

Work Example — Cutting Acrylic (Adobe Illustrator)

RSD-SUNMAX Series
SUNMAX LASER

About this document: This is an English translation of the Japanese original prepared by SUNMAX LASER for reference purposes. In case of any discrepancy, the Japanese original shall prevail. Specifications are subject to change without notice.

Work Example — Cutting Acrylic (Adobe Illustrator)

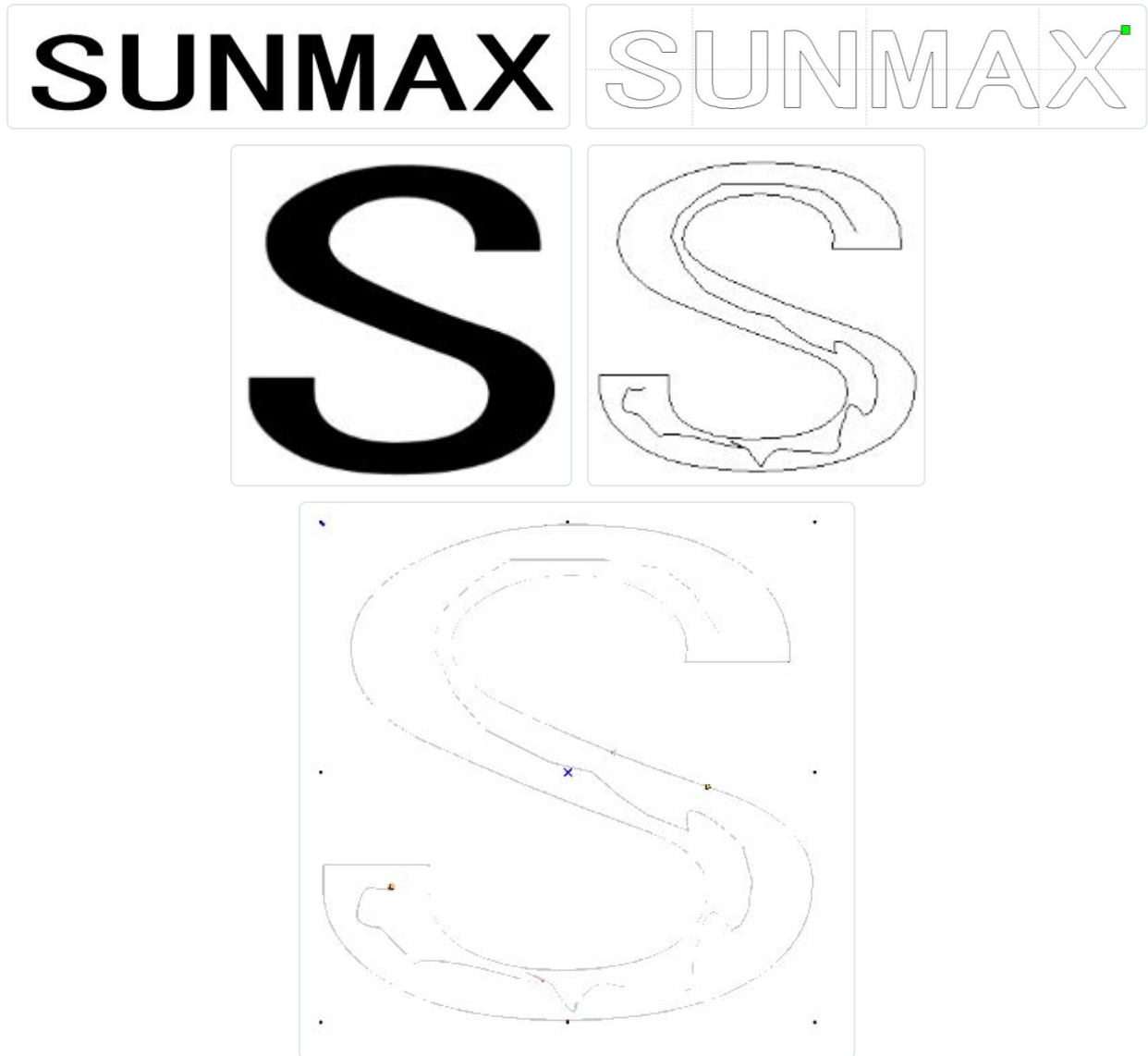
- This document assumes that the laser machine has been set up correctly.
- This document assumes that RDWorksV8, the control software for the RSD-SUNMAX series, has been installed correctly.
- This document uses Adobe Illustrator CS6.

1. Notes on Creating Data

When creating cutting data with Adobe Illustrator, pay attention to the following points.

Note 1: Only outline paths are recognized as data

- a) Fills are ignored. Only paths are recognized as data.
- b) If paths are hidden behind a fill, the hidden path data is also processed when the file is imported into RDWorksV8.

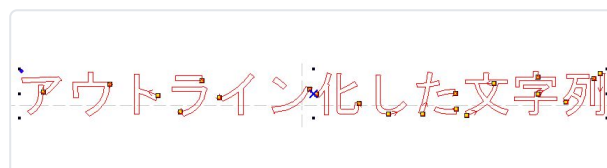
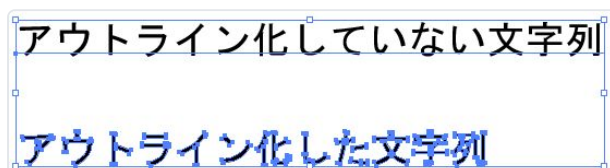
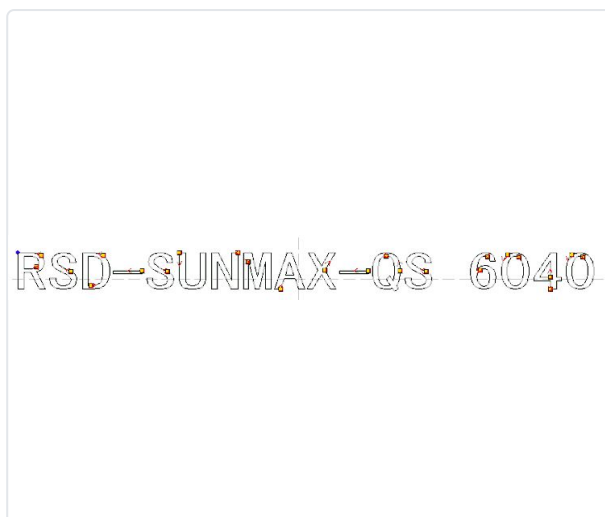


Paths are hidden inside the filled area. When the data is loaded into RDWorksV8, the hidden lines appear.

