Instruction Manual

VRN-Q6

Ultrasonic Periodontal Therapy System

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Copyright Notice

Thank you for buying VRN-Q6 Ultrasonic Periodontal Therapy System. It will bring the all new experience and feeling to you.

This specification is based on the law and regulations of the P.R China and the specific situation of VRN-Q6 Ultrasonic Periodontal Therapy System, applicable to products sold within the territory of P.R China except Hong Kong, Macao and Taiwan. All of the latest information before printing is included in the instru--ction manual. Veirun Medical Technology Co.,Ltd. has full charge of revising the specification(Chinese Simplified version,) and reserves the right to modify it at any time without notice. Some pictures in this specification is shown for reference only, all products as per the material subjects.

Operation of this product should be in concordance with relative standards and regulations of Department for Medicaid Services. Users are strictly-trained doctors and technicians.

Before using this product, make sure the instruction manual has been carefully studied. Veirun Medical Technology Co.,Ltd. accepts no liability for injury or damage resulting from improper use, arising in particular through non-observance of the instruction manual.

⚠ **Notes: Veirun Medical Technology Co.,Ltd. disclaims implied warranties of merchantability and fitness for a particular purpose.** Should your product need additional servicing or repairing, please contact with Veirun Medical Technology Co.,Ltd. or authorized dealers.

1. Product Overview

1. Overview

VRN-Q6 Ultrasonic Periodontal Therapy System, equipped with multifunctional piezoelectric ceramic ultrasonic generator and intelligent sandblasting system, is recommended for Perio, Scaling, Endo, Restorative treatments . It also has the following features:

- The scaler tip is casted from Titanium alloy to ensure circular vibration track and more concentrated amplitude, so that Perio, Scaling, Endo, Restorative treatments can be done simultaneously.
- Smart electronics allows an extremely wide power range with 16 grades from low energy delivery in endodontics to powerful scaling.
- Two large refillable bottles, to satisfy using pure water or disinfectant.
- The hydraulic routing is made from antiseptic material. Disinfectant for the treatment, such as hydrogen peroxide, chlorhexidine, sodium hypochlorite can be filled into the automatic water supply system.
- Detachable handpiece can be 135 ℃and 0.22 MPa autoclave sterilization.
- The design of electric valve, making water better controlled and operation more convenient.
- The evolutional wireless foot pedal remotes the main unit, and the cord foot pedal can also be selected according to user's needs.
- Soft bright LED light improves the clinical efficiency.

1.1 Product Components

Ultrasonic Periodontal Therapy System consists of electronic controlling circuit, sand cylinder, dental emery powder, gas circuit, liquid route, handpiece, sandblasting nozzle, tips, endodontic files, wireless foot pedal and cord foot pedal.

1.2 Applicable Scope

Applicable for periodontal and polishing treatments to clean calculus, plaque and tartar on the surface of tooth and in periodontal pockets, used for root canal disinfection.

1.3 Technical Specifications

- Period of use:10 years
- Input Voltage:100V-240 V~, 50/60 Hz
- Supply Voltage: DC 30 V 1.3 A
- Battery of Wireless Foot Pedal: 1.5 V two AA batteries.
- Receiving Sensitivity -114dB(compliance with Telecommunication Act of China) receiving frequency 2.4 G Hz-2.5G Hz.

Primary Tip Vibration Excursion:	minimum: 1 μm	deviation: -50%
	maximum: 100 μm	deviation: +50%
Half-excursion Force:	minimum: 0.1 N	deviation: -50%
	maximum: 2 N	deviation: +50%
Tip Vibration Frequency:	28 KHz±3 KHz	
Input Power:	30 VA~48 VA	

- Output Power: 3 W~20 W
- Fuse: T 3 AL 250 V
- Intake Pressure: 5 bar~6 bar(0.5 MPa~0.6 MPa)
- Specifications of Sandblasting Powder: The size of sand blasting power which act on gingival is 40 μm-65 μm; act on subgingival is 25 μm and brackish or lemon.
- Weight of Main Unit: 1.5 kg
- Weight of Power Adapter: 0.25 kg
- Dimension in mm(H x M x D): 310 x 370 x 295
- Operation Mode: Continuous operation
- Type of Electric Shock Protection: Class II
- Capacity of Electric Shock Protection: Applied part, Type BF
- Degree of protection against harmful ingress of water: Ordinary equipment(IPX4). Protection against water (used on the foot pedal): (IPX6).
- Security Degree in the Presence of Inflammable Anaesthetics or Gases mixed with air or Nitrous Oxide: Not AP or APG Type.
- Operating Conditions: a) Ambient temperature: 5 ℃ ~40 ℃
  b) Relative Humidity: ⩽ 80%
  c) Supply Voltage:100 V-240V~,50~60 Hz.
  d) Wireless Foot Pedal:
  Emissive frequency:2.4 GHz- 2.5GHz, auto hopped frequency.
  Modulatio: GFSK.
  Effective radiated power:12dbm.

