

External-oral Suction Unit

VV-1000

Instruction Manual

(Please read the instructions carefully before using, maintaining or repairing the equipment. The instructions are for guidance only. The company has the right to improve the design of the equipment.)

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1. Overview

Thank you very much for choosing to use our external-oral Suction Unit! In order for you to be familiar with this product as soon as possible, please be sure to read this instruction manual and the accompanying materials in detail.

1.1 Contents

This instruction manual includes an overview, instructions for use of the suction unit, operation routines, maintenance, and precautions. You can view related content as needed and get corresponding help.

1.2 Structure and Composition

The external-oral suction unit is mainly composed of a generally vacuum pressure suction module, a primary filter, high-efficiency filters, ultraviolet sterilization, plasma sterilization, and a free arm.

1.3 Ideal Applications

It is used for the suction and purification of bacterial aerosols between medical staff and patients during dental treatment.

1.4 Safety Information

1.4.1 Electrical Safety

- The power supply for the environment in which this product is used must have a good, standard grounding device, and the grounding wire must be firm. It must use the national standard single-phase three-plug power cord, and cooperate with a well-grounded single-phase three-hole socket to ensure good grounding of this product.

 **Attention: To avoid the risk of electric shock, the device can only be connected to a power cable with a protective ground. An incorrect grounding plug can cause a risk of electric shock.**

- Before powering on this product, please confirm that the power supply you provide can meet the input power information marked near the power input port of this product.
- Do not share the socket with other electrical appliances to prevent the voltage from being unstable sometimes, which may damage the product
- When performing maintenance / repair or cleaning this product, be sure to unplug the power cord to ensure that the product is completely powered off before proceeding.
- Regularly check the power cord and power plug for damage, and make sure that the power cord is not crushed by other objects.

1.4.2 Regular Inspection

Regular safety inspections should be performed by trained and skilled personnel, the following items should be checked at least once a year:

Check the functional status of the equipment and machines.

Check whether the relevant safety signs are clear.

Check whether the performance of the device meets the instructions in the manual.

Test whether the grounding resistance is less than the resistance value 0.1Ω required in [GB9706.1](#).

1.4.3 Precautions

- 1) You should read and understand all contents in the manual carefully before operating.
- 2) Follow all warnings and instructions on the instrument during operation.
- 3) During maintenance and repair, the water and electricity sources must be emptied before the water and electricity sources are turned off.
- 4) Only trained and skilled medical personnel can operate the equipment. Improper use will cause serious personal injury.
- 5) In following cases, please do not use the device, nor can you open the device or replace the accessories

without authorization, and can only be repaired by the manufacturer or authorized service provider.

- Damaged power cord.
- The device does not work properly.
- The device is damaged.
- Water entered in the device.
- The device runs loudly or has a harsh sound, the output air is overheated, and an unpleasant odor is emitted.
- Product introduction, instruction manual, technical manual, product repair card, circuit diagram, parts list and other useful information, etc., need to be provided when the technician of authorized service provider repair.

6) The operator should unplug the power plug when leaving.

7) In order to avoid damage to machinery and electrical appliances, prevent attachments from falling.

8) The disposal of wastes and residues of products shall comply with the requirements of relevant national environmental protection regulations.

9) Strong electromagnetic waves will not be generated during the operation of this product, but in order to ensure the normal use of other medical devices, it should be prepared for grounding or try to avoid the use of other highly sensitive instruments and equipment at the same time, so as to avoid the equipment from being interfered by electromagnetic sources.

1.4.4 Cleaning

Please keep the environment of the product clean. Before cleaning the product, please disconnect the power supply, wipe the outer surface of the product with a soft cloth and neutral detergent; ABS parts should be cleaned with a soft cloth dipped in soapy water; metal baking parts are cleaned with a soft cloth dipped in soapy water or wiped with car wax.

