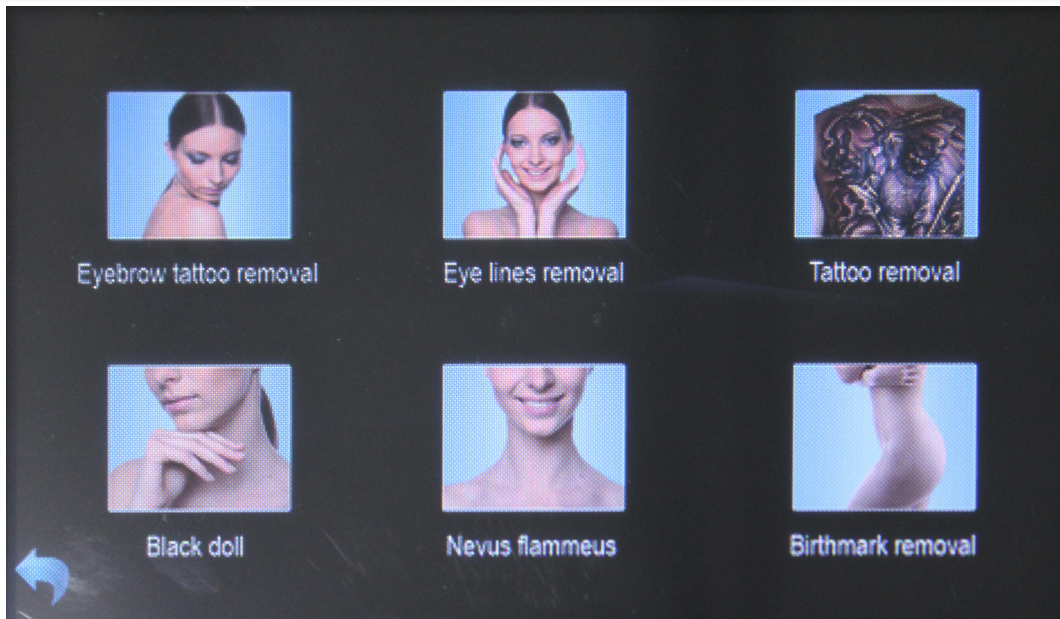


# USER MANUAL

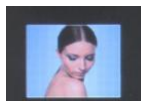


—Please read the instructions before use!

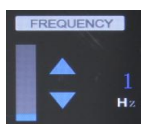
## 1、 Boot operation to wait



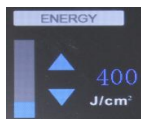
Treatment Program Operation Interface



Eyebrow tattoo removal :current treatment program



: Work several times a second, 1-10Hz adjustable.



YAG energy display , Click ▲ and ▼ to increase or decrease YAG energy.



:water temperature



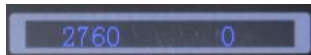
water circulating status



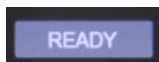
lamp status



working



counter of shots for the current treatment



To switch the work status, press down this button



To stop the work status, press down this button



back

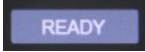
#### • Pre-operation

Clean skin

#### • Operation Steps

1.Filling water.

2.Choose Treatment head:1064nm ,532nmThen fix it in the laser gun.

3.Turn on the key switch and the laser control switch. Adjust the parameters, Point the laser output to the treatment area .then Press down the  key and step on the laser foot switch ,now the statue become to [work],start to emit laser .At this time, you will find the display screen start to count.

### I. Machine structure

The Nd:YAG Laser Tattoo Removal System is made up of light route system, power supply system, computer controlling system, cooling system, etc. The light route system is installed into the hand piece, but power supply, controlling and cooling system are installed into the machine box of power supply.

Main technical parameters:

Laser model: Q-switched Nd:YAG Laser

Laser wavelength: 1064/532 nm

Pulse energy: 50mj

Pulse width: 8ns

Repetition frequency: 1, 2, 3,4,5, Hz

Cooling method: inner circulation water cooling

Power supply: AC110V± 10%, 50~60Hz; 230V±10%, 50~60Hz

Main physical parameters:

Dimensions: 370×275×245mm<sup>3</sup>

Total weight: 18kg

Each part's name and function:

1. Emergency switch: When accident happened suddenly, press the red knob swiftly, then the machine is out of power. Turn the button in the arrow direction to spring it up and power resumes again.
2. Key switch: This is the main power supply switch. The screen displays a long horizontal line. Press the "down" button to shut down the signaling voice.
3. Simm (simmer): Pressing the knob makes system enter into the standby state.
4. Freq (frequency adjusting) key: Set repeated frequency 1~6Hz.
5. Power (power adjusting) key: This is the keys that can adjust energy higher and lower. During operation, every time when "+" is pressed, its energy will increase by 20mj. Every time when "-" is pressed, its energy will decrease by 20mj.

