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XINCHENG PRECISION Laser Cleaning Machine

XINCHENG PRECISION 2000W Laser Cleaning Machine User Manual

Model: BLC-2000

For Rust, Paint, Oil, and Coating Removal on Metal Surfaces

1. INTRODUCTION

The XINCHENG PRECISION 2000W Laser Cleaning Machine (Model: BLC-2000) is a powerful and efficient tool designed for non-contact removal of rust, paint, oil, and various coatings from metal surfaces. Utilizing a 2000W fiber laser source, this machine offers high cleaning efficiency and precision, making it ideal for a wide range of industrial applications.

Key features include:

- **High Efficiency:** Delivers exceptional cleaning efficiency of 15-45 /h.
- **Non-Contact Cleaning:** 360° non-contact cleaning with a 10-meter cable, offering flexibility without distance limitations.
- **User-Friendly Operation:** Features an English operation interface, double-click switch for safety, and red light positioning for precision.
- **Durable Design:** Built with a robust sheet metal structure and an integrated water-cooler chassis for efficient heat dissipation and durability.
- **Wide Application:** Suitable for aviation, marine, electromechanical, rubber mold, equipment manufacturing, auto parts, and food processing industries.

2. SAFETY INFORMATION

This device is a Laser Class II product with an output power of 0.874mW. Adherence to safety protocols is paramount to prevent injury and ensure proper operation. Always wear appropriate personal protective equipment (PPE), including laser safety glasses, when operating the machine.

- Ensure the work area is well-ventilated to dissipate any fumes or particles generated during cleaning.
- Keep flammable materials away from the laser cleaning area.

- The double-click switch on the cleaning head is a safety feature designed to prevent accidental activation.
- Refer to the FDA Accession Number: 2421061-000 for regulatory compliance.

3. PRODUCT OVERVIEW AND COMPONENTS

The BLC-2000 Laser Cleaning Machine consists of the main unit, a handheld laser cleaning head, and various internal components designed for optimal performance.



Figure 3.1: Main Unit of the Laser Cleaning Machine

This image shows the complete laser cleaning machine, a compact unit with wheels for portability and a handle for easy transport.

3.1. Handheld Laser Cleaning Head

UPGRADED LASER CLEANING HEAD

CONTINUOUS OPERATION WITHOUT BURNING THE LENS



Figure 3.2: Upgraded Laser Cleaning Head

The ergonomic handheld cleaning head features red light assisted positioning for precise control and a double-click switch for safe operation. It offers a cleaning width of 160±10mm and a focal length of 550-600mm, suitable for large and irregular workpieces.

3.2. Smart Control Panel



Figure 3.3: Smart Control Panel

The full touch screen operation interface supports multiple languages and allows for process library design, enabling users to set and recall cleaning parameters easily.

3.3. Internal Components

- **MAX Laser Source:** Provides stable, high-efficiency, and energy-saving laser output with minimal maintenance.
- **Integrated Water-Cooler Chassis:** Ensures efficient heat dissipation and durability for continuous operation.
- **Neat Wiring:** Scientifically calculated and organized wiring for easy tracing and maintenance.
- **Air Switch:** Fine manufacturing ensures electrical safety.
- **Universal Casters:** Oil, stain, and impact resistant, reliable, and durable, with locking mechanism for stability.

WHERE THE LASER GOES ALL CAN BE CLEANED

FLEXIBLE AND EFFICIENT, EASY TO CLEAN

APPLICABLE INDUSTRIES



AVIATION
MARINE



ELECTROMECHANICAL



RUBBER MOLD



EQUIPMENT
MANUFACTURING

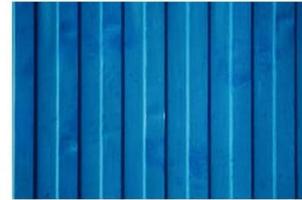


AUTO PARTS



FOOD PROCESSING

APPLICATION TO MULTIPLE SCENARIOS



Mold cleaning, paint stripping or coating removal, pre-treatment of parts before spraying, aerospace component cleaning, oxides removal pre-treatment before soldering or welding, oil pollution and product residues removal, cultural relics cleaning and repair, etc.

