## ATOMSTACK Swift 12W

# ATOMSTACK Swift 12W Laser Engraver and Cutter User Manual

Model: Swift 12W | Brand: ATOMSTACK

### 1. Introduction

This manual provides essential information for the safe and efficient operation of your ATOMSTACK Swift 12W Laser Engraver and Cutter. Please read this manual thoroughly before using the device to ensure proper setup, operation, and maintenance. Retain this manual for future reference.
The ATOMSTACK Swift 12W is a versatile laser engraving and cutting machine designed for precision work on a wide range of materials. It features a 12000mW output laser module, a 300x300mm working area, and 0.08mm engraving accuracy, making it suitable for various creative and professional projects.

### 2. Safety Information

**WARNING: This is a Class 4 laser product. Direct exposure to the laser beam can cause severe eye damage and skin burns. Always follow safety precautions.**

- **Eye Protection:** The laser module is equipped with a laser filter cover. This cover helps protect your eyes and the eyes of those around you from laser damage. However, it is highly recommended to wear additional certified laser safety goggles during operation.
- **Ventilation:** Operate the laser engraver in a well-ventilated area to dissipate fumes and smoke generated during engraving and cutting.
- **Fire Hazard:** Be aware of potential fire hazards, especially when working with flammable materials. Do not leave the machine unattended during operation. The device includes a flame alarm that will automatically trigger and shut down operation if a fire hazard is detected.
- **Tilt Detection:** The machine features a built-in gyroscope. If the device tilts more than 15 degrees, the tilt detection function will stop operation immediately to prevent damage or accidents.
- **Overheat Alarm:** A temperature sensing system is included. If the machine temperature exceeds 45°C, it will stop working. Operation can resume once the temperature returns to

normal.

- **Material Compatibility:** Ensure the material you are working with is safe for laser engraving/cutting. Avoid materials that produce toxic fumes or are highly reflective without proper preparation.
- **Children and Pets:** Keep children and pets away from the operating area.
- **Emergency Stop:** Familiarize yourself with the emergency stop procedure.

## 3. Package Contents

Upon unboxing, verify that all components are present and undamaged. The ATOMSTACK Swift 12W package typically includes:

- ATOMSTACK Swift 12W Laser Engraver main frame components
- Laser Module (12000mW)
- Power Adapter and Cable
- USB Cable
- User Manual and Quick Start Guide
- Assembly Tools (screws, wrenches)
- Sample Materials for testing


Figure 3.1: ATOMSTACK Swift 12W Laser Engraver with sample projects and accessories.

## 4. Setup Instructions

The ATOMSTACK Swift features a modular design for quick assembly. Follow these steps for initial setup:

### 4.1 Unboxing and Component Layout

Carefully open the packaging and lay out all components on a clean, flat surface. Refer to the included quick start guide for a visual representation of all parts.

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Video 4.1: This video demonstrates the unboxing and assembly process of the ATOMSTACK Swift laser engraver. It shows how to lay out the components and connect them to form the main frame.

### 4.2 Frame Assembly

1. **Connect Assemblies:** Place the five main frame assemblies as shown in the video. Ensure the X-axis assembly has the belt facing downward and the Y-axis assembly with the motor is on the left side. Align and connect these assemblies.
2. **Secure Screws:** Secure the connected assemblies with six M5x8 screws using the provided tool.

3. **Install Optical Shaft:** Insert the optical shaft onto the X-axis assembly. Push the X-axis toward the front X-axis assembly, ensuring it is fully inserted and aligned parallel.
4. **Tighten Coupling and Timing Pulley:** Tighten the coupling and the timing pulley on the optical shaft.


Figure 4.2: The modular design of the ATOMSTACK Swift allows for quick assembly, typically within 5 minutes.

### 4.3 Laser Module Installation and Cable Connections

1. **Install Laser Module:** Carefully install the laser module onto the X-axis carriage and tighten the thumb screw to secure it.
2. **Connect Cables:** Connect the motor cable, limit switch cables, and the laser module cable to their respective ports. Ensure all connections are secure.

