

# **Diode Laser Treatment System**

## **User's manual**



**Dear customer,**

Thank you and welcome to choose our products of VIVA Concept Technology Co.,Ltd To ensure proper use our products, we recommend that you read this manual carefully prior to operate. We believe that we can offer you satisfied service.

We can offer technical support for you at all times.

**Please note:**

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All rights are reserved in the event of the grant of a patent or the registration a utility model or design.

If there are any questions, please contact us!

## Pay Attention to Warnings, Cautions and Notes

**WARNING** Warning means that not following instructions properly or ignoring them completely can endanger patients and/or operators.

**CAUTION** Attention means that not following instructions properly or ignoring them completely can damage the unit.

**NOTE** Notes provide additional information.



**Read the user's manual prior to operation!**

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# Chapter 1 Equipment overview

## 1.1 Overview

Diode Laser Hair Removal is the safest and fastest at the present. However, the primary chromophore for laser hair removal is melanin residing in the hair shaft. Secondly, melanin residing in the inner and outer root sheath may also act as a secondary chromophore. Based on selective photothermolysis principle, through specific wavelength, penetrate epidermis into dermis, optical energy was absorbed and translated into heat energy with restraining hair follicle tissues, and produce photothermal effect. It takes laser energy in hair follicle with rich in melanin, surrounding tissues absorb less even no energy, reach to restrained melanin of hair follicles and remove hair. Meanwhile, don't hurt around tissues and virtually pain-free remove surplus hair; eventually, reach to permanent Hair Removal.



Always start with treatment from lower setting and increase energy gradually to avoid side effect.

## 1.2 Features

- 1) Permanent hair removal of all pigmented hair on all skin types, contains tanned skin all over the year round.
- 2) More lower consume cost for the material, which can use for a long time.
- 3) Enhanced cooling system.
- 4) Customized to fit your practice.
- 5) Original technology, virtually pain-free.

## 1.3 Therapeutic range

The treatment of hair removal such as the cheek, lip, beard area, neck, back, chest, armpit, arm, bikini, leg, etc.

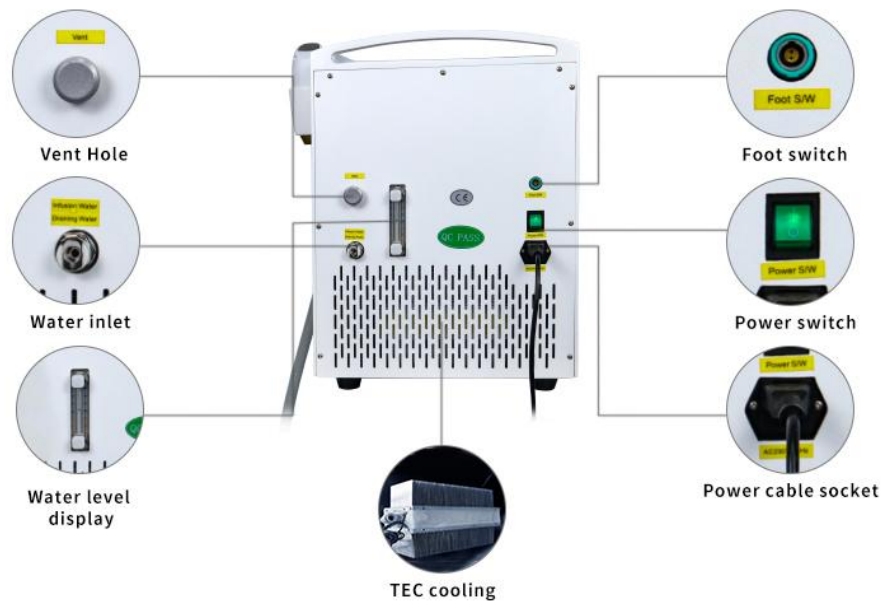
## 1.4 Parts introduction

### 1) Front view of the machine



Name	Note
True color LCD touch screen	It shows the operational settings and adjustments as well as system status on the screen.
Emergency switch	The emergency switch is used to shut off power supply in case of any emergency. Notice: suddenly pressing the emergency switch may damage the components of the system, therefore, it should be pressed under emergency.
Key switch	It is used to turn on/ off the power supply. (rotating the key in a clockwise direction, it will shut off the device, anticlockwise, the system will be turned on).

