



BEIJING SYNTECH LASER CO., LTD

Apollo V+ User Manual

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**APOLLO V+ Multi-Function Light Based Platform**

# **User Manual**

**CE 0197**



**Beijing Syntech Laser Co.,Ltd**



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## PREFACE

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We would like to thank you and welcome you for choosing our product. To ensure proper use of the device, we recommend that you read this manual carefully. The following sections provide a detailed description of the system; the technical specifications, functional structure etc, operating and maintenance instructions.

Please Note:

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## **I INTRODUCTION**

### **1.1 Introduction of Apollo V+ System**

Apollo V+ is a leading researcher and developer for cosmetic treatments, It is one multi-function light-based device, including lasers and intense pulsed light systems, as well as Intense pulsed light combine with radio frequency system, Apollo V+ provide a wide range of application used in the treatment of skin rejuvenation, hair removal, cutaneous vascular and pigmented lesions etc, with these multifunction, Apollo V+ laser and light based technologies will provide greater cosmetic benefits to the consumer.

### **1.2 Features of Apollo V+ System**

- Apollo V+ System has a wide range of application area such as hair removal, skin rejuvenation, vesicular removal etc.
- Enhanced cooling system.
- Exchangeable handpieces from IPL, IPL+RF, and different lasers.
- Apollo V+ System is featured in the multifunction light-based technology, it is not only excellent in the treatment result, but also guarantees the safety of patients to the utmost extent.
- A wide range of customer from all over the world with fast and good effects.
- More lower consume cost for the material, which can use for a long period.

### **1.3 Apollo V+ Handpiece Application**

Apollo V+ can connect three type of handpieces: IPL, IPL+RF, and laser handpieces as the following list.



Apollo V+ Handpiece	Type
IPL Handpiece	HR
	R SR :
	VR
	AR
IPL+RF Handpiece	HR
	R SR :
	VR
	AR
Laser Handpiece	Er:YAG Laser
	Er:Glass Laser
	Long Pulse ND:YAG Laser
	Q-Switch Nd:YAG Laser

In general, applications include the skin rejuvenation and toning of damaged skin; skin resurfacing; hair removal and growth reduction; wrinkle reduction; vascular disease, acne treatment etc. for each handpiece, the exact application is as below:

### IPL , IPL+RF Handpiece Application

IPL handpiece and IPL+RF handpiece has same application except the RF function.

R SR :

SR is for facial treatment, you can choose this option for pores constringency, it can reduce fine wrinkles; shrink skin pores and to effectively improve coarse pores. also improve the skin to make it whiter.

HR

1. HR is used for removing the hair, which is black and strong, such as: armpit hair, etc. also for fine hair, such as: lip hair, etc.
2. Wrinkle removal.

VR

1. VR is used for removing the strong vessels on the face, which means you can



obviously see the venation of the vessels. Also for removing the vessels, which are not very strong; you can only see that there are rubefaction on the face, but the venation of the vessels are not very clear.

## 2. Improve the vessel pathological changes.

### AR

AR is used to improve acne disease and some small brownish spots on the skin, which often turning darker or increasing in number upon exposure to the sun; you can also choose this option to cure some kinds of spots, such as: age pigment, sun-barked spots, also improve the chloasma. Also some kinds of acne, such as: adolescent acne, oil acne, etc, generally speaking, acne is an inflammatory disease of the sebaceous glands and hair follicles of the skin that is marked by the eruption of pimples or pustules.

## Laser Handpiece Application

### ✧ Er:YAG Laser Handpiece:

Scarring removal, skin resurfacing, wrinkle removal;shrink pores: skin rejuvenation.

### ✧ Er:Glass Laser Handpiece

Wrinkle removal, scar removal,skin rejuvenation.

### ✧ Long Pulse Nd:YAG Handpiece:

Hair removal, vascular therapy, skin rejuvenation, wrinkle removal,spider veins.

### ✧ Q-S Nd:YAG Handpiece

Eyebrow line removal, tattoo removal,speckle removal, lip line removal, titian nevus removal.

#### •1064nm wavelength for dark blue and black tattoos:

It can get rid of eye line,eyebrow line, lip line, tattoo, speckle (black, blue, etc.)

#### •532nm wavelength for red tattoos:

It can get rid of eyebrow line, eye line, lip line, tattoo, speckle, titian nevus (red, brown, etc.)



## 1.4 Technical Parameters

Function	Light Based Plat Form
Handpiece Type	IPL, IPL+RF, Laser.
Repetition	0.5Hz
Operating Panel	8.4" TFT Color touch screen
Skin protection	Contact cooling, 0-5°C
Dimension	320×380×1180mm <sup>3</sup>
Weight	48Kg
Power	1500W





## II Safety & Protection

Apollo V+ System is designed for safe and reliable treatment when you use it properly. Only company authorized personnel may service the system, especially inside its protective covers. Authorized personnel and maintenance technician and other user should adequately understand the safety information provided in this chapter.

### 2.1 Electric and Mechanical Safety

- Keep all covers and panels of the system closed. Removing the covers creates a safety hazard.
- There is dangerous high voltage in the machine, so electricity may remain in some components. Therefore, please keep all the panels and covers closed. No one could dismantle any components except the persons authorized by Beijing Syntech Laser Co., LTD. Otherwise, there will be dangers.
- Turn off the system more than 1 minute to replace the handpiece, Do not pull out the handpiece during the system start-up.
- When system is shut down, the next start-up should wait at least 1 minute.
- Perform maintenance procedures when the system is shut down and disconnected from power.
- With the wheels, please remove the machine carefully and slowly, the system may cause injury if proper care is not used when moving it.
- The system is grounded through the grounding conductor in the power cable. This protective grounding is essential for safe operation.

### 2.2 Optical Safety for IPL and IPL+RF Handpiece

- Everyone present in the room must wear protective eyewear whenever the



system is in use.

- Make sure that all treatment personnel are familiar with the system controls and know how to shut down the system instantly.
- Even when wearing protective eyewear, never look directly at the output window of the handpiece.
- If treatment target is near eyes ( such as eyelid ), please protect the eyes of patients with professional equipment.
- Never use the system in the presence of explosive or flammable materials.
- Please keep the handpiece output window clean at any time. After each treatment, remove the cooling gel immediately to protect the crystal filter.
- Do not use flammable cleansers such as alcohol or acetone to treat the skin prior to treatment. If alcohol is used for cleaning and disinfecting, it must be allowed to dry thoroughly before the system is used.
- Never permit reflective objects such as jewelry or mirrors to reflect the pulse light.

### **2.3 Optical Safety for Laser Handpiece**

- The system is laser product and has the sign on the handpiece.
- When operating the system, Everyone present in the room must wear protective eyewear whenever the system is in use..
- Never look directly at the laser handpiece output window, even when wearing protective eyewear.
- Excessive laser energy can result in thermal damage to the treated skin. Therefore operate the system by instruction.
- Make sure that all trained staff are familiar with the system controls and know how to shut down the system instantly.
- When not in use, always keep the handpiece in its carrier. When we use the system for treatment, apply the handpiece output window directly to the



treatment site.