### 4.4 Focus Adjustment

Proper focus is crucial for optimal engraving and cutting results.

1. **Place Workpiece:** Place your material (workpiece) on the engraving area.
2. **Adjust Focus:** Turn the side knob on the laser module to adjust the focus. The goal is to achieve the smallest possible laser spot on the material surface.
3. **Optical Shaft Clearance:** If the hand-tightened screw interferes with the optical shaft, pull out the black part, rotate it outward, and then release it to ensure proper clearance.

### 4.5 X-axis Adjustment

To ensure smooth movement of the X-axis, adjust the eccentric nut:

- Use an open-end wrench to adjust the eccentric nut until the X-axis can slide down smoothly when the machine is tilted at a 45-degree angle. This ensures there is no excessive play or binding in the movement.

## 5. Operating Instructions

### 5.1 Software and Connectivity

The ATOMSTACK Swift supports various software and connectivity options:

- **PC Software:** Compatible with LightBurn and LaserGRBL. ATOMSTACK also offers its exclusive, free "AtomStack Studio" software, which includes image templates, material parameter presets, and automatic accessory recognition.
- **Smartphone App:** Use the free "AtomStack" App for smartphone control.
- **Connectivity:** Connect via WiFi, hotspot, or USB cable.
- **Supported Systems:** Windows, macOS, Android, and iOS.


Figure 5.1: The ATOMSTACK Swift supports multiple operating systems and software, including AtomStack Studio and LightBurn, with various connectivity options.

## 5.2 Engraving and Cutting Process

Once the software is set up and connected, you can begin your projects:

1. **Design/Import:** Create your design or import an existing image into your chosen software.
2. **Material Selection:** Select the appropriate material settings (power, speed, passes) for your material. AtomStack Studio offers preset parameters.
3. **Positioning:** Place your material on the working area. The 300x300mm area is suitable for various projects. An optional AC1 camera can be purchased for precise visual positioning.
4. **Start Job:** Initiate the engraving or cutting process from the software. Monitor the machine during operation.


Figure 5.2: The ATOMSTACK Swift is capable of both precise laser engraving and robust cutting on materials like black acrylic and basswood plywood.

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Video 5.3: This video showcases the ATOMSTACK Swift's capabilities in various engraving and cutting applications, including creating intricate designs on wood and metal, and engraving cylindrical objects.

### 5.3 Supported Materials

The Swift 12W can engrave over 200 different materials and cut various types of wood and acrylic. Examples include:

- **Engraving:** Wood, leather, coated metal, acrylic, paper, cardboard, stainless steel, food, fabric, rubber, glass (requires blackening), ceramic (requires blackening).
- **Cutting:** 4mm black acrylic (one pass), 8mm basswood plywood (one pass), wood, leather.

*Note: For engraving reflective objects such as metal, glass, or ceramic, it is recommended to first*

*blacken the surface to create a layer absorbable by the diode laser, which will achieve better engraving results. For cutting, it is only suitable for wooden materials, black acrylic, and leather. Do not cut hard materials such as metal, ceramic, and glass.*


Figure 5.4: A visual guide to the wide range of materials compatible with the ATOMSTACK Swift for engraving and cutting.

## 6. Maintenance

Regular maintenance ensures the longevity and optimal performance of your ATOMSTACK Swift 12W.

- **Clean the Lens:** Periodically clean the laser module lens with a soft, lint-free cloth and isopropyl

alcohol to remove any dust or debris that may affect laser performance.

- **Clean Rails and Belts:** Keep the guide rails and timing belts free from dust and debris to ensure smooth movement of the laser module.
- **Check Connections:** Regularly inspect all cable connections to ensure they are secure.
- **Software Updates:** Keep your engraving software and firmware updated to benefit from the latest features and improvements.

