Work Example — Rubber Stamp Making (RDWorks V8)

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.

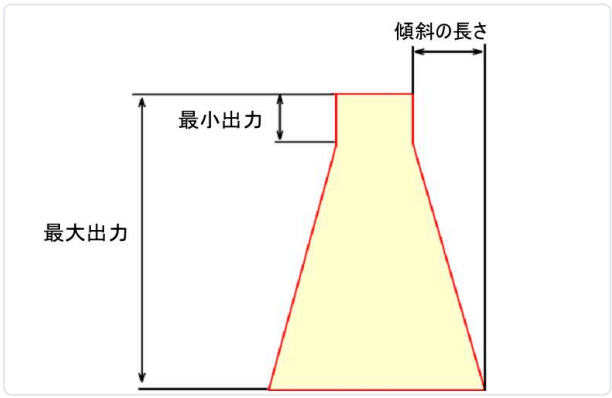
Work Examples — Rubber Stamp Making (RDWorks V8 Edition)

- 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 RDWorks V8, the control software for the RSD-SUNMAX series, has been installed correctly.
- In this document, a rubber stamp is made by slope-engraving a rubber sheet.

Example of a finished product made by following this document

About Slope Engraving

As shown in the figure below, the boundary between the engraved and non-engraved areas is cut as a slope. When making rubber stamps or wooden plaques, slope engraving is effective for increasing the strength of the raised (relief) areas.



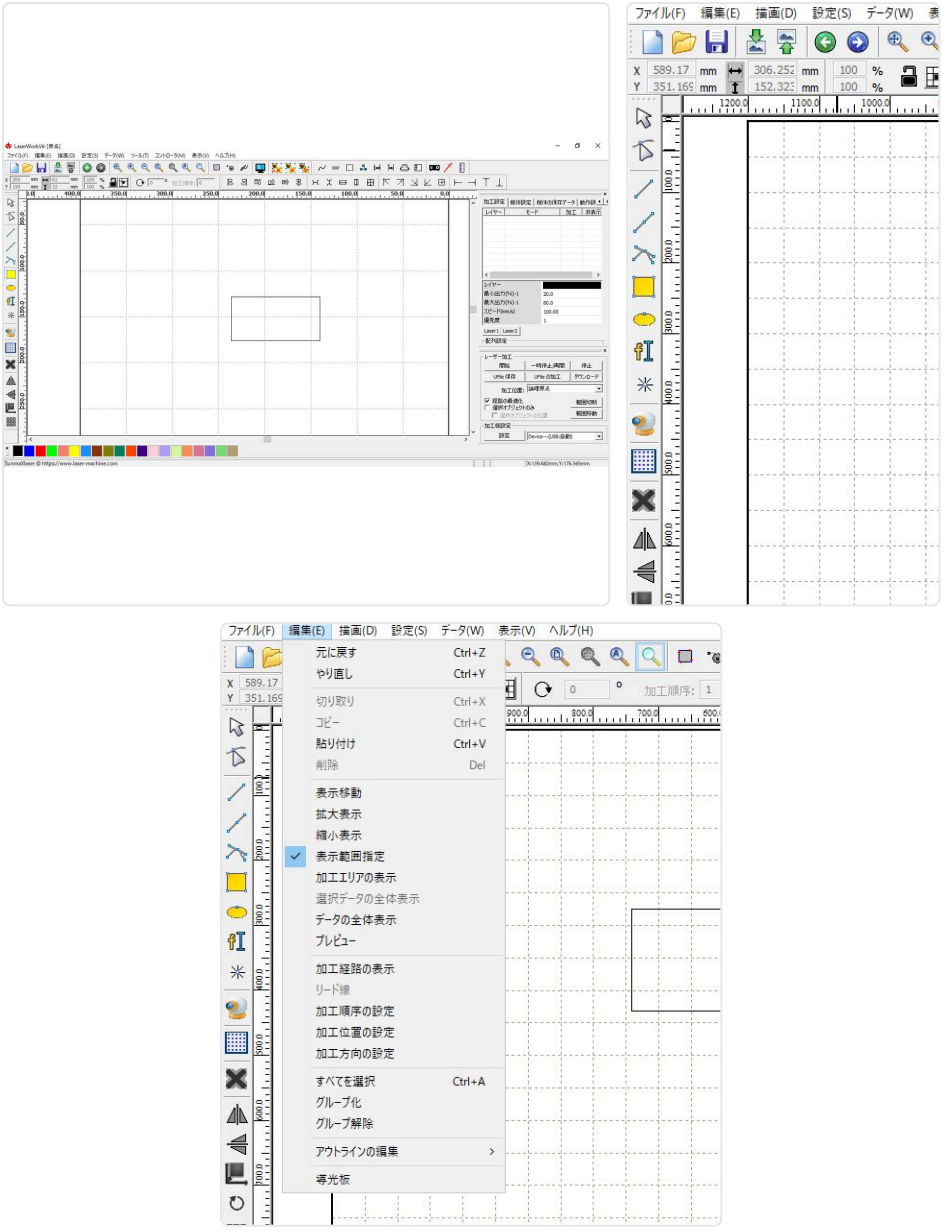
1. Creating the Design in RDWorks V8

Everything from design to processing is done in RDWorks V8.

1.1 Creating the Frame

Click "Rectangle" on the object toolbar so that the button appears pressed in. At any position on the design screen, drag the mouse along the rectangle's diagonal to draw a rectangle.

