



500W Laser Cleaning Machine

Operation Instruction

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Attention

Before using this product, be sure to read and become familiar with the contents of this manual. This manual is provided with the product to the user, to all future users, and to the owner of the product. Contains important operational, safety and other information.

NOTICES

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Chapter 1 Brief introduction

The non-contact laser cleaning machine R&D by Horizon Laser is the new high-tech product. It does not hurt the base material, no consumables, energy saving and environmental protection. The resin, oil, stains, dirt, rust, coating, plating, paint on the work piece surface can be removed with high efficiency. This meets the requirements of complex modeling and precision production cleaning in the industrial processing field, achieves a higher level cleaning effect and lower production cost.

The machine mainly used for automotive industry, machining, electronic processing, cultural relics, mold industry, shipbuilding, food processing, petrochemical and other industries.

Chapter 2 Safety Information

1, The laser cleaning machine - belongs to the fourth category (Class IV) laser products!

The core laser of this cleaning machine is MFPT-500, which belongs to class 4 laser. This product emits infrared laser radiation with a wavelength of 1064nm, and the average power radiated by the cleaning head is greater than 500W, and the peak power is greater than 200KW, which will cause damage to the eyes and skin directly or indirectly exposed to such light intensity. The infrared radiation is invisible, and the laser beam can cause irreversible damage to the retina or cornea. Be sure to wear suitable and certified 1064nm near-infrared laser protective glasses before operating the laser.

Avoid exposing your eyes or skin directly to the scattered radiation from the optical output mirror!

Do not open the cabinet; otherwise, it will influence on the warranty. This product does not have any parts that the customer can repair. All repair must be returned to Horizon Laser Company or follow Horizon Laser's guide.



2, We use multiple nouns and symbols to alert you pay attention to dangerous and important information. They include:

WARNING There is potentially harmful to the human body; do not continue to operate without fully understanding and achieving the required conditions, otherwise, it will cause harm to yourself or others.

CAUTION



There is potential damage to the product, do not continue to operate without fully understanding and meeting the required conditions, otherwise it will cause damage to the product.

IMPORTANT



This symbol represents laser illumination, and we have attached this mark to the laser output of the product.

3, Laser protection requirements

A, Laser safety glasses should be selected based on the ability to shield the laser from the entire wavelength range emitted by the laser cleaner. While operating the equipment, please select the goggles according to the laser wavelength of the laser equipment and ensure that it is always worn. If the device is a laser tunable or Raman product, it emits a laser that exceeds the normal output wavelength range of the device and is protected against this during protection.

B, Laser protection equipment manufacturers, Horizon Laser recommend the following laser safety equipment suppliers to provide materials or equipment Laservision USA, Kentek Corporation, Rochwell Laser Industries and so on.

C, These suppliers information provided by Horizon Laser only taking into account the convenience of the user. We shall not be liable for any problems caused by the use of the above-mentioned suppliers' products.

4, Electromagnetic compatibility emission

EN55011:5009+A1:2010

CISPR11:5009+A1:2010

FCC Class A

Electromagnetic compatibility:

EN61000-3-2:5006+A1:5009+A2:5009

EN61000-3-3:5008

EN61326-1:5006

EN61000-4-2:5009

EN61000-4-3:5006+A1:5007+A2:2010

EN61000-4-4:5004+A1:2010

EN61000-4-5:5006

EN61000-4-6:5009

EN61000-4-11:204

Electromagnetic compatibility:

Class A digital device conforms to CanadaICES-5003

Power supply security:

EN61010-1:5001

Laser safety:

EN60825—1:5007

CDRH21CFR1040、10

Functional safety:

EN ISC13849-1:5008+A1:5009Cat、3/PLd

5, In order to ensure the safe operation and best performance of the product, in addition to the other information contained in this document, please observe the following:

WARNING and CAUTION

WARNING: The laser cleaning machine is always operated with a properly grounded power supply.

CAUTION: Before powering the laser, please make sure that the 110V/220VAC line is correctly connected. If the connection of the laser is incorrect, the equipment will be damaged.

