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V·LASER

User manual



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Notice

- ☞ Please read this manual carefully before using the system, and be sure to use it correctly.
- ☞ Please keep this manual, as it contains important information that will support the safe and correct use of the V-laser.



Everyone in the laser operating area must wear certified safety goggles, and the area must be marked with a warning sign at the entrance.

Warning 1. Do not touch internal parts or the system's connections, as they use high voltage. Contact with wet hands may cause electric shock.

Warning 2. The laser emits visible and invisible rays and should not be exposed directly to the eyes and skin.

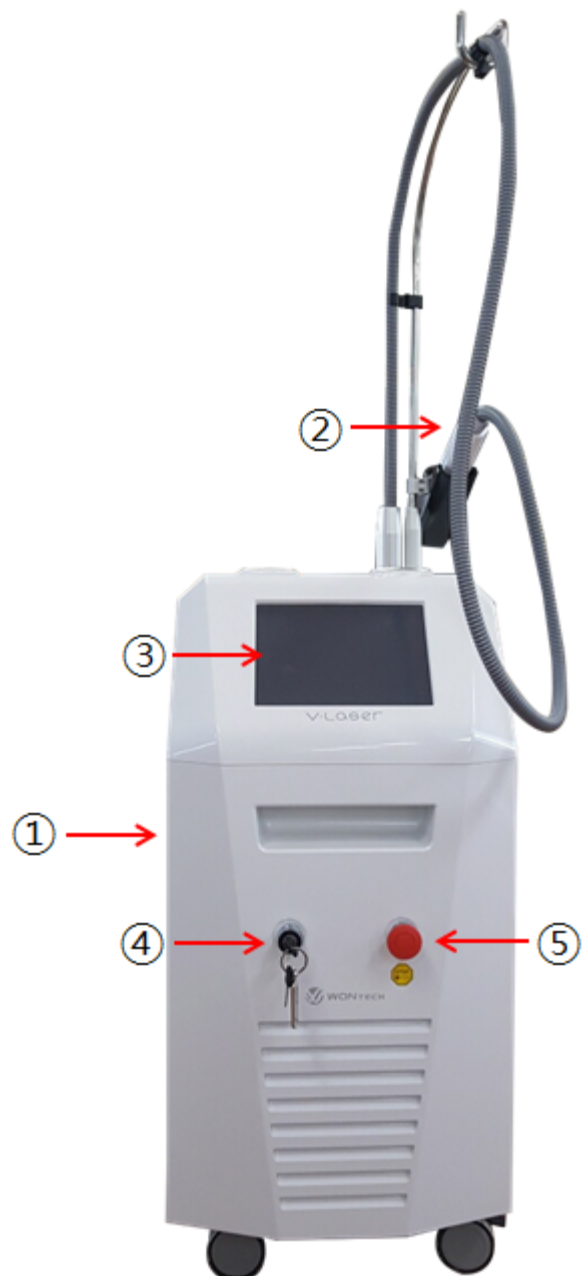
Always wear protective goggles before operation.

Precaution 1. The power supply should be a 220V, 60Hz independent power supply, and must be grounded and stable.

Precaution 2. Do not store or use the system in a dusty environment, in a humid environment, under direct sunlight, or at temperatures below 5 °C or above 40 °C.

Parts of the V-laser (front side)

1. Main body: Laser medium and optical system, cooling unit, CP board, SPU board, etc.
2. Handpiece: A device for delivering the laser output light that is conveyed by the fiber to the treatment area.
3. Monitor: The Touch LCD monitor shows parameters related to laser output and allows the user to control them directly.
4. Key switch: A basic safeguard that allows only authorized personnel to use the unit by requiring the insertion of a key.
5. Emergency switch (Reset button): Switch to stop the operation of the device in the event of malfunction or emergency.



Parts of the V-laser (rear side)

- 6.** Power cord: A power cord connected to a 220V AC power source
- 7.** Ventilator: A device that protects internal electronic components by dispersing heat generated inside from outside
- 8.** Foot switch: A device that fundamentally controls the emission of the laser according to user-defined output parameters.
- 9.** Interlock: A safety device designed to temporarily shut down the system when the door is open during laser emission.