Illustrator data / Imported into RDWorksV8

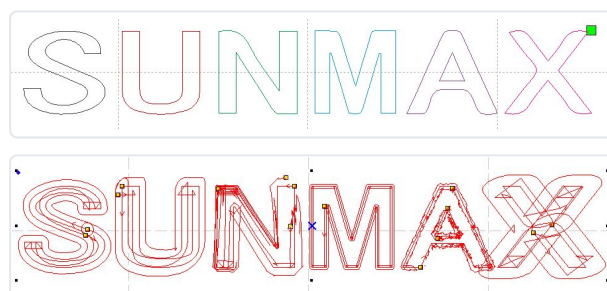
c) Placed image data is not recognized. Only outline paths are recognized.

d) Convert text to outlines.



Illustrator data / Imported into RDWorksV8

Note 2: If line colors differ in Illustrator, the data is split into separate layers



Note: When the file is imported into RDWorksV8, the layer colors are replaced with similar colors.

Note: This applies not only when the file is saved as an Illustrator file (*.ai) but also when it is exported as a dxf file. Note, however, that the layer colors after replacement may differ between *.ai and *.dxf.

Note 3: Illustrator brushes are treated as paths

Note 4: Do not add guides

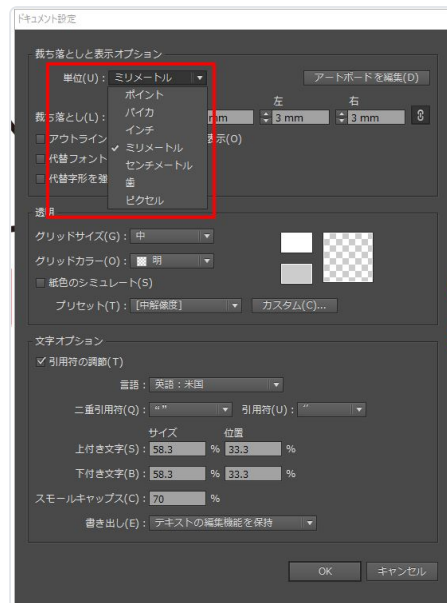
If guides are present, the data may not be loaded correctly.

Illustrator data / Imported into RDWorksV8

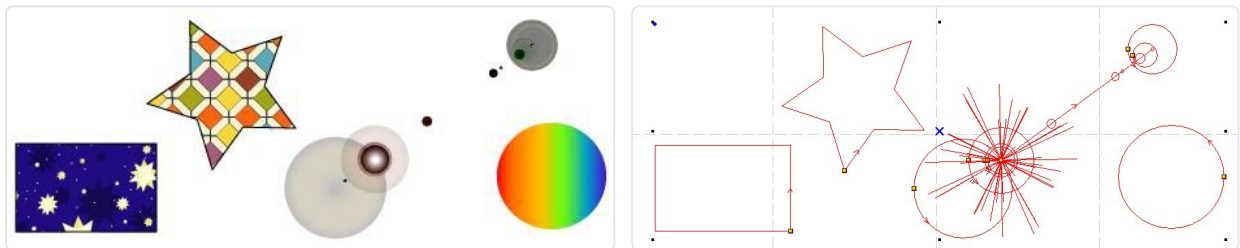
Note 5: Create your data with the unit set to millimeters

RDWorks imports data using [mm] as the unit. Data created in units other than millimeters may not be loaded at its actual size.

The unit in Illustrator is set in "Document Setup".



Note 6: Swatches used to fill shapes are not treated as paths



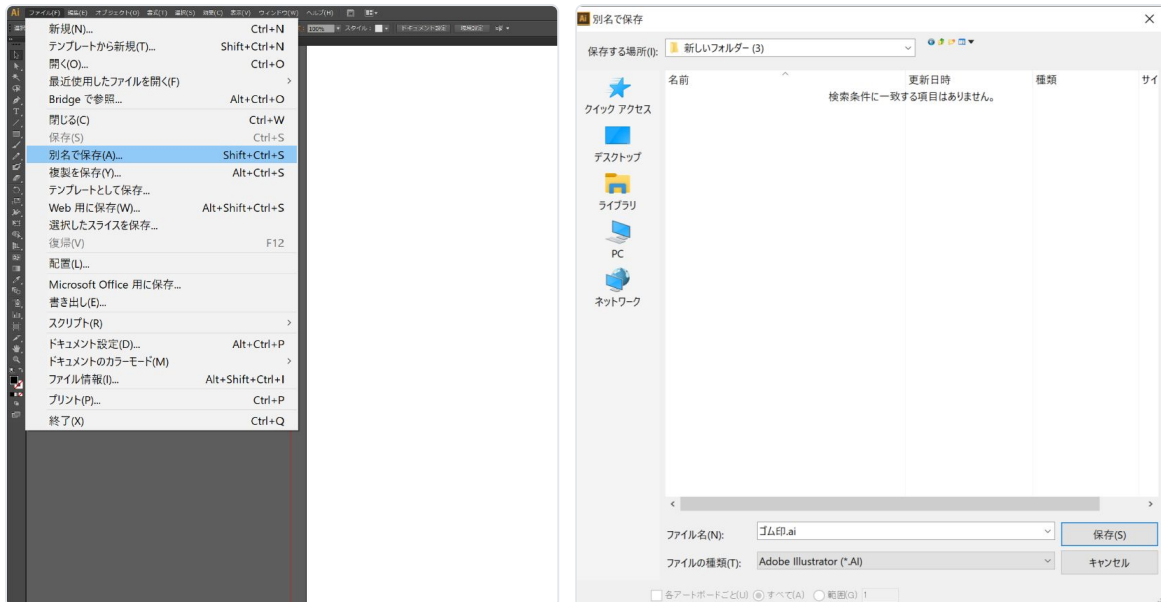
However, pattern swatches alone, when placed by themselves, are treated as paths.

