circle, inner circle and text and click "OK" button.

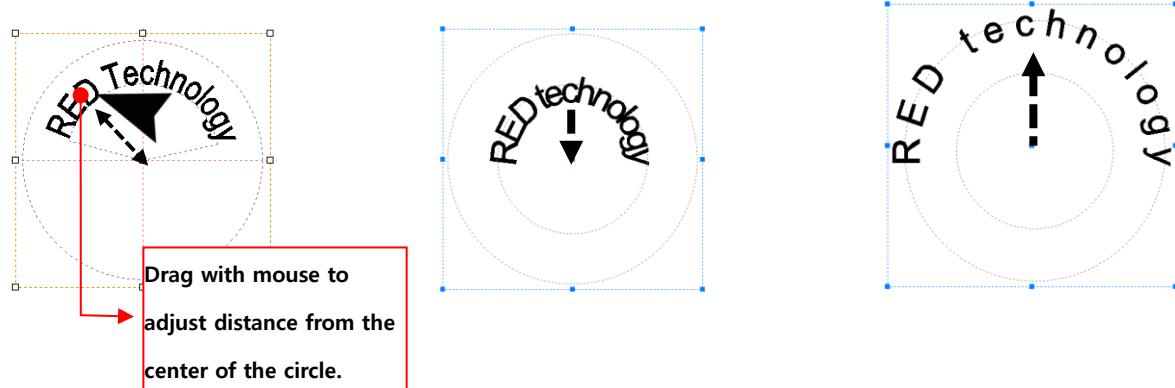


Adjusting layout angle

Drag the first character [R] or last character [y] in the text to adjust the angle of the layout.



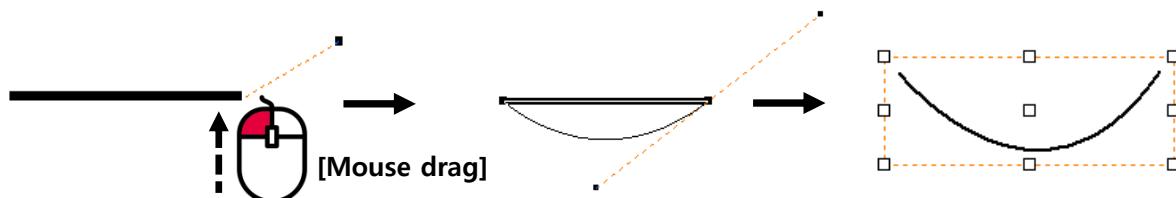
Drag other characters with mouse to adjust the distance to the center of the circle.



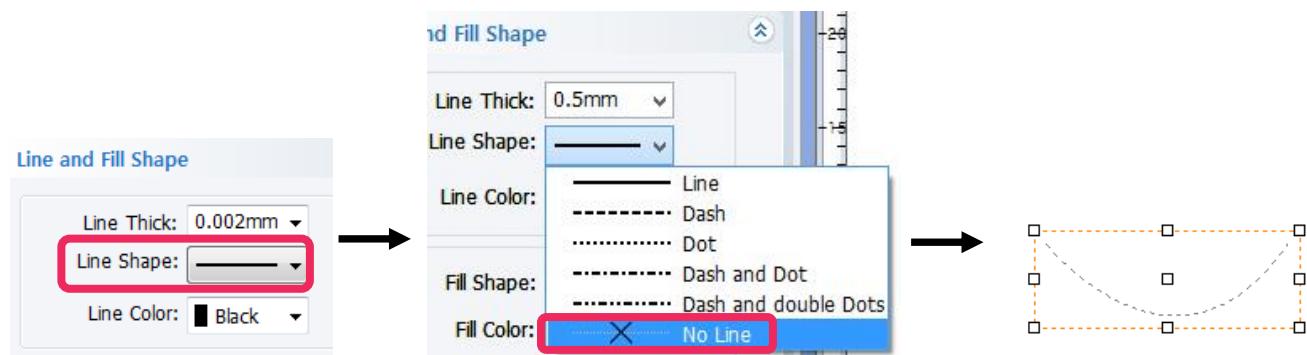
Layout of Text on a Curve

1. Click the  [Line/Curve] button.

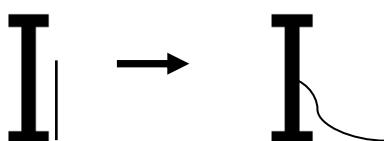
2. Click on a certain point with the mouse and designate a distance. Drag the mouse to make a curve appear. Press the right button on the mouse to create the curve.



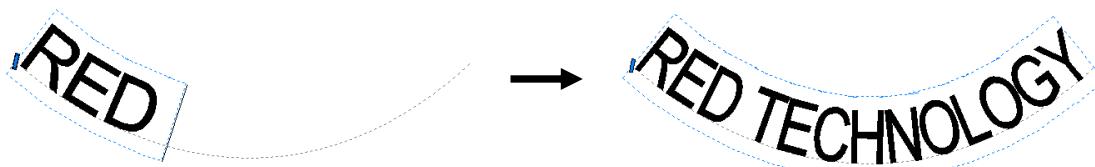
3. Select "No Line" on the "Line and Fill Shape" window on the object property window.



4. Click  [Text Input] button, and move the mouse cursor to the curve line. The cursor shape will change as below.



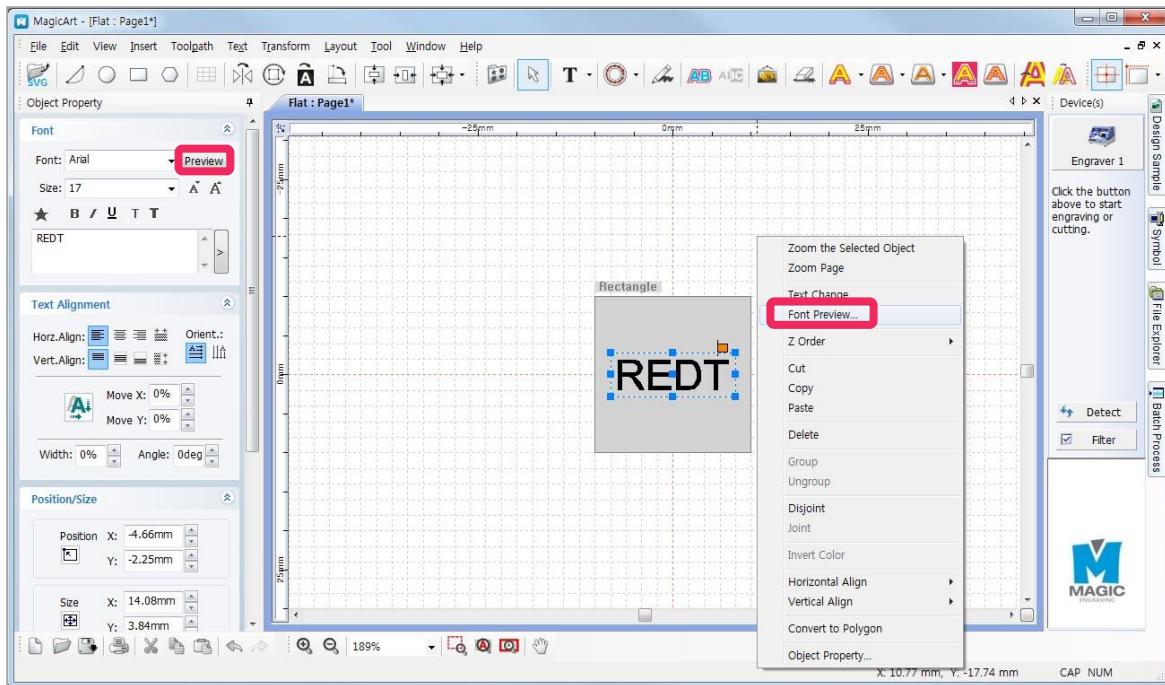
5. In state of the changed cursor shape, click to enter the text input mode.



Font Preview

Apply the fonts installed on the computer to the text objects and preview the shape to select the most suitable font.

Select text object, click "Preview" button in the object property window or right-click the mouse and select "Font Preview" menu. Then, "Font Preview" window will appear.



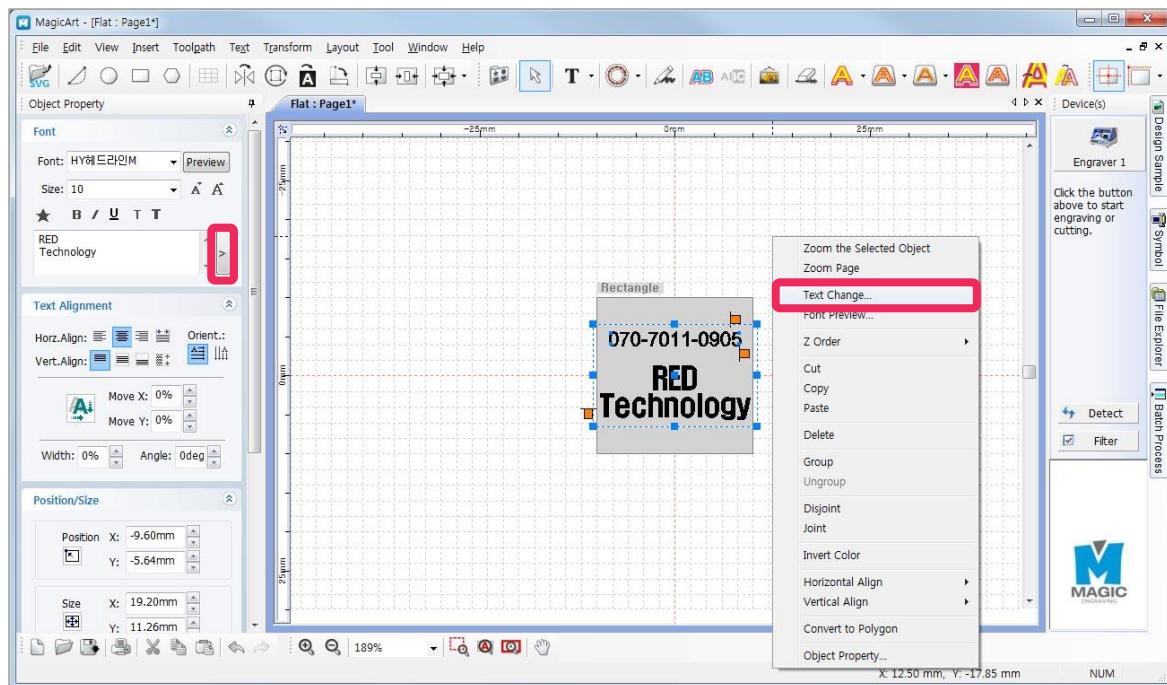
Drag the font list in the font preview window, or click a font while pressing "Ctrl" or "Shift" key, then the preview of the selected font appears automatically. Double click the preview image of the font to select it.



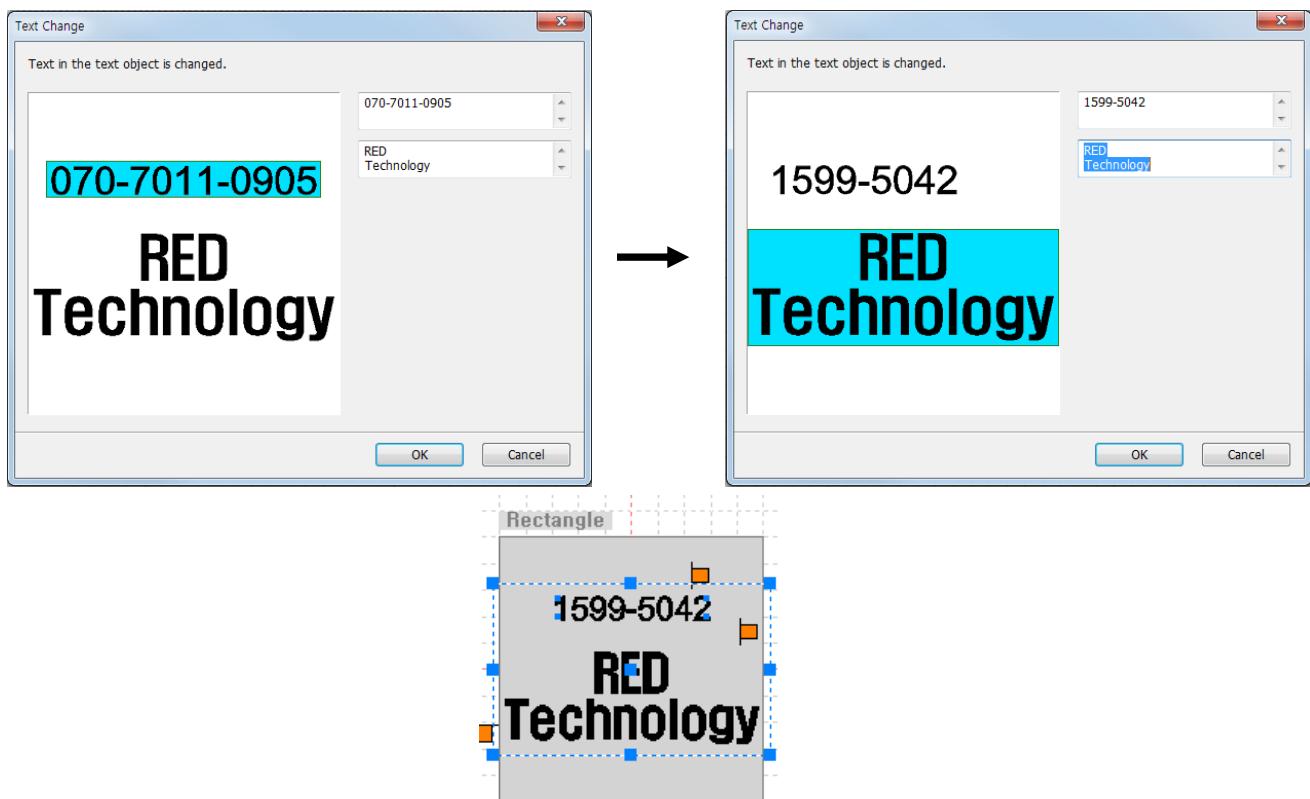
Text Change

The text contents in text objects can be easily changed by the "Text Change" feature.

