

Product Manual

-Diode Laser Hair Removal



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Product Name: 808nm Diode Laser Hair Removal System

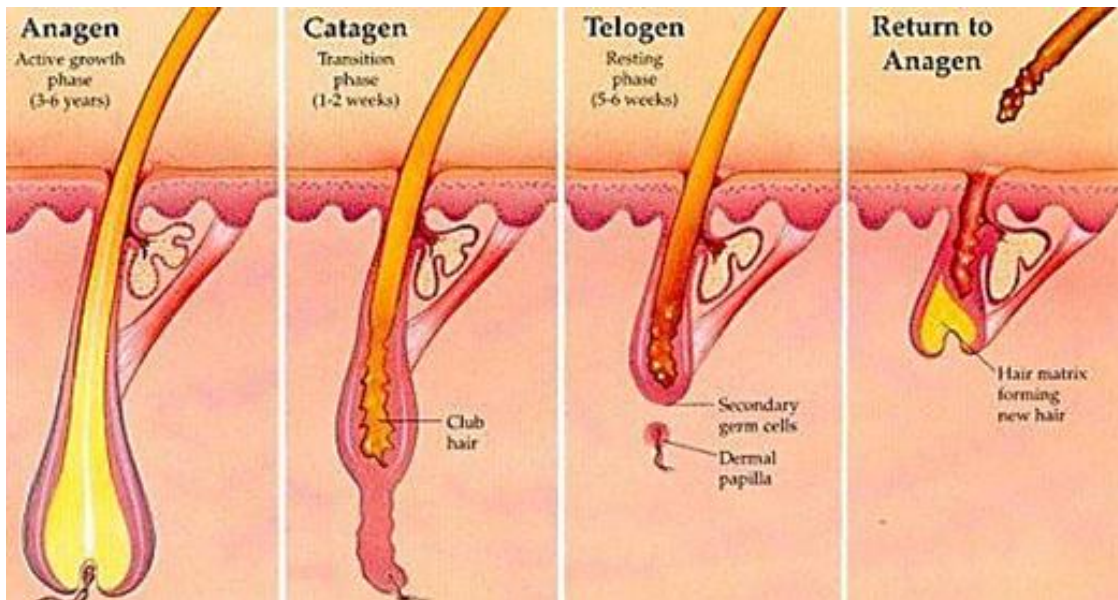
Model: BL-808C

1. Introduction:

BL-808C is solutions for fast hair removal with 808nm high power laser diodes. It is designed with TEC and sapphire cooling unit for skin contact. The laser beam is collimated with a patented technology of beam shaping for a high efficiency for hair removal solutions. This diode laser hair removal can be used for white to light brown skin with dark color hair. The pulse energy is up to 120J/cm² or even higher up to 150J/cm² upon request. It is a permanent diode laser hair removal system.

1.1 Theory

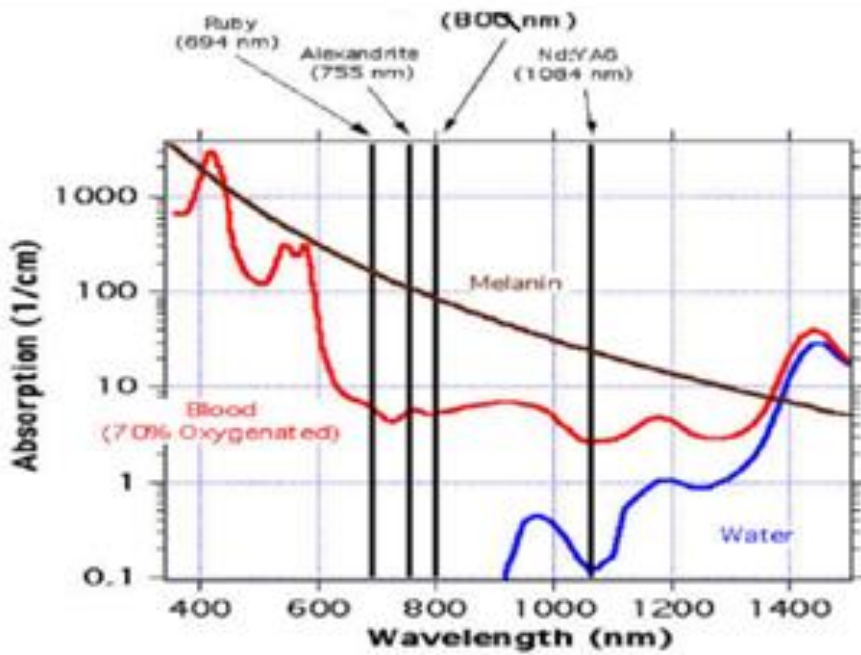
808nm diode laser effectively penetrates deep into dermis and is absorbed by the melanin in the hair follicles. The laser energy transforms to thermal energy, which damages the hair follicle without damaging the surrounding tissue to achieve effective hair removal.



