

Xenopro Fractional Co2 laser

Thank you for choosing our products!
Please read this manual carefully before operate the
machine, and retain it!



Epione Care AB

Content

Safe Guidelines	4
-----------------------	---

Preface	4
Operating instructions	6
1 Principle of System operation.....	6
1.1 Theory of CO ₂ Fractional Laser	6
1.2 Equipment description.....	6
1.3 Main components	6
1.3.1 Sealed-off Xenopro fractional Co2 laserdevice and light indicator.....	6
1.3.2 Main power supply of the laser	7
1.3.3 Main control panel.....	7
1.3.4 Cooling circulation system	7
1.3.5 Foot switch	7
1.3.6 Articulated Arm	7
2 Structure Name	7
3 Preparation for Start-up	9
3.1 Unpacking inspection	9
3.2 Connection of Articulated Arm.....	9
3.3 Coolant liquid input.....	9
3.4 Input voltage checking.....	9
3.5 Power cord connection	10
3.6 Foot switch connection.....	10
3.7 Trial operation	10
4 Operation method.....	10
4.1 POST (Power on self test)	10
4.2 Operation and Setting	10
4.2.1. Therapy normal mode.....	11
. Single pulse	12
. Repeat pulse	13
. Continuous pulse	13
. Super pulse	14
4.3 Scanning mode output	14
4.3.1 Installation	14
4.3.2 Interface of scanning working mode	15
4.3.3 Graphics Selection.....	15
5 Protection and Cautions.....	19
5.1Warning interface	20
5.2 Indication of the cooling circulation system.....	20
5.3 overheat protection	20
6 indicating light.....	20
7 Attentions.....	20
8 Maintenance	21
8.1 Lens cleaning.....	21
8.2 Internal cleaning of the instrument.....	21
8.3 Power calibration.....	21
8.4 Fuse replacement	21
8.5 Tool-bit disinfection.....	21

9 Accessories	22
10 Troubleshooting	22
11 Technical parameters	23
12 Quality assurance and after-sales service	24
13 Internal system structure diagram	25
14 Signs meaning	25
15 Clinical use guidance	26
15.1 the characteristics of skin type and the notice of preoperative preparation	26
15.2 anesthesia points and the laser parameters setting.....	27
15.3 post-operative wound management and ongoing treatment and protection of the skin....	28
15.4 treatment times and effects	30
15.5 indications treatment benchmarks	30
15.6 the needed attention of matters after treatment.....	32

Safe Guidelines

The following information includes product design, technical specifications and handling precautions for the proper use of equipment to provide security guidance.

Xenopro fractional Co2 laser therapy instrument, the design and production are in accordance with these following three safety regulations:

1. Electrical Safety Specifications
2. Laser radiation safety norms
3. Electromagnetic radiation safety norms

Though Xenopro fractional Co2 lasertreatment device with security design, it can ensure the machine's safety only when it is used properly. Please turn to chapter 7, the specific operation caution, for your reference.

Although the electromagnetic compatibility of this instrument has passed the EN 60601-1-2 performance test, you should also avoid using it in strong electromagnetic interference regions.

Preface

30W Xenopro fractional Co2 lasertreatment machine is an intelligent laser medical device. This machine is good at perfect design, nice appearance, reliable performance and easy operation, etc. Its function and technical indicator have reached the international level, which is an upgraded product in our country's similar instruments. They are mainly sold to America, Europe, Japan, Korea and India.

This machine is of vertical structure, which adopts low-order mode carbon dioxide laser. It has a good laser mode, small focused spot, high power density, and perfect wavelength biological effect. Apart from that, it also has a high speed of cutting, less bleeding, good coagulation, and clear surgical visual field. Flexible using, easy operation, and large treatment screen are concluded as well. Stable laser power and free pre-adjusted treatment size, which can diagnose the treatment situation by itself. This machine can be used in beauty hospital, large beauty salons and private clinic.

This treatment device can be widely used in dermatology, gynecology, ENT, dental, general surgery, beauty surgery, such as cutting, vaporization, ablation, coagulation therapy.

Medical	Any parts of various moles, spots, warts, nasal polyps, turbinate hypertrophy, snoring, vascular tumors, scars, skin tag, hemorrhoids, corns, under-arm odor, cervicitis, cervical erosion, leukoplakia, circumcision ,tattoos ,warts, etc.
Beauty	Any parts of various moles, spots ,pimples, acne, syringoma, lipoma, hemangioma, scars, eyelid yellow warts, tobacco pouch surgery, tattoos , cutting eyebrow surgery and remove wrinkle surgery, etc
Physiotherapy	Using the expanded beam can treat skin numbness, neck of inflammation, frozen shoulder, arthritis.

Warning

The treatment machine may produce high tension electricity, so the operator should use it carefully. This manual provides detailed instructions for safety operation, please read it seriously before starting. Any incorrect using and adjusting may cause laser radiation harm or high voltage electric shock.

Operating instructions

1.Principle of System operation

1.1 Theory of Xenopro CO2 fractional laser

The wavelength of Xenopro fractional Co2 laser is 10.6 μ m, which can be fully absorbed by human biology tissue (all the skin are available).The heating and galvanomagnetic effect can minimize bleeding or even no bleeding in the process of cutting, burning, gasification and minimally invasive treatment. Therefore, Xenopro fractional Co2 laseris widely used in this kind of treatment.

Our sealed-off fractional CO2 laser, whose output laser-light will be transferred by articulated arm, which has better sense of direction and higher energy density.

The output laser-light is one kind of invisible light, we adopt a red semiconductor laser-light as a guide light.

When the laser beam go through the focus lens, the produced heat will gasify the target tissue, which can be used in cutting and burning. The unfocused laser beam can be applied in the coagulation surgery, for its low energy density.

1.2 Equipment description

The machine uses the most advanced microprocessor technology (controlled by touch screen) to control the corresponding power, so that it can drive the sealed-off laser device output laser. The human interface design will bring you convenience and safety.

1.3 Main components

1. Sealed-off Xenopro fractional Co2 laserdevice and light indicator
2. Main power supply of the laser
3. Main control panel (LCD touch screen)
4. Cooling circulation system
5. Foot switch
6. Articulated arm

1.3.1 Sealed-off Xenopro fractional Co2 laserdevice and light indicator

Sealed-off Xenopro fractional Co2 laseris made of glass pipe with 900mm length and its effective gas is CO2. There is a lens on each side, besides, electrode and water cooled-tube on the lateral side. When the electrode is connected with the high-tension current, CO2 will drive to produce laser and come out from the

germanium lens. The visible guiding light will show us the position of output point.

1.3.2 Main power supply of the laser

The main power supply is mainly made up of high-voltage switch power, which is used to light the Xenopro fractional Co2 lasertube.

1.3.3 Main control panel

Main control board is made up of LCD touch screen and control circuit board. All the functions can be realized just by the touch screen. The displayed power and time are very accurate, so it suits for basic-level medical cosmetology organization.

1.3.4 Cooling circulation system

For the cooling circulation, we adopt the closed cooling mode. And it's mainly made of cooling water tank, water-adding joint, and water pump and off-water protector. Besides, water pump will drive water to reach the cooling circulation effect.

1.3.5 Foot switch

The foot switch controls the output of the laser. When you step on it, the baffle of electromotor will open, similarly, the laser will come out from the end of the joint arm.

1.3.6 Articulated arm

Our laser output system is seven-joint light guiding articulated arm, and the max working radius is 110cm. So the operation is easy and convenient.

2. Structure name



The front of fractional co2 laser

- 1—Option scanner
- 2—Key switch of the power
- 3—seven-joint light guiding articulated arm
- 4—emergency stop switch
- 5—liquid crystal touch screen



The back of machine

Note: fuse socket is under power supply **and** partial machine has collocated air switch.

3 Preparation for start-up

3.1 Unpacking inspection

After you open the package, please make sure the machine is not damaged, and all the circuit is connected well and parts are complete (refer to the catalog of parts).

3.2 Connection of articulated arm

Take out the articulated arm, and connect it to the socket of joint arm, and screw it tightly.

3.3 Coolant liquid input

A: Fill in water

Twist the screw of “water inlet” and “air switch” off, fill in water from the “water inlet” into the machine till water comes out from the “overflow” gap, and then screw the two screw caps tightly.

B: Drain off water (for special situation)

Twist the screw of “drain outlet” and “air switch” off, the water will flow out. After all the water has been removed, please screw the two caps tightly.

- PS : 1. Water inlet and drain outlet are the same one, but they both have their own way. Please do as 3.3.
2. When you are filling water, you'd better take a pot under the overflow gap.

Warning : Do not start the machine without water in it

Coolant liquid should be pure water or steamed water.

3.4 Input voltage checking

Before you plug the power supply line, please ensure the voltage of power is the same with the machine's (refer to the name plate), in case of unnecessary danger.

3.5 Power cord connection

Plug one end of the corresponding power supply line into the socket of power, and plug the other end of it into the net power output.(Note: the net power output must be well-grounded, so the hospital class are suggested).

