

# User manual



**(CO2 Fractional Laser Machine)**

# Content

Chapter1 Introduction of CO <sub>2</sub> Fractional Laser .....	3
1.1 Treatment Theory .....	3
1.2 Functions .....	4
1.3 Taboos .....	4
Chapter 2 Operation safety & precautions of Co <sub>2</sub> fractional laser system .....	5
2.1 the safety of fractional co <sub>2</sub> laser .....	5
2.2 Electrical Safety and Mechanical Safety .....	8
Chapter 3 Installation of fractional Co <sub>2</sub> laser machine .....	10
3.1 Components of the machine .....	10
3.2 Installation of machine .....	11
Chapter 4 Co <sub>2</sub> fractional laser instructional description .....	14
4.1. Main Interface .....	14
4.2 Operation Instructions of CO <sub>2</sub> Fractional Laser: .....	15
4.3 Operation Instructions of Normal CO <sub>2</sub> Laser: .....	18
Chapter 5 Clinic Applications .....	19
5.1 Treatment Parameters for Fractional Reference .....	19
5.2 Treatment Parameters for Normal Reference .....	20
5.3 Treatment Course: .....	23
5.4 Attentions in Treatment: .....	23
5.5 Attentions After Treatment: .....	23
Chapter 6 Simple Maintenance and Repair .....	24
6.1 Normal Problems and Failures: .....	24
6.2 Daily Maintenance and Repair: .....	25

## **Chapter1 Introduction of CO2 Fractional Laser**

### **1.1 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.

## 1.2 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 stretch marks
6. Remove intractable chloasmas and pigmentation
7. Sun damage recovery
8. Remove flat warts, wet warts, surgery
9. Vaginal tightening, whitening

## 1.3 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.
- f) Herpes or trauma
- g) Pimple record
- h) Severe diabetes patient, high blood pressure sufferer, and epileptic

## **Chapter 2 Operation safety & precautions of Co2 fractional laser system**

### **2.1 the safety of fractional co2 laser**

Co2 fractional laser system is high-tech medical equipment, mainly used for all kinds of facial blemishes and gets 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 、 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 warns, according to the manual, and takes the necessary protective measures.

#### **Patient:**

The Safety of patients mainly relies 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, please pay attention to safety precautions, and double read the following warning items

- 1 In addition to the technical personnel our company authorized, 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 (110V)
- 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.

### **【Warning about Laser】**

- i. Laser may injure the eyes and cause a fire or burns, so the user 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

## **2.2 Electrical Safety 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 cannot 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. Please 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
3. 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
4. Power indicator light: in red color after turn on, indicating that the device is switched on.
5. 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 fractional Co2 laser machine

### 3.1 Components of the machine

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



The machine of fractional co2 laser

Eye patch, foot pedal, power line, protective glasses are also put in the machine box.



Articulated arm and probe of co2 laser

2. The articulated arm like the following picture:



The probe of co2 laser

Articulated arm

### 3.2 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.



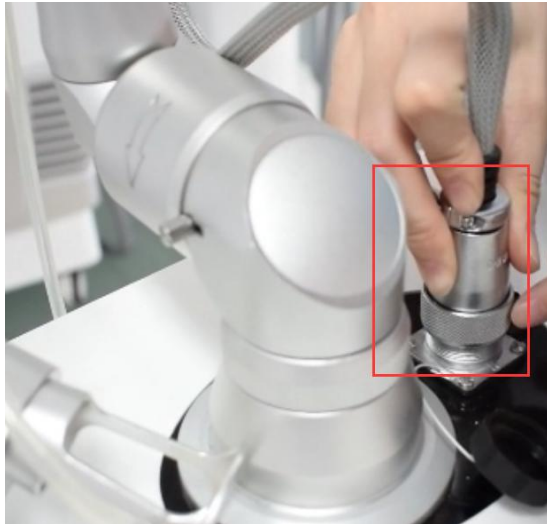
B. Install the power line: connect the electricity power line with the machine.

