

# OPTIC LASER Cleaning System User Guide



## 1 Safety Information

Thank you for choosing OPTIC cleaning system. This User Guide provides important safety, operation, warranty and other information. Please read it carefully before you use this product. In order to ensure safe operation and optimal performance of the product, please follow the warnings, cautions, operating procedures and other instructions Accordingly.

### 1.1 Symbols Used in this User Guide



**WARNING:** Describes a hazard that lead to a personal injury or death.



**CAUTION:** Describes a hazard that lead to a minor personal injury or product damage.

## 1.2 Laser Classification

This series of lasers are classified as a high power Class 4 laser instrument .According to the European Community standards EN 60825-1, clause 9. This product emits invisible laser radiation at or around a wavelength of 1064nm or 1080 nm . Direct or indirect exposure of this level of light intensity may cause damage to the eye or skin. Despite the radiation being in visible, the beam may cause irreversible damage to the retina and/or cornea. Appropriate and approved laser safety eyewear must be worn all the time while the laser is operational.



**WARNING:** You must use appropriate laser safety eyewear when operating this device. The laser safety eyewear is selected According to the range of wavelengths emitted from this product. The end user must ensure that the laser safety eyewear used protects against light emitted by the device over its entire range of wavelengths.

## 1.3 Safety Labels




Figure 1: Laser Radiation Hazard




Figure 2: Handle with care

## 1.4 Electrical Safety

① Make sure your product is grounded through the PE line of the AC power cord. The grounding must be firm and reliable.

	<p><b>WARNING:</b> Any interruption from the protective earth will electrify the enclosure, which may result in personal injury.</p>
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② Make sure that the correct voltage of the AC power source is used.

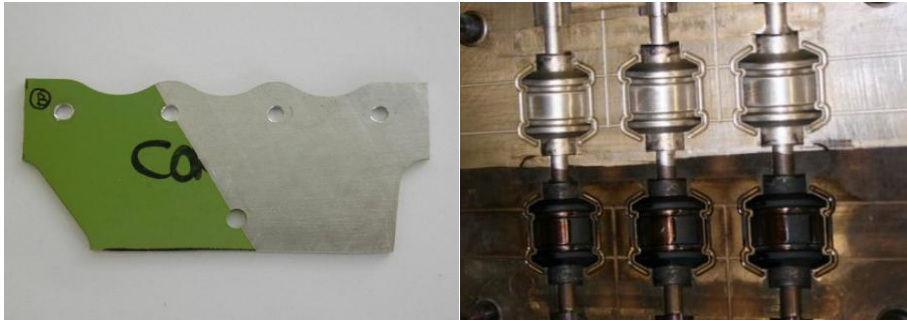
	<p><b>CAUTION:</b> Failure to connect the laser to the correct voltage could damage the product.</p>
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## 2 Introduction

Cleaning System is the new generation product with a high technology that applies for the purpose of the material surface cleaning application, which is easily to be set up, operated and automated. No need of chemistry, water or other working medias, the equipment can be also applied for removing the resin, grease, stains, dirt, rust material, coating, coating and paint. This device can be auto-focused on a specified area of the target surface of the material, which leads to a high performance of cleanliness result. The application industry is covered by Ships, Auto repair, Rubber mold, CNC, Rail, Environmental Protection and so on.

## Application

Cleaning paint/cleaning greasy dirt



Cleaning oxide layer

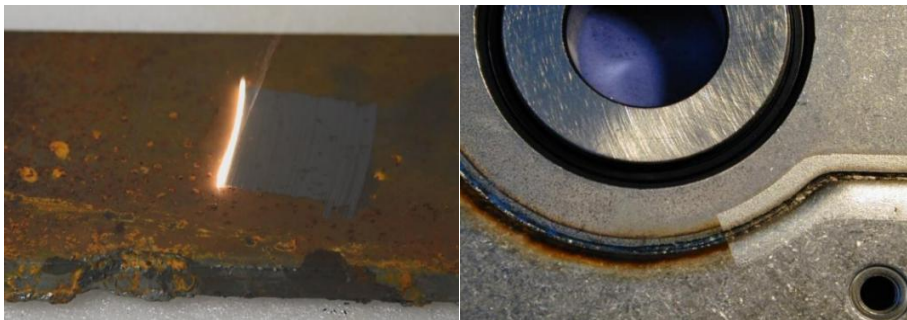


Before

After



Cleaning rust/cleaning welding seam



## 2.1 Features of equipment

- 1) No damage to the base of the material due to the no-touch surface cleaning performance.
- 2) Precise cleaning technique for the specific area in a selected area.
- 3) No need of chemistry or other added supplies.
- 4) Easy to be operated, can be hand-held or auto-cleaned by installing a robotic arm.
- 5) Small cleaning time consumption and comes with a high quality finishing result.
- 6) Stable and impacted integrated design which results to no extra maintenance.