Import a saved design sample, file, or select text objects designed on the screen. Click [Text change] button or right- click the mouse, and select "Text Change" on the menu.



Change contents in the "Text Change" window, and click "OK" button. The changed texts will be shown on the screen.



Template Creation

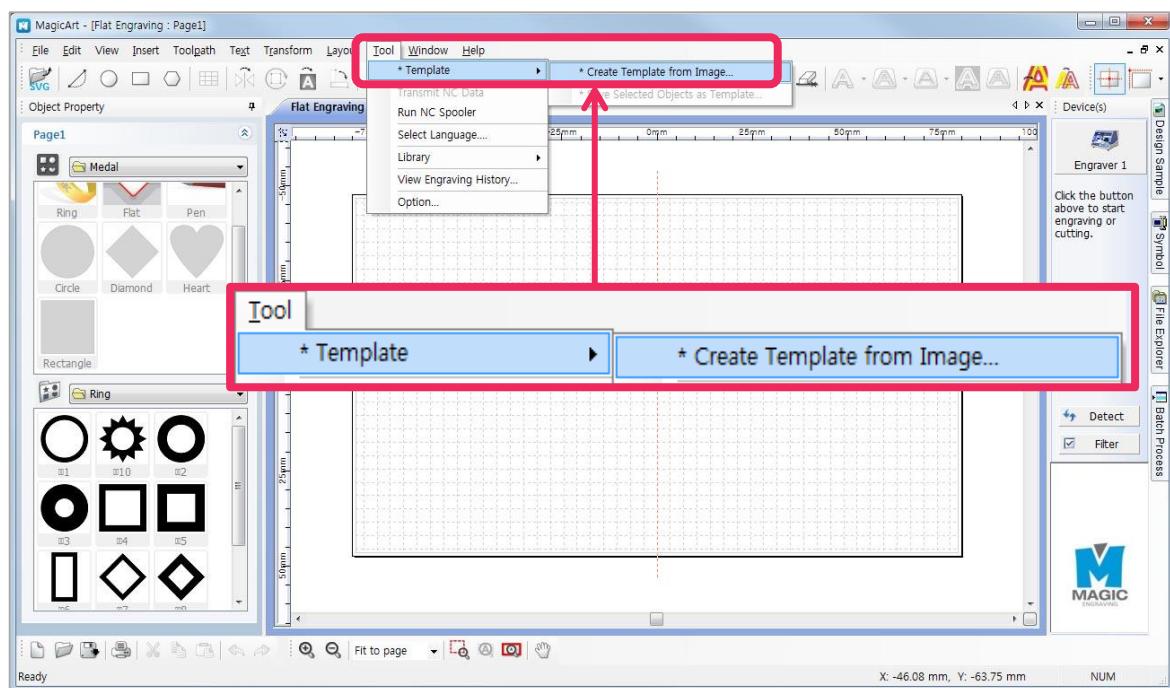
Template is an image corresponding to the materials to be engraved by 1:1 ratio.

Load a template that is the most similar to the material to be engraved, and enter the text to be engraved. This way allows you to create the location of engraving and the size of text to be engraved more easily and conveniently. Circle, heart, square and diamond-shaped templates are initially provided by the program and users can freely add more templates.

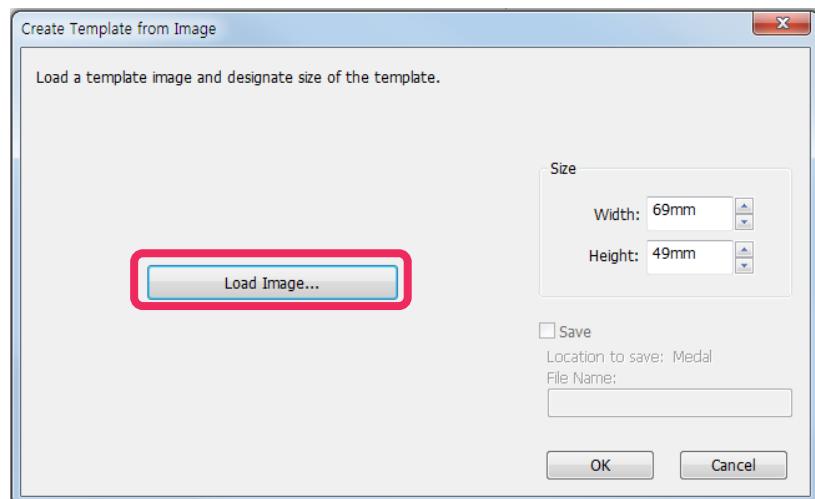
The shape of a template can be designed by graphic program (Illustrator, Photoshop, CorelDraw and etc.) and loaded by SVG file format. Also scanned image file such as jpeg, bmp, png, etc. can be applied as template.

[Creating template #1]

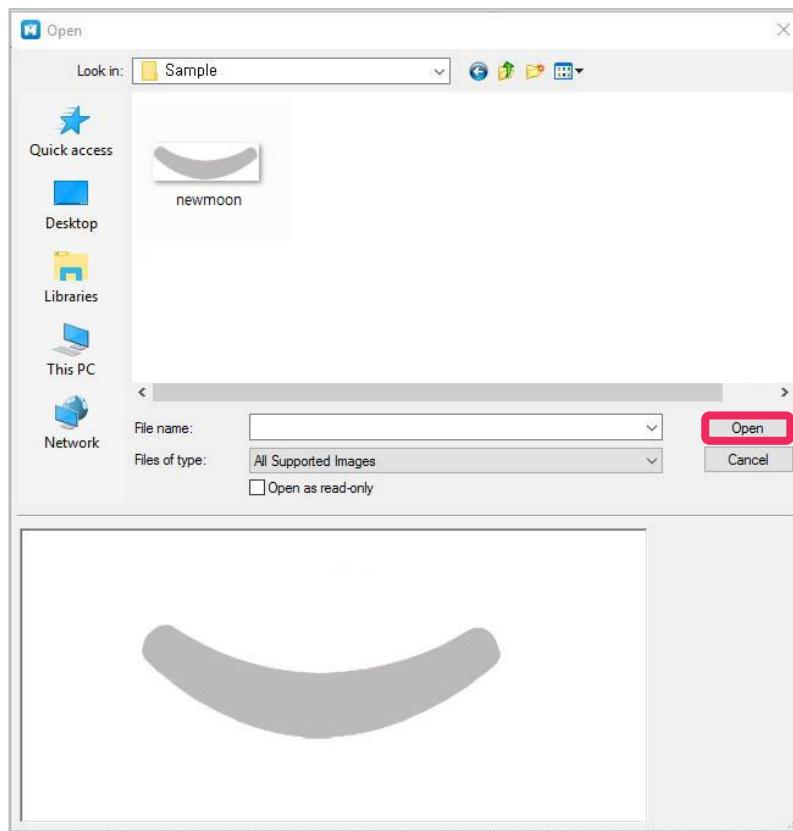
1. Select Tool menu → Template → Create Template from Image.



2. "Create Template from Image" window appears.



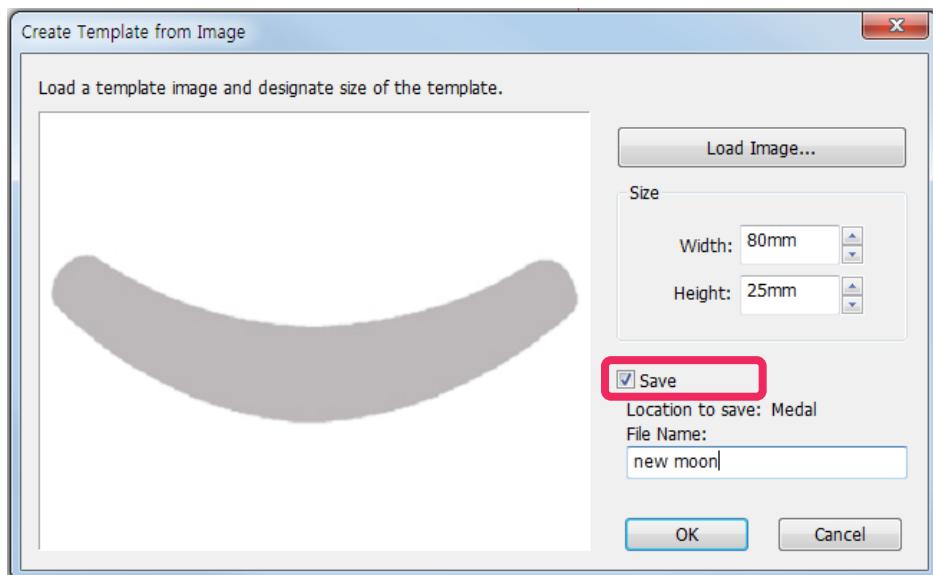
3. Select image files (jpeg, bmp, png and etc.) from the "Open" window, and click "Open" button.