## 2.4 Warning

- Only trained,qualified practitioners can use the system.
- Do not use handpiece for the treatments exceeded the extension defined by this manual.
- Do not step down the foot switch before confirm that the handpiece output window is pointed to the right position.
- Do not leave the machine alone when it is in READY mode.
- Do not turn the system on if you detect water leaking from the system or from the handpiece,if the system is on, turn it off immediately.
- Do not allow handpiece to come in contact with hard materials that could damage the handpiece output window.
- For IPL and IPL+RF handpiece, There must be cooling gel to protect the treated skin.
- The machine can be maintained only after shutdown it and put off the power cord. Maintenance with power on will not only hurt persons but also damage the equipment.

## 2.5 Safe Devices of Apollo V+ System



**Key Switch:** Used to turn on and turn off the power.

Only the key provided by Beijing Syntech Laser Co., Ltd can be used



**Emergency Stop:** With the mushroom-like switch, users can immediately deactivates the system when pressed,regardless of the system stare. The emergency stop has higher priority than the key switch. Turning the



emergency stop clockwise will loose it. Otherwise the equipment will keep on shutdown mode. Suddenly pressing the emergency stop may damage the components of the system. So it should be pressed only under emergency.



**Standby/Ready Button:**

It is a switch button between “standby” and “ready”, This button is located on the right coner of main menu, when turn on the machine,system will enter into standby mode by default, in this mode system can not transmit light. When system is in ready mode, it indicates that the system is ready for transmitting light.

• **Protection for water shortage:**

when the system is short of water ,it will shut off the power and show “ Water Level” on the status bar at the bottom of main menu.

• **Protection for water flow:**

If there’s no water flows in the waterway inside the machine, the system will return to Standby mode by itself, and show” water Flow” on the status bar at the bottom of main menu.

• **Protection for high temperature:**

If the temperature of the water used for cooling is higher than the machine can afford, the system will return to the Standby mode, and show” Water Temperature” on the status bar at the bottom of main menu.

• **Sound guidance:**

There is a sound guidance for each successful operation when contact the touch screen. When the treatment pulse is transmitted, there is also sound guidance prior to each pulse to be transmitted.



### III System Installation

#### Before You Start

##### 3.1 Wheel and Brakes



Front wheel: lock



Front wheel: unlock

There are four wheels at the bottom of the machine, the front two wheels have a lock, pushing the lock button will lock up the machine, pushing again at another side will release the wheel. Please confirm to release all wheels during the movement.

##### 3.2 Handpiece Carrier



Laser Handpiece Carrier





IPL, IPL+RF Handpiece Carrier

Please connect the handpiece carrier to the mainframe when you receive the machine.

##### 3.3 Handpiece Specification



**IPL Handpiece:**



IPL Handpiece for APOLLO V+				
		Name	Specifications	Wavelength
1		Standard cooling IPL HR	IPL Output:5-40J/cm <sup>2</sup>	650nm-1200nm
2		Standard cooling IPL SR	<b>Spotsize:40*8mm<sup>2</sup></b> ;	570-1200nm
3		Standard cooling IPL VR	Cooling:0-5°C	510-1200nm
4		Standard cooling IPL AR		450-1200nm
5		Standard 4 in 1 IPL	Filter: SR;HR;VR;AR IPL Output:5-35J/cm <sup>2</sup> <b>Spotsize:40*10mm<sup>2</sup></b>	SR: 570-1200nm HR: 650nm-1200nm VR: 510-1200nm AR: 450-1200nm
		Crystal filter		
6		Standard cooling 4 in 1 IPL	Fluence: 5-40J/cm <sup>2</sup> <b>Spotsize:40*10 mm<sup>2</sup></b> ; Cooling:0-5°C	
		Sheet filter A		
7		Big spot IPL HR		650nm-1200nm
8		Big spot IPL SR	IPL Output:5-40J/cm <sup>2</sup>	570-1200nm
9		Big spot IPL VR	<b>Spotsize:40*16mm<sup>2</sup></b> ;	510-1200nm
10		Big spot IPL AR		450-1200nm
11		Super Size cooling IPL	IPL Output:5-40J/cm <sup>2</sup> <b>Spotsize:50*16mm<sup>2</sup></b> ;	Handpiece: One crystal with changeable sheet filter
		Sheet filter B		


















**IPL+RF Handpiece:**

IPL+RF Handpiece for APOLLO V+				
		Name	Specifications	Wavelength
1		Standard E-light HR	RF output:0-100J/cm <sup>3</sup>	650-1200nm
2		Standard E-light SR	<b>Fluence:</b> 5-40J/cm <sup>2</sup>	570-1200nm
3		Standard E-light VR	<b>Spotsize:</b> 40*8 mm <sup>2</sup> ;	510-1200nm
4		Standard E-light AR	<b>Cooling:</b> 0-5°C	450-1200nm
5		Small E-light HR	RF Output:0-120J/cm <sup>3</sup>	650-1200nm
		Small E-light SR	IPL Output:5-40J/cm <sup>2</sup>	570-1200nm
		Small E-light VR	<b>Spotsize:</b> 24*8mm <sup>2</sup> ;	510-1200nm
		Small E-light AR	Cooling:0-5°C	450-1200nm
6		Standard cooling 4 in 1 E-light		being prepared for research and Development






**Laser Handpiece:**

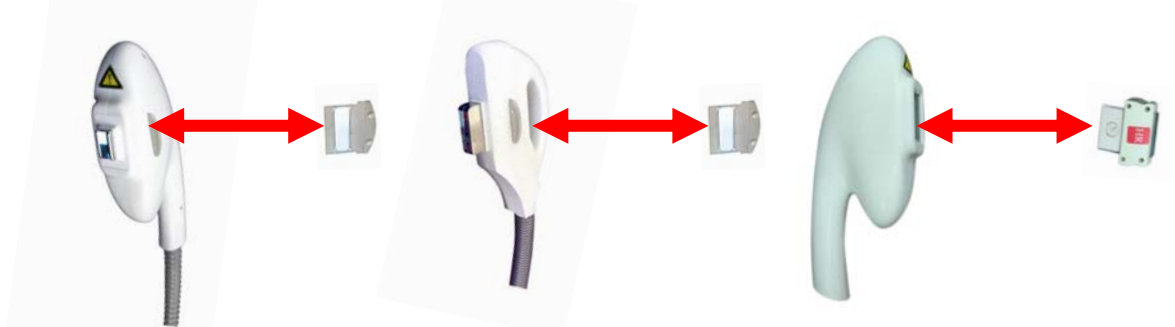
Laser Handpiece for APOLLO V+			
		Name	Specifications
1	Long Pulse Nd:YAG Laser		Handpiece Wavelength: 1064nm Energy: up to 16J Pulse Width: 3~10ms
			Standard treatment tip Spot Size: 3mm;6mm;9mm
			Variable spot size tip Spot Size: 5mm~12mm
			Standard Fractional tip Spot Size: 8mm Spot density: 100dpcm
			Variable Fractional tip Spot Size: 8mm Spot density: 50~200dpcm
2	Er:YAG Laser		HandPiece Wavelength: 2940nm Energy: up to 2J Pulse Width: 0.5~3ms
			Standard treatment tip Spot Size: 3mm;6mm;9mm
			Variable spot size tip Spot Size: 5mm~12mm
			Standard Fractional tip Spot Size: 8mm Spot density: 100dpcm
			Variable Fractional tip Spot Size: 8mm Spot density: 50~200dpcm
3	Er:glass Laser		HandPiece Wavelength: 1535nm Energy: up to 5J Pulse Width: 3~10ms
			Standard treatment tip Spot Size: 3mm;6mm;9mm
			Variable spot size tip Spot Size: 5mm~12mm
			Standard Fractional tip Spot Size: 8mm Spot density: 100dpcm
			Variable Fractional tip Spot Size: 8mm Spot density: 50~200dpcm