Select the rectangle with the "Select" tool, or use "Edit" → "Select All" (shortcut Ctrl+A) to put the rectangle into the selected state.

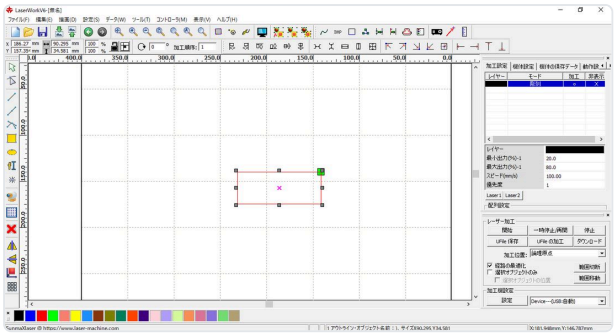


The current object's dimensions are shown in the "X Length" and "Y Length" fields on the properties toolbar at the upper left of the screen.

Note: These values are not displayed unless a layer is selected.

The "X Length" and "Y Length" fields currently hold the size of the rectangle you drew freehand with the mouse, so enter new values for the rubber stamp you are about to make.

Enter the stamp face size plus 2 mm. For example, to make a W60 mm × H20 mm address stamp, enter 62 mm and 22 mm.



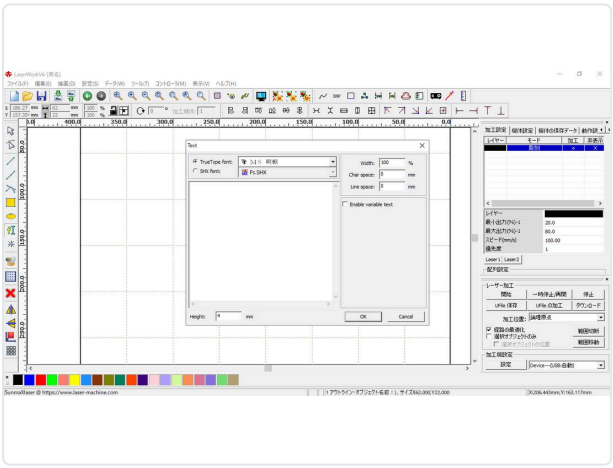
Note: Make sure the lock icon is in the unlocked state. If it is ON, the scaling ratio is locked.

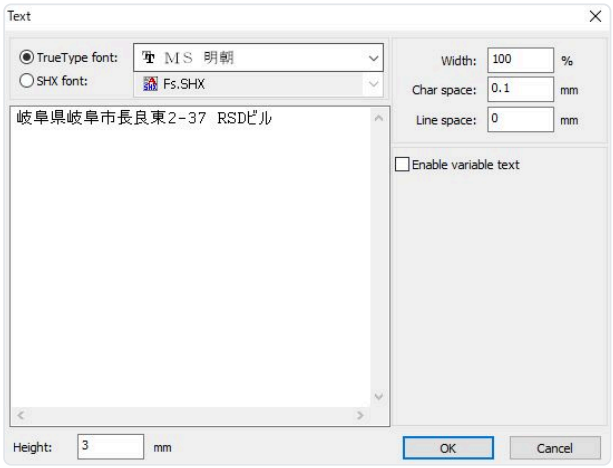
> **Caution:** Without a frame, the job becomes recessed engraving (the black areas / the characters are engraved). A frame is mandatory when making rubber stamps in RDWorks V8. When making a stamp face that itself has a border, it must likewise be enclosed by a frame larger than the stamp's border. This outer frame is not engraved during processing.

1.2 Laying Out the Text

Click "Text" on the drawing toolbar so that the button appears pressed in; this enters text input mode. Click at any convenient position on the screen to display the Text dialog.

The "Create Text" dialog appears.





Height

Sets the initial height of the text. The value can be changed freely later, so any value is acceptable, but when making rubber stamps, setting it to about 4 makes the work easier.

Width

Sets the initial character width. Leave this at 100% at all times; no change is needed.

Char Space

Character spacing is difficult to adjust later. For rubber stamps, if you set the Height to 4, set this to 0.1.

Line Space

Sets the spacing between lines.

TrueType / SHX (CAD)

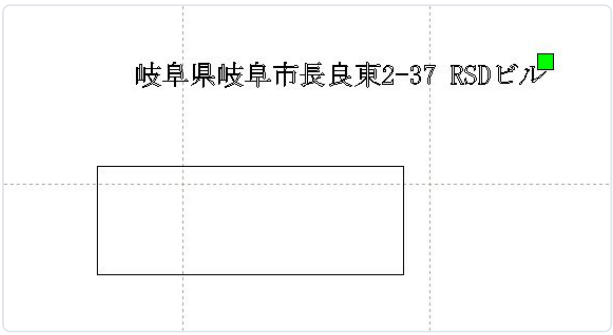
Selecting TrueType or SHX lets you choose between the fonts on your PC and CAD stick fonts. SHX fonts consist only of lines with no thickness and therefore cannot be engraved. Select TrueType here.

For details, refer to the "Menu – Draw" → "Text" section of the RDWorks V8 User Manual.

When you have finished entering the text, click the "OK" button. The text is displayed.

Click "Select" on the standard toolbar to exit text input mode.