WARNING: We suggest that the operator who is not professional can't repair any parts and must be qualified by an Horizon Laser staff. In order to avoid short circuit, do not open the cabinet and make any tampering with the product, otherwise, it will cause trouble to the warranty.

WARNING: The laser cleaning machine has an optical output head that is connected by a fiber optic cable. Be careful to handle this output header carefully.

WARNING: If this device is not used in a manner specified in this document, the protection provided by this device may be damaged. This product must be used only in normal conditions.

Laser Classification

This equipment is divided into high power Class IV laser equipment. This product emits light with a wavelength of around 1060 nm up to 100W. This level of light can cause damage to the eyes and skin. This emitted light is invisible and the beam may cause irreparable damage to the cornea. Laser goggles are not included with this product, but goggles must always be worn while the laser is in operation.

WARNING: Do not install the sight when the laser is working.

WARNING: While operating this product, it is forbidden to look at the output head directly and make sure to always wear goggles.

CAUTION: Except for the controls, adjustments or performance mentioned in this manual, other operations may pose a radiation exposure hazard.

6, Safety label and paste position

The pictures of the labels and their location on the product shown as follows.

Labels Picture

Label Name

Label Location



Emitting Label

On the cover of product,
close to the fiber output



Warning Label

On the cover of product

Chapter 3 Products Introduction

1, Attachment

Please confirm the attachments included in this product in following table.:

Item	Quantity
500W Laser Cleaning Machine	1
Operation Instruction	1

2. Power Supply

The power supply voltage of the machine is 220VAC.

3. External environment and preventive measures

WARNING: Laser cleaning machine can only be operated with a properly grounded and nominal voltage source

WARNING: This device has an output optical head that is connected via a fiber optic cable. Please handle the output head carefully.

CAUTION: While using the sight (such as when the sight is to be mounted on the fixture, or while observing the end face with an optical instrument, etc.), make sure the laser cleaner is off.

CAUTION: Do not expose the device to high temperature and high humidity.

WARNING: There are 2 fans on the rear panel of the laser cleaner for heat dissipation to ensure adequate airflow to cool the unit.

WARNING: Make sure that the ambient temperature and humidity are within the specified range before turning on the device

WARNING: Do not look at the output head directly and make sure to wear laser goggles when handling the product.

WARNING: Power interruptions are very dangerous for the equipment; please provide a continuous uninterrupted supply voltage.

CAUTION: Except for the controls, adjustments or performance mentioned in this manual, other operations may pose a radiation exposure hazard.

CAUTION: For collimated output, keeping the output lens clean is essential. After use, reattach the protective cover of the sight. Do not touch the output lens or clean it with any solvents. It can be cleaned with lens tissue paper.

CAUTION: If you do not follow the above instructions, the resulting optical damage will not be covered by the warranty.

4. Specification

Base Material	Surface Condition	Depth of focus (mm)	cleaning efficiency (mm/min)	Cleaning effect
Cast iron	Heavy rust (0.08mm thickness)	6	8000	Clean surface, no damage to the base metal
Carbon steel	Moderate corrosion (0.05mm thickness)	6	10000	Clean surface, no damage to the base metal
Stainless steel	Surface oil, slightly rust	6	11000	Clean surface, no damage to the base metal
Mold steel gear	Moderate oil stain, attached iron filings	6	6500	Clean surface, no damage to the base metal
Aluminum plate	Oxide/surface contamination	6	6000	Clean surface, no damage to the base metal
No putty paint layer	White pigmented paint (0.1mm thickness)	6	5000	Clean surface, no damage to the base metal

