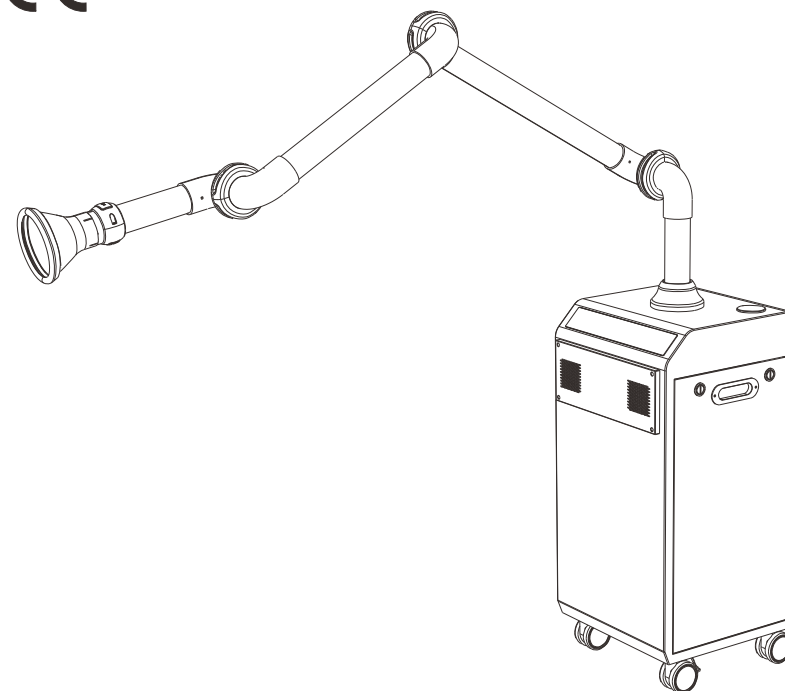


Extraoral Suction System

Instruction Manual

Please read the instruction manual carefully before operating



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Caution

The white foam fixed inside the main unit must be removed before use for the first time.

ESS1

Extraoral suction system

Recommended separation distances between portable and mobile RF communications equipment and ESS1.

ESS1 is intended for use in electromagnetic environment in which radiated RF disturbances is controlled. The customer or the user of ESS1 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and ESS1 as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150kHz to 80MHz $d=1.2 \times P^{1/2}$	80MHz to 800MHz $d=1.2 \times P^{1/2}$	800MHz to 2,5GHz $d=2.3 \times P^{1/2}$
0,01	0.12	0.12	0.23
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 transmitters 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.


NOTE 1 At 80 MHz and 800 MHz. the separation distance for 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.

NOTE 3 An additional factor of 10/3 has been incorporated into the formulae used in calculating the recommended separation distance for transmitters in the ISM frequency bands between 150 kHz and 80 MHz and in the frequency range 80 MHz to 2,5 GHz to decrease the likelihood that mobile/portable communications equipment could cause interference if it is inadvertently brought into patient areas.

NOTE 4 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.



















Guidance & Declaration - Electromagnetic immunity			
ESS1 is intended for use in the electromagnetic environment specified below. The customer or the user of ESS1 should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC 61000-4-6 Radiated RF IEC 61000-4-3	3 Vrms 150 kHz to 80 MHz 3 V/m 80 MHz to 2.5 GHz	3V 3V/m	<p>Portable and mobile RF communications equipment should be used no closer to any part of ESS1, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance</p> $d = 1.2 \times P^{1/2}$ <p>$d = 1.2 \times P^{1/2}$ 80 MHz to 800 MHz</p> <p>$d = 2.3 \times P^{1/2}$ 800 MHz to 2.5 GHz</p> <p>where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer 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:</p> 
<p>NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.</p> <p>NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.</p>			
<p>^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 theoretically with accuracy. 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 ESS1 is used exceeds the applicable RF compliance level above, ESS1 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating ESS1.</p> <p>^b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.</p>			