4	Q-Switched Nd:YAG Laser		Handpiece	Wavelength: 1064nm Energy: up to 800mJ
			Standard treatment tip	Wavelength: 1064nm
			Double Frequency tip	Wavelength: 532nm

### 3.4 Changable Filter Handpiece Connection



Standard Cooling 4 in 1 IPL    Super Size Cooling IPL    Standard 4 in 1 IPL



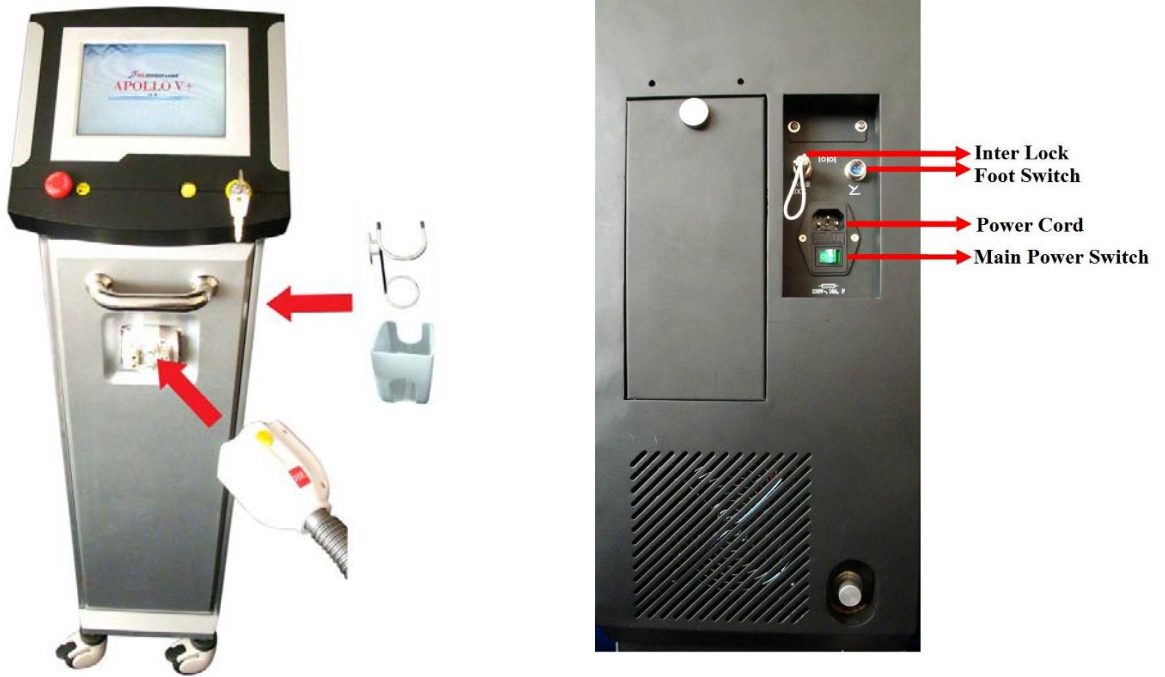
Long Pulse ND:YAG Laser

The connection of other laser handpiece is same as long pulse nd:yag laser.



### 3.5 Other Parts Connection

connect the handpiece, handpiece carrier, key switch, foot switch, inter lock, power cord to the machine.



After connection:





### 3.6 Replace the Cooling Water

The machine applies high-quality pure water or fresh distilled water in cooling system, please do not use tap water and mineral water.

You should add water when you first receive the machine or the system warns a shortage of water.(the system can not startup without water), And it is better to refill the cooling water at least once a month.

#### To Refill Cooling Water

- Turn the system off.
- Loose the screw on the back of the machine as the following picture,



- Then pull out the stopple shown as the following picture.





- Fill the water tank with fresh distilled water.

When finish please plug the stopple and the cover board of water tank.

### **Water Removing from the System**

- Loose the knob shown as the following picture can remove water.



- Turn off the system.

### **3.7 Turning the System On**

1. Connect the power cord into socket.
2. Turn on the main power switch on the back of the machine.
3. Exactly check if the emergency stop button is turned on.
4. Turn the key switch clockwise to turn on power, the machine will check itself and enter into the control software. At the same time the pump and the fan of the cooling system start to work, and the LCD will display the WELCOME interface. Then the machine checks itself in a minute.
5. When selftest has no problem, system will identify the hand piece type automatically; the machine will enter into the auto menu in STANDBY mode.
6. Else the machine will enter into the WARNING mode, and the screen will also



display the alarm information in red words.

7. Setting the treatment parameters.
8. Enter into the Ready Mode.
9. Treatment. In the ready mode, take up the handpiece then step down the foot switch to start the treatment.

### **3.8 Turning the Sytem Off**

1. Return to standby mode.

In READY mode, the system can return to standby mode by pressing the Standby/Ready button on the the screen.

2. Shut down the power. Turn the key switch anticlockwise to shut down the power.  
Turn off the main power switch on the back of the machine.
3. Please take off the power cord if the machine will not use for a long period.



## IV Software Guidance

### 4.1 Display Window Specification

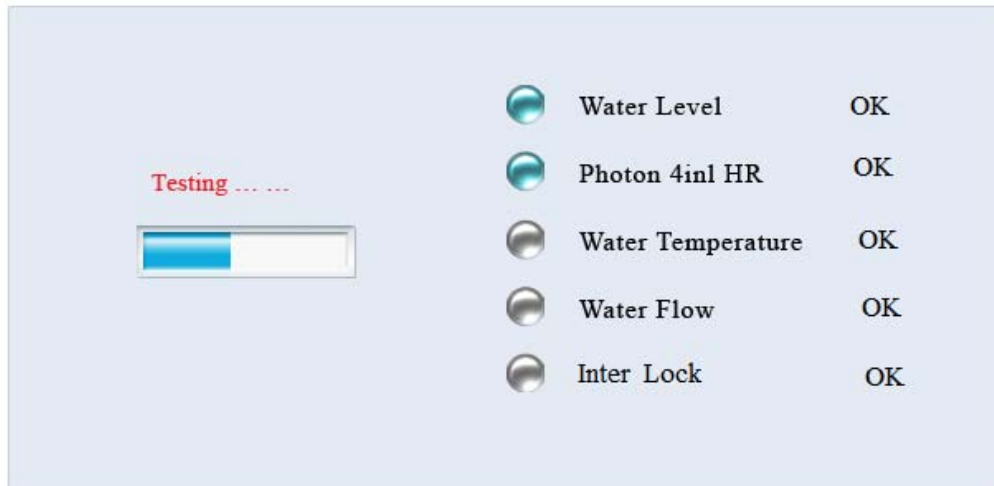
1. when turn on the machine, the system will display the startup process as picture 1;



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Picture 1: startup process

2. Then system will test itself including water level, Inter lock etc, also it will identify the handpiece automatically. (picture 2)



Picture 2: self-test interface

**Statement for self-test Interface:**

**Water level:** The level of the water in water tank.

To check if the water in water tank is sufficient for running a machine. If not the system will emit a BI...BI... sound alarm until the water is sufficient.