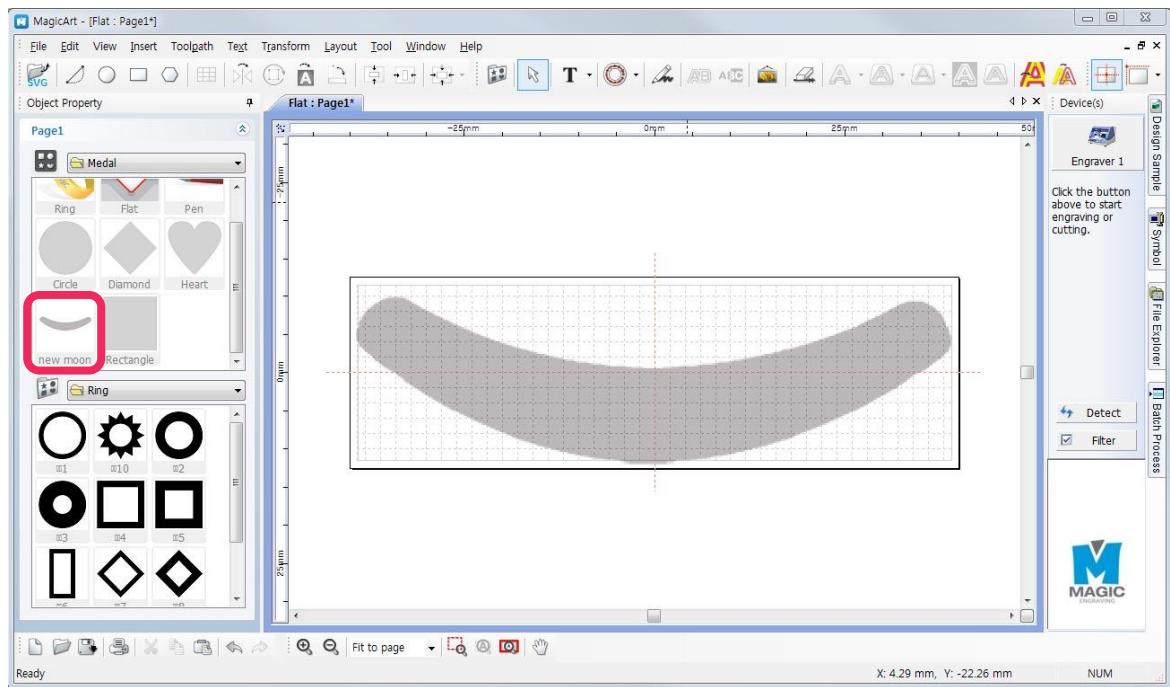


4. Input size of the template.

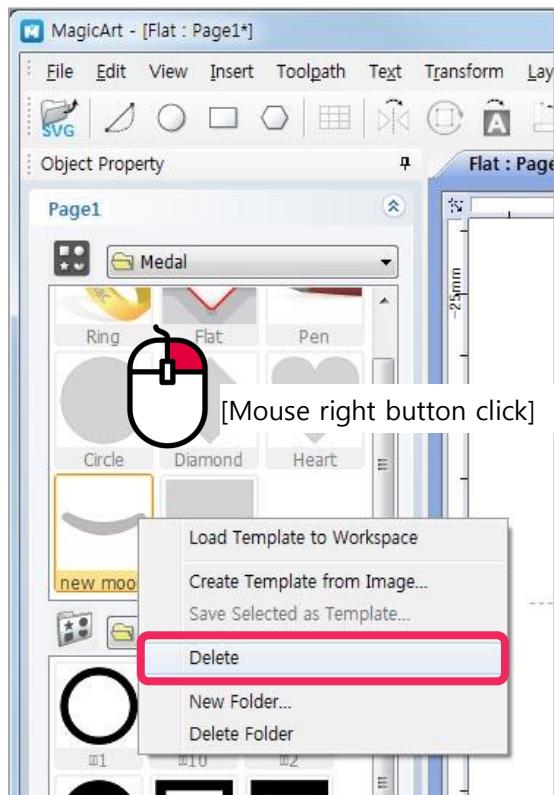
Check "Save" to save the loaded image as a template for later use and enter a name for the template.

Click "OK" button to load the image as a template. If "Save" is checked, and the template name is given, the loaded image will be saved as a template in the template library simultaneously.



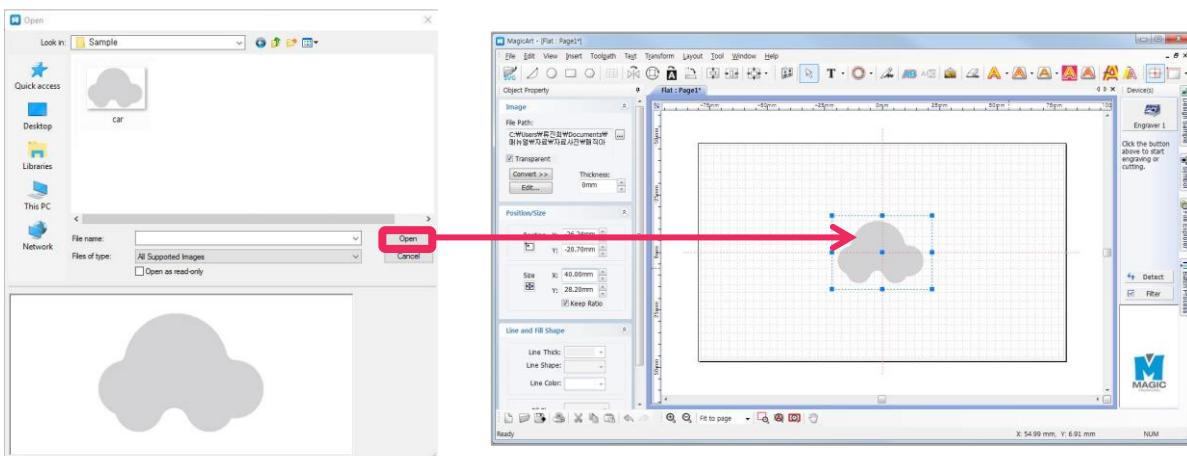


- * Right-click in the template category window for more template related features. The template can be deleted by "Delete" on the menu that appears by right-click in template list window.



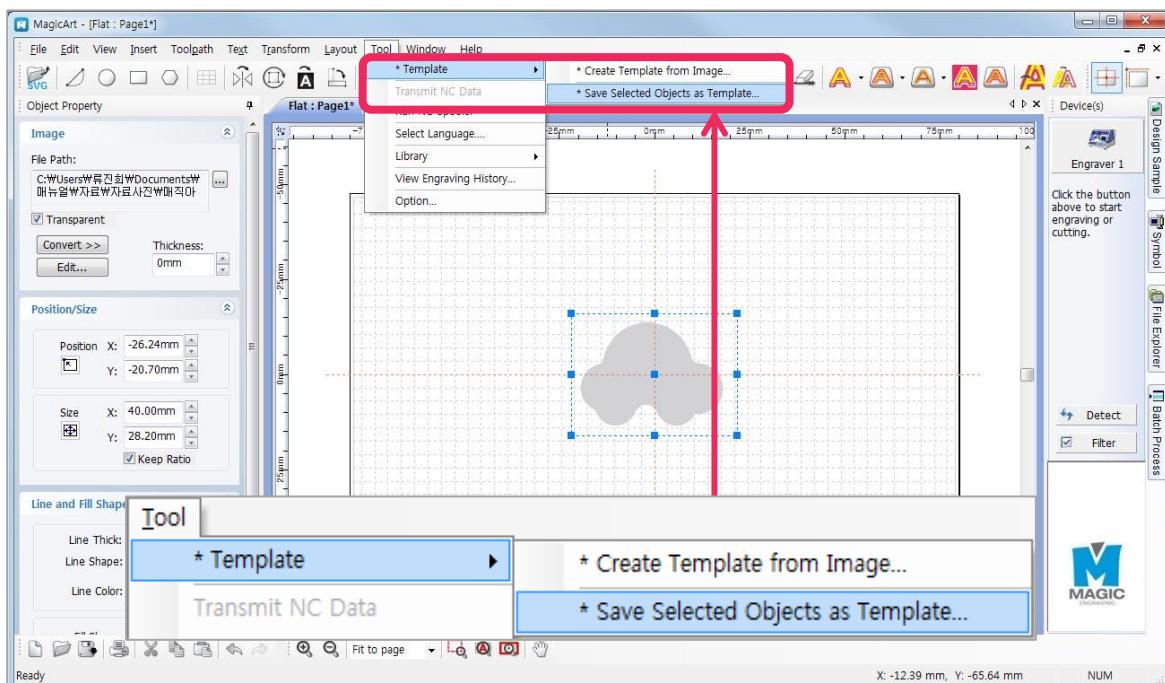
[Creating template #2]

1. Press [Image] button to import an image.

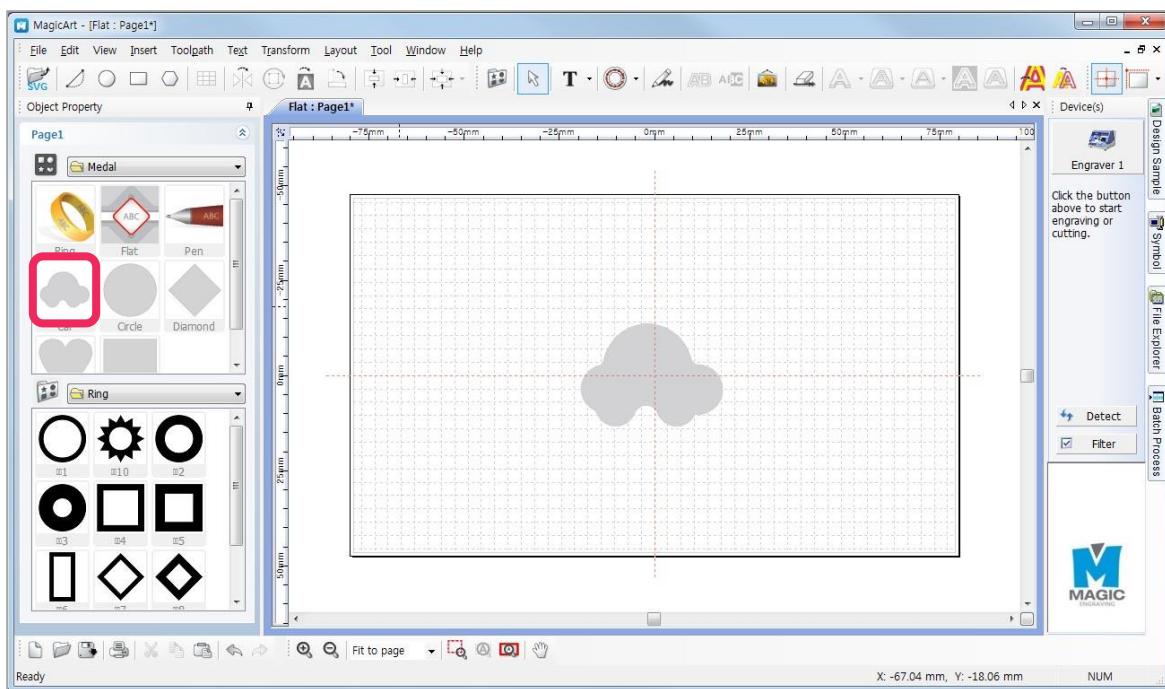


2. Select Tool menu → Template → Save Selected Object as Template.

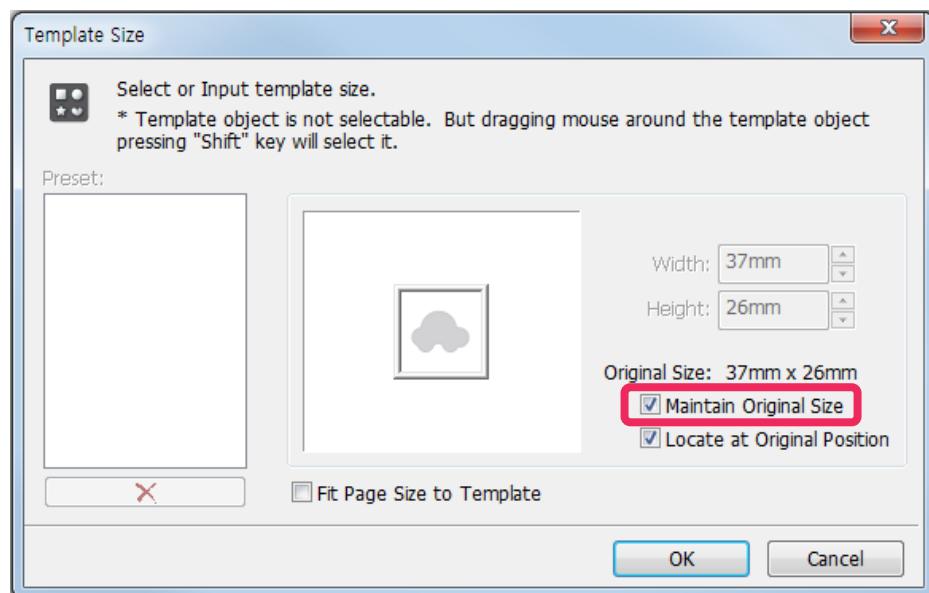
Type a name of new template on "Input" window.



3. The saved template is added in the template library.



The template saved in the "Save Selected Object as Template" menu is saved as designated size to the screen. When loading the template, check "Maintain Original Size", then the template will be loaded with the original size designated when saving the template.