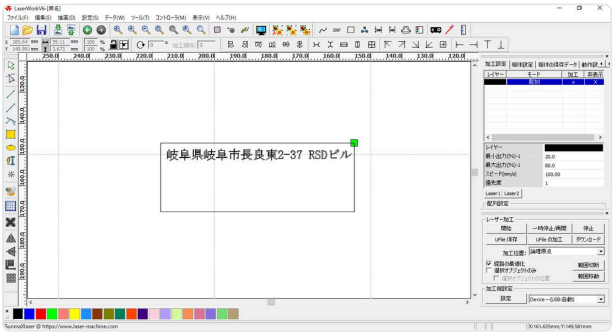
The newly entered text is in the selected state (its color depends on the layer color). In this state, drag the eight surrounding handles with the mouse to adjust its shape. Dragging the × in the center moves the entire text.

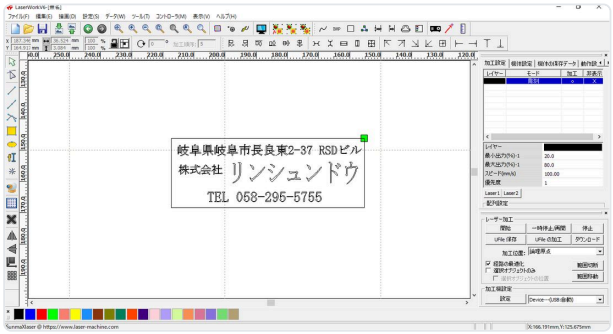


If the text becomes deselected, for example by clicking elsewhere, drag a selection box around the entire text with the mouse to select it again.

Adjust the size and fit the text inside the frame.

Continue by entering the other text, such as the company name, in the same way.



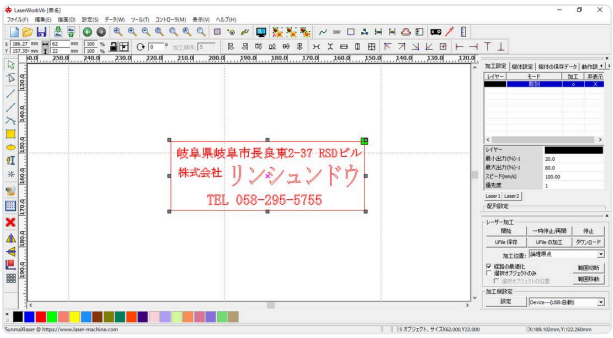


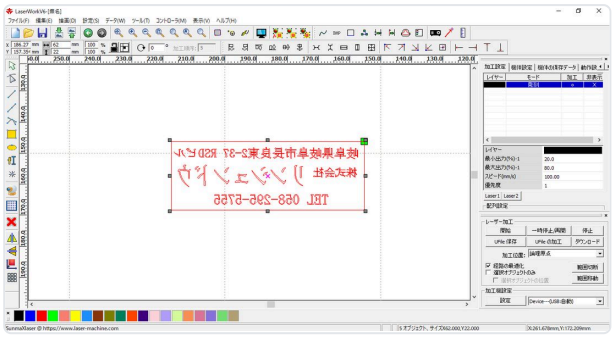
1.3 Mirroring Horizontally

Put all objects into the selected state. You can do this with the shortcut key "Ctrl+A" (or by selecting all of the data with the Select tool on the drawing toolbar).

Dragging the mouse so that it encloses everything puts the whole design into the selected state (shown in red).

With all objects selected, click "Mirror Horizontally" on the edit toolbar to flip the data left to right.





2. Processing Settings

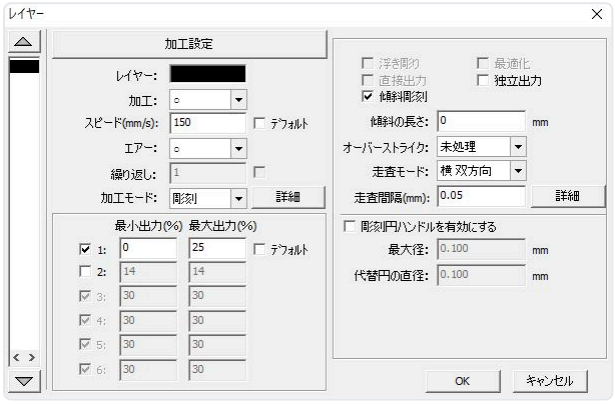
Now that the design is complete, we move on to the processing settings.

2.2 Opening the Layer Dialog

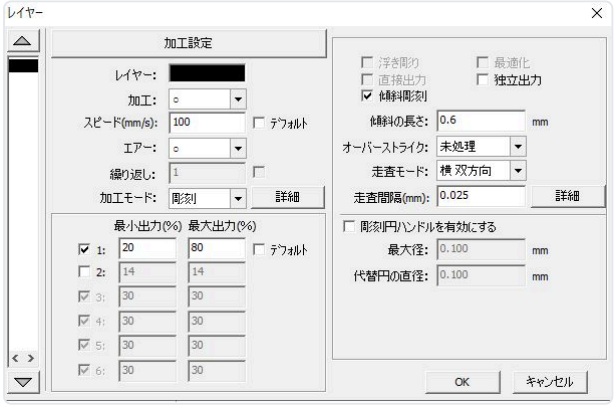
Double-click the layer to display the layer dialog.

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

The layer dialog appears. Change the processing mode to "Scan" (engraving) and click "Slope engraving".



Set each item as shown below.



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

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

To allow for differences in rubber sheet material and to adjust the engraving depth, use the following items as a rule:

Speed

Lowering the speed makes the engraving deeper; raising it makes the engraving 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 thinner the stamped impression becomes. If set to 0, the stamp face may look blurred.