 **Attention: Do not use liquid or cleaning agents containing flammable substances.**

1.5 Symbols and Marks

During installation, operation and maintenance, please pay attention to the important information represented by the symbols on the packaging and product labels:

	Fuse		Attention, please refer to the instructions
	Protective grounding	I	Turn On
	Serial number	O	Turn off
IP20	(IP) Protection (2) The entry of foreign objects larger than 12.5 mm in diameter and 0 (no protection against water)	S3 30%	Intermittent operation The ratio of operating time to the sum of operating time and subsequent interval time is 30%
	Fragile		Face up
	Avoid moisture		Stacking layers

2. Technical Specifications

2.1 Technical Specifications:

Name: External-oral suction unit
 Model: VV-1000
 Voltage/Frequency: AC 110V/60Hz (see the machine nameplate)
 Power: 1200W
 Noise: ≤65dB
 Suction rate / wind pressure: 3000L/min (5KPA)
 Suction pressure: -10KPa
 Dimensions: 325*325*750MM (not including the free arm)
 Filter level: HEPA 13 Filter efficiency: ≥99.97%

2.2 Classification

- 2.2.1 Classified by type of anti-motor: Class I equipment
- 2.2.2 Classification by electric shock protection: ordinary equipment without application part
- 2.2.3 Classified according to the degree of protection against liquid ingress: IP20 equipment
- 2.2.4 According to the safety level when used in the case of anaesthetic gas mixed with air or flammable anaesthetic gas mixed with nitrous oxide

Classification: Not AP type and APG type equipment

- 2.2.5 Classified by operating mode: intermittent operating equipment

2.3 Transport, storage and use conditions

2.3.1 Transport and storage

The machine should be transported and stored under following conditions: Temperature: -10 °C ~ + 50 °C
 Relative humidity range: ≤90%, atmospheric pressure range: 50 kPa ~ 106 kPa

2.3.2 Working condition

Temperature: + 5 ~ 40 °C, relative humidity: ≤80%, atmospheric pressure: 86kPa ~ 106kPa
 There should not be a lot of dust and corrosive substances in the surrounding air.

2.4 Electromagnetic Compatibility

Medical electrical equipment requires special tips on electromagnetic compatibility, as well as installation and use according to the electromagnetic compatibility information provided in the random files; portable and mobile radio frequency communication equipment may affect the use of the equipment.

In order to ensure the best EMC performance, please use the specified cable. The AC power cord specification is 1.8 meters in length; the transducers and cables sold by the company as spare parts for the components of the internal active oxygen air disinfection machine. The use of accessories, transducers and cables outside the regulations may cause an increase in the emission of the air disinfection machine or reduced immunity.

The suction machine should not be used close to or stacked with other equipment. If it must be used close to or stacked, it should be observed to verify that it can operate normally.

Guidance and manufacturer's declaration-electromagnetic emissions		
Dental electric suction machine should be used in the specified electromagnetic environment, the user or buyer should ensure that this product is used under such conditions.		
Launch experiment	Compliance	Electromagnetic environment-guide
Radio frequency emission GB4824	One Unit	Dental electric suction machines use radio frequency energy only for their internal functions. Therefore, its radio

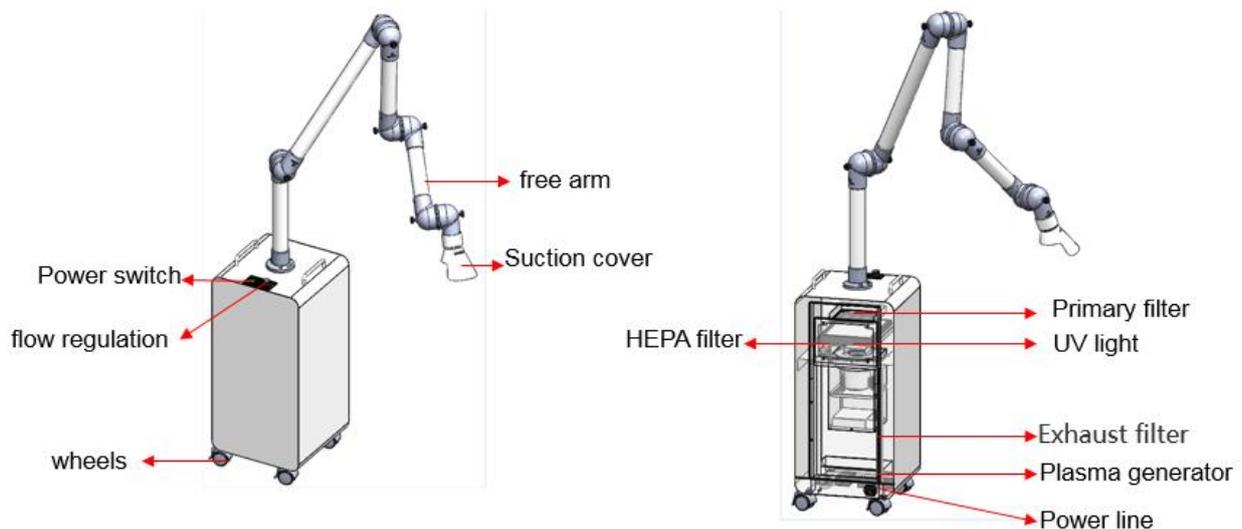
Radio frequency emission GB4824	A	frequency emission is very low, and the interference to nearby electronic equipment may be very small.
Harmonic emission GB 17625.1	Not applicable	Dental electric suction machine is suitable for non-domestic use and all facilities that are not directly connected to the public low-voltage power supply network of domestic residences.
Voltage fluctuation / flicker GB 17625.2	Not applicable	