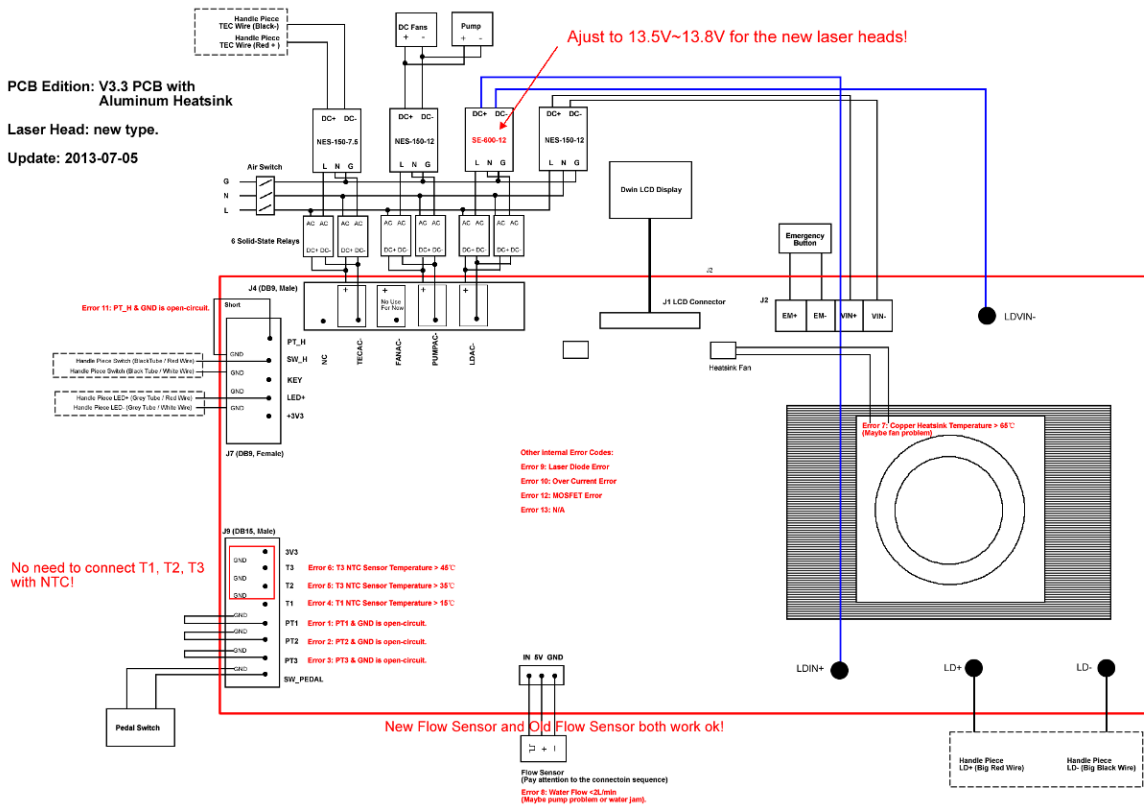
1.2 Technical Specifications:

Parameter	Value	Note
Wavelength	808nm	940nm optional
Pulse Width	25ms~400ms	
Repetition Rate	1Hz~10Hz	
Energy Fluence	0~120J/cm ²	
Beam Type	Collimated	
Skin Cooling	TEC + Sapphire -5°C-5°C	-5°C~5°C
Laser Window	10x16mm	
Laser Cooling Liquid	Purified Water or distilled water	
Cooling Water Volume	3.0~3.5L	
Handle Piece Flow Rate	3.5~4.0L/min	
LCD Screen	8" Touch LCD	
Pedal Switch	Support	
Environment Temperature	5~30°C	
Environment Moisture	<80%	
Input VAC	220VAC / 50-60Hz	110VAC optional
Dimension	~34x33x82cm	
Weight	~40KG	

1.3 The best Wavelength



1.4 System Basic Structures



2. Installation

Please take following steps to start the hair removal system.

