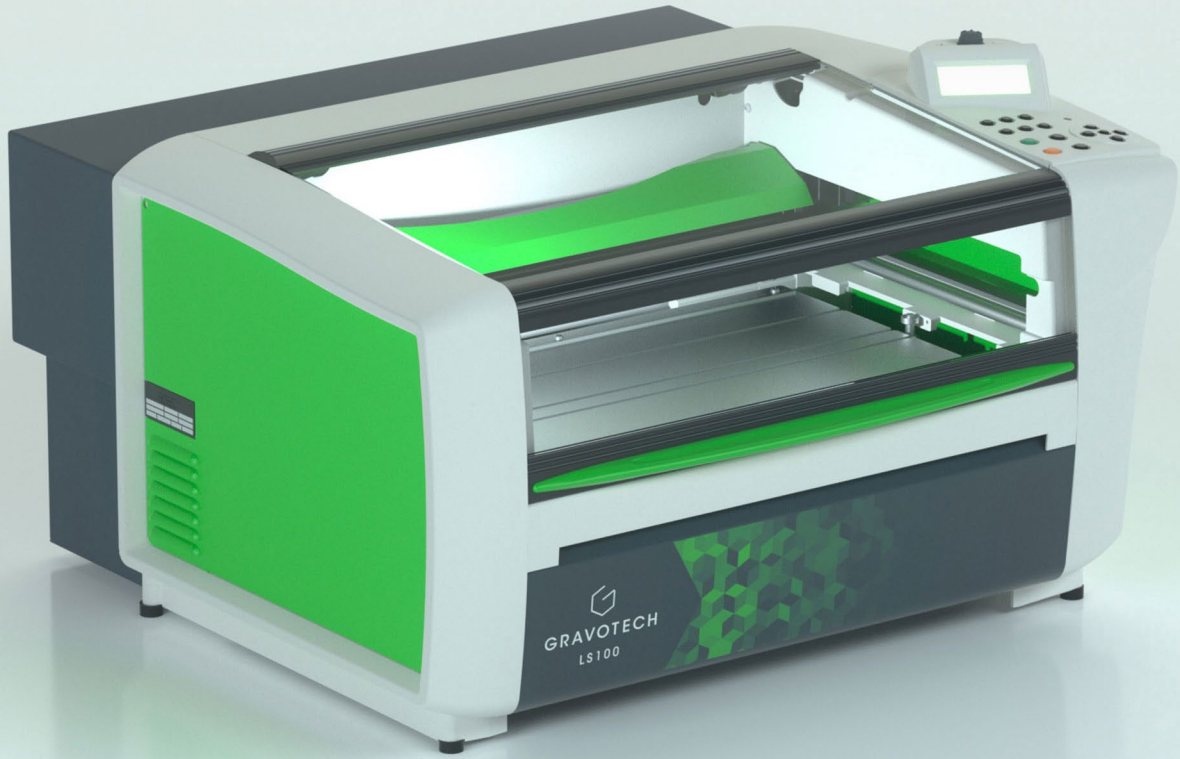
GRAVOTECH
by BRADY

EBOOK

A practical guide to mastering your Gravotech laser table



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GRAVOTECH

by BRADY

How to get the most out of your Gravotech laser table?

Do you own a **CO2 laser table**? Here's a guide full of practical advice and professional tips for getting the most out of your equipment.

Whether you're a novice or a seasoned user, you'll find invaluable information on how to **optimize your engraving and cutting projects**, as well as how to maintain your machine. So, are you ready to become a laser engraving and cutting pro?

