

# **Anle Láser CO2 fraccional**

## **User Manual**



# Catalogue

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# Chapter1 About CO2 Fractional Laser

## I. Treatment Theory

CO2 fractional laser technology has been the latest and most focused technology these 2 years in the United States as well as in the skin community all over the world. It is a kind of minimal invasive surgery, which lies in between invasive and non-invasive treatment. This technology is known as Fractional Photothermolysis theory (dot-matrix light and heat decomposition), which was published in 2004 by Dr. Rox Anderson, one of the laser medical experts from Harvard University. This theory was immediately approved and applied by experts from all over the world.

Fractional Photothermolysis (selective photothermolysis effect) theory is an extension of the traditional theory of Selective Photothermolysis .it has not only rapid and evident results like invasive treatment, but also less side effects and shorter recovery time like the non-invasive treatment. Which means this technology combines both the advantages of the traditional technologies. It is to evenly mark with tiny holes, and then there will be a series of biochemical reactions inside the skin, thus Lift the skin and remove speckles and pigments.

As the fractional laser treatment will only cover part of the skin tissue as well as the new tiny holes do not overlap, therefore part of the normal skin stays the same, which will fasten the recovery. Patients can return to normal life in 4~5 days.

The treatment itself is safer and can treat any part of the body, for example, skin renewing and resurfacing, wrinkle removal. Skin tightening, acne and scar removal, melasma removal, smooth burnt scars and surgery scars. Traumatic scars .remove intractable chloasmas and pigmentation, sun damage recovery. Those treatments have been applied both home and abroad with very good results.

## II. Functions

- 1) skin renewing and resurfacing
- 2) Wrinkle removal. skin tightening
- 3) acne and scar removal , melasma removal
- 4) Smooth burnt scars and surgery scars. traumatic scars ,etc
- 5) remove intractable chloasmas and pigmentation
- 6) sun damage recovery

### **III. Taboos**

- a) Pregnant
- b) Isolation in the sun
- c) Sensitive to light or medicine, or are taking medicine that sensitive to light
- d) Using vitamin within 6 months
- e) Not representative naevi or malignant pathological changes in treatment area.
- g) Herpes or trauma
- h) Pimple record
- j) Severe diabetes patient, high blood pressure sufferer, and epileptic

## Chapter 2 Attentions of CO2 fractional laser

### I. The safety of fractional co2 laser

Co2 fractional laser system is high-tech medical equipment, mainly used for all kinds of facial blemishes and get rid of all parts of unwanted hair on body with safety and reliability

After the training of qualified practitioners, the operator can safely use the machine as soon as proper operation and maintenance, the operator for Operation and maintenance or other staff for adjuvant therapy should be fully aware of safety information provided in this chapter. Most important thing is to be considered surgical safety of persons and other personnel by the surgeon, the design process of the laser has been taken into account to maximize the safety of patients and operators. The following is a part of its security measures:

1. The self-test system of the machine will immediately start up after turn it on , the self-test system will be continuous monitoring of the circuit during equipment operation .
2. The laser transmit to the patient's skin via fractional head, the laser array mirror only shot from the front face handle.
3. The machine has designed a separate safety circuit, when there is leakage of the circuit ,it can be cut power off automatically.
4. The Emergency appears that can be quickly cut off the power by the red emergency switch.
5. Key switch to prevent any person free to open the device.

#### **【warnings 】**

As long as the improper use of any laser device will cause personal injury. the laser will bring a high-pressure during operation running, the Operator for strong light Device should always keep warn , according to the manual , and take the necessary protective measures.

#### **Patient:**

The Safety of patients mainly rely on well-trained physicians as well as the layout of the appropriate treatment room. Cultural quality of life of patients is also very important, they should understand the principles of treatment. Patients receiving strong light therapy should be effectively got eye protection.

#### **Operator:**

Operators in the course of treatment may be exposed to a laser beam, it should be under the protection of the corresponding wavelengths, in the course of treatment, the operator should wear 10600NM (wavelength) protective laser glasses.

**Treatment room :**

The treatment room should be clearly marked with using high-intensity light.

**【main warning 】**

In order to ensure the safe use of this system should pay attention to safety precautions, please double read the following warning items

- 1, in addition to my company's authorized technical personnel, other person cant overhaul the machine, in particular, can not repair the machine inside, including power, cooling systems, optical components and treatment head etc internal adjustments . Note that machine has dangerous high-pressure inside
- 2, confirm that the system's rated voltage is corresponding with the voltage in your country (220V AC)
- 3, the users can safeguard the machine after only turning off and plug the power cord out . because it may cause damage to equipment and people when charge
- 4, Photoconductive crystals should always be kept clean. Do not let light coupling infiltrated into the treatment head.
- 5, When the light treatment head leak water, don't turn it on , if it turn on ,operator must turn off immediately.

**【about laser warning】**

- i. laser may damage the eyes and cause a fire or burns. shall take all necessary protective measures during using it
- ii. Emission excessive light to the treatment area may cause skin damage, resulting in hyperplasia / or atrophy or abnormal pigmentation
- iii. Even if there is to wear protective glasses must not look the laser directly issued from the treatment head
- iv. Do not point the laser treatment head air-launched. When not in use, The treatment should be placed on the holder, it should be pointing to the surgical site(treatment area) during treatment

## **II. Electrical and mechanical safety**

1. To keep all of the panels and cover have been closed, open the cover may be dangerous
2. The system inside produce dangerous high-pressure, even after disconnecting the power cord may also be some parts are still stored electricity. Therefore, except for my company's designated worker, other worker can not open the device.
3. To maintain equipment, don't open the power, and cover keeps the device out of care
4. The weight of the device is 35 kg, it may cause personal injury if the method is incorrect when moving. The machine is well balanced and is removable; it can only be slow-moving carefully.
5. The device through three core power cord grounding in the ground, a good grounding is most important for the operation of security.