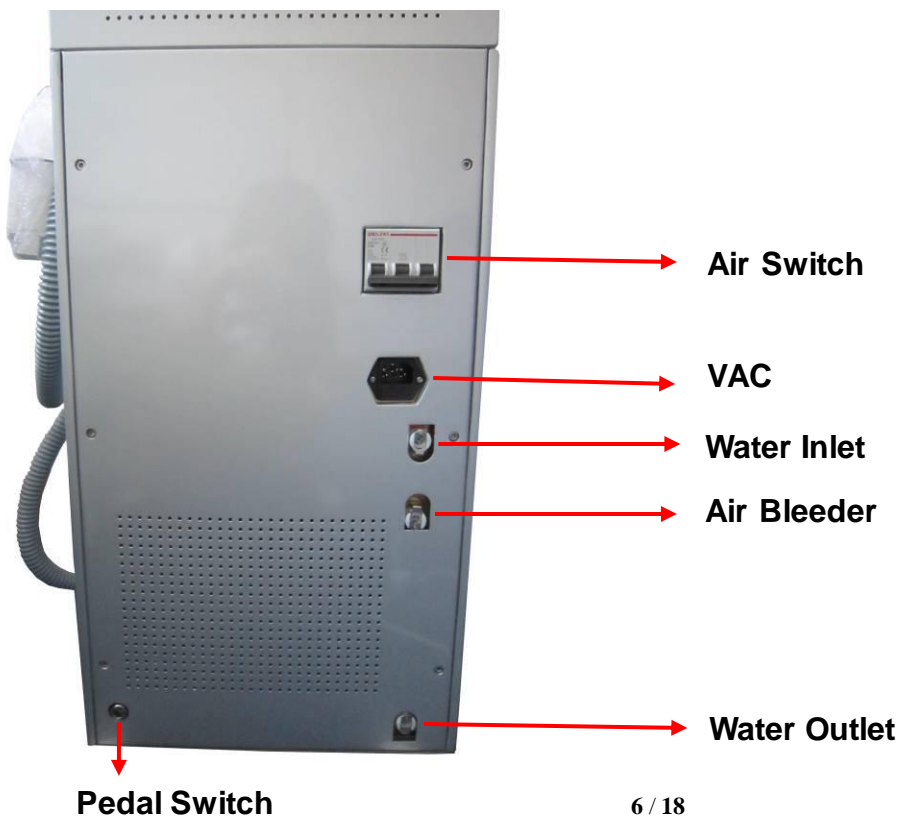
1) Open the package. Put the machine and handle piece in the right place for setup.

Find the CPC connectors and soft tube along with the package.



Put the handle piece in the right place.

2) Check the back panel of the machine as follows:



3) Use a funnel for this operation. Get some purified water (can be drink water) around 4 liters. Make sure there is no dust particle inside the water. Connect the water inlet. And then you can add water with the funnel and soft tube.



**Plug this funnel into
Water Inlet**



4) Plug the valve into Water Outlet. When the water comes out of the Water Outlet, this means the water is enough and you can stop adding. Remove the connectors and the water adding process is finished.



Plug this valve into Water Outlet, when the water comes out from Water Outlet, we can remove this valve.



When the water is full, you just need to take off the valve. Press it like this photo.



- 5) Get the handle piece from the package. Check the connector of the handle piece and make sure there is no other thing dropped inside. Connect the handle piece at the back panel of the machine. Make sure the connection is well done. Any careless connection may cause damage or water leakage. You should hear a clear beep from the CPC connectors when the connection is done.
- 6) Connect the VAC wire of the machine to a wall-plug. Make sure your voltage is 220VAC.