For symbols, the various other tools, and similar elements, check the paths to determine whether the data can be imported.

Illustrator data / Imported into RDWorksV8

2. Saving the Data in Illustrator

Save the data you have created. Click "Save As".



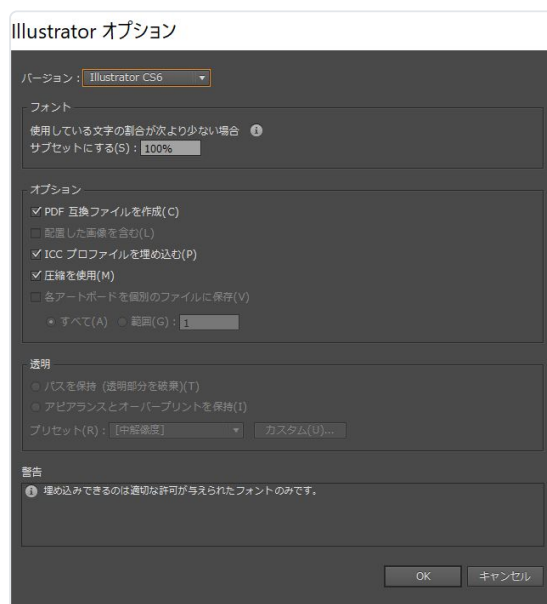
In the file save dialog, specify a file name and a save location.

Leave the file type at the standard setting, "Adobe Illustrator (*.AI)".

Click Save.

An options dialog appears.

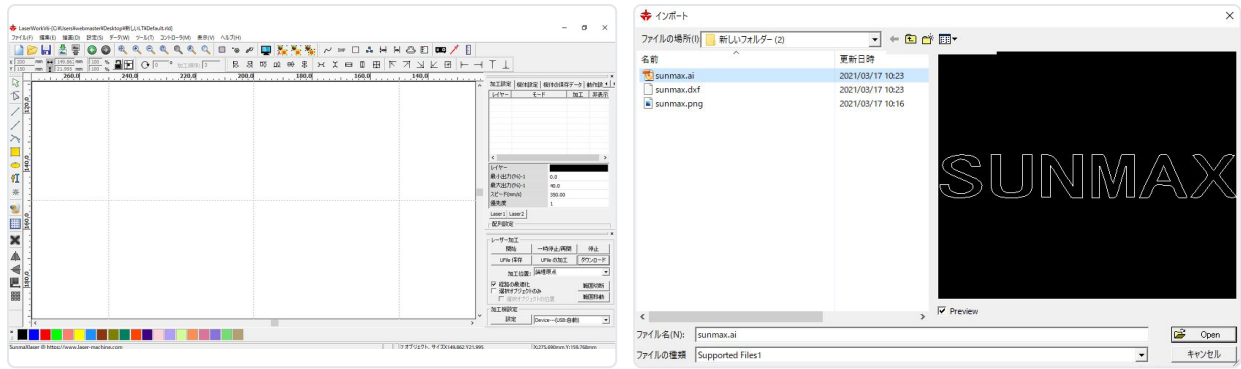
Click the "OK" button to complete the save.



Use a version earlier than CS6.

3. Importing the Data File

Click the "Import" button on the RDWorksV8 standard toolbar.



The Import dialog appears. Select the Illustrator file, confirm that it is shown in the preview, and then click the "Open" button.

Preview checkbox

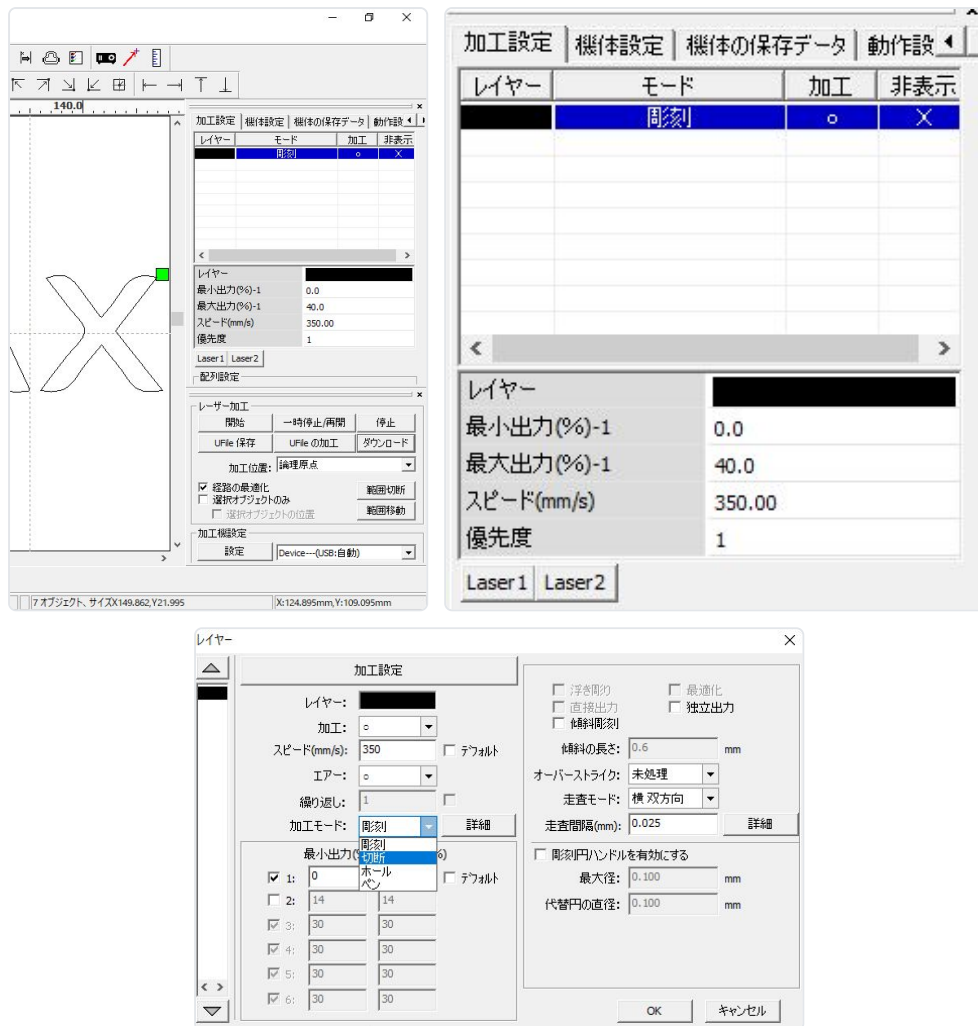
Preview pane: when a file is selected, the contents of the data are displayed.