Guidance and manufacturer's declaration-electromagnetic immunity			
Dental electric suction machine is used in the electromagnetic environment specified below. The user or user who purchased this product should ensure that it is used in this electromagnetic environment.			
Immunity test	IEC 60601 Electrical Level	Coincidence Electrical level	Electromagnetic environment-guide
Electrostatic discharge (ESD) GB/T17626.2	±6 kV Contact discharge ±8 kV Air discharge	±6 kV Contact discharge ±8 kV Air discharge	The ground should be wood, concrete or ceramic tiles. If the ground is covered with synthetic materials, the relative humidity should be at least 30%.
Electrical fast transient burst GB/T17626.4	±2kV On the power cord ±1kV For input / output lines	±2kV On the power cord Not Applicable	The grid power supply should have the quality used in a typical commercial or hospital environment.
Surge GB/T17626.5	±1 kV Line-to-Line ±2 kV Line-to-ground	±1 kV Line-to-Line ±2 kV Line-to-ground	The grid power supply should have the quality used in a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage changes on the power input line GB/T17626.11	<5% UT for 0.5 cycle (> 95% drop in UT) 40% UT for 5 cycles (On UT, 60% drop) 70% UT for 25 cycles (At UT,> 30% drop) <5% UT for 5 S (> 95% drop in UT)	<5% UT for 0.5 cycle (> 95% drop in UT) 40% UT for 5 cycles (On UT, 60% drop) 70% UT for 25 cycles (At UT,> 30% drop) <5% UT for 5 S (> 95% drop in UT)	The network power supply should have the quality used in a typical commercial or hospital environment. If the user of the dental electric suction machine needs to continue to operate during the power interruption, it is recommended that the dental electric suction machine be powered by an uninterruptible power supply or battery.
Power frequency magnetic field GB/T17626.8	3A/m	3A/m	The power frequency magnetic field should have the characteristics of power frequency magnetic field level in a typical place in a typical commercial or hospital

			environment.
Note: UT refers to the AC grid voltage before applying the test voltage.			

3: Product Structure and Installation

3.1 Structure diagram:



3.2 Installation procedure:

3.2.1 Open-package Inspection

Open the package, and check whether the device is in good condition, check complement of unit, spare parts and consumable parts according to the packing list. If you have any questions, please contact our distributor or our company directly.

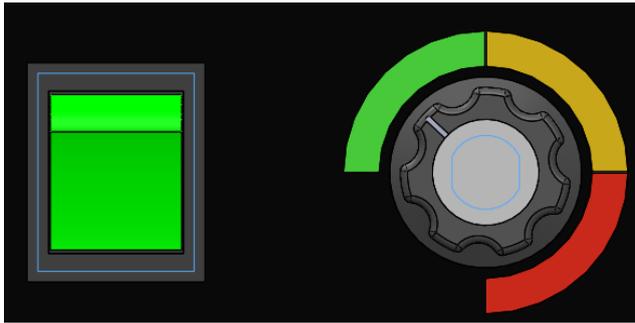
3.2.2 Installation

- 1) Move the machine to appropriate location on the flat solid floor and press on the brake at the bottom of wheel.
- 2) Install the free arm onto the mounting joint at the top of the box.
- 3) Install the suction cover onto designated spot as above picture shows.
- 4) Use one-phase AC 220V-50hz or other local power (220V 60hz, 240V 50hz, 110V 60hz) would be ok.