## 2.4 Operation Conditions

Type	OPTIC-F100
Laser Type	Fibre
Pulse Formation	Q-Switched (Quality factor)
Average Power (W), Max	100watt
Average Power (W), Output Range(if adjustable)	0-100watt
Pulse-Frequency (KHz),Range	10-50
Scanning Width (mm)	10~80
Fiber Length (m)	10-60mm
Cooling Type	Water cooling
Input Power	220V, 50/60H
Power Consumption (W)	600W (including Chiller)
Dimensions(mm <sup>3</sup> )	79*77*121cm
Weight	125Kg Kg Net weight

Comparison with traditional clean methods				
Comparison	Laser Cleaning	Chemical Cleaning	Mechanical Grinding	Dry ice cleaning
Washing Method	non-contact cleaning	contact cleaning	Abrasive contact cleaning	non-contact cleaning
Harm to base material	None	Yes	Yes	None
Washing Efficiency	High	Low	Low	Mid.
Consumable	Power	Chemical Detergent	Abrasive paper, grinder, abrasive stone	Dry Ice
Washing result	Very good, very clear	Medium, uneven	Medium, uneven	Good, uneven
Precision Washing	Accuracy controllable. High precision	Uncontrollable, low precision.	Uncontrollable, medium precision.	Uncontrollable, poor precision.
Safety/Environment	No pollution	Chemical pollution	Dust pollution	No pollution
Operation	Easy to operate, portable or automation optional.	Complicated process, higher technical requirement of the operator. Pollution prevention measures required.	Need more time & manpower. Pollution prevention measures required.	Easy to operate, portable or automatic.
A. First high power fiber laser cleaning machine in China.				
B. Non-contact cleaning, no damage to work-piece.				

C. Precision positioning, selective cleaning.
E. No need chemical detergent, no consumable. Safe & environment-friendly.
F. Easy to operate ,Either portable or equipped with robot for automatic cleaning.
G. High cleaning efficiency, time-saving.
H. Stable laser cleaning system, free maintenance.
I. Cleaning resin, oil stain, rust, coating materials, paints on work-piece surface.

### 3 Installation and Adjustment

#### Use prior notice:

1. Make sure the socket outlet is in good contact, and grounded in good ground.
2. Make sure the lenses on the cleaning head are clean.
3. Make sure all the buttons and switches on the machine are in good condition.
4. Check the water level, if the water level is too low, please add water to the normal range of the scale.

#### 3.1 Operating Procedure:

- 1、 After sealing off, please contrast the packing list, check whether all random files and enclosures are complete, whether the machine is intact.
- 2、 Check the water level of the chiller, make sure the water in chiller is enough before turn on the power-supply switch. (Open the vent before adding water)
- 3、 Button operation, as Figure 3 shows.
  - 1) Emergency-stop button reset;
  - 2) switch the key "1" and the lamp "2" will be lighted;
  - 3) push the laser button "4" and it will be lighted.

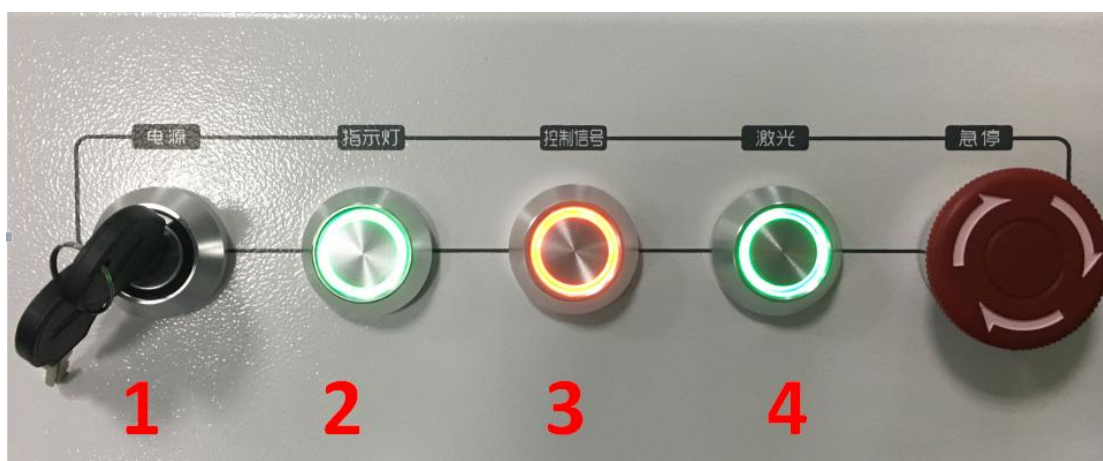




Figure 3

- 4、 Open the case to turn on the laser machine, as Figure 4 shows.
  - 1) All buttons should be reset before turn on the laser machine;
  - 2) Turn the machine on and the green “power”light will be lit up;
  - 3) Press the “laser ” button and the red light will be lit up.