### 3. Installation of articulated arm:



Take out articulated arm from accessories case, and insert in above picture. Make sure 100% insert downwards, keep the gap less than 2 mm. show as following:





Then please  
tightening  
this screw

**Bind Data Line and blowing pipe to the articulated arm, show in follows**

#### **4. Installation of probe**



#### **5. Installation of blowing pipe:**

**Notice:**

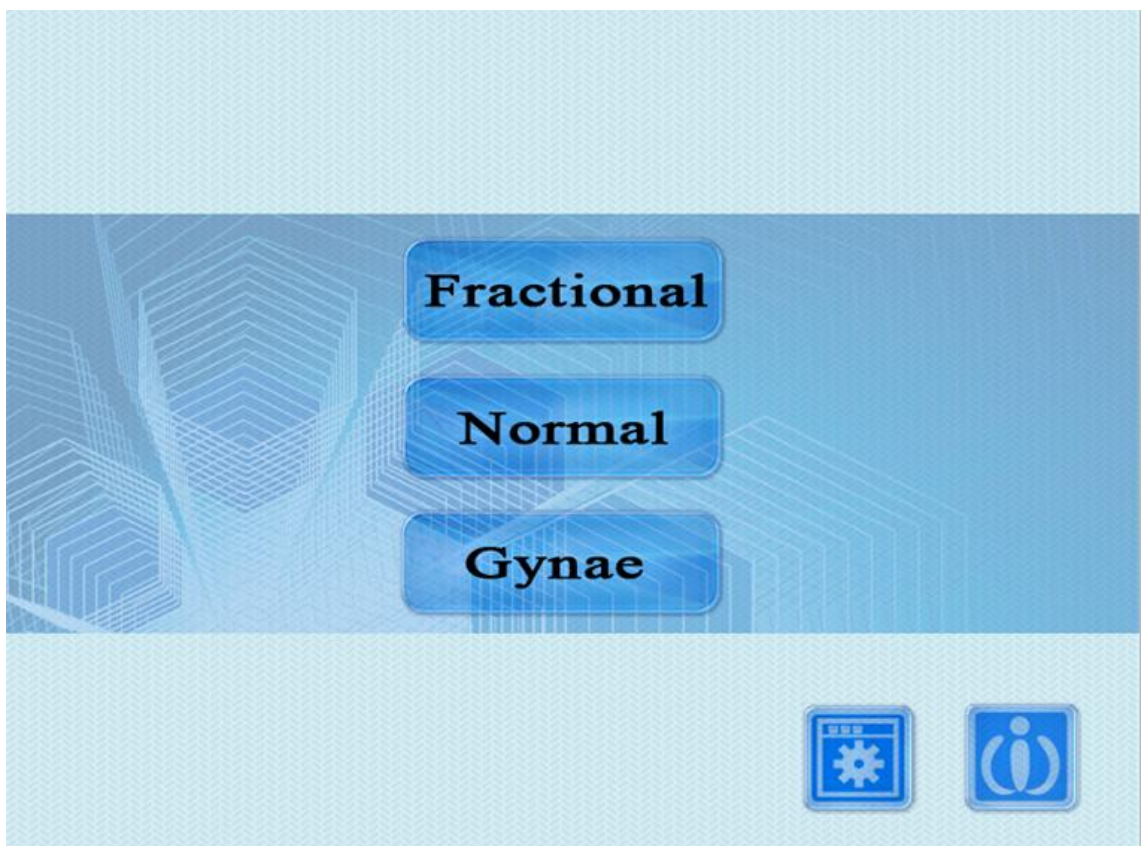
Fractional co2 laser machine can be use in hospital and beauty salon, the notice item about the installment including:

- Open the package, and place the machine on level ground
- Check the machine and the components enough or not
- Check the power supply has electricity or not
- Install probe, and have to well-knit, data line well
- Testing all the function of the machine is normal or not.