**Handpiece:** The handpiece which has been connected.

The system will identify the handpiece automatically and display the handpiece type on this interface. If the handpiece doesn't been plug well or there is a problem inside the handpiece, then system will emit a BI...BI... sound alarm until the handpiece is well connected to the machine.

**Water temperature:** The temperature of the water.

If the machine has started to work for a long time, The system will emit a BI...BI... sound alarm because of the water used for cooling has a high temperature and there will no laser output from the handpiece although the machine is working, please wait



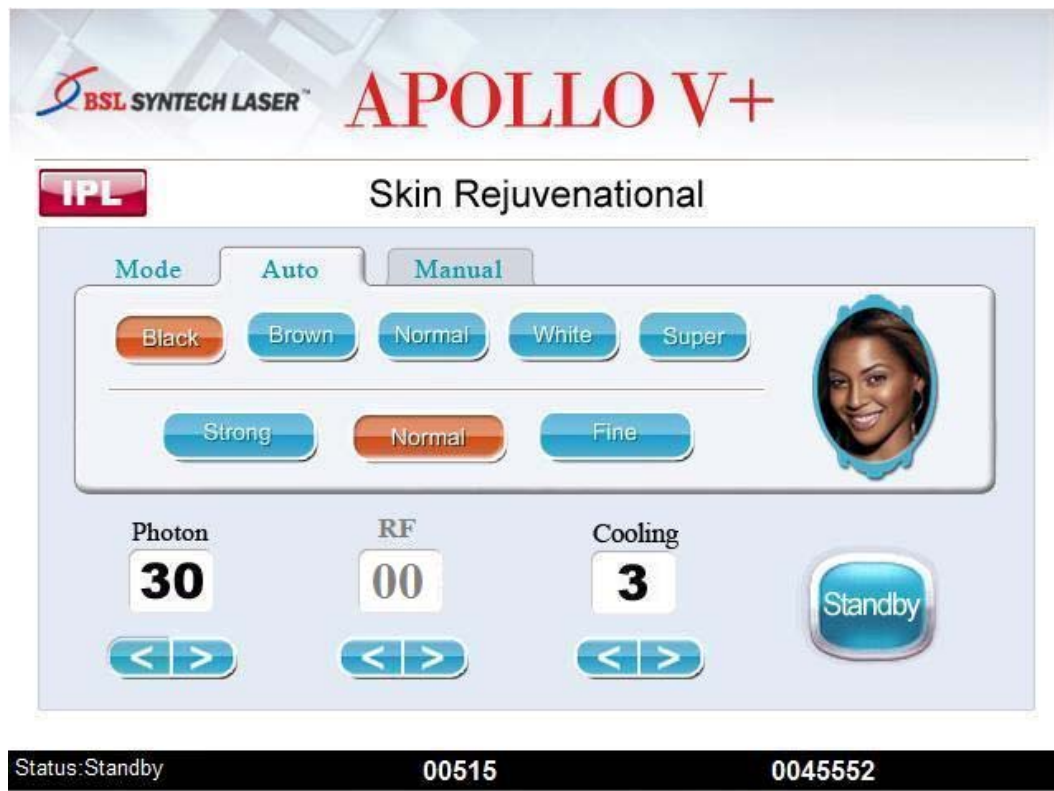
5-10 minutes, if there still has the problem, Please contact the engineer to maintain it.

**Water flow:** The flow of the waterway.

If the pump doesn't work or the impurity of the water jams the waterway because of using it for a long time, then the system will emit a BI...BI... sound alarm until this problem has been removed.

3. system will enter into main menu in auto mode if it can pass the self-test.

**IPL handpiece main menu in auto mode.(picture 3)**



Picture 3 auto mode main menu

**Statement:**

**Skin Type:** Black, Brown, Normal, White, Super (Super white).

**HR handpiece:** Strong, normal, fine.

**SR handpiece:** Takeup, Normal, Weaken.

**VR handpiece:** Thick, Normal, Thin.





**AR handpiece:** Freckle, Normal, Acne.

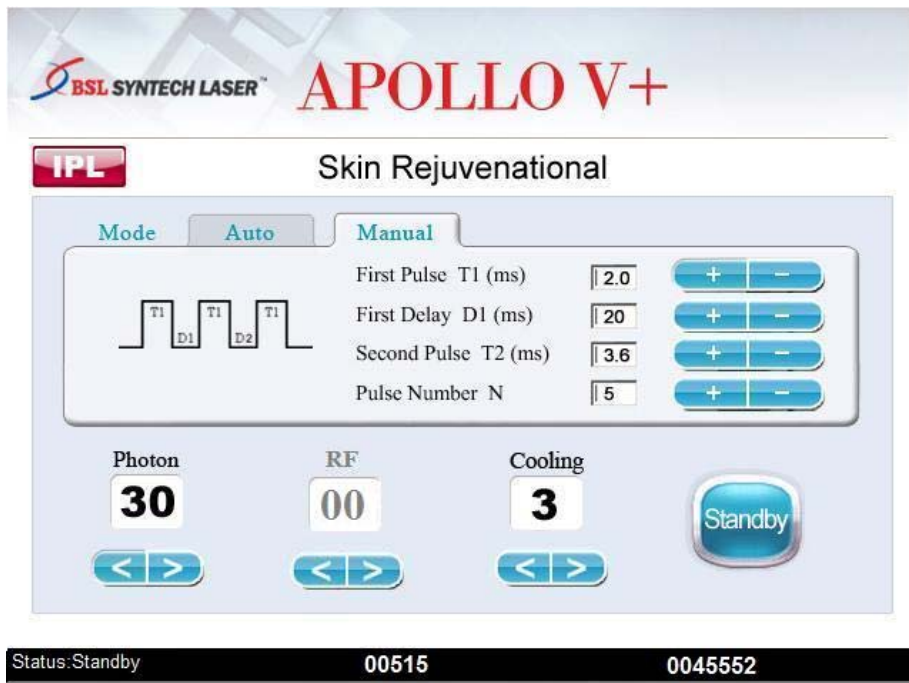
**Photon:** energy density of IPL, press the button “<” and “>” to adjust the IPL density energy, which you can set is from 5-40J

**RF(Radio Frequency):** not available.

**Cooling:** Press the the button “<” and “>” to adjust the cooling intensity according to the output energy and the feel of the customer, the cooling intensity will increase from 1 to 5.

**Standby/Ready Button:** it is a switch button between standy and ready mode, the system will enter into standby mode as default, if all paremeters are set, press this button will switch to ready mode, system can emit light in ready mode, after treatment press this button again will return to standby mode, you can change parameters in this mode. The function is the same in other main menu.

**IPL handpiece main menu in manual mode.(picture 4)**



Picture 4: manual mode main menu

In MANUAL mode, operator can adjust the parameters of the PULSE NUMBER, PULSE DELAY, etc. This mode is for professional who have experience in clinical



treatment.

**Statement:**

**First Pulse T1(ms):** range from 2.0ms to 8.0ms.

You can press the button “+” and “-” to change the number.

**First Delay D1(ms):** range from 6ms to 60ms.

You can press the button “+” and “-” to change the number.

