AENBUSLM DLC-JG-3.0

AENBUSLM 80W Laser Module with Air Assist Instruction Manual

Model: DLC-JG-3.0

1. Introduction

This manual provides essential information for the safe and effective use of your AENBUSLM 80W Laser Module with Air Assist. This module features an 80W machine power and 10W (10000mW) optical output, designed for precision laser cutting and engraving. Please read this manual thoroughly before installation and operation to ensure proper functionality and safety.

2. Safety Information

WARNING: This product contains a Class 4 laser. Direct exposure to the laser beam can cause severe eye injury and skin burns. Always wear appropriate laser safety goggles when operating this device. Never look directly into the laser beam or at reflections.

- Always wear certified laser safety goggles (OD 6+ recommended) when the laser is active.
- Ensure the work area is well-ventilated to dissipate fumes and smoke generated during cutting or engraving.
- Keep flammable materials away from the laser's path.
- Never leave the laser module operating unattended.
- Keep children and pets away from the operating laser machine.
- Ensure the laser module is securely mounted before operation.
- Familiarize yourself with the emergency stop procedures of your laser engraving machine.

3. Product Overview

The AENBUSLM 80W Laser Module is a high-performance laser head designed for various cutting and engraving tasks. Key features include:

- **Powerful Output:** 80W machine power with 10W (10000mW) optical laser output.
- **Advanced Optics:** Built-in FAC (Fast Axis Collimation) technology for an ultra-fine compressed spot, enhancing

cutting penetration and precision.

- **Integrated Air Assist:** Professional air assist system to ensure cleaner cuts and engravings by removing debris and reducing charring.
- **Efficient Cooling:** Built-in fan cooling system (12000 rpm) maintains optimal performance and extends diode lifetime up to 20,000 hours.
- **Versatile Compatibility:** Compatible with 12V and 24V DIY machines, and various laser engraving/cutting machines, CNC routers, and 3D printers.

Figure 3.1: AENBUSLM 10W Laser Engraving Head highlighting its features.