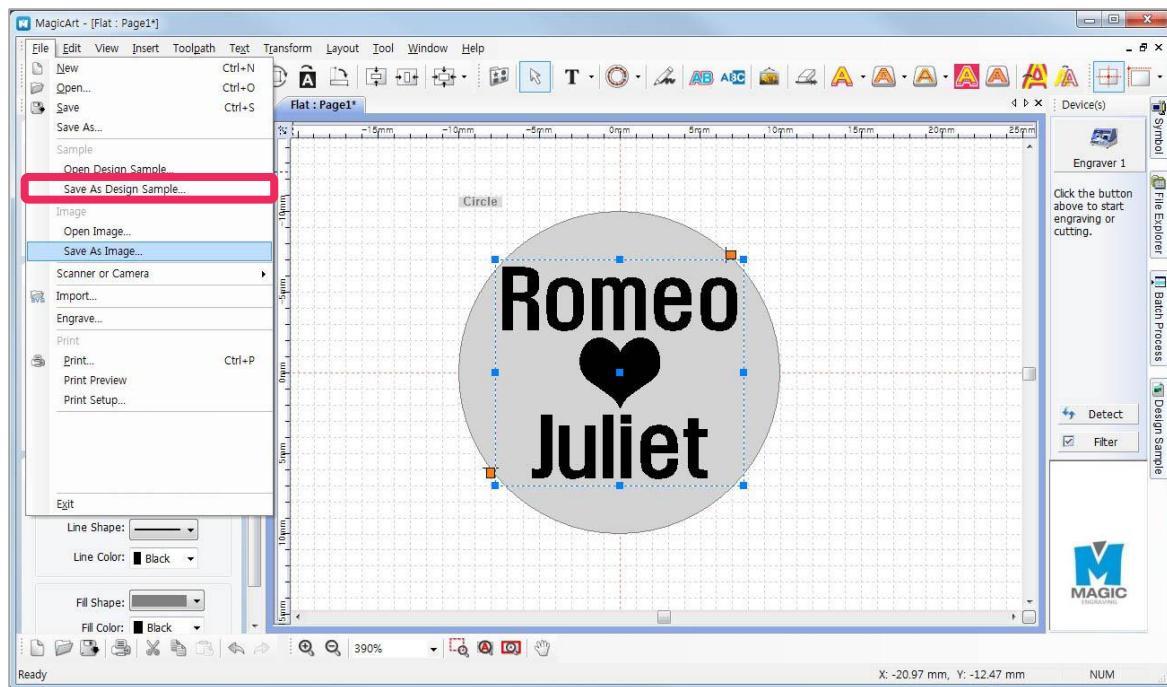


Saving as Design Sample

Edited contents can be saved as design sample for easier access to the design.

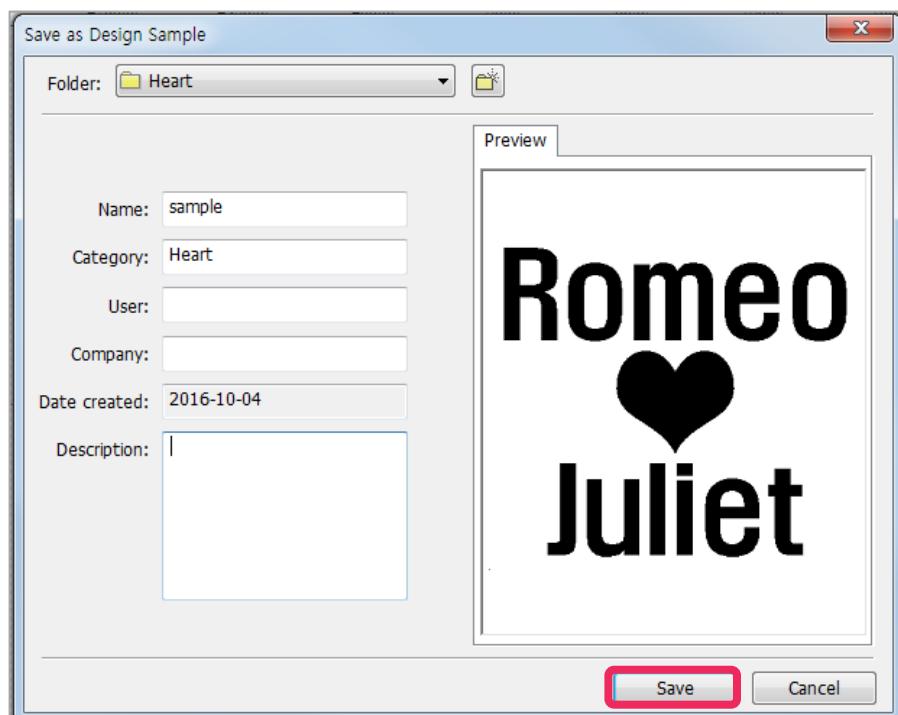
[Saving as design sample #1]

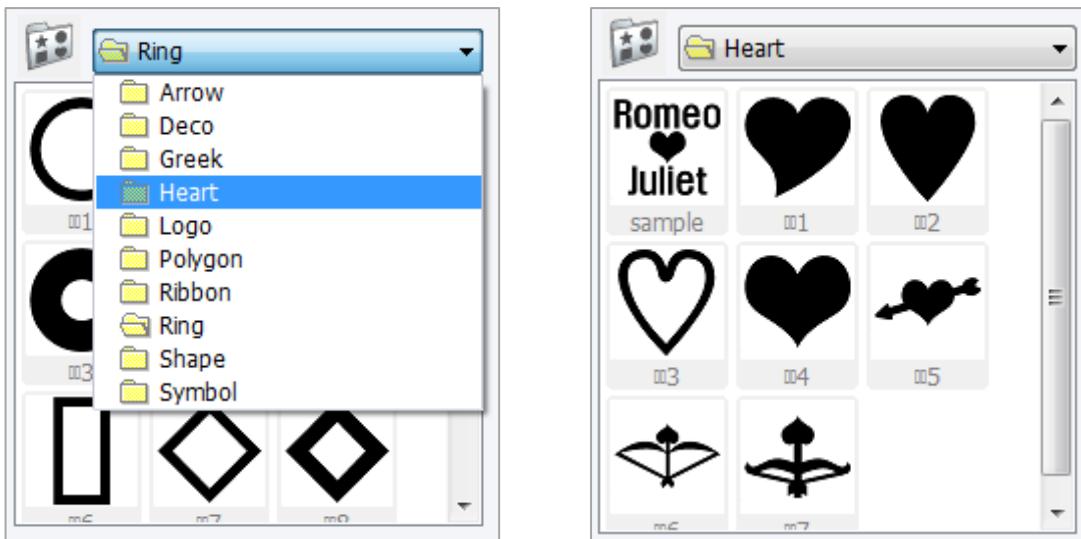
1. Edit contents and select the objects.



2. Click File menu → Save as Design Sample and select a folder or create new folder.

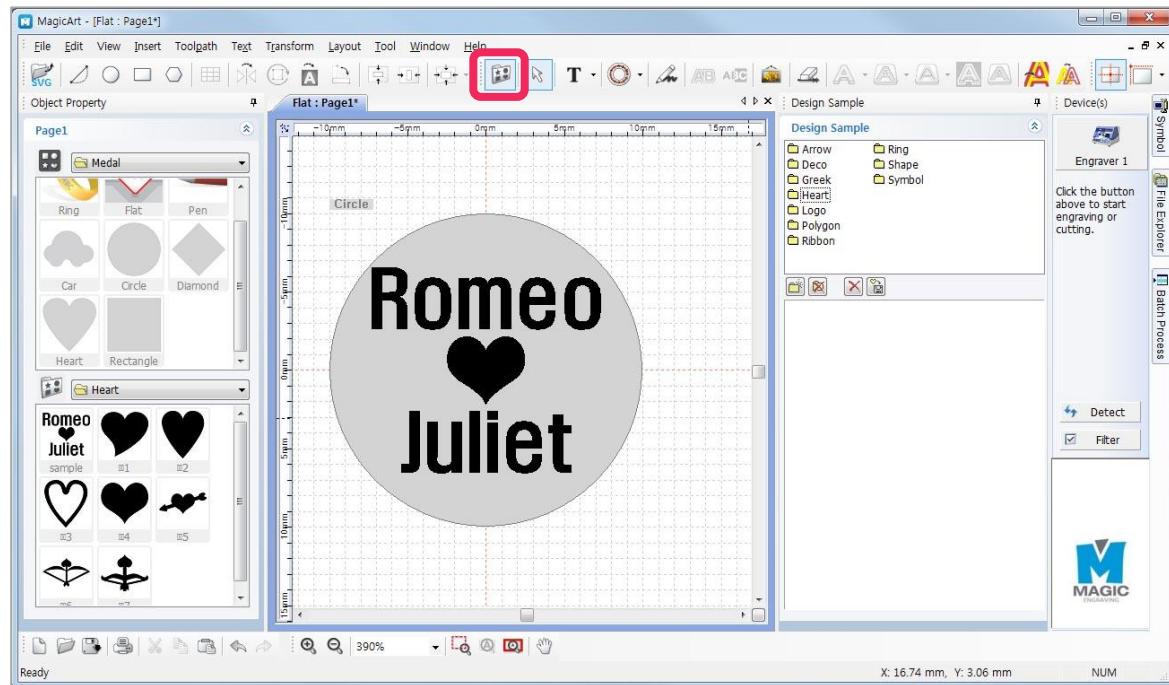
Enter the name and click "Save" button to save it.



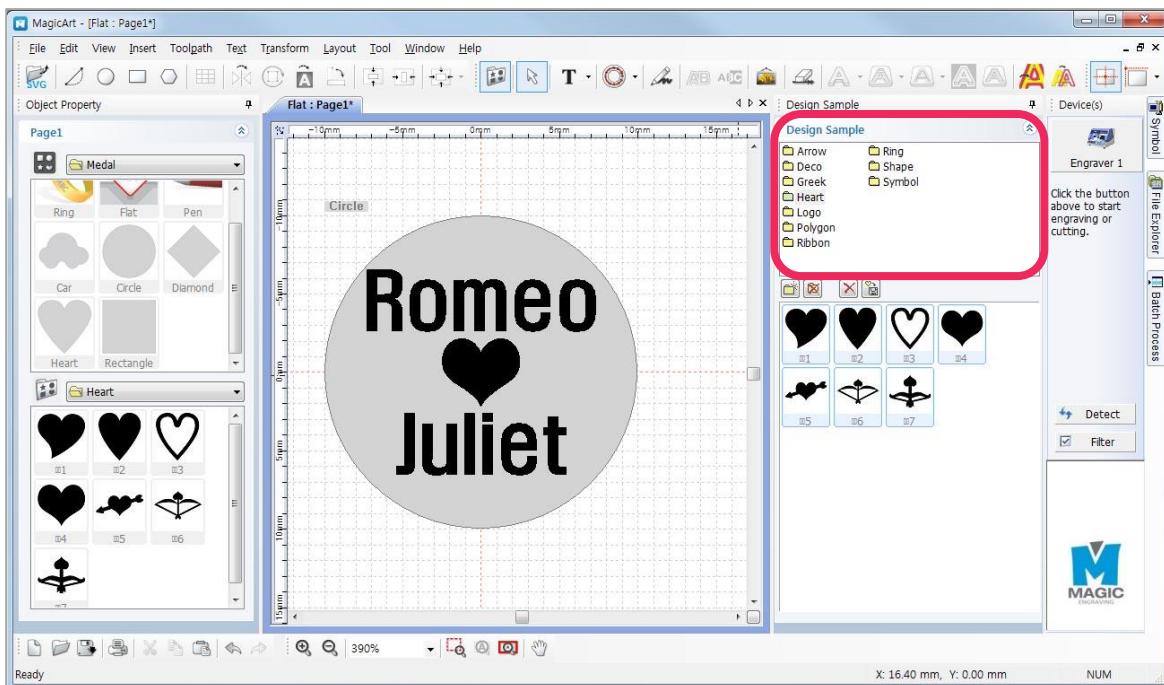


[Saving as design sample #2]

1. Select objects, and click [Design Sample] button.

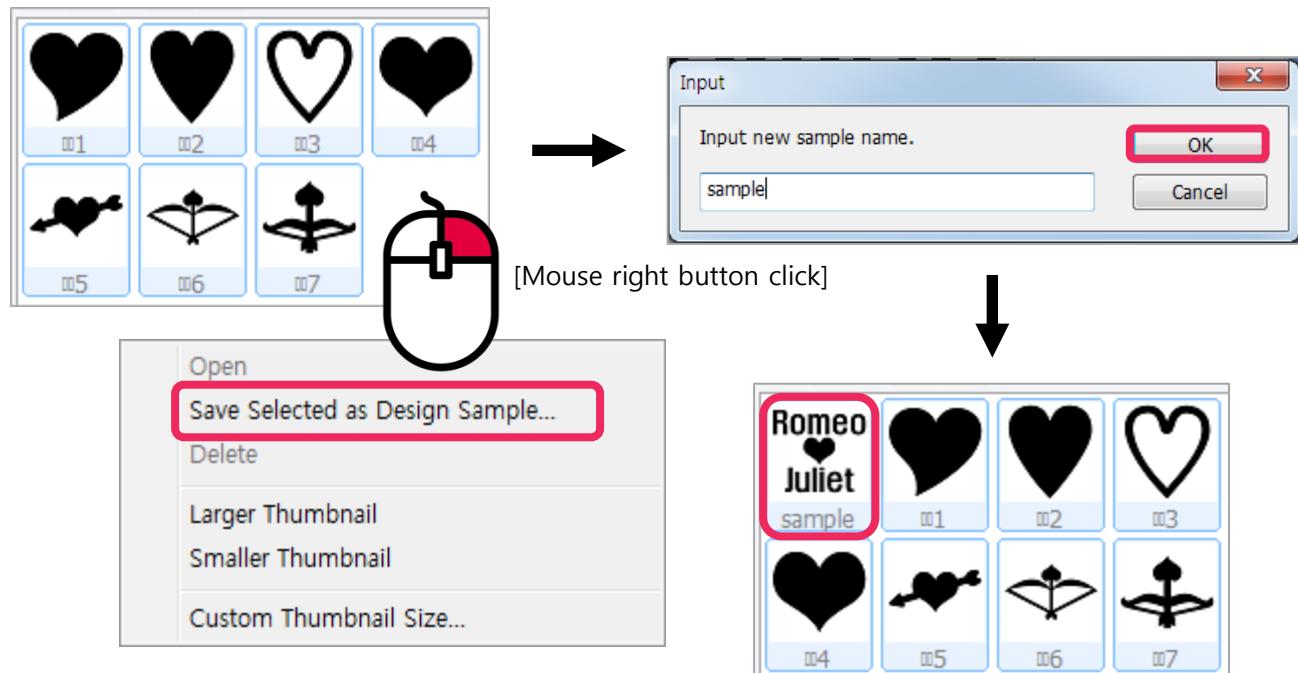


2. Select a folder to save the objects from design sample library window.



3. Click [Save selected image as sample] or right-click the design sample image, and click "Save Selected as Design Sample" menu.

