

Work Example — Rubber Stamp Making (Adobe Illustrator)

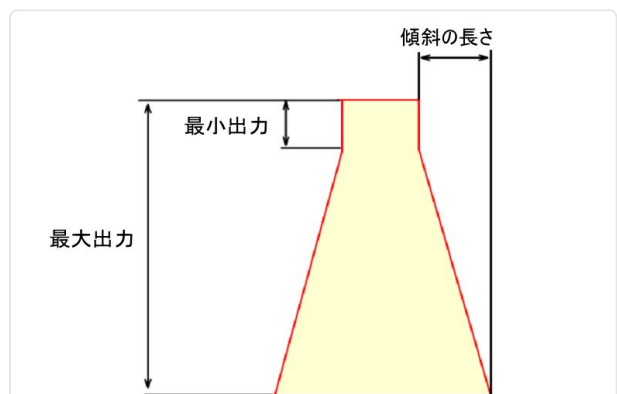
RSD-SUNMAX Series
SUNMAX LASER

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 — Rubber Stamp Making (Adobe Illustrator)

- This document assumes that the laser machine has been set up correctly.
- This document assumes that the honeycomb table is installed.
- This document assumes that RDWorksV8, the control software for the RSD-SUNMAX series, has been installed correctly.
- This document uses Adobe Illustrator CS6.
- In this document, a rubber stamp is made by performing beveled engraving on rubber.

— Finished image of a product made by following this document —



About "Beveled Engraving"

As shown in the figure below, the boundary between the engraved and non-engraved areas is sloped. When making rubber stamps or wooden tags, beveled engraving is an effective way to increase the strength of the raised (relief) portions.

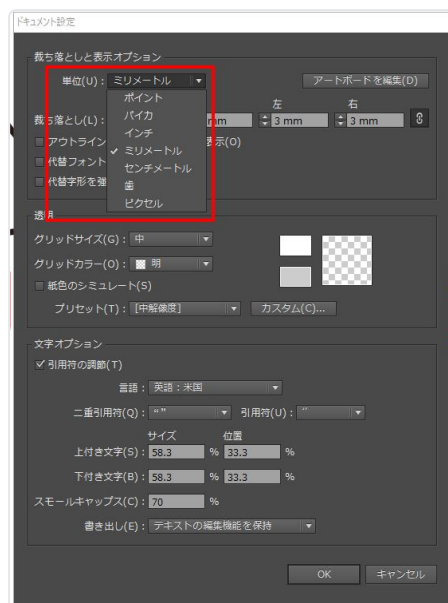
① Precautions

When creating engraving data with Adobe Illustrator, there are two methods, depending on the data format used when importing into RDWorksV8:

- a) Save the data as an Adobe Illustrator (*.AI) file.
- b) Export the data as a monochrome bitmap file.

Note: In this document, the data is saved as an AI file and then processed.

When creating data in Adobe Illustrator, always work in millimeters. RDWorks imports data using [mm] as the unit. Data created in units other than millimeters may not be imported at its actual size. The units in Illustrator are set in "Document Setup."

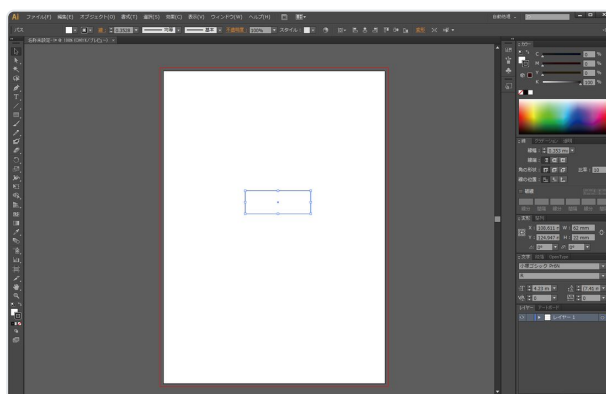


① Creating the Design in Illustrator

Create the design for processing in Illustrator.

1.1 Creating the Rectangle

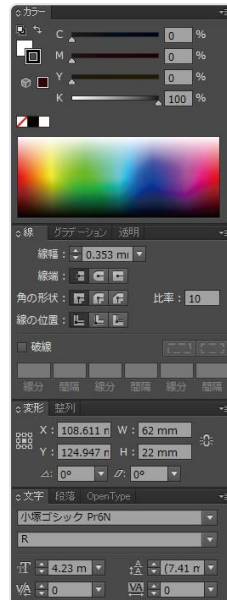
Use the Rectangle tool to create a black frame. Make the frame about 2 mm larger on each side than the actual stamp face. For example, for a W60 × H20 mm address stamp, make the frame W62 mm × H22 mm. Use a stroke width of about 1 pt.



Note: If you do not add a frame, the result is recessed engraving (the black areas — the characters — are engraved). When making a rubber stamp in Illustrator, the frame is required. Likewise, when

creating a stamp face that has its own border, it must be enclosed by a frame larger than the stamp face's border. This outer frame is not engraved during processing.

Note: Always create the data in millimeters. If a different unit is set, you can change it in Document Setup.