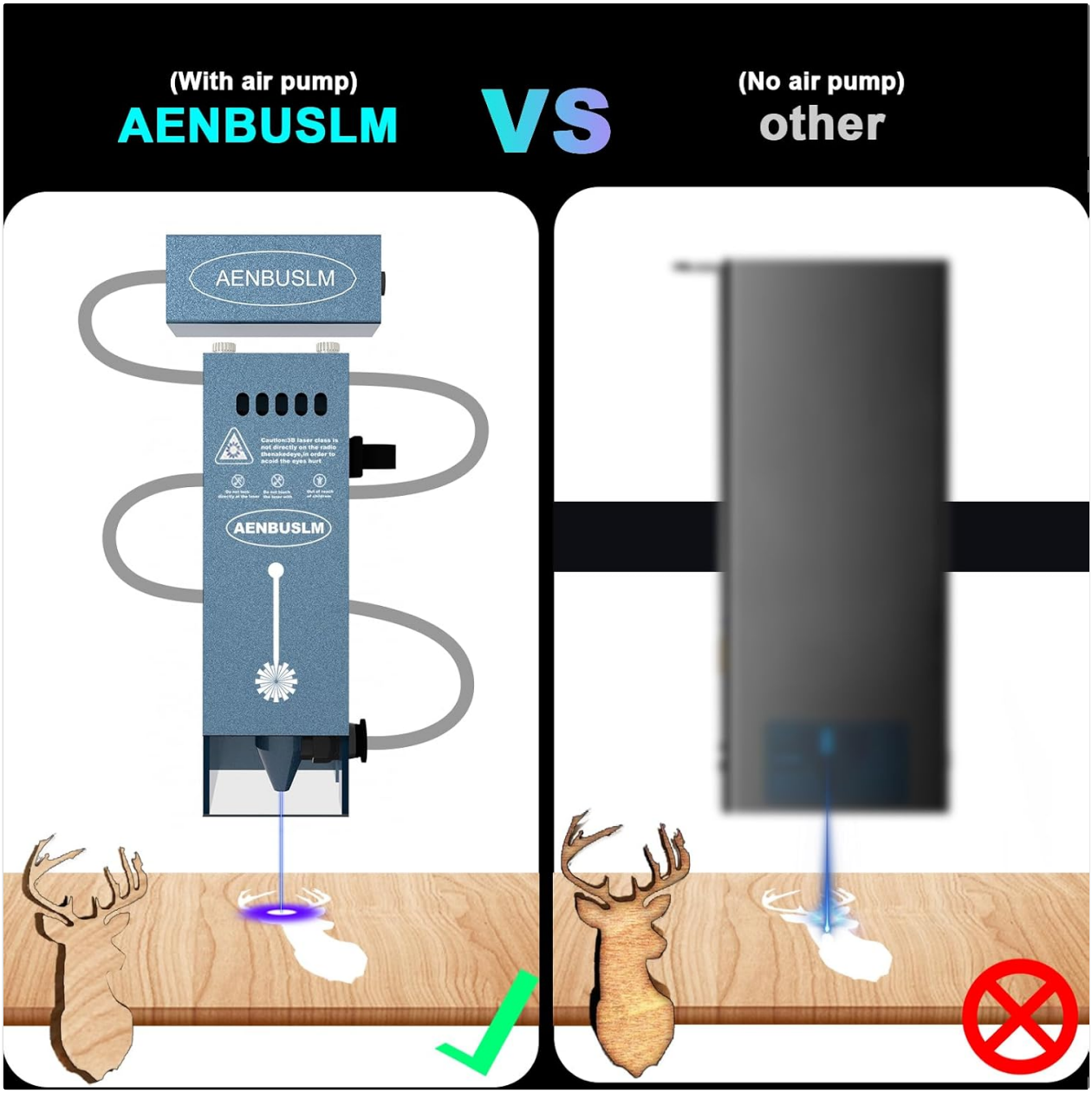

Figure 3.2: Illustration of the integrated air assist providing strong airflow for a smoke-free work environment.