3.6 Foot switch connection

Insert the foot switch's plug into the corresponding socket of it in the machine, when you heard the sound of "crack", which means, it has been well connected.

3.7 Trial operation.

Turn the key to the "1", let the machine run for more than 10 minutes, then turn the key to "0", and turn off the power.

Note: No laser output when the machine is function!

4. Operation Method

4.1 POST (power on self test)

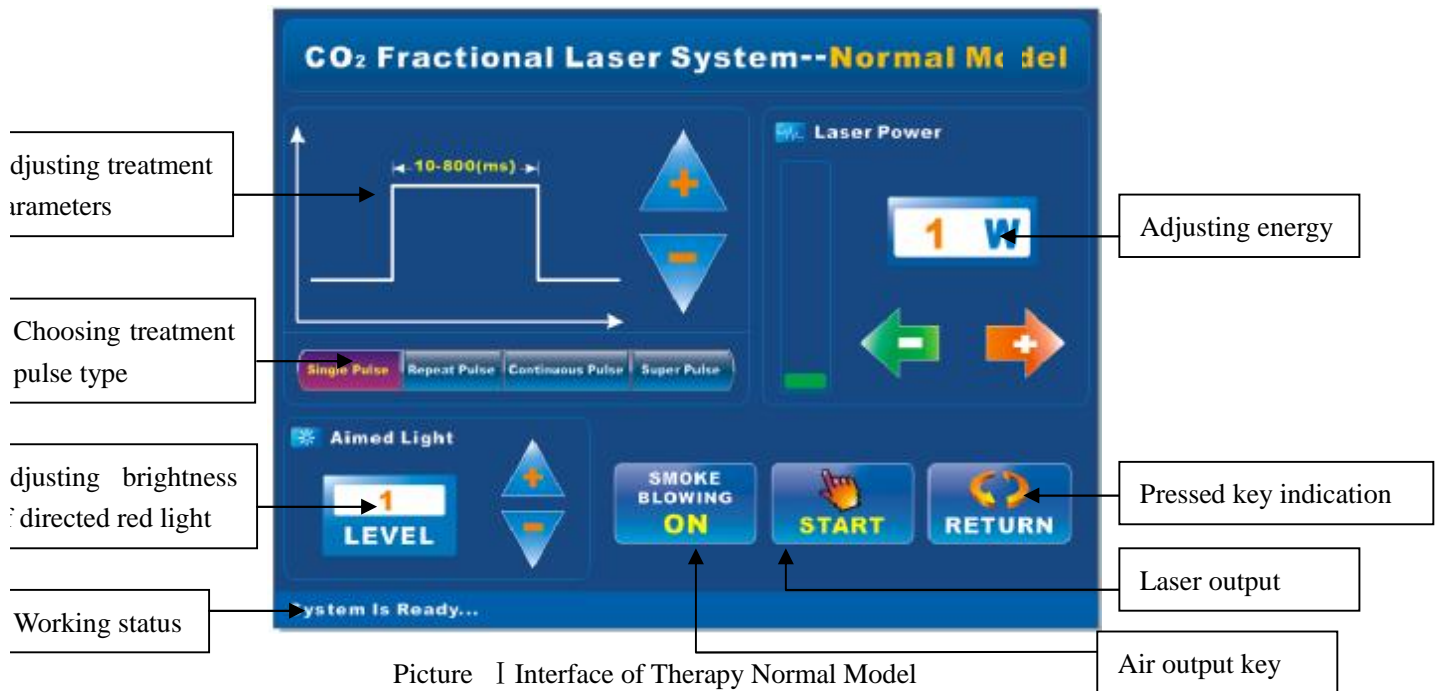
Use the key to turn on the machine and connect the power supply, then the cooling system begins to work; the system will begin the procedure of self-testing. It will firstly test the cooling system, and then power supply and laser tube, if pass, the color will be showed in blue. If all the testing has been passed, it will turn to the main menu page. (If not, it will turn to the warning page.)

4.2 Operation and Setting

If the scanner is not connected after successful testing, it will display the following interface, and three operation modes can be chosen for whichever you need.

**Xenopro CO2 fractional laser machine has two treatment modes:
"treatment normal model" and "Scanning model".**

4.2.1 Therapy normal mode

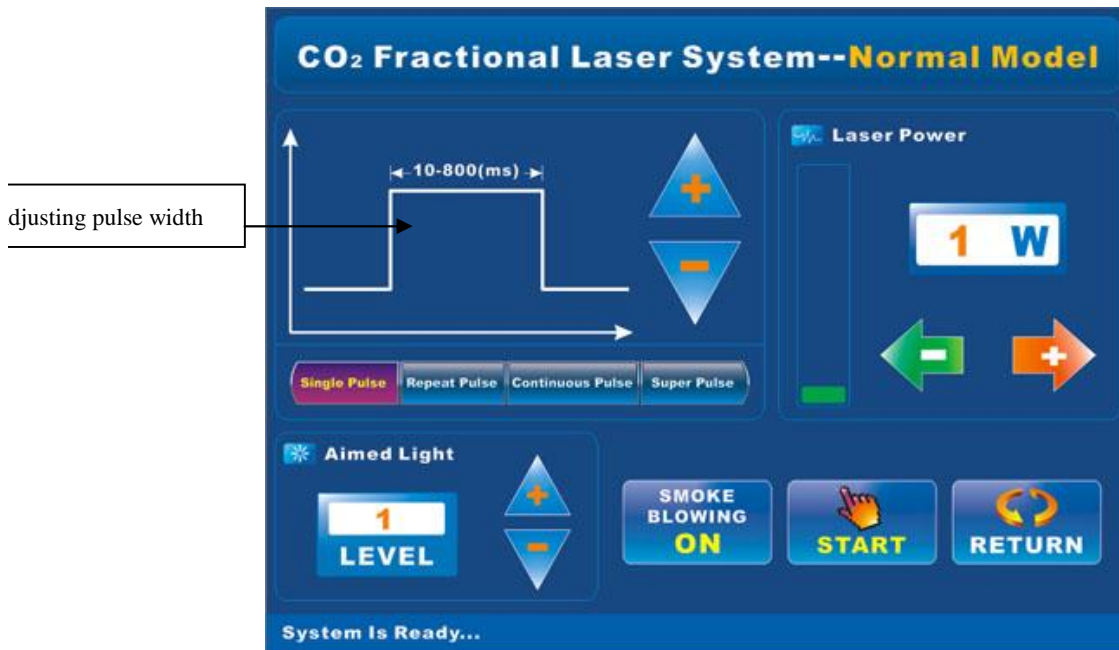


Picture 1 Interface of Therapy Normal Model

- 1、 **Adjusting Treatment Parameters:** Firstly select the numbers to make it turn red, then click “+” and “—” to adjust the pulse width for treatment
- 2、 **Adjusting Energy:** Click directly “+” and “—” to adjust the energy parameters, the energy range from 1W to 30W, and increases or the reduces by 1W as quantity unit
- 3、 **Pressed key Indication:** Click “RETURN” to return to the interface of choosing working model.
- 4、 **Laser Output Indication:** Click “START” key will indicate as “STOP”, and the machine finishes the preparation of output, then step the foot switch to output the laser light
- 5、 **Air output key:** “ON” indicates that press this key will output gas, “OFF” indicates that press the key will stop it.
- 6、 **Working status:** Display machine’s working condition and error forms.
- 7、 **Adjusting the brightness of directed red light:** There are 6 levels to adjust the intensity of red light
- 8、 **Choosing the treatment pulse type:** there are 4 patterns, they are “single pulse, repeated pulse, continuous pulse, and super pulse”

1. **The single pulse output:** step on foot switch can output once only, you need repeatedly step on it if you want to output many times.