The Gravotech expert

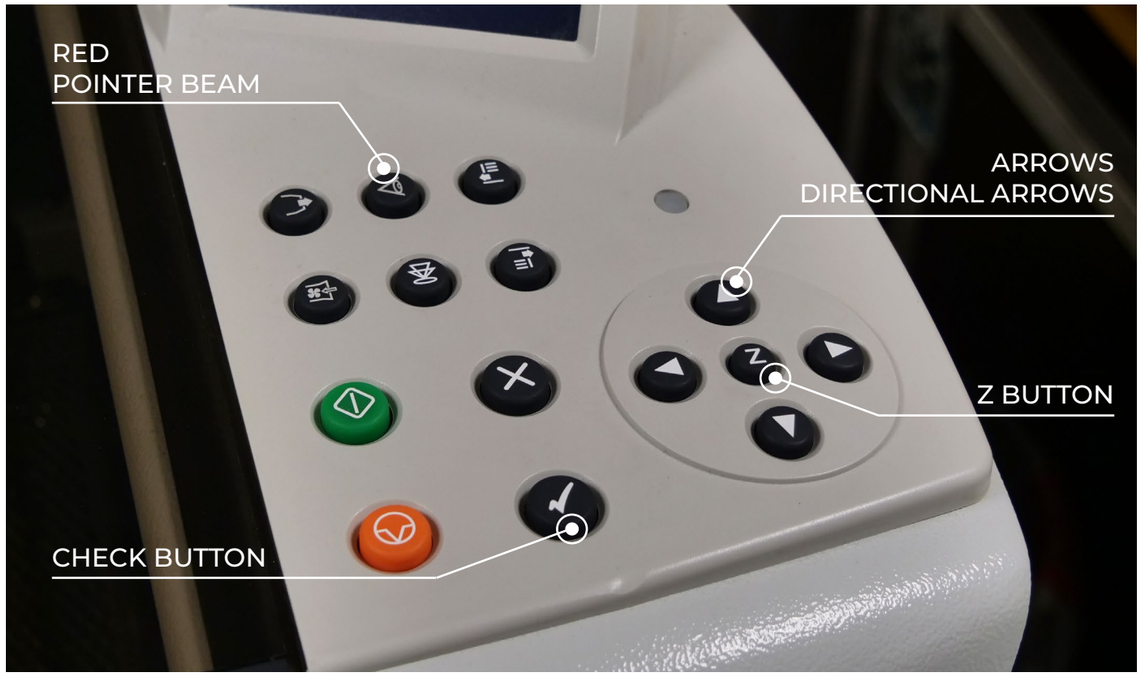
Product Manager at Gravotech, Arthur first worked on the mechanical range before specializing in the laser table range.

His role is to act as a link between the sales and R&D teams. To do this, he gathers and synthesizes customer needs to define future products. He also lends his expertise on current products to sales teams, helping them to respond effectively to customer issues.

***Arthur NAULIN**, gantry laser product manager*

Contents

Recommendations for use



Validate the distance between the object to be engraved and the laser

If you wish to insert a cutting table or a large object into the machine, you must:

- Lower the table by pressing the **Z button** while using the down arrow.
- Confirm the new position of the work surface using the **check button**.

If this action is not taken when engraving or cutting is launched, the table may rise to its initial position, which could crush the engraving head on the object or cutting table.

Display X and Y coordinates on the work surface

By moving the machine's engraving head using the keyboard's **directional arrows** on the keyboard, the precise coordinates of the engraving head are displayed on the machine screen.

This display can be combined with the use of the **red pointer**.
This makes it very easy to find precise physical coordinates and transfer them to the software, to perform an origin offset.

This can be useful when working with irregularly shaped scrap material. It is also an interesting alternative to the *Point & Shoot* function, which is more suited to object engraving.

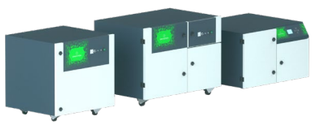
Shifting the engraving origin to add a marking

The engraving origin can be shifted directly from the machine controls, as follows:

- Move the bridge with the **directional arrows.**
- Confirm the position as the new origin with the **check button.**

This is a handy feature for engraving at a precise point on a part, or for adding text to be engraved quickly after cutting.

What you need to know about the fume extractor



Typically, **the fume extractor is controlled by the laser machine** and only activates when it's running - so you don't have to worry about switching it on and off.

However, when you're cutting material, it's possible to **extend the extractor's runtime** by a few seconds in the Gravostyle™ software to ensure that the last of the smoke generated by cutting is sucked out.

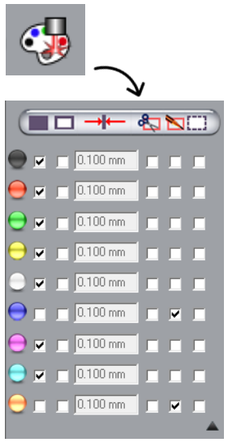
Engraving and cutting your creations

To **accurately import your engraving or cutting requirements** into Gravostyle™ software and obtain the expected results, it's important to choose the right file format. But you still need to know which one to use...