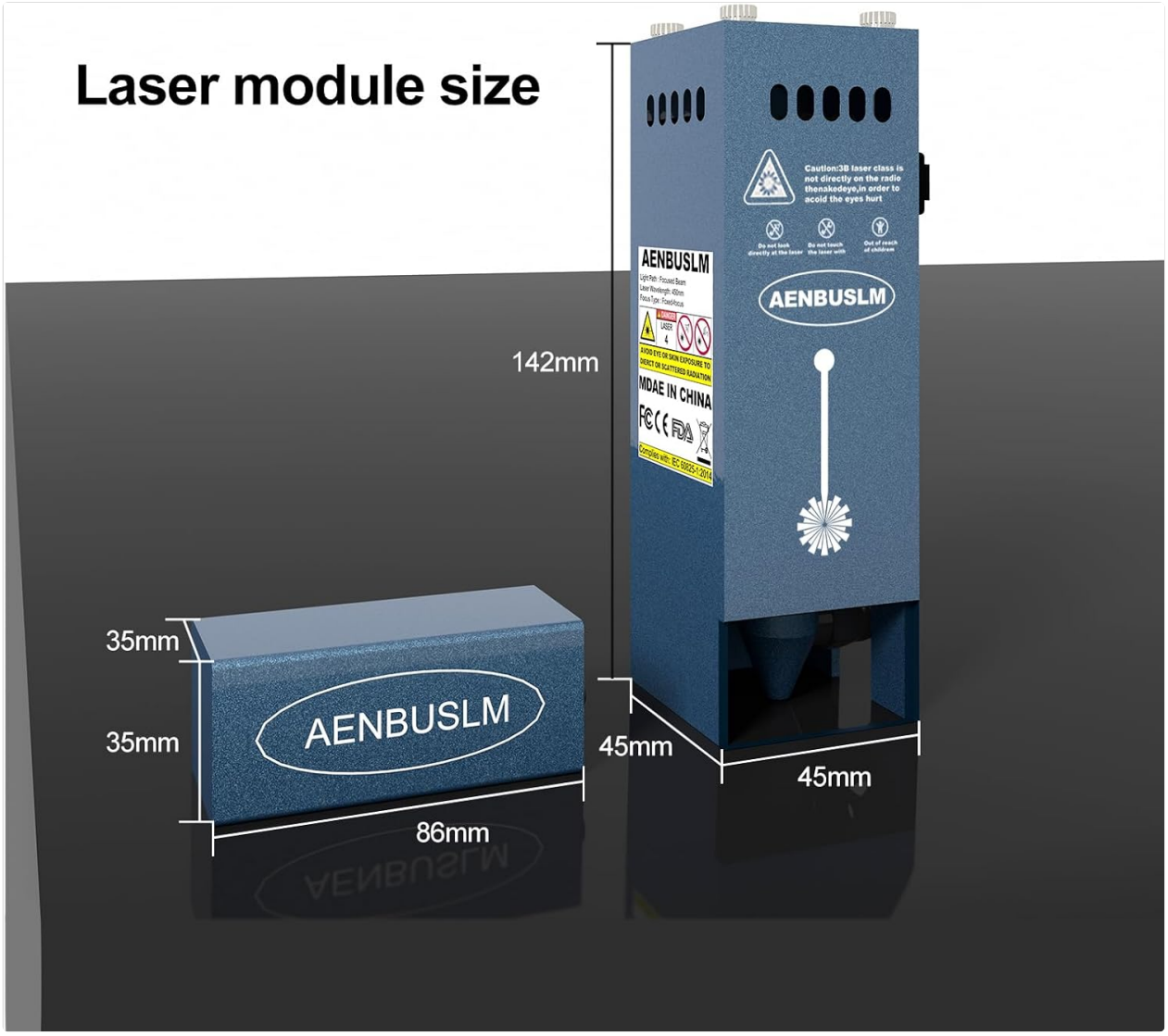

Figure 3.3: Comparison of engraving quality with and without air assist, demonstrating cleaner results with the AENBUSLM module.

4. Setup

Follow these steps to set up your AENBUSLM laser module:

1. **Mounting:** The laser module features multi-hole positions on its back for easy installation onto various laser cutting and engraving machine stands. Securely attach the module to your machine's gantry using appropriate fasteners.
2. **Electrical Connection:** Connect the control line. The installation method is plug-and-play, ensuring compatibility with 12V and 24V systems. Refer to your host machine's manual for specific wiring diagrams if needed.
3. **Air Assist Connection:** If using the external air assist pump, connect the air pump tube to the designated port on the laser module and the air pump. Connect the air pump power cord to a suitable power source.
4. **Focus Adjustment:** Use the provided focus fixing plate to set the correct focal length. Place the plate on your material, lower the laser module until the nozzle touches the plate, then tighten the module's securing screws. Remove the plate before operation.

Figure 4.1: Included components for the AENBUSLM Laser Module.

5. Operating Instructions

Once the laser module is properly installed and focused, you can begin your cutting or engraving projects. Always refer to your laser engraving machine's software manual for specific operational procedures and parameter settings.

- **Material Preparation:** Place your material securely on the workbed. Ensure it is flat and properly positioned.
- **Software Settings:** Configure your laser software (e.g., LightBurn, LaserGRBL) with the appropriate power, speed, and passes for your material and desired outcome. The 10W optical output allows for efficient processing.
- **Engraving Capabilities:**
    - Directly engrave mirror stainless steel without needing to paint it black.
    - Achieve fast engraving speeds on materials like 304 stainless steel, up to 300mm/s with a 45mm focal length.
    - Engrave ceramics and various other materials with high precision due to the ultra-fine compressed spot.
- **Cutting Capabilities:**
    - Cut 12mm acrylic in a single pass.
    - Cut 20mm pinewood in a single pass.
    - The air assist significantly improves cutting performance and edge quality.
- **Start Operation:** Initiate the laser job from your software. Monitor the process closely.