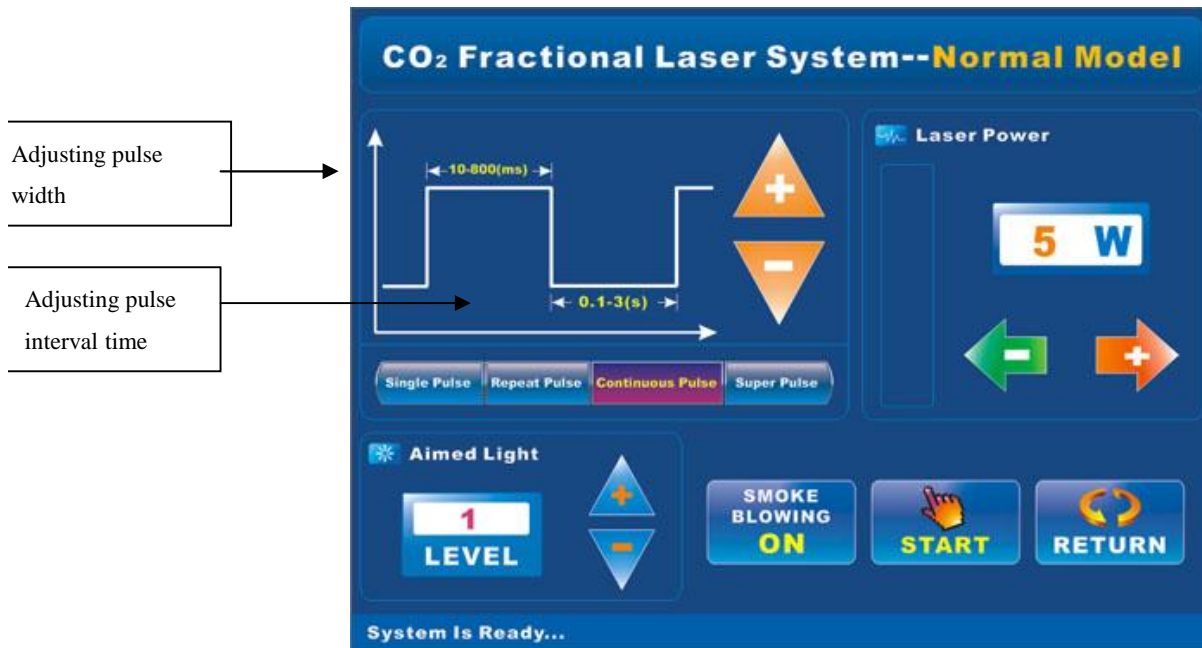
Adjusting range of pulse parameters is from 10 to 500ms, increases or reduces by 10ms as quantity unit.



Picture II Interface for single pulse output

2.Repeat pulse output: Step on the foot switch without loose can output of the modulated pulses repetitively, and when you step off., it will stop.

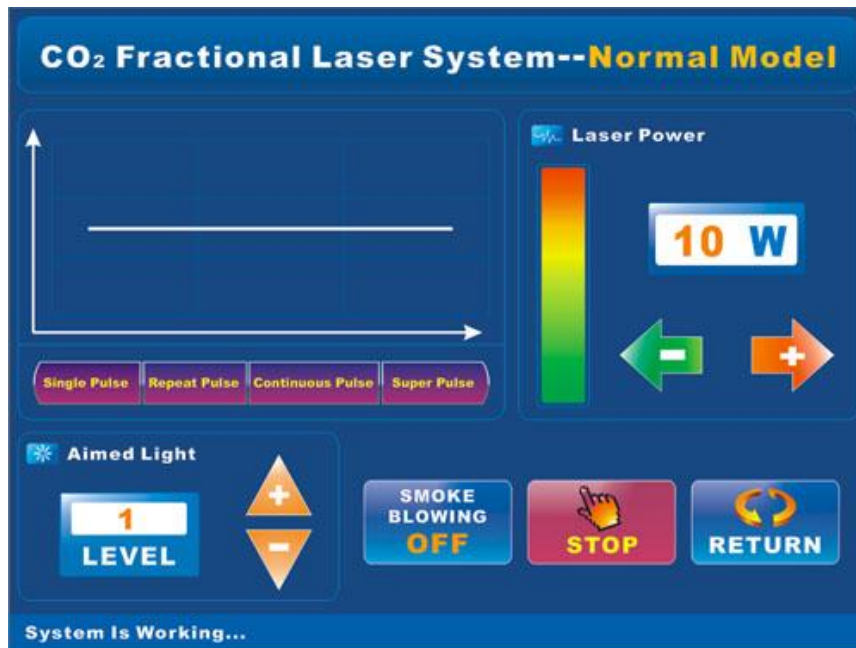
Adjusting range of pulse parameters is from 10 to 500ms, and pulse interval is from 0.1 to 2s, increases or reduces by 0.1s as quantity unit



Picture III Interface of Repeated pulse output

3. Continuous pulse output: Step on foot switch without loose can continuously output modulated laser energy, step-off can stop it.

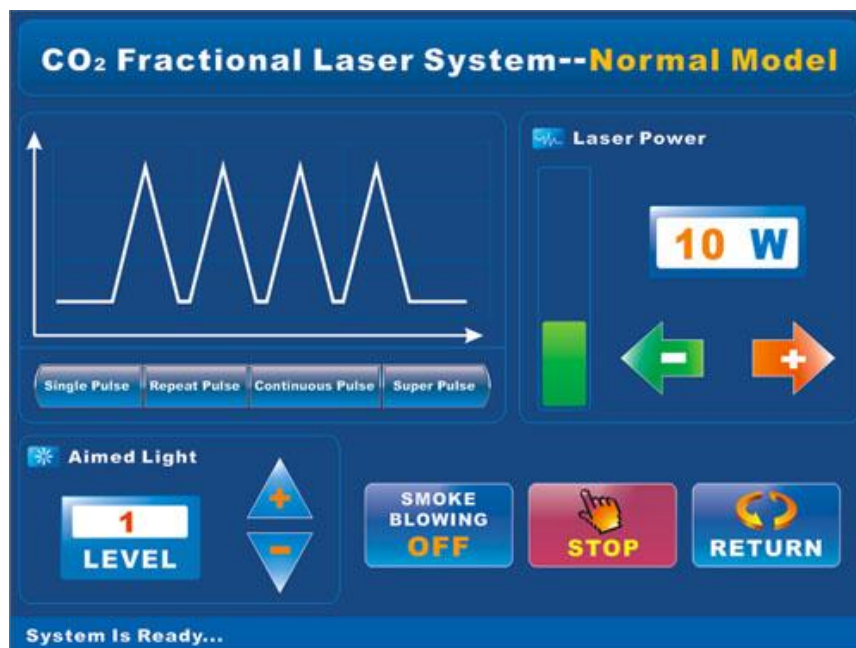
This output pattern, which without pulse-width parameter adjustment, can only adjust the size of energy.



Picture IV Interface of continuous pulse output

4. **Ultra-pulse output:** Step on foot switch without loose can continuously output modulated laser energy, step-off can stop it.

This output mode is without pulse-width parameter adjustment, can only adjust the size of laser energy.



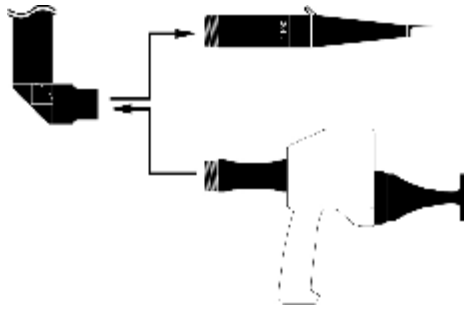
Picture V Interface of Ultra-pulse output

4.3 Scanning mode output

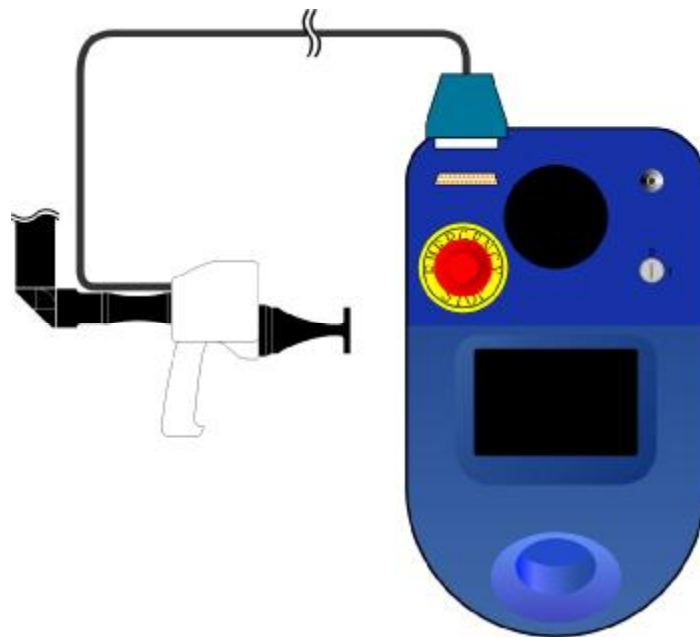
4.3.1 Installation

Please turn off the system power supply before doing these following procedures:

Take the tool bit lenses off the articulated arm, and assemble the scanner. Detailed steps are as follows:

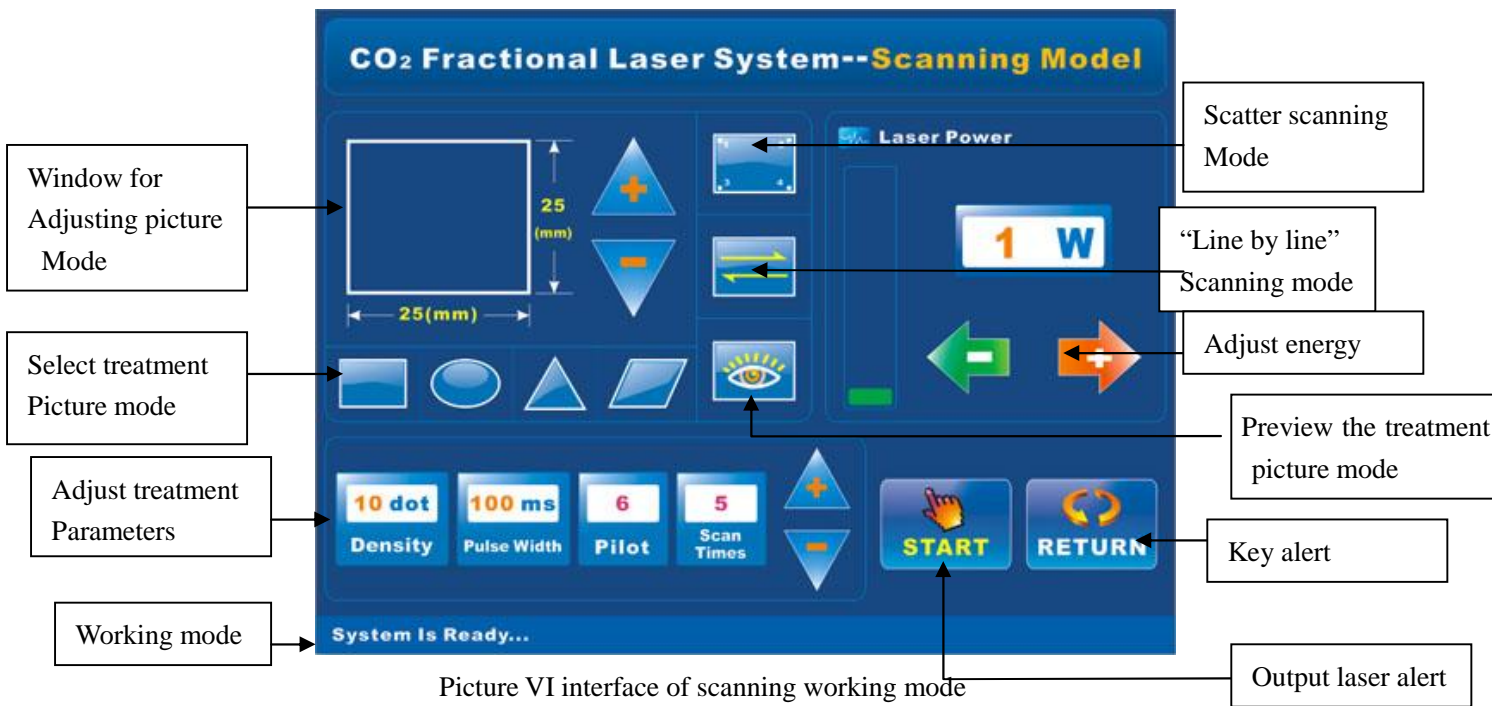


Refer to the following diagram, connecting the 25-pin socket of scanner and the top 25-pin socket of the machine body.



4.3.2 Interface of scanning working mode

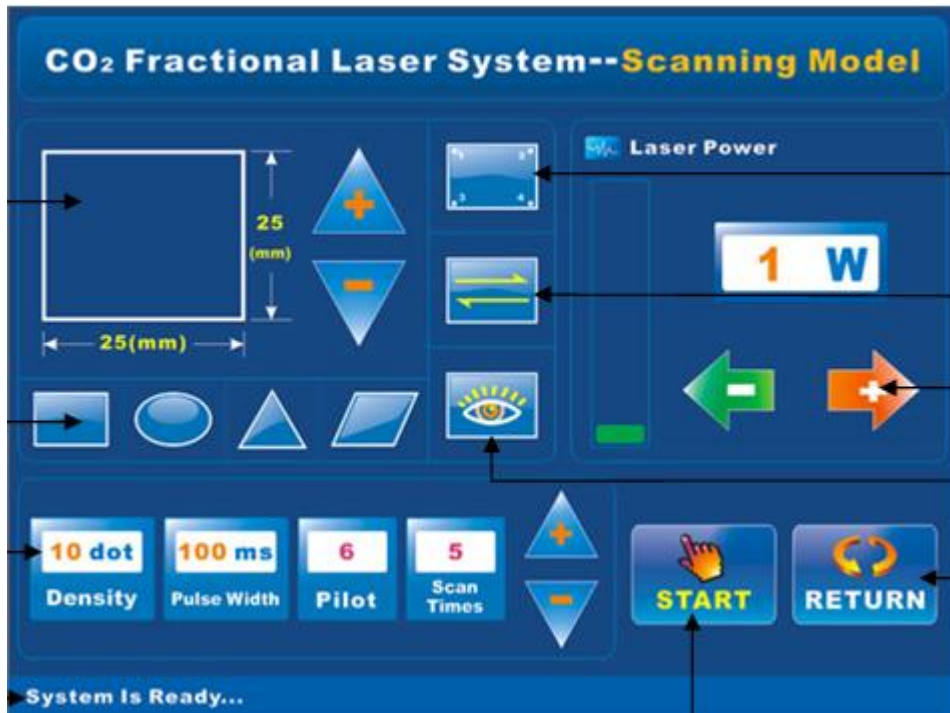
When POST is done successfully, that is, the scanning galvanometer is connected, it will enter the interface of scanning working mode.



Picture VI interface of scanning working mode

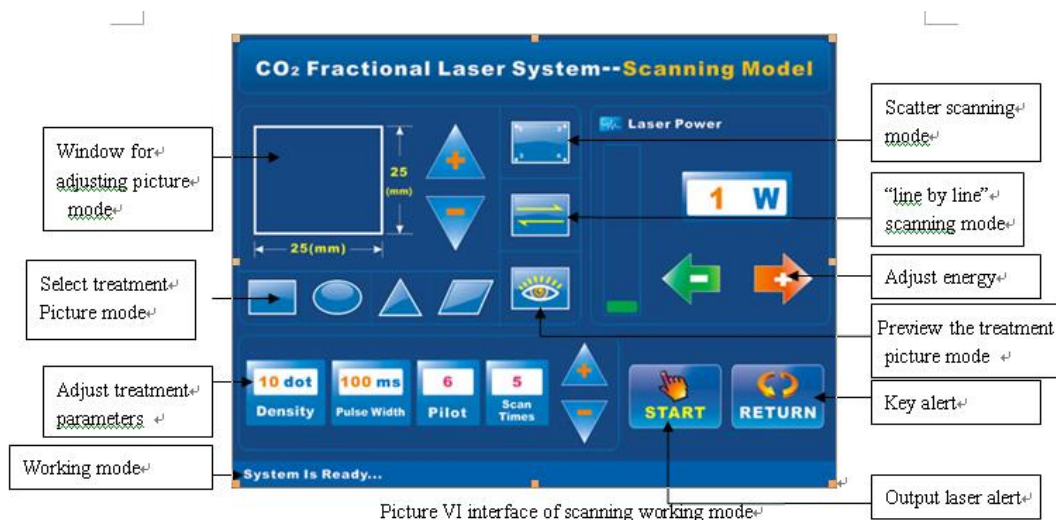
4.3.3 Graphics selection

You can click the "Graphics", in the interface of scanning working mode, to enter into the interface of picture-choosing mode.



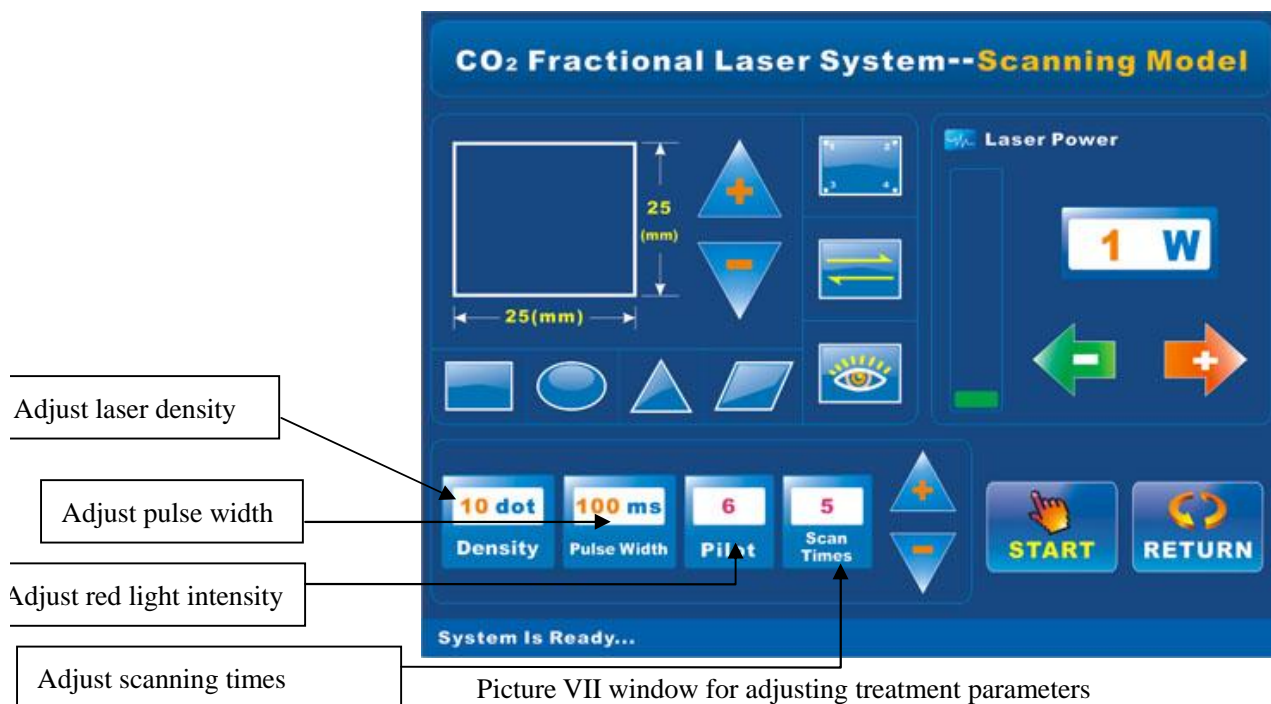
Please choose the graphics at the right menu as you like, and there are 9 kinds, horizontal line, vertical line, triangle, rectangle, parallelogram, circle oval, semi-oval, and rhombus, for your reference.

