

QA-LC60

Fiber Laser Cleaning Machine

User Manual



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§1.Caution for the operation safety

Please completely read and clearly understand the information contained in this manual before any attempt is made to operate this system. There is very important operation and safety information in this operator's manual.

Notice:

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- The QA-LC60 is Class IV laser product.
- The laser output power is W with the wavelength of 1060nm.
- Avoid touching the laser beam or the laser radiation directly. The human body is vulnerable to the output of certain lasers, and under certain circumstances, exposure can result in damage to the eye and skin.
- The system can be only opened for the maintenance in Questt Asia.

§2.Laser Safety information

2.1. Safety Standards

Throughout this manual, special warnings and cautions are given as needed. Important information and special hazards are also identified with symbols (icons) as shown below:

a. Warning

Whenever this “Warning” symbol appears, a hazard may exist that could result in death or serious injury. A description of the potential hazard is supplied for the users’ information. It is the users’ responsibility to take all necessary steps to prevent injury to themselves or other personnel.

b. Caution

Whenever this “caution” symbol appears, a description of potential damage to the Laser is supplied. It is the user’s responsibility to understand this information and use it to prevent any damage to the machinery. If a user does not understand the information or is not sure how to proceed, immediately call the Questt Asia for further instruction.

2.2.General safety instruction

Users should follow the information included in this manual to ensure the safety and performance of the system.

Warning: The power supply must be attached with the ground wire.

Caution: The maintenance should be operated by the qualified professional person from Questt Asia. Don’t open the laser enclosure or destroy the label on the machine. Otherwise, the machine will not be warranted.

Caution: The laser head of the QA-LC60 laser is connected to the fiber-optic. It should be handled carefully during the operating to prevent from the dust and contamination. The lens should be cleaned by the special lens paper

Caution: The system should be operated under the required environment. Otherwise the safety function will be loss.

§3. Laser Class

This laser is manufactured according to the standard of 21 CFR 1040.10(or IEC60825), belongs to the class IV laser product. It can emit Watts of laser at the wavelength of 1060nm. It is harmful to the human eyes and skin. Although the laser beam is invisible, it will cause the injury to the retinal and the corneal. It is necessary to wear a protect glass when the user operates the system. It is the user's responsibility to prepare all the safety glass.

Caution: Don't install the output collimator when the laser is running.

Caution: At the Back of theQA-LC60 laser, there are two fans for the cooling purpose, in order to have sufficient air flow.

Warning: Don't watch the laser output head directly. Wear the protect glass when you operate the laser.

Caution: Don't operate the laser at the frequency less than KHz, the high energy density is harmful to the laser.

Caution: Don't process the metal with high reflectivity, in case the laser will be damaged.

Caution: Use the uninterruptable Power Supply to operate the laser, the break off of the laser power supply will be seriously damage the laser.

Warning: The improper operation of the controller or the regulator may cause the harmful radiation.

§4. The symbol (icon) and the location of the warning and caution



Label of warning

Location: at the cover or the front panel of the laser

Information about the operation.



This symbol means the laser radiation and is marked on the product.

§4. Machine Description

QA-LC60 Fiber Laser cleaning system is one of the advanced products developed by Questt Asia Technology Co., Ltd. It uses the laser's high energy advantage working on the surface of the work piece, to clean the rust , paint, oil , glue on it.

Laser cleaning technology is a new technology that developed in recent decades, related research started in the middle of 80s, but until the early 90s began by researchers attention and rapid development, its emergence has opened a new field of laser technology application in industry, and became a new member of the big family of laser processing in. Laser cleaning technology as a new cleaning technology, has become the supplement and extension of traditional cleaning methods, and has been applied in the field of microelectronics, construction, nuclear power, aerospace, automotive, medical, cultural relic protection.

§5. System Description

Equipment Performance

The machine adopts originally fiber laser and high speedy galvo scanning system. High quality of light beam, long using time, stable equipment performance exempts maintenance. It is speedy, and precious. Cleaning has non-touched process, permanent effect, humanized operation, and stable running.