## Chapter 4 Co2 fractional laser instructional description

### 4.1. Main Interface

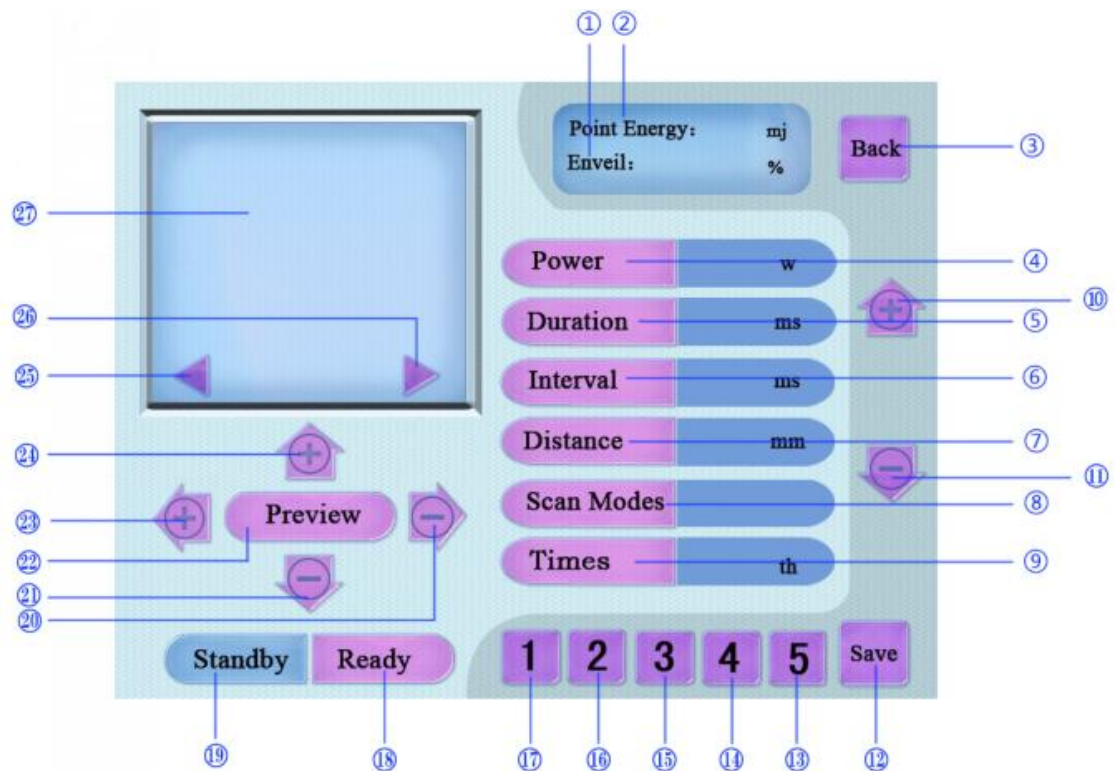


Picture 1

Turn on the machine, and then the first picture will appear on the screen as picture 1.

## 4.2 Operation Instructions of CO<sub>2</sub> Fractional Laser:

### 1、Operation Interface



- 1— Rate of cover
- 2— Energy of spot
- 3— Back
- 4— Power 1%-100%
- 5— Duration 0.1-10ms
- 6— Interval of every spots
- 7—Distance of every spot 0.1-2.6mm
- 8— Scan modes totally 3 modes (Normal, Random, Midsplit)
- 9— Choose the number of repetitions
- 10 —Increase
- 11 —Decrease
- 12— Save the parameters
- 13—17 — 5 parameter
- 18— Ready
- 19— Standby
- 20, 21, 23, 24—Select the location of the graphic
- 22—Preview
- 25, 26— Change graphic, total 6 graphics can be choose
- 27— Graphic

## 2、Introduction of All Buttons on Fractional Laser Interface:

### A. Power button:

function: Adjust power from 1% to 100%

usage: 1. Press it

2.  is to increase power,  is to decrease power

### B. Duration button:

function: Adjust the pulse width, the smaller the number, the smaller the shot. On the contrary, the larger the number, the larger the shot. And if the number is larger, the energy is bigger. Scale of adjustment 0.1—10ms

usage: 1. Press it directly

2.  is to increase power,  is to decrease power

### C. Distance:

function: The distance between shot and shot, adjust scale 0.1-2.0mm

usage: 1. Press it

2.  is to increase,  is to decrease

### D. Interval:

function: The interval time of rescanning



usage: 1. Press it

2.  is to increase,  is to decrease

### E. Times:

function: Adjust the time between shot to next shot.