Monitor Display



1. Guide beam: Turn Guide Beam On/Off and control its brightness
2. User mode: Information, Option, and Air Bubble windows are provided, and it shows information of the system
3. Load: Load saved output parameters
4. Save: Save parameters set in the display window
5. 532nm Mode: Select 532nm Mode
6. 1064nm Mode: Select 1064nm Mode
7. Genesis Mode: Select Genesis Mode
8. Fluence: Select and display the Fluence and Energy required for treatment
9. Frequency: Refers to the repetition rate of the laser; can be set in 1Hz increments
10. Pulse: Function to set the pulse length and set laser emission time
11. Spot size: Function to display spot size
12. UP, DOWN: Change set values by selecting items for laser output
13. Contact Cooling: Change Contact Cooling On/Off and its mode
14. Pulse Count: Display and reset the number of pulses used by the system
14. Standby & Ready: Select and change Standby and Ready

Glossary of Terms

Glossary of Terms

- ◆ Emergency switch: Stops the system when an unexpected situation occurs

- ◆ Key switch: Located on the front of the system, this must be turned to supply power to the system
(Switch to prevent other operation)

- ◆ Touchpad:
 - Fluence: Used to change pulse energy density (J/cm^2)
 - Frequency: Used to change frequency (R. Rate)
 - Spot Size: Used to change the beam diameter.
 - Ready: Key to enter ready mode
 - Standby: Key to return to standby mode

- ◆ Foot switch: Switch used when operating in a selected processing mode of the laser

Other information

- ◆ V-laser specifications: 420 x 793.2 x 912.5mm (WxDxH)
- ◆ Laser Class: Class 4 (IEC60825-1)
- ◆ Weight: 80 kg

All personnel in the laser operating area must wear certified safety goggles, and the area must be marked with a warning sign at the entrance.

How to Use

Purpose of use

The V-laser is used for incision, destruction and removal of human tissue with light energy (laser) emitted by Nd:YAG medium.

Preparations

1. Connect the power cord located on the back of the main body to a 220V outlet.
2. Connect the footswitch to the footswitch connector on the rear (lower left) of the main body.
3. Connect the Interlock that is located at the rear (lower right) of the main body with the interlock connection unit and the entrance gate, and control its access.
4. Secure the wheel by stepping on the lock so that the wheel on the bottom of the main body does not move.
5. Make sure that the emergency switch on the front of the main body is in a normal state.
6. Insert the key into the key slot on the front (bottom center) of the main unit.

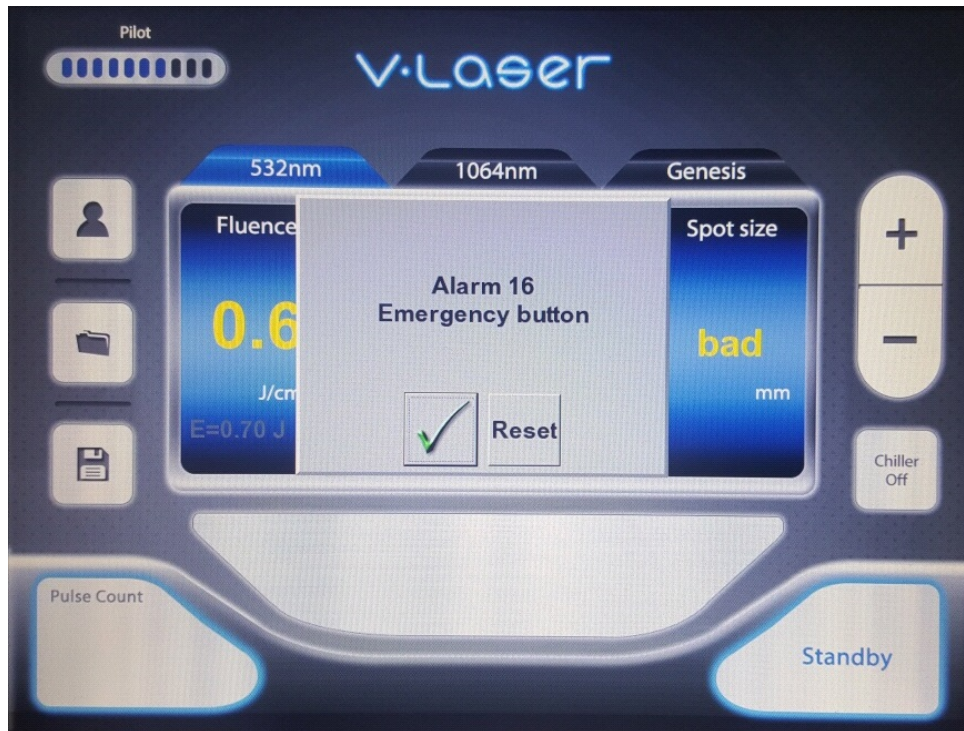
How to supply the power and check the system status

