ATOMSTACK Maker A20 Max

ATOMSTACK A20 Max Laser Engraver User Manual

Model: A20 Max | Brand: ATOMSTACK Maker

1. INTRODUCTION

This manual provides essential instructions for the safe and efficient operation of your ATOMSTACK A20 Max Laser Engraver. Please read this manual thoroughly before operating the device to ensure proper usage, optimal performance, and to prevent injury or damage.

The ATOMSTACK A20 Max is a high-power laser engraving and cutting machine featuring a 20W optical laser, a large 850 x 400 mm working area, automatic air assist, and compatibility with rotary attachments for versatile material processing.
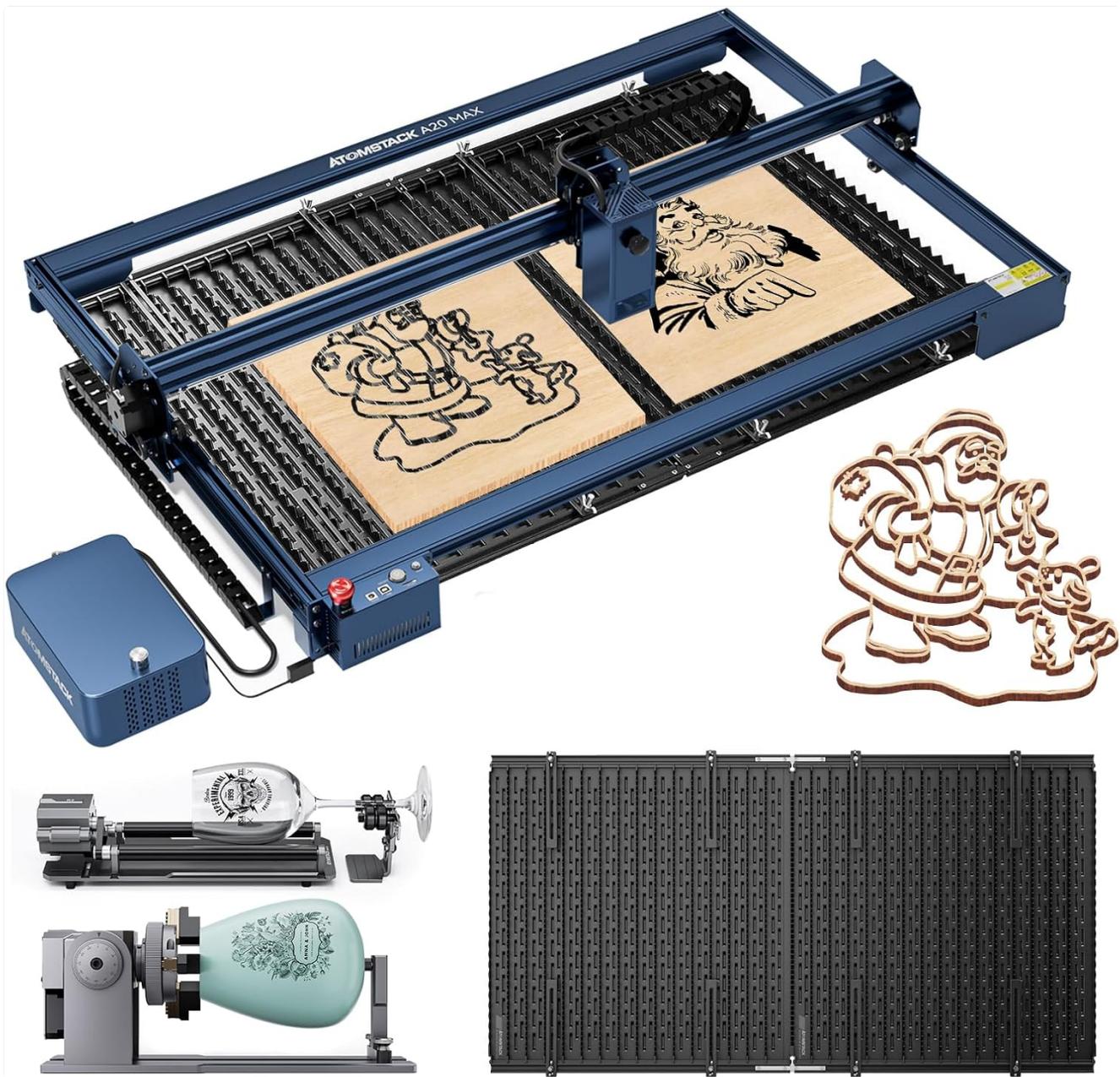
Figure 1.1: Overview of the ATOMSTACK A20 Max Laser Engraver system, including the main unit, R1 Pro rotary attachment, and matrix protection plate.