- Set the foreground color to white or transparent.
- Set the stroke color to black (#000000).
- Use a stroke width of about 1 pt.
- To make a W60 × H20 mm stamp face, the frame is enlarged by 2 mm in each dimension and set to 62 × 22 mm.

1.2 Laying Out the Text

After creating the frame, create and lay out the text.

Note: Always convert the text to outlines.

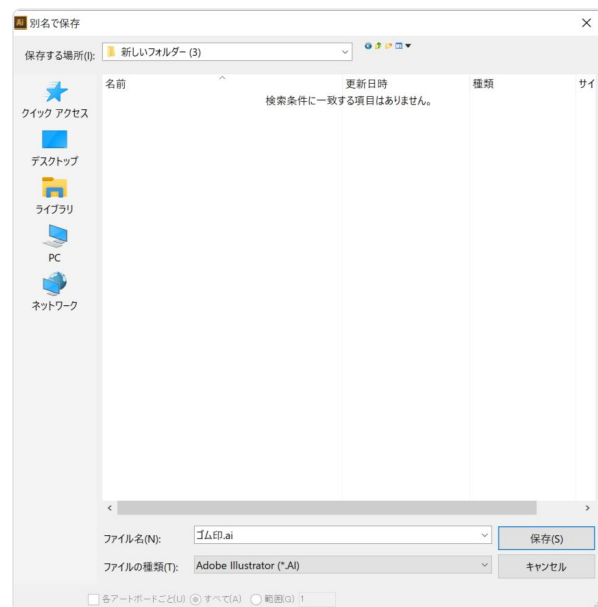
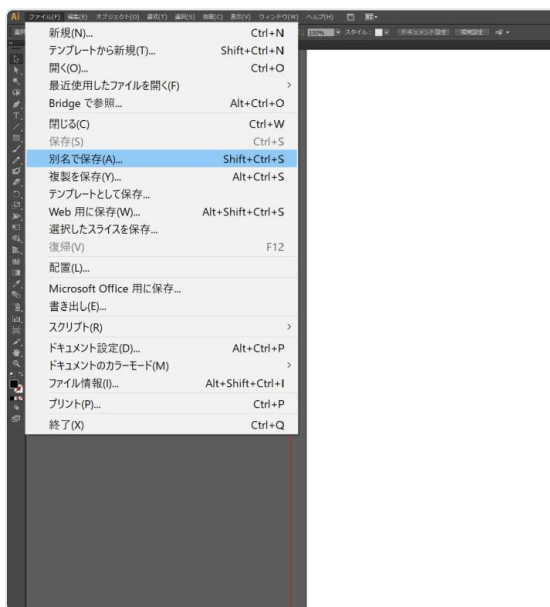
Note: The text color is black (#000000), with no stroke color.



Confirm that everything (other than the lines) has been converted to outlines.

1.3 Saving the Data

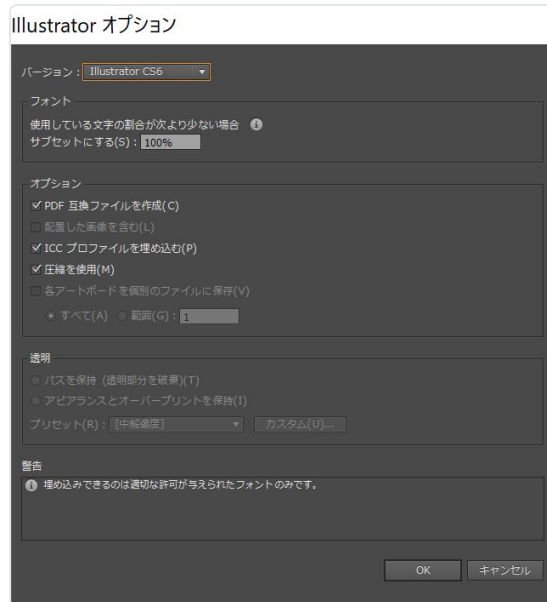
Save the data you created. Click "Save As."



In the save dialog, specify the file name and save location. Leave the file type at the default, "Adobe Illustrator (*.AI)."

Click Save.

The Options dialog appears.



Click the "OK" button to complete saving.

Caution: Use a version earlier than CS6.