1.4 Components and Functions

1.4.1 Normal View

a) The front and back sketch map of the main unit

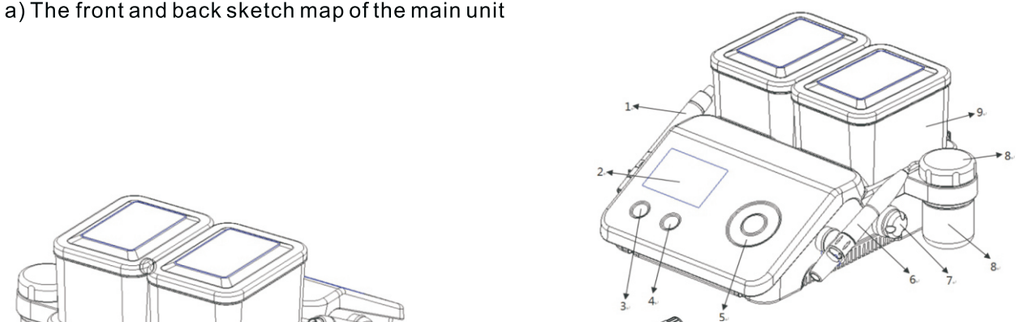

Figure 1

Figure 2

Figure 1: Front View

1. Scaling Handpiece
2. LCD screen
3. Mode Selection Button
   Optionally in “Scaling work” mode:
   G Scaling Treatment
   P Perio Treatment
   E Endo Treatment
4. Liquid Bottles Selection Button
5. Turn power control knob to regulate power. Product will clean gas circuit automatically for 5 seconds if power control knob turned in “surface polishing” mode.
6. Sandblasting Handpiece
7. Sand Control Knob
8. Sand Cylinder
9. Water Supply Bottle(s)

Figure 2: Back View

10. Air/Water Separator
11. Air Intake
12. Tubular Fuse
13. Socket for DC Power Adapter
14. Socket for Cord Foot Pedal
15. Power Switch
16. Strainer Valve
17. Strainer Valve Core(s)
18. Check Valve Quick Coupling