## II. Working condition

Normal working condition:

1. Temperature: 5°C-30°C
2. Relative humidity: ≤70%
3. Pressure: 860-1060hPa

4. Power supply: AC110V± 10%, 50~60Hz; 230V±10%, 50~60Hz

Working mode: interval and continuous working mode. Best to pause for 5 minutes after each continuous outputting of 5000 pulses.

Cooling: Circulatory water cooling with distilled water

## III. Power supply

- power supply: AC AC110V± 10%, 50~60Hz; 230V±10%, 50~60Hz
- Connection:

1. Safety fuse socket: The safety fuse is installed into the power supply socket, using safety fuse(6A/ φ5 ×20) which is used for over loading protection.

2. Power input socket: The machine should be connected to a power supply using a

power cord.

#### IV. Installation

a) The Nd:Yag Laser System should be installed into operating room or therapy room fulfilling the following requirements:

Temperature: 5°C-30°C,

Humidity:  $\leq 70\%$

b) Power supply is installed per the above requirements. Please have qualified electrician to perform checking and installation.

c) Installing navigated spin plugs: Plug navigated spin plugs into the INTERLOCK at the back of machine trunk. Machine will stop outputting laser after pulling out the INTERLOCK.

d) Installing pedal foot switch: Plug the pedal foot switch into the F00TS at the back of machine and then screw it on tightly.

e) Screwing off the stopper on the water tank, then screwing it on tightly after adding distilled water fully.

#### **【Warning】**

**Expensive and fragile laser apparatus is installed in the hand piece (gun). Don't let it fall to the ground during use!**

#### **【Warning】**

**Machine performance will be influenced if it is not installed and used according to instructions. Dangers of laser radiation and electrical shock are possible.**

#### V. Operation:

electrifying:

Plug in the power cord connecting the machine and the power supply.

powering on:

1. Make sure that the emergency switch is in the state of sprung up.
2. Put the key into lock switch and screw it to the state of powering on. At the moment, water pump starts to run and the system enters into the standby state.
3. Parameter setting: Pressing the repeated frequency button can set the frequency from 1~6Hz.

Laser output:

1. Softly press the “sim” key. The standby indicator light (yellow) will light up, and the system enters into the standby state.
2. Press key “+” or “-” to the suitable energy level.
3. Aim the hand piece at the needed therapy part of the skin. Then step on the pedal till it outputs laser with continuous humming sound. When you loosen your foot from the pedal, laser will stop outputting.

**【 notice 】** When the system is working, avoid aiming the hand piece at any dangerous parts of the body(such as eyes). You must first loosen your foot from the pedal after treatment, then you can loosen hand piece when laser stop outputting.

powering off:

1. Press “sim” button and the screen will display a long horizontal line. The system then enters to the standby state, and then it will power off after 1 minute.
2. Screw the key lock to the power off location, then take out the key and give it to the designated keeper.
3. Remove the power cord from the power supply to cut off power. The power indicator light will then be turned off.
4. If emergency happened when system is working, swiftly press emergency shut-off button to power off the machine.

disinfection:

Each time before and after treatment, you must use gauze or cotton lot dipping highly purified alcohol to wipe the head of hand piece once or twice for disinfection.

smoke discharge:

In the course of treatment, the pigment grains in the tissue may splash out as well as produce soot, so you are advised to use the smoke discharge equipment to remove smoke.

use of converter V532:

Screw off the aiming device on hand piece, then screw on the converter V532. When you are about to screw on tightly, adjust the marked line on converter V532 right to the middle of shell on hand piece. This is the best position for green laser output. Other operating methods are the same.

**【 notice 】** It is strictly prohibited to replace treatment head when system is working.

## B. Maintenance

### I. Basic maintenance

#### Cleansing output lens:

There is an output lens behind aiming device. User is suggested to examine whether there are some splashed substance attached on lens after each therapy. If yes, please take off the lens and then dip waterless ethanol with cotton to softly scrub it.

#### Replacing water:

User is suggested to replace water in the machine after using one month in order to extend the lifespan of the machine.

#### **【Warning】**

**Strictly forbidden to examine and cleanse output lens when the system power is on.**

#### Supply cooling water:

Usually, after using two to three months, pay attention to observe the cooling water level, if the cooling water level is lower than waterline (the system is in the state of power off), please inject water into the water tank from the hole with injector till up to the waterline.

**【notice】** cooling water must be distilled water. It is best to use distilled water supplied by hospital. Please keep in mind that it must not use the tap water or other unqualified water.