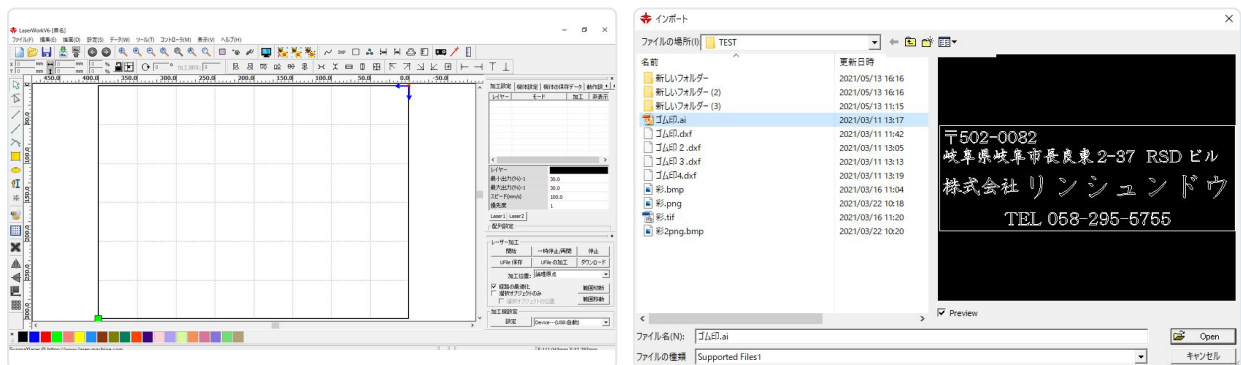
② Importing the AI File

Load the dxf file exported from Illustrator into RDWorksV8.

2.1 Loading the File

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

The file open dialog appears; select the AI file created in Illustrator.



The preview pane is displayed.

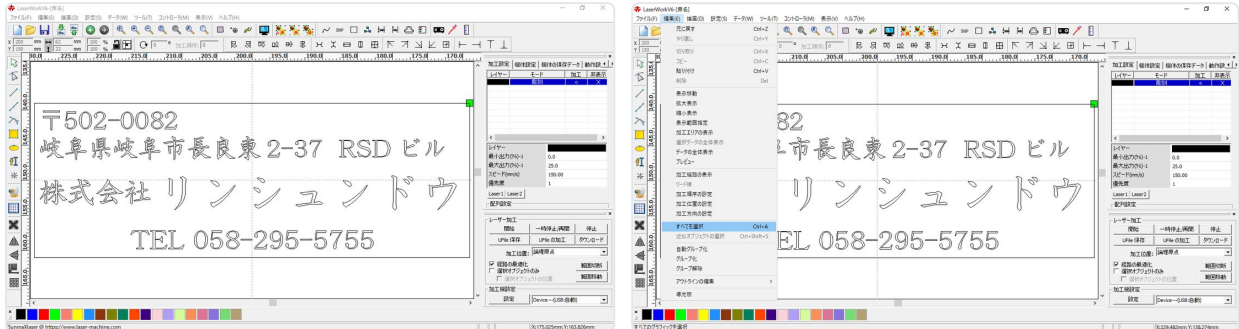
Select the file saved from Illustrator and click the "Open" button.

Note: Always select the Preview checkbox and confirm that the data appears in the preview pane before clicking the "Open" button.

- Preview checkbox
- Preview pane ... When you select a file, its contents are displayed.

2.2 Displaying the Data

When the data is loaded, the data you created is displayed.



2.3 Flipping Horizontally

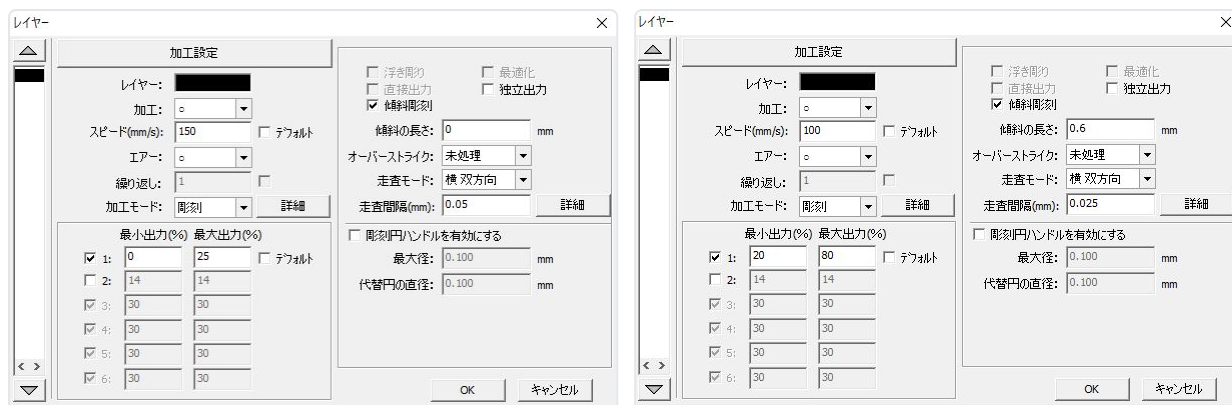
Press the shortcut key "Ctrl+A," or click "Select All" in the "Edit" menu, to select all objects.

With all objects still selected, click "Horizontal Mirror" on the editing toolbar to flip the data left to right.

③ Processing Settings

3.1 Opening the Layer Dialog

Place the mouse cursor over the layer you want to configure and double-click it.



Set each item as shown below.

After configuring the settings, click the OK button to close the dialog.

The settings above are only approximate. The correct values vary with the type of rubber sheet used and the finish you want, so check the actual engraved result and adjust the setting values accordingly.

Use the table below as the basis for the rubber stamp making settings.

Item	Setting
Speed	100–200
Scan Gap	0.025
Max Power	60–100
Min Power	10–30
Ramp Length	0.3–0.6
Scan Mode	Horizontal bidirectional
Air	Either setting is fine (function disabled)

Differences in rubber sheet material and adjustment of the engraving depth should basically be handled with the following items.

