“Acare” Suction Unit
ASU-200 User Manual

Model No.: ASU-200

Please read the instruction manual before use

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Please read the instruction manual before use

Warning & Caution

1. This device is intended for use by professional. The manufacture recommends that user train on use this device.
2. Do not place or store product where it can fall or be pulled into a tub or sink.
3. Do not place in or drop into water or other liquid.
4. Do not reach for a product that has fallen into water. Unplug immediately.
5. To reduce the risk of burns, electrocution, fire or injury.
6. This product should never be left unattended when plugged in.
7. Close supervision is necessary when this product is used by, on, or near children or invalids.
8. Use this product only for its intended use as described in this manual, do not use attachments not recommended by the manufacturer.
9. Never operate this product if it has a damaged cord or plug, if it is not working properly, if it has been dropped or damaged, or dropped into water. Return the product to the provider for examination and repair.
10. Keep the cord away from heated surfaces.
11. The device can also use for field and/or transport.

Chapter 1. Introduction

1.1 General Information

Intend Use

The device is used to remove fluids from the airway or respiratory support system and infectious materials from wounds. The device creates a negative pressure (vacuum) that draws fluids through disposable tubing that is connected to a collection container. The fluids are trapped in the collection container for proper disposal. It is for use on the order of a physician only.

⚠ **THIS DEVICE IS NOT INTENDED FOR HEMOSPASIA**

Chapter 2. Product Description

Product	Model	Specification	Standard Accessory
(1) Suction unit	ASU-200	80 KPA	☑
(2) Suction container	LAB-0019-00Z8	1000 ml	☑
(3) Connection tube		φ7mm*φ12mm	☑
(4) Bacteria filter	AHD-0012-00A1		☑
(5) Patient tube		ϕ6mm*ϕ10mm*1800mm	
(6) Remote controller	ARE-0019-00A2		
(7) Battery	LB-04	2500 mAh	
(8) Power adapter	UE60-180334SPA3	100-240V	☑
(9) Carrying bag			☑

Chapter 3. Set-up

(1) Connect the connection tube on the vacuum outlet.

(2) Connect the other side of connection tube on the suction container.

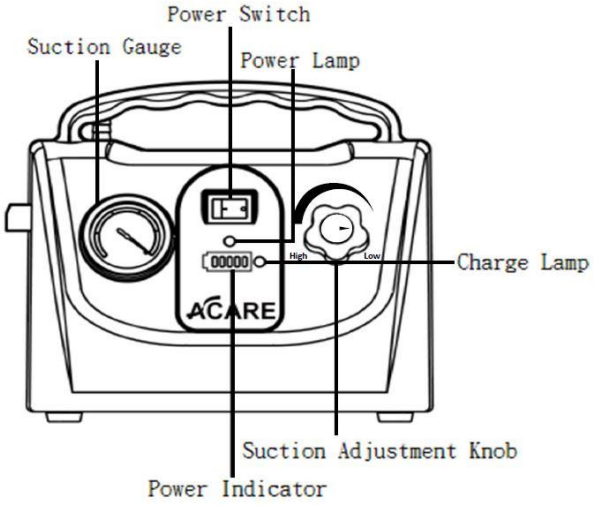
(3) Hook up the container with the container connection base.

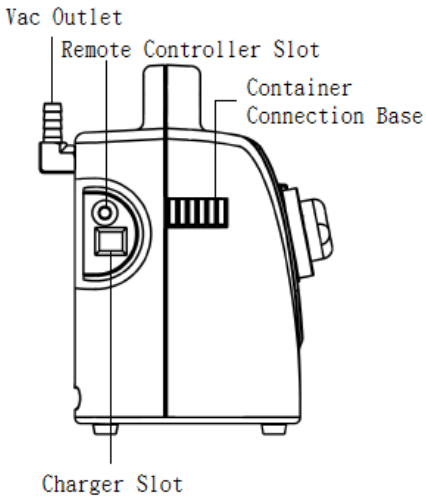
(4) Connect either end of the suction tubing to the tubing connector then connect the other end to the bacteria filter. Ensure that the clear side of the bacteria filter is toward elbow and container when installing/re-installing. Do not reverse direction of filter

(5) Please assure that all connections are secure and without leaks before using.

Chapter 4. Operation Instruction

Front Panel





Device Operation

(1) Open the device.
(2) Adjust the pressure.
(3) Verify that unit is at desired suction level before beginning.
(4) Insert the suction tube to a suitable depth in patient's nostril patient suction
(5) Close the device after use

⚠ **Do Not Exceed 15 Seconds for Each Therapy**

⚠ **Do Not Block the Exhaust Outlet During Use**

⚠ **No Modification of this Equipment is Allowed**

⚠ **To Avoid the Risk of Electric Shock, this Equipment Must only be Connected to a Supply Mains with Protective Earth**

⚠ **If the protect mechanism of the container triggered, turn off the device and disconnect the container immediately.**

Chapter 5. Cleaning & Maintain

-Device

(1) Recommend that pour the liquid in the container before met the full line.

(2) Disinfected with diluted medical alcohol to clean the device surface after use.

(3) Disinfected with diluted medical alcohol to clean the accessories, such as suction container, connection tube, and suction tube…etc.