**【Fire Prevention】**

- 1, the temperature of an object will increase after absorbing light energy. Should take preventive measures to reduce the hazards of ignition or near the treatment area flammable.
- 2, the skin should not be clean and processing by the use of alcohol or acetone and other inflammable before operation, if necessary, use soap and water.
- 3, if use alcohol to clean off the treatment head or any of its components disinfection, must be dry before it turn on

**【System security device】**

1. The device is equipped with a number of security devices, all people in operating room must be familiar with all of their location and use
2. Key switches: the key switch is used to turn on and turn off the system power. The machine can only be turned on by the key which we offer
3. Power indicator light: in red color after turn on, indicating that the device is switched on.
4. Emergency switch: This is a red mushroom-shaped button for emergency turning off the whole machine. Pressed it, no matter what state the system is , the power would immediately be cut off. Clockwise rotation of an emergency switch can loosen it, or equipment is kept in the off state.

**【Device self-test】**

After turning on , the circuit of the system instantly go into the self-test state . In this case, the operator should be allowed the device to run 1-3 minutes before the next step.

**【Device level】**

- 1、 Electric shock protection: 1 level, BF-level
- 2、 anti-corrosive liquids: general
- 3、 Please don't use the device if there is the flammable anesthetic mixture with air nitrous oxide environment
- 4、 Mode of operation: Continuous.

# Chapter 3. Installation of CO2 fractional laser

## I. Components introduction

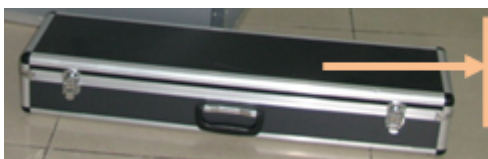
1. The machine when received just like the following picture:



Main device



Accessories case 1: the probes of fractional Co2 laser



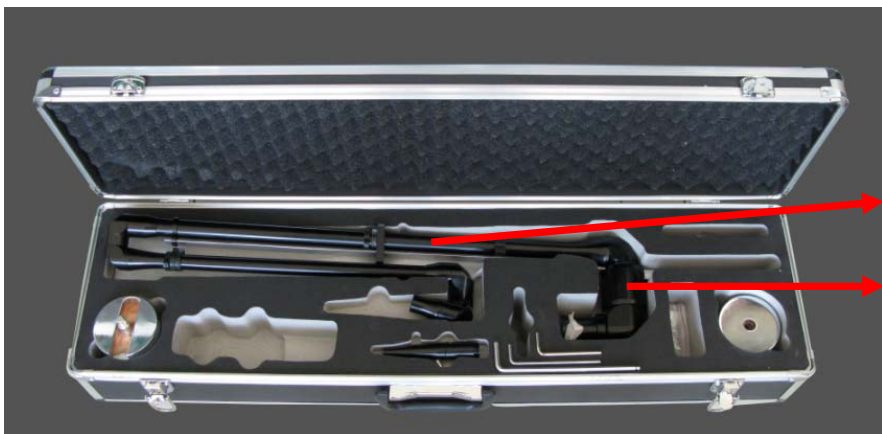
Accessories case 2: Articulated arm and probe of Co2 laser