- **Speed** — Lowering the speed makes the engraving deeper; raising it makes it shallower. The maximum value is 1000 for the SUNMAX-QS series and 1200 for the SUNMAX-GS series.
- **Max Power** — Raising it makes the engraving deeper; lowering it makes it shallower. The maximum value is 100.
- **Min Power** — The larger the value, the finer the impression left when the stamp is used. Setting it to 0 may also make the stamp face look blurred.
- **Ramp Length** — When engraving deeply, raising the value increases the strength of the characters.

The following items do not need to be changed for rubber stamp making, regardless of the job content.

- **Scan Gap** — If you want to increase production speed even at the cost of a coarser finish, raising this value shortens the production time. For example, setting it to 0.05 halves the production time.

- **Scan Mode** — Select horizontal bidirectional. The laser fires on both the outbound and return passes of the scan. If bidirectional is not selected, the laser fires in horizontal unidirectional mode. Horizontal unidirectional mode may improve processing quality in some cases; however, the processing time is doubled.

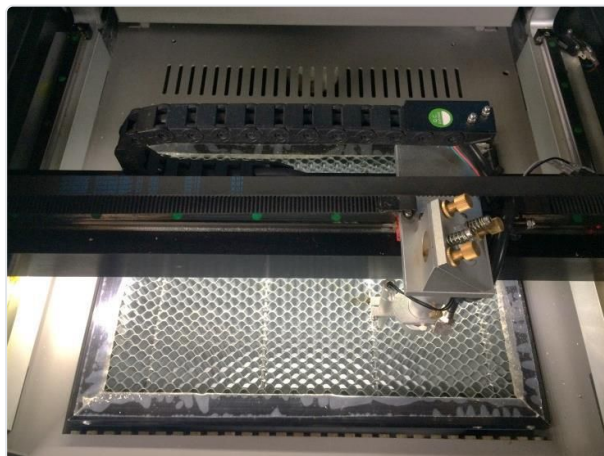
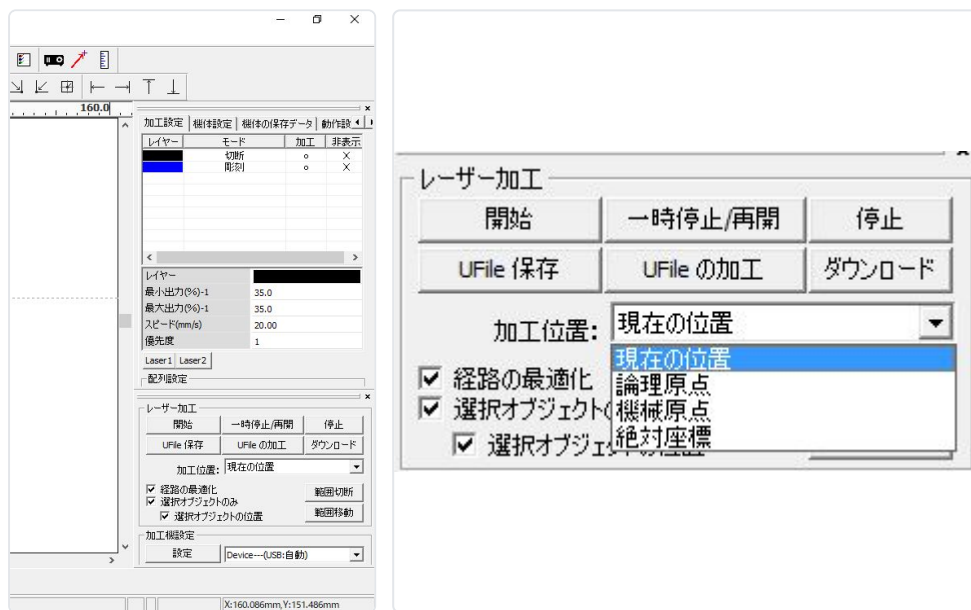
For details, refer to the RDWorksV8 User Manual, "Processing Settings (Layer Settings)" — "Engraving Settings" section.

④ About the Origin

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

When processing is started from the operation panel, the logical origin is always the processing start position. Refer to the separate RDWorksV8 User Manual, "Machine Operation Panel" — "About the Logical Origin".

When processing is started from RDWorksV8, you can select from four origins depending on the setting.