4. Selecting and Configuring the Processing Mode

Select and configure the processing mode for cutting. The processing mode is selected and configured in the pane shown below.

Note: The "Mode" column reads "Engraving" in the figure below, but depending on the state of RDWorksV8, a different mode name may be displayed.

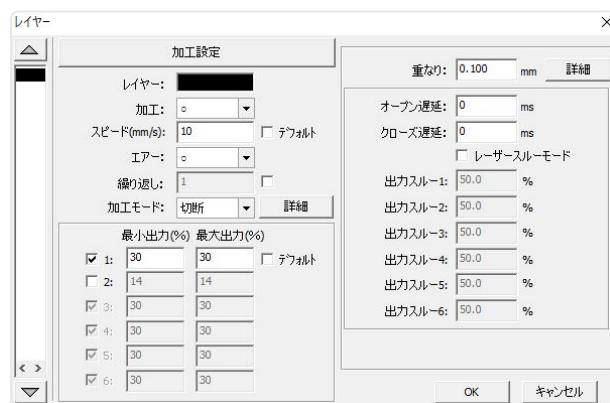
Note: The settings for each mode are remembered, so the values you set last are displayed as the defaults the next time you create data.



The Layer dialog appears. Change the processing mode to "Cut".

Double-click.

The processing details can be configured in the "Layer" dialog (the initial settings differ from those in the figure below).



Set the "Speed," "Max Power," and "Min Power" values according to the thickness of the acrylic and the required quality.

For details, refer to "Processing Settings (Layer Settings)" — "Cut Settings" in the RDWorksV8 User Manual.

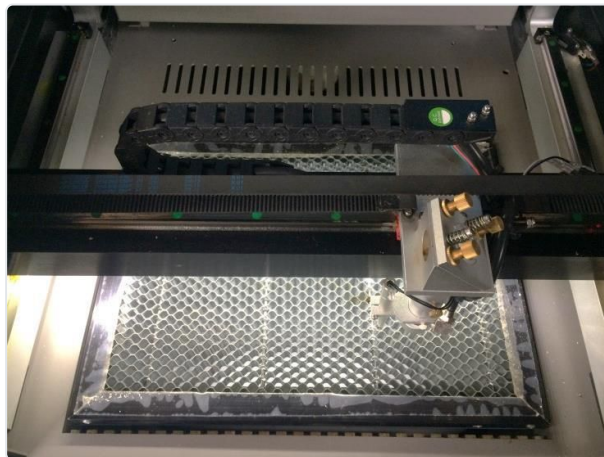
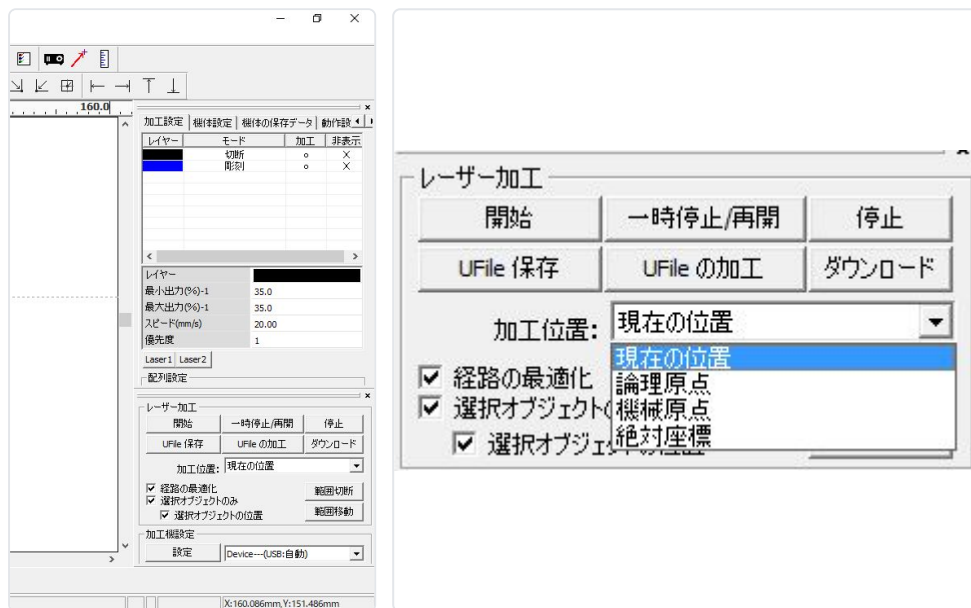
Click the OK button to complete the settings.

5. About the Origin

Before starting a job, you need to check and set the processing start position.

When starting the job from the machine's control panel, the logical origin is always the processing start position. Refer to "Machine Control Panel" — "About the Logical Origin" in the separate RDWorksV8 User Manual.

When starting the job from RDWorksV8, you can choose from four origins, depending on the setting.

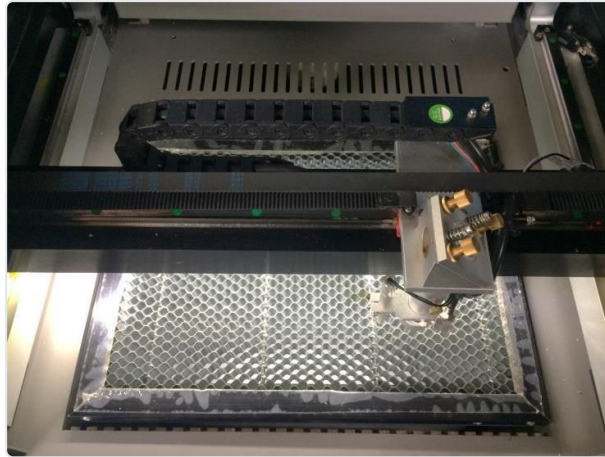


5.1 Current Position

When "Current Position" is selected, clicking the "Start" button in RDWorksV8 runs the job using the current position of the laser head as the data origin.