**Second Pulse T2(ms):** range from 2.0ms to 8.0ms

You can press the button “+” and “-” to change the number.

**Pulse Number N:** range from 2 to 8.

You can press the button “+” and “-” to change the number.

**Photon:** range from 5j to 40j.

You can press the button “<” and “>” to change the number.

**RF(Radio Frequency):** not available.

You can press the button “<” and “>” to change the number.

**Cooling:** range from 0 to 5.

You can press the button “<” and “>” to change the number.



**IPL+RF handpiece main menu in auto mode.(Picture 5)**



Picture 5: auto mode main menu

**Statement:**

**Skin Type:** Black, Brown, Normal, White, Super (Super white).

**HR handpiece:** Strong, normal, fine.

**SR handpiece:** Takeup, Normal, Weaken.

**VR handpiece:** Thick, Normal, Thin.

**AR handpiece:** Freckle, Normal, Acne.

**Photon:** energy density of IPL, press the button “<” and “>” to adjust the IPL density energy, which you can set is from 0-40J

**RF (Radio Frequency):** energy density of RF, press the button “<” and “>” to adjust the PF density energy, which you can set is from 0-100J.

**Cooling:** it is same function as above mentioned.

**Standby/Ready Button:** it is same function as above mentioned.



**IPL+RF handpiece main menu in manual mode.(picture 6)**



Picture 6: manual mode main menu

**Statement:**

**First Pulse T1(ms):** range from 2.0ms to 8.0ms.

You can press the button “ + ”and “ - ” to change the number.

**First Delay D1(ms):**range from 6ms to 60ms.

You can press the button “ + ”and “ - ” to change the number.

**Second Pulse T2(ms):**range from 2.0ms to 8.0ms

You can press the button “ + ”and “ - ” to change the number.

**Pulse Number N:** range from 2 to 8.

You can press the button “ + ”and “ - ” to change the number.

**Photon:**range from 0j to 40j.

You can press the button “ < ”and “ > ” to change the number.

**RF:**range from 0 to 100.

You can press the button “ < ”and “ > ” to change the number.

**Cooling:** range from 0 to 5.



You can press the button “<” and “>” to change the number.

**Standby/Ready Button:** it is same function as above mentioned.

**Er:YAG Hanpiece main menu (picture 7)**



Picture 7: Er: YAG main menu

**Statement:**

**Energy:** range from 200mj to2000mj.

You can press the button “+” and “-” to change the number.

**PulseWidth:** 0.5ms,1ms,2ms,3ms.

You can press the button “+” and “-” to change the number.

Note: when PulseWidth is 0.5ms, the available energy is 200-600mj;

when PulseWidth is 1ms, the available energy is 200-1000mj;

when PulseWidth is 2ms, the available energy is 200-1400mj;

when PulseWidth is 3ms, the available energy is 200-2000mj;

**Delay:**1-5s.

You can press the button “+” and “-” to change the number.



**Er:Glass main menu (picture 8)**



Picture 8: Er:Glass main menu

**Statement:**

**Energy:** range from 1j to 6 j.

You can press the button “ + ”and “ - ” to change the number.

**PulseWidth:** 3ms,5ms,8ms,10ms.

You can press the button “ + ”and “ - ” to change the number.

Note: when PulseWidth is 3ms, the available energy is 1-2.5j;

when PulseWidth is 5ms, the available energy is 1-4.5j;

when PulseWidth is 8ms, the available energy is 1-6j;

when PulseWidth is 10ms, the available energy is 1-6j;

**Delay:**1-5s.

You can press the button “ + ”and “ - ” to change the number.



**Long Pulse Nd:YAG main menu (picture 9)**



Picture 9: Long Pulse Nd:YAG main menu

**Statement:**

**Energy:** range from 5j to16j.

You can press the button “ + ”and “ - ” to change the number.

**PulseWidth:** 3ms,5ms,8ms,10ms.

You can press the button “ + ”and “ - ” to change the number.

Note: when PulseWidth is 3ms, the available energy is 5-7j;  
when PulseWidth is 5ms, the available energy is 5-10j;  
when PulseWidth is 8ms, the available energy is 5-14j;  
when PulseWidth is 10ms, the available energy is 5-16j;

**Delay:**1-5s.

You can press the button “ + ”and “ - ” to change the number.



**Q-S Nd:YAG main menu (picture 10)**



Picture 10:Q-S Nd:YAG main menu

**Statement:**

**Energy:** range from 200mj to 800mj.

You can press the button “ + ”and “ - ” to change the number.

**PulseWidth:** not available.

You can press the button “ + ”and “ - ” to change the number.

**Delay:**1-5s.

You can press the button “ + ”and “ - ” to change the number.

## 4.2 Operation Notice

- Regarding the touch screen, please carefully protect it not to be injured or scraped.
- During the treatment, the operators should wear protection glasses to avoid intense light or laser output.





- A microcomputer is inserted into the machine. In case of system crash or other exceptional operations, shut down the machine, and restart it after 1 minute. Then the machine will restore to work normally.
- During the IPL or IPL+RF treatment, please make sure that the handpiece output window should be vertical with treated skin, and there must have cooling gel between the crystal coupling head and skin.
- The handpiece output window is an exact optical instrument, so shock or impact should be avoided.



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## V Routine Maintenance

Only with simple maintenance, the machine can be used for a long period. Users should carry out the steps of maintenance listed in this manual, and the technicians authorized by Beijing Syntech Laser Co., Ltd will take other maintenance work.

### 5.1 Environmental Requirements

Corrosive materials can damage electronic parts; therefore, the system should operate in non-corrosive atmosphere. metallic dust can damage electrical equipment. therefore, particle dust should be kept to minimum.

For optimal operation, maintain room temperature between 20° -25°C and relative humidity of less than 80%.

### 5.2 Cleaning the System

- The machine should be cleaned once a week, and the surface of all the metallic and plastic components should be cleaned by soft,damp,non-abrasive cloth, in some cases, soft cleanser may be used.
- Clean the screen with clean soft cloth.
- Be careful not to spill any liquids on the system.

### 5.3 Cleaning the Hanpiece ( IPL&IPL+RF )

After each treatment, the whole handpiece should be cleaned, and the steps are as follows:

- Brush off the cooling gel on the handpiece output window with clean paper towels.
- Clean the surface of handpiece output window with medical tampon and



absolute alcohol.

- Clean the whole handpiece with 75% alcohol again to sanitize.

#### **5.4 Cleaning the Laser Handpiece**

- Remove the handpiece tip.
- Clean the whole laser handpiece with 75% alcohol again to sanitize.

#### **5.5 Replace the Handpiece**

When the handpiece is out of service life or reduces significantly in energy, you should replace it and send the old one to Beijing Syntech Laser Co., Ltd. The steps of replacement are as follows:

- Shutdown the machine and wait over 1 minutes.
- Press the black button of handpiece plug. This is upward and downward buttons.
- Pull out the handpiece.
- Plug the new treatment handpiece into the socket. Notice the direction of the socket. If plug it correctly, it will sound Kata.
- Turn on the power. The machine will change the parameter of treatment and show different treatment item according to the handpiece type.

#### **5.6 Moving the System**

➤ TO MOVE THE SYSTEM WITHIN THE FACILITY:

1. Turn the system off.
2. Disconnect the power cord.
3. Place the handpiece into its carrier.
4. Release the wheel brakes.