Mill scale of hot-rolled steel , light-colored paint and high-temperature-treated paint or coating are not easy to remove. Please confirm with us before placing an order. It would be better to send samples for testing.

STRICT SELECTION OF MATERIALS

KEEP IMPROVING



MAX Laser Source

Stable, high efficiency, energy saving,
basically maintenance-free, good experience, low cost



Smart Control Panel

Full touch screen operation interface, multilingual support
Work status is clear at a glance
Process library design, set once, use at any time



Neat Wiring

The selection of components has been
scientifically calculated.
The layout is reasonable.
The logo is clear and easy to maintain.



Air Switch

Fine manufacturing escorts
your electricity safety



Universal Casters

Oil, stain, and impact resistant,
reliable and durable, easy to lock

TECHNICAL PARAMETER

Model	BLC-1000	BLC-1500	BLC-2000	BLC-3000
Laser Source Power	1000W	1500W	2000W	3000W
Laser Wavelength	1080±10nm			
Laser Type	Continuous / Modulation			
Maximum Modulation Frequency	20KHz			
Cable Length	10m (15m can be customized)			20m
Scan Width	10-160mm			
Power Configuration	AC220V±10%			AC380V±7%
	6kw	8kw	10kw	13kw
Cooling Method	Water cooling (Medium: Deionized water, distilled water or purified water)			
Machine Dimension	845*460*605mm		905*480*630mm	1240*584*1148mm
Package Dimensions	1120*565*1050mm			1430*720*1220mm
Net Weight	106kg	113kg	137kg	225kg
Gross Weight	138kg	145kg	169kg	285kg
Water Tank Capacity	16L (14-15L of water to be added)			



SFX[®]

MOBILE
LASER CLEANING MACHINE

Easily remove: RUST, PAINT, OIL, COATING!

BLC-1000/1500/2000/3000

-  **LIGHTWEIGHT FLEXIBLE**
-  **SIMPLE OPERATION**
-  **EFFICIENT CLEANING**
-  **LONG FOCAL LENGTH HIGH TOLERANCE**
-  **DURABLE LENS**

The advertisement features a background image of the laser cleaning machine with a hand holding the nozzle. The machine is blue and black, with a control panel and a large black bag of waste material.



Figure 3.4: Internal Components (MAX Laser Source, Neat Wiring, Air Switch, Universal Casters)

These images illustrate the quality components used within the laser cleaning machine, including the laser source, organized wiring, safety switch, and durable casters.

4. SETUP

Before operating the laser cleaning machine, ensure proper setup to guarantee safety and optimal performance.

1. **Unpacking and Placement:** Carefully unpack the machine. Place it on a stable, level surface in a well-ventilated area. The integrated water-cooler chassis allows for easy portability.
2. **Water Filling:** Open the water tank access panel. Fill the water tank with 14-15L of pure water or distilled water. Do not use tap water. Ensure the water level is within the recommended range indicated by the water level gauge.

Video 4.1: Operation for Laser Cleaning Machine - Water Filling

This video demonstrates the process of filling the water tank with distilled water and checking the water level.

3. **Power Connection:** Connect the machine to a 220V power supply. Ensure the power outlet meets the machine's electrical requirements.
4. **Initial Checks:** Verify all connections are secure. Ensure the emergency stop button is disengaged (pulled out).

5. OPERATING INSTRUCTIONS

Follow these steps to operate the laser cleaning machine effectively and safely.

1. **Power On:** Press the 'POWER' button on the control panel. The system will initiate.
2. **System Login:** On the smart control panel, enter the password (default is 'admin' or as specified in your documentation) to access the main interface.

Video 5.1: Display for Laser Rust Removal - Control Panel Overview

This video provides a general overview of the laser cleaning machine's control panel and its display.

