

Fractional CO₂ Laser

User Manual V1.0



VF14

Thanks for choosing our product
Please read through the manual before using

Accessories List

Fractional Laser Head



Vaginal Treatment Heads



Three size of scanning treatment



Normal Laser Head



Foot switch



Power supply wire



Key



Protect glasses



Air-blowing

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Scope of Application

Fractional CO₂ Laser System is a brand new laser rejuvenation technology. It fires a laser beam which is then split into numbers of microscopic beams, producing tiny dot to peel skin and penetrate the laser beam into the corium, achieve cure the uneven epidermis. Make dermal collagen regenerate and remodeling. Choosing different output shape、 size、 scan depth and laser output power depend on the actual need when operate. Fractional co2 laser for the treatment of all kinds of skin pigment abnormality disease vascular dermatoses disease all kinds of nevus spilus tattoo hair removal and hair grafting dermopathy after hurt and bio-benign skin scar、 ect. Besides, this type product also can outward bound to living body Laser engraved area.

Contradiction

- Someone who is allergic to light is forbidden to use this equipment
- Someone who has serious scars is forbidden to use this equipment.
- Someone who has serious heart disease is forbidden to use this equipment.
- Someone who has high blood pressure is forbidden to use this equipment.

Great Attention

For you and other person safety

VCA Laser declare solemnly

- All the operators must be trained properly with knowledge of operation and security of laser before practice!
- Only the maintainers or people authorized by our company can repair and maintain the rejuvenator!
- Please read the Operation Instruction carefully! Any damages or costs caused by improper actions, prohibited in the Operation Instruction, are beyond our company's responsibility.
- All operators must value at moment dangers caused possibly by CO₂ laser!

I.Safety System

For safety, Fractional CO₂ laser system is specially designed to minimize damage of laser radiation to persons and environment in the vicinity of the system. However, as the maximum energy of the machine can get 30W, improper use may result in severe damage to the operator, the patient and the environment, such as burn, blindness, fire and explosion.

To ensure safety, read the following operating precautions thoroughly

1、Laser safety

According to the classification of the protection against laser radiation, Fractional CO₂ laser system belongs to class III-laser equipment.

Warning

Fractional co₂ laser is invisible Ultra far infrared with a wavelength of 10.6μ m.

All the personnel, including the patient, must wear protective eyewear.

Warning

The laser aperture is located at the end of the mechanical pointer!

Avoid laser radiation from this aperture!

1. Make education and training for the operator; let them understand which potential dangerous will be happen when operate this class laser. Make appropriate laser safety training, and teach them how to deal when come up any imminent danger. Due to the eye damage by laser is irreversibility, so it is very important to make the education and training of operating laser machine safely.
2. Never stare directly into the laser beam emitted from the end of mechanical pointer or any reflected laser beam.
3. Keep ignitable and explosive stupeficient, liquid and gas, including alcohol, ether, nitrous oxide and oxygen, away from laser beam path, and safety measures should be taken.
4. In case of reflecting laser beam, metal apparatus should not be used. If the metal apparatus have to be used, avoid directing the laser beam onto the surface.
- 5.The laser operator must know the laser machine construction、 security protection, Issue the second class laser machine use license after the operator pass the examine, Only the operator who have license have competency to operate the laser machine. Must prohibiting the non-staff enter the laser control area. Visitor need to get surveillance personnel permission and know the potential risk of this type laser machine first, after adopt the necessary safeguards then can enter. Non-staff can't enter the laser control area open the laser machine without permission.
6. The ornaments that reflect light, such as watch, necklace and bracelet, should be

taken off before operation.

7. The patient should be provided with adequate protections for eyes, such as protective eyewear and tarsi.

8. Never direct laser beam to places other than the skin to be treated or the target used for calibration. When moving the handpiece in the operation or laying down the handpiece after the operation, ensure that the front-end is not directed at any body's eye.

9. A sign warning of the danger of laser radiation and indicating no entry should be placed at the entrance to the treatment room whenever the system is in use.

10. Begin the treatment with the lowest energy setting that is effective for the intended application, for different parts of human body varies in absorbing the light.

2、Eyes protective

Fractional co2 laser output energy could more than 30W.at any place in the treatment room, staring into the laser beam will result in damage to the vitreous body and retina.

Warning

All personnel in the vicinity of the system must wear protective eyewear;

The patient must be provided with adequate protections for the eyes.

Avoiding the operator and client of being hurt by laser!