Engraving fonts or illustrations without gradients

File type	Laser path in Gravostyle™	What you can do
Vector format (AI, EPS, PDF, SVG, CDR, DXF)	Blue lines for shapes and contours Black lines for solids	Engrave shape outline Engraving a solid (filling a shape)

Focus on settings for engraving with Gravostyle™



In general, for engraving, **power is reduced** and **speed is high**. This ensures fine, precise engraving, without marking or burning the material.

For **deep engraving,** power should be increased and speed decreased. This will enable you to **dig deeper** into the material, while avoiding burning or deforming it.

It's also possible to **assign different engraving parameters** to different elements of your design, by assigning different colors to them. You can then specify the laser parameters for each color when sending the file to the laser table. This saves **time** and **ensures more precise engraving results**.

Finally, you should know that all Windows fonts are available in Gravostyle™ software. You can also install additional fonts if you wish.

Photo and illustration engraving with gradient

File type	Laser path in Gravostyle™	What you can do
Raster format (JPG, JPEG, PNG, PSD, TIFF, GIF, BMP) or **vector** format (AI, EPS, PDF, SVG, CDR, DXF).	Burn a monochrome gradient image	Managing a grayscale file

Good to know about Gravostyle™

With Gravostyle™, it's possible to reproduce a scanned drawing, logo or photo taken from a phone.

The laser table makes it possible to **retranscribe the grayscale** of the design when engraving. This means you can engrave a logo in several shades, or a black-and-white image with shades of gray.

But be careful, to ensure **good marking quality**, always use a high-quality photo (300 dpi minimum). As with printing, the quality of the engraving can never be higher than that of the source image.

- If image quality is insufficient, the engraving result will be blurred or pixelated.
- The higher the engraving resolution, the longer it will take.

It's up to you to find **the right balance between engraving quality and time available.**

Cutting out your creations

File type	Laser path in Gravostyle™	What you can do
Vector format (in layout)	Orange lines for cutting	Cut a shape by following its contour