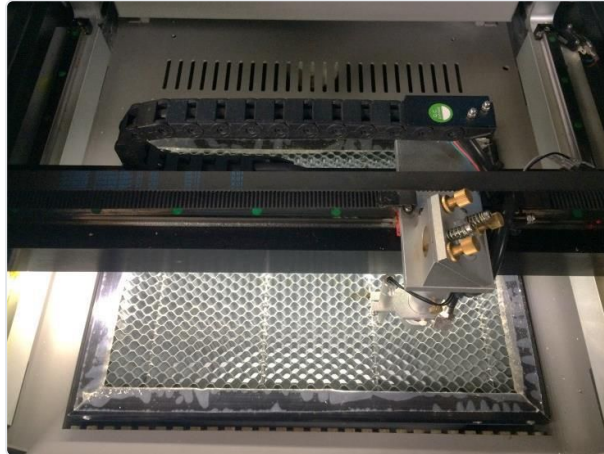


8.1 Current Position

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

8.2 Logical Origin

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

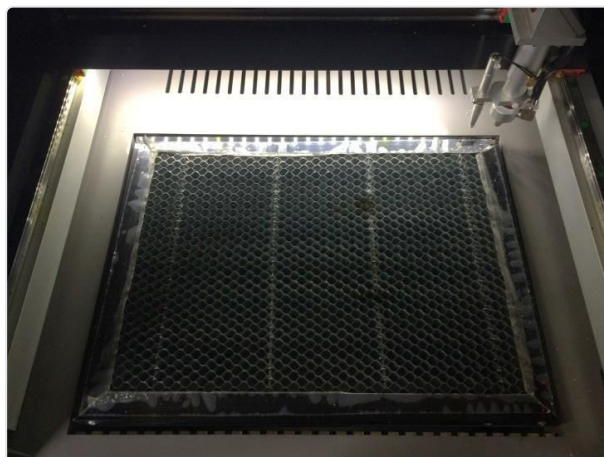


Press the "Origin" button on the machine operation panel. Even if you then move the laser head, when processing starts the laser head moves to the logical origin and begins processing.

8.3 Machine Origin

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

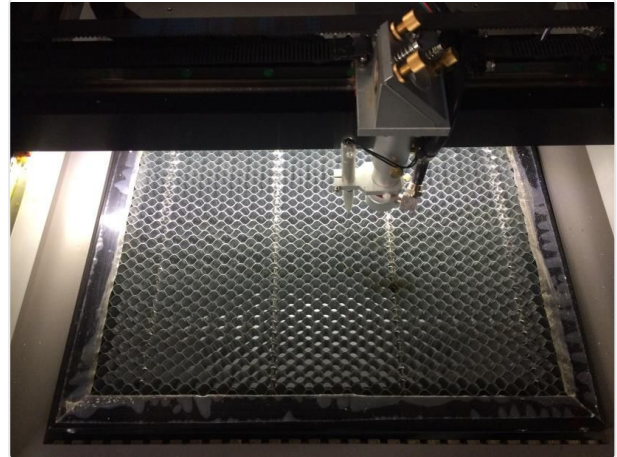
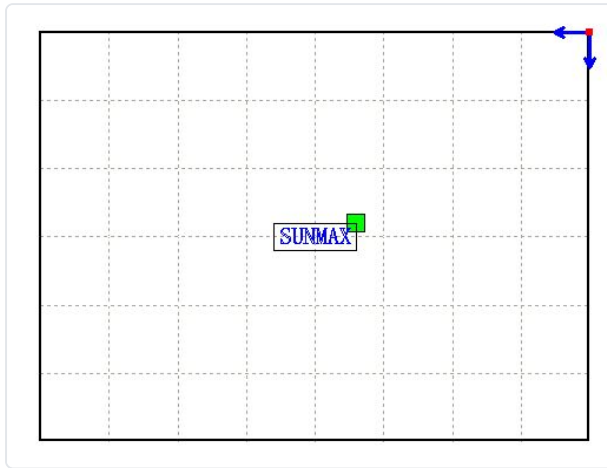
When processing at the machine origin, only cutting is possible.



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

8.4 Absolute Origin

When "Absolute origin" is checked, the logical origin set with the "Origin" button on the operation panel and the processing settings used when processing from RDWorksV8 become invalid, and processing is performed at the position shown on the RDWorksV8 design screen.