①.All persons in the vicinity of the system must wear safety eyewear. The protective goggles with the system absorb the light with a wavelength is $10.6\mu\text{m}$. If using goggles other than those specified herein, users should pay attention to the wavelength and the value of optical density. The chosen goggles should be comfortable to wear and provide a broad view. And they should be draughty and tight. Both the frame and edge should provide the same protection as the lenses. Never use planar-surface lenses that may lead to laser reflection.

②. As the goggles may fail to prevent the laser beam or the laser beam reflected by glass, reflection mirror and smooth metal surface, never stare directly into laser beam or the reflected laser beam with the goggles on.

③. Protective eyewear and tarsi can provide adequate protection for the eyes

3、Electrical safety

According to the classification of protections against electric shock, Fractional CO₂ laser belongs to class III, common equipment.

The applicable power is single-phase AC 230V, with the maximum current no more than 10A.

To connect the net power supply, must use well-grounded single-phase three-wire receptacle, in compliance with national standards.

When Fractional CO₂ laser is in use, high voltage will be generated, When the system is turned off, high voltage may still remain in the capacitor.

4、Carrying safety

Fractional CO₂ laser is convenient for users to transport.

- 1) Precision optical system is located in the hand piece of the Fractional CO₂ laser.
When transporting, use shock absorbing package provided by Grigon; otherwise, it may result in maladjustment of the optical system, affecting the output laser energy.
- 2) The host contains optical system, When transporting, use shock absorbing package provided by Grigon; Otherwise, it may result in maladjustment of the optical system, lead to machine can't work

5、System safety setting

For customer safety, we have designed the following safety protection mechanism:

- Ready/Stand by control: "Stand by" status is the safe status; the output of laser is prohibited.
 - Laser radiation warning: Laser will come out, make sound alarm.
 - Lock Switch: Operator qualification restriction.
 - Urgent Stop: To stop the machine easily when some emergency happens.
- 【Notice】** The key should be removed after every usage and kept by professionally trained or appointed operator.

II. Installation and Usage

1 Product description:

Fractional CO₂ Laser is composed of laser power supply, network power supply, control system, cooling system, CO₂ optical laser, light-conducting arm and so on. CO₂ optical laser, power supply, control and cooling were installed inside crust; light-conducting light was installed outside crust.

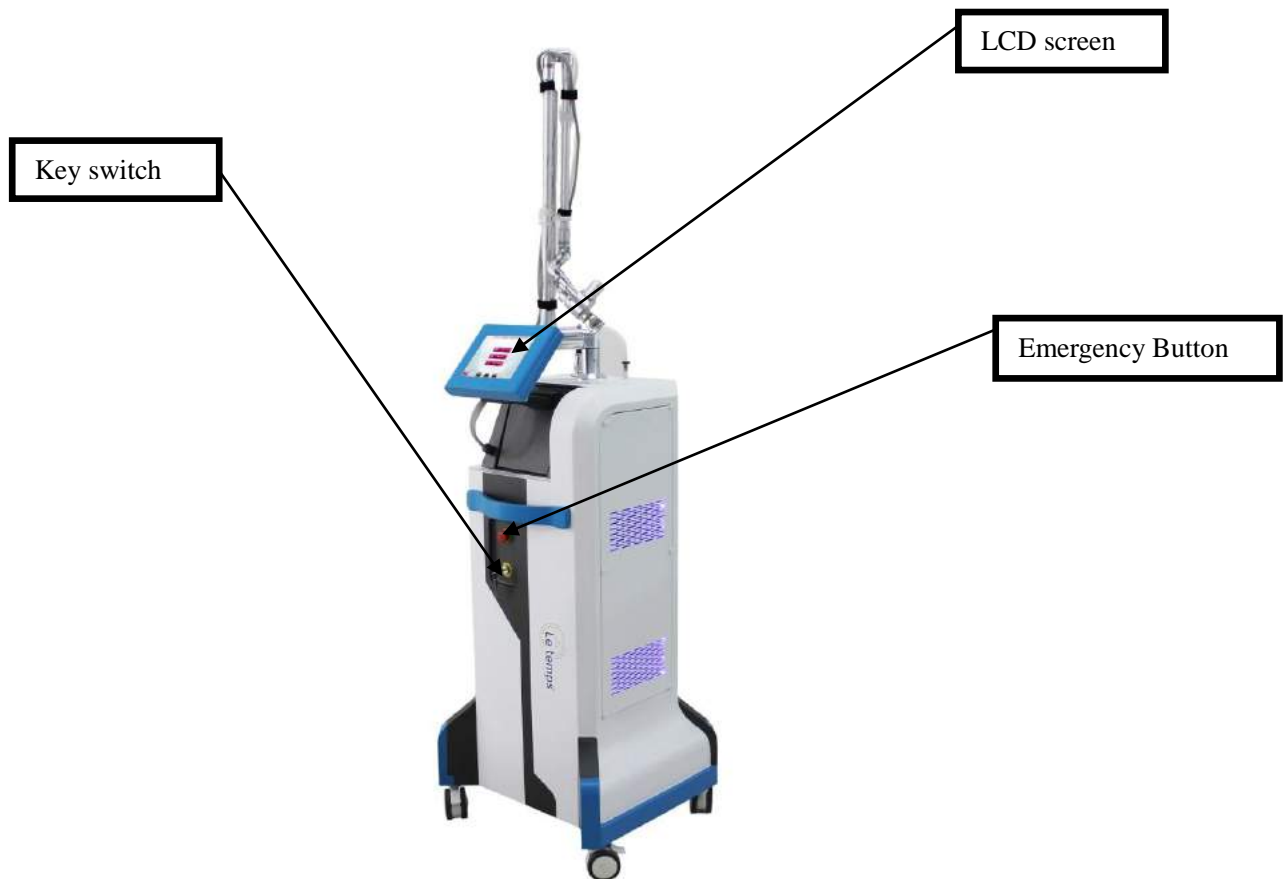
2 Main technical parameter:

Laser Type	CO ₂ gas optical laser
Laser wavelength	10.6μ m
Output power	30W
Cooling method	Wind cooling system

3 Main physics parameter:

Dimension of crust	39×40×100
Radius of light-conducting arm	1m

4 Name of every part and function



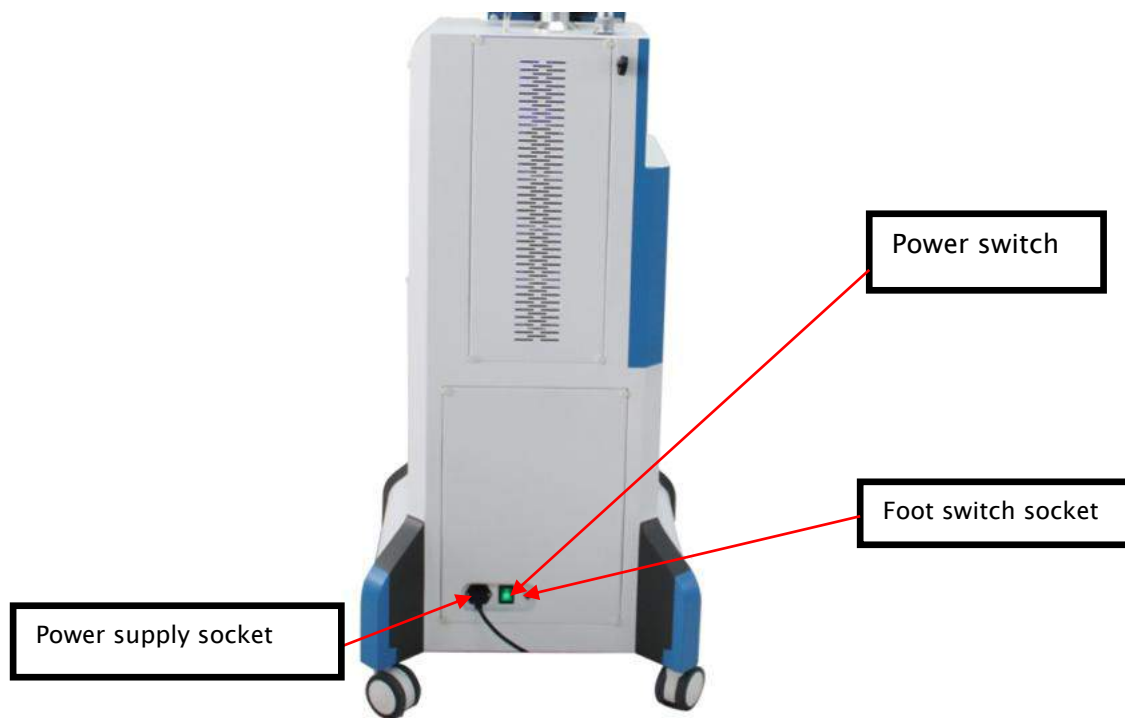
Urgent stop : When something emergency happens push down, the power is off.
Screwed clockwise, the power supply is on.

