

Adjusting Cutting Positions for Array Data

RSD-SUNMAX Series
SUNMAX LASER

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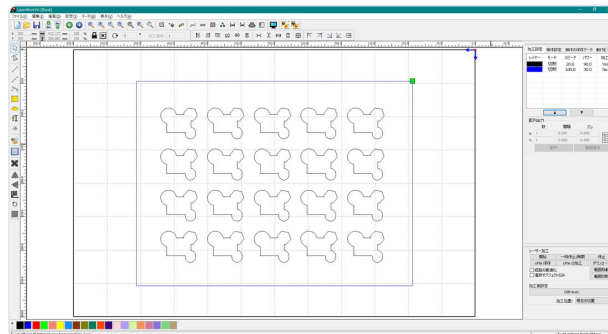
Adjusting Cutting Positions for Array Data

This document explains how to fine-tune the scale and position when cutting array data with the RSD-SUNMAX-LT6040-ST908-40W.

Workpieces printed on acrylic or similar materials may show slight deviations in size and position from the design data. If you cut exactly as specified in the design data, the cuts will be slightly misaligned with the printed content, and you will not obtain a proper result. When such printing deviations occur, you need to adjust the machining data so that the cuts are made in the correct positions.

This document describes a procedure in which markers are placed at the four corners of the machining data, and the machining data is corrected using the marker positions as reference points.

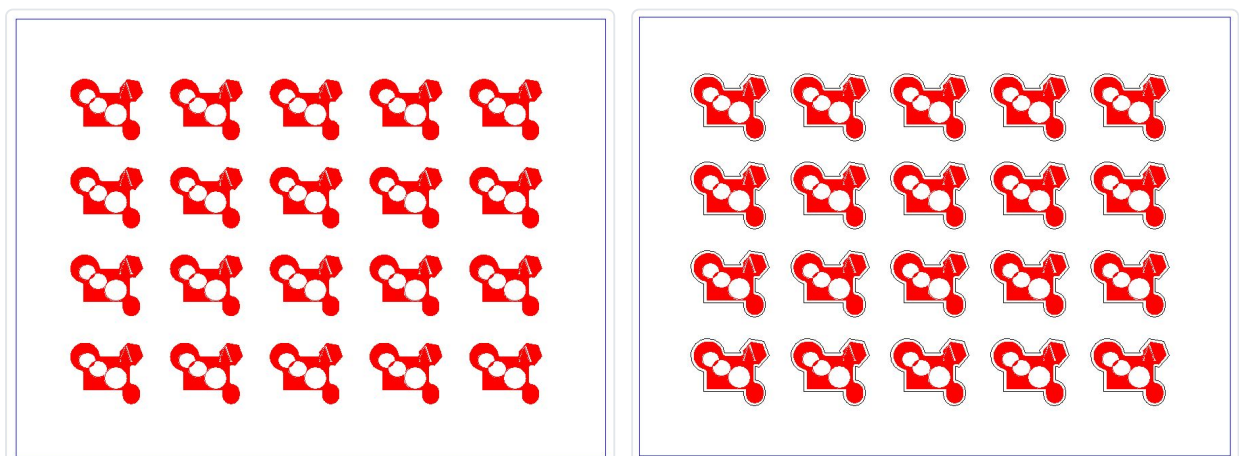
As an example, we use the machining data shown below.



The black layer contains the outline lines used for cutting.

The blue layer represents the shape of the workpiece. The blue layer is not processed.

As an example, assume that the workpiece is printed as shown below.