5. With one hand, secure the handpiece and slowly push or pull the system using the handle.

➤ TO MOVE THE SYSTEM TO ANOTHER FACILITY:

1. Turn the system off.
2. Disconnect the power cord.
3. Disconnect the handpiece and pack it into its storage case.
4. Release the wheel brakes.
5. Slowly push or pull the system using the handle.
6. Lift the system to the vehicle and lay it carefully.



“Upon arrival to the new location”

- Release the wheel brakes and move the system using the system handle to its new service area.
- Reconnect the handpiece.
- Inspect the water tank to assure that the system has not lost its water supply. Refill the reservoir with distilled water. Close cover securely.
- Reconnect the power cord.
- Turn system on.
- Calibrate to assure system performance.
- Turn system off until needed.

Note: Never lift, pull or push the system using the operating panel.

Always use the handles when moving the system.

## 5.7 Trouble Shooting

We guarantee to repair our products for free in the first year after they were sold and repair them in the rest years with reasonable charge. Please connect with our company once our products have any problems. Resolve methods of some common troubles are



given in the following

<b>Problem</b>	<b>Possible Reasons</b>	<b>Settlements</b>
1. You can not startup the system	The power cord maybe is not well connected or main power switch is not open	Check whether the sockets are powered and the connection between the inlet and socket.
	The emergency switch has been pressed	Turn the emergency switch clockwise and then loose it
	The key switch does not startup the machine fully	Turn the key clockwise to the greatest extent
	The fuse are destroyed	Replace the fuse. If the fault still exists, please inform Beijing Syntech Laser Co., Ltd
2.The system is crashed or there are irregular operations	The machine is strongly disturbed in accident	Restart your machine. If the problems still exist, please inform Beijing Syntech Laser Co., Ltd
3.The screen shows “Warning: Please Check Water!” after start up the machine	Be short of water	Add water into the water tank until the warnings disappear
4.There is nothing on the screen and there has alarm continually after startup the machine	connect the handpiece incorrectly, or the handpiece is not belong to the Beijing Syntech Laser Co., Ltd	Connect the treatment handpiece in correct direction untill you hear the sound “kata”, or connect the high-quality handpiece provided by the Beijing Syntech Laser Co., Ltd.



## **VI Application Guidance**

### **6.1 Application Guidance for IPL&IPL+RF Handpiece**

#### **General Rules About Parameters Selection**

When you make treatments with IPL or IPL+RF System, you can adjust the following parameters: Influence, numbers of pulse, duration of pulse and intervals of pulse. Skin type etc, Combined with the several parameters the machine could treat almost all kinds of skin.

#### **The Influence of Pulse Parameters On The Treatment**

The pulse parameters include duration of pulse and intervals of pulse. It is vital for achieving ideal treatments effectives to select properly the parameters of pulse. The key point of hair removal treatment is how to heat the pathological changes up to enough temperature and make them destroyed while the organization and surface skin are not damaged. The surface skin contain melanin that can absorb the light energy, thus the temperature of the surface skin can increase rapidly, accordingly because the side effects we do not wish.

The lights will attenuate after through a deeper cortex, while such energy density will cause damage of the surface skin, thus there are certain difficulties to treat further pathological changes without damaging the surface skins.

The cooling time of objectives is direct ratio with the squares of their dimensions. our System makes use of this principle to divide the total energy of treatment into some parts and adjust the energy and intervals between these parts. For the adjustment of duration of pulse, the part needing to be treated can be heated; for the adjustment of the intervals of pulse, the part of pathological changes can be kept higher temperature



while the surface skin can keep cool.

As to the customers with more white skin and more durable ability, can select the machine with less numbers of pulses, wider pulse and less narrow intervals of pulse.

As to the sensible customers with more black skins, can select the machine with more numbers of pulses, less wide of pulse and larger intervals of pulse.

### **The Influence of Energy Density On Treatment Result**

The energy density is the energy irradiated on the unit area of the skin, and our system applies the facula as large as 35mm x 15mm, the light scatter weakly, thus the effective of treatment can be increased. More higher the energy density is, more higher the temperature of pathological changes and surrounding organizations as well as surface skin is. When the energy density increases, the distribution of temperature will keep unchangeable, thus, the temperature increases.

As to the customers with more white skin and durable ability, can select the machine with higher energy density. As to the sensitive customers with more black skins, can select the machine with less energy density.

### **The Consequences of Adjusting Parameters**

Considering the difference between individuals, the choice of parameters is flexible. Adjust these parameters according to various conditions of skin so as to achieve the best treatment effect.

When the parameters are adjusted, firstly, the proper duration of pulse and the intervals of pulse should be selected according to the kinds of skin and shade of color of the pathological changes so as to achieve the best distribution of temperatures, and then, the energy density should be adjusted until get the best treatment effective.

Transmit setting of RF energy: the maximal output energy of our system is 100J/cm<sup>3</sup>,



the pulse duration can last 200ms, and RF energy effect on the skin through the double electrode on the handpiece; the infiltration depth can arrive about 2mm.

The unique design of the handpiece can make it output the best suitably energy, and effects on the corium deep-seated tissue.

Recommend parameters for skin rejuvenation are shown as below:

<b>Skin Type</b>	<b>Fluence</b>	<b>RF Energy</b>	<b>Cooling</b>
Light Skin	22-25J/cm <sup>2</sup>	70-90	1-3
Normal Skin	18-23/cm <sup>2</sup>	60-80	2-3
Dark Skin	15-20J/cm <sup>2</sup>	50-70	2-3

### **Treatment contraindications**

- Damaging of immune system
- Scared bodies
- Pregnant women and persons with unhealthy psychology
- persons who is taking aspirin or antioxidant.
- abnormal blood coagulation
- skins which is sensitive to lights
- diabetes mellitus, skin cancer, psoriasis, eczema or dermatitis
- parts that are filled with artificial materials after plastic surgery

### **The Process Of Skin Rejuvenation Treatment**

#### **Preparations Before Surgery**

- Eliminate the patients whose skin became dark after irradiated by sun light or artificial light within the nearest month
- Ask the diseases history of patients, find out the expectation of the patients and make sure whether the patient is suitable for treatment with INUER





System.

- Introduce the knowledge of photon rejuvenation, the discomfort during the treatment, the phenomena after surgery and the periods of treatments, etc.
- Use a little area of skin to have a test.

### **Operations Procedure**

1. Cleaning the Skin
2. Wear the eyewear to the customer and operator
3. Daub the cooling gel
4. Start treatment. Touch the skin slightly with the handpiece output window, and press down foot switch to emit pulse.
5. After have irradiated the whole treated skin, clean up the residual cooling gel.
6. After treatment, make cold compress (not ice compress) in the treated skin to reduce the swell and uncomfortable feelings. The temperature of cold compress should not less than 4°C.

### **Possible Side Effects and Corresponding Settlements**

- **Pain:** Most customers will feel uncomfortable when the pulse light apply on treated skin, just like pricked by a needle or bumped by an elastic band. It is possible that the parameter has been set improperly if there is no pain or excess pain. The hot feelings will last no more than 1 hour, and most of adults and older children can stand these uncomfortable feelings.
- **Scab or blain:** If the treatment parameter is improperly set, it maybe form scab or blain on the surface of treated skin, which can be treated with antibiotics or burns ointment, and it can healed up about 5 to 10 days.