Slope Length

When engraving deeply, increasing this value improves the strength of the characters.

The following items do not need to be changed when making rubber stamps, whatever their content:

Scan Interval

If you want to speed up production even at the cost of a coarser finish, raising this value shortens the production time. For example, if you set it to 0.05, the production time is cut in half.

Scan Mode

Select horizontal bidirectional (X swing). The laser fires on both passes of the scan. If bidirectional is not selected, the laser fires in one horizontal direction only. With horizontal unidirectional scanning, the processing quality can sometimes improve.

However, the processing time will be doubled.

Configure the settings for rubber stamp making based on the table below.

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

3. About the Origin

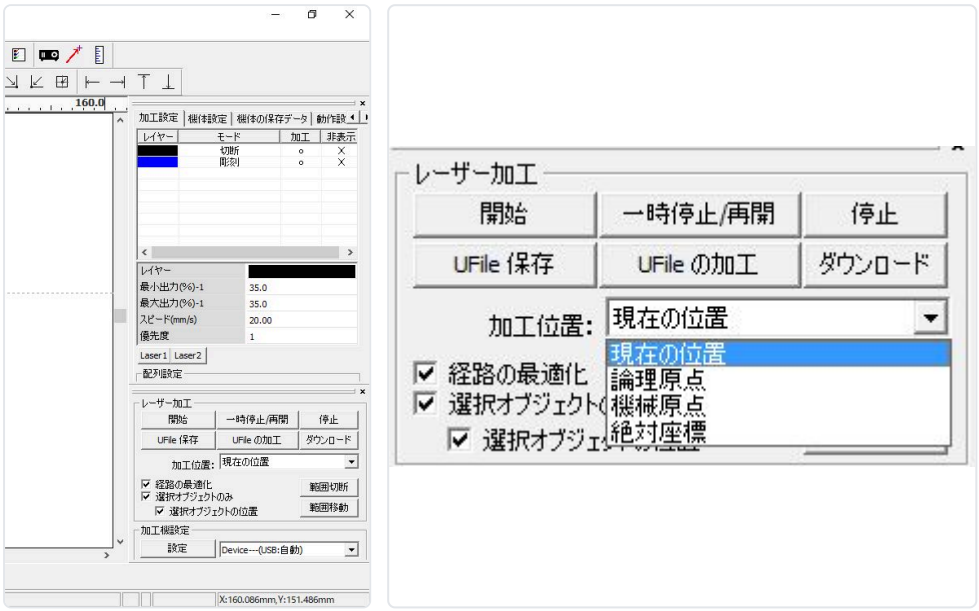
Before starting processing, you must check and set the processing start position.

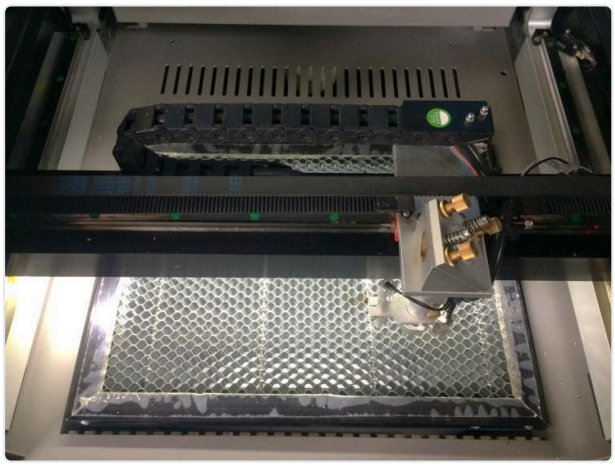
When starting processing from the operation panel, the logical origin is always the processing start position. Refer to "Machine Operation Panel" – "About the Logical Origin" in the separate RDWorks V8 User Manual.

When starting processing from RDWorks V8, you can choose among four origins depending on the setting.

8.1 Current Position

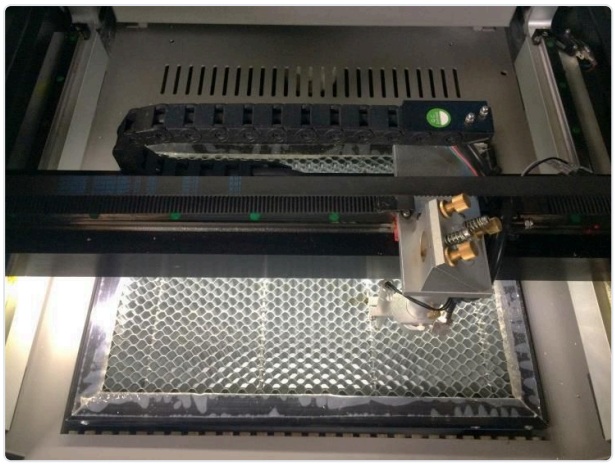
When "Current position" is selected, clicking the "Start" button in RDWorks V8 performs the job using the current position of the laser head as the data origin.





8.2 Logical Origin

When "Logical origin" is selected, clicking the "Start" button in RDWorks V8 performs the job using, as the data origin, the logical origin position that was set with the "Origin" button on the laser machine.