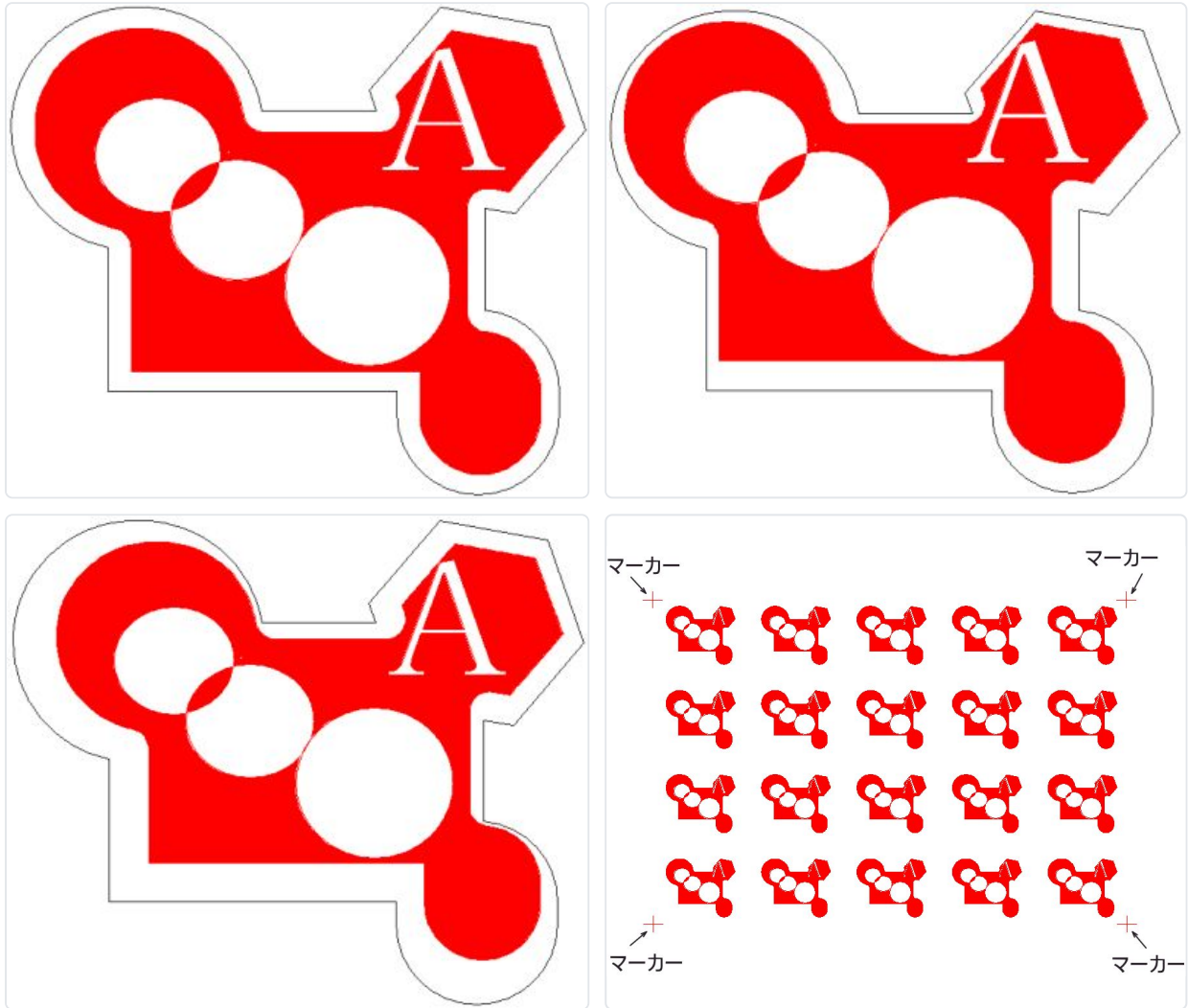
Red indicates the content printed on the workpiece.

The blue lines indicate the shape of the workpiece.

The machining content of this example is shown below.

Only the black lines are cut.

When the cuts are made in the correct positions, the result looks like the figure below.



If the cutting position is misaligned with the printed position, the margins become uneven.

To correct the machining data so that it absorbs slight deviations in the printed result, follow the procedure below.