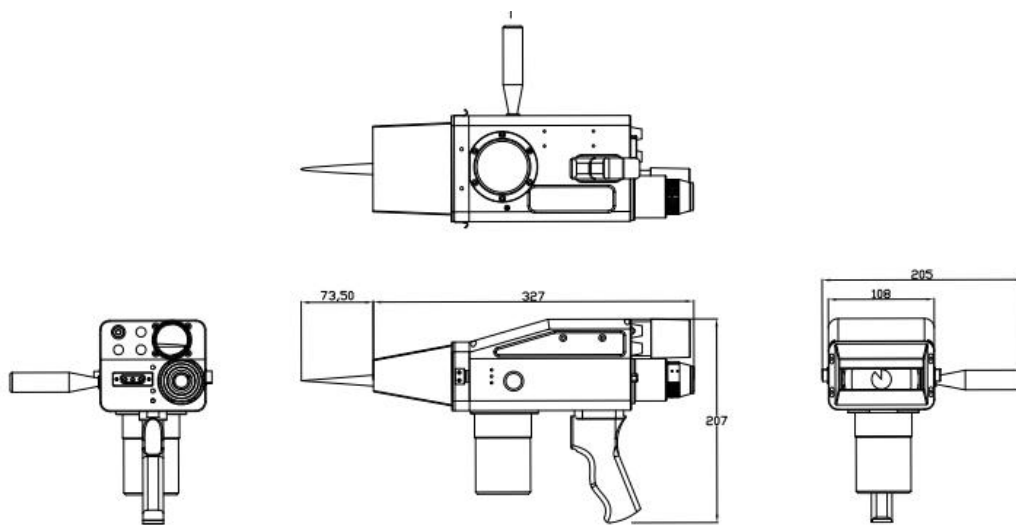
Electrical characteristics

No.	Characteristic	Test Conditions	Min	Typical value	Max	Unit
1	Supply voltage	220	210	220	230	AC
2	Maximum current loss	$P_{out}=P_{nom}$			25	A
3	Total power consumption	$P_{out}=P_{nom}$, $T=20^{\circ}\text{C}$			6.5	KW

General characteristics

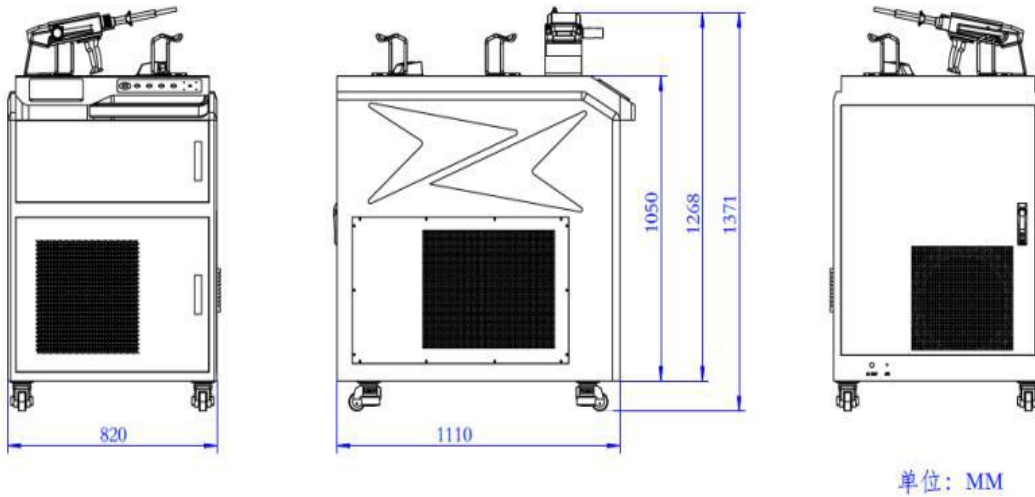
1	Working temperature range	0		+40	°C
2	Storage temperature	-10		+60	°C
3	Laser power	500			W
4	Peak power	>200			KW
5	Cooling method	Water cooling			
6	Laser level	Level 4			
7	Laser wavelength	1064			nm
8	Humidity	10		95	%
9	Laser machine size	L1100 x W 840 x H1150			mm
10	Weight	250			kg

5, Hand held cleaning head dimension



* The hand held cleaning head is subject to the final product.

6, Cabinet dimension



The dimension of the cabinet is subject to the final product.