usage: 1. Press it

2.  is to increase width of pulse,  is to decrease width

of pulse

### F. Overlap:

function: Choose scanning times, adjust scale 1-20

usage: 1. Press it

2.  is to increase,  is to decrease



**G. Shape:**

function: Choose different graphics, there are six graphics total

usage: 1. Press it



2. Use  and  to choose graphic

**H. Scan mode**

function: choose different scan methods:

Normal, Random, Midsplit

usage: 1. Press it

2.  &  are used to choose scan method

**I. Back**

function: Back to previous menu

usage: Press it

**J. Graphic Translation**

function: Move the graphic paralleled to the left, right, up and down

usage: 1. Press the arrow directly

**K. Save:**

function: Save the parameters after setting up

Usage: After set up any parameters, press save button to save

**L. Preview**

function: Preview scan graphic and aim at treatment area

usage: Before treatment, press preview button to preview

**M. ①②③④⑤:**

function: Six buttons are used to save six different data (parameters)

usage: Press any button among ①②③④⑤

**N. Standby**

function: Status of standby

usage: Press the button, the machine will go out of working condition

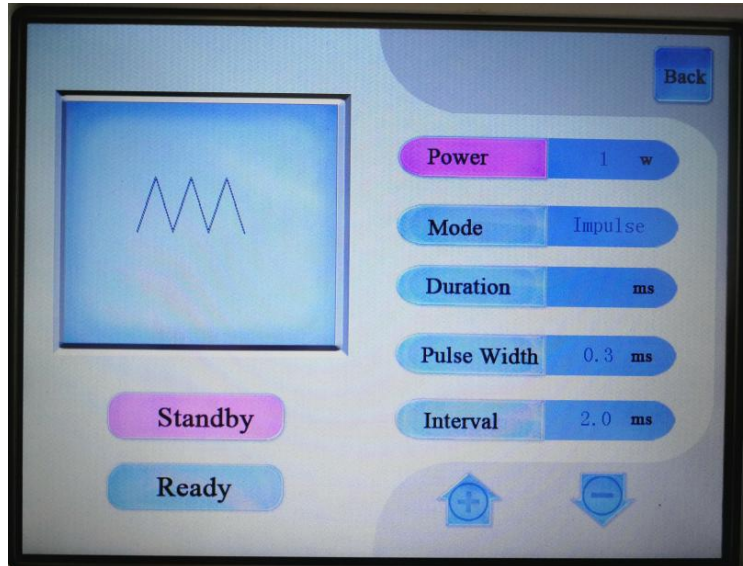
**O. Ready**

function: The machine comes to ready status

usage: Press the button directly; it comes to condition of ready

## 4.3 Operation Instructions of Normal CO<sub>2</sub> Laser:

### 1、Operation Interface





### 2、Introduction of All Buttons on CO<sub>2</sub> Laser Interface:

#### A、Power button :

function: Adjust output of energy



usage: 1. Press it

2.  &  are used to increase or decrease the energy

#### B、Mode:

function: Adjust treatment mode, 1. One point mode 2 continuous point 3 pulse point