3. **Parameter Settings:** Navigate to the 'Settings' or 'Laser Par' section on the touch screen. Adjust parameters such as Power (%), Duty (%), Frequency (KHz), AirOn Delay (ms), and AirOff Delay (ms) according to the material and contamination type.
4. **Red Light Positioning:** Before emitting the laser, press the 'ENABLE' button once to activate the red light. This red light assists in positioning the cleaning head accurately on the workpiece. Move the cleaning head until the red dot and the red line coincide for optimal focus.
5. **Laser Emission:** Once positioned, double-click the trigger on the handheld cleaning head to emit the laser. The double-click interval should not exceed 1 second.

Video 5.2: Product Display of Laser Cleaning Machine - Cleaning in Action

This video showcases the laser cleaning machine in operation, demonstrating its effectiveness on various surfaces.

6. **Cleaning Process:** Move the cleaning head steadily across the surface to be cleaned. The laser will ablate the contaminants without damaging the base material.
7. **Stopping Operation:** Release the trigger to stop laser emission. For complete shutdown, press the 'EMERGENCY' button or power off the machine via the control panel.

6. MAINTENANCE

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

- **Water Quality:** Regularly check the water level and quality in the integrated water-cooler chassis. Replace pure or distilled water as needed to prevent algae growth and maintain cooling efficiency.
- **Lens Inspection:** Periodically inspect the laser cleaning head's lens for any dust or debris. Clean gently with a specialized lens cleaning solution and cloth if necessary. The upgraded cleaning head is designed for continuous operation without lens damage, but proper care is still recommended.
- **General Cleaning:** Keep the exterior of the machine clean and free from dust. Ensure ventilation grilles are not obstructed.
- **Cable Management:** Store the 10-meter fiber optic cable properly to prevent kinks or damage.

7. TROUBLESHOOTING

This section provides solutions to common issues you might encounter.

Problem	Possible Cause	Solution
Machine does not power on	No power supply; Emergency stop engaged	Check power connection; Disengage emergency stop button
No laser emission	Laser not enabled; Trigger not double-clicked correctly; Safety interlock active	Press 'ENABLE' button; Double-click trigger firmly; Check all safety sensors
Poor cleaning performance	Incorrect parameters; Dirty lens; Improper focal distance	Adjust laser parameters; Clean lens; Verify red light positioning
Overheating warning	Insufficient water level; Obstructed ventilation	Add distilled water; Clear obstructions from vents

For issues not listed here, please contact customer support.

8. SPECIFICATIONS

Detailed technical specifications for the BLC-2000 Laser Cleaning Machine.

MULTIPLE TESTS CE CERTIFICATED

RELIABLE, STABLE AND DURABLE , PASSED MANY RIGOROUS TESTS IN THE INDUSTRY



- HIGH CONTAMINATION TEST
- ANTI-INTERFERENCE TEST
- HIGH TEMPERATURE TEST
- VIBRATION TEST
- CONTINUOUS WORKING TEST
- FATIGUE TEST
- DUST PROOF TEST
- HIGH HUMIDITY TEST

*The above are only parts of the tests

Figure 8.1: Technical Parameter Table

This image provides a comprehensive table of technical parameters for various models, including the BLC-2000.

Feature	Detail
Brand	XINCHENG PRECISION
Model Name	BLC-2000
Laser Source Power	2000W
Laser Wavelength	1080±10nm
Laser Type	Continuous / Modulation
Max Modulation Frequency	20KHz
Cable Length	10m (15m can be customized)
Scan Width	10-160mm
Power Configuration	AC220V±10%
Cooling Method	Water cooling (Deionized water, distilled water or purified water)
Machine Dimension	905*480*630mm (35.6"L x 18.9"W x 24.8"H)
Net Weight	137kg (302 lbs)
Water Tank Capacity	16L (14-15L of water to be added)
Noise Level	70 dB
Control Method	Touch
Portable	Yes (with wheels)

9. WARRANTY AND SUPPORT

XINCHENG PRECISION is committed to providing quality products and excellent customer service.

- **Returns:** This product is eligible for 30-day easy returns.
- **Customer Support:** An After Sales Center in North America provides 12-hour quick response support. For any inquiries or technical assistance, please contact the seller directly.