Chapter 4 Operation

Statement

Horizon Laser ensure that the product is thoroughly tested and inspected, and all inspection items meet written quality specifications before shipment.

Note: If you find any damage to the outer and inner packaging while you receive the product, please contact Horizon Laser Company or the designated agent immediately.

1. Plug the power supply

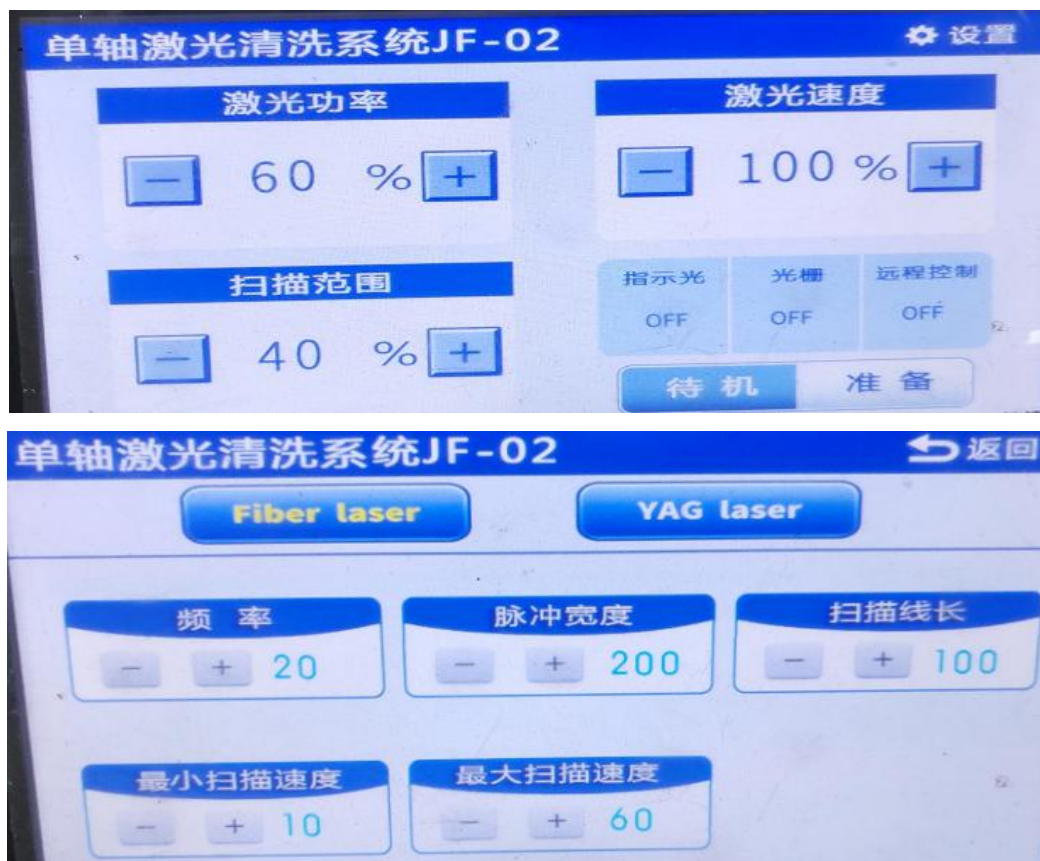


2. Boot steps:

- (1) Turn out the red emergency stop switch to the up state;
- (2) Turn on the main power rotary switch and automatically start the ice water machine at the same time;
- (3) Wait 10s, turn the power key to the right, and the device will start;
- (4) Set the parameters on the control panel, click "prepare" on the touch screen to start the cleaning head galvanometer;
- (5) Click the Start button, hold the cleaning head, and press the cleaning head handle button to clean the workpiece. Rotate the red emergency switch to the pop-up state.