usage: 1. Press it

2.  &  are to choose three modes

#### C、Standby:

function: Status of standby

usage: Press the button, the machine will go out of working condition

#### D、Ready:

function: The machine comes to ready status

usage: Press the button and it will come to condition of ready

#### E、Back

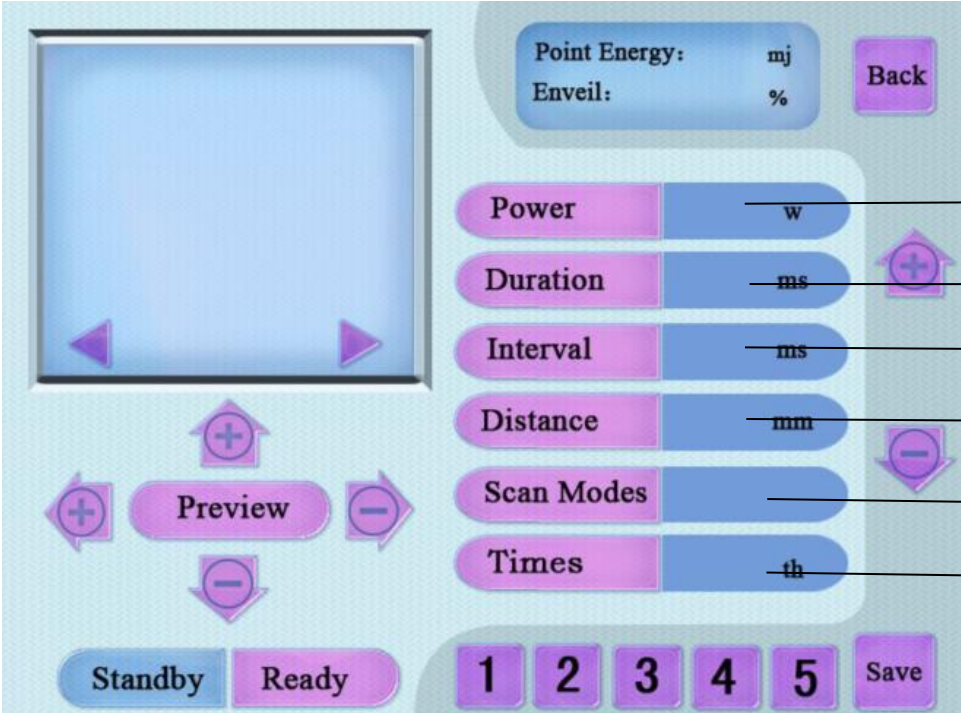
function: Back to previous menu

usage: Press it

## Chapter 5 Clinic Applications

### 5.1 Treatment Parameters for Fractional Reference

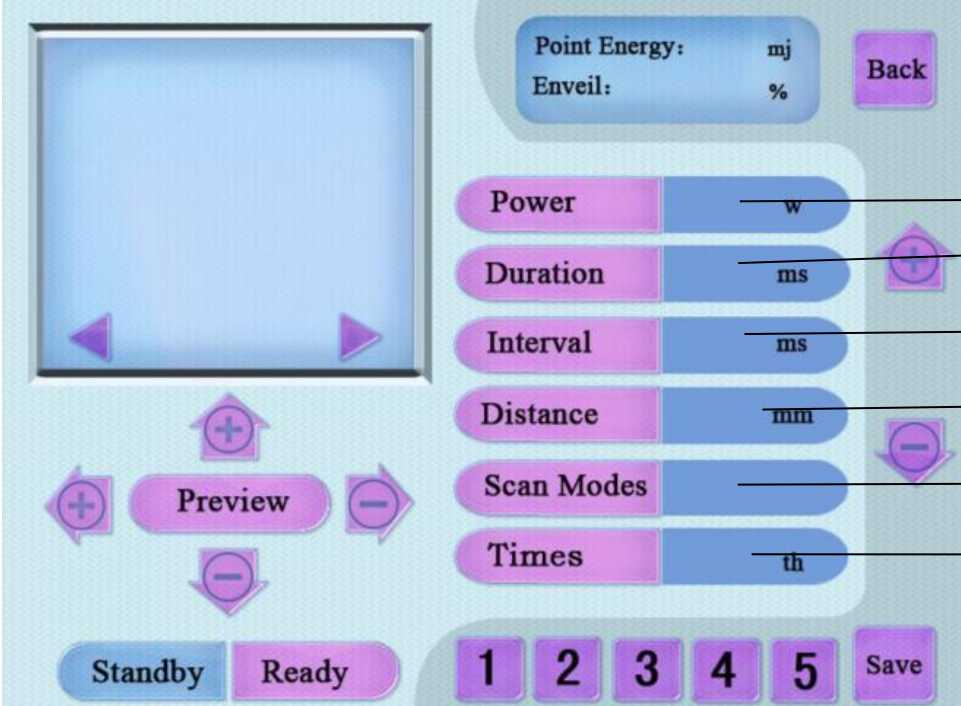
**A. for wrinkle removal, skin rejuvenation etc.:** we suggest that pulse duration is over 3, show as following:



The screenshot shows a control interface for a medical device. On the left is a large square preview window with left and right arrow buttons. Below it are four directional buttons (up, down, left, right) surrounding a 'Preview' button. At the bottom are 'Standby' and 'Ready' buttons, followed by a row of buttons numbered 1 through 5, and a 'Save' button. On the right side, there are several parameter controls: 'Point Energy: mj' and 'Enveil: %' with a 'Back' button; a 'Power' slider set to 'w'; a 'Duration' slider set to 'ms' with an upward arrow button; an 'Interval' slider set to 'ms'; a 'Distance' slider set to 'mm' with a downward arrow button; 'Scan Modes' with a downward arrow button; and 'Times' set to 'th'. To the right of these controls are five text boxes providing suggestions for each parameter.

Start from 30%- 50% and increase accordingly till micro-change on skin
Suggest: 1.0-1.3ms
Suggest: 1-2
Suggest: 0.7-1mm
Suggest: Random
1

## B. Reference Parameters for Scar Removal:



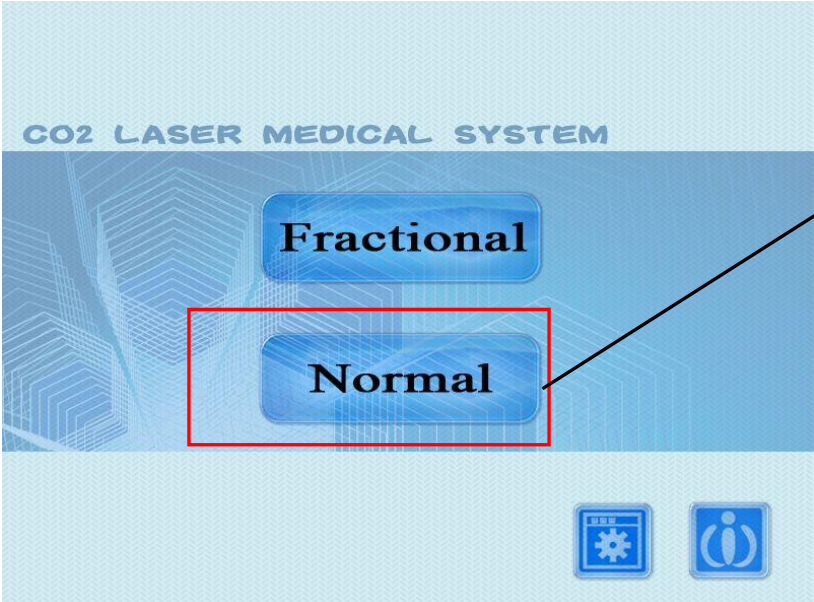
The screenshot shows the CO2 Laser Medical System interface for Scar Removal. The interface includes a large preview window on the left, a 'Preview' button with directional arrows, and a 'Standby' button. On the right, there are several parameter settings:

- Point Energy:** mj
- Enveil:** %
- Back** button
- Power:** w
- Duration:** ms
- Interval:** ms
- Distance:** mm
- Scan Modes:** (with a dropdown arrow)
- Times:** th

Below these settings are five numbered buttons (1, 2, 3, 4, 5) and a 'Save' button. To the right of the interface, a series of text boxes provide suggestions and instructions:

- Start from 40%- 60% and increase accordingly till micro-change on skin
- Suggest: 1.3-1.5ms
- Suggest: 1-2ms
- Suggest: 0.8-1mm
- Suggest: Random
- 1

