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> Comgrow Z1 Laser Engraving Machine 5W Output Power, Laser Cutter and Engraver Machine 24V Compressed Spot 10000mm/min with Eye Protection for Wood Metal Glass Acrylic Leather 15.7"x15.7" Laser Engraver Z1 5W User Manual

## Comgrow Z1 5W

# Comgrow Z1 Laser Engraving Machine 5W User Manual

Model: Z1 5W | Brand: Comgrow

## 1. PRODUCT OVERVIEW

The Comgrow Z1 Laser Engraving Machine is a versatile tool designed for precise engraving and cutting on a wide range of materials. Featuring a 5W output power and a 0.08mm compressed laser spot, it offers high accuracy and efficiency. Its robust all-metal body ensures stability and durability. The machine supports multiple software platforms and connection methods, providing flexibility for various user needs.



Figure 1: Comgrow Z1 Laser Engraving Machine and example projects.

## 2. SAFETY INFORMATION

Operating a laser engraving machine requires strict adherence to safety guidelines to prevent injury. Always wear the provided eye protection goggles when the laser is active. Ensure proper ventilation to dissipate fumes and smoke generated during engraving and cutting. Never leave the machine unattended during operation. Keep flammable materials away from the working area. The machine is equipped with an eye protection design and a safety anti-tilt function for enhanced safety.

## Newly upgraded laser head



Figure 2: The laser head features an eye protection design for user safety.

### 3. SETUP GUIDE

#### 3.1 Unboxing and Component Check

Carefully unbox your Comgrow Z1 Laser Engraving Machine. Verify that all components listed in the packing list are present and undamaged. The package typically includes the main frame components, laser module, power supply, USB cable, SD card, safety goggles, and a 2mm focus tool.

#### 3.2 Assembly

Assemble the machine by following the detailed instructions provided in the assembly video. Ensure all screws are tightened securely for stable operation. The machine features an all-metal body for improved engraving precision and dual Y-axis motors for enhanced stability and accuracy.

## All-metal body

improve engraving precision.

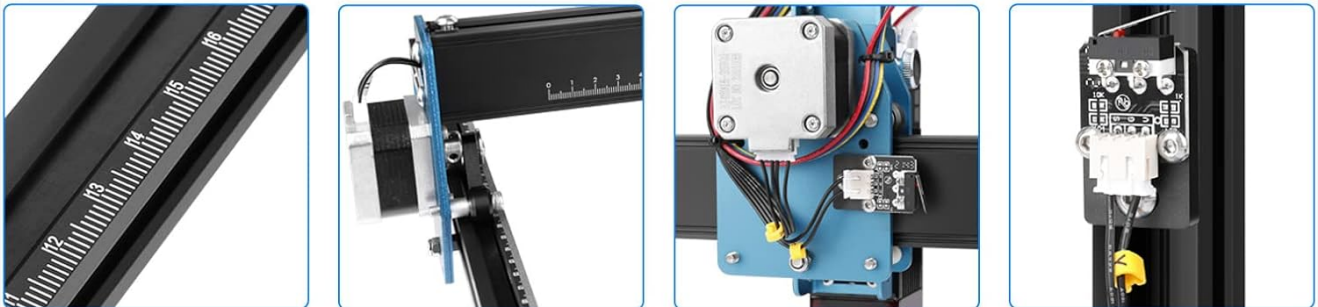
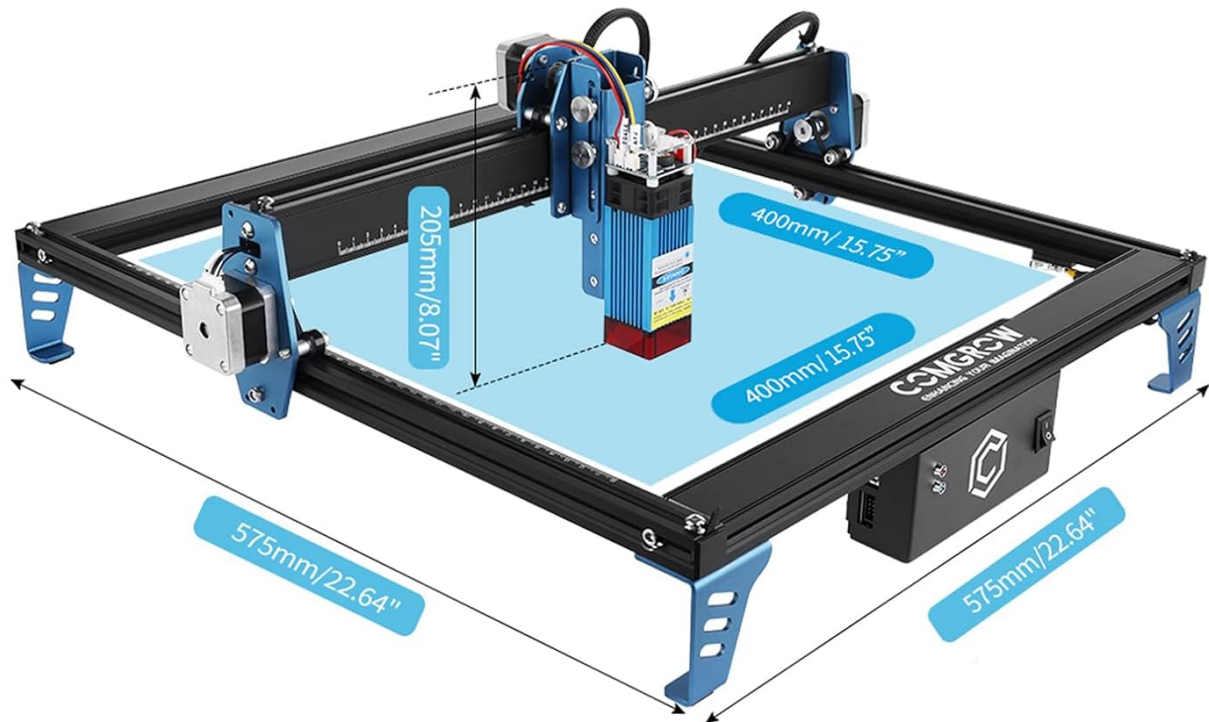