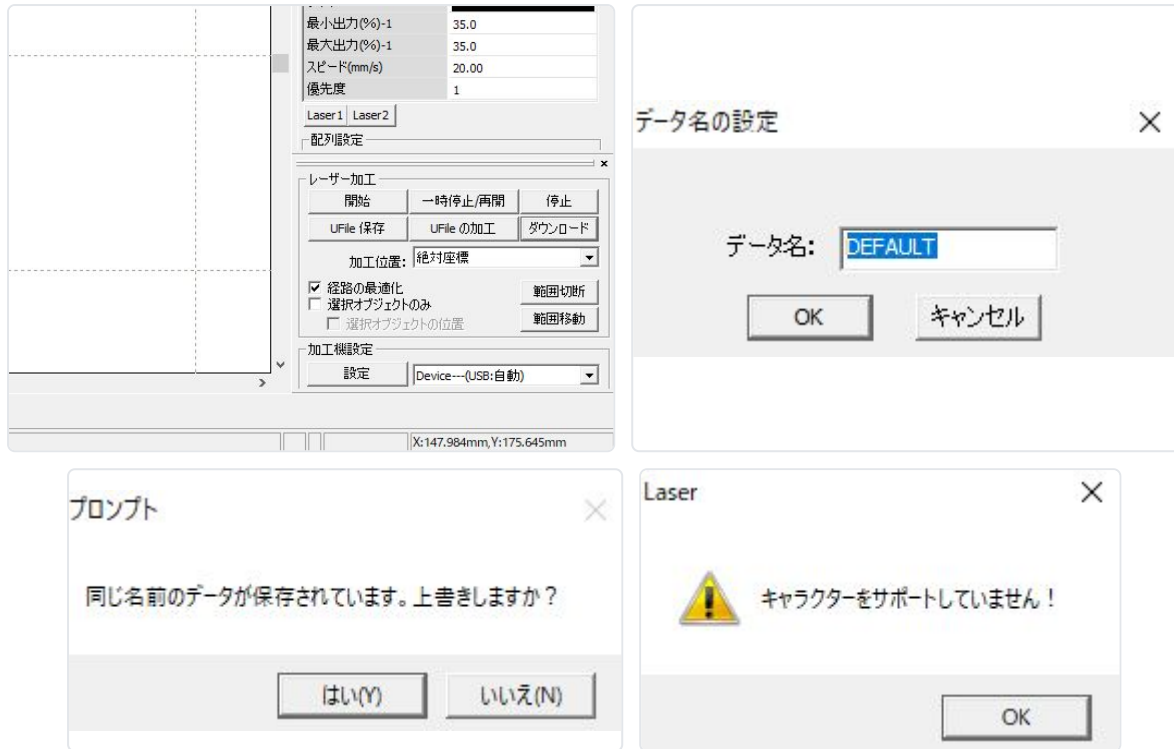
Place the objects in RDWorksV8. When processing starts, the laser head moves to the same coordinates as on the RDWorksV8 design screen and begins processing.

⑤ Downloading the Data

Once the processing settings and the processing position setting are complete, send the processing data to the laser machine.

When you download the data and then process it, processing is carried out from the operation panel, so the processing start position is always the logical origin position.

Note: If you start processing from "Start" in the machine control pane of RDWorksV8, the data is not downloaded.



At the bottom right of the screen, click "Download" in the laser processing section.

Clicking the Download button displays the "Set data name" dialog. Enter any name you like.

Note: If a file with the same name already exists on the laser machine, a dialog asking "Overwrite?" is displayed.

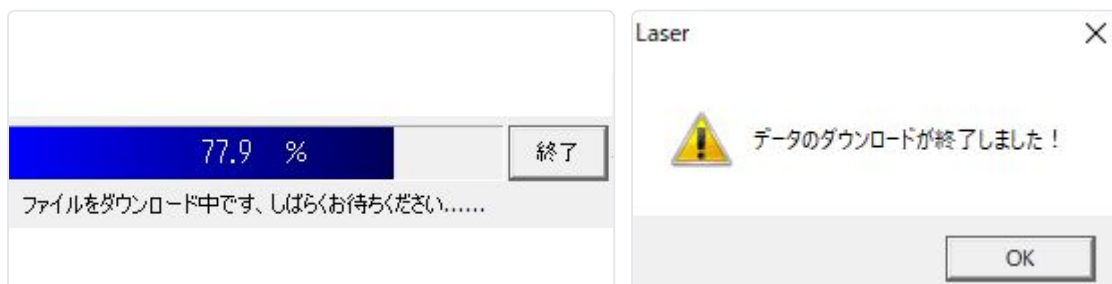
Note: Only single-byte alphanumeric characters can be used. Entering Japanese characters causes an error.

Starting the Download

Click to start downloading the data.

The data download is complete when the download progress bar reaches 100%.

Note: If you have created data of a large size, this step may take some time.



Download Complete

When the progress reaches 100%, the download complete dialog is displayed.

Click the OK button.

⑥ Processing

Now that the processing data has been saved to the laser machine, it is time to run the job. Start processing by following the steps below.

6.1 Setting Up the Table

The RSD-SUNMAX series can be used with three different types of processing tables.

Engraving Table

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

- As a rule, use it for engraving only. Do not use it for cutting. When cutting, the laser beam must pass all the way through the bottom of the material, but because the engraving table is a flat plate, the beam cannot pass through. It is therefore used for engraving.
- Cutting on the engraving table becomes possible if you place spacers of some kind between the table and the material to create a gap. In general, a clearance 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 underneath, 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 underside of the material caused by laser reflection than the honeycomb table does. When the cutting table is installed, autofocus cannot be used; focusing is instead adjusted with the cylinder on the laser head.



In this work example, we will use the honeycomb table.

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

6.2 Focusing

The distance to the laser head differs from workpiece to workpiece. You can either set the focus using autofocus, or adjust the height manually using the focus gauge.

Caution: Always perform focusing whenever the height of the workpiece changes.

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

Using Autofocus

With autofocus, a sensor mounted on the machine automatically adjusts the focal distance.