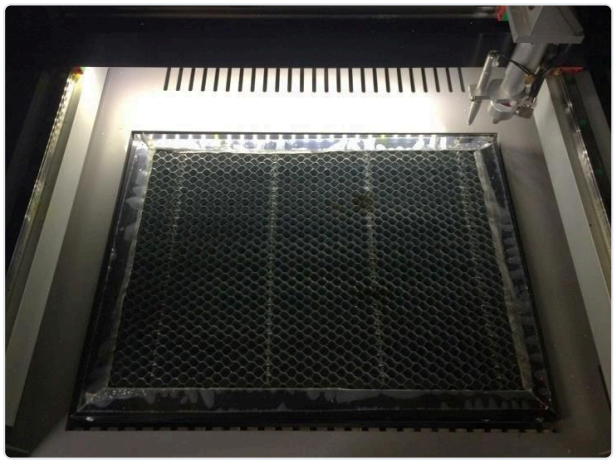


Press the "Origin" button on the machine operation panel. Even if the laser head is then moved, when processing starts the laser head moves back to the logical origin and begins processing.

8.3 Machine Origin

When "Machine origin" is selected, clicking the "Start" button in RDWorks V8 performs the job using the laser machine's machine origin position (rear right: the position the machine homes to when the laser machine starts up) as the data origin.

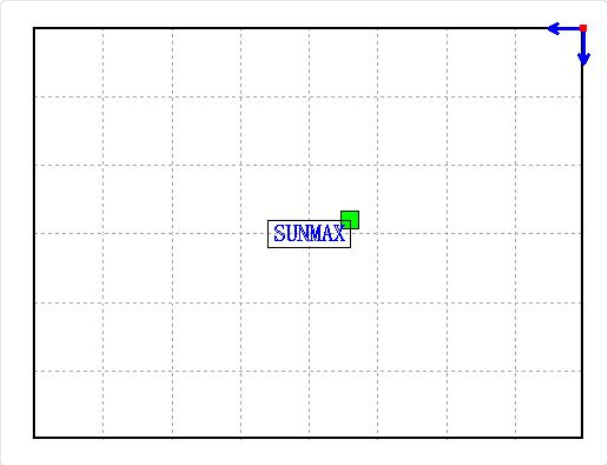
When processing from the machine origin, only cutting is possible.

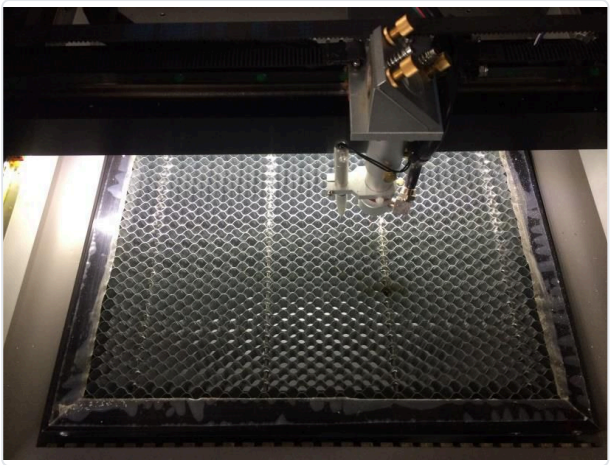


When processing starts, the laser head moves to the machine origin and begins processing.

8.4 Absolute Origin

When "Absolute origin" is checked, the logical origin set with the "Origin" button on the operation panel and the origin settings used when starting the job from RDWorks V8 are disabled, and processing is performed at the position shown on the RDWorks V8 design screen.





Place the objects in RDWorks V8. When processing starts, the laser head moves to the same coordinates as on the RDWorks V8 design screen and begins processing.

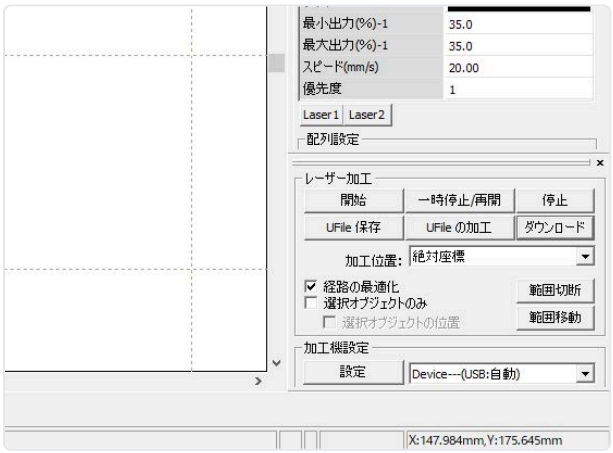
4. Downloading the Data

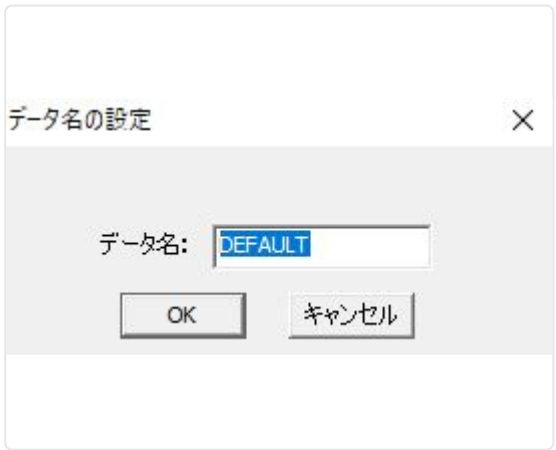
Once the processing settings and processing position have been set, send the processing data to the laser machine.