Applicable fields

The machine is widely applied in microelectronics, construction, nuclear power, aerospace, automotive, medical, cultural relic protection.

The main of technical parameters

Model	QA-LC60
Laser source	Fiber
Laser Power	60W
Fiber Cable Length	3 Meters
Laser Wavelength	1060um
Pulse Energy	1.2 mJ
Pulse frequency	20-100KHz
Work speed	0-7000mm/s
Cooling	Air cooling
Dimension	450*350*550 mm
Weight	30Kg
Beam width	10-110mm
Optional	Manual
Temperature	5-40 °C

§6. Installation

Just connect the wire cable on your Electricity plug. No other installation needed. The voltage needed is Single Phase, 220V, 50/60HZ.

§7. Operation

7.1 Connect the Main Power cable to your electricity plug.

7.2 Loose the "STOP"

7.3 Turn on the Key Switch. Waiting about 15 seconds to start cleaning.

7.4 Press the red button on laser gun head, the laser will come out for cleaning. Finished cleaning, loose your fingle from the trigger.

7.5 If need to change laser power and laser beam length, just press the four buttons besides the Panel.

First, press the red button "Select" for 3 seconds, until the number on panel start Flashing. Press "Select" again, stop at the one you want to change. Press the two green button in middle, to increase and decrease the number. Everytime after finished changes, then press "Confirm", next time when you open the machine, the panel will show the parameters you set last time.

PS: Remember to press "Select" for **3 seconds** until **number flashing**, then choose the one you want to change.

A: Power. Laser power percentage, choose from 5%, 25%, 50%, 75% ,100%. **Suggest 100%.**

B: Width. Laser beam width, setting from 0.5-5, bigger number, the laser beam width is longer, **Suggest 3.0** . (longest laser beam width settings: Width 5.0, Frequency 50)




C: Frequency. Scanner freenency, setting from 50-500, smaller number, the laser beam width is longer, **Suggest 150** .

D: Laser. **This parameter, do not change. (Normal:45000)**





7.6 After finished working, Turn off the Key Switch, press the Emergency Stop.

7.7 Every week, use Alcohol to clean the lens on Laser head.(if too much rust on lens, the laser power will be weak.)

Parts discription and photos:/

1.	Connect the Main Power cable to your electricity power. Pull up the air switch.	
2.	Loose the Emergency stop.	
3.	Turn on the Keyswitch	

4.	Working light	
5.	Panel and Setting Buttons	
6.	Machine holder	

7.	Moving wheels with brake	
8.	Laser head trigger	
9.	Laser head Gun	
10.	<p>Lens</p> <p><i>(the lens is F-100, focus distance is about 100mm, max beam width is 70mm, if you need longer laser beam width, we can equip bigger lens F-160)</i></p> <p><i>Every Month, use alcohol to clean the lens if too much rust on surface.</i></p>	

§8. Attentions

- 8.1 Forbids in the refrigeration ventilator anomaly condition, start laser power source and oscillating mirror power source.
- 8.2 Do not allow the equipment work in the situation that the power and the voltage are not stably, when necessity needs the manostat to keep constant voltage.
- 8.3 Presents the abnormal phenomenon, first closes the total power switch and then to inspect .
- 8.4 When the equipment works, all circuit protection device (for example: Laser power and oscillation mirror power) and Optical devices (for example: The Fiber Optic Laser, oscillating mirror and the f - Theta focusing lens) needs the good abstraction of heat, therefore should insure that the working conditions ventilation.
- 8.5 The use environment should the clean and no dust, otherwise will pollute the optical device and affect the laser power's output, seriously ever damage the optical device!!!
- 8.6 Environment relative humidity $\leq 80\%$, temperature $5^{\circ}\text{C} \sim 40^{\circ}\text{C}$.
- 8.7 The complete machine earths reliably, if not observe this stipulation possibly to cause electric shock or the equipment work is not normal!
- 8.8 It must after cut-off power source at least 10 minutes later, only then can carry the machine, earthing and inspect the machine .

§9. Service

If the above steps do not correct the malfunction, do not disassemble without our instruction. Do not hesitate to contact us by the following info:

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