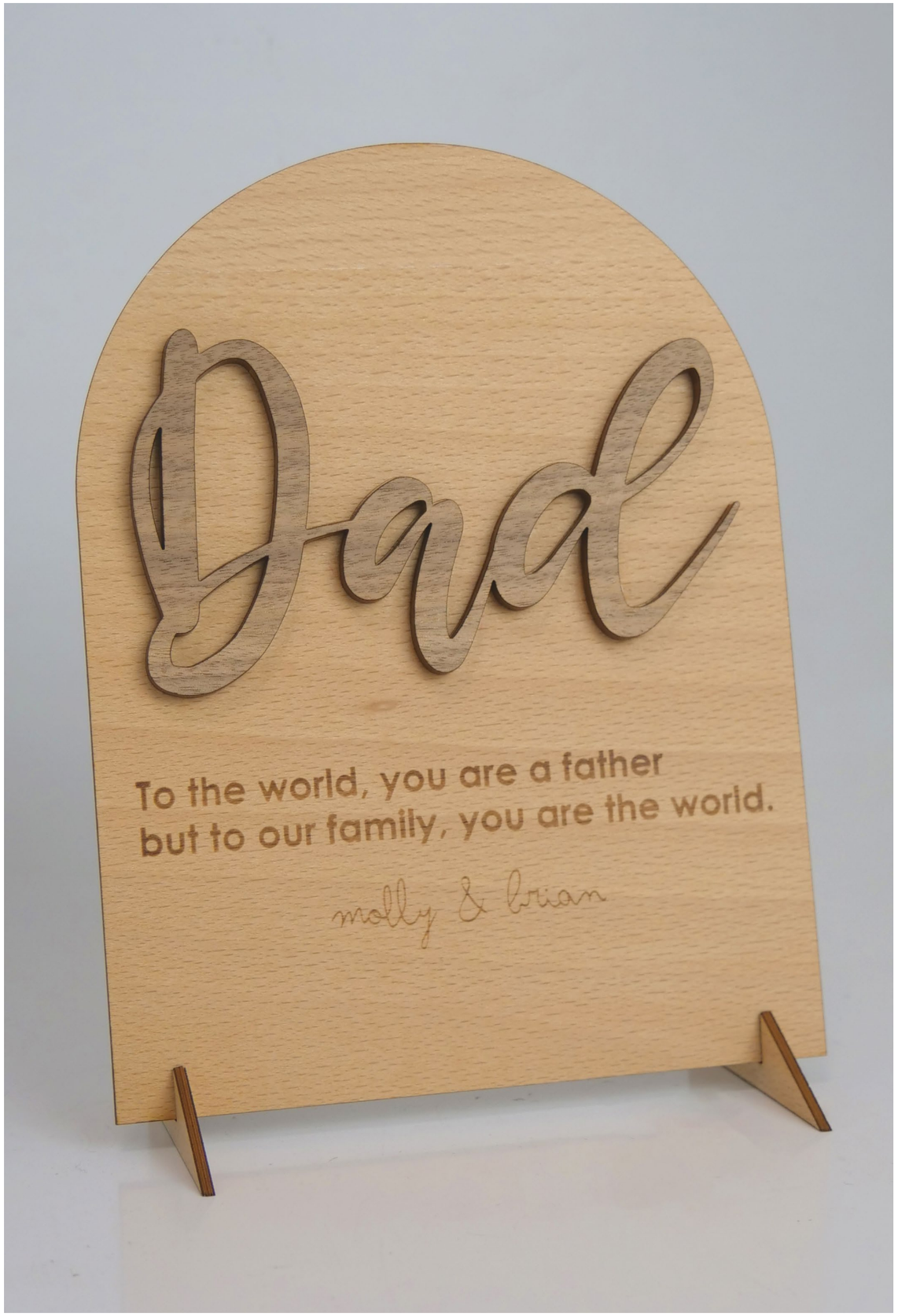
Focus on cutting parameters

In general, when cutting, power is high and speed is low to cut through the material. The thicker the material, the higher the power **to increase power and reduce speed.**

All engraving and cutting modes can be combined in a single engraving file. For example, you can create a design with both engraving and cutting elements. Simply **assign** them different colors and specify the corresponding laser parameters for each color.

A few additional tips for use

- When **cutting**, always **reduce speed** rather than increase power. For the same speed, it's better to use 80% power than 100%;
- Do not remove the protective film from Gravotech material when cutting;
- Use **material calibration** to find new parameters (see page 11).



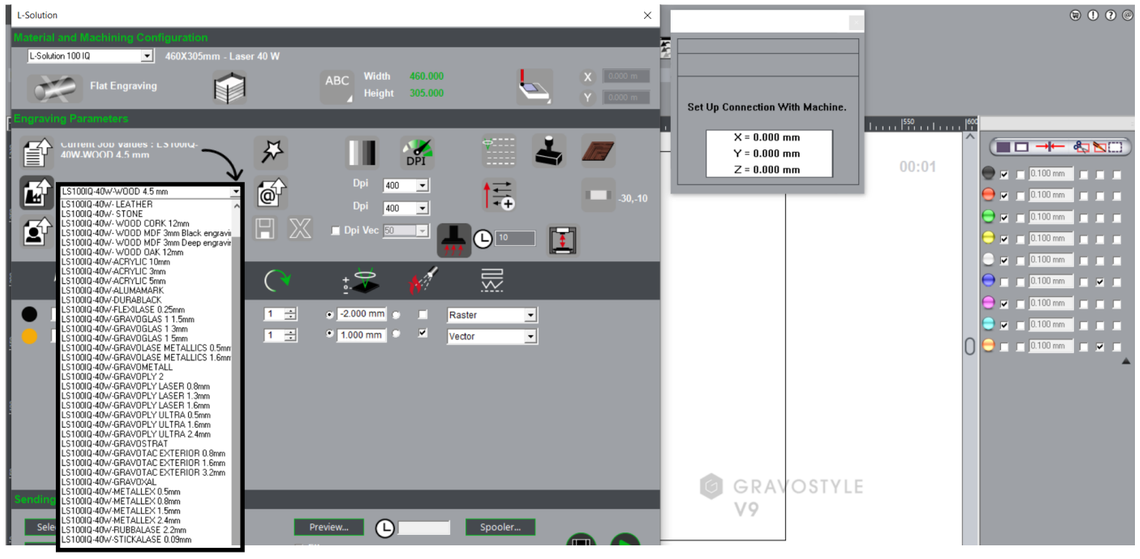
Understand how to set up your materials on Gravostyle™

GRAVOSTYLE

Depending on the material, **laser power and speed parameters** must be properly adjusted to obtain quality engraving and cutting results with Gravostyle™ software.