Preparation 1

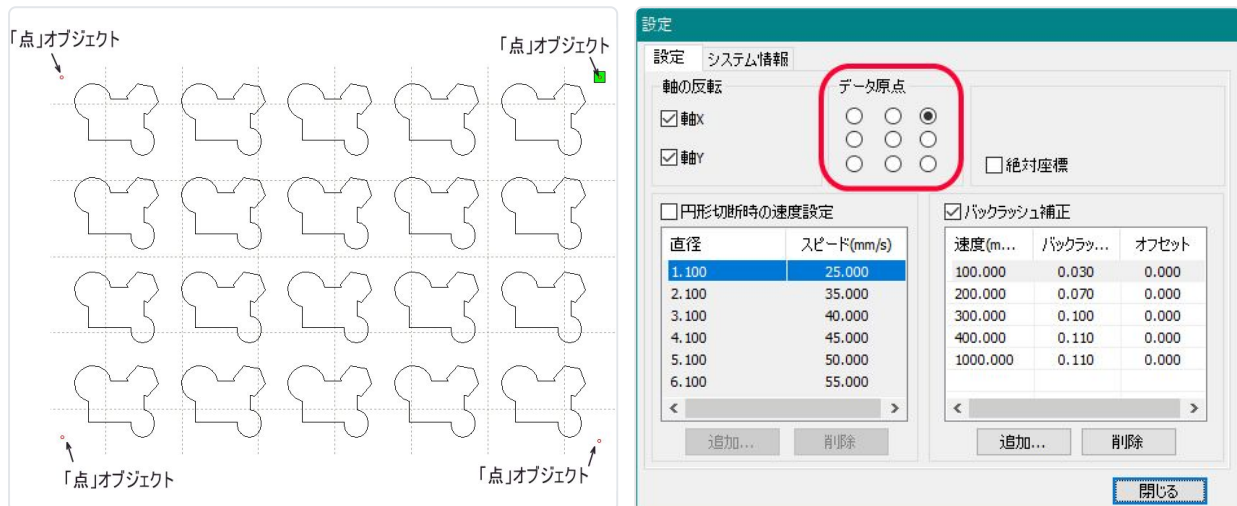
Add alignment markers to the print data and the machining data.

a) Printing alignment markers

To enable alignment, modify the print data so that markers (registration marks) are printed at the four corners of the data at the same time. The shape of the markers does not matter.

b) Adding "point" objects to the machining data

Add "point" objects to the machining data. Place the point objects at exactly the same positions as the markers in the print data.



Once the markers have been added to the print data and the point objects to the machining data, you can adjust the machining data before processing.

Preparation 2

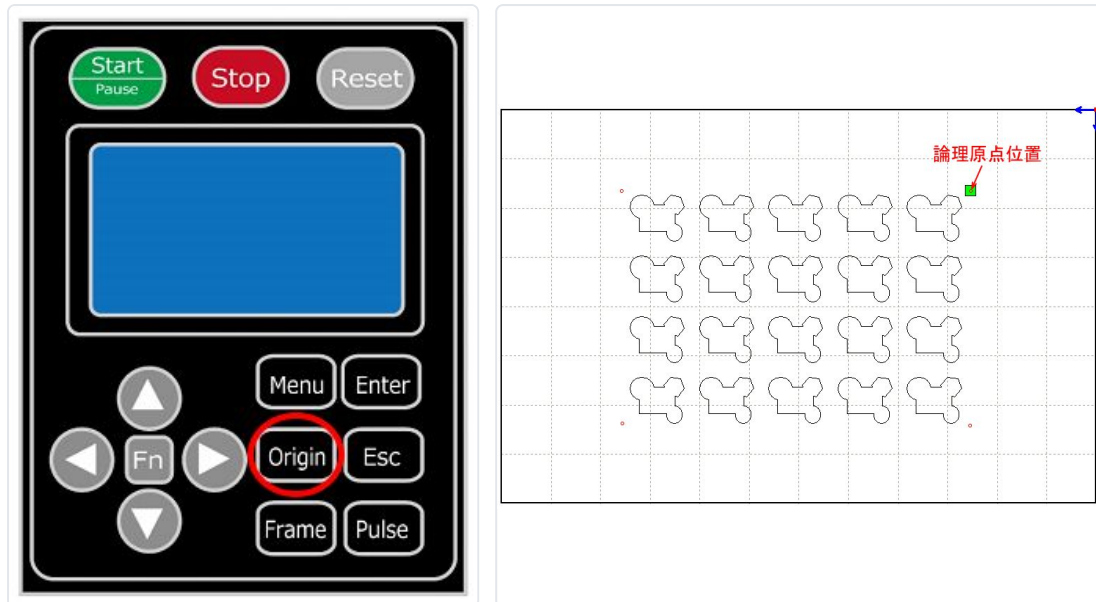
Determine the data origin and the logical origin.

The data origin is the origin position of the entire machining data, and the logical origin is the physical origin used when machining is actually performed. Machining is performed so that the logical origin coincides with the data origin.