5.2 Logical Origin

When "Logical Origin" is selected, clicking the "Start" button in RDWorksV8 runs the job using the logical origin set with the laser machine's "Origin" button as the data origin.

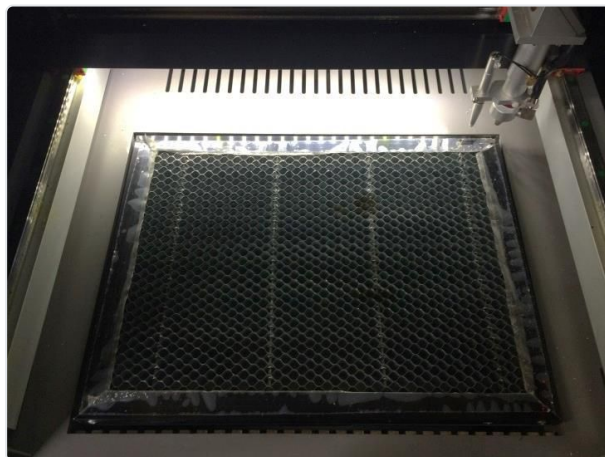


Press the "Origin" button on the machine's control panel. Even if the laser head is then moved, when the job starts the laser head moves back to the logical origin and begins processing.

5.3 Machine Origin

When "Machine Origin" is selected, clicking the "Start" button in RDWorksV8 runs the job using the laser machine's machine origin (rear right — the position the machine homes to when the laser machine starts up) as the data origin.

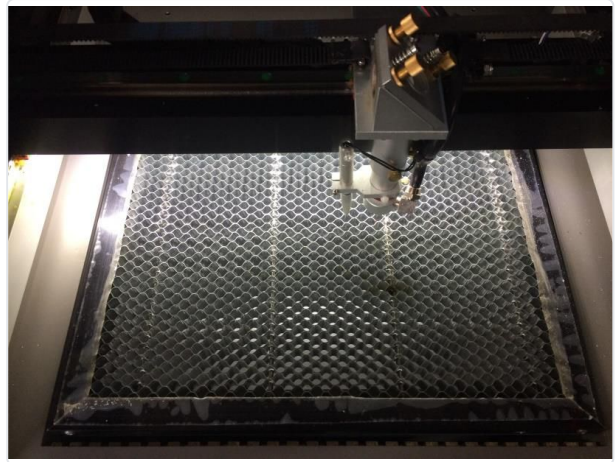
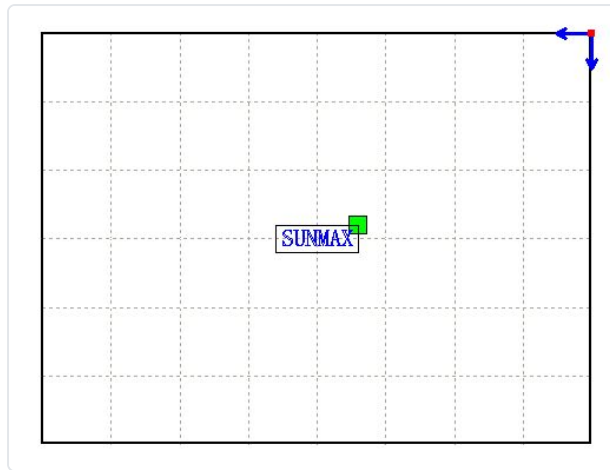
When processing from the machine origin, only cutting is possible.



When the job starts, the laser head moves to the machine origin and begins processing.

5.4 Absolute Origin

When "Absolute Origin" is checked, the logical origin set with the control panel's "Origin" button and the origin setting used when processing from RDWorksV8 are both ignored, and the job is processed at the position shown on the RDWorksV8 design screen.



Place the objects in RDWorksV8. When the job starts, the laser head moves to the same coordinates as on the RDWorksV8 design screen and begins processing.

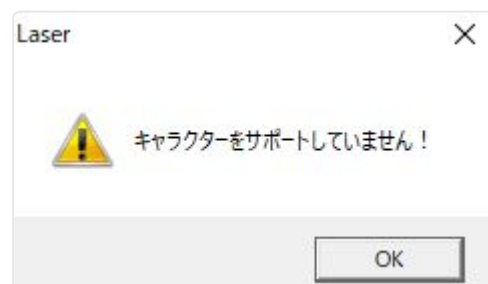
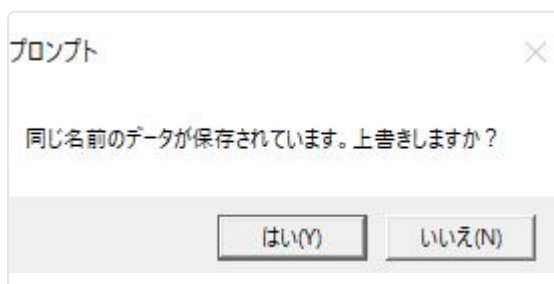
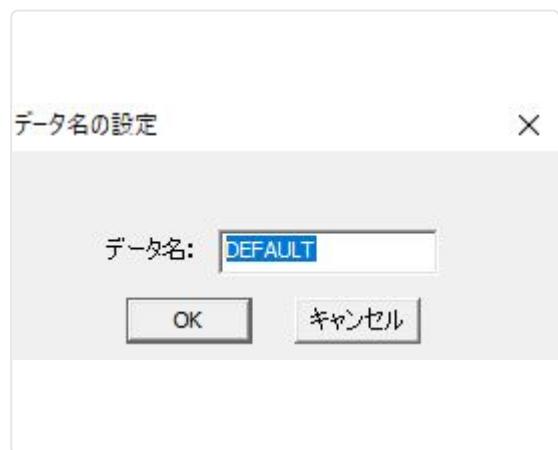
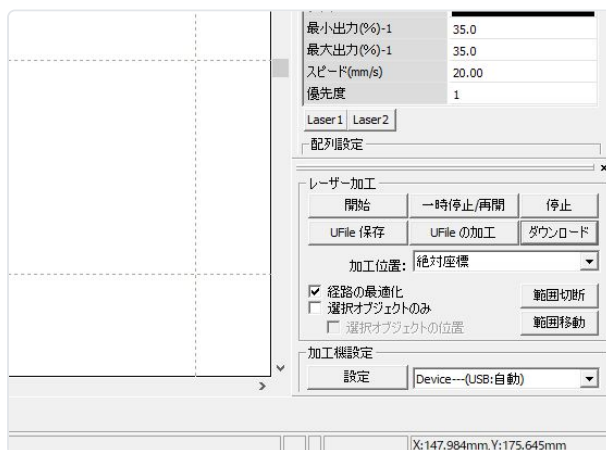
6. Downloading the Data

Once the processing settings and the processing position have been set, send the job data to the laser machine.