In Gravostyle™, they are **expressed in percentages** and not in Watts to simplify use.

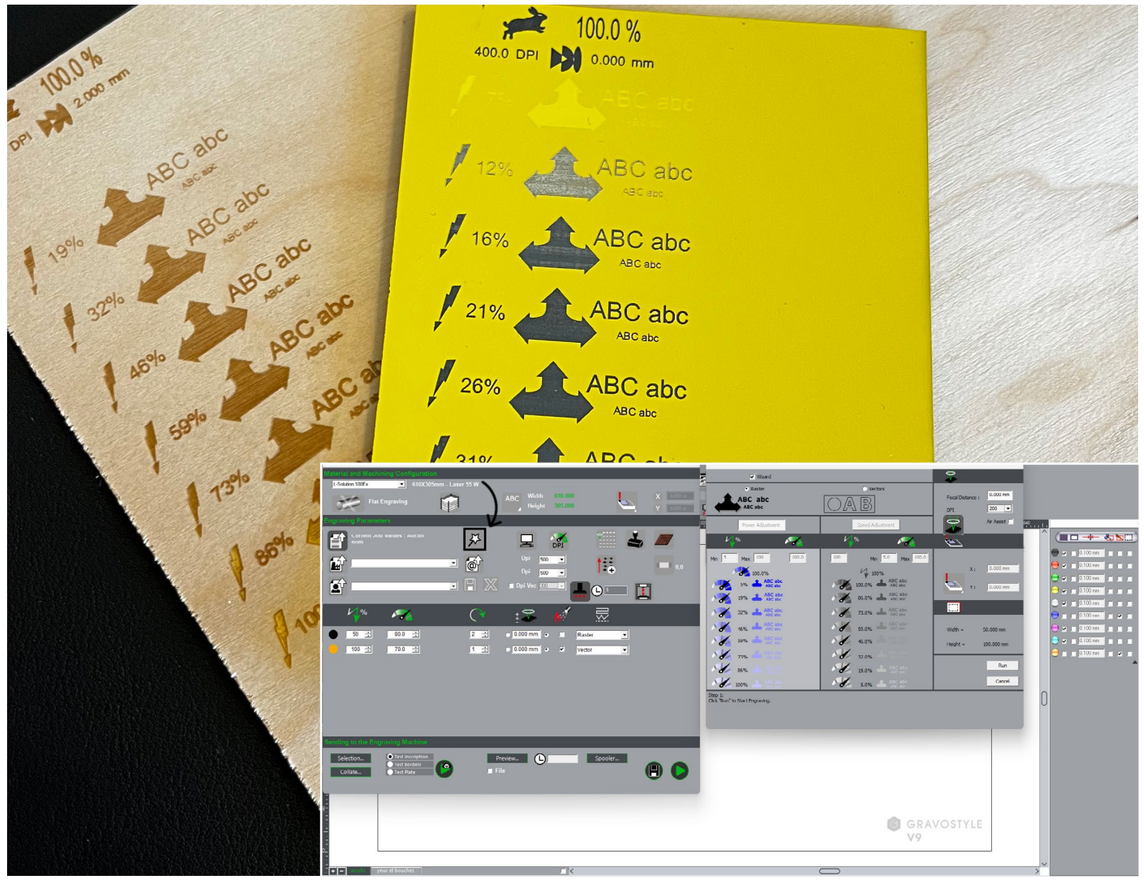
Gravotech materials: pre-set parameters



All Gravotech **materials parameters** are pre-registered in Gravostyle™.

A library is present with **automatic settings per material, for both engraving and cutting.** When a new Gravotech material is released, a Gravostyle™ update is performed automatically.

And outside the Gravotech range of materials?



To engrave a material that's not from the Gravotech range, there's a tool called the **material calibration.**

It allows you to perform several tests by gradually increasing speed or power, creating an engraving nuancier that will help you make a choice of rendering. You can then save your settings in the software with a specific name.

Save your own settings in our software

- **Factory preset (Gravotech database):** these are the pre-set parameters for Gravotech materials.
- **User preset (user's own database):** these are the settings you have saved for materials you use frequently.