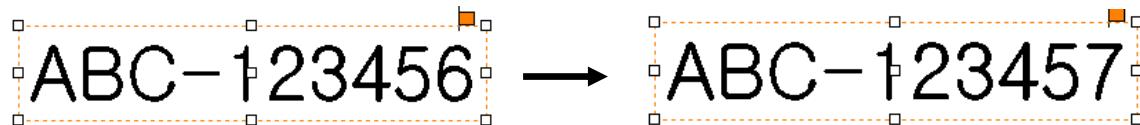
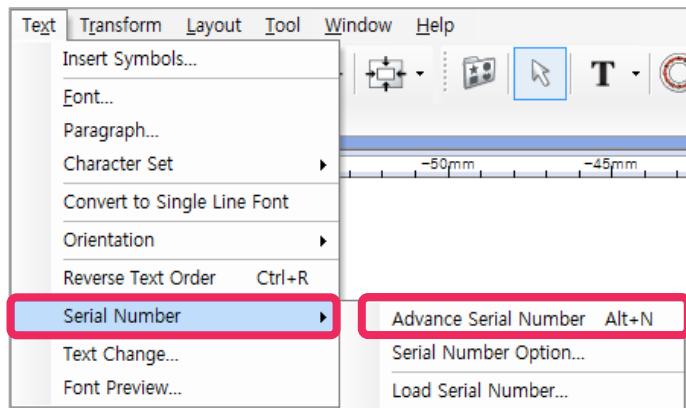
Enter the name to be saved, and click "OK" button to save it in the design sample library.



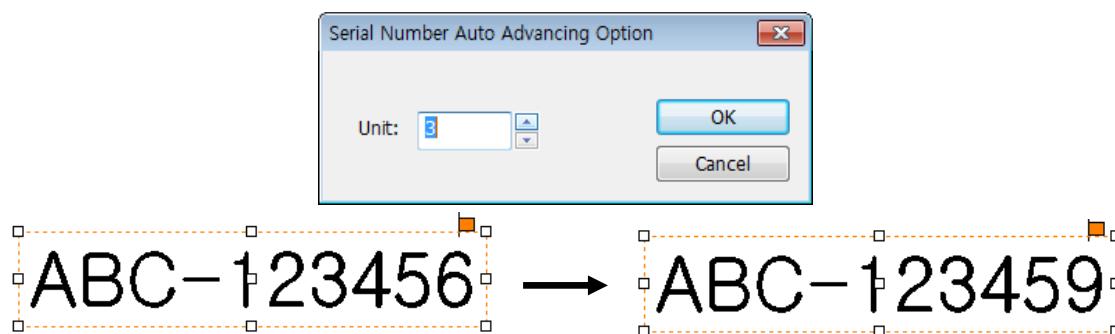
Auto Change of Serial Number

Use this function when changing numbers by certain unit.

Edit the font and size of text object with number, and press "Alt+N" key on a keyboard, or select Text menu → Serial Number → Advance Serial Number to change the number automatically.



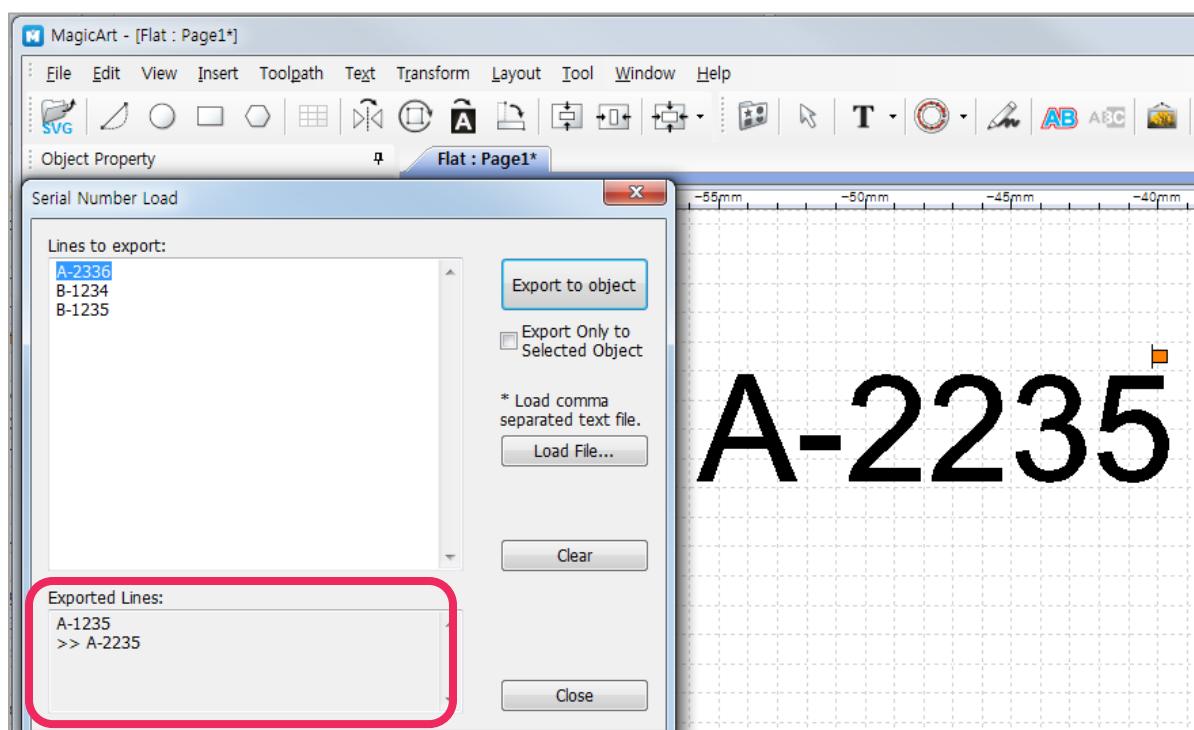
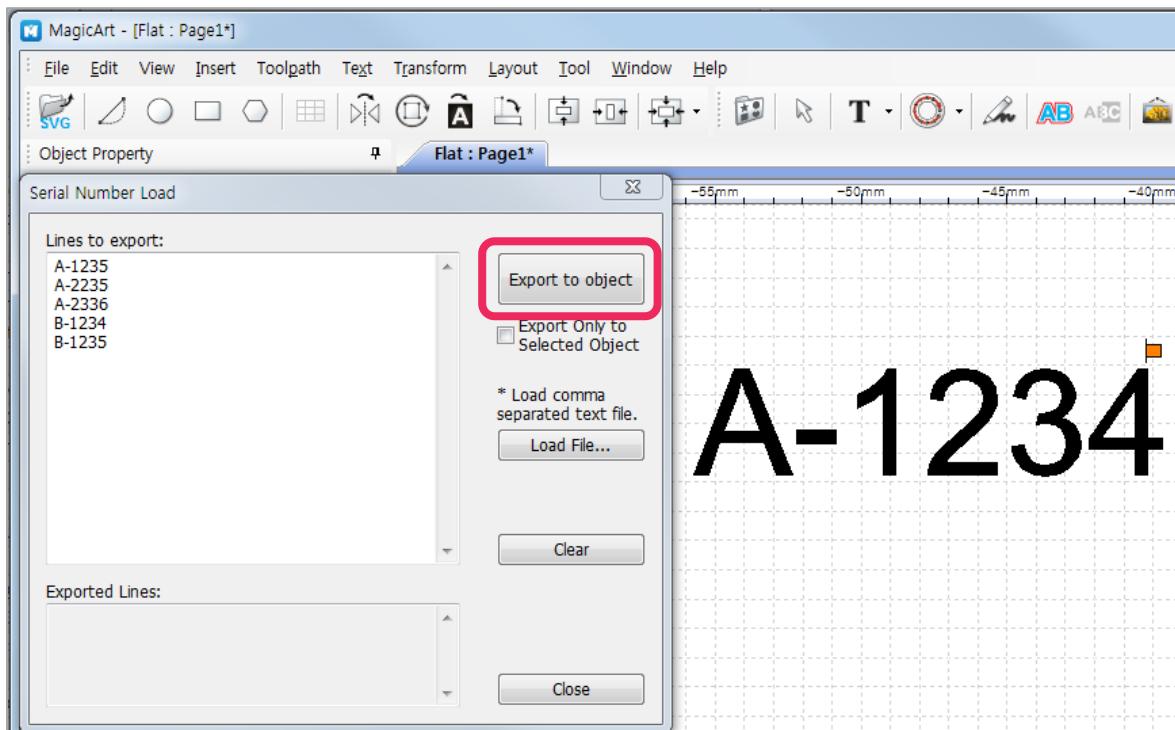
Select Text menu → Serial Number → Serial Number Option and enter a unit from the "Serial Number Auto Advancing Option" to change the serial number by the designated unit automatically.



If the serial number is not regular, then select Text menu → Serial Number → Load Serial Number.

Enter serial number in the "Lines to export" field or click "Load File" button to load it from a file (.txt or .csv file format).

Once serial numbers are loaded, click "Export to object" button. The text on the selected text object is automatically changed, and the serial number is deleted from the list. The deleted numbers will be shown in the "Exported Lines".

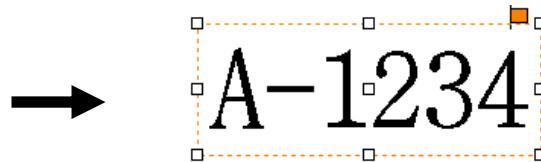




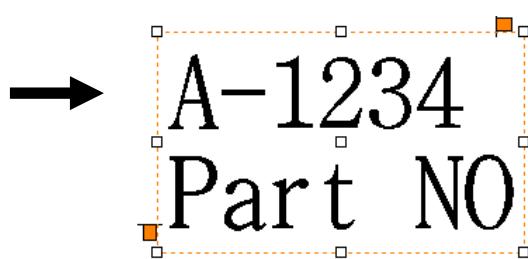
Serial numbers can be loaded from comma separated values file (.csv) or text file (.txt).

Each row of the file is recognized as one serial number, and the contents of each row separated by comma are shown in the next line.