The interface of scanning working mode:



Picture VI interface of scanning working mode

- 1、 **Scanning mode include two types working modes:** "line by line" scanning mode and scatter scanning mode;
- 2、 **Window for adjusting energy:** press "+" and "-" to adjust the energy, the energy range is 1~30W, take "1W" as the unit for increasing or decreasing the energy;
- 3、 **Window for previewing the treatment picture mode:** this window can preview the treatment picture which has been adjusted according to your own parameters;
- 4、 **Key alert:** press "RETURN" to back to the interface of "select treatment mode";
- 5、 **Output laser alert:** press "START", the key will become into "STOP", laser output is standby, meanwhile, when you press "footswitch", the laser can be charged out;
- 6、 **Working mode:** showing equipment working mode as well as the "error alert information";
- 7、 **There are four items in the window of adjusting parameters:** laser density、 pulse width、 illumination of red light and scanning times;

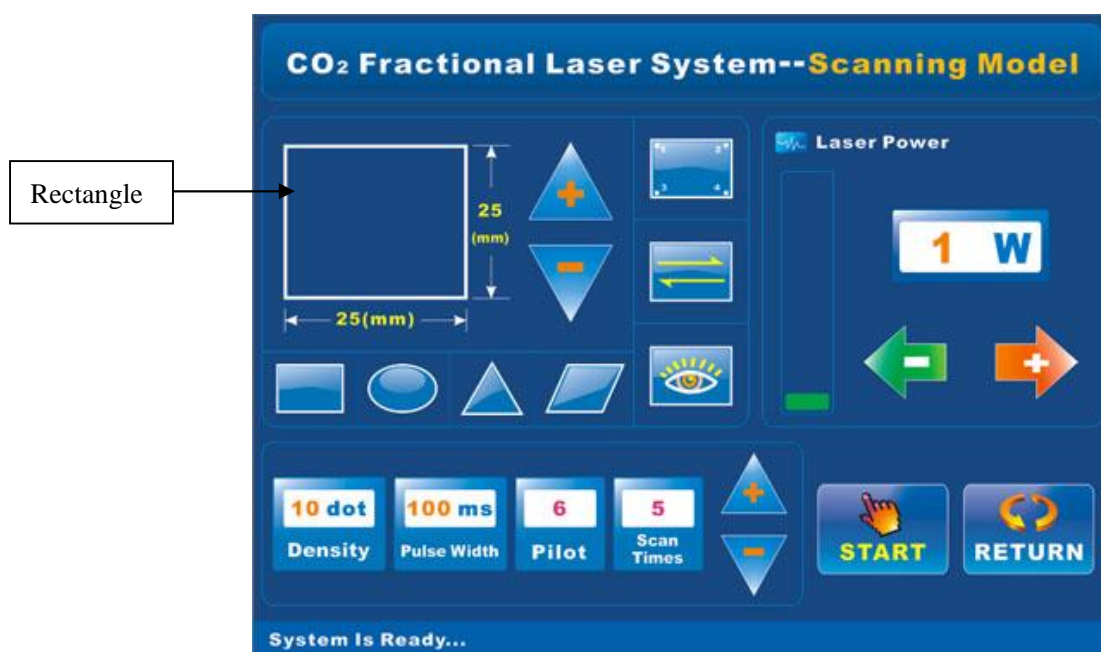


Picture VII window for adjusting treatment parameters

- 1、 **Scanning times:** Press the foot-switch without losing, the maximum repeat time the laser can scan, the range of scanning times: 1~5pcs;
- 2、 **Adjust red light intensity:** the red light direct can be adjusted, the range of the light intensity is: 1-6;

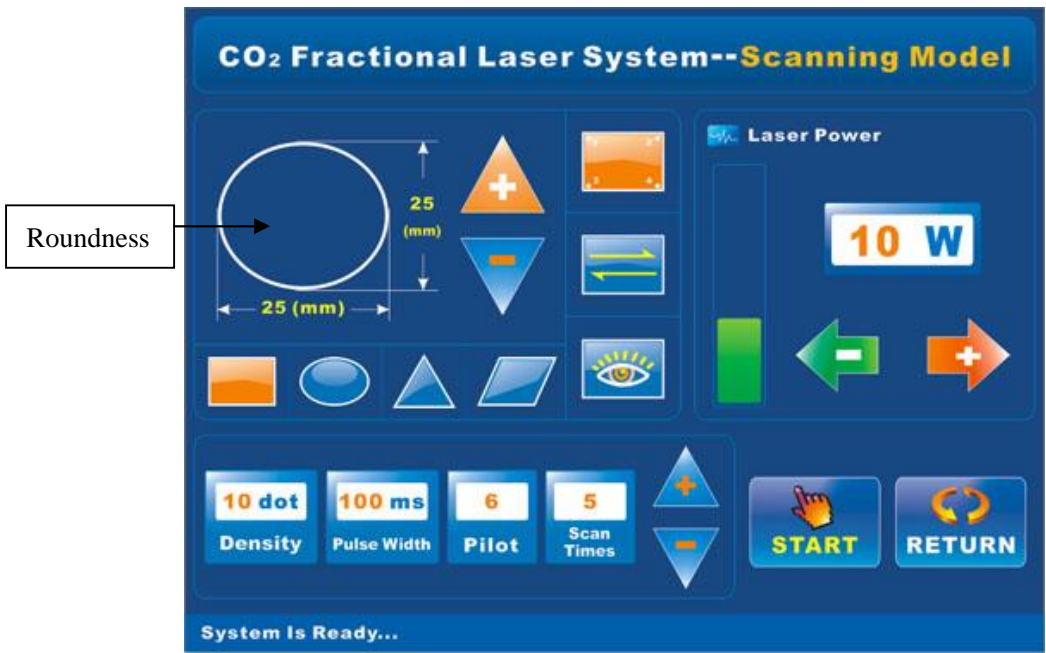
- 3、 **Adjust pulse width:** the range of laser pulse width is “1~50ms”, take “1ms” as the unit for increasing or decreasing the width;
- 4、 **Adjust laser density:** Laser density means the quantities of the laser spots per 1mm, the adjusting range of laser density is: 0.5~4; 0.5 means the laser can shot one spot per 2mm, 1 means the laser can shot one spot per 1mm, 2 means the laser can shot 2 spots per1 mm, by parity of reasoning;
- 5、 **Adjust picture parameters:** all pictures can be adjusted by length and width except triangle, both of the two parameters range of rectangle and roundness is 1~20mm, the range of hemline for parallelogram is 1~6mm, height is:1~14mm; Triangle can be adjusted by three parameters, the range of the parameter sum of the hemline is:1~20mm; the parameter range of the side-line is:1~20mm. All the above parameters shall take “1mm” as the unit for increasing or decreasing the numbers;
- 6、 **There are four types scanning modes can be selected:** rectangle、 roundness、 triangle and parallelogram;