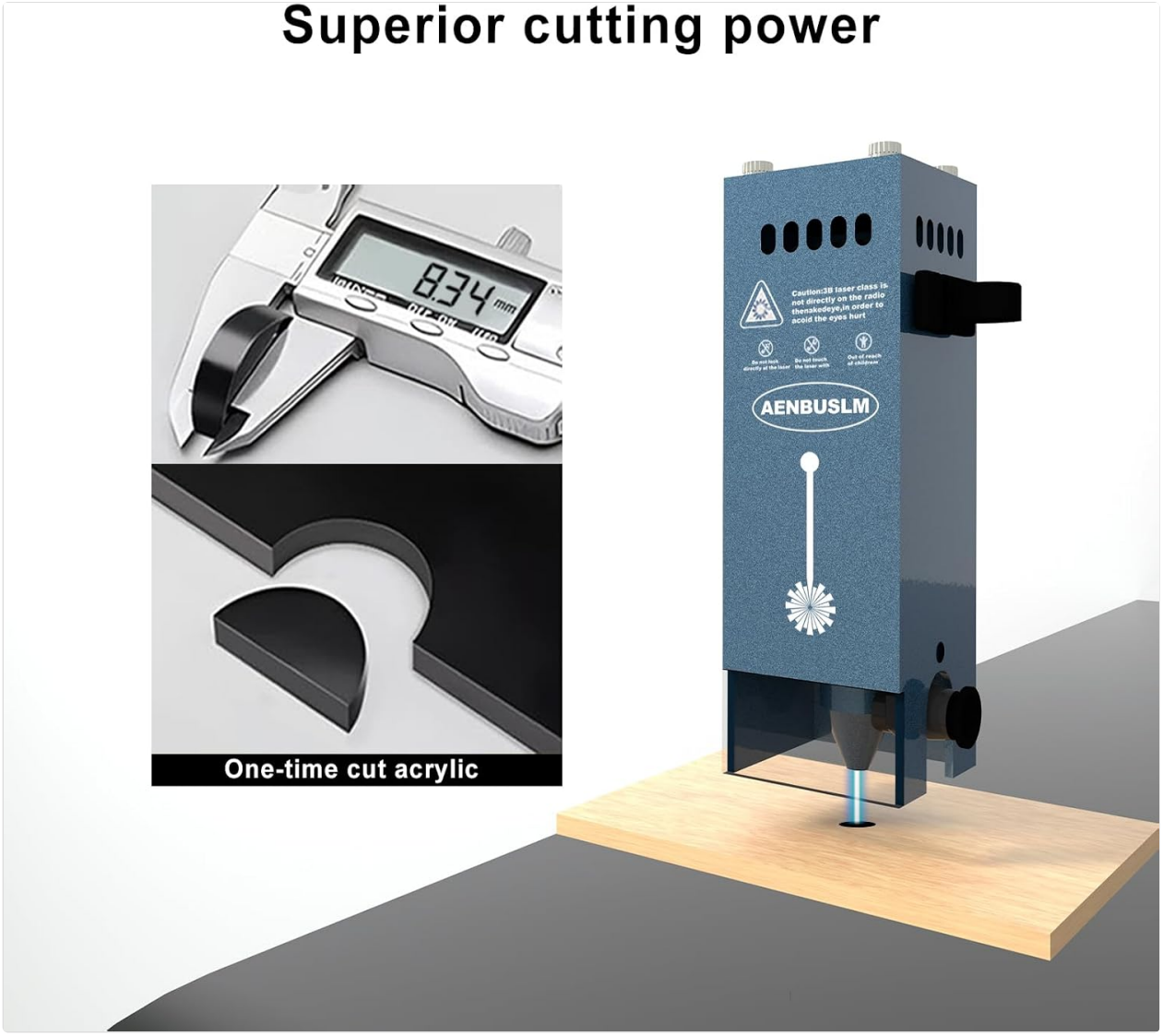

Figure 5.1: Examples of the laser module's cutting ability on acrylic and pinewood.