#### Exceptions

1. The system has set up a software anti-interference procedure. When the system is turned on and it detects that there is excessive interference when the machine changes from pause state to standby state, the system may restart and reset automatically.

2. Abrupt stoppage of electrical supply. When this happens, the system has a software protective function, and you can often turn on the machine again in one minute.

## II. Maintenance contact

When your machine does not work normally, please contact our after service staff timely. If the machine is dismantled by unapproved personnel and resulted in any

damages, it is out of the guarantee scope.

## **C. Appendix**

### **I. Appendix 1: Notice when you treat black & blue pigmentations with laser at 1064nm**

#### **1. What you should do before treatment:**

First, know that whether the patient has the constitution of scar: Previously, whether the patient washed eyebrow or tattoos using other way? Observe whether the scar has existed? Explain to patient that it is possible to have remained marks of pigmentations after removing imprinted tattoo color, which are the pigmentations caused by sunburn after tattoo. And explain to patient that the tattooed material is possibly constituted of complex colors, so when removing blue and black colors, it is likely to remain coffee or red color material. Patient can have a treatment with blue light after interval of two months.

Explain to patient the things that may happen in operation and after operation. Meantime, avoid the unnecessary dissension with patients for the reasons that patients have little understanding for the operation as well as recovering course after operation in the treatment course.

Before purifying eyebrow, it's better to shave the eyebrow in order to observe it well in operation.

#### **2. Occurrence in operation:**

When treating the deep tissue, it will produce stronger pigment explosion together with stronger noise because laser power is intensely absorbed by black pigment: the part of human body can appear turgidity owing to the smashed pigment; and the shallower pigment will explode out from scarfskin and form a seeping blood spot.

After the first treatment with laser, the tissue color will turn shallower, but after a period of time (ten minutes or several tens of minutes), the tattooed color will partly restore, which is also normal. Meantime, the gulping function and transport function of the patient's body cells will last for a rather long time (two to three weeks). During this period, the tattooed color of tissue will gradually turn shallow.

Advise that the second treatment should start two to three months after the first treatment.

#### **3. Possible phenomena after operation:**

Hair color will possibly fade and fall off, but in about four weeks new hair will grow again even stronger and darker than before, but eventually it will resume normal.

The treatment part will have blood seeping and turgidity, but its degree is different for different people.

After detumescence, the treatment part will feel itchy and you may be able to feel a hard tissue. These are all normal. These responses will disappear after two weeks to one month.



#### 4. Doctor's advice after operation

It is forbidden to do possible infectious action, including drawing eyebrow and washing eyebrow with water for three to seven days, and guarding against sunburn. For patients who bleed more and swell seriously, they can take antibiotic medicine according to doctor's advice.

## **II. Appendix 2: Notice when you treat brown & red pigmentations with laser at 532nm**

Laser at 532nm is called blue laser, which has a big difference to biologic tissue compared with laser at 1064nm.

The hemoglobin in human body and the tattooed brown as well as red pigmentations by man-made have a certain absorption to laser at 532nm, so after being illuminated by laser, the scarfskin tissue is possible to appear epidermis boiloff, and the capillary vessel tissue below scarfskin which absorbed laser at 532nm would occur to outburst and produce gore, the symptom is called "zidian sickness". The brown and red pigmentations absorbing laser at 532nm will blow up, spring out from body or be smashed by laser so that pigmentations are metabolized and discharged by body cell.

The possible side effects when removing brown and red pigmentations with laser at 532nm:

1. The surface of skin boils away and blanches, and scarfskin is also putrefied. The over-pigments possibly fade away or pigmentations become darkness.
2. The treatment part will produce redness and turgescence, if excessively damaged it will lead to scab and the recovering time is from twenty to sixty days according to different people.

When remove brown & red pigmentations with laser at 532nm, you should use the small energy densities (also big spot size) to have a near treatment, while the deeper pigmented layer you should treat many times but each treatment interval is less than two months.

Before treatment, you should explain to patient the possible side effect and the possible iron hydronium which is contained in individual pigment can transform into iron oxide after absorbing laser so as to blacken and aggravate the tattooed color as well as lead to treatment failure.

After treatment, the patient should keep away from water and shouldn't touch the treatment part to avoid infection. Meantime, patient should avoid sunburn so as not to arouse pigmentationed darkness.

Human's eyes are very sensitive to laser at 532nm. Eyes illuminated with 532nm laser can lead to eye-twinkle or permanent blindness. So the operator must wear the laser protective glasses as well as keep the patient's eyes safe when treating. Other irrelevant people must leave the treatment room.