## 7. Troubleshooting

If you encounter issues with your ATOMSTACK Swift 12W, refer to the following common troubleshooting tips:

| Problem | Possible Cause | Solution |
|---|---|---|
| Laser not firing or weak output | Loose cable connection, dirty lens, incorrect focus, incorrect software settings. | Check all cable connections. Clean the laser lens. Adjust the focus. Verify power and speed settings in the software. |
| Machine not moving or erratic movement | Loose motor cable, jammed rails, incorrect X-axis adjustment. | Check motor cable connections. Clean and lubricate guide rails. Re-adjust the X-axis eccentric nut as per setup instructions. |
| Engraving quality is poor or inconsistent | Incorrect focus, wrong material settings, material not flat, dirty lens. | Ensure proper focus. Adjust power and speed settings for the specific material. Ensure the material is flat and securely placed. Clean the laser lens. |
| Flame alarm triggers frequently | Excessive smoke/fumes, highly flammable material, sensor obstruction. | Ensure adequate ventilation. Use appropriate materials. Clean the flame sensor if accessible. Reduce laser power or increase speed if possible. |

If the problem persists, please contact ATOMSTACK customer support for further assistance.

## 8. Specifications

- **Model:** AtomStack Swift 12W
- **Laser Output Power:** 12000mW
- **Engraving Accuracy:** 0.08mm
- **Working Area:** 300mm × 300mm (expandable to 300mm × 800mm with optional Y-axis extension kit)
- **Engraving Speed:** Up to 10000 mm/min (600mm/s)
- **Product Dimensions:** 16.73 x 16.54 x 5.31 inches (460 × 420 × 130mm)
- **Item Weight:** 11.02 pounds (2.8kg)

- **Connectivity:** WiFi, Hotspot, USB
- **Supported OS:** Windows, macOS, Android, iOS
- **Supported Software:** LightBurn, LaserGRBL, AtomStack Studio, AtomStack App
- **Laser Class:** Class 4