2. Safety Instructions

Operating a laser engraver involves potential hazards. Adhere to the following safety guidelines to prevent accidents and ensure safe operation:

- **Eye Protection:** The laser module is equipped with a protective cover. However, it is strongly recommended to wear additional safety goggles specifically designed for laser protection during operation to safeguard your eyes from direct or reflected laser light.

- **Ventilation:** Ensure adequate ventilation in the work area to dissipate fumes and smoke produced during engraving and cutting. Some materials can produce toxic fumes.

- **Fire Safety:** Keep a fire extinguisher nearby. Never leave the machine unattended during operation, especially when cutting flammable materials.

- **Material Compatibility:** Only engrave or cut materials specified as safe. Avoid materials that produce hazardous fumes or can easily ignite.

- **Children and Pets:** Keep children and pets away from the machine during operation. The laser protective cover helps prevent accidental contact with the laser point.

- **Power Supply:** Use only the provided power adapter and ensure it is connected to a grounded outlet.
- **Emergency Stop:** Familiarize yourself with the location and operation of the emergency stop button.

3. PACKAGE CONTENTS

Upon unpacking, verify that all components are present:

- ATOMSTACK A20 Max Laser Engraver Main Unit
- 20W Laser Module
- F30 Pro Air Assist System
- R1 Pro Rotary Roller (Chuck Rotary, Roller Rotary, Sphere Rotary, Ring Rotary)
- Matrix Cutting Protection Plate (850 x 460 mm)
- Power Adapter and Cables
- USB Cable
- Safety Goggles
- User Manual (this document)
- Tools for Assembly

4. SETUP AND ASSEMBLY

The ATOMSTACK A20 Max features a modular design for flexible assembly and expansion. Follow these general steps for initial setup:

1. **Frame Assembly:** Assemble the main frame components. The X-axis extension scheme ensures stability over the large working area.
2. **Laser Module Installation:** Securely attach the 20W laser module to the gantry.
3. **Cable Management:** Utilize the tank chain system for clean and tidy cable routing, preventing tangles and extending cable lifespan.
4. **Air Assist Connection:** Connect the F30 Pro Air Assist system. The machine features an automatic control switch for air assist.
5. **Matrix Protection Plate:** Place the matrix cutting protection plate on your work surface. This plate protects the desktop and enhances cutting performance.
6. **Power and USB Connection:** Connect the power adapter to the machine and a grounded outlet. Connect the machine to your computer via the USB cable.