Key switch : Screwed clockwise, the power supply is on.

Screw to the original part anticlockwise to power off.

【Notice】 :

Never connect this equipment with any other equipment! Otherwise it will cause damage and risk of electric attack!



- Power switch: Main power switch of entire machine which is used to control the connection of machine to network power.
- LCD Screen.: It shows all menus, pictures, parameters which can be choose by operator in order for clients to choose, set and check.
- Finger-touch button.: Choose mode of treatment, set parameters of treatment. Control the standby or ready of product.
- Foot switch socket.: Connect foot switch, control the output of laser

5 Operation condition

Temperature of environment: +10°C~+40°C

Relative humidity: 30%~75%.

Atmosphere pressure: 700 hpa~1060hpa

Power supply: 220V~±10%, 50Hz, 10A

- Operation mode: sequence, random
- Cooling system: wind cooling
- Configuration of power supply
Working power: 220V~±10%, 50Hz, 10A

Instructions for relative parts with electrical configuration:

Insurance pipe: The F10A130V/φ 5×20 insurance pipe installed in power supply

socket is used for overload protection of laser power, network power, control system and cooling system

Power supply input socket: The power supply which was equipped with product was connected inside this socket; another end should be inserted to network power supply socket.

【Notice】: The power supply of Fractional CO2 Laser is equipped with single-phase 3 lines power supply pin to make sure your network socket is well grounded.

6 Function screen

1. Boot interface



After opening machine, the screen will show company logo

2. Operation choosing screen

The screenshot shows the 'FRACTIONAL LASER SYSTEM' interface. At the top, the title 'FRACTIONAL LASER SYSTEM' is displayed in red. Below the title are three main operation mode buttons: 'Scan' (with a grid icon), 'Normal' (with three arrows icon), and 'Gynecology' (with a female symbol icon). At the bottom of the screen, there are three status indicators: 'LASER OK', 'TEMP OK', and 'VOLTAGE OK'. Red arrows point from callout boxes to each of these elements.

“Scan” enter the scan Laser Mode

“Normal” enter the normal Ultra Pulse Mode

“Gynecology” enter the vaginal treatment Mode

Laser will test automatically when start machine, about 1 min.

2, after the standby screen, choose the treatment Mode

“Scan”, enter the Fractional Laser screen, Use for the treatment of different Shape、Area and Density.

“Normal”, enter the normal Ultra Pulse screen, use for the treatment of laser cutting、Single Pulse and Ultra Pulse.

“Gynecology”, enter the Vaginal Laser treatment..