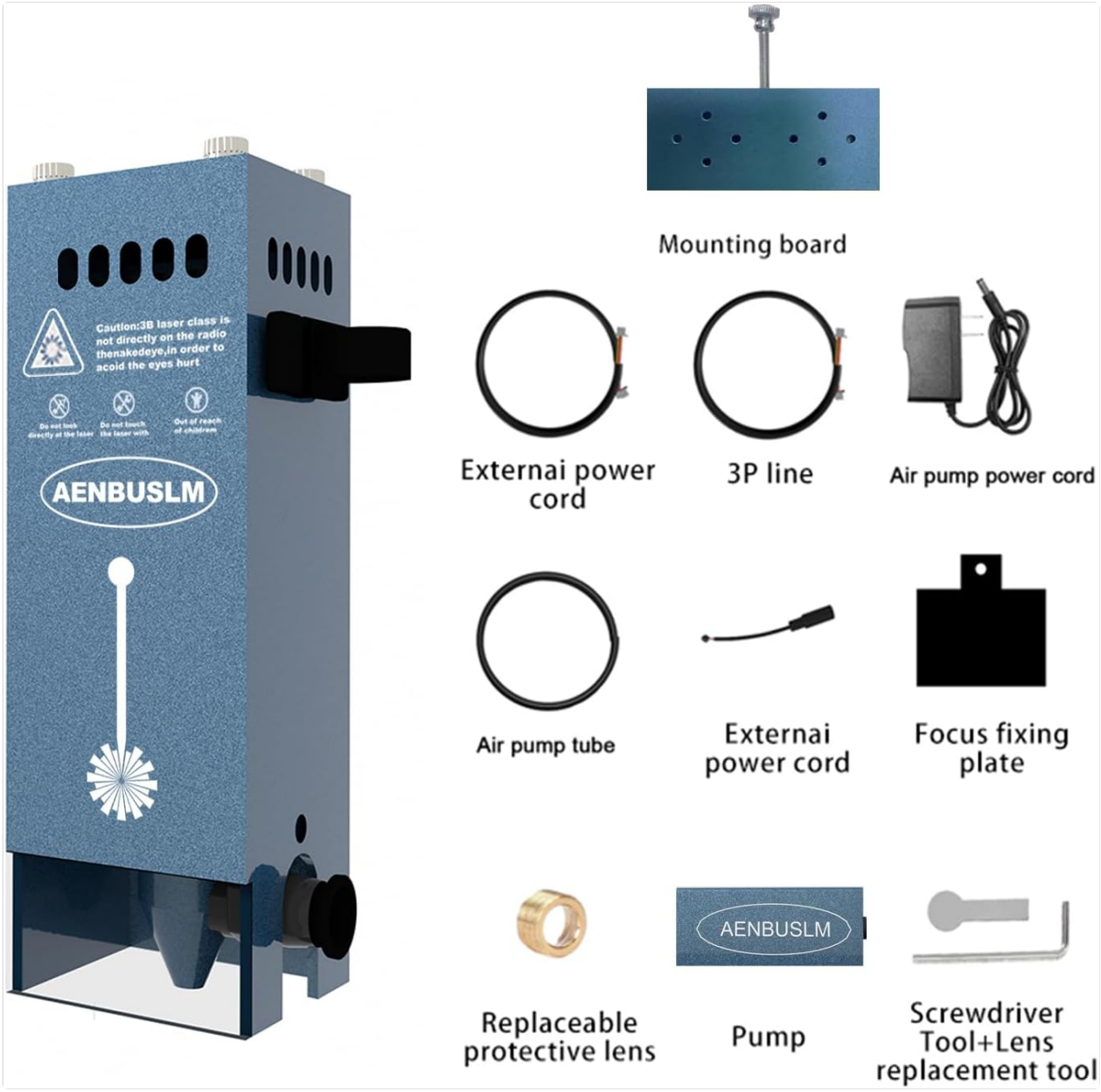

Figure 5.2: Demonstration of superior cutting power on acrylic.

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Video 5.1: This video demonstrates the AENBUSLM 80W Laser Module in operation, showing its capability to engrave on wood and stainless steel. The video highlights the speed and precision of the engraving process.

6. Maintenance

Regular maintenance ensures the longevity and optimal performance of your laser module.

- **Lens Cleaning:** Periodically inspect and clean the protective lens. Dust and debris can accumulate and reduce laser power. Use a soft, lint-free cloth and lens cleaning solution specifically designed for optics.
- **Lens Replacement:** The module includes a replaceable protective lens. If the lens becomes scratched or damaged, replace it using the provided screwdriver tool and lens replacement tool.
- **Air Assist Nozzle:** Ensure the air assist nozzle is clear of any blockages. Clean it regularly to maintain effective airflow.
- **Cooling Fan:** Keep the cooling fan free from dust and obstructions to ensure efficient heat dissipation.

7. Troubleshooting

If you encounter issues with your laser module, consider the following troubleshooting steps:

- **No Laser Output:**
  - Check all power connections to the laser module and the host machine.
  - Verify the control signal cable is securely connected.
  - Ensure the laser is enabled in your software and the power settings are not set to zero.
- **Weak Laser Power / Poor Engraving/Cutting:**
  - **Focus:** Re-check the laser focus. Incorrect focus is a common cause of weak performance.
  - **Lens Cleanliness:** Clean the protective lens as described in the Maintenance section.
  - **Alignment:** Ensure the laser beam is properly aligned through the nozzle. Misalignment can significantly reduce effective power. If you suspect misalignment, consult your machine's manufacturer or a qualified technician.
  - **Software Settings:** Review your power and speed settings in the laser software. Adjust them according to the material and desired effect.
  - **Material:** Ensure the material is suitable for diode laser processing.
- **Excessive Smoke/Charring:**
  - Verify the air assist system is functioning correctly and the nozzle is clear.
  - Adjust laser power and speed settings. Lower power or increase speed may reduce charring.
  - Ensure adequate ventilation in your workspace.

8. Specifications

Feature	Specification
Brand	AENBUSLM
Model Number	DLC-JG-3.0
Machine Power	80W
Optical Output Power	10W (10000mW)
Laser Class	Class 4
Beam Type	Ultra-Fine Compressed Spot (Built-in FAC)
Cooling System	Built-in Fan (12000 rpm)
Diode Lifetime	Up to 20,000 hours
Compatibility	12V and 24V DIY machines, various laser engravers/cutters, CNC routers, 3D printers
Item Weight	1.1 pounds
Package Dimensions	8.43 x 5.71 x 3.94 inches

9. Warranty and Support

AENBUSLM is committed to providing high-quality after-sales service. If you encounter any problems when using our products, you can contact our after-sales service team at any time. Our professional technicians will provide you with solutions and assistance in a timely manner.

For support, please refer to the contact information provided with your purchase or visit the official AENBUSLM website.