MODULAR DESIGN, ASSEMBLE FREELY EXPANDABLE

27mm

460mm

425mm

425mm

Connector

Figure 4.1: The modular design allows for flexible assembly and expansion of the working area.
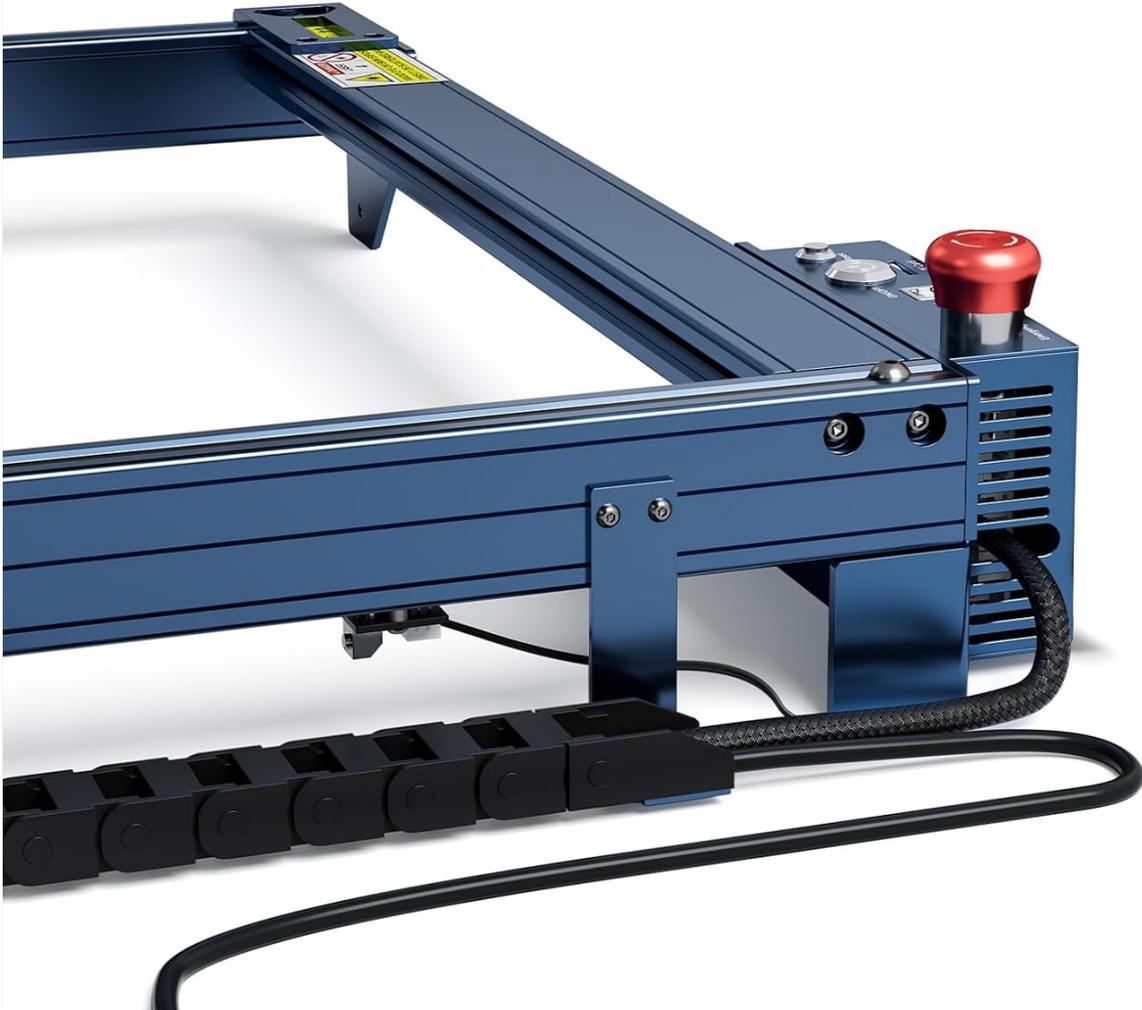
Figure 4.2: The integrated tank chain ensures organized and protected wiring.

5. OPERATING INSTRUCTIONS

5.1. Software and Connectivity

The ATOMSTACK A20 Max supports popular laser control software:

- **LaserGRBL:** Compatible with Windows XP/7/8/10.
- **LightBurn:** Compatible with Windows XP/7/8/10, Mac.
- **Mobile App:** The machine features an upgraded WiFi function, allowing for offline control via a mobile application.

Supported file formats include NC, BMP, JPG, PNG, and DXF.

Figure 5.1: The machine can be controlled wirelessly via a mobile application using its WiFi function.

5.2. Laser Module and Focusing

The 20W laser module utilizes four 6W laser coupling technology for high optical power. It features a fixed-focus design, eliminating the need for manual focusing and allowing for quick setup.