- **Change of pigmentation:** If the parameters are used improperly or the customers don't take care to avoid sunlight, which maybe cause the pigmentation, and these changes normally will restore within 3 to 6 months.
- **Skin redness:** After treatments, the treated skin, particular the skin around the nose or face become red, and this skin redness can be reduced by low concentration steroid ointment, and it can restore with 3 to 7 days.
- **Cyanosis:** If the parameters are used improperly, there maybe blue cyanosis on the treated skin, which will last for 5 to 15 days, when it fades away, the skin may turn to red color like rust, and fade away within 1 to 3 month.
- Excessive Swelling (Edema).
- Scarring.

### **Treatments After Surgery**

- If the edema appear after treatment, they could be treated with antibiotic ointment and burns ointment. Low concentration steroid ointment also could be used to reduce the swell.
- Within 4 to 5 days after treatments, take particular care to prevent trauma, and don't take bath with hot water, do exercises or kneads.
- Use suntan oil with SPF more than 30 with 1 month after treatment, and protect the treated area against sunlight so as to be avoid pigmentation.
- Suggest the customers not to take part in furious sports or similar activities.

### **The Process Of Hair Removal Treatment**

1. Cleaning the Skin
2. Cut the hair less than 1mm.



3. Wear the eyewear to the customer and operator
4. Daub the cooling gel
5. Start treatment. Touch the skin slightly with the handpiece output window, and press down foot switch to emit pulse.
6. After have irradiated the whole treated skin, clean up the residual cooling gel.
7. After treatment, make cold compress (not ice compress) in the treated skin to reduce the swell and uncomfortable feelings. The temperature of cold compress should not less than 4°C.

Recommend parameters for hair removal are shown as below:

<b>Skin Type</b>	<b>Fluence</b>	<b>RF Energy</b>	<b>Cooling</b>
Light Skin	25-30J/cm <sup>2</sup>	70-90	1-3
Normal Skin	20-25/cm <sup>2</sup>	60-80	2-3
Dark Skin	18-23J/cm <sup>2</sup>	50-70	2-3

## 6.2 Application Guidance for Laser Handpiece

### **Er:YAG Laser Handpiece**

#### **System Overview**

Er:YAG Laser is a kind of medical system which applies a beam of laser to irradiate the skin surface of the patients. Er:YAG laser (wavelength 2940nm) is a solid-state laser. As there is a high absorption peak for water at this wavelength, when the laser apply on the skin, it instantly peeling off the outer layer of the skin layer by layer. The treatment features a shallow exposing depth. Therefore the affected part can be healed in short time without downtime.

#### **Treatment Parameter**

Choosing the correct treatment parameters is essential for successful treatment. The



pulse duration is optimized for the effective heating with minimal risk of skin damage.

**Note:**

Always start with treatment from lower setting and increase energy gradually to avoid side effect.

When treating the mild photo-aging skin. The choosing of the parameters is similar to the scar treatment. You can refer to the Fitzpatrick

Classification of Skin Type

I - Always burns, never tans (pale white skin)

II - Always burns easily, tans minimally (white skin)

III - Burns moderately, tans uniformly (light brown skin)

IV - Burns minimally, always tans well (moderate brown skin)

V - Rarely burns, tans profusely (dark brown skin)

VI - Never burns, (deeply pigmented dark brown to black skin)

Also the shallower of the skin color, the bigger of the fluency energy can be used.

For the mild to moderate wrinkling, the energy is varying and spot size ranges at 3mm or 6mm. For the wrinkling of deeper, repeated treatment is suggested and the spaced time should be not less than 2 weeks. For the periorbital wrinkling, the fluency should start from the minimal; for the mouth around wrinkling, the fluency should be the maximal; for the forehead wrinkling, the fluency should be moderate.

For the scarring, Epidermis was effectively removed on a layer-by-layer basis. If bleeding appeared, the hemostatic was used on the bleeding surface (minimal: pulse energy:200mj and spot size: 3mm max: 400mj and 3mm). Healing was excellent and without apparent scarring. An energy fluence of around 600mj and 6mm) has been proven to provide very precise ablation, because of its high selectivity to tissue water and negligible thermal damage. And the lighter of the skin color, the bigger



fluency energy should be used. And the deeper of the scarring, the bigger fluency energy should be used.

Laser overlapping is allowed from 10% to 50%.

### **Postoperative Details:**

- It is recommended that a cold (not frozen) pack will be applied to the treated site immediately after the treatment.

- It is better not to expose the skin to the sunburn within 2 weeks after treatment.

Skin redness or erythema may occur but it will disappear within three months. blistered or ulcerated skin can be treated with an antibiotic ointment or burn treatment cream.

- Two weeks after laser treatment, topical application hydroquinone 2–5%, tretinoin 0.05–0.1%, and hydrocortisone 1% cream is recommended for 2–4 weeks.

- For the darker skin Fitzpatrick III, IV, Post-inflammatory hyperpigmentation probably occur two to four weeks after laser treatment and can diminish within three months.

- Mild hyperpigmentation (rarely occur)

- Mild to moderate, postoperative acne flare-up (not often)

## **Erbium:Glass Laser Fractional Handpiece**

### **Introduction**

Erbium:Glass Laser fractional handpiece is adopted for the purpose of the narrow and deep MTZs'. It results in the maximum efficacy of the treatment because it can go deep into the skin. Our equipment gives such high energy and these micro beams create narrow, deep columns of tissue coagulation, while sparing the tissue surrounding the columns from damage. It tends to be rather focused into the deep



hole without being dissipated by the skin surface, Our laser source is Erbium:Glass of the wavelength 1540nm with the maximum power for each MTZ. Shallow holes of other fractional systems prevents the long term of effect of the skin resurfacing. Erbium glass laser has a broad application because of the excellent properties. Mostly, it is the best glass material due to its eyesafe wavelength of 1540 nm and high transmission through atmosphere.

For the long term effects with less down time, Erbium:Glass laser is best of choice of the laser source of the factional systems.

### **Wide Range of Use**

- Skin rejuvenation without removal of the top layer of skin
- Drying out of active acne by reducing the sebum production
- Specific generation of collagen during the treatment of scars and acne scars

### **Practical Operation**

- Treatment of all skin types
- Treatment over the entire year possible
- Pain free treatment without side effects
- No down time for the patient
- It gives less pain,less swelling,and less redness

### **Long Pulse Nd:YAG Laser Handpiece**

#### **Long pulse Nd:YAG Introduction:**

The long pulsed 1064-nm Nd:YAG laser is a safe and effective method of long-term hair reduction in patients with darkly pigmented skin. Because the longer wavelength of Nd:YAG laser, with its decreased absorptive affinity for epidermal melanin, may



provide the advantage of deeper penetration into the dermis, this enables the energy to reach the hair bulb or bulge region with the possibility of lethal follicular damage. In addition, the use of a long pulsed Nd:YAG laser at high fluences can effectively treat patients with darker skin tones while producing few adverse posttreatment sequelae. Sun-protected and thinner axillary skin showed greater clinical response to and fewer adverse effects of laser treatment than did sun-exposed facial and leg skin.