## 2) Back view of the machine



## 1.5 Contraindications

1. The patients with the keloid history and photosensitivity diseases.
2. Having the history of skin infections or herpes simplex in the treatment region.
3. Within 6 weeks, other ways for hair removal had been used.
4. The patients who are allergic to hydroquinone drugs or other bleaching agents.
5. Pregnant, menstrual women and the patients with the malignant tumor.
6. The patients with the history of taking Lsotretinoin within 6 months.



### Notice

Hair removal equipment has no significant on the white hairs, the person with suntanned skin should be used with caution.

## 1.6 Accessories

After you received the machine, please check all the parts of the machine according to

the following Packing Contents List at first, and contact us immediately if you find any lost and damaged parts inside the packing.

Name	Quantity	Model/Code
Handpiece	1	808nm Diode laser
Eye-protection glasses	1	808nm
Goggles	1	-----
Power cable	1	EN
Foot pedal	1	Big foot pedal
Funnel	1	
Handpiece support	1	-----
Key	2	2801
Support screw	-----	-----
Handpiece screw	2	-----
O-ring	1	11×1.9



**Warning**

Use offered by manufacturers or suggested accessories



## 1.7 Technical specifications

Name	Value
Power consumption	2000W
Laser wavelength	808nm
Spot size	12*20mm
Pulse width	10-300ms
Energy density	5-100J/cm <sup>2</sup>
Pulse frequency	1-10Hz
Cooling mode	Close-cycle water cooling; contact cooling for the laser head is 0-4°C
Electrical requirements	110V ± 10%, 50/60Hz, 220V ± 10%, 50Hz
Weight	48KG
Dimension (L*W*H)	450×430×1000(mm)

## Chapter 2 Safety

The machine is designed for safe and reliable treatment when you use it properly. Only VIVA Concept corporation authorized personnel may service the system, authorized personnel and maintenance technician and other users should fully understand the safety information provided in this chapter.

### 2.1 Responsibilities of user

Before each treatment, the user must check the functional performance of the device in order to rule out any risk to patients or someone else. If the device is used in conjunction with peripheral units, the User's Manuals for the peripheral units must also have been thoroughly read and understood.

#### 1) Safety precautions

The following are its parts of safety precautions:

A. Upon switching on the system, the processor first undergoes a self-diagnostic program. The processor will then examine the system automatically and continuously during the entire treatment procedure.

B. Use the Emergency Stop Switch (red button) to turn the power off in case of an emergency.

C. Remove the Key when not in use to prevent unauthorized access to the device.

## 2) Safety warning

- Don't use the equipment with other electrical equipment.
- Verify room voltage with supply area of the equipment are consistent, Don't use alter-mating current more than 240V.
- Don't operate the equipment in the high temperature or humidity place, avoid cause electric shock or fault.
- Ensure that the equipment is connected with power supply prior to use.
- Prior to use, Ensure that connection is good between circuit and accessories.
- Make sure that all trained personnel are familiar with the system controls and have a good knowledge of how to shut down the system instantly.
- It's better to operate the equipment in the dry place, Don't use it outside the room.
- Only use our company to provide matching accessories.
- Please turn off power supply after use it, before cleaning and maintenance.
- Don't use the equipment if you are uncomfortable.
- Don't use the equipment if skin have any uncomfortable or hurt.
- Pregnant women are forbidden to use it .
- Never use the modified or remould-ed equipment

## 3) The Environment Requirements

Working temperature scope	+15-30°C
Relative humidity scope	30%-80%
Atmospheric pressure barometer	86Kpa-106Kpa
Power supply	220V/AC±10%, 50/60Hz, 10A;

## 2.2 User training

The VIVA -820 requires special expertise and care in its handling and using. Only persons who have received appropriate handling training on the device, taking into consideration of operating instructions, and who are familiar with its therapeutic effect and possible risks are permitted to use the laser unit.