Figure 5.2: The 20W laser module features compressed spot technology for precise engraving and cutting.

5.3. Air Assist System

The integrated F30 Pro Air Assist system significantly improves cutting performance by clearing smoke and debris from the laser's path. The system includes an automatic control switch, which can be managed via software (e.g., LightBurn M7 function).
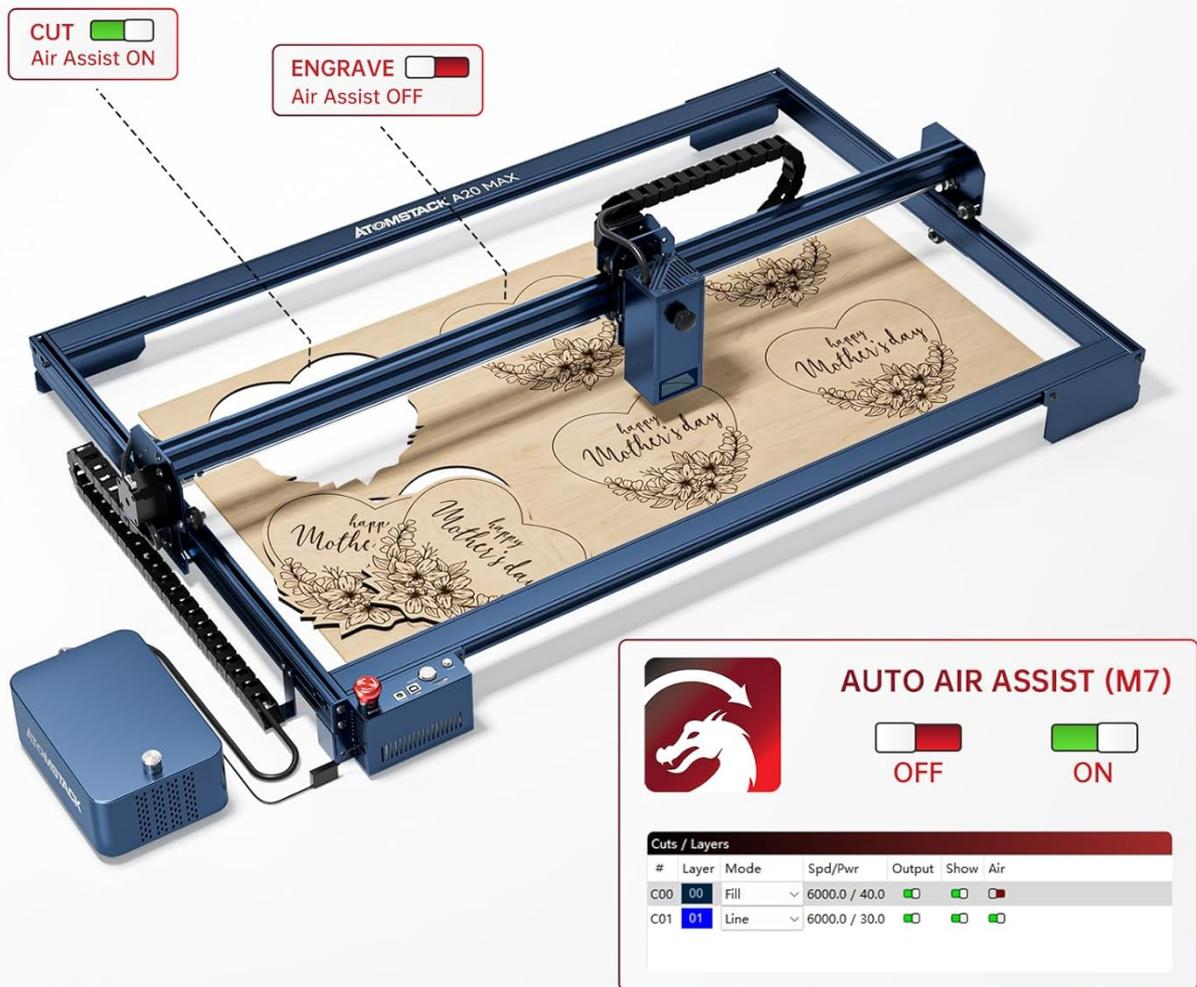
Figure 5.3: The automatic Air Assist switch can be toggled for cutting (ON) or engraving (OFF) operations.