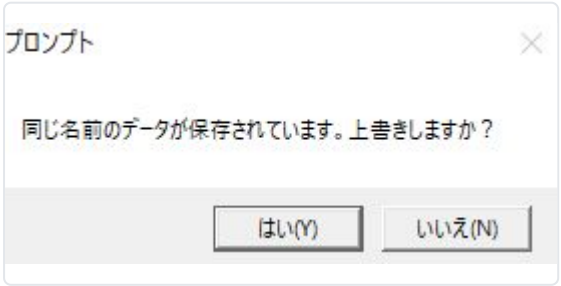
When you download the data and then process it, the job is started from the operation panel, so the processing start position is always the logical origin position.

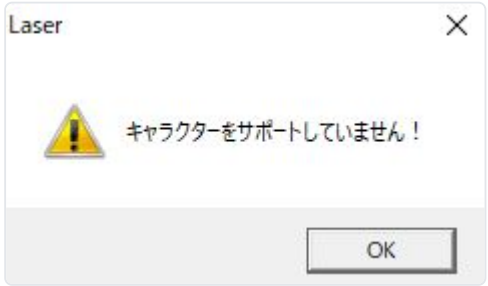
Note: When starting the job from "Start" in the machine control pane of RDWorks V8, the data is not downloaded.

Click "Download" in the Laser work area at the bottom right of the screen.









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

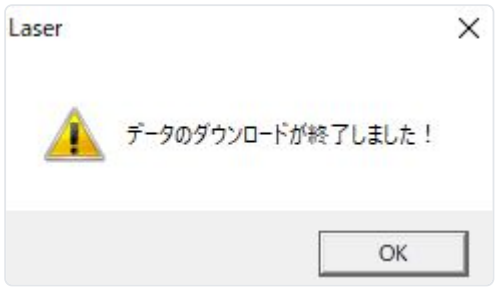
Note: If a file with the same name already exists on the laser machine, a dialog asking "Overwrite?" is displayed.

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

Starting the Download

Clicking starts the data download. The download is finished when the download progress bar reaches 100%.

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



Download Complete

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

Click the OK button.

5. Processing

The processing data has now been saved to the laser machine, so you can perform the job. Start processing using the following procedure.

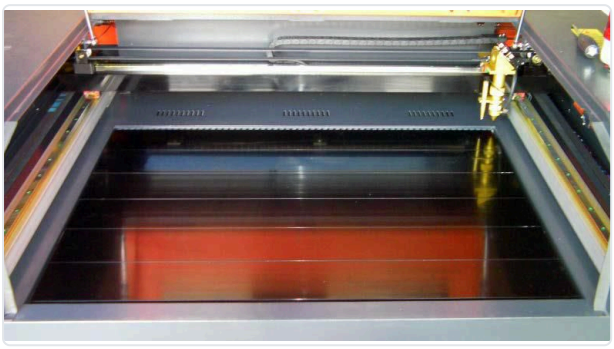
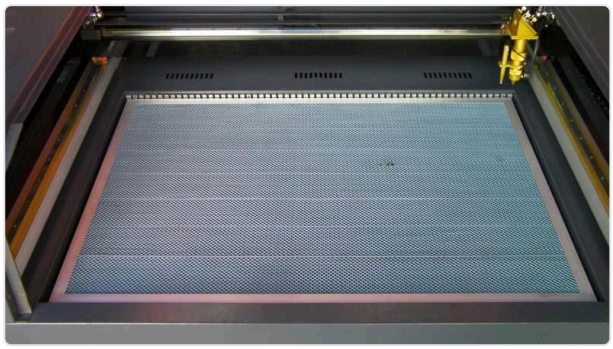
6.1 Installing the Table

The RSD-SUNMAX series can be used with three types of processing 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. 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 some kind of spacer 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 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 causes 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 cylinder on the laser head.

In this work example, we will process the job using the honeycomb table. For how to install and remove each table, refer to the machine's instruction manual.

6.2 Focusing

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

> **Caution:**

- Always perform focusing whenever the height of the workpiece changes.
- When using the cutting table, autofocus cannot be used. Focus manually.

Using Autofocus

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

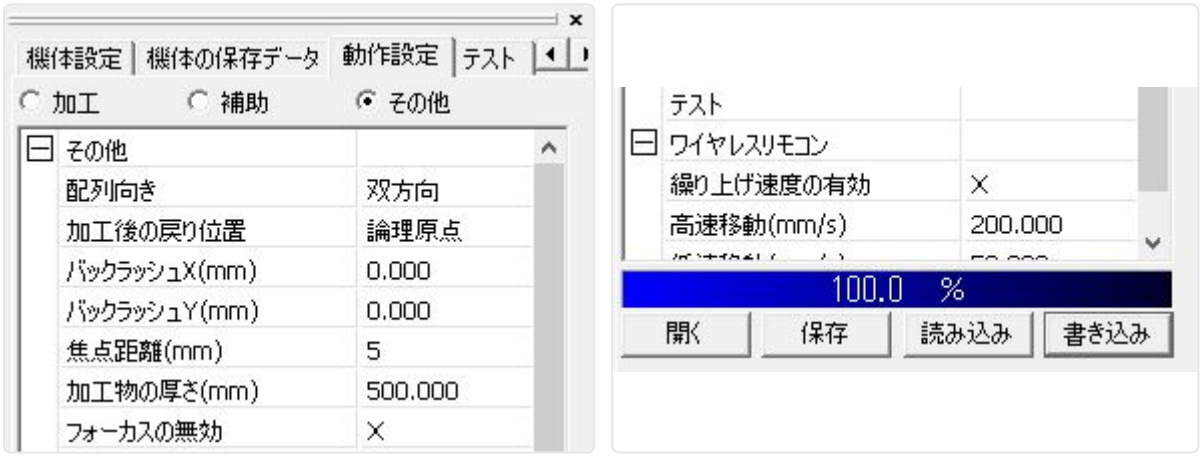
Adjustment Procedure

The autofocus focal distance is set by entering a value in RDWorks V8 under "Work Settings" → "Other" → "Focus Distance"; this value defines the return amount for autofocus. Use the focus gauge to fine-tune the value until the position is correct.