3.3 Operation mode control

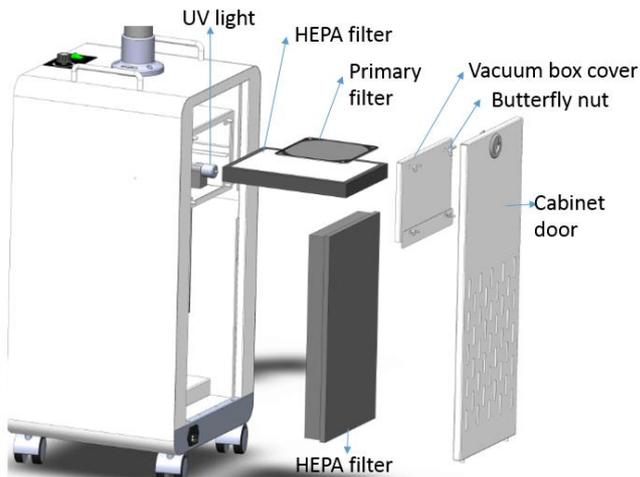
Move the machine to appropriate location and press on the brake at the bottom of wheel, plug in the power cord, pull the free arm to an appropriate position according to the demand, switch on the power and device start to work. Suction power could be controlled through the knob on the control panel, turn off the power switch after use, pull back the free arm.

This equipment has stepless knob, it can meet the needs for most operation when the knob is adjusted to the low power area (green area). If some surgery need larger flow, it can be adjusted clockwise, the maximum power is not recommended.



4: Maintenance

- 4.1 Keep the outside of the machine clean and tidy, do not use chemical detergent, alcohol to wipe the machine.
- 4.2 Clean the primary filter regularly (wash with water once every month).
- 4.3 Maintain and replace HEPA filter and exhaust filter, ultraviolet lamp once a year, the replacement steps are shown below:



- 4.3.1 Open the cabinet door, remove the 2pcs butterfly nuts which fix the HEPA filter baffle, remove the HEPA filter baffle, then it can be taken out, use the same way to install the new HEPA filter.
- 4.3.2 Remove the remaining two butterfly nuts which fix the vacuum box cover, remove the cover, then the primary filter and HEPA filter can be taken out, use the same way to install the new filters.
- 4.3.3 Remove the ultraviolet power cord from the cable card, and then remove the ultraviolet lamp from the box. Install the ultraviolet lamp tube in the same way.
- 4.3.4 Restore the vacuum box cover, baffle, butterfly nut and cabinet door in order after the replacement.

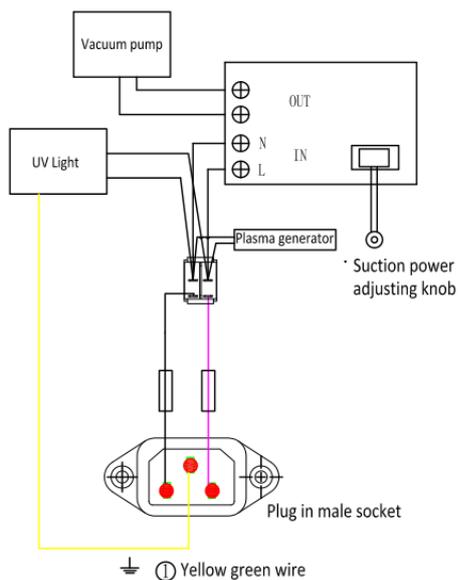
Note: the butterfly nut should be tightened to ensure good sealing of the vacuum box.

- 4.4 After each treatment, soak the suction cover in disinfectant for 5 minutes for disinfection/sterilize at 121°C for 15 minutes.
- 4.5 Free arm disinfection: run the equipment to suck the disinfectant spray before off work every day.
 - ⚠ (Do not use alcohol or other flammable disinfectants, recommend organic solution such as quaternary ammonium salt, less corrosive disinfectant.
- 4.6 During the above maintenance, please disconnect the power supply to avoid the risk of electric shock.
- 4.7 Stop operation and pull out the power plug, store it in a dry ventilated place.

5: Trouble-shooting

Problem	Check	Tips
The power indicator is not on, the machine cannot work	Whether the power plug is properly plugged in	Plug it in properly
	Whether the fuse blown	Change the fuse
The power indicator is on and the suction power is small	Whether the filter is blocked	Wash the filter
	Whether the outlet on the door is blocked	Clean the outlet
The power indicator is on and has no suction power	Whether the circuit board, potentiometer damaged	Change the circuit board, potentiometer
	Whether motor is loose connection	Tight the connection part
	Whether the motor broken	Change the motor

6: Electric principle diagram



7: Disposing notes

Following requirements shall be followed as stored:

- Disconnect the appliance from power.
- The components of the product are non-toxic, dispose of the appliance should following all environmental regulations.

8: Packing list

Series No.	Product name	Unit	Quantity
1	Suction device + free arm component	pc	1
2	Suction cover	pc	2
3	Instruction manual	pc	1