1. Turn the key clockwise to supply the power.
2. When the power is supplied to the system, the logo screen is displayed on the Touch LCD monitor. At the same time, a self-diagnosis is performed. If there is no abnormality, the screen switches to the following main screen.

At this time, the device is in a standby state.



3. If an error is detected during the initial self-diagnosis, a buzzer sounds and an error message is displayed on the Touch LCD monitor, as shown below.



4. This system provides a touch-sensitive LCD monitor with a pressure-sensitive touch screen, so you can use your finger or a pen to operate the buttons displayed on the Touch LCD monitor and adjust various output parameters through the button operation.

How to Use

1. Touch and select the laser mode you want to use.









2. You can adjust the output parameters in the selected laser mode. To select the laser fluence (energy density), frequency (frequency of laser irradiation per second) and pulse (laser irradiation time), touch the corresponding item, and



set the desired value using the  buttons.



3. When the output parameters have been set in the selected laser mode, the user can select the Contact cooling according to the user's choice and adjust the brightness of the Guide beam.

4. Contact cooling can be selected by pressing   state is activated in three states of  - 5 degrees,  - 10 degrees,  - 15 degrees, and the Contact cooling method is applied. This function induces cooling by cooling the sapphire of the handpiece.

5. The brightness of the guide beam is controlled by touching  and adjusting it according to the color of the space.

6. When the output parameter, cooling method and brightness of the guide beam have been adjusted from the selected laser mode and the setting is completed, you can see that the laser is ready to be irradiated because it changes to Ready  state when the Standby  button is selected.



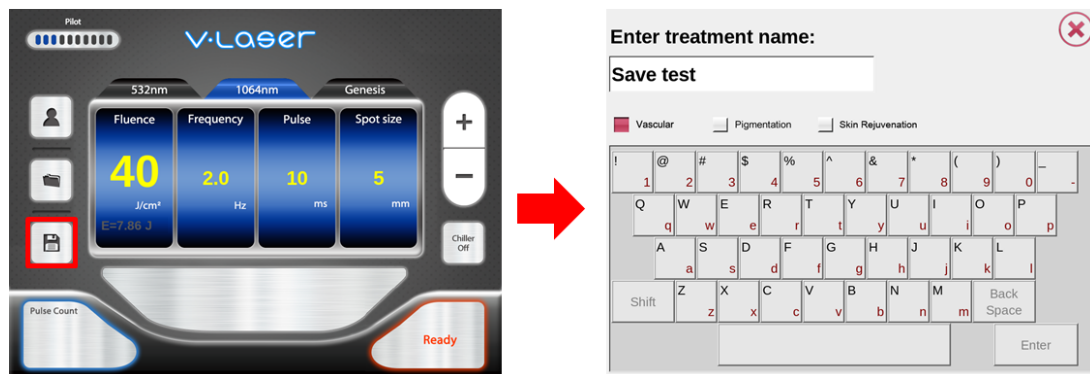
7. When the handpiece is pointed at the irradiation position and the foot switch is pressed, the laser is irradiated on the irradiation spot according to the set value.



- ◆ Always wear protective goggles before operating the laser.
- ◆ Before pressing the footswitch, check the parameter values and the laser generator.