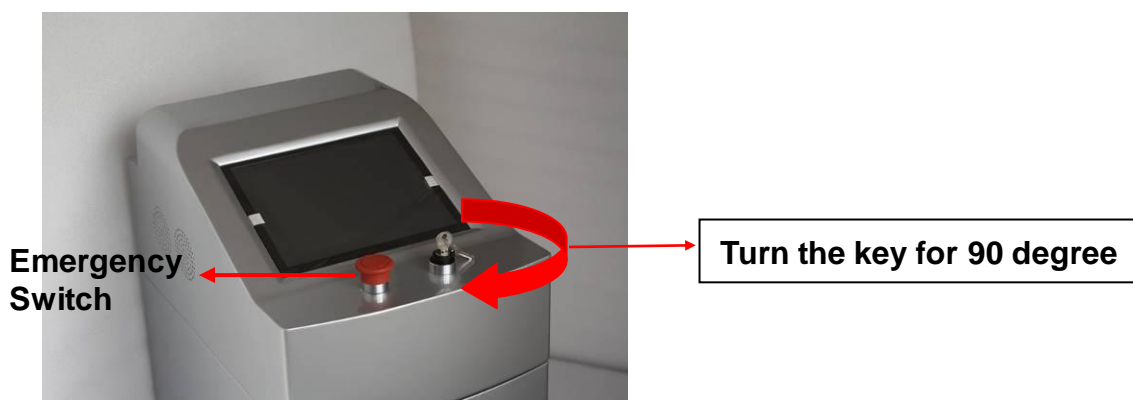
- 7) Turn on the Air Switch.



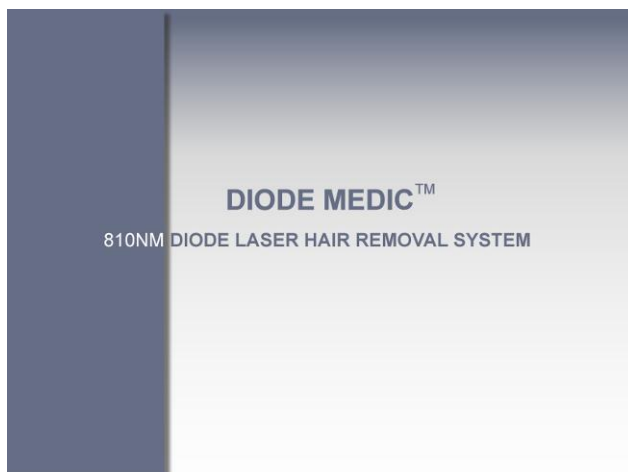
- 8) The preparation is done when you finish the steps above.

3. Operation

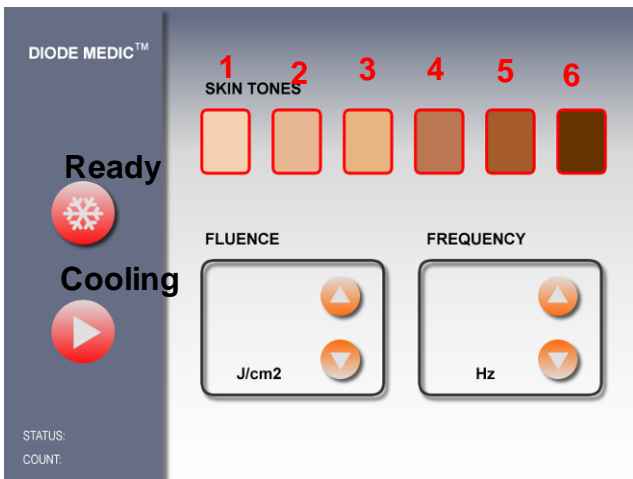
- 1) Check the front panel of the machine.
- 2) The red button is Emergency Switch. If pressed down, the laser will be shut off immediately. It should be released when you are trying to start the machine. The other switch is the VAC switch of the system.
- 3) Check the back panel and switch on the air switch.
- 4) Turn the key in the front panel and start the machine.



- 5) Then you will see a 5 seconds blue screen. This is the initializing status of the system. The pump and fans will work and self-check during this period. The LCD shows as follows:



- 6) After 5 seconds, you will enter the main operation interface in the LCD screen, as follows:



7) Then you can adjust the parameters with the LCD screen. There are totally 2 parameters to be set, including: Energy and Frequency. Choose skin color first, after the 2 parameters set well, press Ready and Cooling, then the cooling system begin to work. Wait for a while until the tip of the laser handle piece becomes freezing, you can begin to operate on skin.

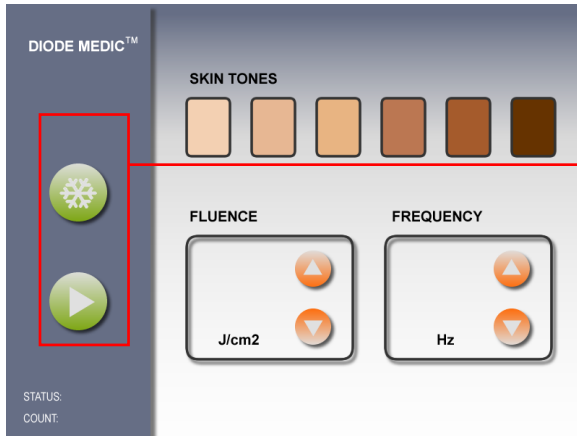
8) The **Frequency** shows the pulses per second of the laser. A higher repetition rate leads to higher pulse energy fluency. The Repetition Rate can be variable from 1Hz~10Hz with a step width of 1Hz.