2. All accessories show as following picture:





Accessories case 1



treatment HP

Co2 laser probe

# Accessories



handpiece



Co2 laser probe



fractional Co2 laser probe



goggles for doctor



goggles for client



spanner



accessories box 1



accessories box 2



pedal



tools for water inlet

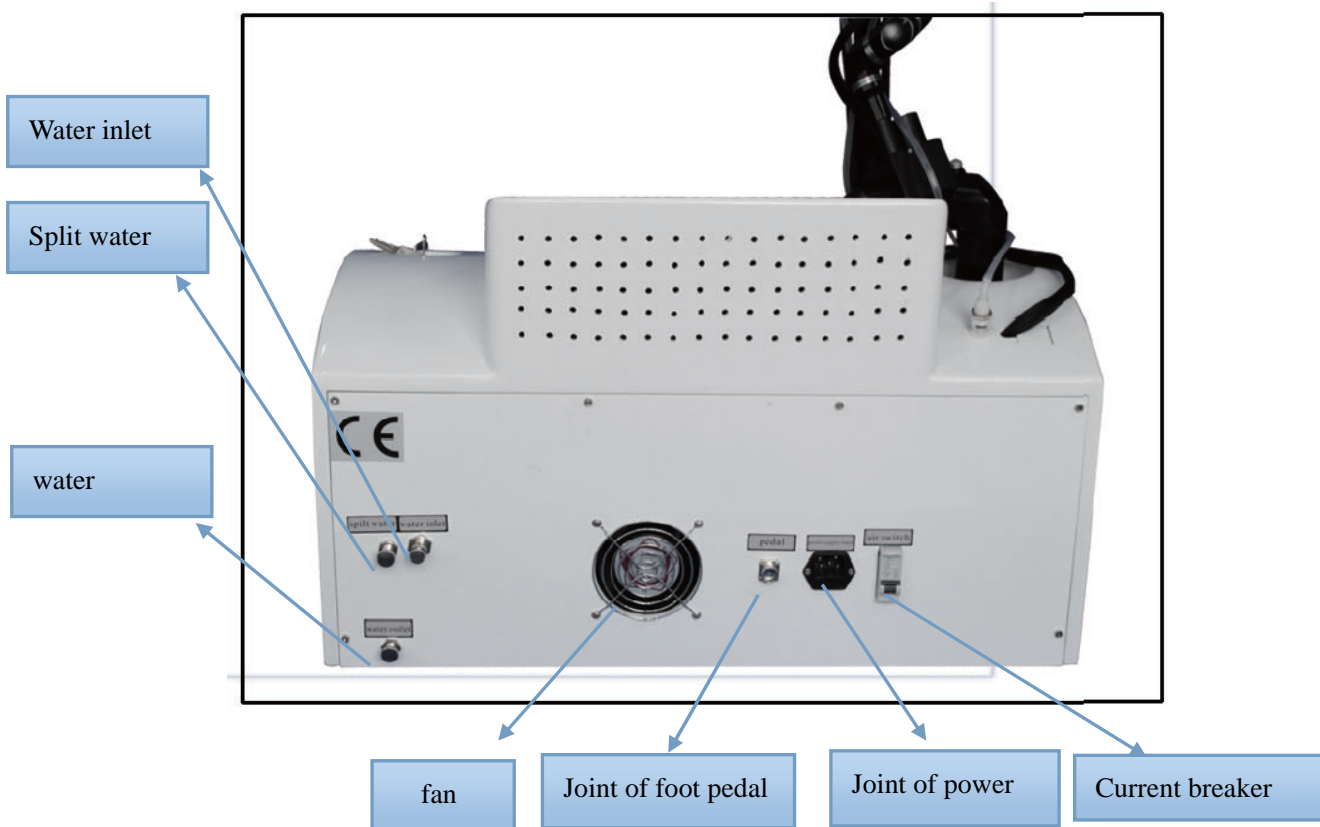


keys



power cord

3. About main device:



## II. Installation of machine

1. Placement: place the machine on level ground, make sure the treatment room is clean and it is about 22~28°C and humidity not more than 20%.

2. Input distilled water or pure water;

A. Input water: input distilled water or pure water in the machine through water inlet, until the water spill over the “ spilt water hole”, which means the water is enough for cooling system;:



1: take off screw



2: connect water pipe



3 put water inside

B. Install the power line: connect the electricity power line with the machine.



4: foot pedal

5: power cord



C. Please insert the key on the machine, and turn it, then the machine is opened, and water cycles and cooling system inside the machine startup, and please wait 3 minutes, and cover the probe by an A4 paper. And shows like this;



D, the open the machine, The red light is in the centre site under normal working mode; any deviation requires to adjust red light necessarily.

E, If the red light is out of centre site, should adjsut again, do as following:  
Release the infrared ray firstly and re-fixing .

**3. Installment:**

A. Install the articulated arm

① Take off the screw in the topside of the machine, as the picture:



Screw off this screw firstly

② Take out the articulated arm first, and adjust the position of connector

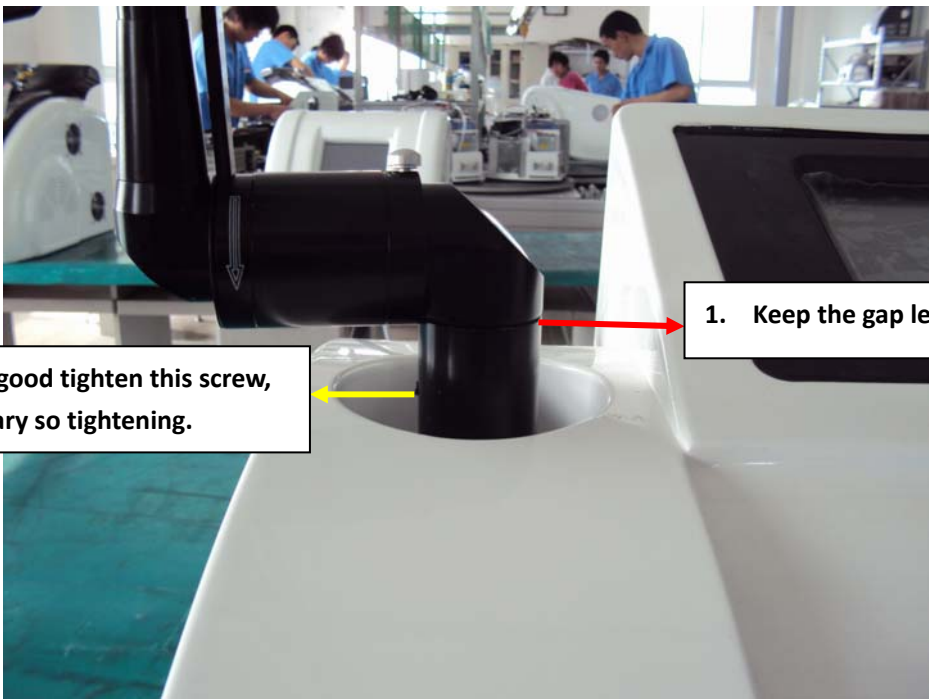


Push this button to right



After adjustment of connector, this button turns to left

Vertically insert the articulated arm to the



2. Make sure good tighten this screw, not necessary so tightening.

1. Keep the gap less than 2 mm

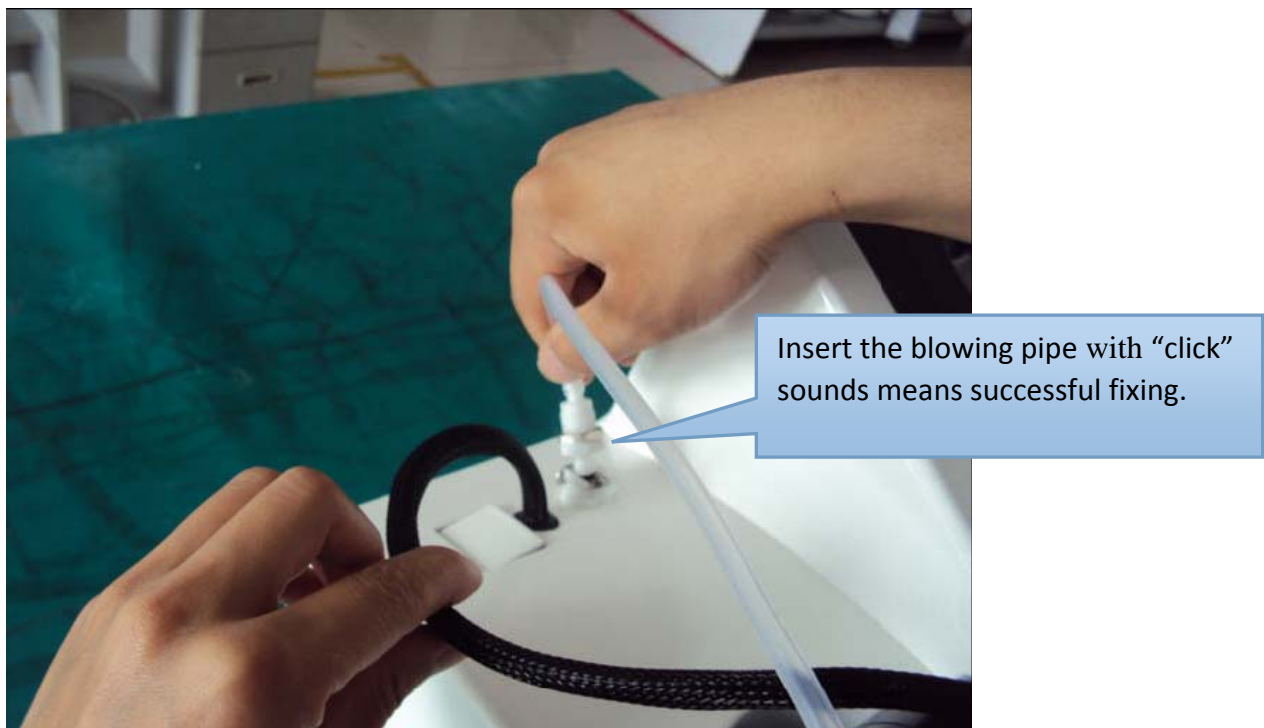
B. Installment of the probes

1). Aim the probe to connector, and move the articulated arm in Clockwise for fixing; show as following:



**(2) Bind USB cable and blowing pipe to the articulated arm show in follows:**

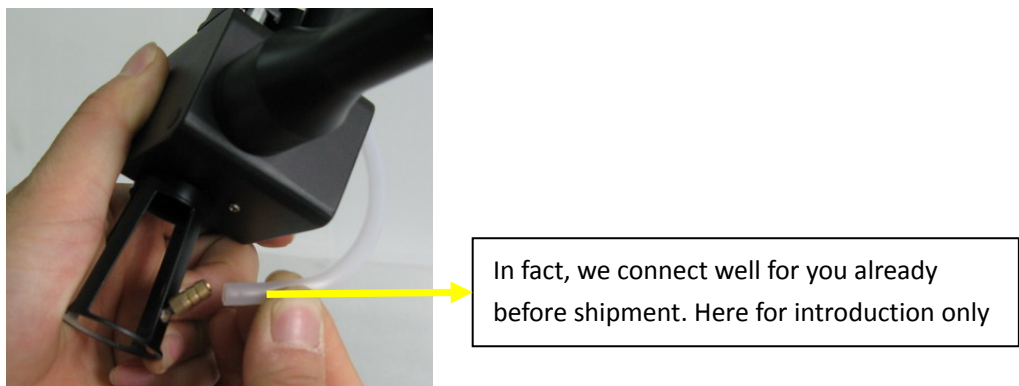




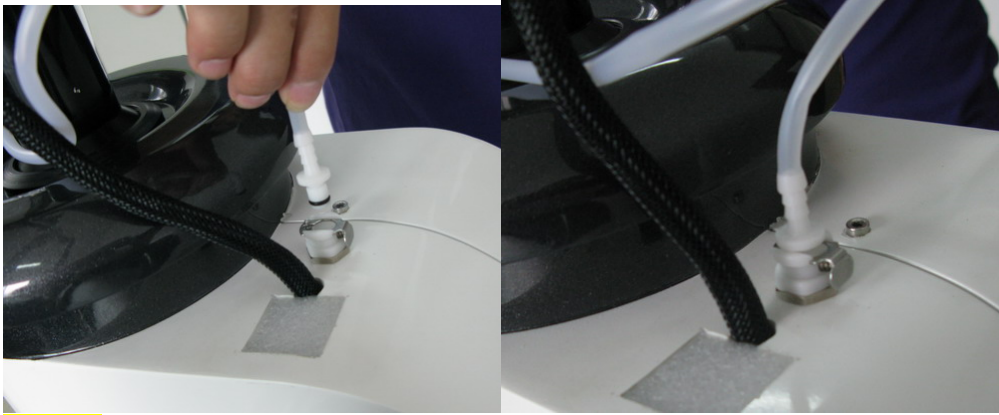
**Note:** pay more attention in USB cable and blowing pipe binding, avoid 90 degree of dead angle and make sure easy movement of 360 degree.

**C. Install the blower part on the probe**

① Take out the windpipe, and insert the one joint side directly, as the following picture



② Insert another side in the air faucet in the probe, as the following picture.



**Note:** pay more attention in USB cable and blowing pipe binding, avoid 90 degree of dead angle and make sure easy movement of 360 degree.

**B. Attentions:**

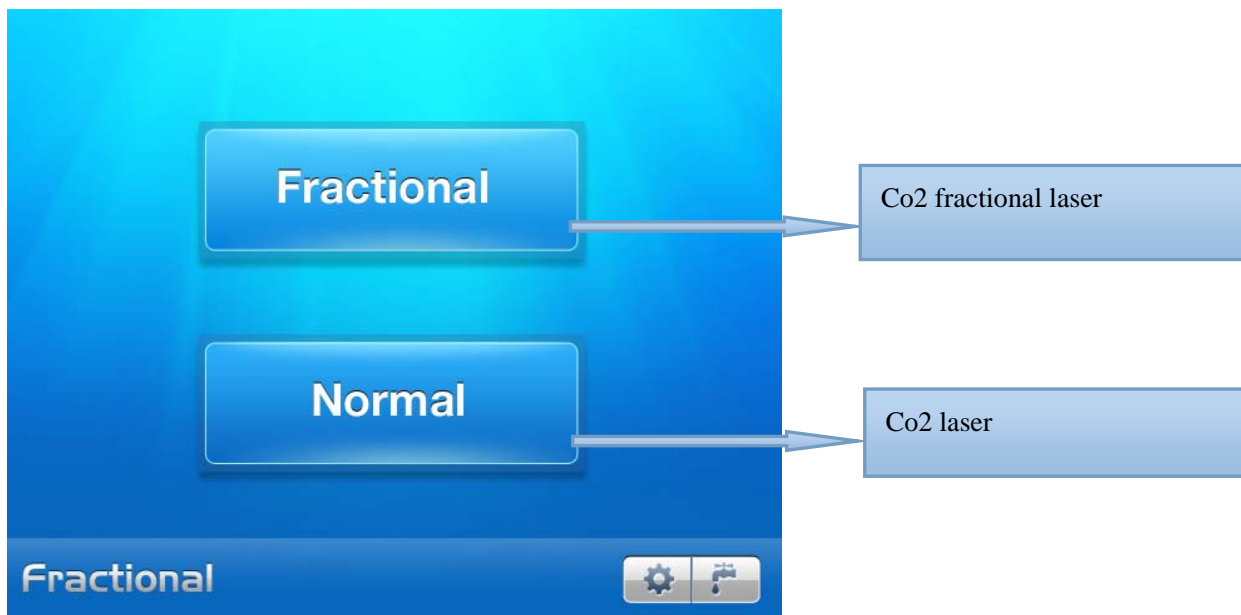
This laser system can be used in hospital and beauty salons, but should pay more attentions in installation:

- ※open the package when receiving, and place all parts on ground.
- ※check up condition of main machine & accessories.
- ※if good condition both, please check up whether good electricity source or not.  
Make sure stable electricity inputting.
- ※install laser probe and make sure firm connection; and keep good USB cable connection.
- ※ when input water to machine, please keep 220V socket away from water.
- ※ function test.

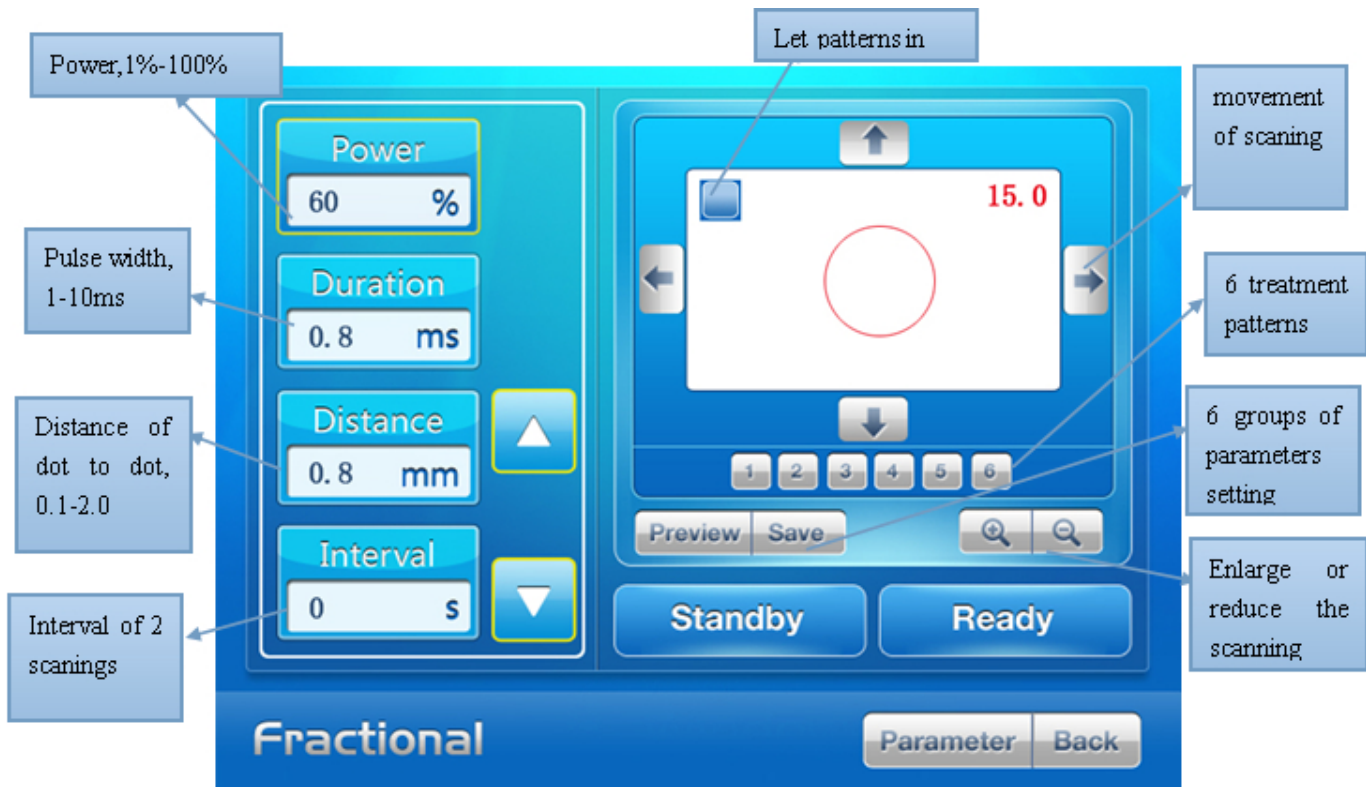


## Chapter 4 Operation on software

### I. First interface



## II. About Fractional CO2 laser menu



△ is to increase , ▽ is to decrease

**A. Power button:** Adjust power from 1% to 100%

**B. Duration button:** Adjust the pulse width, the smaller the number, the quicker the laser effect on skin. Scale of adjustment 0.1—10ms .