I . Rectangle



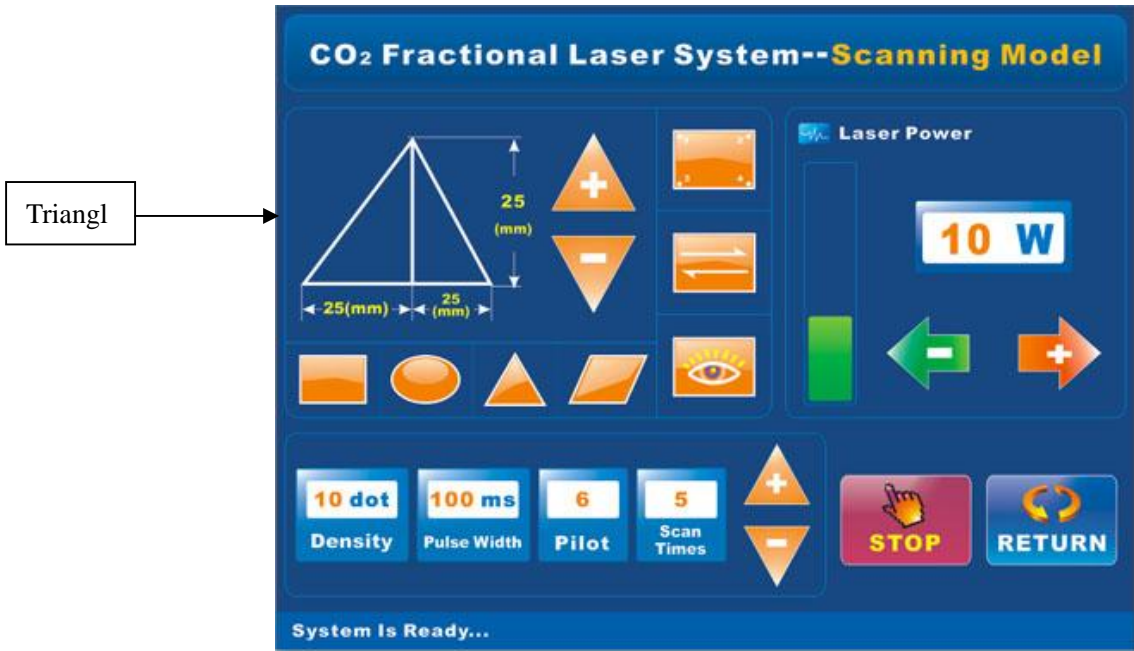
Picture VIII treatment interface of rectangle

II 、 Roundness



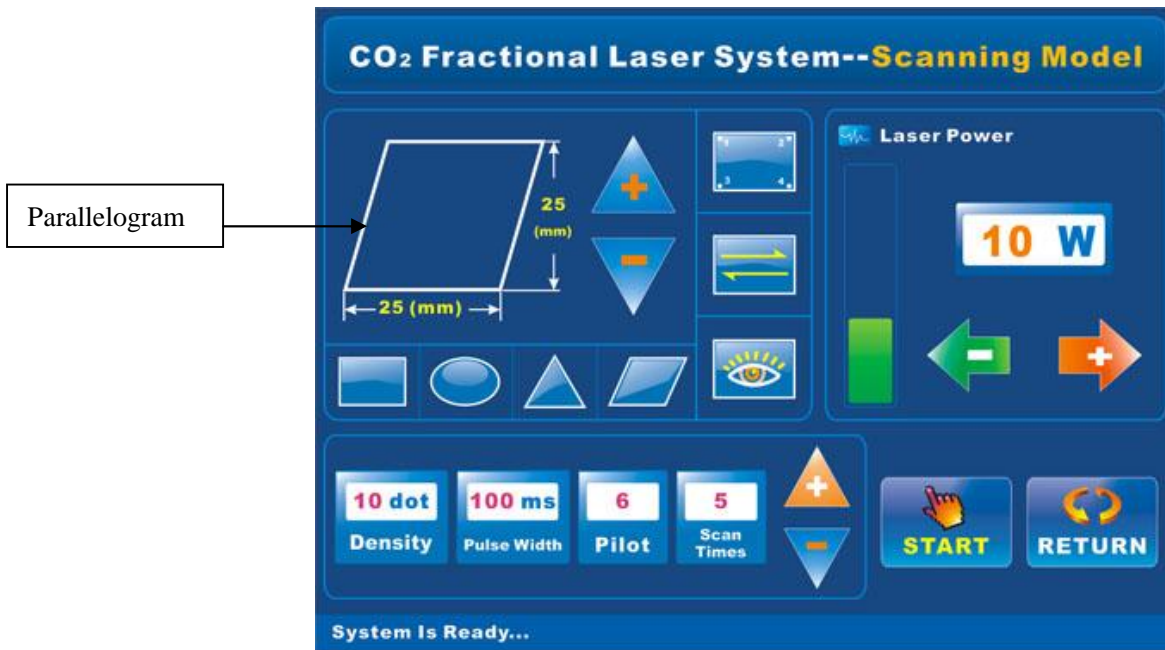
Picture IX treatment interface of roundness

III、 Triangle



Picture X treatment interface of triangle

IV、 parallelogram



Picture XI treatment interface of parallelogram

Error alert:

Scanner error Scanner initialization error PWM error Water level error CO2
 Power supply error Water pressure error Control board 12V error

5. Protection and Cautions

5.1. Warning Interface

In any states, if the cooling system, power supply and laser tube in one or more fails, there will be a warning screen, and the fail parts will be displayed in red.

5.2. Indication of the cooling circulation system

When the machine is started, the pump start working, the cooling fluid circulation system has not reached the normal operating state yet, when the indicator flashes while the machine was given a "beep" sound. When the circulation into the normal state, alert to eliminate, "beep" sound to stop.

5.3 Overheat protection.

To prevent the machine from overheating: when the circulating water temperature is higher than 40°C, indicator lights flashing without a break, and also the loud "beep" sound. You should turn off the machine, let the natural cooling to 25°C below before, then using the machine again.

6. Indicating light

10.6μm of the Xenopro fractional Co2 laseris invisible, as a user operation, the instrument provides red visible semiconductor laser as instructions; refer to the "Aiming Beam" button on the menu. Visible light is adjustable.

7. Attentions

7.1 Laser can not be allowed to irradiate on human's eyes and healthy skin at any time.

7.2 Laser can not be irradiated on smooth surface for preventing eyes and skin from radiating, such as, stainless steel surface, mirror and so on. Otherwise the laser can be formed into reflection or diffuse reflection.

7.3 After disinfect the partial parts of the machine by 75% alcohol, you'd better not use laser until the alcohol is volatilized completely. Or it may cause fire or explosion. Please do not use the flammable anesthetics or oxidizing gas as you use this machine, such as nitrous oxide (N₂O) and oxygen.

7.4 In order to prevent focusing lens be polluted, meanwhile, and keep a clean surgery environment. Please try to use smoking extractor. Tool bit and focusing lens should be cleaned once every 3 months at least.

7.5 When the equipment is used, keep away from the equipment about 35 m, otherwise your eyes will be injured if you directly look at laser. The operator must wear safety glasses during working.

7.6 It can produce a high voltage inside the instrument. It is not available for an unprofessional person to open the instrument case, lest shock.

7.7 Once the machine emits abnormal smell or produced abnormal sounds, please cut off the power immediately, check the power line, and not give power before troubleshooting.

Please use it carefully to avoid damaging, because laser tube is made of glasses

7.8 The temperature range when using the machine is 5 ~ 40 , humidity range is 10% ~80%.

7.9 Please empty water of the tank before moving the equipment in case that the laser tube is damaged by the water (it can be informed into ice during cool day) on the laser tube wall.

7.10 When the spare parts are end of date, please do not throw it away, please disposed according to the regulations of local environmental protection departments.

7.11 Please pull out the key from key- switch when the equipment is not used and then keep it carefully.

7.12 Operating room would better be equipped with free- dust environment or smoking-extractor device

8 Maintenance

The instrument's power supply board and laser tube can produce high-voltage. So please maintain the instrument by a professional to avoid electric shock.

8.1 Lens cleaning

The instrument's out-put power will be decreased a little after half a year, which may probably due to focusing lens, has been polluted. Please use wet cotton to clean the lens carefully.

8.2 Internal cleaning of the instrument

If the inner of machine have been dusted, you can put some detergent or toothpaste on the wet cotton cloth to clean.

Notice: the cotton cloth can not be excessive wetted, or else, it may cause short circuit.

8.3 Power calibration

Every year you should calibrate the laser output power. The professional should use the standard laser power meter to calibrate.

8.4 Fuse replacement

Cut off the power; unplug the power wire before replacing the fuse.

8.5 Tool bit disinfection

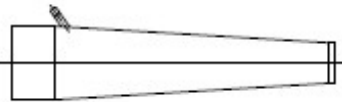
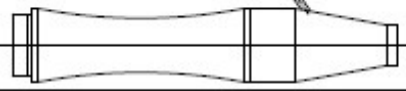
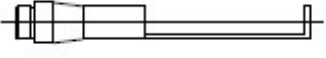

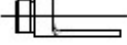
Heads must be disinfected after use (Refer 7.3.)

9 Accessories

Standard configuration

Manual	1
Articulated arm	1
Power line	1
Foot switch	1
Fuse wire($\Phi 5 \times 20$, 5A)	2

Standard tool bit:

DWG NO.	FIGURE
JH-DT-01	
JH-DT-02	
JH-DT-03	
JH-DT-04	
JH-DT-05	

Notice: Tool bit should be disinfected and clean by 75% alcohol before use. You can not use laser until the alcohol is volatilized completely.