By default, the data origin is at the top right (the right rear of the machine), which is the same as the machine origin. It can be changed if necessary, but it is normally left at the top right.

The machining origin is set in the "Setting" dialog, which is displayed by clicking "Config" > "System Setting" in the LaserWorkV6 menu.

The logical origin is the position of the laser head at the moment the "Origin" button on the operation panel is pressed. Each time the "Origin" button is pressed, the logical origin is updated to match the current laser head position.



When the data origin is at the top right, the laser head position at the time the "Origin" button is pressed (the logical origin) corresponds to the position of the top-right point object.

Scaling of the machining data is performed with the logical origin as the reference point, so it serves as the reference for alignment.

① Measuring the distance between the markers on the workpiece

Measure the actual distances between the markers printed on the workpiece and check for any difference from the print data. Check both the horizontal and vertical directions. If there is no difference between the data dimensions and the measured values, no position adjustment is required.

② Rescaling the machining data

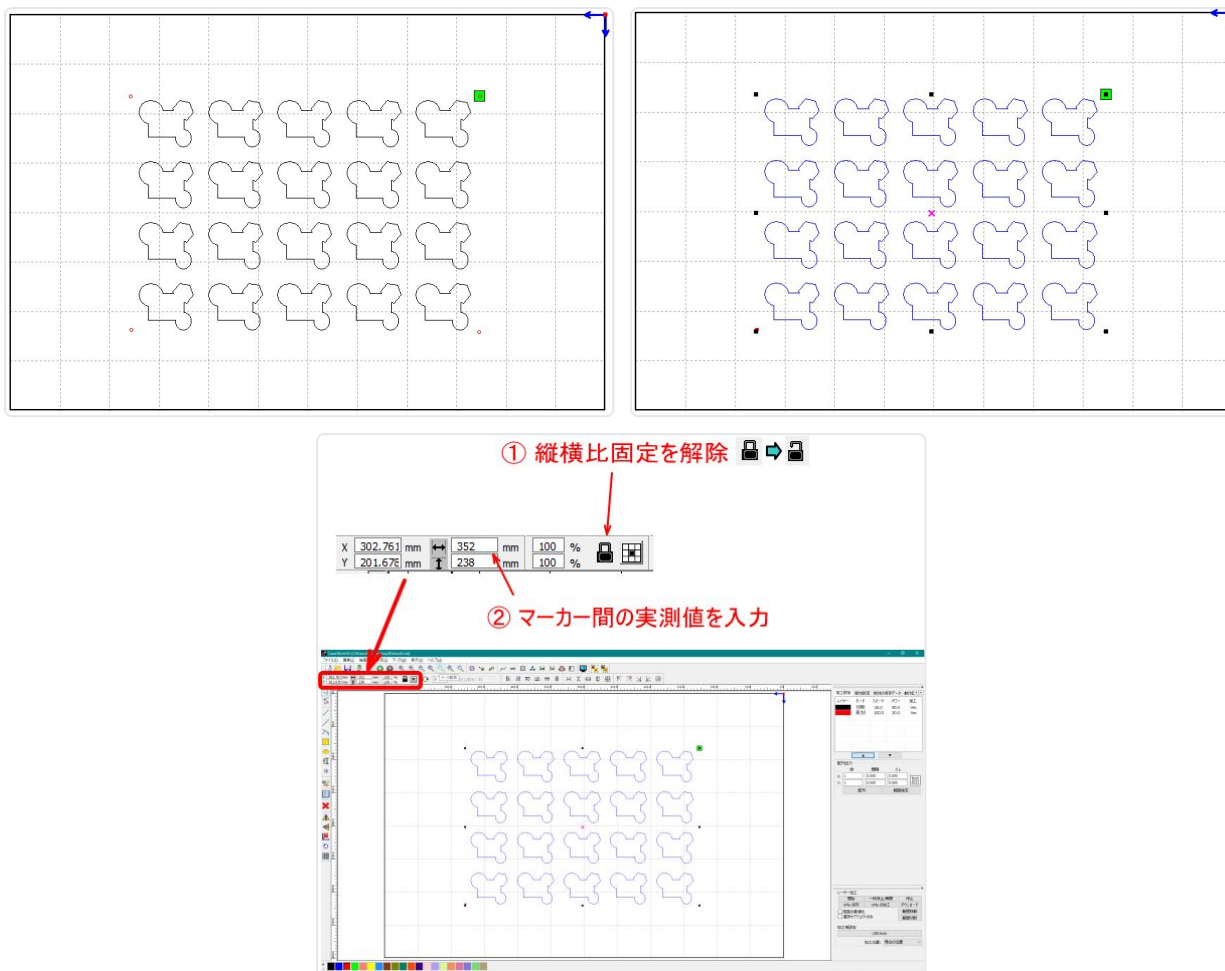
If the distances between the markers in the print data differ from the measured values, adjust the size of the machining data.