Figure 4

- 5 、 Open the top case cover and take out cleaning head, as Figure 5 shows. Taking the cleaning head directly toward people is forbidden, as well as high reflectivity materials(copper,aluminum...).



Figure 5

- 6、 Man-machine interface.
  - 1) Boot screen as Figure 6;
  - 2) Parameter setting interface, Power (%) and Freq (Khz) , as Figure 7 shows;





Figure 6



Figure 7

3) Click number to set the parameters .as Figure 8 and Figure 9.

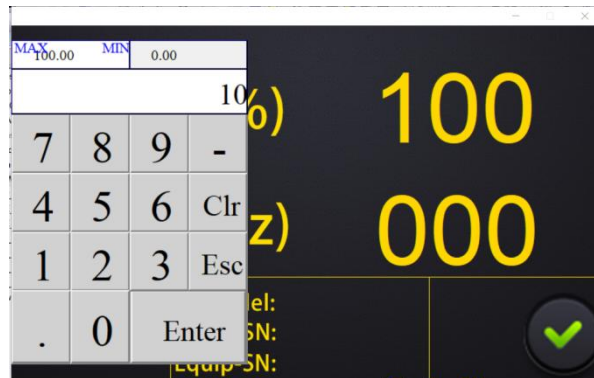


Figure 8

4) Click “√” after setting complete, use “×” to cancel the setting and go back to the parameter setting interface.



Figure 9

7、 Press the control button “3”. This button must be turned off after cleaning.



Figure 10

- 8、 Take the cleaning head towards the surface of material,press the red button (safety button) on the cleaning head.



Figure 11

- 9、 On the cleaning head , “Width” switch is to change width of the laser beam ,the other is for air exhaust system.



Figure 12

10、 Turn off the machine in reverse sequence.

### 3.2 Attentions

- 1、 Taking the cleaning head directly toward people is forbidden, as well as high reflectivity materials(copper,aluminum...).
- 2、 Taking on labor protection appliance and eyewear when using.
- 3、 The alarm light will be on if laser machine hasn't been turned off properly and service life will be influenced. Users are suggest to check every button whether they are reset or not before power supply.
- 4、 It's forbidden to make cleaning head at a right angle to materials.
- 5、 Change water in chiller every 3-6 months with deionized water.
- 6、 The bending radius of corrugated pipe must be no smaller than 250 mm ( $\geq 250\text{mm}$ ). Two positions as pictures show below should be protected properly and avoid being bent excessively.



## 4 Warranty and After-Sale

### 4.1 Warranty

we promises to maintain products which are produced and sent according to a formal contract,and guarantees every repaired machine will function good if used properly.

we have the rights to repair or replace a product in warranty period if it has a material or technical problem. We will charge for the maintenance under normal circumstances. It will be free if the machine has special problems.

### 4.2 Warranty Scope

we will not provide warranty service in following cases:product or parts (including fiber) are damaged because of modification ,dismantlement ,improvement with out permission;product or parts (including fiber) are damaged because of emergency or negligence;product or parts (including fiber) are damaged because of lack of preservation .....customers have the responsibility to learn the directions on the user guide and operate the machine properly. Damages resulted in abnormal operation will not get warranty services. Accessories are not in

warranty.

Customers should make a written request in 30 days as soon as they found a problem which is in the warranty range , no third party should be involved in the maintain process and products or part that are not produced by OPTIC should also not included.

### **4.3 Technical Support and Product Maintenance**

Contact with OPTIC engineer whatever problems occur when using , and make a troubleshooting under engineer's direction.

All products waiting for repair or replacement should be placed in cases OPTIC provides , otherwise OPTIC will charge for the damage it may cause.

When customers receive OPTIC products ,please check if the product is damaged and whether accessories is complete or not.

OPTIC keeps on developing new products , information and parameters in this file may change. All technical parameters are subject to the contract.

Warranty and after-sale clauses above are for reference only , and are subject to the formal contrast.