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1 Symbol instruction

 Trademark	 Caution
 Follow instructions for use	 Use indoor only
 Alternating current	 Appliance compliance with WEEE directive
 Date of manufacture	 Manufacturer
 Standby	 Suction
 Ozone sterilization	 Reservation
 Low wind power	 High wind power
D Day	H Hour
M Minute	SN Serial number
 CE marked product	 Authorised representative in the European Community

Guidance & Declaration-electromagnetic immunity			
ESS1 is intended for use in the electromagnetic environment specified below. The customer or the user of ESS1 should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Electrical fast transient/burst IEC 61000-4-4	±2kV for power supply lines ±1 kV for Input /output lines	±2kV for power supply lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV line to line ±2 kV line to earth	±1 kV line to line	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11.	<5 % U_T (>95% dip in U_T) for 0.5 cycle 40 % U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95 % dip in U_T) for 5 sec	<5 % U_T (>95% dip in U_T) for 0.5 cycle 40 % U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95 % dip in U_T) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of ESS1 requires continued operation during power mains interruptions, it is recommended that ESS1 be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE U_T is the a.c. mains voltage prior to application of the test level.			

16 EMC–Declaration of conformity

Guidance and manufacturer's declaration-electromagnetic emissions		
ESS1 is intended for use in the electromagnetic environment specified below. The customer or the user of ESS1 should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	ESS1 uses 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.
RF emissions CISPR 11	Class B	ESS1 is suitable for use in domestic establishment and in establishment directly Not connected to a low voltage power supply network which supplies uildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Complies	
Voltage fluctuations / flicker emissions IEC 61000-3-3	Complies	

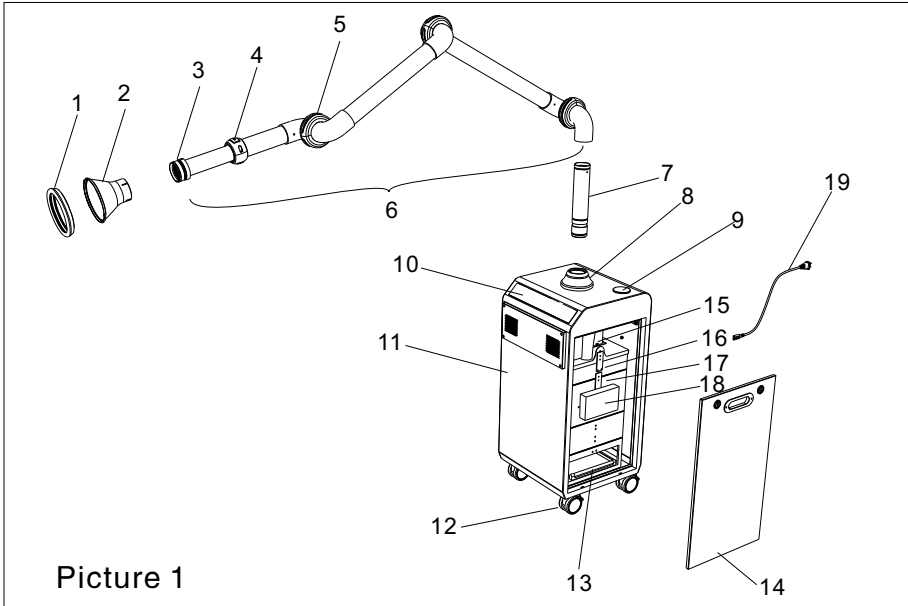
2 Introduction

This machine has the negative pressure suction function, which can suck dust, droplets and other aerosol.The aerosol is cleaned and disposed by ozone,plasma,and HEPA filter.