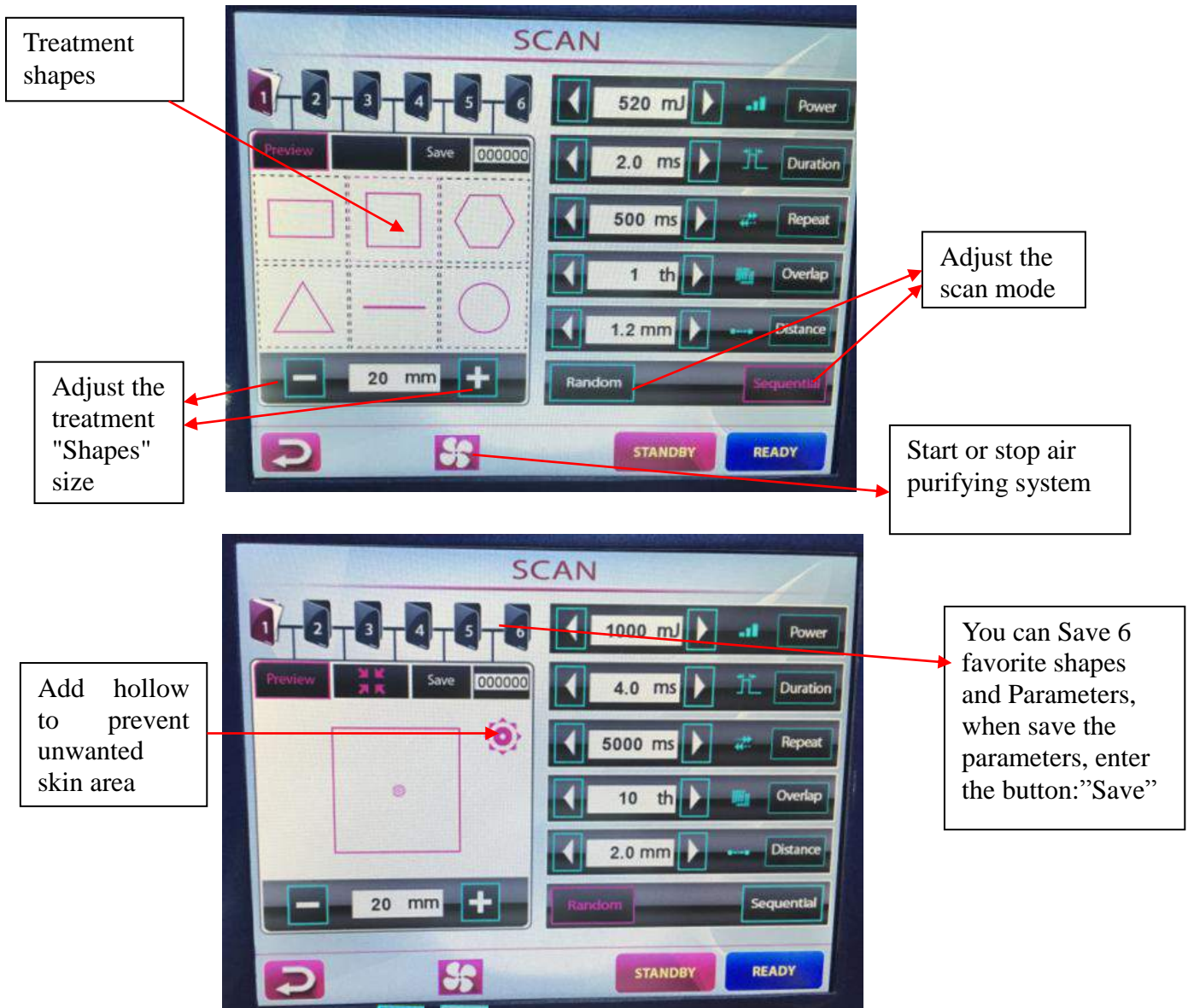
3, after standby, choose the Mode and set the parameters.



4, After Finish the setting, press the Foot switch to do the treatment



5, the detailed application of each Mode as follows



Application Method of Mode “Scan”



Press “Scan”, the screen turn to CO2 Fractional Mode screen.





1, Select “Power”, press   to set the power(Point Energy:10-1000mj)


2, Select “Duration”, press   to set the stay time of each spots
Range: 0.2ms-4.0ms

3, Select “Repeat”, press   to set the Interval time of spots
Range: 500ms -5000ms

4, Select” Overlap”, press   to set the repeating shot times of spots
Range: 1th-10th

5, select “Distance”, press   to set the distance between spots
Range: 0.2mm-2.0mm

6, select “Sequential ” or “Random” to set the Scan Modes

7, Select shape, press  to set the shot shape
Shapes: Triangle \Square\right hexagon\Circle\Rectangle\Line
Use “+ -“to change the size of shape
Range: 4mm-20mm

8, Use “Save” to save parameters

Save the parameters in the Number Key. For example, Press the number” 1” ,then set the parameters (size, power, duration etc.) then press “Save”, the parameters have be saved, next time when you use the machine, you just need press “1” and the parameters you saved will be input automatically.

9, After Finish the settings, press “READY” then press Foot switch to burst laser