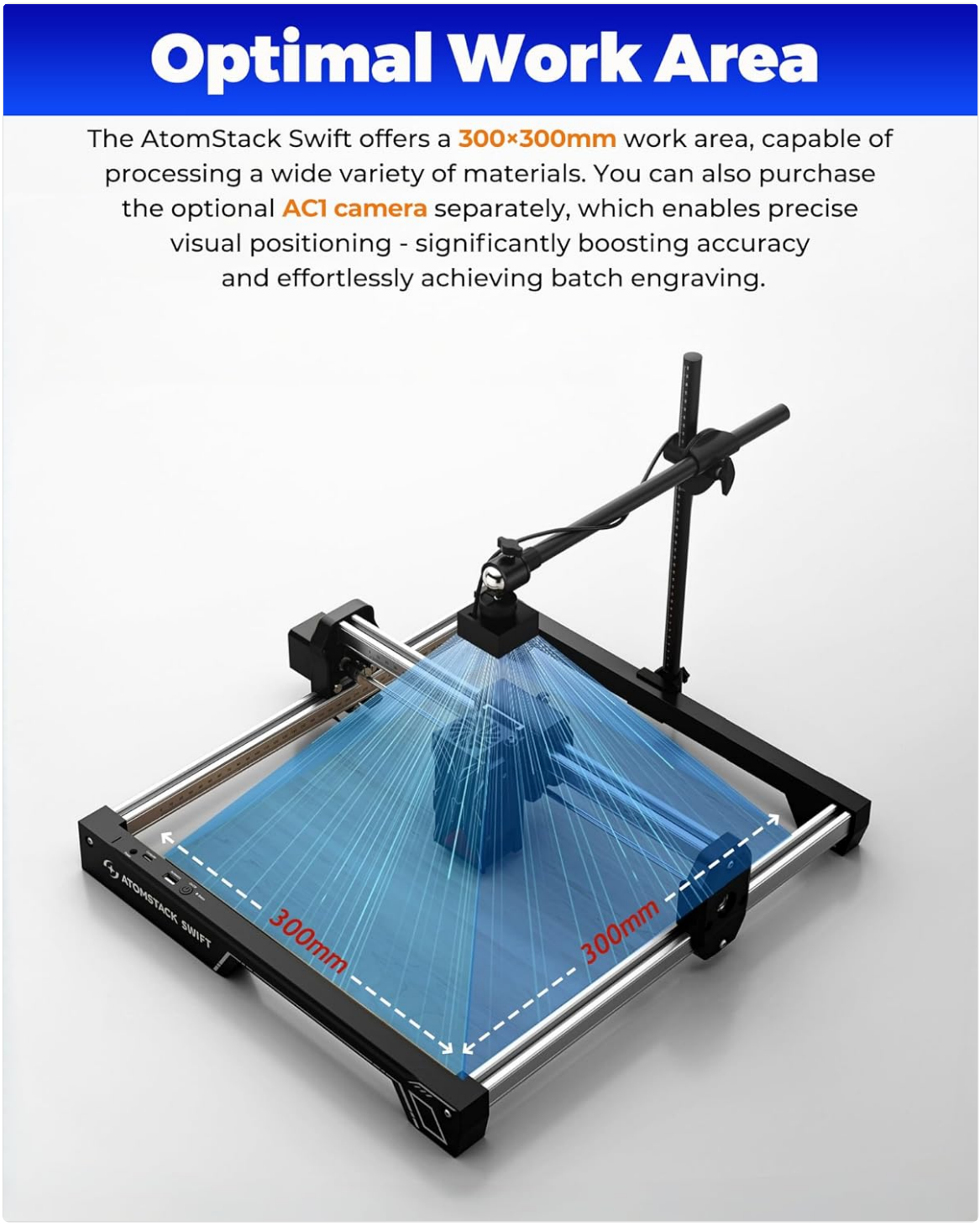


Figure 8.1: The ATOMSTACK Swift features a 300x300mm working area, suitable for a variety of projects.

## 9. Warranty and Support

For warranty information, technical support, or service inquiries, please refer to the official ATOMSTACK website or contact your retailer. Keep your purchase receipt as proof of purchase.
**Manufacturer:** Shenzhen AtomStack Technologies Co., Ltd.

## Related Documents - Swift 12W

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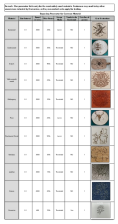
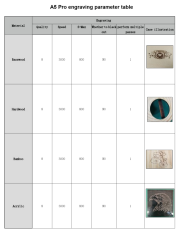
|---|---|
|  | Laser Engraving and Cutting Parameters for Common Materials<br>A comprehensive guide detailing optimal laser engraving and cutting parameters for a wide range of materials, including wood, leather, acrylic, glass, metal, and more. Parameters cover line interval, speed, power, image mode, and passes, with visual examples. |
|  | ATOMSTACK K40 MAX-20W Laser Engraving and Cutting Parameter Guide<br>A comprehensive guide detailing engraving and cutting parameters for the ATOMSTACK K40 MAX-20W laser module across a variety of common materials. Includes settings for speed, power, line interval, and image modes. |
|  | P7 M30 Laser Engraving and Cutting Parameters<br>Comprehensive parameter tables for AtomStack P7 M30 laser engraver and cutter, detailing settings for various materials like Basswood, Hardwood, Bamboo, Acrylic, Kraft Paper, Mirrors, and Leather for both engraving and cutting operations. |
|  | Atomstack A5 Pro Laser Engraving and Cutting Parameters<br>Detailed parameter tables for the Atomstack A5 Pro laser engraver and cutter, covering engraving and cutting settings for various materials including Basswood, Hardwood, Bamboo, Acrylic, Kraft Paper, Mirrors, Leather, and Stainless Steel. Includes recommended Speed, S-Max, and pass settings. |
|  | ATOMSTACK A5 Pro Laser Engraving Machine Manual<br>Comprehensive user manual for the ATOMSTACK A5 Pro laser engraving machine, covering safety, software installation (LaserGRBL and LightBurn), operation, and troubleshooting. |

[ATOMSTACK Laser Engraving and Cutting Parameters for Common Materials]

A comprehensive guide to engraving and cutting parameters for various materials using ATOMSTACK laser machines, including speed, S-Max, and pass settings.