**【 notice 】 The color material which contains iron hydronium can not be removed with laser.**

### **III. Appendix 3: The skills and methods to remove tattooed colors (as for reference)**

#### **1. Eyebrow purifying**

Purifying normal blue, black eyebrows:

Set the frequency of light (three or five times each second), the head of hand piece should keep distance of one finger from skin. After the first purifying eyebrows, there is a returned color within ten to twenty minutes, then go to the second purifying for further breaking the tattooed color while the head of hand piece should keep two or three fingers distance more or less from the treatment part in order to increase the absorption of body. After one month and a half, recheck whether the tattooed color is faded away completely. If not, purify again.

The eyebrows you used other way to wash it before and the skin has existing defectiveness:

Set out the frequency of light (three times each second), the head of hand piece should cling to skin tightly and increase its angle to skin, only purifying for one time is okay. After one month and a half, recheck whether the tattooed color has faded away. If not, purify again.

Purifying brown eyebrows:

Set out the frequency of light (two to three times each second). The head of hand piece should keep a distance of three fingers from skin. After the first purifying, if still remain deeper color on skin, purify once again. After one month and half, recheck it again. If only red color is remained on skin, purify it with green light. When treating with green light, the head of hand piece should keep distance of one to two fingers from skin.

#### **2. Purifying eyelid**

Set the frequency of light to three times each second. The head of hand piece should be kept at a distance of about one finger from skin, and yet it is difficult to purify eyelid. It needs two or three times treatments and each treatment interval should be two months for the best result.

#### **3. Purifying tattoos**

It is the same method to remove eyelid. If the tattoo area is too big, just use one time purifying in order to avoid great damage.

#### **4. Purifying lip-line**

If tattooed with red lip-line, choose one spot at lip end for testing. If the spot turns black at once after using laser, the tattooed color must contain the iron ion. Then the patient should never purify it with laser any more.

If tattooed with poppy, rose-colored lip-line and lip, choose white light used for purifying blue and black color for the first purifying. Set the frequency of light to

three or four times each second, and the head of hand piece is kept at two to three fingers distance from skin. After one month and a half, recheck it.

The white light used for purifying blue and black color is the least damaging to skin, so when you purify any tattooed color you can use white light first to remove the deeper color of them, but the green light is harmful to skin when wash red material of color, so must be cautious to use green light.

#### **IV. Appendix 4: Nursing and attention when treating with laser**

1. After being treated with laser within twenty-four to forty-eight hours, the skin will possibly appear rube faction feedback like burnt by sunburn. It may even appear blain、turgidity、bleeding together with light ache, all which belong to the normal response of tissue. If need, you can take anodyne pills or put some ices on the treatment part at intervals.
2. The treatment part irradiated by laser will be scabbed within one to three days and the scab will fall off within five to fourteen days. The patient must keep in mind that he/she cannot denude the scab on his/her initiative, but let it fall off automatically in order to decrease chance of leaving scars on skin.
3. Keep the treatment area dry and clean. Before the scab falls off, the patient can wash it with clear water, and coat some ointment of bacteriophage on it. Alternatively, you can use the boracic acid.
4. When the scab falls off automatically, the treatment area is possible to take on shallow red or pink or slightly hollow. This phenomena will gradually disappear after several weeks or several months.
5. The area treated with laser should avoid direct sunlight within three to six months. The patient should use sun-cream of SPF(anti-sun index) —fifteen multiple or above when going out. The patient should also wear broad-edge cap and dress in long-sleeved shirt and trousers when going out.
6. The treatment part which is not protected properly against sunshine will take on brown spot or uneven pigment. This will fade away after several months. In rare cases this will not fade away for a long time.
7. The patient should have the persistence and confidence in treatment course. Generally, it can only be judged whether the treatment is effective for patient after one to three months.
8. After treated by laser, if the patient finds that the treatment area appears abnormal, for example, the wound effuse yellow liquid or the patient feels great ache, the patient should go to the hospital for treatment at once.

#### **D. Special attention**

Precious, breakable, costly laser apparatus is installed in hand piece, so it is forbidden to drop and hit the hand piece.

Before using, you must screw off the stopper on water tank to check whether it has water in tank, if hasn't you must inject distilled water fully. It is seriously forbidden to power on without water. The aftereffect caused by this will be out of guarantee.

When use laser at 532nm, the operator must wear protective glasses and to avoid radiation to surrounding people. If don't wear, it will produce radiation, even lead to blindness.

## **E. Taboo scope**

If the pigment dye containing iron ion is irradiated by laser, it will produce uneasily washed-out black particle of ferric oxide and result in operation failure. At the moment, you ought to stop treatment with laser.

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