When you download the data and run the job, processing is started from the control panel, so the processing start position is always the logical origin.

Note: When starting the job from "Start" in the RDWorksV8 machine control pane, the data is not downloaded.

At the lower right of the screen, click "Download" in the "Laser work" pane.



When you click the Download button, the "Set File Name" dialog appears. Enter a name of your choice.

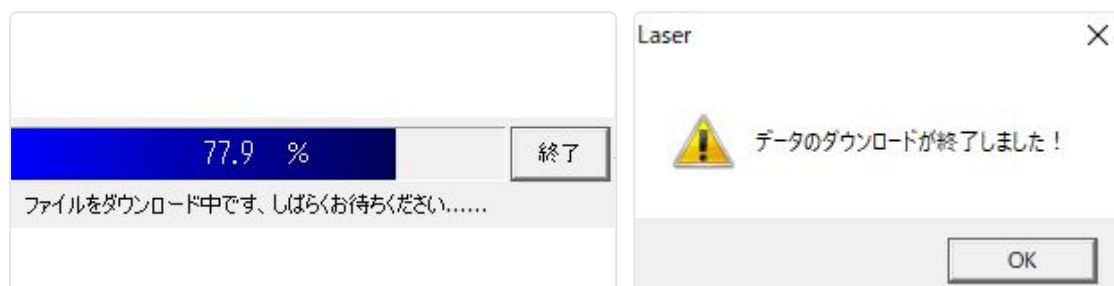
Note: If a file with the same name already exists on the laser machine, a dialog asking whether to overwrite it appears.

Note: Only single-byte alphanumeric characters can be used. Entering Japanese characters causes an error.

Starting the Download

Click to start downloading the data. The download is finished when the download progress bar reaches 100%.

Note: If the data you created is large, this step may take some time.



Download Complete

When the progress bar reaches 100%, the download-complete dialog appears.

Click the OK button.

7. Processing

The job data is now stored on the laser machine, so you can run the job. Start processing by following the steps below.

7.1 Setting Up the Table

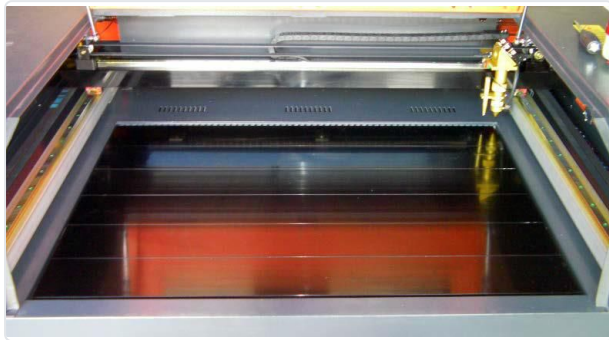
The RSD-SUNMAX series lets you choose among three types of work tables.

Engraving Table

With the engraving table, no attachment is used; the material is placed directly on the laser machine's lift table for processing.

- As a rule, use it only for engraving. Do not use it for cutting. Cutting requires the laser beam to pass through the bottom of the material, but because the engraving table is a flat plate, the beam cannot pass through it. It is therefore used for engraving.

- Cutting on the engraving table becomes possible if you place spacers between the table and the material to create a gap. In general, a gap of about 2–5 mm is required between the table and the material.
- The engraving table is well suited to holding and processing thick materials.



Honeycomb Table

The honeycomb table is used by placing it on the lift table. Both engraving and cutting are possible. In addition, by connecting an exhaust blower to the honeycomb table box, the material is held down by suction from below, so even light materials such as cloth and paper can be fixed in place.

Cutting Table

In addition to the honeycomb table, the RSD-SUNMAX series comes with a cutting table. By installing the supplied cutting-table parts on the table, you get a cutting table that produces less scorching and melting on the back of the material from laser reflection than the honeycomb table. When the cutting table is installed, autofocus cannot be used; focusing is adjusted with the laser head cylinder.



In this example, we will use the honeycomb table for processing.

For how to install and remove each table, refer to the machine's instruction manual.

7.2 Focusing

The distance to the laser head differs for each workpiece. You can set the focus either by using autofocus or by manually adjusting the height with the focus gauge.

Caution: Always refocus whenever the height of the workpiece changes.

Caution: When using the cutting table, autofocus cannot be used. Focus manually.

Using Autofocus

With autofocus, the focal distance is adjusted automatically by the autofocus switch mounted on the laser machine.

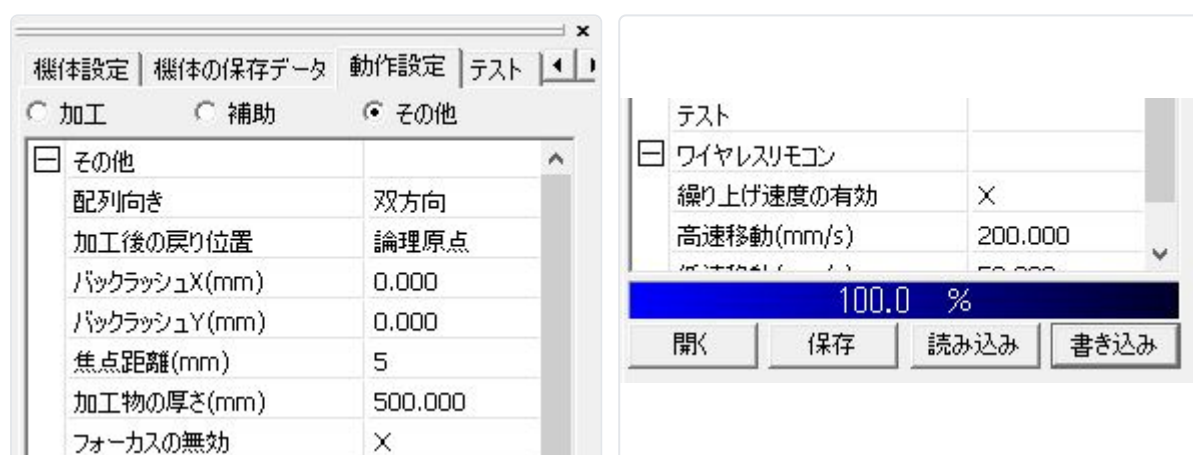
<Adjustment procedure>

The autofocus focal distance is set in RDWorksV8 under "Work settings" → "Other" → "Focus distance"; this value determines the return amount for autofocus. Adjust the value using the focus gauge so that the correct position is obtained.