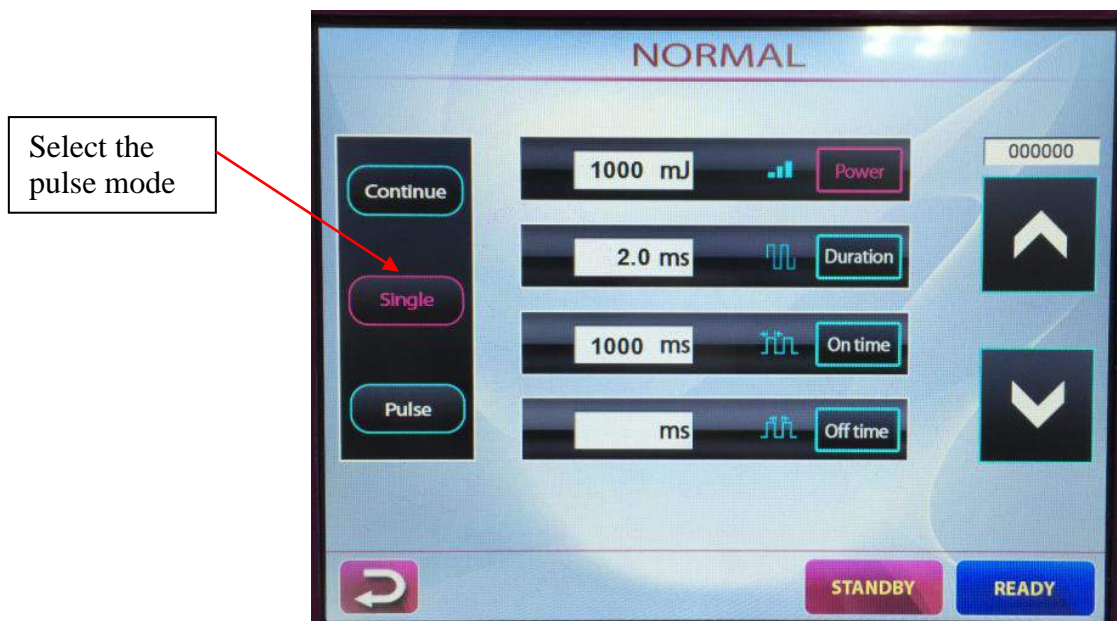
10, when burst laser, press “Preview” to turn on the Red light of treatment head to preview the shape.

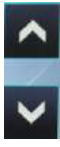
11, Press “” to start or stop air purifying system.

12, finally, press “” to return mode choice.

Application Method of Mode “Normal”

Press “Normal”, Enter the CO2 Normal Mode screen.



1, Select “Power”, Use  to set the power Range: 10-1000mJ

2, Select Mode

Mode1: Continue / Mode2: Single / Mode3: Pulse

3, Use  set the time.

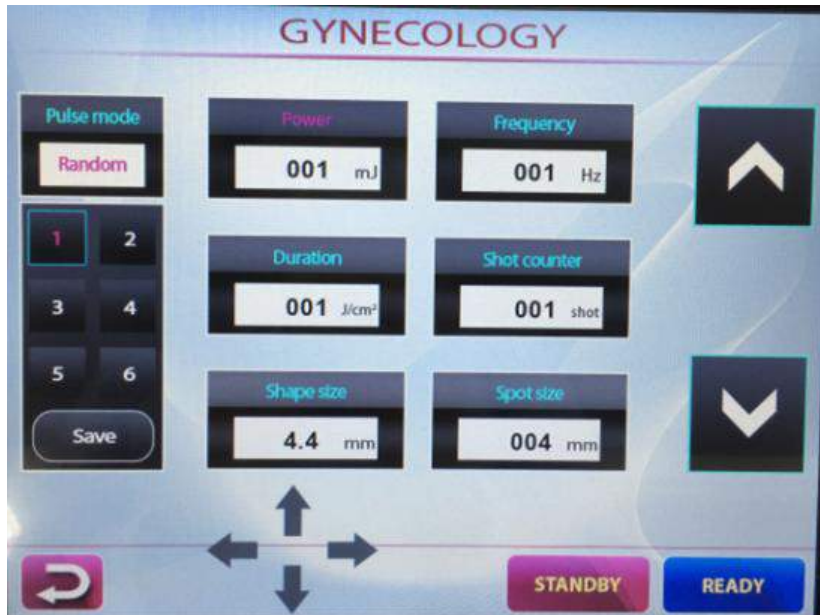
Mode1: Continuous unavailable

Model2 : Single Duration Range: 0.1ms-2.0ms

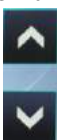
Model3: Pulse On Time Range: 10ms-1000ms Off Time Range: 10-1000ms

4, Press “Ready” then press Foot switch to burst laser


Application Method of Mode “Gynecology”



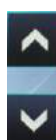
Press “Gynecology”, Enter the CO2 Gynecology Mode.

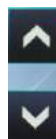
1, Select “Power”, Use  to set the power(Point Energy:1-40mj)


2, Select “Duration”, Use  to set the stay time of spots
Range: 1-10

3, Select “Frequency”, Use  to set the frequency of shots
Range: 1 – 10Hz

4, Select “Shot Counter”, Use  to set the number of shots
Range: 1-10 shot

5, select “Shape size”, Use  to set shape size of shots
Range: 4.4mm-5.0mm

6, select “Spot size”, Use  to set spot size of shots
Range: 4mm-100mm

7, Press  to adjust position of laser shots.