Untrained or unqualified operating personnel are not permitted to operate the VIVA -820 under any circumstances whatsoever. VIVA Concept Xi'an Photoelectric Technology Co.,Ltd offers comprehensive training courses for the P-diode laser. Each user must have read and understood the User's Manual completely prior to starting the machine.

Patient's safety mainly depends upon a well-trained operators and a suitable treatment room. The attending operators must inform the patient all inherent risks with the use of this device. The success of the treatment depends largely on the user's experience and knowledge of the biophysical connections.

## 2.3 Optical safety

All personnel (including the patient) must wear the protective glasses; opaque eye shield for the patient and filtered 200nm – 1200nm for the operators. The goggles / glasses provided with this unit are manufactured specifically for the 400nm to 1200nm wavelength produced by the unit. Do not substitute treatment / safety glasses with other types of tinted eyewear which may not meet the specific safety requirements of the unit.

**Note: Gauze, eye-shield and tarsi are all effective in the protection for the eyes.**



**WARNING**




This device may cause thermal injury if used improperly. Medical personnel must familiarize themselves with the devices safety instructions and operational procedures prior to use.

## 2.4 Electrical and equipment safety

The unit uses 220V±10%, 50/60Hz or 110V±10%, 50/60Hz single-phase power supply. Its capability should be no less than 2000W. Use a 10A (220V±10%, 50/60Hz); 20A (110V±10%, 50/60Hz) single-phase three-wire outlet at an international level.

This device connects the ground through three lines, connecting the ground well is important to the operation safety.

The high voltage inside the device is very dangerous. Electricity may remain in some components, therefore, It is not advised to open the cover. This will result in an electrical shock.

NO.	Mark	Specification
Label 1		Production information
Label 2	S/N	Sequence Number
Label 4		Product Address
Label 5		Protection
Label 8		Warning and Notice. Please read user's manual in detail

Do not open the control or rear panel even if the unit is switched off. Only authorized personnel may repair or maintain the unit. Tampering with the unit will void its warranty.

## 2.5 Safe Classification of equipment

# Chapter 3 Installation



**Don't modify the equipment without manufacturer's authorization**

## 3.1 Installation Requirements

The equipment should install the atmosphere of non-corrosiveness gas, dust and fewer particles, corrosive gas can damage to electron, optical components, connection wire. More dust and particles can damage filter, electron components. Temperature and humidity of installation should conform to the requirements of function parameters.

### Procedure:

Before unpacking the VIVA -820, ensure that working environment conforms to the requirements of this section.

1. Unpacking the device.
2. Staying the device for 12 hours, in order to avoid destruction by high humidity during long distant transportation.
3. Assembly of its components and ensure that all connections are firmly in place.
4. Fill the water tank with distilled water only.
5. Installation treatment handpiece and connect the power supply

**After unpacking the parcel, before installing the device, *ensure that the device keeps the cool and dry place for 12 hours, in order to avoid destruction by high humidity during long distant transportation.***

### 1) Location Requirements

The device should be positioned in an area with adequate ventilation away from devices that produce heat (i.e. refrigerator).

### 2) Electrical Requirements

Before the machine leaves the factory, it has already been marked the local rated

voltage according to the customers' request. It corresponds to the electricity requirement as follows:

AC220V±10%, 10A; 50/60Hz; or AC110V±10%, 20A, 50/60Hz

Input electric current can't have momentary change, electric voltage or electric current peak, sink.

It is recommended that this device use a dedicated power supply with its own circuit breaker.