2.1 Product name: Extraoral suction system

2.2 Item No.:ESS1

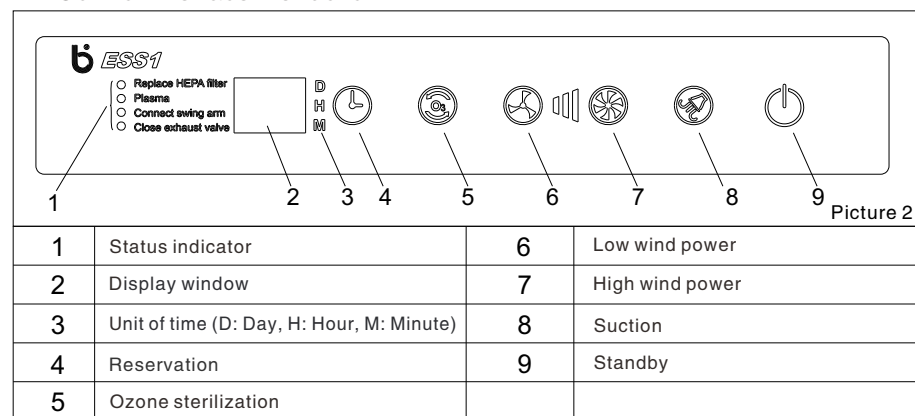
2.3 Parts sketch map



Picture 1

1	Drip-proof ring	11	Main unit case
2	Suction hood	12	Silent wheel
3	Extension tube	13	Ultraviolet lamp (optional)
4	Positioning switch	14	Door of main unit case
5	Joint	15	ozone generator
6	Swing arm	16	Tornado filter box
7	Middle column	17	Plasma box
8	Connecting flange	18	Plasma power supply
9	Seal cover	19	Power cord
10	Control panel		

2.4 Control interface instruction



3 Intended use, structure and contraindication

3.1 Structure: This machine is composed of main unit, HEPA filter, valve, pipe and other parts.

3.2 Intended use: This machine is used to provide a negative pressure source for dental treatment equipment to achieve the suction function.

3.3 Contraindication: The patients with heart pacemaker are forbidden to use this machine.

4 Components

This machine is mainly composed of following parts:

No.	Description	Item No.	Category
01	Main unit	ESS1	Main unit
02	Swing arm	SA-1	Part
03	Suction hood	—	Part
04	Drip-proof ring	—	Part
05	Middle column	—	Part
06	Screw	M4	Part
07	Power cord	2m	Part
08	Instruction manual		—
09	Qualified certificate		—
10	Warranty card		—
11	Packing list		—

More details about product and accompanying documents in the packing list.

12 Storage and transportation

12.1 Relative humidity: 0~80%

12.2 Atmospheric pressure: 50KPa~106KPa

12.3 Environmental temperature: -10℃~+50℃

12.4 Prevent excessive shock and vibration in transportation, be sure to handle with care and avoid inversion.

12.5 Don't mix with dangerous goods during transportation.

12.6 Avoid the sun, rain or snow during transportation.

13 Date of manufacture, useful life

13.1 Refer to the product label for date of manufacture.

13.2 Useful life: 5 years

14 After-service

14.1 We offer one year free warranty to the whole machine and two years free warranty to the brushless motor based on the warranty card from the date when it is sold to the end user. Lifetime maintenance.

14.2 In case of failure or damage caused by the following reasons, our company will not carry out warranty and will not assume any responsibility.

① The operators who are not designated by our company and dealer install, modify, repair, etc.

② Failure or damage caused by products of other companies.

③ Use the parts not designated by our company to modify, maintenance, repair.

④ Do not follow the precautions and operation methods as specified in this instruction manual.

⑤ Malfunction and damage caused by the environmental conditions, for example, power supply and installation environment, which do not meet the conditions of use described in this instruction manual.

15 Environmental protections

15.1 The machine does not contain any harmful ingredient. You can deal with it based on the local law.

15.2 We reserve the right to change the design of the machine, product technique, accessories, instruction manual and the content of original packing at any time without notice. If there are some differences between picture and real machine as the norm.

11 Trouble shooting

Fault	Possible cause	Solutions
No power	The plug is not connected well.	Connect the plug well. (Picture 7)
	The power switch is not turned on.	Turn on the power switch. (Picture 7)
	The fuse is broken.	Replace the fuse. (Picture 11)
Weak suction	The filter screen of suction inlet is blocked.	Clean and unchoke the filter screen.
	The fan outlet is covered or blocked.	Remove coverings or barriers.
	HEPA filter reaches its useful life.	Replace HEPA filter. (Picture 9)
	HEPA filter is blocked.	Replace HEPA filter. (Picture 9)
	The drawer locks inside the main unit are not fastened well.	Fasten the drawer locks well
	The internal air pipe and its joints are loose.	Tighten the air pipe and its joints.
Trouble reminder	The status indicator of "Replace HEPA filter" flashes.	Replace HEPA filter. (Picture 9)
	The status indicator of "Plasma" flashes.	Clean plasma generator. (Picture 10)
	The status indicator of "Connect swing arm" flashes.	Insert the extension tube into the the bottom of sterilization connector of the main unit case. (Picture 8)
	The status indicator of "Close exhaust valve" flashes.	Make sure the exhaust valve is open.