10 Troubleshooting

If you meet some problems during operation, please try to do as follows:

Trouble	Possible reason	Resolving method
After start the power supply, the operating panel is not working , either is water pipe (or water pipe is working with shaking or sound)	a. Not plug well. ; b. Urgent switch is on.	a. Checking plug b. Open the urgent switch (it is like a red mushroom)
The machine is running well without the laser output	a. Without connect the foot-switch ; B. Incorrect parameters ; c. Not tighten those two screws after filling water ; Not using key-switch ; Not tighten each part of joint arm.	A. Connect the foot-switch well ; b. Set correct parameters ; C. Tighten screws on the water tank ; plug key switch and set it on “1” ; Tighten each part of joint arm.
No laser output with alarm	The water tank is over hot because of long time working.	Turn off the machine for a while ,till the temperature becomes normal and

		then restart
With big noise when the machine is working	The machine is not putting well	Putting the machine in a balanced place.
The aiming beam is not focused or even not output ; Xenopro fractional Co2 laseris also not focused on	Joint arm is broken or can not work normally ; No any laser out-put or output power decreases dramatically	Repaired by a professional

Notice: Operator is not admitted to adjust: laser tube, joint arm, diode balanced beam and micro-computer controller.

11 Technical parameters

Model	
Working model	Single pulse, continuous pulse and repeated pulse
Output power	0 ~ 30W (adjustable)
Input power	450VA
Laser type	Sealed-off CO ₂ laser
Laser mode	Lower mode
Laser wavelength	10.6μm
Divergence angle	4mrad
Focused spot diameter	≤0.4mm
Tool bit focus	F=100mm (optional)
Pulse width	0.02 ~ 0.99s
Aiming beam	Red diode laser (650nm, 2mW)
Transmission system	Spring -balanced 7 joint arms
Cooling system	Inside-circle coolant
Controlling system	Controlled by microcomputer
Display screen	LCD
Working environment temperature	5 ~ 40℃
Humidity	< 80%
Air pressure	86KPa ~ 106 KPA

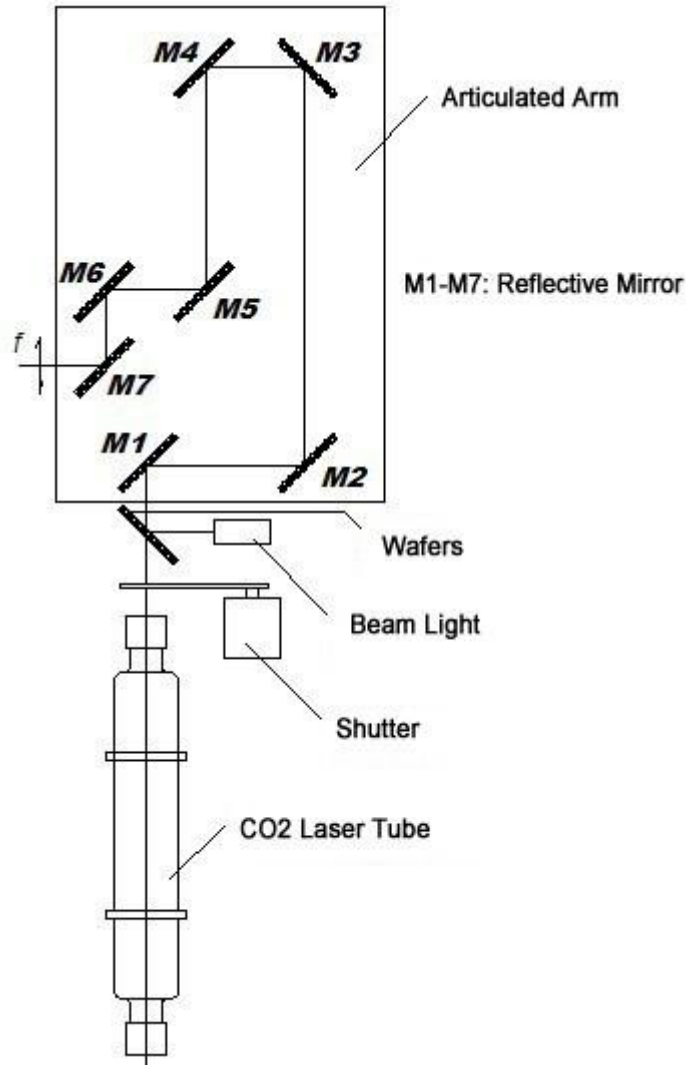
Input power	AC220V±10%, 50Hz	
Preheating-time	> 5min	
Electromagnet	No electromagnet interrupt	
other working environment	No obvious shaking or airflow	
Weight	NW	38kg
	GW	65kg (wooden package)
	weight	65kg
Size	130×60×70cm	

12 Quality assurance and after-sales service


Our product is one of high quality therapeutic equipment which is well-designed and convenient-operated. It will perform outstandingly only in the condition of proper use and maintenance. Within one year right after the day you purchase, we will provide free service of repairing those damage ones which made by manufacture or any defects in the parts or components. (Clients should pay the bill of parts transport and professional door-to-door service).



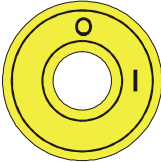




The warranty service will be immediately terminated, within the guarantee period, for those damages which caused by inappropriate operation, for instance, using mismatching power supply and components, violating the installation of instructions, and damaged by wrongly operation, maintaining and transport, etc.

13. Internal system structure diagram



14 signs meaning

order	signs	Meaning	standard
1		Warning and explanation	IEC60825-1

order	signs	Meaning	standard
2		Warning: laser hazard	IEC60825-1
3		Emergency stop button	IEC60601-2-22
4		“1”-power on(connected with net power) “2”-power off(break the net power)	IEC 60417-1:5007 IEC 60417-1:5008
5		Caution: check the random files	IEC348 IEC60601-1
6		Laser aperture	IEC60825-1
7		High voltage/ Dangerous voltage	IEC 60417-1:5036
8		Earthing protection	IEC 60417-1:5019
9	AIR OUTLET	Air outlet	-----
10	WATER INLET	filler	-----
11	OVER FLOW	overflow	-----
12	WATER OUTLET	Water outlet	-----

15. Clinical use guidance (Reference)

15.1 The characteristics of skin type and the notice of preoperative preparation:

1. If the skin with lesions is suitable for laser resurfacing?

For the clients with ptosis of face and eyelids, are better to choose surgery (such as face lift and blepharoplasty).

For the wrinkle around the mouth and eyes, are better to choose laser.

For the wrinkle which is caused by muscle movement (such as wrinkles of glabella, forehead and nasolabial sulcus) also can choose laser to remove, but it is just temporary.

For the acne scars would be better to choose laser to remove.

2. How to distinguish the skin type?

The white skin (light-color skin, Fitzpatrick divided it into type I and type II) is more suitable for laser resurfacing, but the dark skin is also suitable. For the clients with deep color skin has a tendency of causing pigmentation, if the operator is not so professional when operate the laser.

3. Whether the client is really wanted to take the treatment?

The operator should inform the clients both sides of the treatment. The laser treatment can improve the skin texture, but the treatment can't give the client very smoothly and beautiful skin.

In order to make the clients know more clearly about the treatment, the operator would better show them the before & after treatment pictures from previous clients.

The operator should make the clients know that this laser treatment is just for improving the skin surface, rather than permanently remove the pigment or shrink the big pore skin.

The reason why we should tell the clients the real side is many clients think wrongly that they don't need make-up any more after treatment.

4. Whether the patient took retinoic acid drugs recently?

It is reported that the clients who took this drug about two years may appear scar after the laser treatment.

If that kind of clients want to take this treatment, the operator should be better to suggest them to wait a few more days.

But the laser treatment can be done before such client took the retinoic acid drug.

5. What's kind of the client's life? whether the laser treatment will affect their normal life?

It seems very difficult for those patients, who have to work outdoors and need time to arrange outdoor activities (take part in recreational activities or drive to work), to avoid sunlight about 2 or 3 months.

In order to make that kind of clients to take the laser treatment more security, the operator can inform them to pay more attention to block the sunshine and suggest them to wear anti-sunshine glasses, hats or umbrella.

If a patient is considered that he or she is suitable for the Xenopro fractional Co2 lasergrinding treatment, the medical personnel should thoroughly tell them about the treatment methods, operation time, anesthesia and postoperative protection, etc. You should also show them the before & after pictures of other similar cases or teaching videotapes, which are very helpful, to a great extent, it can reduce their worrying.

15.2 Anesthesia points and the laser parameters setting:

1. Anesthesia

Half an hour before surgery (uses the Xenopro fractional Co2 laser for cut, not means skin rejuvenation), the operator should put some medicine or anesthesia plaster on the client's treatment area.

2. Skin disinfection

Wash away the make-up and scurf at the first time by using water and detergent. For the skin disinfection, the operator can do it as the normal way, but not using the disinfectant which is easy dying the skin. If using the

disinfectant which is easy volatilizing, easy firing or easy exploding, please be sure to open the window and door. For the hair or beard place, you can put a wet cloth to protect.