## 5.2 Treatment Parameters for Normal Reference



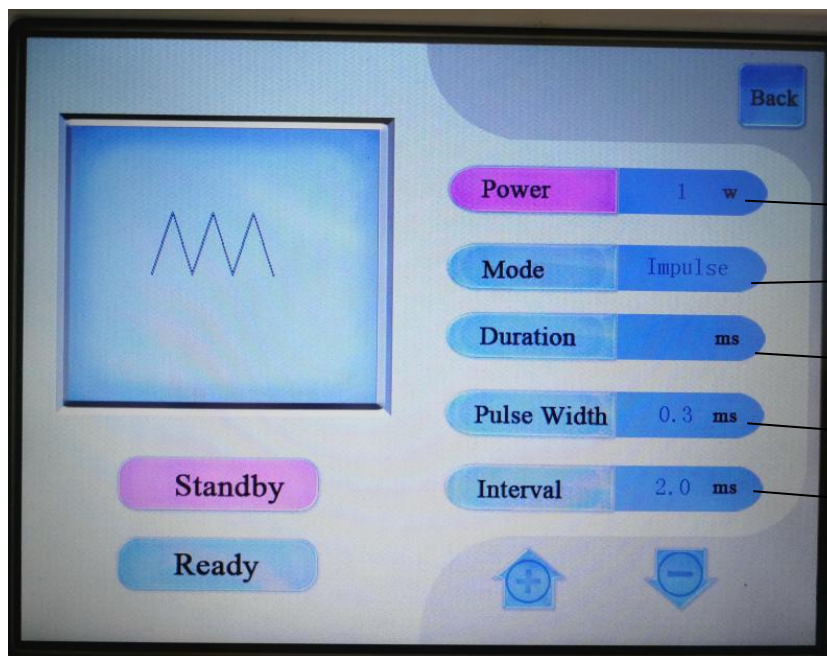
The screenshot shows the CO2 Laser Medical System interface for Normal Reference treatment. The interface has a blue background with the text 'CO2 LASER MEDICAL SYSTEM' at the top. Below this, there are two main buttons: 'Fractional' and 'Normal'. The 'Normal' button is highlighted with a red rectangular box. An arrow points from the 'Normal' button to a text box on the right that says 'Choose normal system to do'. At the bottom of the interface, there are two icons: a gear icon and a person icon.