b) Attaching the Tips

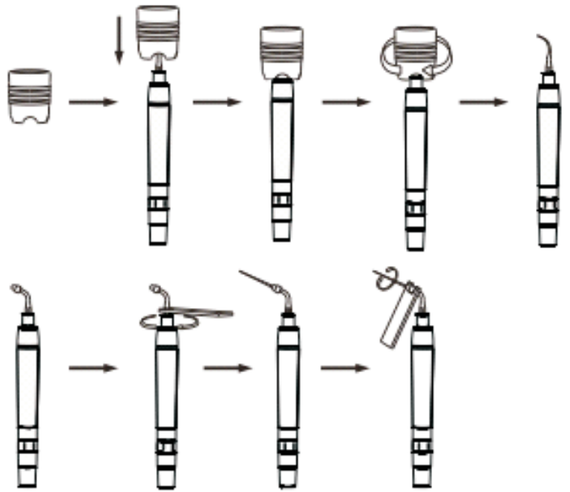

Figure 3

c) Attaching the sandblasting nozzle

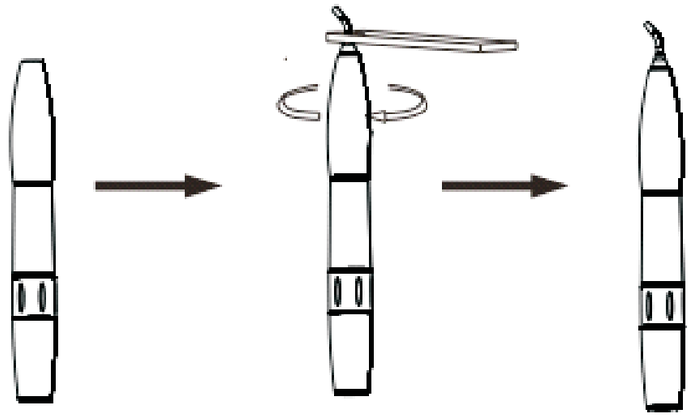

Figure 4

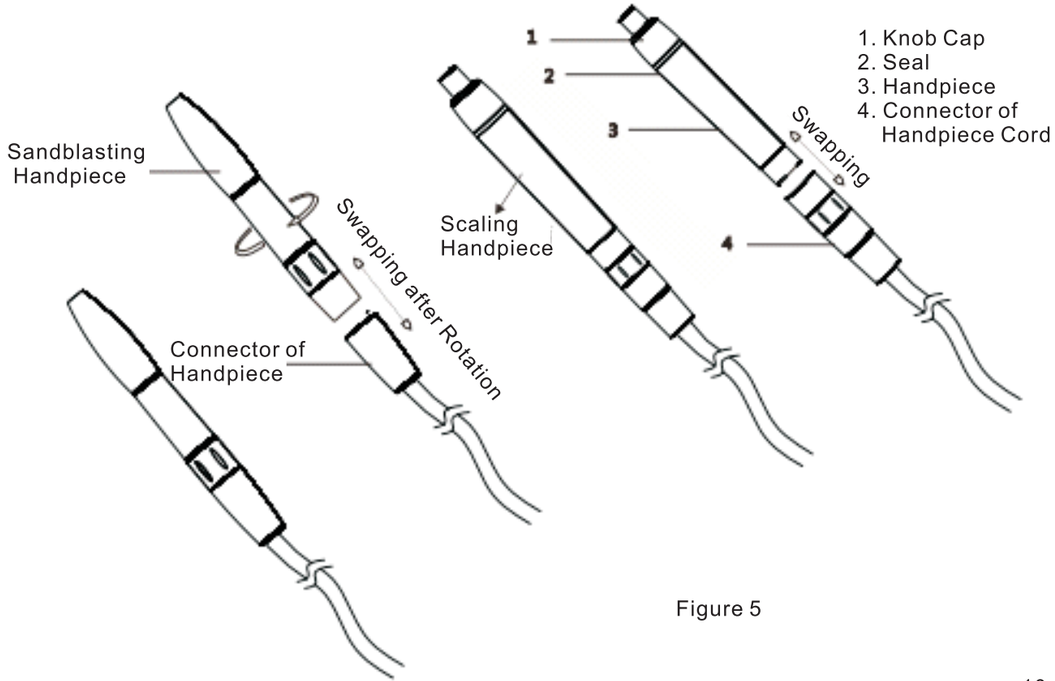

Figure 5

d) Installation for the Battery of Wireless Foot Pedal

Take off the sticker, and stick the waterproof rubber on the bottom.

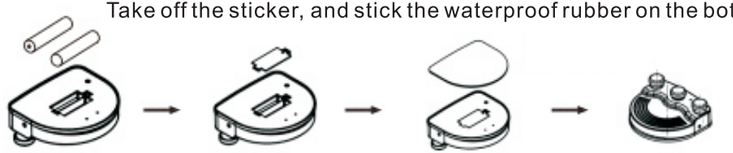

Figure 6

e) Wireless Foot Pedal Code Reset Process

1. Power state, press "M" and "⊟" toggle button, until the power strip lights are all on;
2. Under the premise of ensuring the foot press, load two AA batteries(It needs to be done when the power bar light is on).
3. At this point, the code is completed together, waiting for 30 seconds or rebooting, and then it can be operated normally.

f) Sockets for Air Intake and Power Adapter

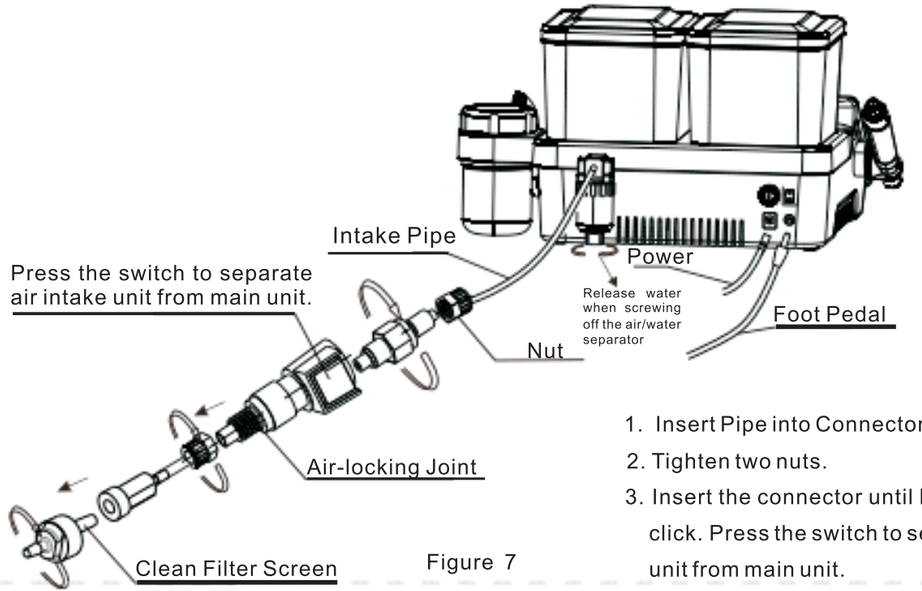

Figure 7

1. Insert Pipe into Connectors through Nuts.
2. Tighten two nuts.
3. Insert the connector until hearing a distinct click. Press the switch to separate air intake unit from main unit.