Optimizing your laser's use according to material and application

Here are a few tips and recommendations for setting up engraving and/or cutting parameters.

Engraving and cutting on wood

For engraving:

- Engrave typography in the direction of the wood grain (like lines on a sheet of paper).
- Defocus the laser slightly by 2 mm for a darker, shallower marking;

Cutting:

- Putting **masking paper** on the surface of the wood avoids the deposit of smoke and glue residues. Cutting edges will thus be preserved against dark marks.

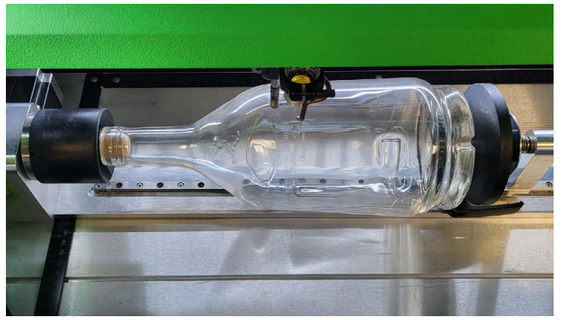
Bending:

- Wood can be made flexible with dashed cutting lines. The space between the cutting lines defines the maximum bending angle.

Glass engraving

Glass is a material that can overheat, causing microcracks:

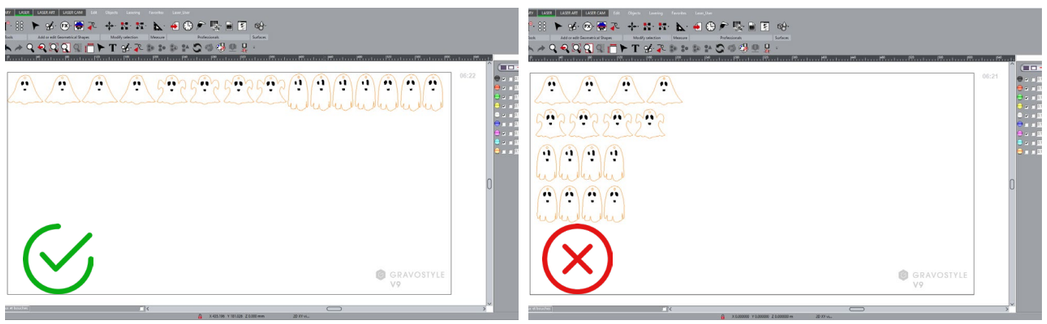
- Put wet paper on the glass;
- Engrave through wet paper.



For cylindrical glass (bottles and glasses):
Use a cylinder turner to rotate the glass at the same time as engraving (360° engraving).

Gain in speed

- Use the horizontal axis to optimize marking time:



- Reduce DPI for faster engraving at low resolutions.

Engraving and cutting on acrylic/PMMA

To cut acrylic (the aim is to get as smooth an edge as possible):

- Set speed fairly low and increase vector DPI;
- Defocus inside the material (focus point not on the material surface, but 1/3 of the material thickness);
- Use a picot table for cutting (this limits beam returns).
- For transparent acrylic, engraving is done on the reverse side and in mirror image.

What about photo engraving?

Depending on the material to be engraved, there are a few recommendations to keep in mind;

On anodized anodized aluminum or acrylic:

- It's best to have a uniform background for engraving. You can also use free tools available on the Internet to remove the background and convert the photo into a negative.
- In Gravostyle™, the recommended engraving method is *Grayscale*, which allows you to engrave in shades of gray. In the software, anything white will not be engraved, while anything black will.

On wood:

- The background must be removed in Gravostyle™ to facilitate engraving, the recommended engraving method is image format or *PhotoLase*.

The most frequent mistakes

In this section, we explore the most common mistakes made by novice laser table users. Understanding these pitfalls will help you optimize the use of your laser table and improve your engraving and cutting results.

Wrong connection or cable

Check that all **cables are correctly connected** before you start engraving.

Forgot to select the engraving to be sent

Always use **the preview tool** before you start engraving. This will help you avoid errors and loss of material.

Incorrect positioning of engraving on object

Before you start engraving, remember to check the **positioning of the engraving**. We recommend you use the pre-engraving simulation, which uses a red dot to simulate the engraving position directly on the object.