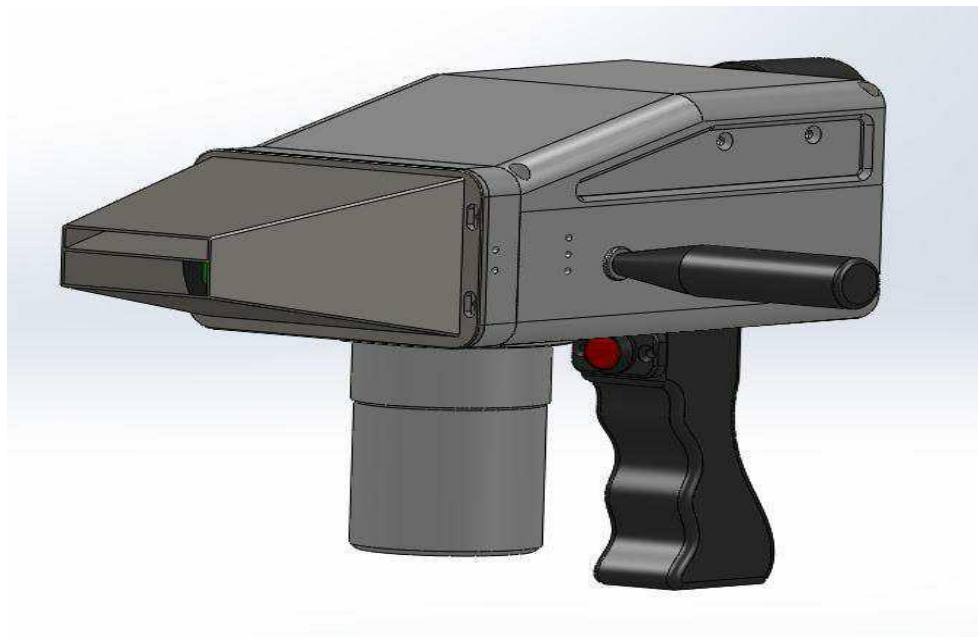
3. Control panel setting parameters

- (1) Laser power: 0%-100%
- (2) Laser speed: 1%-100%
- (3) Scanning range: 1%-100%
- (4) Laser frequency: 1KHz-400KHz
- (5) Field lens options: 160mm, 254mm (default), 330mm
- (6) Pulse width: 200ns-350ns
- (7) Maximum scanning speed: 60
- (8) Minimum scanning speed: 10

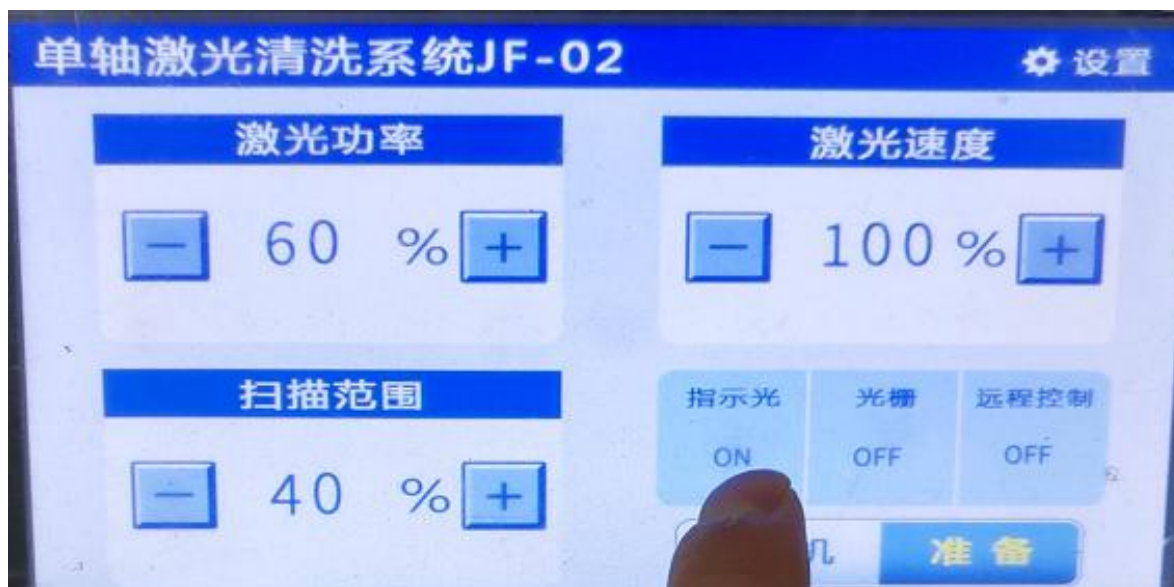


4. Open the red light preview

- (1) Hand-held cleaning head;