g) Control of Water and Sand Consumption

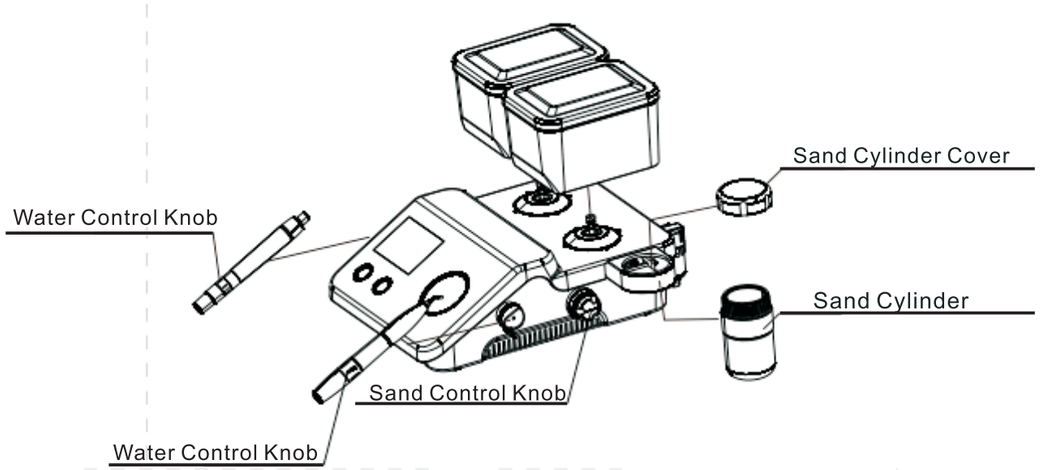

Figure 8

1. Rotate water control knob to control water consumption.
2. Rotate sand control knob to control sand consumption.
3. Keep sand cylinder dry to avoid wet gravel agglomeration.

2 Product Functions and Operations

2.1 Ultrasonic Scaling and Ultrasonic Periodontal Treatment

2.1.1 Operations

1) Take the main unit out of the box and put it on a stable plane.
2) Turn the water control knob to the maximum.
3) Install the battery for wireless foot pedal, or insert the plug of the cord foot pedal into the main unit.
4) Liquid route installation: Fill up appropriate amount of purified water into the water supply bottle, and then insert the water supply bottle to the main unit.
5) Gas circuit installation: Connect external source gas to the air intake.
6) Screw the scaling tip tightly to the handpiece by wrench, and then connect the handpiece and the connector of handpiece cord correctly. Before the installation of handpiece, please make sure the end of handpiece and the connector of handpiece are dry.
7) Make sure that the power switch on the main unit is off. Insert the plug of the power source to the main unit, and then connect the power.
8) Turn on the power switch of the main unit, and the LCD screen is on. The left bottle is used by default.
9) The normal frequency is extremely high. At the normal working state of the scaling tip, a light touch and a certain to-and-fro motion will eliminate the tartar without heating. Overexertion and long-time lingering are forbidden.
10) Vibrating intensity: Adjust the vibration intensity as need. Generally, the middle grade is suitable

for most of time. According to patient's different sensitivity and the rigidity of the tartar, adjust the vibrating intensity during the clinical treatment.

11) Water Consumption adjust: Step on the foot pedal, and the tip begins to vibrate, and then turn the water control knob to form fine spray to cool down the handpiece and clean the teeth.

12) After finishing operation, keep the device working for 30 seconds on the water supply condition in order to clean the handpiece and the scaling tip.

2.1.2 Scaling Function

Screw the regular tip tightly to the handpiece by wrench. Press mode selection button and select G to clean teeth.

2.1.3 Periodontal Treatment Function

Screw the titanium alloy tip tightly to the handpiece by wrench. Press mode selection button and select P to conduct periodontal treatment.

Notices: Do not pull out the handpiece when the foot pedal is stepped on and the product is producing ultrasonic vibration. Please uninstall the battery if not using the wireless footpedal for long time.