Please change this  
probe

### A. Reference Parameters for flat wart, wet wart removal, surgery



Start from 40%- 60%  
and increase  
accordingly till  
micro-change on skin

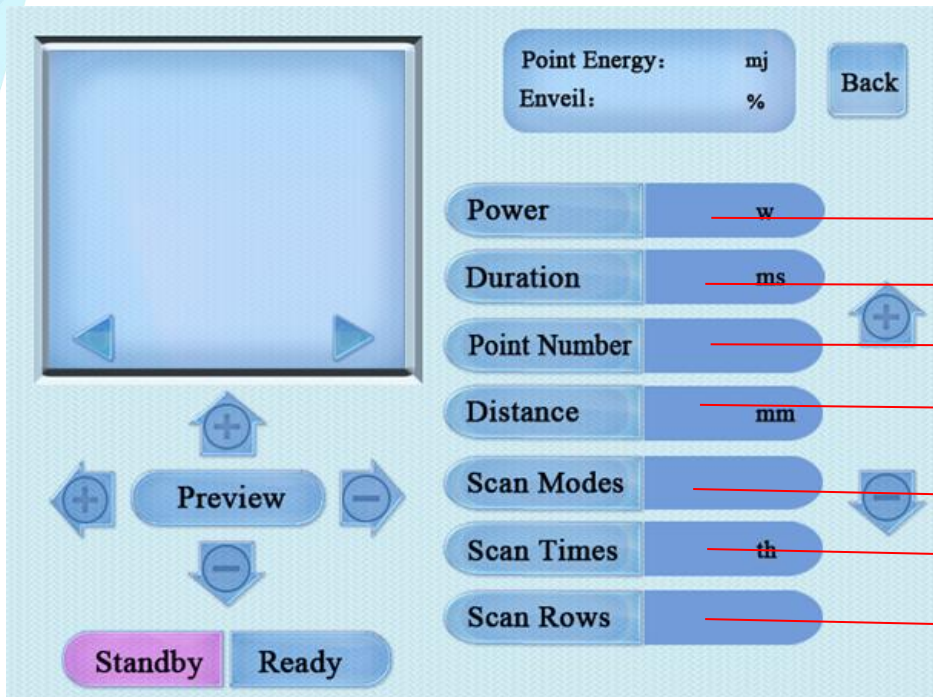
Usually use Impulse

Don't need to choose

Suggest: From 1mm

Suggest: 1-2ms

### C. Reference Parameters for Vaginal Treatment



Point Energy: mj  
Enveil: %

Back

Power: w

Duration: ms

Point Number

Distance: mm

Scan Modes

Scan Times: th

Scan Rows

Preview

Standby Ready

Suggest Start from 20%- 30% and increase accordingly till micro-change on skin

Suggest 1

Suggest from 20 to 32

Suggest from 1.0ms

Suggest from 20 to 32

Suggest Random

Suggest 2-5



With S.S. steel frame together, it is 360 degree head, to do vaginal tightening



Central therapy head, use for Urine incontinence and inflammation



Use for vaginal whitening

### **5.3 Treatment Course:**

- 1). Wrinkle removal, acne scar removal, skin resurfacing, skin rejuvenation
  - a. 3-5 treatments per course
  - b. do treatment every 3-4 weeks.
- 2). Scar removal:
  - a. 4-6 treatments per course
  - b. do treatment every 4-5 weeks.
- 3). Facial skin rejuvenation:
  - a. 2-3 treatments per course
  - b. do treatment every 3-4 weeks.
- 4). Vaginal Treatment:
  - a. 4 treatments per course
  - b. do treatment every 7 days.

### **5.4 Attentions in Treatment:**

- a. adjust energy from low to higher, or may burn skin
- b. it's not short than 3 weeks every treatment.
- c. water prohibited on treatment area in 24 hours.
- d. isolation prohibited on treatment area in 7 days.

### **5.5 Attentions After Treatment:**

1. Skin may feel warm and appear a little sensitive and pink. Apply an ice pack to the treated area when you get home to accelerate recovery.
2. On rare occasions, skin may appear to have miniscule red bumps that may cause slight itching, use Real Results Recovery Gel to continue to soothe and calm the skin at home.
3. Avoid using makeup unless it is a mineral based makeup
4. Avoid excessive hot water or cold water
5. Avoid strongly scented lotions or soaps, exfoliating creams, and scrubbing
6. Avoid picking or scratching at the skin

7. Apply SPF 30+ sunscreen to protect your skin from the sun.
8. Avoid using AHA (Alpha Hydroxy Acid) or Vitamin A products
9. Avoid swimming pools and spas with multiple chemicals/chlorine
10. Avoid activities that cause excessive perspiration
11. 3 days + Always remember to apply your SPF 30+ sunscreen everyday to protect your skin from the Australian sun to avoid repeat damage and marking.
12. Some darker spots may take longer to lighten and some scarring may need ongoing maintenance\*. Some spots, like freckles, may form a scab and will naturally purge from the skin.
13. A clinical therapist will assess your skin and advise you accordingly.
13. \*In approximately 1% of cases skin pigmentation and indented acne scarring may take up to 6 months or longer post treatment to clear, depending on individual skin response.

## **Chapter 6 Simple Maintenance and Repair**

### **6.1 Normal Problems and Failures:**

#### **A. No electric current to the whole machine**

##### **Solutions:**

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

#### **B. Water flow alarm:**

##### **Solution:**

- a. Check up whether enough water inside water tank
- b. Check up whether pump work well or not
- c. May air inside pump, should turn on/off machine frequently till air exhausted; or output water and input water again
- d. May problem to water flow switch, replace new one or make those two wire (connect to water flow switch) short circuit

#### **C. System halted:**

##### **Solutions:**

- a. High interference, check up whether electric appliances of big power rounding network



- b. Software out of control, replace new LCD controller

**D. Uneven energy output or off position:**

**Solutions:**

- a. Adjust laser beam path
- b. Lens (on probe) is dirty, clean by alcohol.

Notice: take it use after lens dry, or alcohol fire and damage lens

**E. No infrared ray indicator:**

**Solutions:**

- a. Check up power supply for infrared ray indicator, whether 3V DC output or not
- b. Replace new sighting device of infrared ray

**F. Blowing device does not work:**

**Solutions:**

- a. check up “pump”, whether work well or not
- b. check up “pipe”, whether leak or not

## 6.2 Daily Maintenance and Repair:

**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. Repair:**

- 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