Lines to export:
A-1234



Lines to export:
A-1234,Part NO



Loading and Editing Image

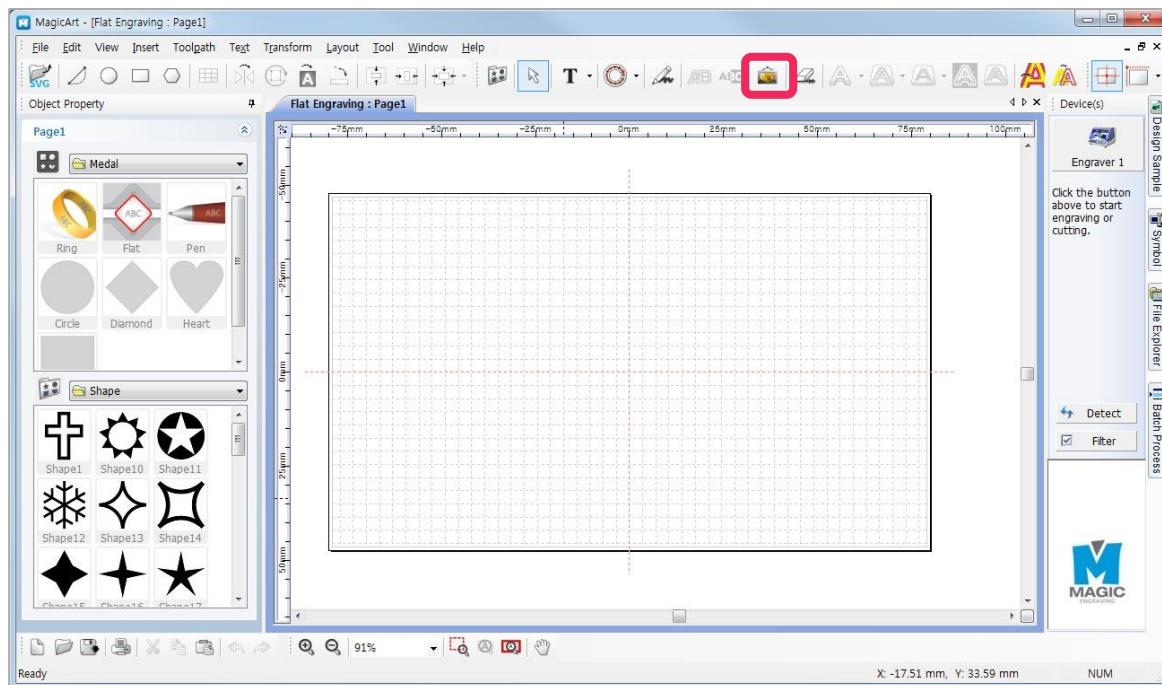
1. Loading an image

This program provides a function to load various types of image files. Supported image file types are as follows.

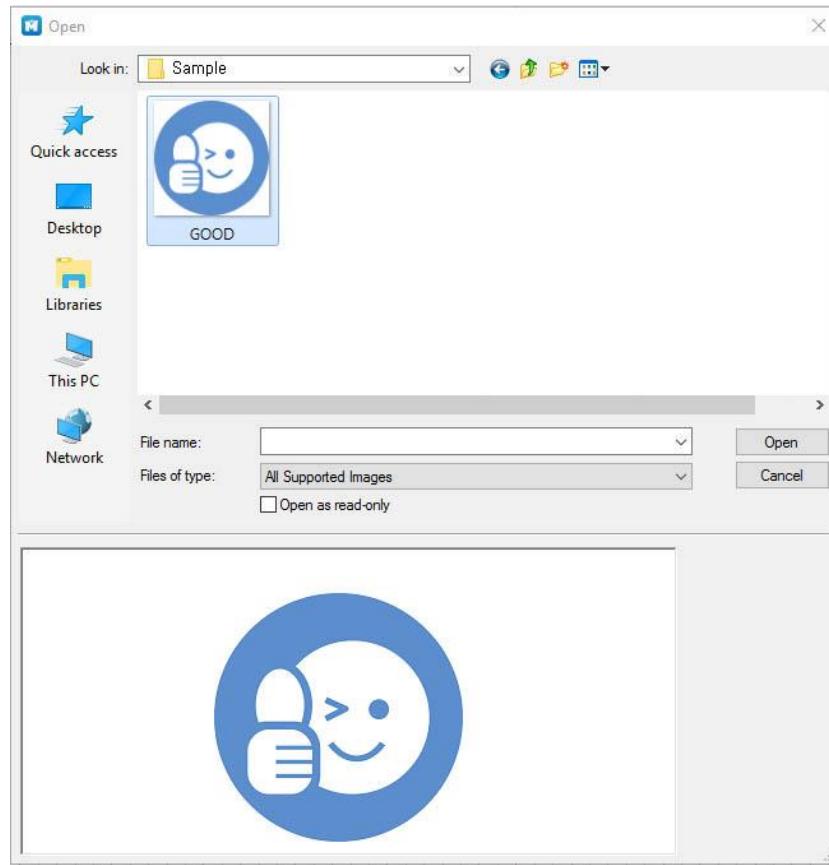
BMP	Windows or OS/2's bitmap graphic file
GIF	CompuServe graphic file
JPG/JPEG	JPEG bitmap graphic file
PNG	Portable Network Graphics bitmap graphic file
PCX	Z Soft PC paintbrush bitmap file
TIF/TIFF	Tagged Image File Format bitmap file
WMF	Windows meta file

Image file can be loaded by following method.

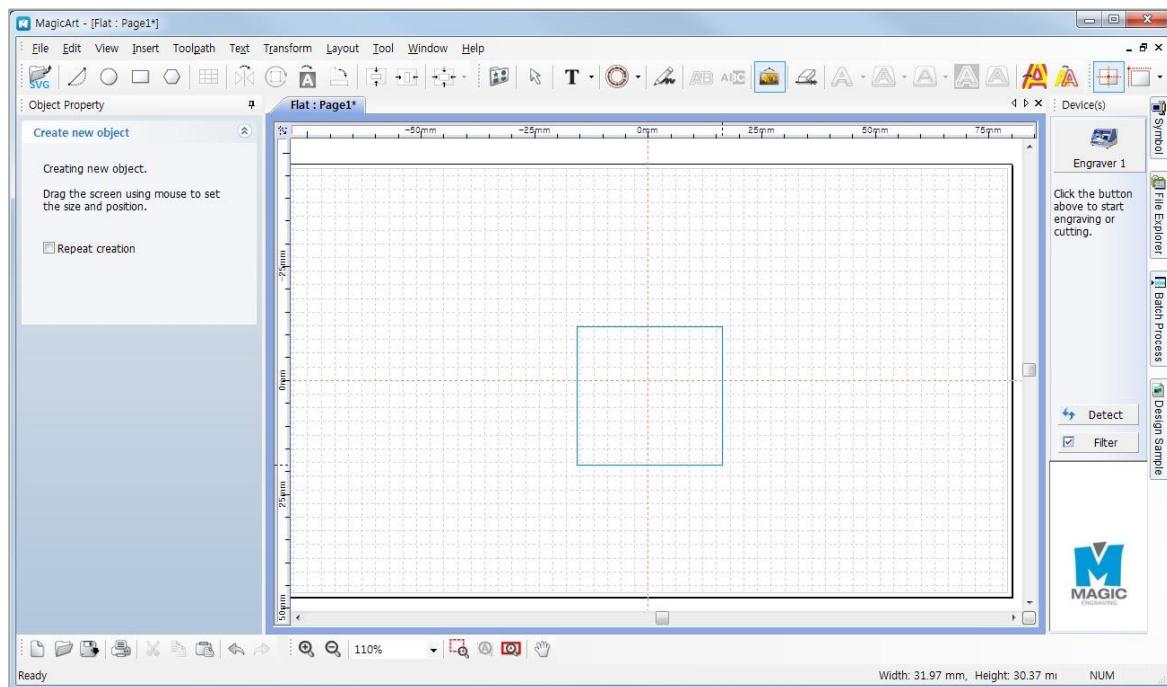
1. Select  [Image] on the toolbar or select Insert menu → Image.

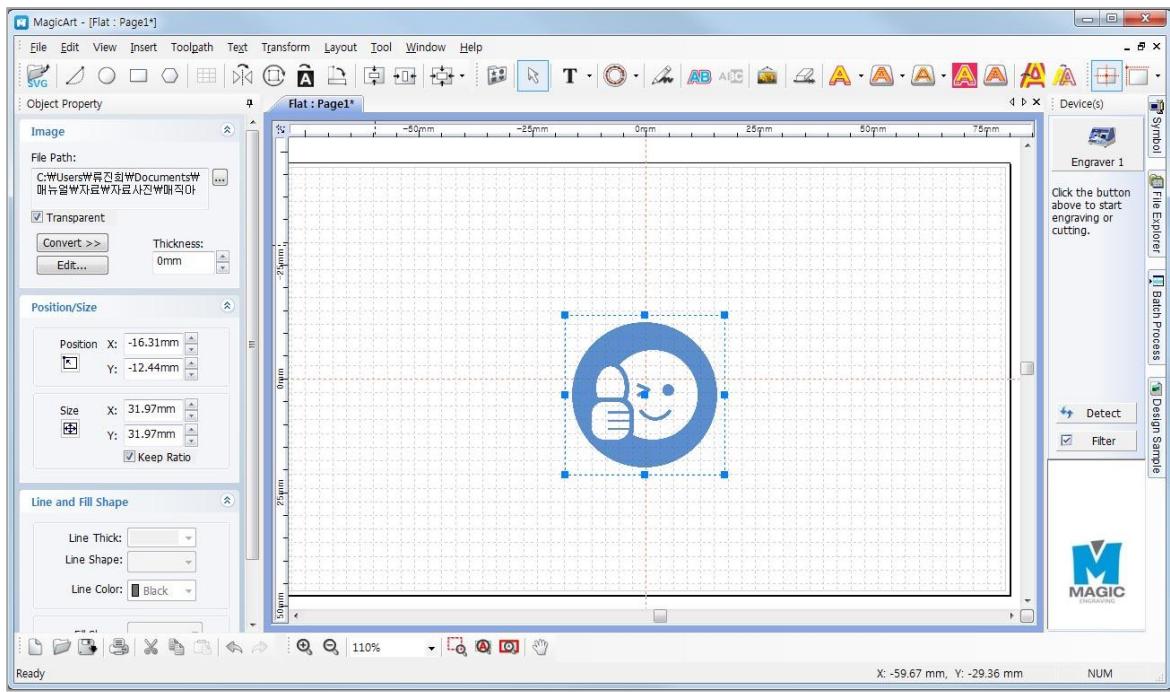


2. When "Open" window appears as the figure below, select the image to be loaded, and click "Open" button.



3. Drag the work area with the mouse to load the image by desired size.



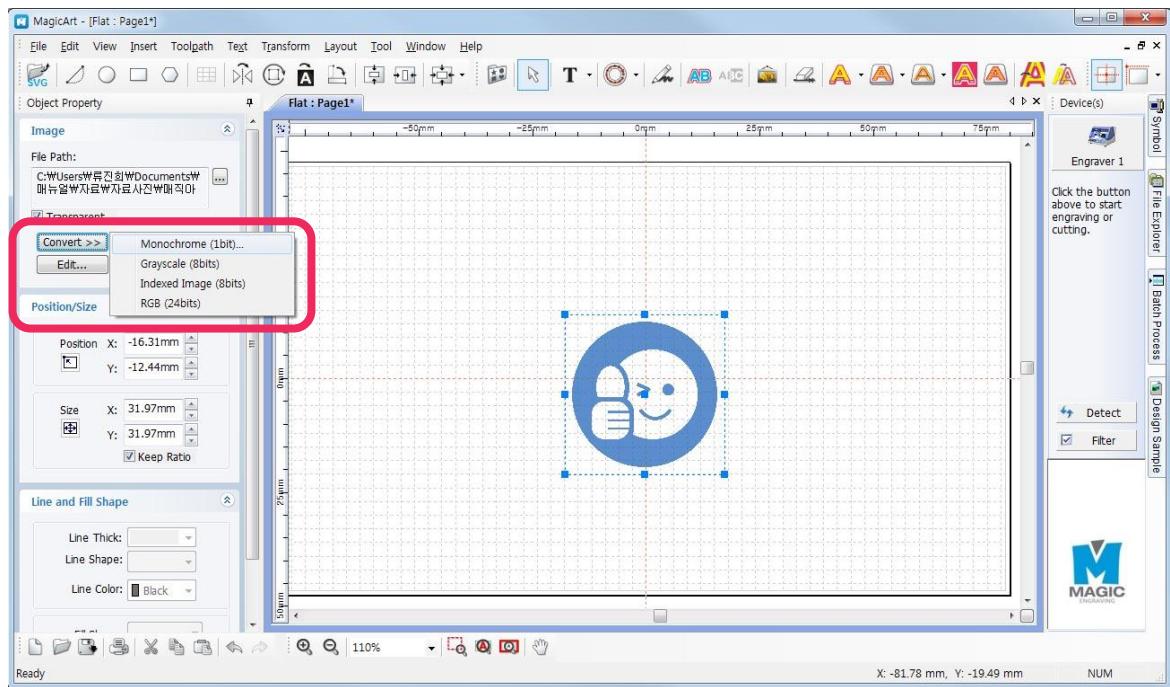


2. Converting and editing image

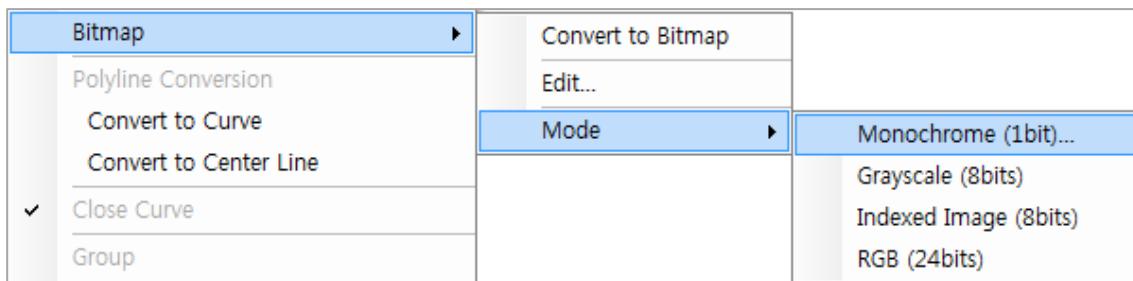
Only single color image can be engraved. Since multiple color images cannot be engraved by engraver, it should be converted to single color (1 bit) image.