Figure 3: The all-metal body provides a stable engraving platform with a 400x400mm working area.

Video 1: Detailed guide on how to assemble the Comgrow Z1 Laser Engraving Machine.

### 3.3 Software Installation and Connection

The Comgrow Z1 is compatible with various engraving software. For new users, LaserGRBL is recommended (supports Windows 7/8/10/XP). Experienced users can utilize LightBurn (supports Windows/Mac/Linux). Install the necessary drivers and software from the provided SD card or official Comgrow website.

Connect the machine to your computer via USB cable or utilize Wi-Fi for wireless data transfer. An SD card slot is also available for offline operation.

# Multiple Software Support

Laser GRBL: For Windows XP, 7/8/10/11.

Lightburn: Available for Windows, Mac OS and Linux.

Support NC, DXF, BMP, JPG, PNG, SVG, G-Code and other file formats.

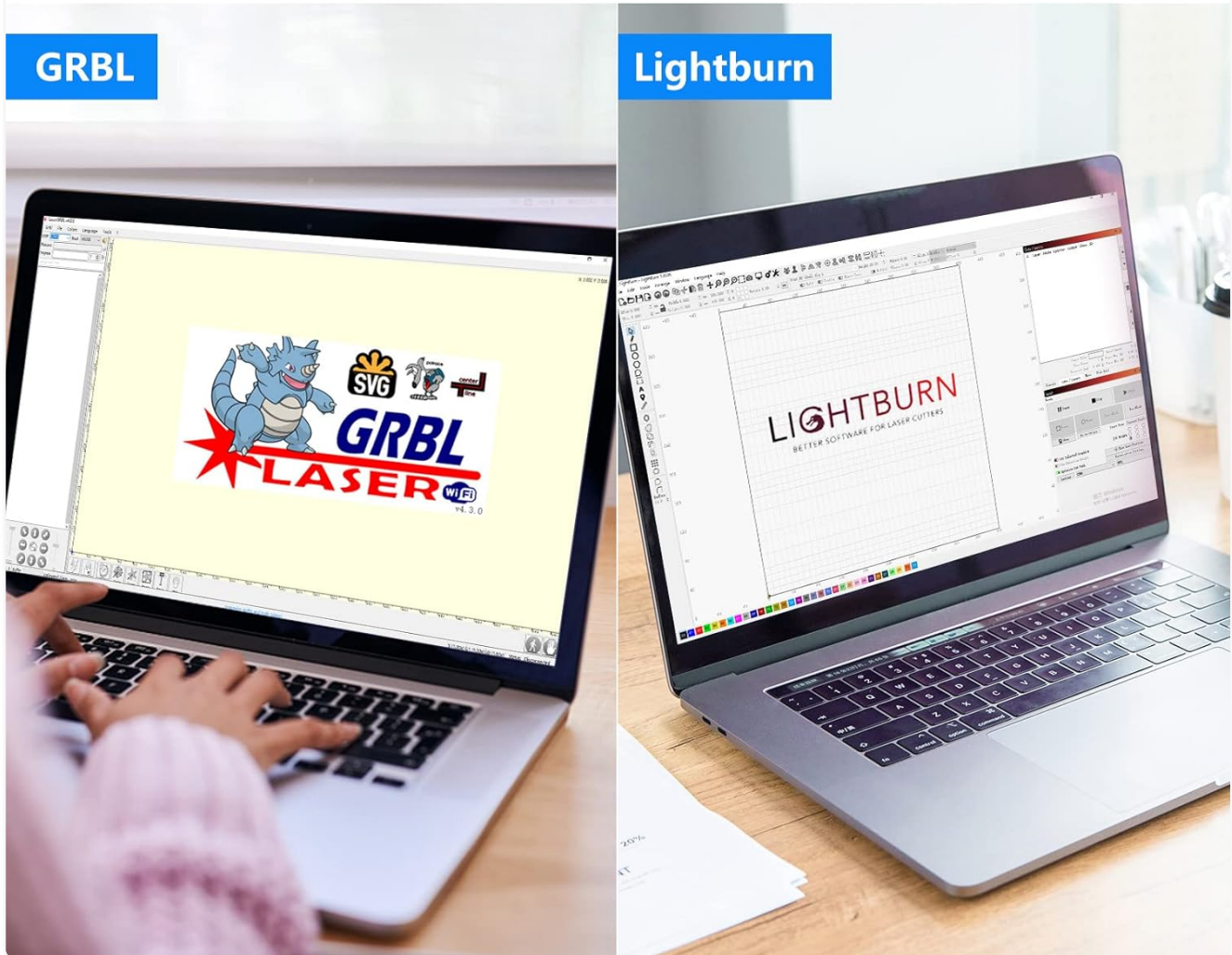


Figure 4: Comgrow Z1 supports both LaserGRBL and LightBurn software for versatile control.

## 4. OPERATING INSTRUCTIONS

### 4.1 Material Preparation and Focusing

Place your chosen material flat on the working surface. Use the included 2mm clear/frosted plastic tool to set the correct focal length. The laser needs to be a specific distance from the top of the material for optimal focus. Adjust the laser module height until the tool fits snugly between the laser and the material.

### 4.2 Engraving and Cutting Parameters

Optimal engraving and cutting results depend on the material type, power, and speed settings. Refer to the table below for recommended parameters for common materials. Adjust power and speed based on desired depth and material characteristics.