5.4. R1 Pro Rotary Module

The R1 Pro rotary module expands the machine's capabilities, allowing for engraving on irregular and cylindrical objects. It supports various rotary configurations:

- **Chuck Rotary:** For holding cylindrical items like bottles or cups.
- **Roller Rotary:** For rolling objects like tumblers.
- **Sphere Rotary:** For spherical objects.
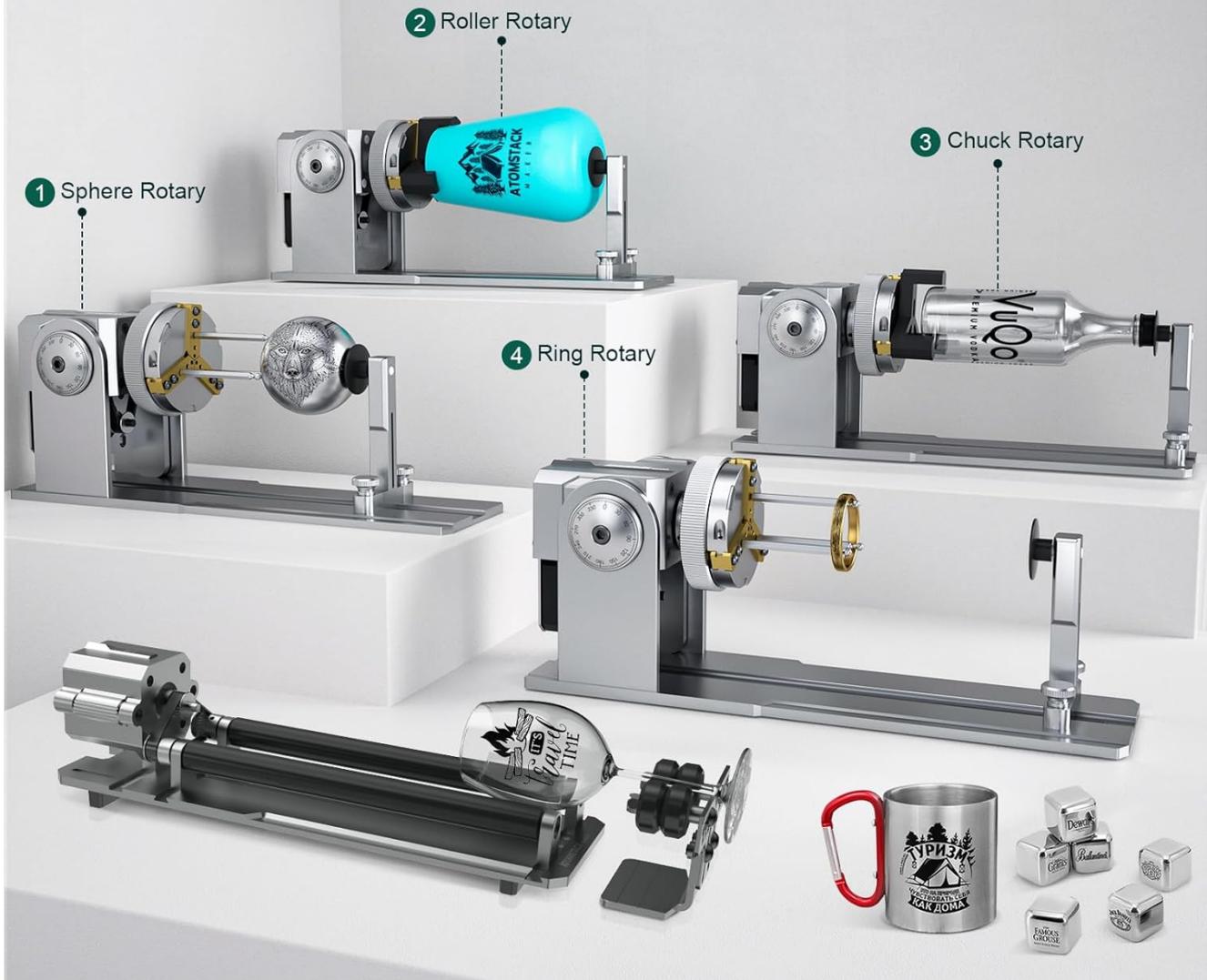- **Ring Rotary:** For small, ring-shaped items.