2.1.4 Instruction of Wrench Using (See figure 3)

The wrench's structure is designed in special way which can control the strength of the scaling tip's installation properly and correctly. It also can guarantee the operator screw or unscrew the scaling tip effectively and keep their hands away from being scratched.

Operation step:

1) Align the legs of the wrench to the tip, rotate the tip in a clockwise direction till the tip does not turn round anymore, and then it is installed.

2) Unloading the tip: Grip the handle and rotate the tip in a counter-clockwise direction by wrench to remove it.

3) Once after using, please put the wrench into disinfection cabinet to disinfect.

2.2 Endodontics Function

Operation step:

1) Fix clamper to handpiece by endo wrench, unscrew the screw cap on the clamper.

2) Put the ultrasonic endodontic file into the hole in the front of clamper, screw the screw cap with en --do wrench to tight up the clamper.

3) Press mode selection button and select E. Put the ultrasonic file into the patient's root canal slowly, and step on the foot pedal to start endo irrigation. During the treatment, turn up the power gradually according to the needs.

Notices:

1) **When fixing clamper, it must be screwed down.**
2) **The screw cap on the clamper must be screwed down.**
3) **Do not press it too much when the ultrasonic file in root canal.**
4) **Do not step on the foot pedal until the ultrasonic file is in root canal.**
5) **The power range of endo treatment is advised from the 1st to the appropriate grade.**

2.3 Surface Polishing Function

1) Fixing sandblasting nozzle in the sandblasting handpiece.(See figure 4)
2) Connecting the sandblasting handpiece to the connector of sandblasting handpiece cord.(See figure 5)
3) Sand consumption control: Rotate sand control knob in the sandblasting handpiece to control sand consumption.
4) Water consumption control: Rotate water control knob in the sandblasting handpiece to control water consumption.
5) Stepping on the foot pedal to start surface polishing treatment. 45° ~60° in jet angle and 4-6 mm in separation distance with teeth is recommended for the best treatment.
6) After finishing treatment, pressing power control knob, and then sandblasting system will clean the current gas circuit automatically for 5 seconds.
7) After self-cleaning,unscrew the sandblasting nozzle and pull out the handpiece before sterilization.

2.4 Wireless Foot Pedal Function

2.4.1 Installation

Put 2 AA batteries into wireless foot pedal, stick the waterproof rubber on the bottom after covering the battery cover. Leave the wireless foot pedal on the flat ground. After installing the ultrasonic scaler, turn on the ultrasonic scaler power, and then the wireless foot pedal is available.

2.4.2 Applicable Scope

Within any distance of 5 meters, the wireless foot pedal could fully operate the Ultrasonic Periodontal Therapy System.

2.5 Automatic Water Supply System with Double Bottles

2.5.1 Operation

1) Open the water cap, fill up the purified water, and then tighten the water cap.
2) Clean the water hole of the water supply bottle and the intake of the main unit.
3) Insert the water supply bottle to the main unit.
4) Press “Liquid” button to switch the left bottle or the right bottle. The light on the bottom of bottle will stay on to confirm your selection.

2.5.2 Notices

1) Make sure the air intake and water hole of the water supply bottle is not blocked.

2) Check the water proof "O-ring" on the water hole part is not damaged. If the "O-ring" is damaged or falling,please replace it immediately.

3) Make sure that the water cap is tighten in case of water leaking.

4) Clean the water hole of the water supply bottle before each use.

5) When change the liquid inside of water supply bottle, please turn the water control knob to the maximum and run the device for 30 seconds in order to maintain and clean the current liquid route. Then start to do the treatment.

6) When the liquid inside the water supply bottle is low, please fill up the liquid to ensure the regular working.

3 Sterilization and Maintenance

3.1 Sterilization of Detachable Handpiece

3.1.1 Autoclaved under high temperature/pressure:

1) 121℃/1 bar(0.1Mpa) 20 minutes.

2) 135℃/2.2 bar(0.22MPa) 15 minutes.

3) Pull out the handpiece and unscrew the scaling tip,endodontic files or sandblasting nozzle after each operation.

4) Pack the handpiece with sterile gauze or bag before sterilizing.

5) Reuse handpiece after it cools naturally in case of scalding hand.

⚠ Notices :

1) Dry the cleaning liquid in the handpiece with compressed air before sterilization.

2) Be sure that the scaling tip has been unscrewed from the handpiece and it cannot be sterilized with others.

3) Please check whether the outer of the handpiece is damaged during the irrigation or steriliza --tion, and do not apply any protective oil on the surface of handpiece.