**C. Distance:** The distance between dot and dot, adjust scale 0.1-2.0 mm

**D. Back:** Return to previous menu

**E. button to enlarge or lessen the graphic:** Enlarge or lessen the patterns.

**F. Save:** Save the parameters after setting up

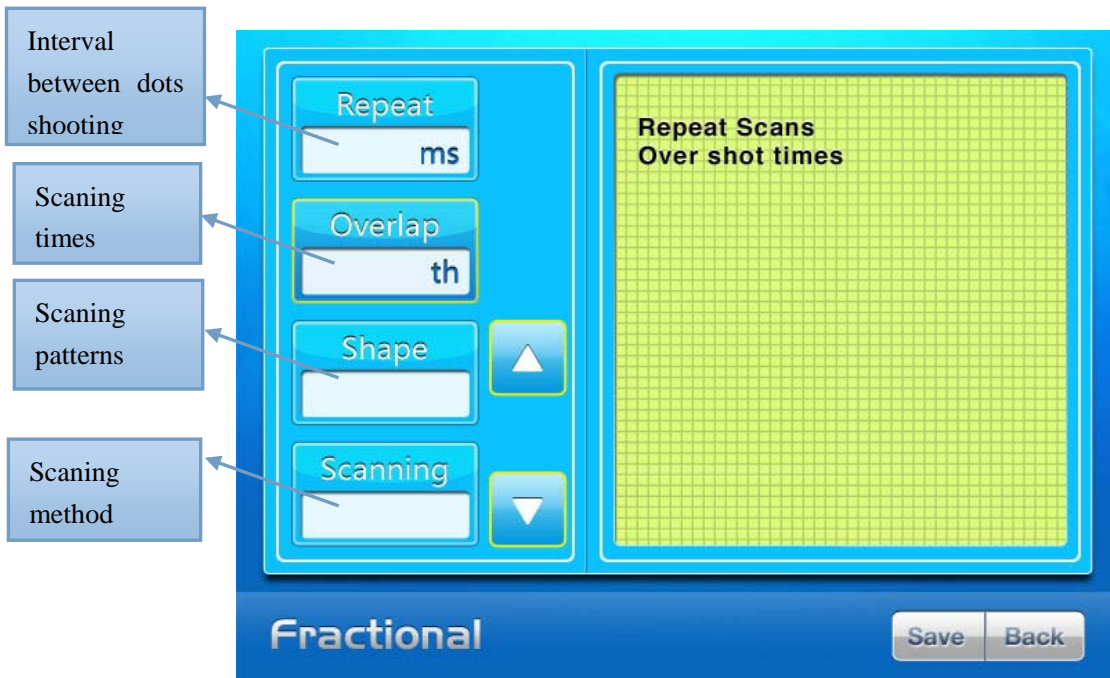
**G. preview:** Preview scan patterns and aim at treatment area

**usage: Before treatment, press preview button to preview**

**H. ①②③④⑤⑥:** 6 scanning patterns

**I. Standby:** Press the button, the machine will go out of working condition

**J. Ready:** Press the button directly; stimulate program.



**A. Repeat:** Adjust the time between one dot to next dot.

Scale of adjustment 1—5000ms

**B. Overlap:** Choose scanning times, adjust scale 1-20 th

**C. Shape:** Choose different patterns, there are 6 patterns totally

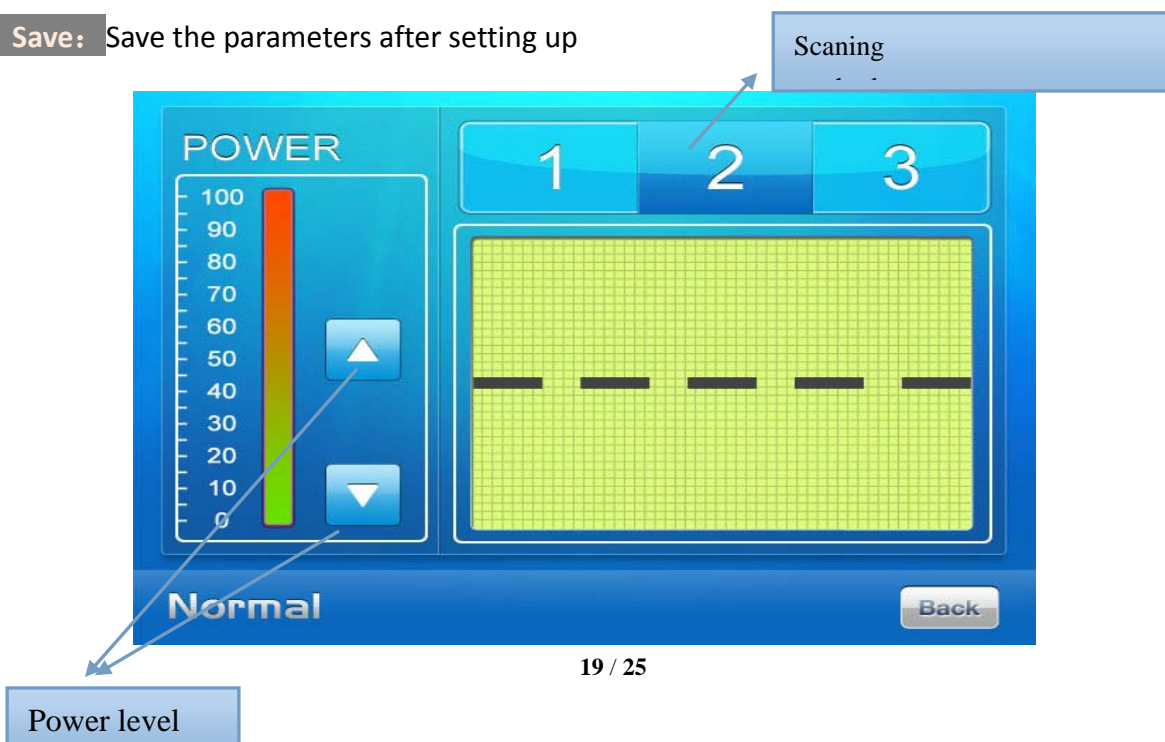
Use  $\triangle$  and  $\nabla$  to choose patterns