After entering the setting value, write the data to the laser machine.

Press the "Z/U" button on the machine's control panel to display the options screen.

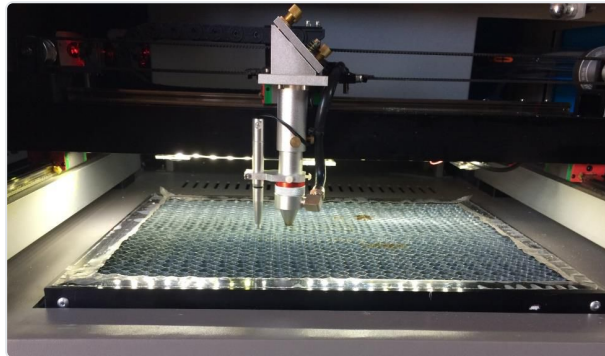
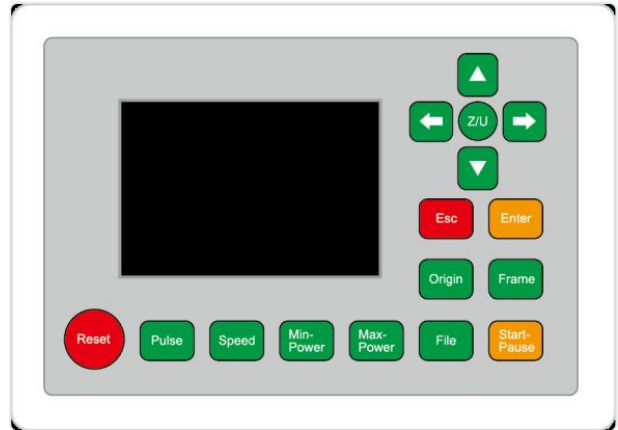
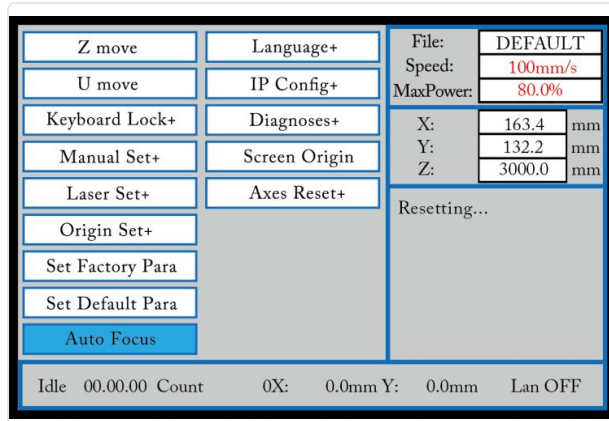
— Control panel —



Press

Use the arrow buttons to select "Auto Focus" and press "Enter"; the machine then performs the autofocus operation.

— Control panel screen —



(1) Select (2) Press

The lift table rises until it touches the autofocus switch, and the machine automatically adjusts to the focal distance value you set.

Manual Focusing (Using the Focus Gauge)

In the manual method, you operate the lift table by hand and use the focus gauge to set the focus. This allows more accurate focusing than autofocus.

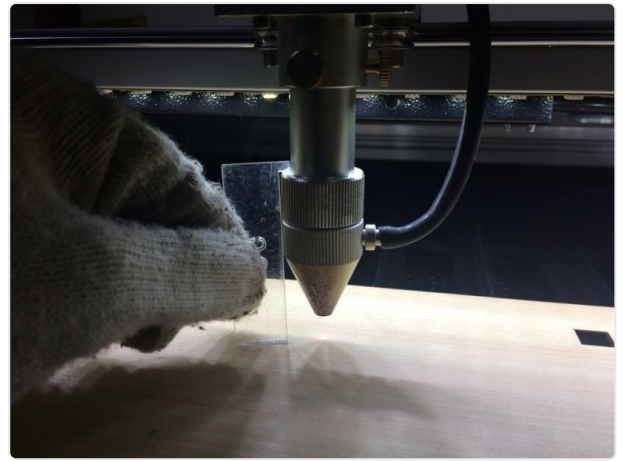
— Focus gauge —

<Adjustment procedure>

Place the focus gauge between the laser head and the workpiece.

Press the "Z/U" button on the control panel to display the options screen.

— Control panel —

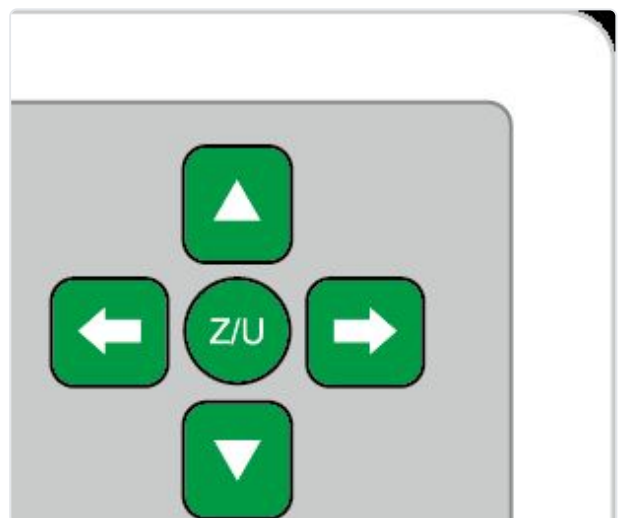


Insert the focus gauge / Press

Highlight "Z move" and press the left/right arrow keys on the control panel to move the lift table up and down.