If the problem still can't be solved, please contact with us.

5 Technical specifications

5.1 Specifications

Input voltage	AC 110V / AC 230V 50/60Hz
Input power	700VA
Suction	10KPa
Suction flow	3000L/min
Ultraviolet lamp (Optional)	4W × 2 (Optional)
HEPA filter	H13-H14
Noise	60 ± 2dB
Swing arm dimension	φ 50mm × 1621mm
Main unit dimension	350mm × 395mm × 671mm

5.2 Working condition

5.2.1 Environment temperature: +5℃ ~ +40℃.

5.2.2 Relative humidity: 0 ~ 80%.

5.2.3 Atmosphere pressure: 70KPa ~ 106KPa.

6 Precaution

6.1 This machine is limited to suck dust, droplets and other aerosol in the dental treatment environment.

6.2 Do not suck metal dust.

6.3 Do not place this machine around a container containing hydrotherm or liquid.

6.4 Do not touch the power cord with sharp objects to prevent scratch.

6.5 Do not block suction inlet and exhaust valve when using.

6.6 HEPA filter should be cleaned or replaced immediately due to blockage of foreign matter.

6.7 Replace HEPA filter when the status indicator of “Replace HEPA filter” flashes.

6.8 Please clean the plasma generator in time when the status indicator of “Plasma” flashes.

6.9 Insert the extension tube of swing arm into the sterilization connector of the main unit case when using ozone sterilization function. When the status indicator of “Connect swing arm” flashes, please confirm if the swing arm is connected correctly. (If the status indicator of “Connect swing arm” still flashes after connecting swing arm well, please do not use ozone sterilization function temporarily and contact dealers or manufacturer for repair.)

6.10 The exhaust valve should be closed during using ozone sterilization. Please confirm if the exhaust valve is closed when the status indicator of “Close exhaust valve” flashes. (Please do not use ozone sterilization function temporarily and contact dealers or manufacturer for repair if the exhaust valve can not be closed.)

6.11 This machine requires professional maintenance, and all electrical parts must be installed by authorized technicians.

6.12 If this machine is abnormal or damaged, please stop using it immediately and consult the seller.

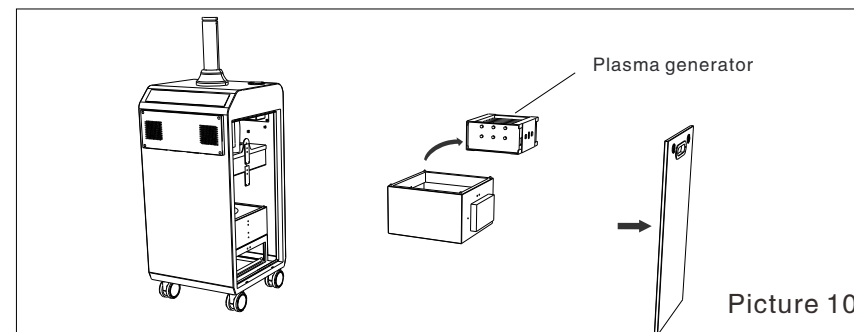
6.13 Under the following situations, please cut off the power supply and unplug the power plug.

- ① Replace HEPA filter, clean, maintain and troubleshoot the machine.
- ② Abnormal sound or high temperature.
- ③ Not used for a long time. (To be safe and to save electricity.)

9.2.5 Open the dust-proof lock catch of tornado plasma box, raise the top cover of tornado filter box, and take out of plasma generator filter.