8, After finish the settings, press “READY” then press Foot switch , machine begin to

burst laser , lift foot off the foot switch, laser stop shot.

7、 Installation

- (1) Fractional CO2 Laser should be installed in surgery room or treating center with temperature $+10^{\circ}\text{C}\sim+40^{\circ}\text{C}$ and relative humidity 30%~75%.
- (2) The net power supply should follow requirements as before, please let expert electrician to check it.
- (3) Install foot switch: Insert the pin of foot switch to foot switch socket on back side of equipment, and then tighten screws.

Warning

Precise optical laser was installed inside the light-conduction arm of this product.
It should be well protected when removing and using to avoid collision.

Warning

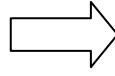
Installation and usage deviated from this instruction menu will affect the performance of this product and it may cause laser radiation or attack.

- (4) Install the light-conduction arm(also see videos)





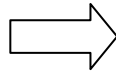
1. Hold it horizontally and vertically, then insert the pedestal



2. Tighten the screw



3. Install the fractional treatment head



4. Use the bandage to fasten the air pipes on the 7-jointed arm light conducts



5. Connect the air pipe with the filter

(5)Change the Scan to Normal laser head

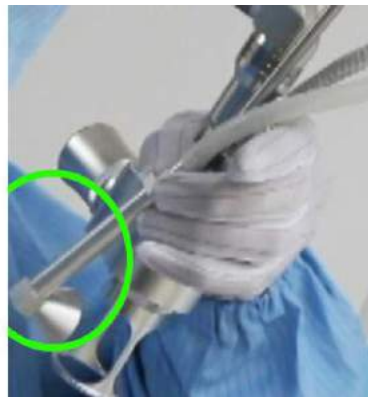


1. Unscrew the Scan Head from light-conduction arm

2.Screw the head to the ARM

(6)Change the Fractional to Vaginal treatment head (Please see video first)

【NOTE】 You can only through the “fractional head” to change to vaginal head!!!



Use screwdriver to remove the screw

Remove this part

Remove the inhale bowl

Remove the fractional head and Install the vaginal head:



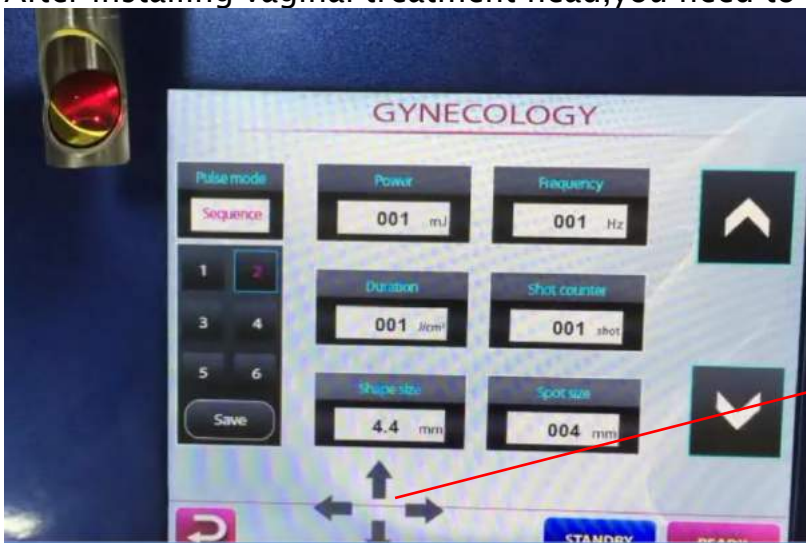
Install the 45degree head




Notice: There are 4 vaginal treatment heads, 2pcs are used inside body to tighten vaginal, 2pcs are used outside body, tighten the vulva, skin rejuvenation, improve the labia color(one is used for Vulva, the other is used for clitoris)

8.Adjust laser light position

After installing vaginal treatment head,you need to adjust output red light pattern.



Then adjust red light position through  screen. Until the square pattern is correct.

Pls. adjust the laser depend on the require:
the square shape must be show in the center and within the lens area.

After installing taper lens treatment head, you also need to adjust output red light pattern



Regarding this vaginal head, just need to adjust the red light position on the



screen. Pls. adjust the laser depend on the require: the round shape must be show in the center and within the lens area.