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

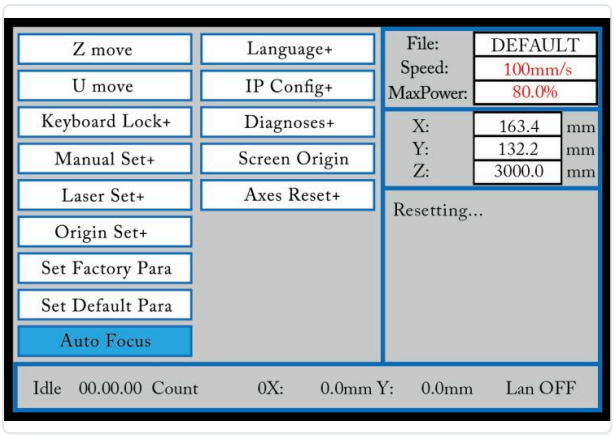
Press the "Z/U" button on the machine's operation panel to display the options screen.

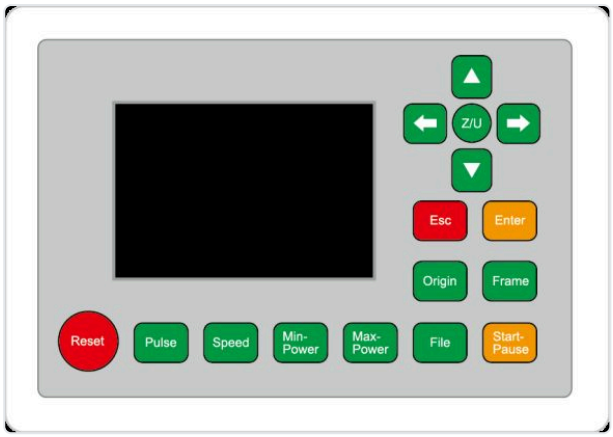
Operation panel — press this button

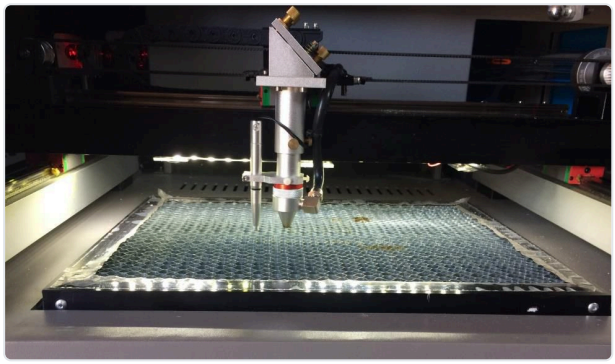


Use the arrow keys to select "Auto Focus" (①), then press "Enter" (②).

Operation panel screen





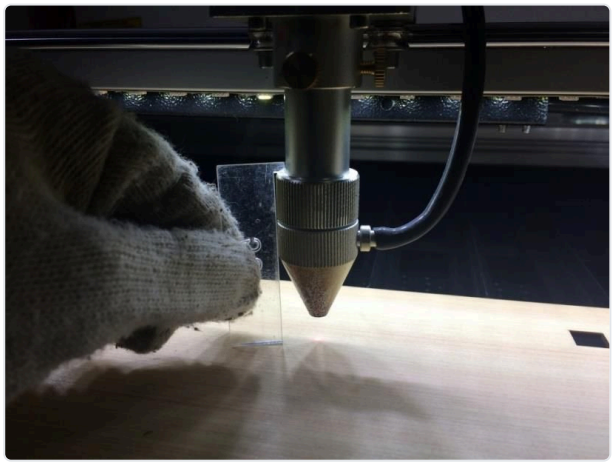


The lift table rises until it touches the autofocus switch, and the focus is then set automatically to the focal distance value you configured.

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 Procedure

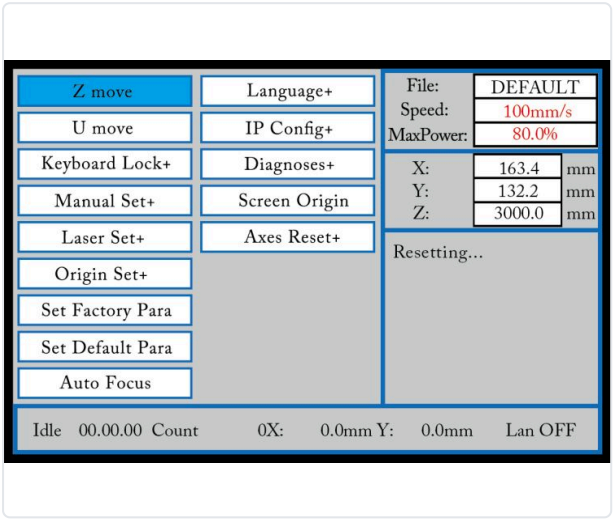
Place the focus gauge between the laser head and the workpiece.