9.2.6 Use a brush to clean the dust and particles on the electrode slice of plasma generator.

9.2.7 After finishing cleaning plasma generator, put it into the plasma box, buckle the lock catch, close the doors of main unit case.(Picture 10)



9.3 Replacing fuse

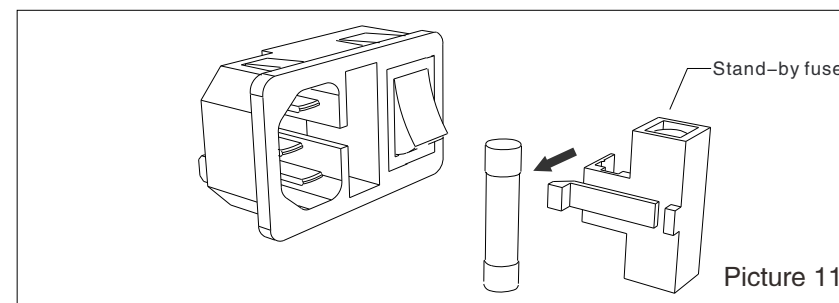
9.3.1 Cut off the power supply and unplug the power plug before replacing fuse.

9.3.2 Remove the fuse holder from the power socket. (Picture 11)

9.3.3 Push the fuse out of the fuse holder with a small screwdriver.

9.3.4 Put the new fuse into the fuse holder.

9.3.5 Install the fuse holder back into the power socket.



10 Maintenance

10.1 Wipe the outer surface of the machine by medical alcohol.

10.2 It is recommended to run the machine that have been unused for a long time once a month.

10.3 Ozone sterilizes inside of the machine that has not been used for a long time before use.

9 Cleaning and replacement of components

9.1 Time to replace HEPA filter

The useful life of HEPA filter is set as 1 year by default. When the remaining days are greater than 99 days, the control panel does not show the remaining days of HEPA filter. When the remaining days is less than 99 days, the control panel shows the specific remaining days of HEPA filter. When the remaining days are less than 5 days, the status indicator of “Replace HEPA filter” flashes. Please prepare HEPA filter in advance and replace it in time.

9.1.1 Before replacing HEPA filter, ozone sterilization should be carried out for the machine.

9.1.2 Disconnect the power supply and unplug the power plug before replacing HEPA filter.

9.1.3 Wear gloves when replacing HEPA filter.

9.1.4 Unlock the lock at door of main unit case by an iron sheet and open the doors of main unit case on both sides.

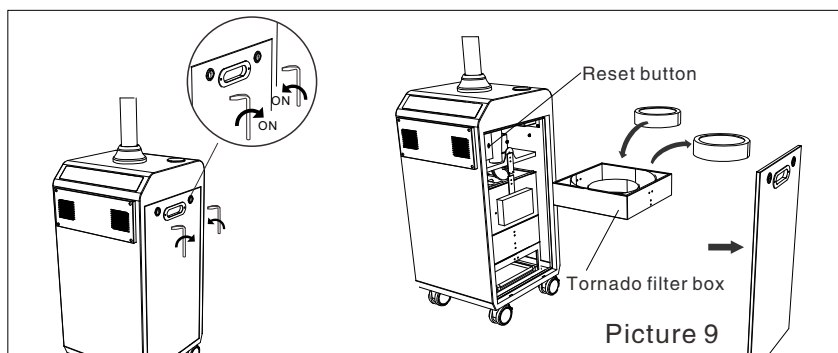
9.1.5 Open the dust-proof lock catch of tornado filter box, raise the top cover of tornado filter box, and take out of HEPA filter.

9.1.6 Place the new HEPA filter in the center of the tornado bucket. Turn the side with the ring-pull up.

9.1.7 Reconnect the power supply after replacing HEPA filter. Turn on the power switch and press the reset button for 5S. Finish reset after the buzzer makes a “Di” sound. (Picture 9)