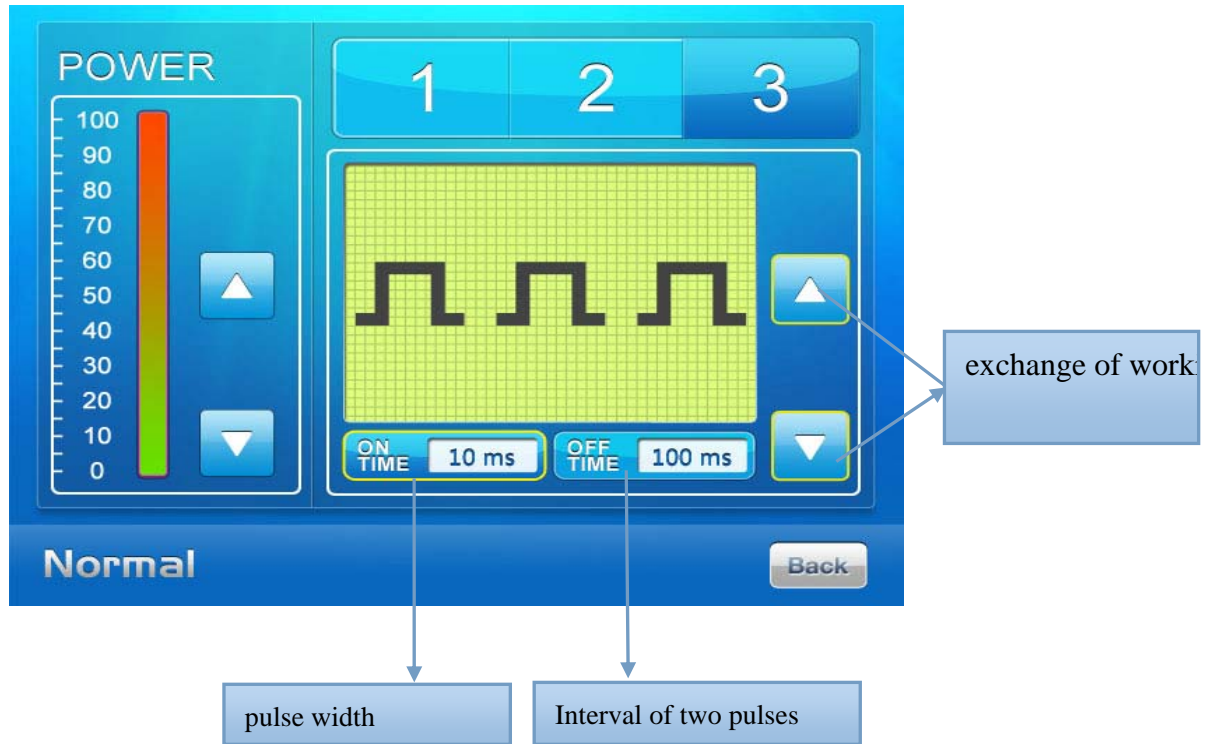
**D. Scanning:** choose different scan methods:

1、 free scan, 2.Sequence scan 3、 maximum distance scan

. $\triangle$  &  $\nabla$  are used to choose scan method

**E. Save:** Save the parameters after setting up





**A. Power button:** Adjust energy from 1% to 100%

**B. Exchange of mode button:** exchange in 3 kinds of modes:

1. One pulse
2. Continuous pulses
3. Multi pulses

**C. on time:** it appears under mode 3, adjust pulse width; the smaller value the shorter time of output pulse effect on skin. Adjust scale 10-1000 ms.

**D. off time:** It appears under mode 3, adjust interval between two pulse width; the smaller value the shorter interval, the bigger value the longer interval. Adjust scale 10-1000 ms.

**Warning: Return to the main menu before shutting down the machine!!!**

# Chapter 5 About clinic applications of fractional Co2 laser

## I. . Treatment course:

### 1). wrinkle removal, acne scar removal

- a. 3-5 treatments per course
- b. interval per treatment: 3-4 weeks.

### 2). Scar removal:

- a. 4-6 treatments per course
- b. interval per treatment: 4-5 weeks.

### 3). Facial skin rejuvenation:

- a. 2-3 treatments per course
- b. interval per treatment: 3-4 weeks.

## II. Attentions during the treatment

- a. energy starts from low to higher, or it may burn skin
- b. Every interval treatment time is no less than 3 weeks.
- c. don't wet skin after treatment in 24 hours
- d. don't expose treatment area in the sun after treatment in 7 days
- e. Must use the sun protection cream.
- f. if there is not professional doctor, we suggest not using Normal Co2 Separately.

## III. Reference parameters

A、 when doing wrinkle removal and skin rejuvenation, we suggest adjusting parameters as below:  
(Pulse width is less than 3)

Start from 20% until the skin looks vaporization

0.3-0.8ms

0.8-2.0mm

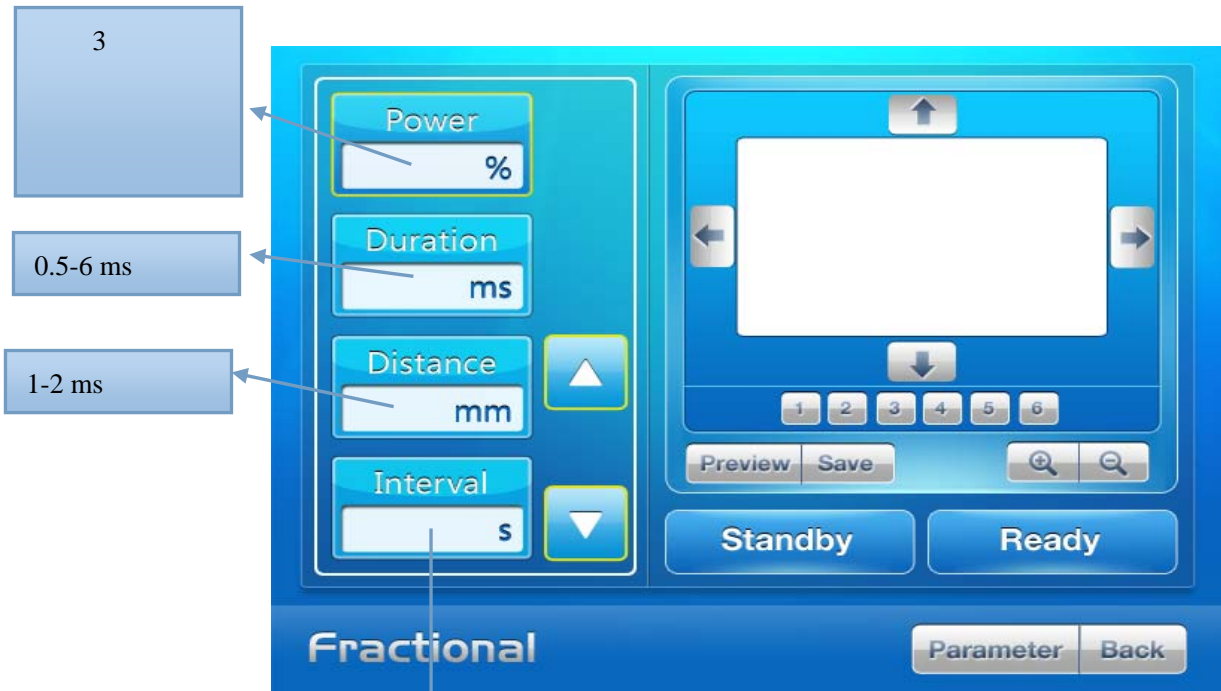
The screenshot shows the main control interface for the Fractional CO2 Laser. On the left, there are four vertical control panels: 'Power' (with a percentage input field), 'Duration' (with a millisecond input field), 'Distance' (with a millimeter input field and an upward arrow), and 'Interval' (with a second input field and a downward arrow). On the right, there is a large white preview window with directional arrows (up, down, left, right) and a row of six numbered buttons (1-6). Below the preview window are 'Preview' and 'Save' buttons, and a magnifying glass icon. At the bottom of the interface are 'Standby' and 'Ready' buttons, and a 'Parameter' button with a 'Back' sub-button. The word 'Fractional' is displayed in large text at the bottom left.