(4) Charge the device for 3hrs at least once per month.

(5) The reusable collection canister is single-patient use and should be replaced every 1 to 2 months.

- Bacteria Filter

(1) The filter can't be cleaned.

(2) If the filter gets wet, or becomes contaminated or clogged, it must be replaced.

Chapter 6. Troubleshooting

Problem	Possible Cause	Solutions
Pump runs, but no vacuum	1. Tubing isn't connected properly. 2. Tubing breaks or leaks. 3. Container do not assembly properly. 4. Container breaks or leaks.	1. Assembly the tube properly. 2. Contact your equipment provider for repair
Unit does not working when power is opened	1. Switch broken. 2. PCB board broken.	Contact your equipment provider for repair
Vacuum delivered, but gauge did not display the values	1. Tubing isn't connected properly. 2. Gauge broken	Contact your equipment provider for repair
Battery will not hold a charge.	1. Charging IC broken 2. Battery life expires	1. Ensure that unit is equipped with battery. 2. Verify that charge light turns on. 3. Check electrical connections during charging. 4. Contact your equipment provider for repair
Low vacuum	1. Tubing isn't connected properly. 2. Pump broken. 3. Suction container full.	1. Assembly the tube properly. 2. Contact your equipment provider for repair
Abnormal sound when the device working	1. Pump broken 2. Waste liquid or water countercurrent to the machine	Contact your equipment provider for repair

Chapter 7. Technical Specification

Item	Specifications
Power Consumption	35VA
Max Suction Pressure	-600 mmHg (-80 Kpa)
Exhaust Air Volume	24 L/MIN
Supply Voltage	AC 100-240V, 50/60Hz / DC 18V, 3.34A Acare Car Charger for DC 12V
Lithium Battery	14.8 VDC, 2.5 AH Charging time: 3 hours Using Time: 60 min, after full charged
Sound Level	<70 dB (A)
Container	1000ml
Unit	190mm(L) x 110mm (W) x 175mm (H)
Weight	1.7 Kg
Temperature	Operation: +10~+40˚C Transport and Storage: -15~+50˚C
Humidity	10%～90%RH
Operation Pressure	700-1060hPa
Operation Height	<3000m
Patient Tube	ϕ6mm*ϕ10mm*1800mm
Output level	High vacuum/High flow

NOTE: The manufacturer reserves the right to modify the specification without notice

Chapter 8. Power Adapter

Part Number	Description	UOM	Manufacturer
UE60-180334SPAX	AC Power Cord for ASU-200	1/ea	Dongguan Shilong Fuhua Electronic Co., Ltd.

The power adapter plug is also served to disconnect the device, not to position the equipment to make it difficult to operate the disconnection device.

Chapter 9. Symbol Definitions

Symbol	Explain	Symbol	Explain
	Type BF applied part The patient tubing is applied part.	**IP21**	Protect against solid foreign objects of 50 mm ϕ & Protected against vertically falling water drops
	Attention, Consult accompanying documents	**SN**	Serial number of the product
	Manufacturer		Consult accompanying documents
	Manufacturing Date		Authorized representative in the European Community.
	Dispose the waste equipment according to the national law.		

Chapter 10. Electromagnetic Compatibility

Guidance and manufacturer's declaration – electromagnetic emissions		
The ASU-200 is intended for use in the electromagnetic environment specified below. The customer or the user of the ASU-200 should assure that it is used in such an environment.		
Emissions	**Compliance**	**Electromagnetic environment-- guidance**
RF emissions CISPR 11	Group 1	The ASU-200 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	The ASU-200 is suitable for use in all establishments,including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Guidance and manufacturer's declaration – electromagnetic immunity			
The ASU-200 is intended for use in the electromagnetic environment specified below. The customer or the user of the ASU-200 should assure that it is used in such an environment.			
Immunity test	**EN 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	±2 kV for power supply lines	±2 kV 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(s) to line(s)	±1 kV line(s) to line(s)	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 5s	<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 5s	Mains power quality should be that of a typical commercial or hospital environment. If the user of the HCM-860 requires continued operation during power mains interruptions, it is recommended that the HCM-860 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			

Guidance and manufacturer's declaration – electromagnetic immunity

The ASU-200 is intended for use in the electromagnetic environment specified below. The customer or the user of the ASU-200 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	3 Vrms 150 kHz to 80 MHz	3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the ASU-200 , including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = 1{,}2\sqrt{P}$ $d = 1{,}2\sqrt{P}$ 80 MHz to 800 MHz $d = 2{,}3\sqrt{P}$ 800 MHz to 2,5 GHz 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 metres (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:
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	

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 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 the ASU-200 is used exceeds the applicable RF compliance level above, the ASU-200 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the ASU-200.
b. Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Recommended separation distances between portable and mobile RF communications equipment and the ASU-200.

The HCM-860 is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the ASU-200 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the ASU-200 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**		
	150 kHz to 80 MHz $d = 1{,}2\sqrt{P}$	**80 MHz to 800 MHz** $d = 1{,}2\sqrt{P}$	**800 MHz to 2.5 GHz** $d = 2{,}3\sqrt{P}$
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 metres (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) according 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.

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