How to save

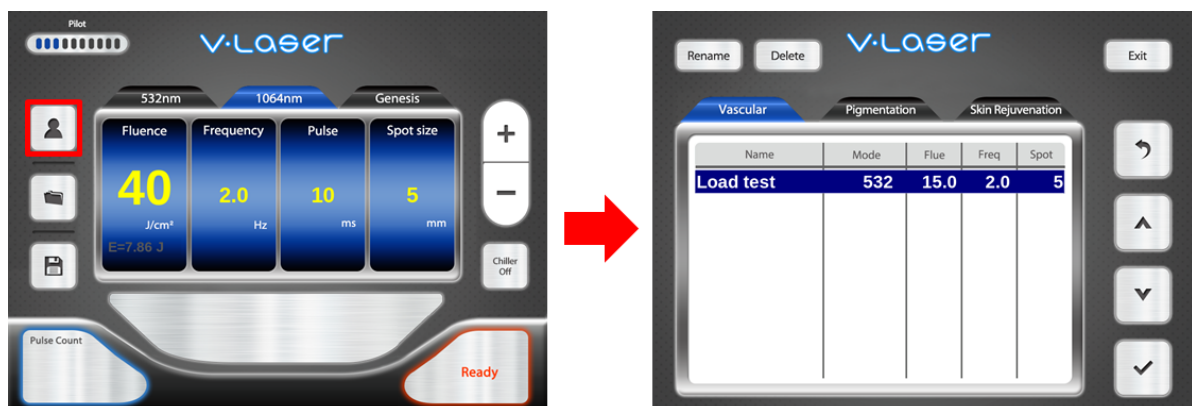
1. Output parameters to be newly defined can be stored from the desired Main screen.
2. After selecting the output parameters to save, touch the Save button to define the indication name as shown below.



3. Enter the Indication name using the keyboard, and touch Enter to go to the Main screen.
4. If you do not want to save it, touch EXIT to go back to the main screen.
5. You can use the import method to verify whether the defined output parameters are well stored.

How to load

1. Predefined settings can be recalled from the Main screen.
2. Touch the Load button as shown below to select the predefined data based on the indication.



3. Use the Move button to select the indication you want to define and then touch \checkmark .
4. The setting is completed with selected output parameters while the system switches to the main screen. At this time, make sure that they are defined as desired setting values.
5. Touch the Standby button to switch to Ready state and use the foot switch to irradiate the laser.

How to turn off

1. To stop the device, release the foot switch and press the Standby button to change the system to standby mode.
2. Turning the key switch counterclockwise to the OFF position will turn off the power of the system in operation.

※ If the patient feels uncomfortable, the emergency switch should be pressed to immediately stop the operation.



How to store and manage the V-laser

1. If the system is not in use, turn off the system by turning the key switch from the ON position to the OFF position, counterclockwise, when it is connected to commercial power.
2. The key position should be managed by the person in charge of handling the V-laser.
3. Avoid moisture, direct sunlight and dust.
4. Attention should be paid to the fact that the optical fiber of the glass material may be damaged if the handpiece or the optical fiber beam transmitting device is subjected to impact.
5. Since this is a system that uses water cooling and air cooling, there is a risk that the cooling water may freeze when the temperature drops below freezing. Therefore, room temperature should be maintained during use and storage.
6. When it is determined that there is a problem with the operation of this system or it is likely to be malfunctioning, do not disassemble it, and call the manufacturer.

Precautions for use

1. Warnings:

- 1) This laser equipment should not be used by anyone other than authorized users (doctors).
- 2) Be sure that you read and understand the manual before operating the laser equipment, and receive specialized training related to the operation.
- 3) In the event of an equipment failure, it must be repaired by an engineer who has been authorized by the manufacturer.
- 4) This laser equipment is medical laser equipment and should only be used for medical purposes.

2. Although there are no age or gender limitations related to the use of this laser surgical equipment, the user is advised to make an appropriate judgment on whether or not to use the equipment after analyzing the patient's health status.

3. Precautions regarding care in use:

- 1) Always monitor the equipment and patients for any abnormalities.
- 2) If any abnormality is found in the equipment or patients, take appropriate measures such as stopping the operation of the equipment while maintaining the safety of patients.
- 3) In case of contact with unused parts, be careful not to touch the equipment with patients.
- 4) As blindness caused by retina damage may be caused by the beam emitted or irradiated by this laser surgical device, do not look directly or indirectly into the device.

4. General precautions:

- 1) Confirm that the device is operating normally before use.
- 2) The laser irradiation room should have a laser warning label at the entrance.

- 3) Users should be familiar with the instructions in the handbook, take appropriate safety precautions and always be aware of possible hazards.

5. Interaction: Use caution when using the V-laser in combination with other equipment, as it may interfere with accurate diagnosis or may be dangerous.

6. There is no age or gender limit in terms of the use of this laser surgical equipment, but the output of the laser should be controlled appropriately according to the judgment of the user.