Table 1: 5W Laser Module Engraving Parameters

| Mode | Materials  | Power (%) | Speed (mm/min) | NOTE |
|------|------------|-----------|----------------|------|
|      | Wood board | 100       | 2500           |      |

| Mode      | Materials       | Power (%) | Speed (mm/min) | NOTE   |
|-----------|-----------------|-----------|----------------|--|
| Engraving | Bamboo          | 100       | 2500           |  |
|           | Solid wood      | 100       | 2500           |  |
|           | Leather         | 100       | 2000           |  |
|           | Glass           | 100       | 700            | Te surface needs to be painted black or heat transfer paper applied. |
|           | Ceramic         | 100       | 700            | The surface needs to be heat transfer paper applied.                 |
|           | Acrylic         | 100       | 1500           | For transparent surface need to be painted black.                    |
|           | Stainless steel | 100       | 300            |  |
|           | Anodized metal  | 100       | 800            |  |
| Fabric    | 40              | 5000      |                |  |
| Cutting   | 2mm thick board | 100       | 250            | Cutting thick boards can reduce the focal length appropriately.      |
|           | 3mm thick board | 100       | 180            |  |
|           | 4mm thick board | 100       | 120            |  |
|           | Cardboard       | 100       | 1500           |  |
|           | Leather         | 100       | 120            |  |
| Fabric    | 100             | 1500      |                |  |

For optimal results, always perform test engravings on scrap material before starting your main project.