9) The **Energy** shows single pulse of laser energy on the skin.

10) There are totally 2 status on the screen: **READY/COOLING**

A. **Status: Ready.** When parameters have been set, press READY button on the middle-right of the LCD, after 3 seconds, the system will enter 'Ready' status. SYSTEM STATUS at the bottom shows "ready". In this status, the pump and fans are working and the laser is ready to use. Once you reset the parameters, the system will enter the 'Stand By' status again.

B. **Status: Cooling.** When you press cooling, the TEC & Sapphire cooling system begins to work. The tip of the Handle piece becomes cold.



Press Ready, Cooling, the button will turn to green.

C. **Status: Standby.** When you press '**READY**' button again, the system will enter the '**Stand By**' status. In this status, the pump and fans will stop.

D. **Status: Error 01~13.** This means the system protections take action. You need to check if anything goes wrong with the system or environment. The error code is as follows:

ERROR CODE:

Error Code	Error Description	Position
Error 01	ErrWaterLevel	PT1 (Water Level Protection)
Error 02	ErrPT2	N/A
Error 03	ErrPT3	N/A
Error 04	ErrWaterTemp15	T1 (15 Deg.C)
Error 05	ErrWaterTemp35	T2 (35 Deg.C)
Error 06	ErrWaterTemp45	T3 (45 Deg.C)
Error 07	ErrPCBTemp	PCB Heatsink Temperature High

Error 08	ErrWaterFlow	Water Flow Rate Protection
Error 09	ErrLaserDiode	Laser Diode Error
Error 10	ErrOverCurrent	Over Current Protection
Error 11	ErrHandlePT	PT_H
Error 12	ErrMOSFET	MOSFET Defect Protection
Error 13	ErrNA	N/A

11) Set the parameters (Energy, Frequency) and press 'READY' button to enable the handle piece.

12) During 'Ready' status, you press COOLING

13) Take the handle piece. Pressure the pedal switch or the switch on the handle piece to shot the laser pulses. Keep pressing the button and the laser output will continue.

14) You can stop the machine anytime by turn off the key in the front panel.

15) Any sudden situations, press the Emergency Button to stop the laser, and then turn off the key. The Emergency Button is designed to shut off the laser, not shut off the VAC.

The Key is designed to shut off the VAC input.

**Any sudden Situations,
Press down**



4. Clinic Operation

1) The skin must be shaved before treatment.

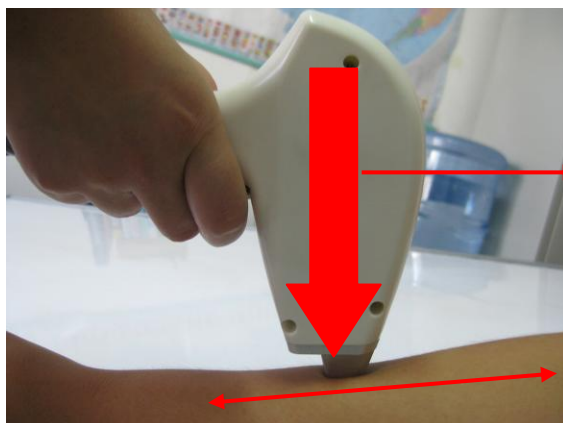


2) Use a little gel.



3) Hair Removal.

4) When the handle piece tip get cooling after 2-3 minutes, make sure the cooling tip contact tightly with the skin. Slide the handle piece at a constant speed backwards and forwards.



The handle piece should be vertical with the skin.

Backwards and forwards for 8 Times

- 5) After treatment, clear the gel on the handle piece, and put it back to the machine.
- 6) Record File
- 7) Record the parameters using for the client.