Notice: Please sterilize the head after each treatment, with professional high temperature disinfection instrument. The same as sterilize the scalpel. Otherwise it will be blood infection dangerous.

9、working method

● connection with network power

Connect network power with machine electric outlet by the power line coming with the machine

● power on

- Close power switch, green indicating lamp will be on.
- Make sure the button of emergency stop switch is up.
- Insert the key into lock switch, rotate 90 degree clockwise to working state when wind cooling system starts to run.

● Parameters setting

- The system enters standby state, choosing treatment mode and setting necessary

treatment parameters.

b) Set parameters from weak/mini to strong/max which need to be suitable for patients'skin tolerance.After choosing suitable parameters, the patients can receive the treatment, or else it will harm patients'skin. Attention!!!

● laser output

a) After parameters setting, press the key "READY", the laser will be lightened and the system is at ready state when treatment preparation is ok.

b) When treatment head aiming to patients'treatment area,press the foot switch, with continuous beep, the laser will work according to the treatment mode and parameters chosen; loosen the foot switch, the laser will stop to work.

Notice: when the system is working, do not aim the treatment head to dangerous area, such as eyes.avoid to press the foot switch make laser output and cause accidents.After finishing the treatment every time, loosen the foot swith first, when the laser stopped to work, then loosen the treatment head.

● pause

You should press standby button to break off the treatment, and the machine will be on standby state which is a safe state when press the foot switch, there are not laser output making sure the treatment is safe.

● emergency

If there appears emergency during operation, press down the emergency switch, turn off the power switch on the back of the machine and the whole machine is no power. After malfunction removal, close the power switch and rotate the emergency switch, then the power is on.

It is forbidden to lift the emergency stop switch before malfunction removal.

The emergency stop switch is not used as power switch of machine

● power off

a) Press the key "STANDBY", make the machine return standby state

b) Rotate lock switch 90 degree anticlockwise to be power off position

c) After finishing the operation, unplug the key which should be kept by specially-assigned person.

d) After closing the power switch, unplug powerline plug from network electric outlet which makes the machine power off.

Warning

If operations go against the guideline of this manual, it will cause the danger of laser radiation.

● disinfection

Before and after operation, clean the aiming head 1-2 times using gauze or cotton bud with medical alcohol.

- eject smoke

During operation, pigment granule of tissues possibly splash, or there appears smoke,so it is a suggestion that use our air purifying system to clean smoke in the room.

【Notice】It is forbidden to replace aiming device when the machine is on “READY”state.

III.Maintenance and repair

1 Simple maintenance

1. Clean aiming device

The output len back of aiming device should be checked whether there are flying objects on its surface.If yes, clean it using cotton bud .

Warning

It is forbidden to check or clean output lens when the machine is power on.

2. Clean machine surface

After using the machine every day, close the power switch of machine, unplug powerline from network power socket, and then clean machine surface with a little wet and soft towel.

2. Machine repair

1. There are laser inside of machine and accurate optical system inside of light arm, so non-professional maintenance personnel do not presume to maintain or replace parts. Maintenance must be done by professional person. Professional person must pay attention to protect the laser and light arm, or else it will cause personal injury or machine damage which is not responsible of our company.

2. Please unplug the powerline plug from network power socket when mainten the machine.

3. If it needs power to inspect maintenance results, make sure that person and machine are safe first, and then connect the powerline of machine with network power socket.

4. It needs to use the parts supplied or allowed by our company to mainten the machine (like power supply, laser power light arm), or else it will cause any damage of person and possession which our company is not our company's responsibility.

3. The judgment of abnormal phenomenon and maintenance of contact.

- the judgment of abnormal phenomenon

phenomenon	checkpoints
No power	<ol style="list-style-type: none">1. If network power has power.2. If power plug of machine is connected well.3. If power line is damaged.4. If protective tube is damaged5. If power switch is closed.6. If the emergency stop switch is lift.7. If the lock switch is opened.
There is no laser output or beep after pressing down the foot switch.	<ol style="list-style-type: none">1. If the system enters "ready" state2. If the foot switch is normal.3. If there is error code on the display screen.
other problems	Please contact your agent or manufacturer.

Service

When your machine does not work normally, please do not presume to open or maintain it, please contact the service department of our company. You should advise us the machine number and the detailed problems of the machine. If you presume to open the machine without our company's permission, our company will not response for warranty any more.