### 4.3 Engraving Different Materials

The Comgrow Z1 can engrave and cut various materials. Below are examples and videos demonstrating its capabilities:

- **Wood:** Ideal for detailed engravings and cutting thin wood boards.

*Video 2: Learn how to engrave wood plates with the Comgrow Z1.*

- **Acrylic:** Achieve clean cuts and engravings on acrylic sheets. Transparent acrylic may require painting the surface black or applying heat transfer paper for better results.

*Video 3: Guide on using Comgrow Z1 to engrave acrylic and stainless steel.*

*Video 4: Learn how to engrave acrylic with the Comgrow Z1.*

- **Anodized Metal:** The laser can engrave on anodized aluminum alloy, mirrored stainless steel, and carbon steel.

*Video 5: Demonstration of engraving anodized metals with the Comgrow Z1 laser engraver.*

### 4.4 Engraving Cylindrical Objects (Optional Rotary Roller)

For engraving cylindrical objects such as tumblers or bottles, the Comgrow Z1 can be upgraded with a rotary roller (sold separately). This accessory allows for precise engraving on curved surfaces.

# Easy to Engraving Cylindrical Objects

(Need to buy rotary roller engraving module separately)



Figure 5: The optional rotary roller enables engraving on cylindrical items.

Video 6: Instructions on how to use the Rotary Roller with the Comgrow Z1 Laser Master.

## 5. MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your Comgrow Z1.

- **Laser Lens Cleaning:** Periodically clean the laser lens with a soft, lint-free cloth and a small amount of isopropyl alcohol. Ensure the lens is free of dust and debris to maintain laser precision.
- **Rail and Belt Inspection:** Check the X and Y-axis rails and belts for any signs of wear, looseness, or obstruction. Keep the rails clean and lubricated if necessary.
- **General Cleaning:** Wipe down the machine's frame and components regularly to prevent dust buildup, which can affect performance.

## 6. TROUBLESHOOTING

If you encounter issues with your Comgrow Z1, refer to the following common troubleshooting tips:

- **Machine Not Connecting:** Ensure the USB cable is securely connected to both the machine and the computer. Verify that the correct drivers are installed and the software (LaserGRBL/LightBurn) is configured with the correct COM port and baud rate (e.g., 230400).
- **Poor Engraving Quality:** Check the laser focus. Ensure the material is flat and properly secured. Adjust power and speed settings according to the material and desired effect (refer to Table 1). Clean the laser lens if the output appears weak or inconsistent.
- **Skipping or Misalignment:** Inspect the X and Y-axis belts for proper tension. Ensure the eccentric nuts on the gantry are adjusted correctly to eliminate any play. Check for obstructions on the rails.
- **Laser Not Firing:** Verify that the laser module is correctly installed and all wiring connections are secure. Check the power supply.

For more complex issues, consult the detailed troubleshooting section in the full user manual or contact Comgrow customer support.

## 7. SPECIFICATIONS

**Table 2: Comgrow Z1 Laser Engraving Machine Specifications**

| Feature            | Specification                 |
|--------------------|-------------------------------|
| Brand              | Comgrow                       |
| Model Number       | Z1 5W                         |
| Material           | Metal                         |
| Color              | Black                         |
| Item Weight        | 5.38 Kilograms (11.82 pounds) |
| Operation Mode     | Automatic                     |
| Product Dimensions | 24 x 12 x 7 inches            |
| Laser Output Power | 5W                            |
| Laser Spot Size    | 0.08 mm                       |
| Engraving Area     | 15.7"x15.7" (400x400mm)       |
| Max Speed          | 10000mm/min                   |
| Connectivity       | Wi-Fi, USB cable, SD card     |
| Supported OS       | Windows, Mac, Linux           |

## 8. WARRANTY AND SUPPORT

Comgrow provides warranty coverage for manufacturing defects. For specific warranty terms and conditions, please refer to the warranty card included with your product or visit the official Comgrow website.

For technical assistance, troubleshooting, or spare parts, please contact Comgrow customer support through their official channels. You can also visit the [Comgrow Store](#) for additional resources and product information.