9.1.8 Cover the top cover of tornado filter box, and close the doors of main unit case. (Picture 9)

9.1.9 HEPA filter is treated as medical waste.



9.2 Cleaning plasma generator

9.2.1 Ozone sterilizes the machine before cleaning the plasma generator.

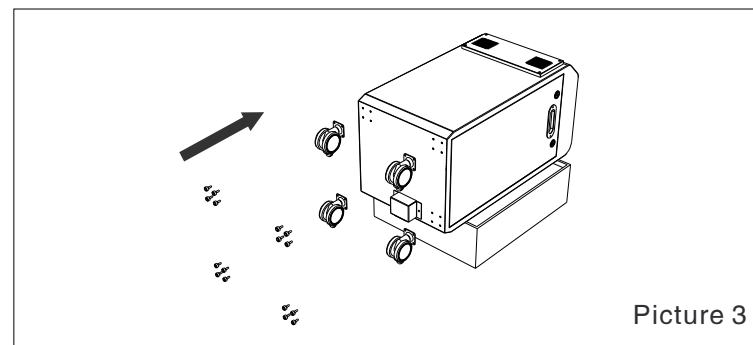
9.2.2 Cut off the power supply and unplug the power plug before cleaning the plasma generator.

9.2.3 Wear gloves when cleaning the plasma generator.

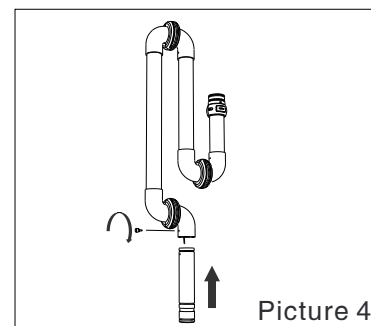
9.2.4 Unlock the lock at door of main unit case by an iron sheet and open the doors of main unit case on both sides.

7 Installation

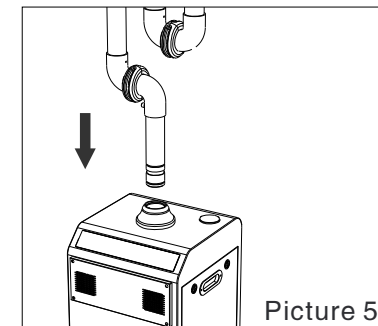
7.1 Please install the silent wheels as picture before use. (Picture 3)



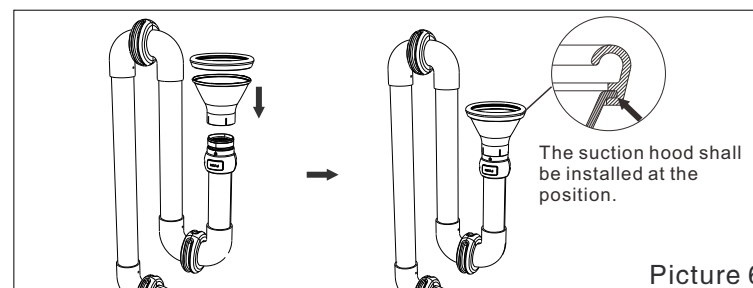
7.2 Insert the middle column into the first joint of swing arm and tighten the screw. (Picture 4)



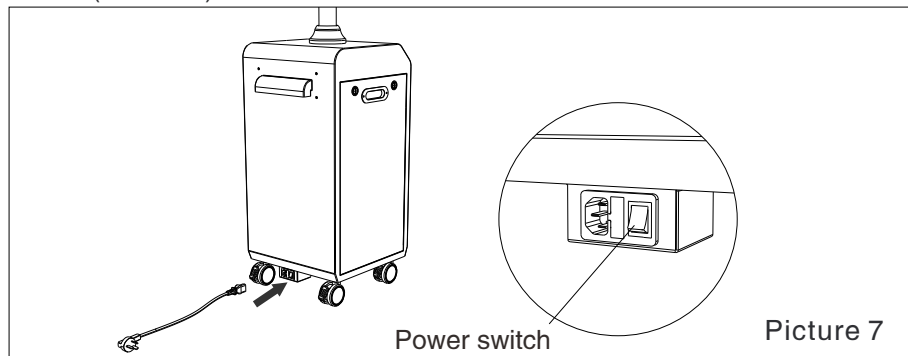
7.3 Insert the middle column into the connection flange. (Picture 5)



7.4 Install the drip-proof ring to the suction hood and then install the suction hood to the front end of swing arm. (Picture 6)