Using too much power

It's better to **use too little power than too much**. If the engraving is not pronounced enough, it will always be possible to make a second pass. But if the engraving is too pronounced, or even burnt, it will be impossible to go back.

Safety and maintenance recommendations

Using a laser table safely

A **CO2 laser table** is a **class 2** laser machine . No specific safety measures are required for the operator. However, remember to follow the safety instructions for safe operation.

- Operating the **air assistance** during cutting not only improves cutting quality, but also facilitates better **smoke evacuation.**
- For safety reasons, do not leave the machine unattended during engraving or cutting.
- Do not engrave or cut **PVC**, as the chlorine present in its composition is released as a gas and is harmful to the user and the mechanical parts of the laser table.
- For user safety reasons, do not engrave with the door open.

Initiate maintenance operations

To ensure optimum operation of your laser table and prolong its life, you can follow a few maintenance instructions.

- **Clean the lens** before working with the machine, to avoid the accumulation of dust deposits when not in use.
- **Keep your machine clean** between uses. This may include picking up chips and dust debris. Keep the worktable clean.
- Clean the **mirror** once a month. This will help **maintain** optimum laser beam quality.
- Change the **extractor filter** when the indicator lights up. This will maintain optimum filtration for the user and prevent dust build-up in the machine.
- The service life of a CO2 laser source is extended when it operates optimally within a **temperature range of 68°F to 77°F**. It is therefore essential to keep the machine within this range to guarantee its performance.

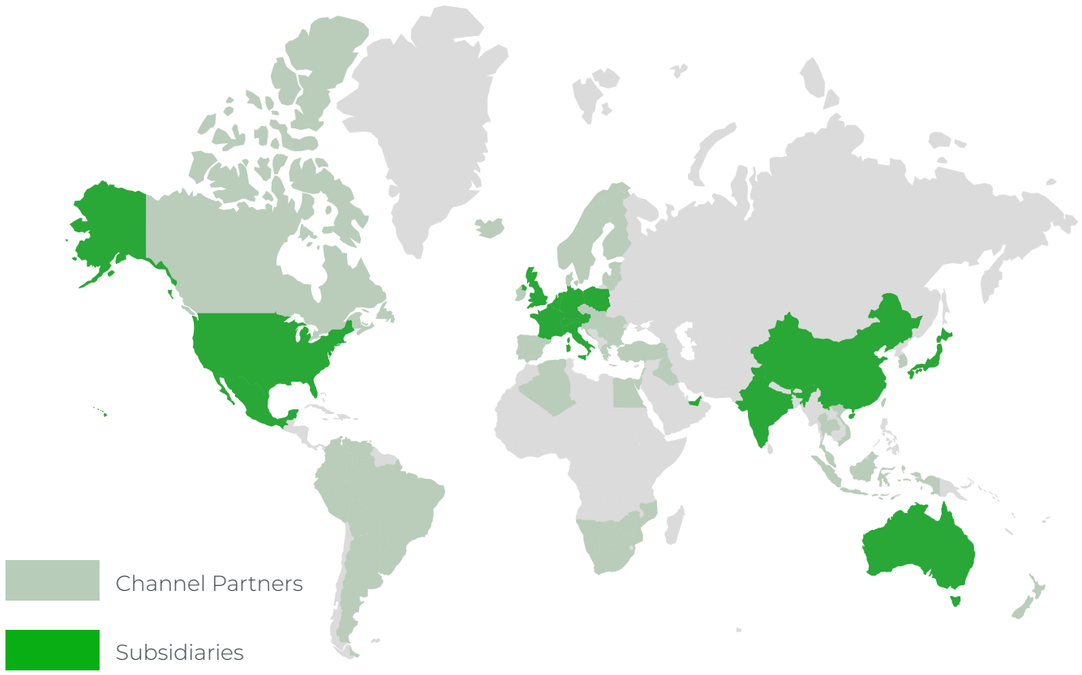
Contact after-sales service for regular machine maintenance

A service and maintenance contract increases the machine's lifespan and guarantees maximum uptime!

You now have all the keys you need to understand and optimize your CO2 laser engraving or cutting operations. Still have a few questions?

Contact a Gravotech expert

Gravotech, leader in permanent marking solutions



+85
years of expertise

+60 000
customers

+85 %
sales export

77
countries

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