1、we can set

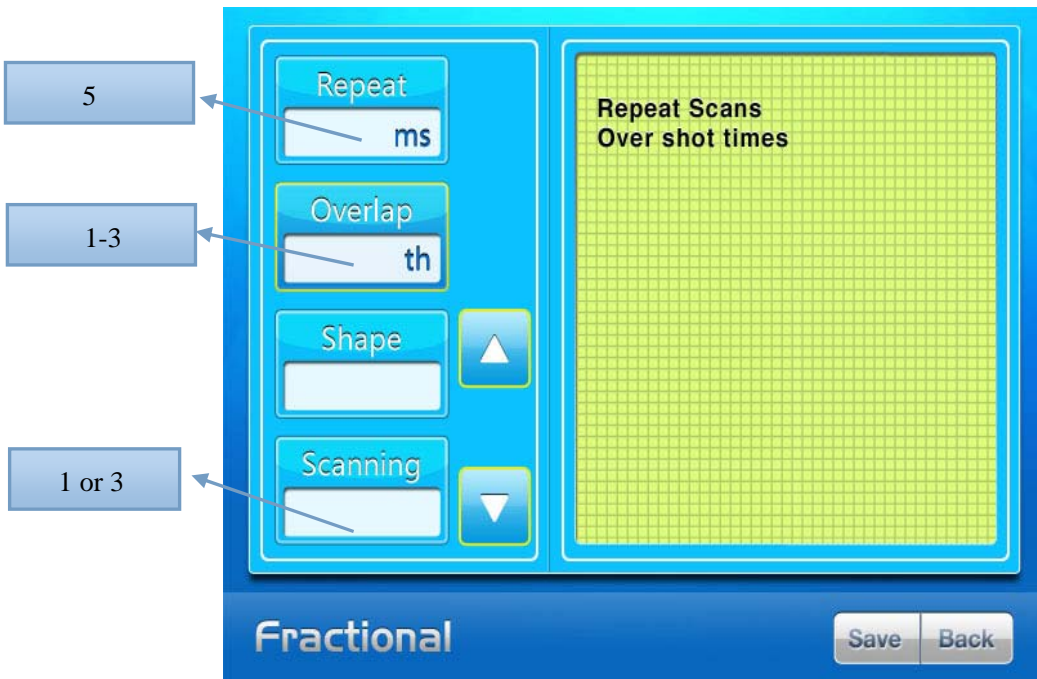
1

The screenshot shows a secondary control panel for the Fractional CO2 Laser. On the left, there are four vertical control panels: 'Repeat' (with a millisecond input field), 'Overlap' (with a 'th' input field), 'Shape' (with an upward arrow), and 'Scanning' (with a downward arrow). On the right, there is a large green grid area with the text 'Repeat Scans Over shot times'. At the bottom of the interface are 'Save' and 'Back' buttons. The word 'Fractional' is displayed in large text at the bottom left.

B、 if removing scars, we suggest using parameters as follow:



1、 we can set up it to be 0,  
2、 if we set up between 1- 6 s, and step pedal constantly, the machine will scan automatically according to our set.



## Chapter 6 Simple Maintenance and Repair

### I. Common malfunctions:

1) No electric current to the whole machine



- Check up "emergency button", keep it bounce in working
- Check up "air switch", keep it up in working
- Check up "fuse" on "power socket" at the rear panel,
- Check up "power cord", whether is in a good condition or not
- Check up whether power supply to machine

2) System halted:



- High interference, check electric appliances of power rounding network
- Software out of control, replace new LCD controller

3) Uneven energy output or off position:



- Adjust laser beam path
- Lens (on probe) is dirty, clean by alcohol. Please Use the lens after lens dry, or alcohol fire and damage lens

4) No infrared ray indicator:



- Check power supply for infrared ray indicator, whether 3V DC output or not
- Replace new indicator of infrared ray

5). The blowing pipe does not work



- Check up air pump whether work good or not
- Whether blowing pipe broken or not

6). Alarm of water flow:



- a. check up whether enough water inside machine or not
  - observe water level through the slot at side shell
- b. check up whether pump circuit or not.
- c. maybe some air inside pump, please let the air out of pump by turning on / off machine repeat. In this case, please leave the caps for water inlet and water spilt off both; keep caps on till good water circulation.
- d. check up switch of water flow, if damaged, please change a new one or let those two cables (connect to switch) short circuit directly.

### II. Daily maintenance and maintain:

A. maintenance:

- a. machine insulation prohibited



- b. take hope-pocket cover lens against dust, including whole machine. It's important.
- c. take care of probe (important).

B. maintains:

- a. change water every 3 months.  
Water source: pure water or distilled water
- b. keep machine good ventilation, and out of dust (important)
- c. unprofessional operator prohibited