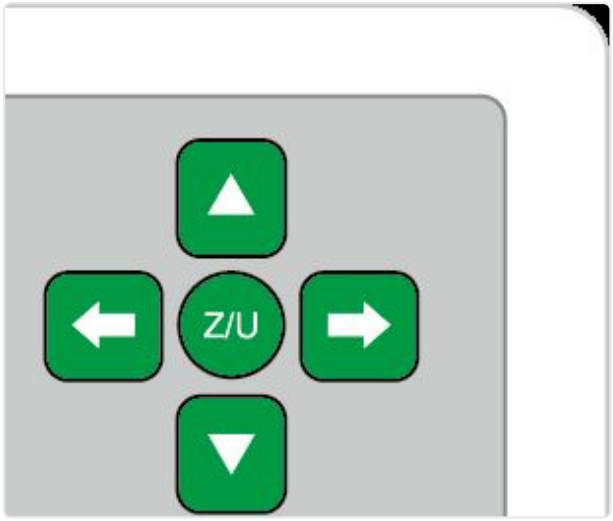
Press the "Z/U" button on the operation panel to display the options screen.

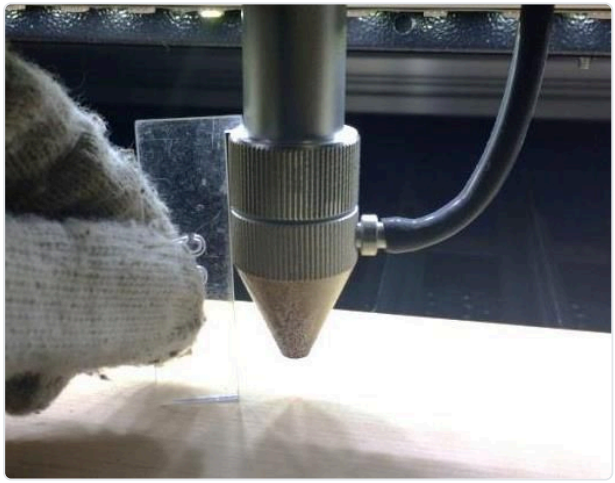
Operation panel — insert the focus gauge; press this button

Select "Z move", then press the left/right arrow keys on the operation panel to move the lift table up and down.

Operation panel screen — up / down







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

6.3 Cover

Once preparation is complete, lower the top door.

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

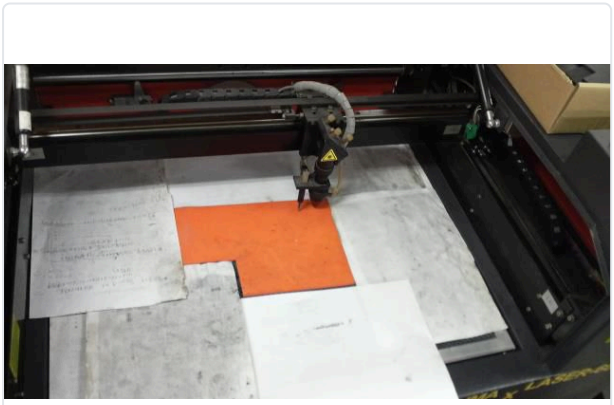
6.4 Power for External Equipment

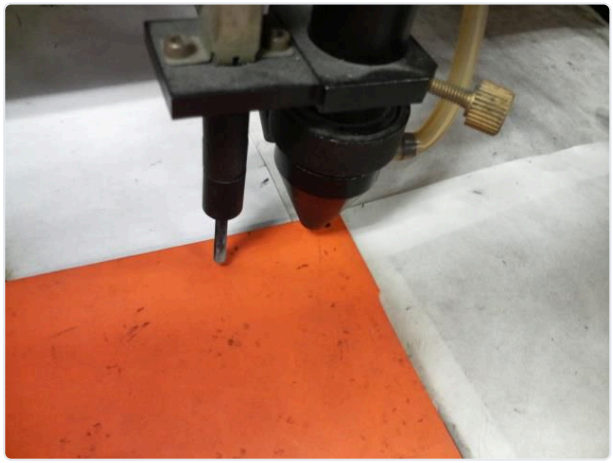
Confirm that the automatic water chiller, the air compressor, and the exhaust blower are all switched ON.

6.5 Starting Processing

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

Processing is performed using the "logical origin" method. Move the laser head to the position where you want to start processing using the arrow keys on the operation panel, then press "Origin" to set the logical origin.





[redacted]

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

When processing is finished, the laser machine emits a beep. Open the protective cover and remove the processed material.

6.6 After Processing

Wash the rubber sheet with water using a toothbrush or similar tool to remove the burn residue. The rubber sheet engraving is then complete.

13. Miscellaneous

Making Multiple Copies of the Same Engraving

Click "Array Copy" on the RDWorks V8 drawing toolbar and configure the settings, or configure them under "Array Output".

Array Copy copies the selected object according to the rows and columns you specify. After an array copy, you can therefore reposition or process each copied object individually.

Array Output outputs the selected object according to the specified rows and columns. Because the objects are not actual copies, you cannot reposition or process them individually after array output. However, it allows flexible automatic placement, such as specifying row and column offsets.

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

Cutting Around the Stamp After Engraving the Rubber Sheet

If you want to cut out the stamp face after engraving it, add a layer set to "Cut" mode. The cut-mode layer must be different from the slope-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, then fine-tune from there. The appropriate settings vary with the material and thickness of the rubber sheet. To keep the burn from spreading, the speed should be as fast as possible. Cutting by repeating about 3 passes at a higher speed produces a cleaner finish.