4) There are 2 waterproof "O-ring" at the end of handpiece. Since sterilization and repeated pulling and inserting will reduce its using life, please lubricate them with dental lube frequently. Change the new "O-ring" if it is damaged or worn excessively.

5) The sterilizable parts can be sterilized over 250 times.

6) The following sterilizing methods are forbidden:

- **Put handpiece into any liquid for boiling;**
- **Dip handpiece in disinfectors such as iodine, alcohol and glutaraldehyde;**
- **Put handpiece into oven or microwave oven for baking.**

3.2 Sterilization of Tips,endodontic files and Sandblasting Nozzles

All the scaling tips, endodontic files and sandblasting nozzles can be autoclaved under high temperature and pressure.

3.3 Sterilization of Wrench and Endo Wrench

1) The wrench and endo wrench can be sterilized under high temperature and pressure.
2) The following sterilization methods for wrench are forbidden:
   - Braise in liquor;
   - Dip in iodine, alcohol or glutaraldehyde;
   - Heat in oven or microwave oven.

The scaling tips, endodontic files, sandblasting nozzles, wrench and endo wrench can be cleaned by ultrasonic cleaner.

⚠ **Notice :**

We are not responsible for any damage of the torque wrench directly or indirectly made by any way in the above items.

3.4 Troubleshooting and Notices

3.4.1 Troubleshooting

Faulty	Possible cause	Solutions
No response, no indication.	The power plug is in loose contact	Make the plug insert to the socket well.
	The foot pedal is in loose contact (cord foot pedal).	Insert the foot pedal to its socket tightly.
	The fuse in the main unit is broken.	Change the new fuse.
	The battery for wireless foot pedal died .	Change the new batteries.
	The foot pedal is out of order.	Press the reset button(See figure 7).
No ultrasonic oscillation	The tip is in loose contact.	Screw the tip on the handpiece tightly.
	The connect plug between the handpiece and the circuit board is in loose contact.	Contact the dealer or us.
	Handpiece problem.	Send the handpiece to dealer or us to repair.
	Cable problem.	Contact the dealer or us.

The scaling tip vibrates but there is no spray.	The water control knob is off.	Turn on the water control knob 【Note 1】.
	Insufficient power.	Adjust the power range to the appropriate grade.
Water leak from the product.	The internal pipe is broken down.	Contact the dealer.
The vibration of the tip becomes weak.	The tip has not been screwed on to the handpiece tightly.	Screw the tip tightly.
	The tip is loose because of shaking.	Screw the tip tightly.
	The coupling between the hand -- piece and the cable is not dry.	Dry it by the hot air.
	The tip is damaged【Note 2】.	Change the new tip.
Water leak between the handpiece cord and the handpiece.	The waterproof “O-ring” is damaged.	Change the new waterproof “O-ring”.
The endodontic file does not vibrate.	The screw is loose.	Tighten it.
	The endodontic file is damaged.	Change the new endodontic file.

No powder, air or water.	No air or water.	Contact the dealer or us.
	Handpiece or nozzle is blocked.	Check if there is air or powder in handpiece cord when pulling out the handpiece. 1) If there is nothing, clean the strainer valve core. 2) If there is air or powder, unscrew nozzle by wrench and clean it by ultrasonic cleaner after clearing the powder.
No powder and water but air.	No powder.	Add some poder to the sand cylinder.
	No water.	Check if there is water in the bottle.
	Humid powder.	Clear and dry sand cylinder and fill it with new powder.

Notice : If the problem still cannot be solved, please contact with local dealer or us.

3.4.2 Notices

【note 1】Rotate water control knob in the handpiece.

【note 2】If the scaling tip has been screwed on tightly and there is spray too, the following phenomena show that the scaling tip is damaged:

1) The vibration of tip and the spray from the tip are apparently weakening.

2) The noise or droning sound from tip when operation.

3.5 Maintenance of Sandblasting System

1) Press power control knob to make product clean gas circuit automatically for 5 seconds after each using.

2) If there is residual liquid in the air/water separator, rotate the knob at the bottom of air/water separator to empty the residual liquid before use.

3) Unscrew the strainer valve monthly and clean the strainer valve core regularly.As shown in figure 8.

4. Contraindication

- The hemophilia disease patient is not allowed to use this product.
- The patients or doctors with heart pacemaker are forbidden to use this product.
- The heart disease patient, pregnant woman and children should be cautions to use this product.