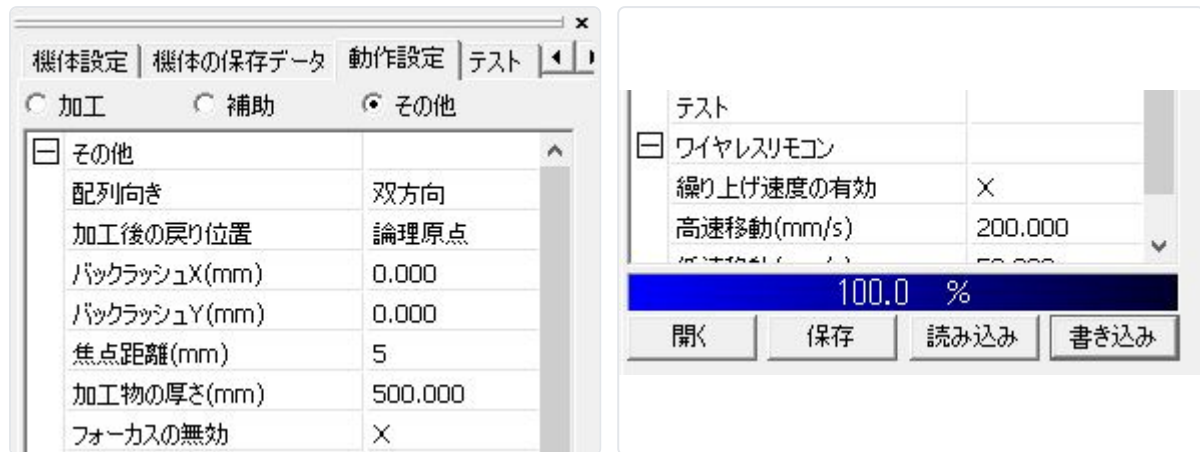
Adjustment method

The autofocus focal distance is configured in RDWorksV8 under "Work Settings" → "Other" → "Focus distance"; this value sets the return amount of the autofocus. Adjust the setting value using the focus gauge so that the head ends up at the correct position.

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

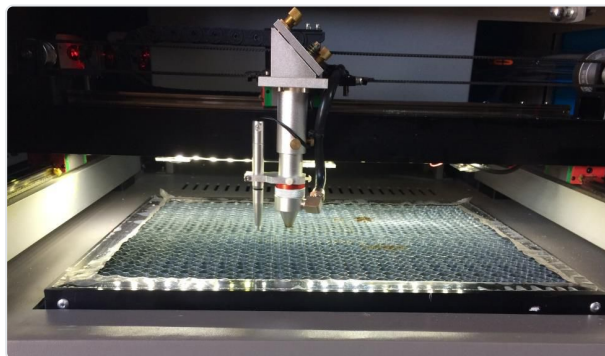
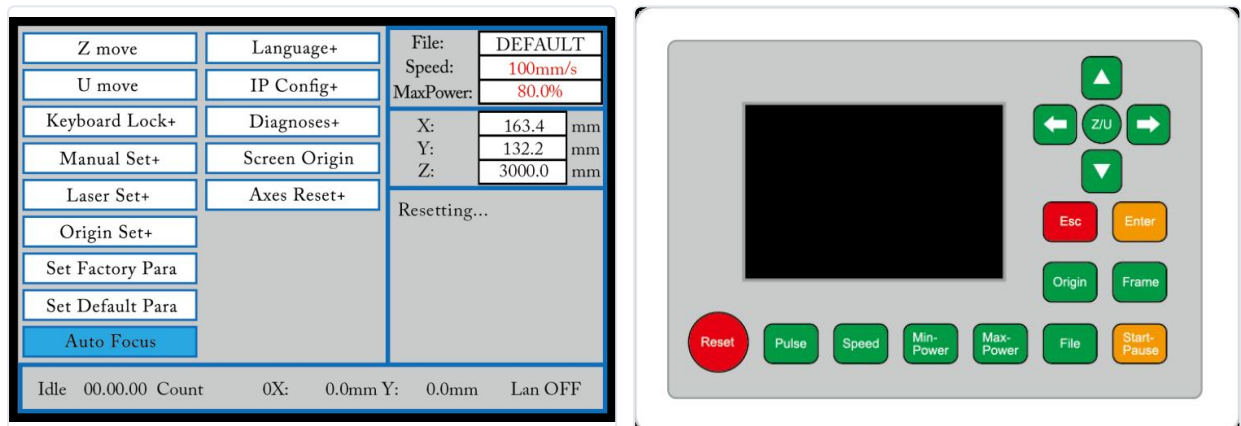
Press the "Z/U" button on the machine's control panel to display the option screen.

Control panel (Press)



Select "Auto Focus" with the arrow keys and press "Enter".

Control panel screen ((1) Select, (2) Press)

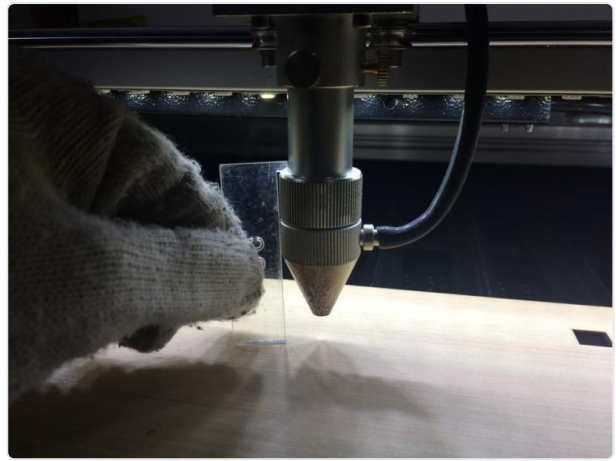


The lift table rises until it contacts the autofocus switch, and the focus is then set automatically to the configured focal distance value.