### 3) Environment Requirements

**Air quality:** No caustic particle (such as acid) in the air, which can damage the electric wire, the electric component and optical component surfaces. The dust in the air should be as little as possible, or it can absorb the energy of light and be heated up. Metal particles could damage the electric component.

**Temperature:** The diode laser system has an optimal working temperature between 15°C~30°C. Relative humidity should not be over 80%. The working power of this device is about 2 KW. It would be best that the P-diode laser unit be installed in an air-conditioned room where the relative humidity and temperature can be maintained at optimal levels.

## 3.2 Installation

### 1) Connect the handpiece s with machine



A



B

First : make sure the contact pins are aiming at corresponding position.



**Second: Rotate**  to lock the socket

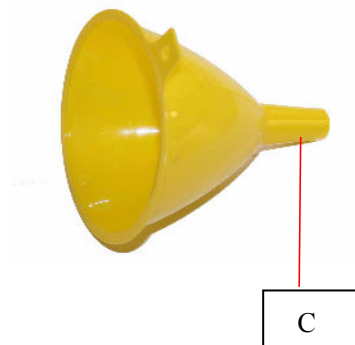
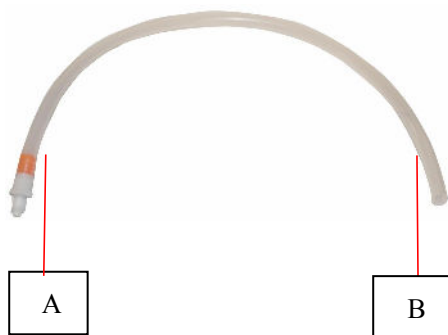
**If you need unplug the handpiece, please Loosen the screws, and press the two**

gray buttons simultaneously, then unplug the handpieces.



This is essential to be sure to tighten the screws, or high voltage is easy to poor contact, contact terminal will be burned off. In addition, easily caused leakage of water injection connector.

## 2) Fill water



Water Viewing Window

### Installation:

1. Insert B into C;
2. Insert A into D;
3. Fill water;

At the same time, observe water viewing window, when water reaches the water viewing window of 80%--90% , Stop filling water.



## WARNING

- 1 Use purified water or water without hydrogen, strictly prohibited mineral water
- 2 Replace water every month.
3. Only personnel trained by the distributor are authorized to maintain the inner workings of this device. Any manipulation to the system may cause damage to the device and will void its warranty.

### 3.3 Equipment safety (Move)

If the device is to be moved within the general area.

1. Turn the device off;
2. Put the treatment head on the support;
3. Pull out the power cable;
4. Relocate the unit (Avoid tilting the device).

### 3.4 Transport and Storage Conditions

1. The cooling water in the instrument should be let out and cleaned during storage and transport.

2. The device should vertically be installed in the outer packing box during transport.

The instrument is fixed on the base  $>550\text{mm} \times 490\text{mm} \times 430\text{mm}$  so that the wheels of the instrument will not glide.

3. There is waterproof and soft gasket material in the outer packing box of the instrument and handle with care which the instrument should be supported by natural damage. The markings such as "Handle with care", "No wetness", "up" should be on the box.