— Control panel screen —

Z move	Language+	File:	DEFAULT	
U move	IP Config+	Speed:	100mm/s	
Keyboard Lock+	Diagnoses+	MaxPower:	80.0%	
Manual Set+	Screen Origin	X:	163.4	mm
Laser Set+	Axes Reset+	Y:	132.2	mm
Origin Set+		Z:	3000.0	mm
Set Factory Para		Resetting...		
Set Default Para				
Auto Focus				
Idle 00.00.00 Count 0X: 0.0mm Y: 0.0mm Lan OFF				



Up / Down

Adjust the height until the focus gauge just barely grazes the workpiece.

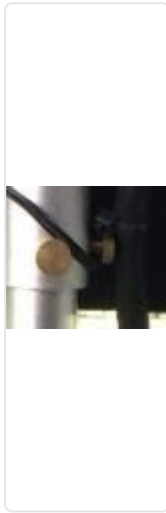
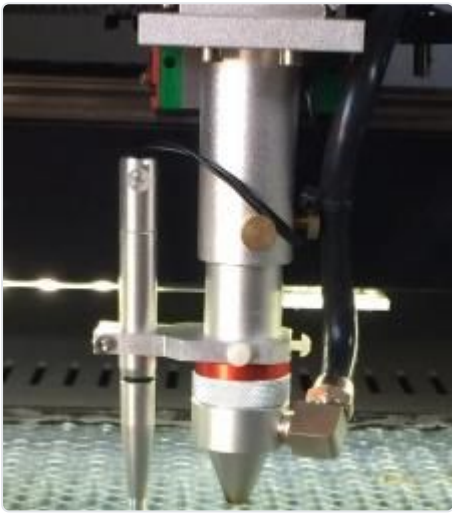
Until the gauge just grazes the workpiece

When Using the Cutting Table

When the cutting table is in use, the lift table cannot be raised or lowered, so you must set the focus manually (the procedure differs from the normal manual adjustment method).

<Adjustment procedure>

Loosening the screws on the laser head allows you to adjust the length of the head. (There are two screws.)



Turn counterclockwise to loosen, clockwise to tighten.

After loosening the screws, place the focus gauge in between and adjust the height until the gauge just grazes, then tighten the screws.

Once the height is set with the focus gauge, tighten the screws.

7.3 Cover

Once preparation is complete, close the top door.

Caution: If the top door is open, the laser will not fire.

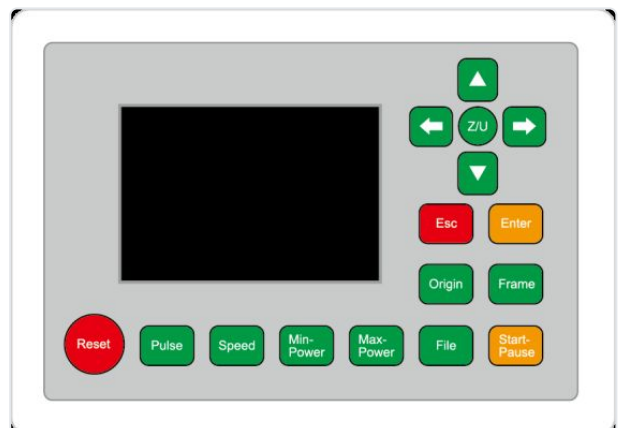
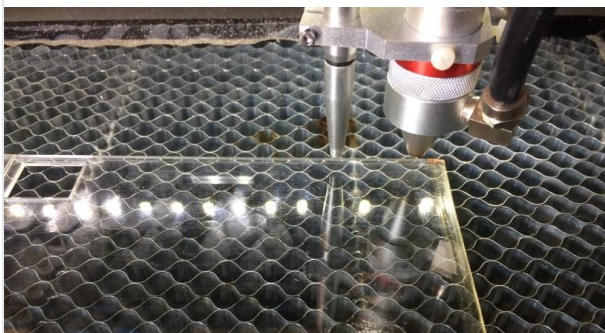
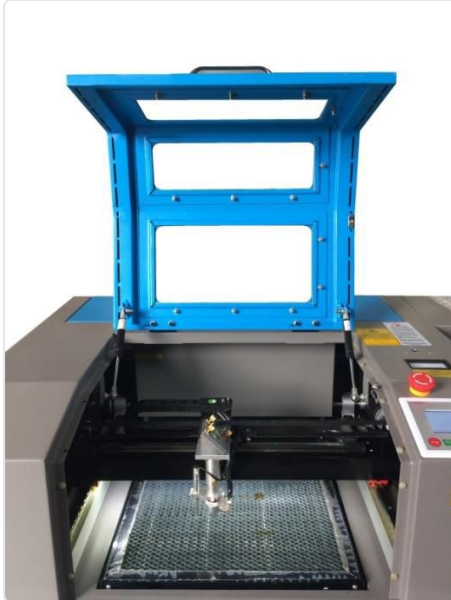
7.4 Power for External Equipment

Make sure that the automatic water chiller, the air compressor, and the exhaust blower are all switched ON.

7.5 Starting the Job

Preparation is now complete, so start processing. In this example we process using the "logical origin" method.

Move the laser head to the position you want to process, then press "Origin" to set the work origin.



Move the laser head with the direction keys; set the origin with "Origin".

Press "Start" on the control panel to begin processing.

When processing is finished, the laser machine sounds a beep. Open the cover and take out the processed material.

8. Other

[To make multiple copies of the same engraving]

Click "Array copy" on the RDWorksV8 drawing toolbar and configure the settings, or use "Array output".

配列出力

	数	間隔	ズレ
X:	3	20.000	0.000
Y:	2	30.000	0.000

Array copy copies the selected objects according to the specified row/column settings. After the array copy, you can therefore reposition or process each copied object individually.

Array output outputs the selected objects according to the specified row/column settings. Because these are not copies, you cannot reposition or process the individual objects after array output. However, it allows flexible automatic placement, such as specifying offsets between rows and columns.

Note: For details, refer to "Difference between Array Copy and Array Output" in the RDWorksV8 User Manual.

9. Processing Precautions

Caution: When cutting thick acrylic or otherwise processing at very low speed with high laser power, the acrylic material may catch fire. Always keep the job under constant observation while working, and watch out for fire.