3. Treatment procedure

Removing wrinkles around the eyes place by the laser. Please be sure to wear the goggles to protect eyes, and using wet cloth to protect the eyelash and eyebrow. The laser energy can be set from the doctor's experience (reference: energy: 250-400mj, spot: 3mm). During using the laser, be sure the handle is perpendicular to the skin. The rejuvenation depth is depended on the laser speed and irradiating times. ig. Try best to avoid the laser pulse overlap. After the first -treatment, please use the medical cloth with the brine to clean the treatment place, doing this the operator can see clearly the treatment result (if the depth is enough or not) .Usually we can see the shrink of the derma (the wrinkle become little or disappear, during the second -treatment, you can treat the deep-wrinkle place repeat. For the wrinkle under of the eyes, usually, two times treatment is ok. For the wrinkle in two sides of the eyes is usually deep, needs more then two times treatment. For the wrinkle around the mouth usually is deep, needs about 2-4 times treatment. During the treatment for those place (eyes place and mouth place) ,the operator must carefully look at the skin change to avoid appearing white-yellow skin .Because those place is easy appearing scar ,especially for the female-skin. For the wrinkle around the eyelash and forehead: the operator can use the energy up to 500mj (usually need about 2-5 times treatment. For the acne scar removal, seeing the little blood phenomenon is a good treatment result. Usually, nose place treatment can be deeper then face, face can be deeper then mandible, but no matter which place treatment, be sure to avoid appearing the white-yellow skin.

15.3 Post-operative wound management and ongoing treatment and protection of the skin

- I Currently both at home and abroad, some doctor employ the traditional dressing or surgical dressing which is semipermeable and postoperative-symptom-relieving biosynthesis. Namely, enclosed method. While some other doctors simply use topical ointment of antibiotics, which called open therapy. Whatever the means are, it should take use of the dressing which is good in absorption of the drainage and in moisturizing, so that it could heal the wound in short time and relieve the postoperative pain. Mostly, we choose the postoperative treatment method according to specific situations.
- I According to the grinding degree (range, depth), oral antibiotics could be suggested to protect infection. If the patients with history of herpes simplex, in general, effective medicine of antivirus infection should be applied, which is keep on taking from preoperative 24 hours to postoperative 7-10 days, until the healing of epidermis. Most patients have no postoperative pain or slight pain, general painkillers, like cortisone (20-30mm/once a day for 3-5days) could be suggested to take orally to relieve the edema after operation, especially for those who have a widespread surgery. Caution in using the hormone medicines when the patient has a tendency of virus infection. For most patients, an icepack will have a wonderful performance on easing the topical symptom, edema and effusion, especially on wound of widespread surgery.
- I For the postoperation, we generally use a special surgical dressing, 2nd skin, to treat the large area of wound, which has good absorption of exudates, and maintain the moist wound environment without causing tissue impregnation. Twice a day for the first three days and later once a day. Open the wound area on 5th-7th days

and coated with compound Chinese herbal ointment with their configuration for more than two weeks, generally. The exchange time of those given methods of wound healing should be based on the speed of each patient so as to make an appropriate adjustment, which also related to each doctor's clinic experience. In this way, the wound scar is not obvious and the changes of wound color are very smooth. However, it is not suitable for smaller wounds or closure therapy. We more directly use Chinese herbal ointment which should be thickly coated, initially. After 2 to 3 weeks, you can see a small amount of scarring, and then continue to use the ointment 1 to 2 weeks until the scar off completely.

- I Once the scar off the wound, without obvious inflammation and pigmentation, you can use some light-shade liquid and cosmetics. For those post-inflammatory hyperpigmentation(within one month after surgery) patients, we often use hydrocortisone cream with glycolic acid or retinoic acid accompanied by a small amount of compound hydrocortisone preparation. Most patients can recover within 1 to 2 months. If the patient is allergic to hydroquinone, retinoic acid, or azelaic acid, you can use the desensitization therapy or use other type of drugs. You should minimize the possibility of second inflammatory pigmentation. It is an essential part in our clinic practice, and that is why we have your special attention. Although the pigmentation is temporary, which can itself go away, the use of hydroquinone cream, UV protection will dissipated this phenomenon as soon as possible.
- I Using pulsed Xenopro fractional Co2 laser to grind skin, the side effect is not common, but postoperative erythema, which typically lasts 6 to 12 weeks, should not be treated as a complication, such as long erythema duration or local skin hardening probable means early scars. Miliun and acne can occur, esp. when you use some oil-gas-tight ointment after surgery. Using some retinoic acid medicine may help you to reduce or remove miliun, local use or eat some oral antibiotics can control wound infection and it is also helpful to treat acne.
- I In any surgical procedure, infection can lead to complications which you should do bacterial culture and take the broad-spectrum oral antibiotics. If the patient has a history of herpes simplex infection may easily have wound infection, you'd better use some drugs to prevent and do more local wound care, similarly, wound infection can also localized use topical antiviral agents. For those who just started to take the retinoic acid drugs right before operation, you should give some advice and explanation by routine. For those who are taking can be allowed before surgery, but at the first stage of post operation, patients can not take in order to avoid excessive stimulation.
- I Using any kind of grinding technology will appear scar if the doctor can not grasp the depth of intraoperative grinding, which, in some way, will damage the dermis layer. In addition, for those who take retinoic acid drugs recently, or postoperative patients with secondary wound infection will increase the risk of scar.
- I Generally speaking, dark-shade is necessary at the following 3rd to 6th months after the required time, because ultraviolet light may lead to irregular pigment changes in the process of wound healing. Opaque shading materials (including titanium dioxide, etc.) are perfect basic supplies, which play dual roles in shelter and light-shade. Most patients are unwilling to back to their daily life until the surgical part can be covered by makeup and the swelling is fully subsided (often more than ten days). And normally, the patient should come back to the clinic to have a postoperative review at 1st, 3rd, 4th and 8th weeks, take and leave photos.

15.4 Treatment times and effects

indications	expected effects			treatment interval
	1 time	3 times	5 times	
Acne depressed scar, burn scars, traces of operation, large pores	15%	40%	70%	3~4 weeks
wrinkles	15%	40%	70%	3~4 weeks
Coplexion improvement, skin whitening and enhancement	40%	60%	80%	3~4 weeks
fine wrinkles removal, pore minimizing, facial impurities removal	20%	40%	70%	3~4 weeks

15.5. Indications treatment benchmarks

1. Acne depressed scar, burn scars, traces of operation, large pores



- 1) Conventional treatment: irradiate the affected part once in the pulse width of 90-150ms.
- 2) Repeat treatment: irradiate the affected part 2-3 times in the pulse width of 40-60ms
- 3) Treatment frequencies: 4-5 times
- 4) There might be the possibility of sharpening the acne which could be gradually vanished, or the possibility of exudates from pore which can not be pressed or stimulated. Heteropathy would be used to heal the wound.

2. Wrinkles



- 1) Conventional treatment: irradiating the affected part once in the pulse width of 80-120ms.
- 2) Repeat treatment: irradiating the affected part twice in the pulse width of 40-50ms
- 3) Treatment frequency: 3-4 times

3. Complexion improvement, skin whitening and enhancement



- 1) Therapeutic method: Irradiating the whole face once with pulse width of 40-50ms, then irradiating repeatedly when there is a need in special parts with the pulse width of 30-40ms.
- 2) Treatment frequencies: 2 ~ 3 times

4. Fine lines removal, pore minimizing, facial impurities removal



- 1) Treatment method: irradiating the whole face once with pulse width of 40-50ms, then irradiating repeatedly

when there is a need in special parts with the pulse width of 30-40ms

2) Treatment frequency: 2-3 times

3) It might work on epidermal chloasma, but the area of skin lesions of dermal chloasma would expand. There is a need to treat part of it, and decide next step after confirming the reaction.

15.6 The needed attention of matters after treatment

1. Precautions before treatment

1) avoiding makeup and cleansing when treating faces. (removing fuzz if it is necessary)

2) avoiding to see the laser directly with naked eyes.

3) It would be painful when having treatment, surface anesthesia could be cancelled when feel less painful.

4) After treatment, the affected part will become white or grey, and it is also possible to be red or light blister which will be crusted within 2-3 days, and come off from fifth day to fourteenth day.

5) The wound should be covered with sterile gauze for protection after laser treatment.

2. Matters need attention after treatment

1) After treatment (about 2 hours), there will be an irritable pain or swell on parts which have been treated. Even though a proper treatment is given in hospital, scorching pain is still can be felt after a while. Wet packing with cold towel could ease the pain and avoid using the cosmetics and facial mask.

2) Sesame-sized crust will appear within 2-3 days after treatment, and come off after 5-7 days. Please lightly wash the face with special facial cleanser or refining foam.

3) Sun cream should be used to scabbed parts.

4) After using special detergent and refining foam about one week, make-up can be wear after 2-3 days.

5) After treatment, spa, sauna, half bath and vigorous excises should be avoided before the wound is crusted off naturally.