#### 4. Environment Requirements

Working temperature scope :  $+15 \sim +30^{\circ}\text{C}$

Relative humidity scope: 30%-80%

Atmospheric pressure barometric : 86kpa – 106kpa

Power supply: 220V/AC $\pm$ 10%, 50/60Hz 10A; or 110V/AC $\pm$ 10%, 50/60Hz, 20A



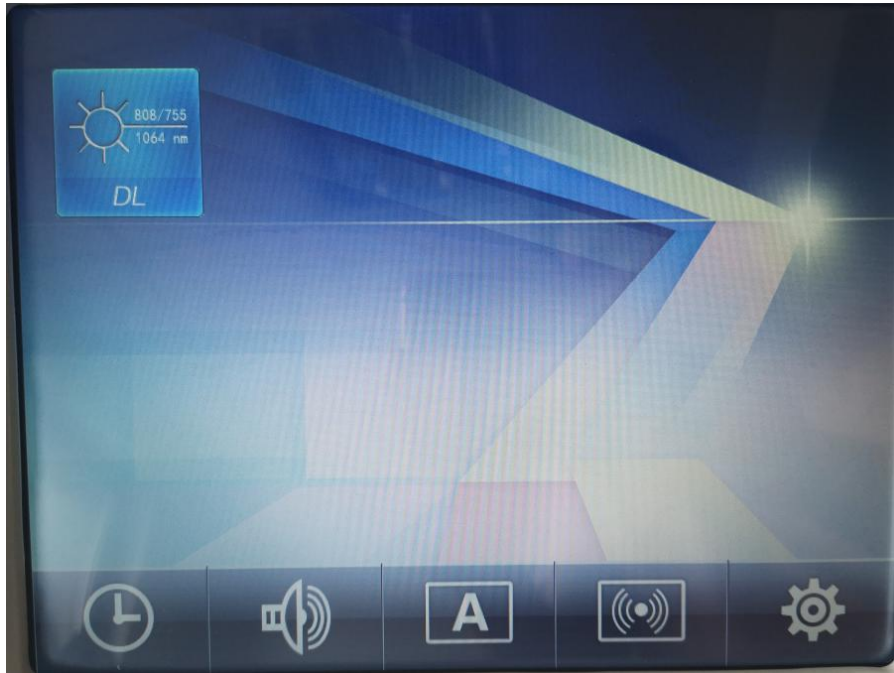
# Chapter 4 Operation

## 4.1 Software operation explanation










1. WARNING: High voltage: please ensure that all panels are secured prior to operation.
2. Place the treatment head on its support when on standby mode.
3. All personnel in the treatment room must wear the protective filtered glasses supplied.
4. Make sure the patient is wearing the opaque protective goggles prior to treatment.
5. Avoid looking directly into the intense light during the treatment even if you are wearing the protection glasses.
6. Do not point the treatment head outside the treatment field.

### 1) The welcome interface.

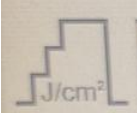
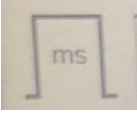
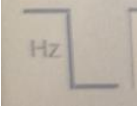
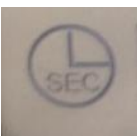







## 2) Treatment interface


Icon	Name	Function
	Date and time	Set date and time
	Vioce setting	Turn up and down voice
	Language set	Set your language
	Function update	No using for now
	Engineering mode setting	Need password go into
	DL	Touch go into treatment parameter setting

Press  , System enter into Laser hair reduction treatment interface.



Icon	Name	Function	Remark
	Energy density display	Show energy density	The range of energy density is 10~100J/cm <sup>2</sup>
	Pulse width display	Show pulse width	The range of Pulse width is 10-300ms
	Pulse frequency display	Show pulse frequency	The range of pulse frequency is 1~10HZ
	sec	Setting treatment time/shooting	1-30s adjustable
	Clear	Clear the current treatment times	
	Mode 1	Memory data 1	—

	Mode 2	Memory data 2	—
	Mode 3	Memory data 3	—
	Mode 4	Memory data 4	—
	Mode 5	Memory data 5	—
	Return	Return to previous interface	—
	Save	Save setting parameters	—
	Standby/Ready	Switch to standby /ready	—
	Temperature of water tank Icon	Show the temperature of water tank	Its temperature alarm is 
	Water flow display	Show the condition of water flow at all times	Its alarm icon is 
	Cooling level	Choose cooling level	Cooling level 1-5 adjustable
	Intermittent shooting mode	Set timer 1-30s to limit shooting time	
	Continuous shooting mode	No limited continuous shooting	

 **Warning:** before application or on operation, if not using control device and regulating device in the laser system or conducting operation according to the specified methods, dangerous exposure will be produced.