[Converting to single color image]

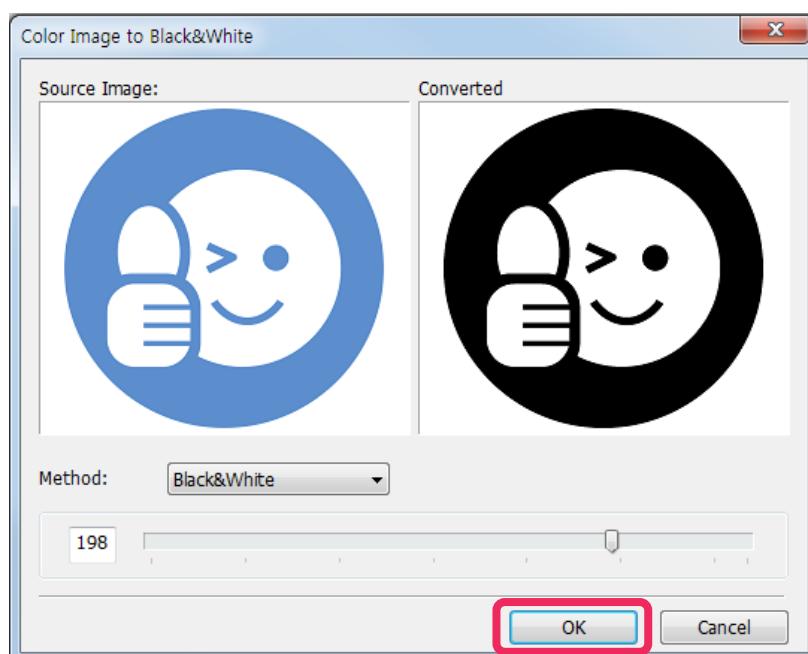
1. Select the image object you want to convert, and click "Convert" button in the image object window and select "Monochrome (1bit)."



Or select the Transform menu → Bitmap → Mode → Monochrome (1bit).



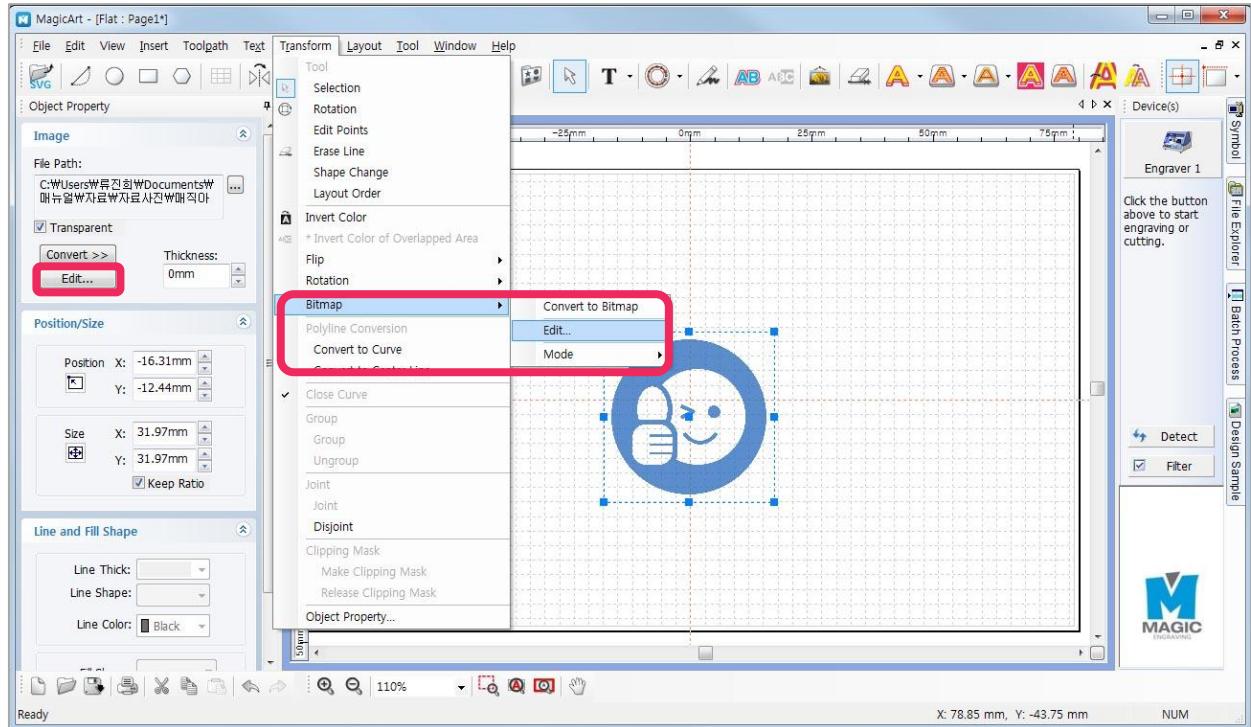
2. "Color Image to Black & White" window appears as below. Adjust the slider to change it to the most suitable single color, and click "OK" button.



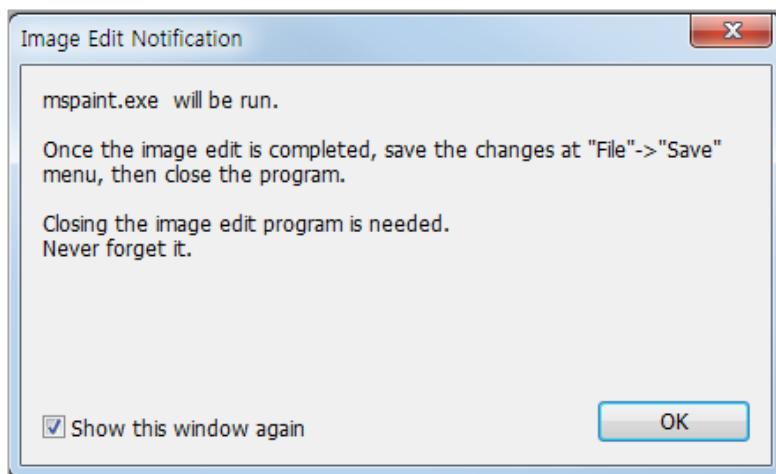
[Editing image]

Loaded image can be edited by "Paint" program in Windows.

Select the image object to be edited, right-click it to select "Edit" or select Transform menu → Bitmap → Edit.



Click [OK] to run Windows Paint program.



Then, Windows Paint program will show the image.

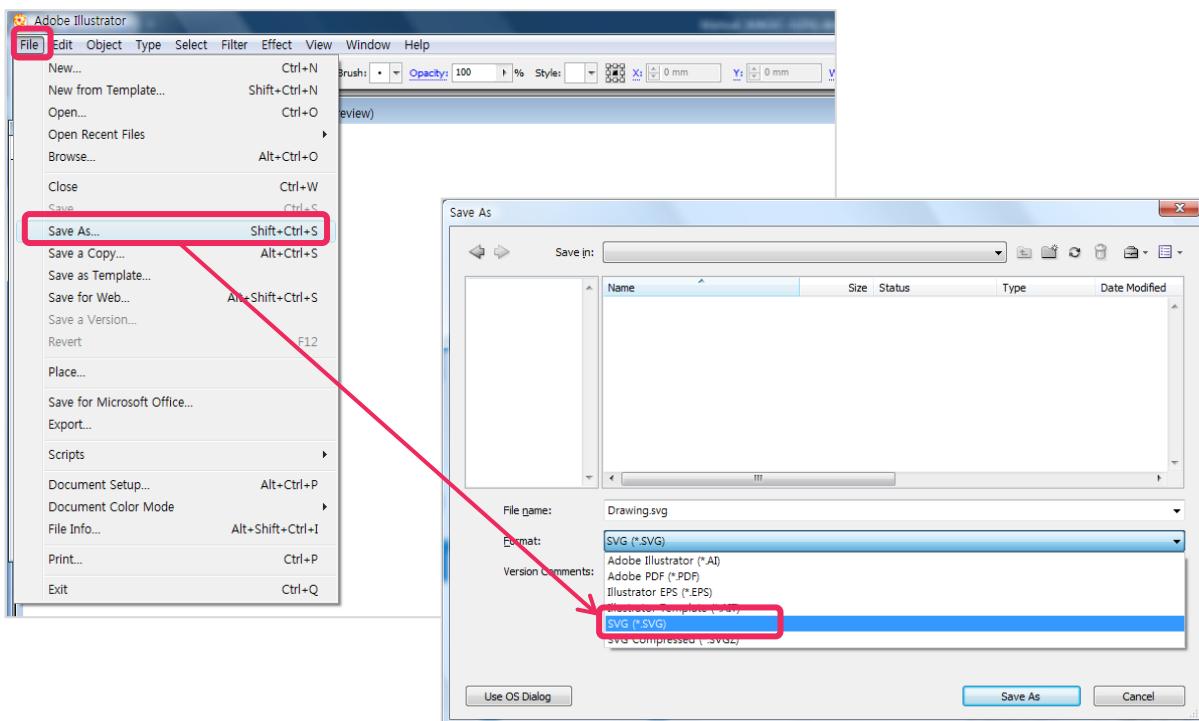
After editing the image, press "Save" from the File menu of Paint, and close the program to apply the edition.

Import a File in SVG Type

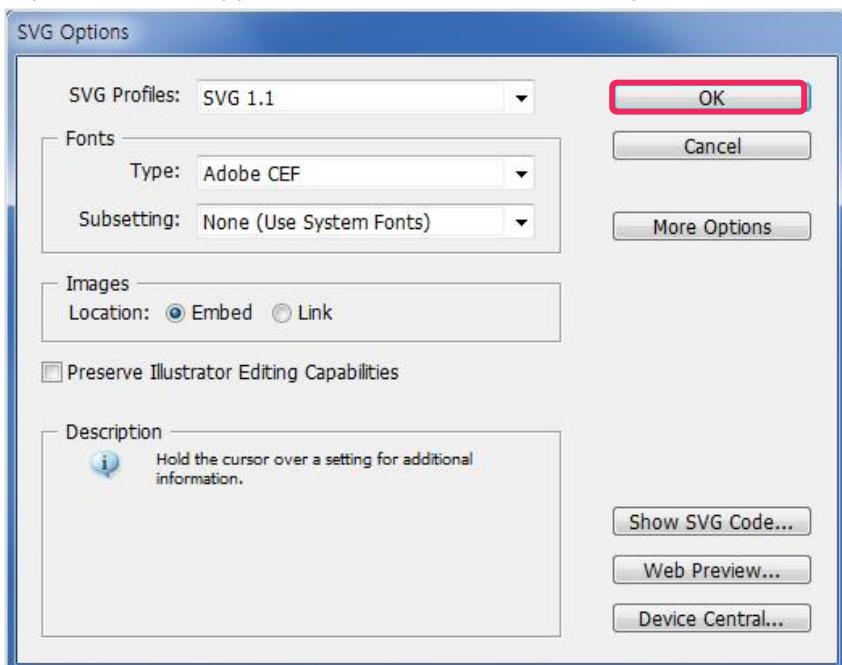
Loading vector graphic files such as SVG file is also supported.

The SVG file is created by various graphic programs such as Illustrator, CorelDraw and etc.