To adjust the machining size, select all of the machining data, including the point objects, and then enter the values measured in "① Measuring the distance between the markers on the workpiece" into "Size" on the LaserWorkV6 property bar.

Example) Suppose the distances between the markers in the data are 352 mm horizontally and 238 mm vertically, and the measured values are 354 mm horizontally and 235 mm vertically.

Operate LaserWorkV6 using the following steps.

1. Select all of the machining data.
2. Enter the size values in the property toolbar. Make sure the aspect-ratio lock is disabled at this time.



The printed size on the workpiece and the dimensions of the machining data now match.

③ Aligning the logical origin with the markers on the workpiece

Place the workpiece on the machine table and align the logical origin with the marker position.

As a general rule, set up an alignment jig or alignment marks on the table, and place the workpiece so that it is not tilted.

If the workpiece is not tilted, move the laser head and use the red pointer to align it with the marker position on the workpiece. Press "Origin" on the operation panel at the marker position; that position then becomes the logical origin, and the alignment is complete.

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

If no alignment jig or alignment marks are available, or if the workpiece is not square, you need to adjust the tilt of the workpiece.

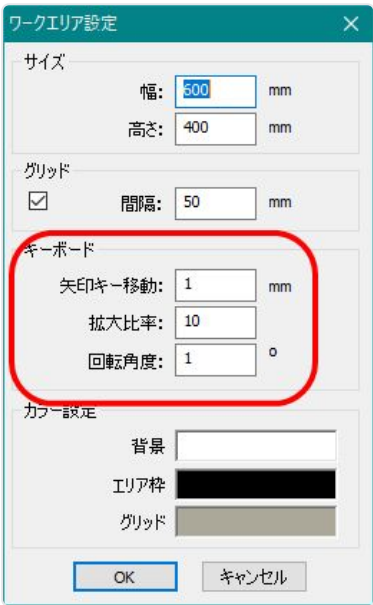
Press the "Frame" button on the operation panel to run a test movement. After the test movement, the laser head stops at the logical origin position, so align the marker on the workpiece with the red pointer. Then press the "Frame" button again to run another test movement, and adjust the position of the workpiece so that the laser head passes over all four markers. If the workpiece is tilted, the laser head position will deviate from the markers during the test movement.

Once the positions of all four markers are aligned, press "Start" on the operation panel to begin machining.

Moving individual objects independently

Select the object you want to move, then move it using the arrow keys on the keyboard of the control PC.

The distance an object moves when you press an arrow key can be set in the "Work Area Settings" dialog, which is displayed by clicking "Config" > "Work Area Settings" in the LaserWorkV6 menu.



Among the objects on the design screen, the currently selected objects can be moved and rotated by pressing the arrow keys (objects that are not selected do not move or rotate).

Arrow key	Moves the object a "small move" in the direction of the arrow key
Shift + arrow key	Moves the object a "large move" in the direction of the arrow key
Ctrl + arrow key	Rotates the object (↑ or ← rotates counterclockwise; ↓ or → rotates clockwise)

Arrow key move

Sets the movement amount [mm] for a "small move".
If set to 1, pressing an arrow key once moves the object 1 mm in that direction.

Magnification ratio

Sets the multiplier applied to the small move for a "large move".
"Large move" distance [mm] = arrow key move setting × magnification ratio setting

If the arrow key move setting is 1 and the magnification ratio setting is 10, pressing Shift + arrow key once moves the object 10 mm in that direction.

Rotation angle

Sets the angle for "rotation".

If set to 1, pressing Ctrl + ↑ or Ctrl + ← once rotates the object 1° counterclockwise, and pressing Ctrl + ↓ or Ctrl + → once rotates it 1° clockwise.