### **Treatment Procedure:**

1. Before each treatment, hairs longer than 1mm were shaved close to the skin using a safety razor.

You can also shave all unwanted hairs and wait for 1 week prior to treatment. Hairs less than 1 mm are recommended to treatment with good results.

2. Apply anaesthetic ointment for external use on treatment target.

3. Set parameters as energy, pulsewidth, delay.

This parameter setting should be different according to different skin type, generally speaking, for skin type I/II, skin type III/IV, skin type V/VI

4. Press down foot switch to start treatment.

### **Course of The Treatment and Interval**

One course includes 3 continuous treatments, and each treatment should be done every 4-6 weeks. additional treatments are needed according to the requirements of clients.

### **Results:**

in general, one month after a course of the treatment, 58% ~ 62% percent of facial hair or 66% ~ 69% percent of body hair will be reduced, it is the maximum reduction, then six months after a course of treatment, on average, 41% ~ 46% of facial hair or 48% ~ 53% percent of body hair will be reduced and results is different according to different clients. results of body hair removal is more better than facial hair removal.



### **Undesired reaction possibility**

Patients will feel some discomfort during treatment that increased with higher settings (increased fluence and longer pulse duration), on average, pain was rated as moderate. Other acute reactions that increased with higher parameters included erythema, perifollicular edema, edema, and hair singeing. Immediate purpura, blistering, crusting, etc. and all these reactions will recover very soon.

### **Q-Switch Laser Handpiece**

#### **Eyebrow Line Removal Procedure**

1. Cleaning the treated skin (eyebrow should be shaved before treatment)
2. Totally disinfect the treatment target with iatrical alcohol.
3. Setting Parameters: frequency etc.

eyebrow line with black colour we recommend use 2-3 mm spot size, frequency is 2-5/second.

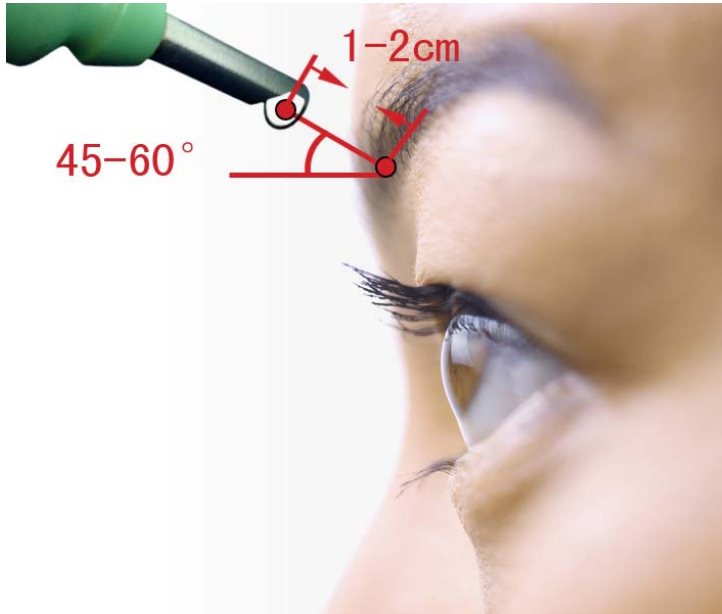
4. Start treatment.

Press down foot switch to start a treatment.

#### **Notice:**

When start a treatment, Please keep 1-2cm from forefront of the tip to the treatment target, the tip also should keep 45-60° with Horizontal plane of treatment target. (Picture 5). output spot should be in sequence during the treatment and keep overlap 25% between each output spot.





Picture 5

### Eye Line Removal Procedure

1. Cleaning the treated skin.
2. Totally disinfect the treated skin with iatrical alcohol.
3. Setting Paremeters: frequence etc.

Eye line we recommend use 2mm spot size, frequency is 1-2/second.

4. Wear the eyewear to protect the customer's eyes.
5. Start treatment.

Press down foot switch to start a treatment.

#### Notice:

When start a treatment, Please keep 1-2cm from forefront of the tip to the treatment target,the tip also should keep 45-60° with Horizontal plane of treatment target.(Picture 6)

output spot should be in sequence during the treatment and keep overlap 25% between each output spot.



Picture 6



Eyelid Pad

### Lip Line Removal Procedure

1. Cleaning the treated skin.
2. Totally disinfect the treatment target with iatrical alcohol.
3. Setting Paremeters: frequence etc.

Lip line we recommend use 2mm spot size, frequency is 2/second.

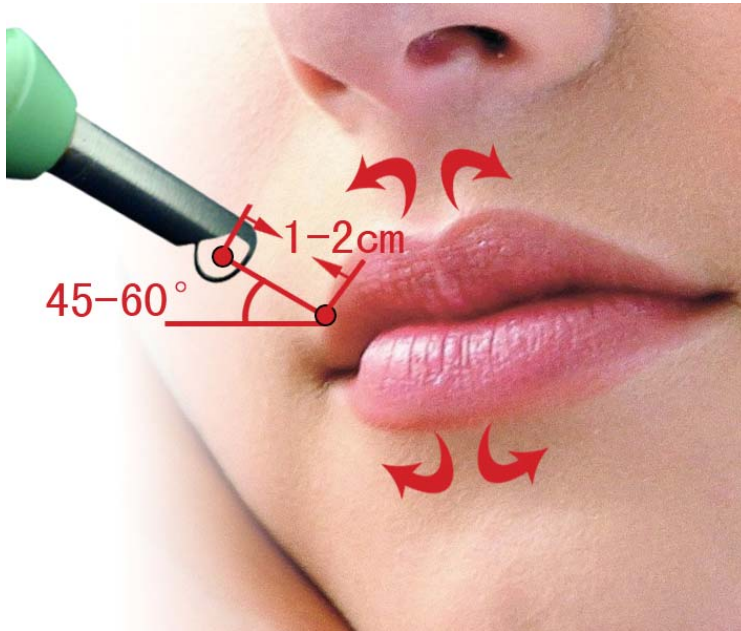
4. Start treatment.

Press down foot switch to start a treatment.

#### Notice:

When start a treatment, Please keep 1-2cm from forefront of the tip to the treatment target,the tip also should keep 45-60 ° with Horizontal plane of treatment target.(Picture 7), we recommend to start treatment from cental of lip to edge as the red mark shown as picture 7.

output spot should be in sequence during the treatment and keep overlap 25% between each output spot.



Picture 7

### **Tattoo Removal Procedure**

1. Cleaning the treated skin.
2. Totally disinfect the treatment target with iatrical alcohol.
3. Setting Paremeters: frequence etc.

Tattoo s we recommend use 2mm spot size, frequency is 5/second.

4. Start treatment.

Press down foot switch to start a treatment.

### **Notice:**

When start a treatment, Please keep 1-2cm from forefront of the tip to the treatment target,the tip also should keep 45-60° with Horizontal plane of treatment target.

output spot should be in sequence during the treatment and keep overlap 25% between each output spot.

### **Period of Treatment**

Multiple treatments are often needed to achieve the desired results of the tattoo removal. The number of treatments will vary depending on the depth and color of



the tattoo, the age of the tattoo and who placed the tattoo. You must wait at least a month between treatments. Professional tattoos usually require 5-8 treatments. The black colored inks usually responds quicker then the bright colored inks because the black colored inks absorb the laser light better.