5. Storage and Maintenance

- The product should be handled carefully and lightly. Be sure that it is far from the vibration, and installed or kept in a cool, dry and ventilated place.
- Do not store the product together with the articles that are combustible,poisonous,caustic and explosive.
- This product should be stored in a room where the relative humidity is less than 80%,atmospheric pres --sure is 50 kPa to 106 kPa, and the temperature is -20 ℃ to +50 ℃.
- If not use for a long time, please make the machine get through to the power and water once per month. Press mode selection button to clean gas circuit automatically and unscrew the strainer valve to clean the strainer valve core regularly.

6. Transportation

- Excessive impact and shake should be prevented in transportation. Lay it carefully and lightly and do not invert it.
- Do not put it together with dangerous goods during transportation.
- Avoid solarization and getting wet in rain or snow during transportation.

7. Packing List

No.	Name	Specification/Model
1	Motherboard	/
2	Sandblasting handpiece	/
3	Scaling handpiece	/
4	Handpiece cable	/
5	Tips	/
6	Wrench	/

7	Endo wrench	/
8	Endodontic file	/
9	Waterproof “O-ring”	/
10	Multi-function syringe	/
11	Air pipe	4 mm×6 mm
12	Power adapter	30 V
13	Electromagnetic valve	/
14	Wireless foot pedal	/
15	Cord foot pedal(option)	/
16	LED	/

Note: This instruction manual did not detail the specification parts of ultrasonic scaler; please check the promotion documents and “packing list” along with the packing.

8. After Service

According to the warranty card, we offer the life time repair since the product is purchased. The repair of the device should be carried out by our professional technician, We are not responsible for any irretrievable damage caused by the non-professional person.

9. Symbol Instruction

VRN	Manufacturer 's logo		Caution! read the operation instruction		Class II		Applied part, type BF
	Disposal		Manufacturer		Consult the accompanying documents	SN	Serial number
135℃	Autoclavable		Atmospheric pressure for working/storage		Fragile	%	Storage Humidity
	Storage Temp		Up		Water bottle switch		Keep dry
- +	Electrical Outlet		Foot pedal connection	Gas 0.5-0.6Mpa	Air supply		

10. Environmental Protection

No harmful factor in this product, and deal with it based on the local regulation.

11. Manufacturer's Right

We reserve the rights to revise the design, technique, fittings, content of the instruction manual and original packing list at any time without notice. If there are some differences between blueprint and real product, take the real device as the norm.

12. Electromagnetic Compatibility

Notice:

1) Non-authorized repairs may result in some problems of this product or other products without express consent of Veirun Medical Technology Co.,Ltd.

2) VRN-Q6 Ultrasonic Periodontal Therapy System is designed and tested according to the note "Electro --magnetic compatibility".

3) Notes: EFT/BEndo indicator light and perio indicator light would be blinking under EFT/B, which will not affect the normal use of the machine and can recover when test finished. According to experienced clinicians, professionally trained how to use specialized equipment and system, this level of risk is accepted.

10.1 Requirements of Cable Installation

Cable Name	Cable Type	Cable Length
Power supply line	Unshielded parallel line	1.2 meter
Foot pedal line	Unshielded parallel line	2.2 meter
Handpiece line	Unshielded parallel line	2 meter

10.2 Critical Components for EMC

Critical components for EMC of this product includes transformer, power line, IC chip. Using or replacing accessories which are not designed or supplied by our company would result in decreased electromagnetic emission and electromagnetic immunity of this product. Do not replace parts of the product without authorization.

10.3 Guidance and Manufacturer's Declaration--Electromagnetic Emissions

Guidance and manufacturer's declaration--electromagnetic emissions		
The models VRN-Q6 Ultrasonic Periodontal Therapy System are intended for use in the electro --magnetic environment specified below. The customer or the user of the VRN-Q6 Ultrasonic Perio --dontal Therapy System should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic emissions-guidance
RF emissions GB 4824	Group 1	The models VRN-Q6 Ultrasonic Periodontal Therapy System use RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
Conducted emissions GB 4824	Class B	The models VRN-Q6 Ultrasonic Periodontal Therapy System are suitable for used in domestic establishment directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.
Harmonic emissions GB 17625.1	Noncomplying	
Voltage fluctuations /flicker emissions GB17/25.2	Complies	

10.4 Guidance and Manufacturer's Declaration--Electromagnetic Immunity

Guidance and manufacturer's declaration--electromagnetic immunity			
The models VRN-Q6 Ultrasonic Periodontal Therapy System are intended for use in the electromagnetic environment specified below. The customer or the user of the VRN-Q6 Ultrasonic Periodontal Therapy System should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic emissions-guidance
Electrostatic discharge(ESD) GB/T 17626.2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covers with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst GB/T 7626.4	±2kV for power supply lines ±1kV for input/output lines	±2 kV for power supply lines ±1 kV for interconnecting cable	Main power quality should be that of a typical commercial or hospital environment.
Surge GB/T 17626.5	±1kV line to line ±2kV line to earth	±1kV line to line	Main power quality should be that of a typical commercial or hospital environment.