- (2) Tap the indicator light on the touch screen to turn OFF-ON, and tap prepare.



5. Cleaning operation

- (1) Turn off the indicator light on the touch screen first, and the status is from ON-OFF;
- (2) Click the Start button on the control panel;
- (3) Hold the cleaning head and press the "handle laser button" to use;
- (4) After use, click the "Start button" again, and then click the touch screen to stand by.



Chapter 5 Classic Cases



Railway track rust removal



Molding cleaning



Welding bead cleaning



Metal surface coating removal



Cultural relics cleaning



Painting cleaning

Chapter 6 Warranty service

General Terms

Horizon Laser Company warrants all defects in the products and production processes for all machines manufactured under the contract and guarantees that their machines meet their written quality specifications under normal use.

Horizon Laser Company makes reasonable choices for repair or change new machine that are faulty due to materials or production processes during the warranty period. All parts that repaired or changed still covered by the warranty by the remaining warranty period as the original product.

Warranty Limit

- * Products, components (including fiber optic connectors) or equipment are not covered under warranty in follow conditions:
- * Being tampered, opened, disassembled or modified by other people but not from Horizon Laser;
- * Damage caused by improper use, negligence or accident;
- * Use the machine exceed the specifications and technical requirements of the product;
- * Failure due to user's software or interface;
- * Use due to incorrect installation, repair, or other information contained in this manual.;

The above information is the responsibility of the customer to understand and operate in accordance with the user manual and specifications; otherwise, the fault will not be covered by the warranty. Accessories and fiber optic connectors are not covered by the warranty.

During the warranty period, the buyer must feedback within 30 days once there is any fault. Horizon Laser did not grant any third party (including purchased users or customers) to repair parts, equipment or other products.

Driver software

Any driver software that is available now or in the future is an exclusive license for Horizon Laser. By using the software, means you agree to the terms here. Trade secret laws, copyright laws and international treaties protect this driver software.

Horizon Laser retain ownership. The owner of the device can only use the driver software for the purpose of Horizon Laser's product and program backup. Horizon Laser will not warrant the device where there is any changes to the driver software.

The driver software provided will not be changed for any reason or other special purpose and will not be warranted. Horizon Laser do not guarantee that the software contains functions that meet all

users' need, or that the device or driver software won't be disturbed or error-free. Not all driver software is subject to normal quality control or product application from Horizon Laser, but it provides to the user in response to user needs. Horizon Laser may modify the driver software, but we are not responsible for releasing the latest version.

In addition to the above express warranty terms, Horizon Laser refuses to provide any and other warranties to the purchaser, including unlimited, any and all implied warranties, such as infringement of freedom or other commercial purposes.

Repair Service

CAUTION

There are no repairable parts inside. A qualified worker from Horizon is required to perform the repair. All repairs or replacements covered by the warranty must be requested with an Horizon Laser or local representative as soon as possible after the failure has been detected. After we have authorized it, we must install it in a matching package and return it. Any damage found after receiving the product must be accompanied by supporting documents in order to claim to the carrier.

IMPORTANT

Do not send any product back to Horizon Laser without RMA(Return Material Authorization). If the product is not covered by the warranty or exceed the warranty period, the customer is responsible for the cost of product repair.

We reserve the right to make changes to any design or structure of our products at any time without notice.

If you have any other questions or requirements, please contact us freely:

24 Hours Service Line: 400 0512 966

Suzhou Horizon Laser Technology Co., Ltd