Manual Focusing (Focus Gauge)

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

Focus gauge



Adjustment method

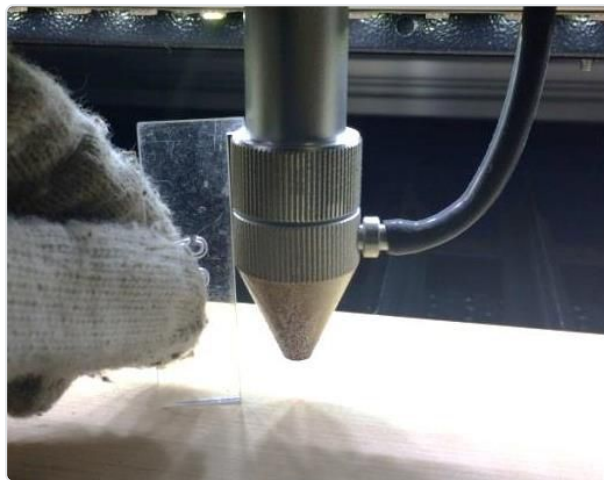
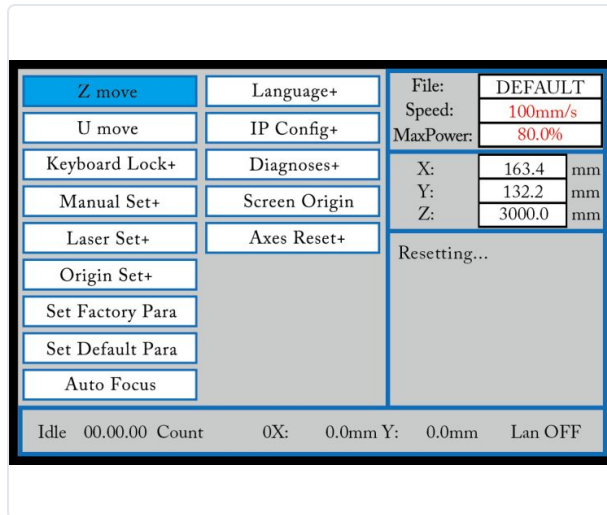
Insert the focus gauge between the laser head and the workpiece. (*Insert the focus gauge*)

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

Control panel (*Press*)

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

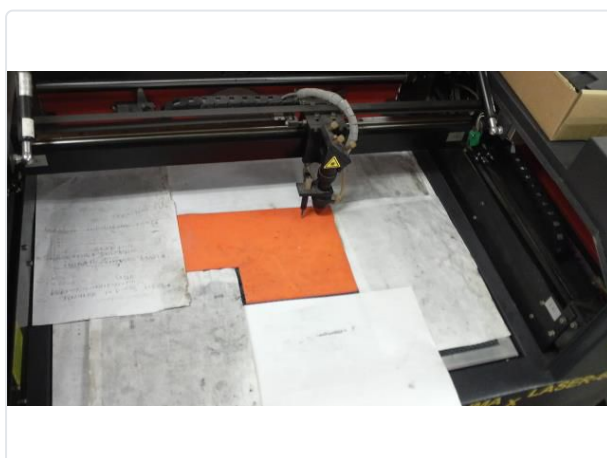
Control panel screen (*Raise / Lower*)



Adjust the height until the focus gauge just grazes the workpiece. *(Until the gauge just grazes the material)*

6.3 Starting the Job

After placing the rubber sheet, cover the exposed honeycomb areas with paper or similar to maintain the table's suction.



We will process using the "logical origin" method.

Using the arrow keys on the control panel, move the laser head to the position where you want processing to start, then press "Origin" to set the logical origin. (*Move the laser head with the arrow 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 protective cover and remove the processed material.



6.4 After Processing

Wash the rubber sheet with water using a toothbrush or similar to remove the burn residue. This completes the engraving of the rubber sheet.

⑬ Other

[Making Multiple Copies of the Same Engraving]

Click "Array Copy" on the drawing toolbar of RDWorksV8 and configure it there, or configure it with "Array Output".

配列出力			
	数	間隔	ズレ
X:	3	20.000	0.000
Y:	2	30.000	0.000
配列		範囲指定	

Array Copy copies the selected object according to the specified row/column settings. Therefore, after an array copy, you can reposition and process each copied object individually.

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

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

[Cutting Around the Rubber Sheet After Engraving]

If you want to cut out the stamp face after engraving it, add a "Cut mode" layer. The cut-mode layer must be different from the beveled engraving layer used for the stamp face, and it must be processed after the stamp face.

For the cut layer, start with settings of about Speed = 1 and Max Power = 100, and then dial in the parameters. The appropriate settings vary with the material and thickness of the rubber sheet. To suppress burning, it is better to make the speed as fast as possible. Cutting by repeating the pass about 3 times at high speed gives a cleaner finish.