7. Precautions in application

- 1) Be careful not to let the laser radiation beam out of the chamber during irradiation.
- 2) Be sure not to radiate the laser beam to light-reflecting material such as glass or a mirror.
- 3) Anyone directly exposed to the laser equipment must wear protective goggles.
- 4) Check the switch connection status, polarity, dial setting meter, etc., and confirm that the device operates correctly.
- 5) Make sure all power cord connections are correct and complete.
- 6) Be aware of the risk of ignition when the laser is irradiated (radiated) to the materials with the absorbing wavelength band, infrared wavelength band, or absorptivity.

8. Precautions to Prevent Safety Accidents:

- 1) Do not place any combustible material near the laser equipment.
- 2) Use in places where there are no adverse effects due to air, water, etc. including air pressure, temperature, humidity, ventilation, dust, salt and sulfur.
- 3) Ensure that the emergency button can be reached easily.
- 4) Do not use in chemical storage areas or gas generating places.
- 5) Pay attention to the power frequency, voltage, and allowable current value (or power consumption).
- 6) Inspection and maintenance should be regularly performed.
- 7) Keep away from flammable substances such as anesthetics or solvents.
- 8) Do not modify this equipment arbitrarily, as high voltage is generated inside it.

- 9) Be careful to ensure stability, avoiding slope, vibration, and impact (including when transporting).
- 10) If you want to use equipment that has been left idle for a long time, be sure to confirm that it is operating normally.

How to save

1. Disconnect the power cord after use.
2. Do not apply shock or excessive force when moving or installing.
3. Be careful about safety conditions such as inclination, vibration, and impact (including when driving).
4. Store in a dry place.
5. Install and store in a place where there will be no adverse effects due to the environment. Ensure normal air pressure, room temperature, humidity, and ventilation, while preventing exposure to sunlight, dust, and salt.
6. Do not install near fireplaces, heaters, etc.
7. To clean the outer case, use a soft cloth and a neutral detergent with no moisture. Do not use anything else.
8. Do not keep it in a chemical storage area or a place where gas is generated.
9. Be sure to check the equipment, parts, and accessories.
10. When using equipment that has been not in use for a while, make sure it is clean and safe before use.

How to maintain

◆ If the equipment has been exposed to dust or dirt, wipe it off with a soft, dry cotton cloth.

(Do not wipe with a strong chemical solution such as thinner or benzene.)

◆ After treatment, wipe the tip of the handpiece with a soft cotton cloth moistened with ethyl alcohol.

◆ If the equipment has not been used for an extended period of time, or if the following maintenance is required, please contact our A/S division (080-638-6700).

- Replacement of cooling water in cooling system
- Internal material of the equipment
- Inspection of optical device
- Replacement of flash lamp

◆ If you suspect a defect, immediately contact our headquarters' A/S division (080-638-6700). Do not attempt to repair the equipment independently.

User Checklist

When the equipment is not responding

1. Make sure that the power cord is not connected to the power source.
2. Check to ensure the main voltage is appropriate.
(Check the voltage level of the wire, and connect the power cord to another outlet.)
3. Check whether the key switch or main switch is turned off.
4. If there is a possibility that no power is reaching the CPU board, please request service.
5. If there is a possibility of damage to the key switch, main switch, CPU board or power cord, please request service.

Foot switch is pressed, but the laser beam is not irradiated.

1. Please confirm that the equipment is in READY mode.
2. Confirm that the cable of the footswitch is properly connected to the connector on the back of the equipment.

When an error message appears on the screen

1. One of the parameters exceeds the allowable value.
 - Turn the equipment off and wait a few seconds before turning it on again.
2. This may be a defect in the equipment, so please request service.

◆ If you suspect a defect, immediately contact our headquarters' A/S division (080-638-6700). Do not attempt to repair the equipment independently.

Laser safety

Laser Operating Room Safety Management

- At the operating room where the laser is used, always cover the window so that it is blocked from the outside, and install a sign outside the door indicating that the laser is in use.
- Always maintain good ventilation in the operating room where the laser is used.
- Always check the safety instructions and operate the laser in the proper sequence before operating the laser.
- Prior to laser operation, the specified parameter values should be checked.
- Users must wear protective goggles when operating the laser.