Voltage dips, short interruptions and voltage variations on power supply input lines GB/T 17626.11	<5%UT(>95% dip in UT) for 0.5 cycle 40%UT(60% dip in UT) for 5 cycles 70%UT(30% dip in UT) for 25 cycles <5% UT(>95% dip in UT) for 5 cycle	<5%UT(>95% dip in UT) for 0.5 cycle 40%UT(60% dip in UT) for 5 cycles 70%UT(30% dip in UT) for 25 cycles <5% UT(>95% dip in UT) for 5 cycle	Main power quality should be that of a typical commercial or hospital environment. If the user of the models VRN-Q6 Ultrasonic Periodontal Therapy System require continued operation during power mains interruptions, it is recommended that the the models VRN-Q6 Ultrasonic Periodontal Therapy System be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field GB/T 17626.8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristics of a typical location in atypical commercial or hospital environment.
Note: UT is the a.c mains voltage prior to application of the test level.			

10.5 Guidance and Manufacturer's Declaration--Electromagnetic Immunity

Guidance and manufacturer's declaration--electromagnetic immunity			
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Immunity test	IEC 60601 test level	Compliance level	Electromagnetic emissions-guidance
Conducted RF GB/T 17626.6 Radiated RF GB/T 17626.3	3 Vrms 150kHz~80 MHz 3 V/m 80MHz~2.5 GHz	3 Vrms 3 V/m	Portable and mobile RF communications equip --ment should be used no closer to any part of the models VRN-Q6 Ultrasonic Periodontal Therapy System, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance: $d=[\frac{3.5}{V_1}]\sqrt{p}$ $d=[\frac{3.5}{E_1}]\sqrt{p}$ 800 MHz~800 MHz $d=[\frac{7}{E_1}]\sqrt{p}$ 800 MHz~2.5 GHz. where P is the maximum output power rating of the

			transmitter in watts(W) according to the transmitter manu -- facturer and d is the recommended separation distance in meters(m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,[a] should be less than the compliance level in each frequency range.[b] Interference may occur in the vicinity of equipment marked with the following symbol: 

Note 1:At 80 MHz and 800 MHz, the higher frequency range applies.
Note 2:These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

[a] Field strengths from fixed transmitters, such as base stations for radio(cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered.If the measured field strength in the location in which the models VRN-Q6 Ultrasonic Periodontal Therapy System are used exceeds the applicable RF compliance level above, the model VRN-Q6 Ultrasonic Periodontal Therapy System should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the models VRN-Q6 Ultrasonic Periodontal Therapy System.
[b]Over the frequency range 150 KHz to 80 MHz, field strengths should be less than 3V/m.

10.6 Recommended Separation Distances between Portable and Mobile RF Communications Equipment and the Models VRN-Q6 Ultrasonic Periodontal Therapy System

Recommended separation distances between portable and mobile RF communications equipment and the models VRN-Q6 Ultrasonic Periodontal Therapy System.			
The models VRN-Q6 Ultrasonic Periodontal Therapy System are intended for use in electromagnetic environment in which radiated RF disturbances is controlled. The customer or the user of the models VRN-Q6 Ultrasonic Periodontal Therapy System can prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the models VRN-Q6 Ultrasonic Periodontal Therapy System are recommended below, according to the maximum output power of the communications equipment.			
Rated maxi -- mum output power of transmitter/W	Separation distance according to frequency of transmitter/m		
	150 kHz~80 MHz $d=[\frac{3.5}{V_1}]\sqrt{p}$	80 MHz~800 MHz $d=[\frac{3.5}{E_1}]\sqrt{p}$	800 MHz~2.5 GHz $d=[\frac{7}{E_1}]\sqrt{p}$
0.01	0.12	0.12	2.3
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitter rated at a maximum output power not listed above, the recommended separation distance d in meters(m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts(W) accordable to the transmitter manufacturer.
Note1: At 80 MHz and 800 MHz, the higher frequency range applies.
Note2:These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

VRN-Q6 Ultrasonic Periodontal Therapy System has been tested and homologated in accordance with YY0505-2012/IEC 60601-1-1:2012 for EMC. But it is no guarantee in any way that this device will not be effected by electromagnetic interference. Avoid using the product in high electromagnetic environment.