5. Recommended Parameters:

- 1) Firstly, choose the skin color on the screen.
- 2) Secondly, adjust FREQUENCY (Hz) ,Recommend: 3-6Hz;
- 3) Lastly, adjust Energy(J/cm²) is between 5-10 J/cm² (Recommend); Handle piece slides about 6-8 times.
- 4) About the lip, hair line, recommend Fix-Point mode. It's also ok to slide handle piece.
Recommended Frequency: 1 Hz

6. Notice:

- 1) The white skin should choose a higher Energy.
- 2) The brown skin should choose a lower Energy.
- 3) Dark color hair should choose a lower Energy.

7. Course of treatment

- 1) Usually, it needs 4-5 course of treatment. (For the thin hair, it can increase the treatment courses)
- 2) Treatment interval is according to the hair cycle. Usually,
- 3) Treatment interval of the face is about 20-30 days.
- 4) Treatment interval of Arms and Legs, Body are about 30-40 days.

8. Treatment Notice

- 1) The treatment of the hair removal needs experienced professionals. Do not use it if you have no experience for such kind of laser device.
- 2) Operators and patients must wear laser goggles to protect eyes from any laser damage threat.
- 3) Please notice that this is a high power laser device and if the patients feel very painful,

please stop the laser and check if there is anything happens to the patients' skin.

Adjust it as a proper power that the patients can stand to do the treatment.

- 4) Skin color is very important. For white to light color, you can adjust the laser power up to 60~90% for a higher performance, and the Fluency can be adjusted to 40~90J/cm². For light color to light brown, you need a lower laser power (20%~60% for example), with a longer pulse width to protect any skin burning. Also you need to extend the treatment time for the dark skin to inject enough energy to the skin and follicles.
- 5) The skin must be shaved before treatment.
- 6) The handle piece is better to be operated at **SCANNING** mode. It is faster for treatment.
- 7) Skin contact gel is no necessary for treatment. It won't make the treatment better or improve the skin feeling.
- 8) You need to wait for 2~3 minutes before the cooling tip becomes cold.
- 9) Keep contact between the cooling tip and skin. And you can also use the edge of the Aluminum head of the handle piece to cool down the skin during treatment.
- 10) Never shot the laser pulses to eyes, or watch the laser directly.
- 11) Please refer to the experience data of Color II Skin hair removal which we provide along with this manual.

9. Maintenance

- 1) The water must be changed after every 6 months.
- 2) The machine must be operated in a room with air-conditioner.
- 3) The environment temperature can not go below ZERO, or the ice may damage the water tanks and water channels inside the machine and the handle piece.
- 4) Clear the gel on the handle piece and make sure there is no dust attached on the handle piece window.
- 5) Do not bend the tube of the handle piece too hard, or this may cause flow switch ERROR.

- 6) Do not plug in & out the handle piece connectors frequently. This may cause bad connections and may cause water leakage or not well electrical connections.
- 7) Do not shot the laser at random targets, or it may cause burning or fiber.

10. Warranty Notice

Please take necessary protections for the operation of the machine and handle piece, and notice that following situations can not be warranted:

- 1) Operation the system without water.
- 2) Power up the system without connecting the handle piece.
- 3) Regular drops of the handle piece.
- 4) Wrong input VAC.
- 5) Other manual operating mistakes.

Attachment

-Fitzpatrick Skin Types



SKIN TYPE I This is a very fair skin. The individual has light-coloured eyes and blonde or reddish hair colour. They are very sensitive to the sun and burn easily whenever exposed. They never tan.



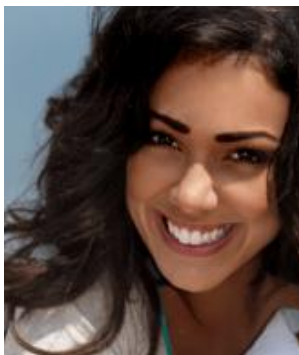
SKIN TYPE II This is a light complexion, light-coloured eyes, blonde, reddish or light-brown hair colour. They are very sensitive to the sun, burn easily. This skin type can gradually build a tan.



SKIN TYPE III This is a medium complexion, light to dark eye colour, usually brown or darker hair colour. Sensitive to the sun, rarely burns and always tans well.



SKIN TYPE IV This is a darker complexion, dark eyes, usually dark brown to black hair colour. Moderately sensitive to the sun, rarely burns and always tans well.



SKIN TYPE V This is a dark complexion, Middle Eastern, Indian skin. Dark eye colour, usually black hair colour. Minimally sensitive and always tans.



SKIN TYPE VI This is a black complexion, black eyes and black hair colour. It is least sensitive to the sun and never burns.