# Chapter 5 Clinical guidelines

## 5.1 Treatment must know



**Prior to treatment, please read this chapter carefully.**

- 1) Prior to treatment, consultant should comprehensive consultation for specific conditions of customers, within need of the treatment areas, do the test for customers.
- 2) Pregnant, epilepsy, patients with mild measles, new skin-burns, capillary broken through chemical treatment, these are supposed to conform to suggestions to treat.
- 3) epidermis scrape hair in the treatment area and clean skin surface with neutral detergents, don't use any make-ups.
- 4) Using lots of gels to smear skin surface of treatment parts( it's the best to use import or specialize gels, effect will more obvious).
- 5) Treatment head aiming at skin of treatment area during the treatment, touch skin surface slightly, must be maintain the cleaning of treatment head.
- 6) It is normal that skin surface will occur mild red at times, it will disappear automatically for a few hours after the treatment.
- 7) In order to future use, record treatment parameters.
- 8) Within 24 hours, don't use any make-ups, avoid sunlight exposure and strong movement, adjust diet, smear sunscreen when go out within one month.



Only professional personnel with appropriate training may operate this device. Unauthorized use or abuse in the hands of a novice may cause thermal injury to oneself or others and may cause irreparable damage to the unit.

## 5.2 Preoperative Preparation

### 1. Inquiry

1. Avoid sunlight / artificial UV light exposure 3-4 weeks prior to treatment.
2. Discuss current treatment plan.
3. Clarify and confirm patient's expectations.
4. Rule out any conditions contraindicating this treatment.
5. Sign *Written consent of customers*.

### **2. Explanation**

1. Discuss the possible number of treatments required for treatment.
2. Inform the patient regarding the possibility of a stinging/ warm sensation during treatment.
3. Inform the patient regarding the possibility of transient erythema.

### **3. Optical Protection**

1. The patient should wear the protective opaque eye goggles.
2. The Physician should wear the protective filtered translucent eye goggles.



The treatment room should be clearly marked to prevent unnecessary access by other personal during the procedure.

## **5.3 Post-operation Care**

### **1. Prevent sun exposure**

Patients should use high factor sunscreen after operation one month, and protect treatment parts from the sunlight, sun exposure may increase regeneration rate of melanin and produce hyperpigmentation.

2. Avoid hot baths, using powerful deodorant/antiperspirant within 24 hours after treatment, don't swimming in the high chlorine pool.

### **3. Make up**

Most doctors allows patients to use make-ups after operation, once patients find split or infection and inform doctors at once, in addition, stop make up.

# Chapter 6 Maintenance

This chapter describes the regular maintenance that can be performed by the owner authorized personnel must do any other maintenance work not described in this chapter. System troubleshooting is also enumerated in this chapter.



**WARNING**

Before any maintenance work turn the power off and unplug device. Failure to turn off the power may cause an electric shock, damage to the device and bodily injury. Never tempt to remove the back panel or device casing. Unauthorized tampering with the internal system of the devices will automatically void the warranty.

## 6.1 Cleaning the Main Host

The main host casing or body must be clean with a soft damp cloth. A mild detergent may be used but be cautious, do not let the liquid sip into the machine.

## 6.2 Refilling the Water Supply

Observe the water level through the water viewing window at the rear of the unit. The water level is best maintained within the midpoint of this window. Distilled water can be added by following the instructions seen in “Section3.2 Installation”.

## 6.3 Electronic compatibility(EMC)

MED-820 conforms to the testing of EMC.

## 6.4 Product shelf life

The product shall be used in the period of validity, and its shelf life can be achieved 5 years.

## 6.5 Environmental protection

When at the end of the service life of equipment accessories, please dispose

properly in line with local environmental laws and regulations.