7.5 Connect the power cord to the main unit and the other section to the socket.(Picture 7)



7.6 Please note the following when installing this machine.

- ①It should be installed out of contact with water.
- ②It should be installed in a place where the use or performance of this machine will not be affected by adverse factors such as air pressure, temperature, humidity, ventilation, sunlight, dust, salt, sulphur content, etc.
- ③Pay attention to stable state, avoid tilt, vibration and shock (including during transportation), etc.
- ④Do not install it near the chemical storage area.
- ⑤Note voltage and allowable current (or power) of the power supply.
- ⑥Make sure the ground wire of power supply is properly connected.

8 Usage

8.1 Confirmation before use



8.1.1 Make sure to keep articles that are likely to be sucked away from the suction inlet.



8.1.2 Verify that the swing arm support is stable.


8.1.3 Make sure the power cord is connected properly.


8.1.4 Press the power On–Off button under the machine.

8.2 Suction function

8.2.1 After confirming the proper angle of suction inlet and swing arm, press the standby button  on control panel and start the machine. Press the suction button  and start suction function.

8.2.2 Obtain suitable suction through pressing high wind power button  and low wind power button . The machine is set with 3 gears of suction to be adjustable.

8.2.3 Press the suction button  to end or pause suction work, and the machine stops sucking immediately.

8.2.4 Press the suction button  again, and the machine starts to suck immediately.

In case of touching the swing arm, pay attention to put it away after use.

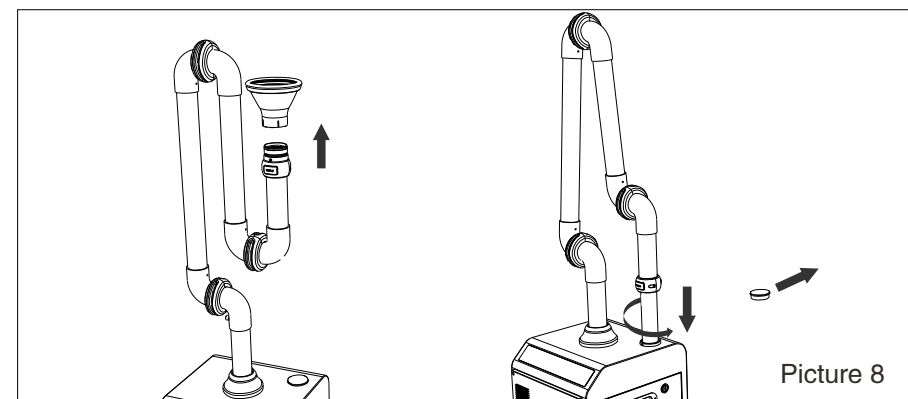
8.3 Cleaning and disinfection

8.3.1 Cleaning and disinfection of suction hood and drip–proof ring


Remove suction hood and drip–proof ring after completion of the work. Wipe and disinfect them with alcohol or other neutral disinfectant.




8.3.2 Ozone sterilization


8.3.2.1 Remove the suction hood and open the seal cover of main unit case. Adjust the swing arm angle, insert the extension tube into the sterilization connector of the main unit case, rotate to the right and press down (Picture 8), and then confirm the status indicator of “Connect swing arm” is always on.



8.3.2.2 Press the standby button  and start the machine.

8.3.2.3 Press the ozone sterilization button  and choose ozone sterilization function.

8.3.2.4 When you need to reserve start–up time, press reservation button . Select reservation start–up time through low wind power button  and high wind power button .

8.3.2.5 Ozone sterilization function starts after stopping reservation selection for about 10S. When you don' t need to reserve start–up time, ozone sterilization function starts after pressing ozone sterilization button  and no any operating for about 10S. Ozone sterilization time is set at one hour.

8.4 Drying function

8.4.1 After ozone sterilization is completed, drying function starts automatically. At the moment, ozone generator closes, fan runs, exhaust valve opens, and moisture inside the machine is dried.

Remarks: Ozone sterilization function is suggested to be used in unmanned condition after work. Ozone sterilization and drying lasts for about 1.5H.