Figure 5.4: The R1 Pro rotary module offers four different configurations for versatile engraving.

5.5. Supported Materials and Performance

The ATOMSTACK A20 Max is capable of engraving and cutting a wide range of materials:
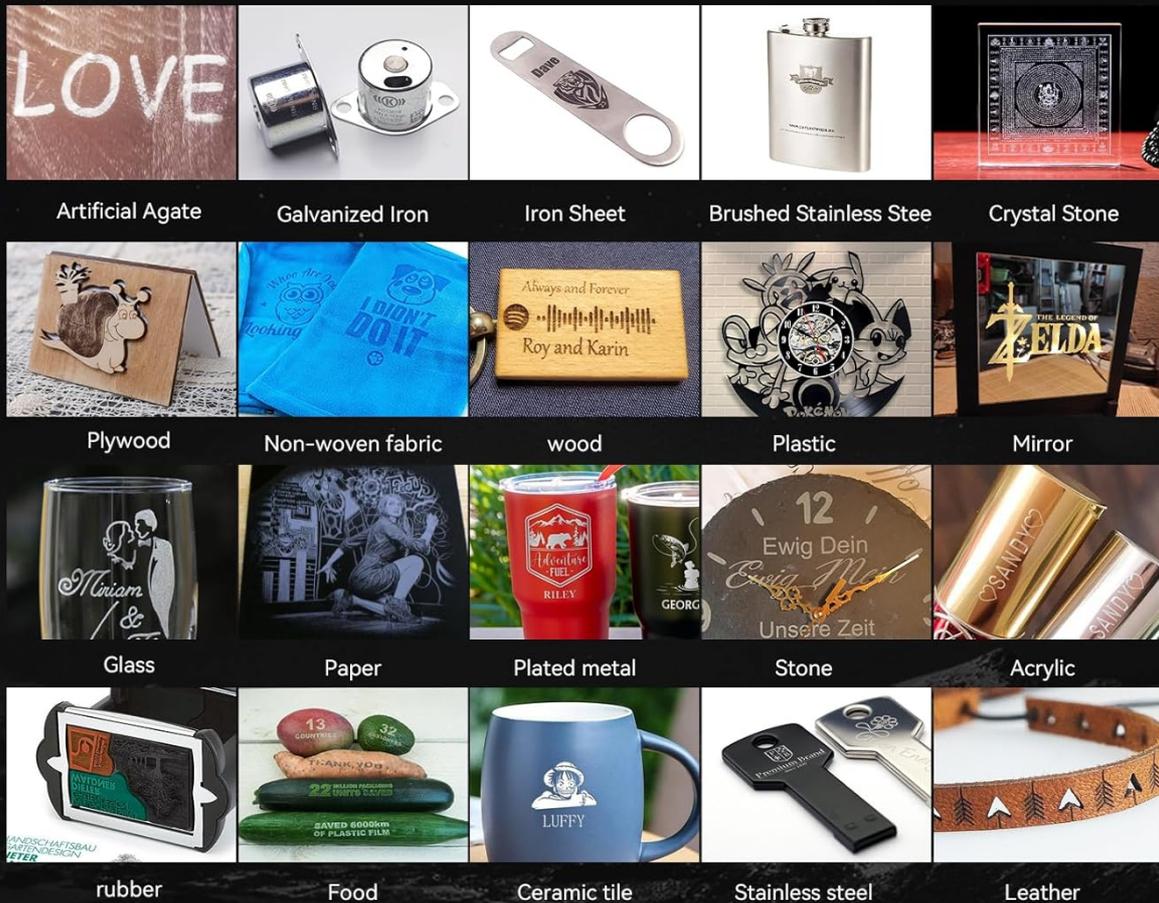
Engravable Materials:

- Wood, Bamboo, Cardboard, Plastic, Leather, PCB Board, Aluminum Oxide
- Non-reflective electroplated layer and paint layer of metal
- 304 mirrored stainless steel, Glass, Ceramic, Cotton, Slate

Cuttable Materials:

- Cardboard, Non-woven fabrics, Wood boards, Plywood (12-15mm in one pass)
- Acrylic (transparent acrylic needs to be painted black, 8mm black acrylic in one pass)
- Thin plastic sheets, Sponge, Metal sheets (e.g., aluminum, stainless steel up to 0.05mm)

The machine can cut 25mm thick wooden boards and 30mm thick black acrylic boards with ease. Engraving and cutting speeds are up to 40% higher than standard models, comparable to a 300W CO2 laser engraver effect for certain materials.

Figure 5.5: A visual representation of various materials that can be engraved or cut by the machine.

6. Maintenance

Regular maintenance ensures the longevity and optimal performance of your laser engraver:

- **Cleaning the Lens:** Periodically clean the laser module lens with a specialized lens cleaning solution and cloth to maintain laser beam quality.
- **Rail Cleaning:** Keep the guide rails and wheels free from dust and debris to ensure smooth movement of the laser head.
- **Cable Inspection:** Regularly inspect all cables for wear or damage. The tank chain system helps protect wiring, but visual checks are still recommended.
- **Work Area Cleanliness:** Keep the work area and the matrix protection plate clean from accumulated residue.

7. Troubleshooting

If you encounter issues, consider the following common troubleshooting steps:

- **No Laser Output:** Check power connections, ensure the laser module is properly seated, and verify software settings.
- **Poor Engraving/Cutting Quality:** Ensure the material is correctly positioned, the laser lens is clean, and power/speed settings in the software are appropriate for the material.
- **Machine Not Responding:** Check USB connection, power supply, and ensure the correct COM port is selected in your software. Restart the machine and computer if necessary.
- **Movement Issues:** Inspect guide rails for obstructions or debris. Ensure belts are properly tensioned.

For persistent issues, refer to the manufacturer's online resources or contact customer support.

8. SPECIFICATIONS

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Total Machine Power	130 W
Electrical Laser Power	90 W
Optical Laser Power	20-22 W
Laser Wavelength	455 ± 5 nm
Engraving Accuracy	0.01 mm
Focus Method	Fixed focus laser, no focusing required
Engraving Size / Working Area	850 x 400 mm
Control Software	LaserGRBL, LightBurn
Operating System Support	Win XP/7/8/10, Mac (for LightBurn)
Supported File Formats	NC, BMP, JPG, PNG, DXF
Data Transfer Method	USB connection, WiFi (Mobile App)
Power Supply Input	100-240 V AC, 50/60 Hz
Power Supply Output	12 V, 5 A
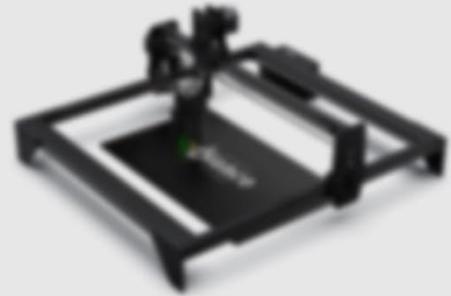
Figure 8.1: The large 850x400mm working area accommodates extensive engraving and cutting projects.

9. WARRANTY AND SUPPORT

For warranty information, please refer to the documentation provided with your purchase or contact the retailer. For technical support, software updates, or further assistance, please visit the official ATOMSTACK Maker website or contact their customer service department.

Manufacturer: ATOMSTACK Maker

First Available Date: August 10, 2023