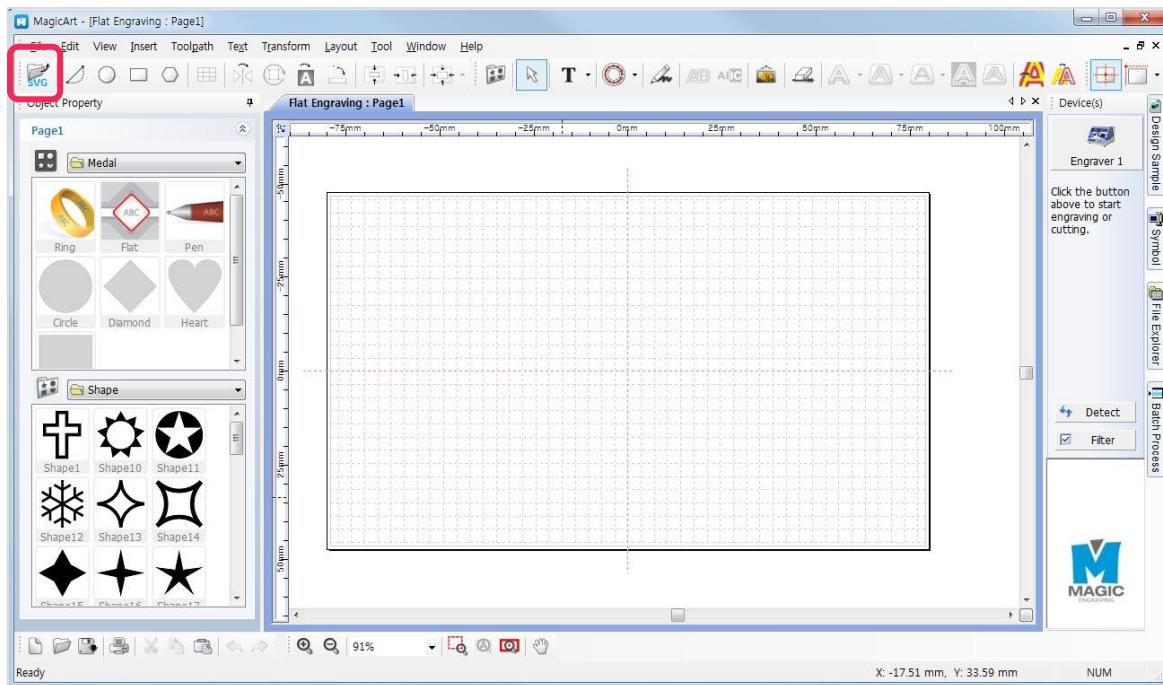
1. Select File menu → Save As from Illustrator program to save a file in SVG type.



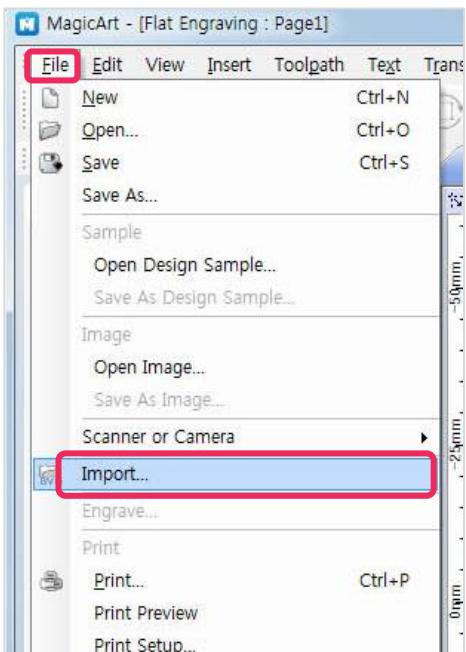
2. SVG option window appears. Press "OK" button to complete the save.



3. Click  button to load the SVG file.



4. Or select File menu → Import to import a file.



Origin Point Calibration

※ The machine is initially set up at factory. Please contact reseller before changing the machine settings.

※ Calibrate the machine by using tip(Carbide, Diamond). The machine cannot be calibrated by using endmill, cutter, etc.

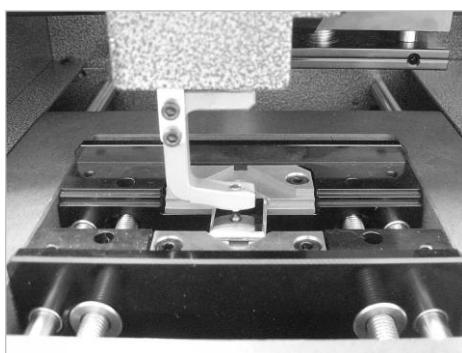
※ Calibrate the machine only when Engraver pressure lock is not fixed. The nose, tool, and material can be damaged if you calibrate the machine when the head is fixed.

1. Tool Calibration (touch)

1. Fix a flat surfaced material on the clamp.
2. Fix the tool short enough.

3. Press  button to move the tool to the clamp.

4. Press and hold  button for more than 2 seconds to go to the tool calibration mode. The tool will be lowered down to the material held in the center of the clamp.



5. Lower the tool manually by loosening the fixing bolt of the tool with a wrench, or raise the material with your hands to make the tool and materials touch as shown in the picture below.





6. Press and hold **START** button until it beeps (more than 3 seconds) to confirm that the setting is saved, then the tool will measure the material's height.

2. Laser Pointer Calibration



Laser Radiation

Avoid eye or skin exposure to direct or scattered radiation. Class IIIA laser product.

◆ Multi performance clamp

1. Fix a flat surfaced material on the clamp.



2. Press and hold button for more than 2 seconds.

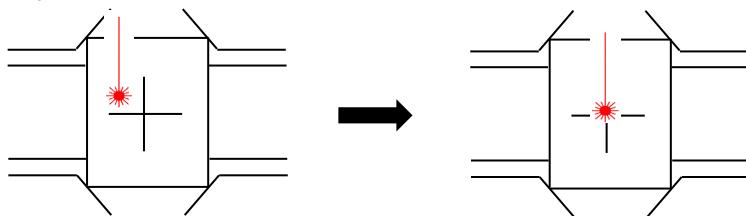
3. The tool draws cross (+) lines on the materials and the laser pointer is turned on.



4. Move the laser pointer to the center of the cross by using the direction key.



Then press and hold button.



5. Laser pointer moves closer to the material to accurately calibrate the laser pointer's origin.



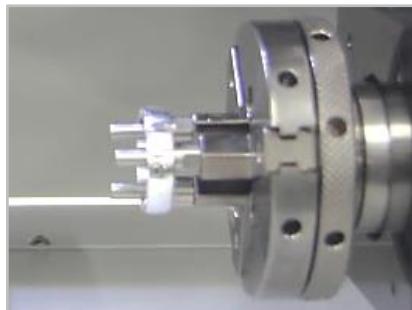
Move the laser pointer to the center of the cross by using the direction key on



engraver, and press and hold the button until it beeps (more than 3 seconds) to confirm that the setting is saved.

◆Rotation clamp (Chuck)

1. Fix a ring on flat surface of the rotation clamp. (Ring Outer Diameter Max.18mm)

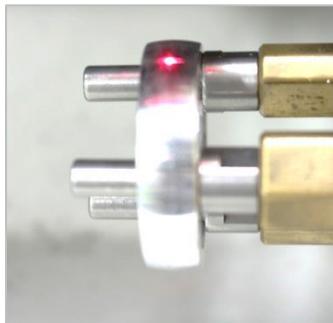


2. Press the button to move the ring outer diameter marking position of the rotating clamp.



3. Press and hold button for more than 2 seconds.

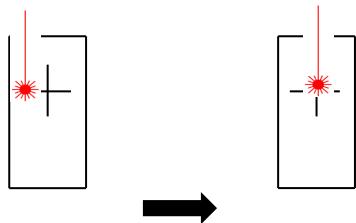
4. The tool draws cross (+) on the materials, and the laser pointer is turned on.



5. Use the direction key to move the laser pointer to the center of the cross, and



press button.



6. Laser pointer moves closer to the material to accurately calibrate the laser pointer's origin.



Move the laser pointer to the center of the cross by using the direction key on

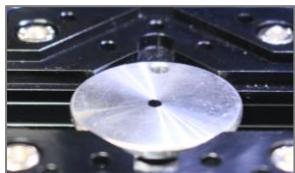


engraver, and press and hold the button until it beeps (more than 3 seconds) to confirm that the

setting is saved.

3. Saving Multi-performance Clamp Origin Position

1. Put a dot on the center of the material with the marker, and fix it at the center of the clamp.

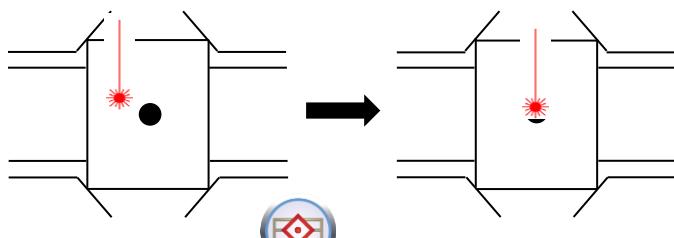


2. Press  button to convert to flat mode.

3. Press  button to turn on the laser pointer on the clamp.



4. Move the laser pointer to the center of the dot by using the direction key.

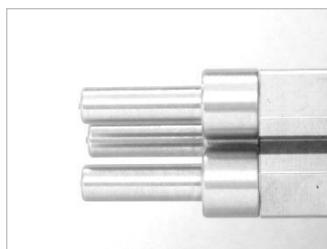


5. Press and hold the  button until it beeps (more than 3 seconds) to confirm that the setting is saved.

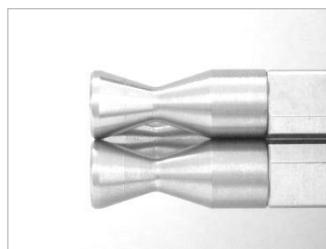
6. Tool will be moved to the position stored by pressing the button.

4. Chuck Finger Origin point

1. Set the chuck finger to the rotation clamp of the engraver.



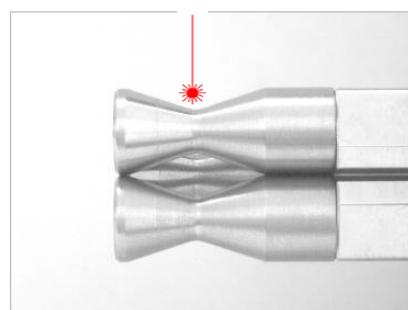
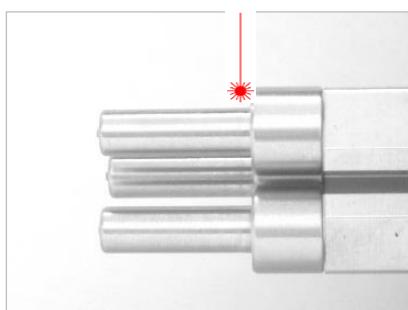
Flat chuck finger



Round chuck finger

2. Press  or  button to turn on the laser pointer at the Origin of the chuck finger.

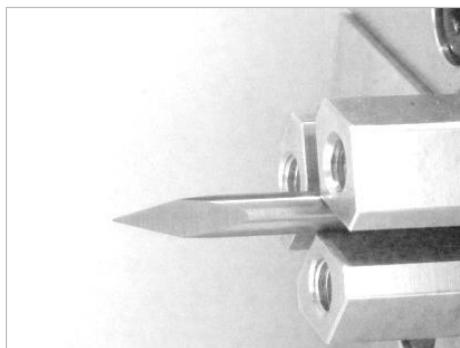
3. Use the direction key of the engraver to match the laser pointer to the base point of each chuck finger as below.



4. Press and hold  or  button until it beeps (more than 3 seconds) to confirm that the setting is saved.

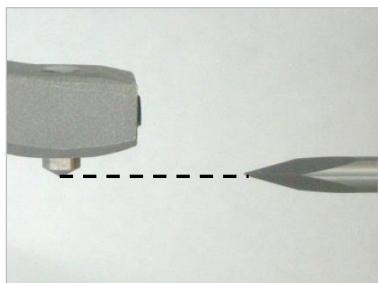
5. Rotation Clamp Origin point (Z axis)

1. Set the sharp tool into the rotation chuck of the engraver as shown in the picture below.



2. Press  button on the engraver to move the tool to the center of rotation clamp.

3. Use  buttons to align the end of the ring inner diameter engraving tool and tip of the sharp tool on the same horizontal line. If the distance between the tool and the sharp tool is too far, then bring them closer by using  button.



4. Press and hold  button for more than 2 seconds to save the settings.



R&D by REDT

<http://www.redt-magic-engraver.com>

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