## 6.6 System trouble shooting

Phenomenon	Reason	Solution
No power	<ol style="list-style-type: none"> <li>1.Pseudo connection or missed connection of power cable.</li> <li>2.Circuit breaker (electrical outlet switch), key switch or emergency switch is off.</li> <li>3.Inner electric apparatus with open circuit.</li> </ol>	<ol style="list-style-type: none"> <li>1.Make sure that the system is properly plugged to the power outlet and that main voltage is present in the socket.</li> <li>2.Check if Circuit breaker (power outlet switch), key switch and or emergency switch are on.</li> <li>3.1) Touch the connection between key switch and power supply by one insulating rod. Then connect it again.</li> <li>2) Measure if the input and output switch cables of power supply are open or not, then join it again.</li> </ol>
Trip out or fuse burning	<ol style="list-style-type: none"> <li>1.Inner system with water loose or damp.</li> <li>2.Inner electric apparatus with short circuit.</li> <li>3.Current overload due to lower voltage or unstable voltage.</li> </ol>	<ol style="list-style-type: none"> <li>1.Make sure that Inner system with no water loose or damp, then turn on.</li> <li>2.Take out the power cable, while keep all the switches on, and check if the input pins of power outlet with short circuit? If yes, take out the input pins of power supply, subsidiary power supply one by one, then check if it with short circuit by multi-meter. If it is defective, replace it.</li> <li>3.Please try to use the voltage stabilizer, or change a big fuse.</li> </ol>



Water flow alarm	<ol style="list-style-type: none"> <li>1. Water tank with no water.</li> <li>2. Handpiece or filter jam/block or silicon tube bended.</li> <li>3. Water pump or magnetic valves broken.</li> </ol>	<ol style="list-style-type: none"> <li>1. Add enough water into the tank</li> <li>2. Insert the silicon tube to the handle connector, instead of handpiece plug and play. If the water flow is normal, then there is sth block in the handpiece, you may send back it for repair; if the water flow still alarms, it may due to inside silicon tube bended. Open the system and check it.</li> <li>3. Measure the input voltage of the pump and the magnetic valves, if no voltage, check the power supply circuit; if with normal voltage, then the water pump or valves is broken, just change or repair it.</li> </ol>
Water tank temperature alarm	<ol style="list-style-type: none"> <li>1. Not enough to support sound cooling due to less water in the water tank.</li> <li>2. Continuously working for long time with high energy.</li> <li>3. The environmental temperature is too high</li> <li>4. Radiator of the refrigerator with poor ventilation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fill enough water to the tank</li> <li>2. Stop the system for 15 minutes and then restart.</li> <li>3. Lower environmental temperature and then restart.</li> <li>4. Clean the radiator, make it with good ventilation.</li> </ol>
Magnetic door	<ol style="list-style-type: none"> <li>1. Magnetic door contact with open circuit or with wrong connection to the footswitch.</li> <li>2. Control board or</li> </ol>	<ol style="list-style-type: none"> <li>1. Keep the magnetic door contact with the right connector, and make it with closed circuit.</li> <li>2. Remove the magnetic door contact detector from the control board, then connect the No.5 and No.6 pins</li> </ol>

contact alarm	magnetic door contact malfunction.	<p>frequently by conductive metal.</p> <p>1) if the door contact icon changes on the screen, thus the magnetic door contact or related circuit turns to malfunction. Then take out the door contact wires, and keep it's well connected with no open circuit, or just change the door contact.</p> <p>2) if with no change, just change or repair control board.</p>
Low energy	<p>1.Output lens/mirror is dirty</p> <p>2.Laser emitter / generator is oxidized</p>	<p>1.Clean the output lens/mirror.</p> <p>2.Change the new emitter/generator.</p>
Current overload protection	<p>1.control board malfunction</p> <p>2. Handpiece malfunction</p>	<p>1.Restart the device, if the system is normal, then you may use it again;</p> <p>If with the same problem, it may due to control board malfunction, just change or repair it.</p> <p>2.Check if the entire handpiece is normal or not, if the emitter/generator with open circuit, then change it. Also check if the control board is normal or not, if yes, just send them together for repair or change.</p>