

# SUCTION MACHINE MANUAL



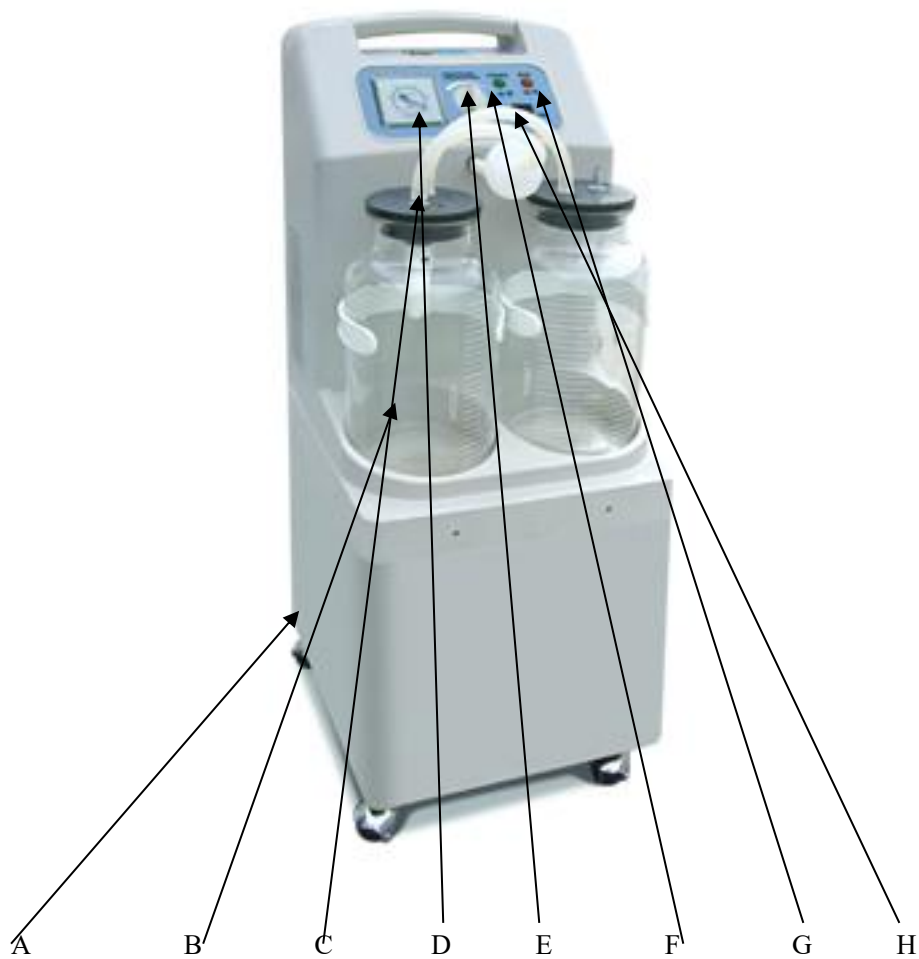
Instruction For Use

Technical Data

Warranty

**Suction Device Picture and Symbols**

**Suction Device Picture**



- A. Suction Device**
- B. Suction Bottle**
- C. Connection tubes**
- D. Vacuum Pressure Value Reader**
- E. Pressure Regulator**
- F. Power Indicator**
- G. Running Indicator**
- H. Suction Switch (there will be a power switch besides it)**

### **Introduction**

**This introduction For Use (IFU) contains important information regarding safe and effective operation the suction machine. This manual is intended to aid with training of personnel and provide a reference for experienced users. Also included are instructions for commissioning the device, preventative maintenance, and cleaning and disposal.**

**Note: It is important that IFU be kept with the device or the immediate vicinity.**

**Operational safety and efficacy of the suction machine depends not only the ability of the treating clinician, but also on the care and maintenance of the device. Regular cleaning and service will assure continued performance and safety of the suction machine.**

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**The manufacturer is not responsible for damages arising from the use of the suction device with components, parts or wound sealing kits other than those manufactured by us and specified for use with the suction device.**

**The manufacturer is not responsible for damages arising from modification, extension, or repair of the suction device by any party not authorized by the manufacturer.**

**The IFU, or portions thereof, may not be reproduced, transmitted or disseminated in any form or by any means without the written permission of an authorized representative of the manufacturer.**

#### **Package Contents**

**Verify the package contents include:**

- 1. Suction Device**
- 2. Instructions For Use**
- 3. 2500 ml Bottle (including 2500 ml jar, pump-canister tubing, and overflow protection )**
- 4. 2500 ml Bottle**
- 5. Pedal Switch**
- 6. Air Filter**
- 7. Power Cable**
- 8. Fuse ( RF1  $\phi$  5\*20/2.0A) 2PCS**
- 9. Inner suction tube**
- 10. Connection tubes( 2 m length)**

**If any of these items are missing, contact your distributor or Authorized Provider.**

#### **Indications**

**It is indicated for suction in surgeries when patients who would benefit from a suction device particularly as the device may promote wound healing.**

#### **Contraindications**

**It is contraindicated in the presence of :**

**Abortion Surgery**

**Necrotic tissue**

**Untreated osteomyelitis**

**Malignancy ( with exception to enhance quality of life )**

**Untreated malnutrition**

**Exposed arteries, veins, or organs**

#### **Precautions**

**Precautions should be taken for patients who care or may be:**

**Receiving anticoagulant therapy**

**Suffering from difficult hemostasis**

**Untreated for malnutrition**

**Non-compliant or combative**

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### Suction Settings

Setting the suction level is a decision that the health care provider must make based on an individual assessment of the particular wound. These general guidelines should be adhered to:

40-80 mm Hg is the recommended therapeutic pressure range.

Lower levels of suction are generally effective and more tolerable.

The suction level should never be painful. If the patient reports discomfort with the suction level, it should be reduced.

### Adjusting Vacuum

Vacuum may be adjusted by turning the pressure clockwise or anti-clockwise on the control panel. The pump will maintain the preset vacuum level without stopping until paused or switched off.

**Note:** Displayed pressure values may vary during therapy and are a normal indication of pump functionality.

### Problems Analysis and Trouble Shooting

Item	Problem	Cause Analysis	Solution	Remarks
1	Max negative pressure < 0.09MPa	1)leak in the lid of the jar. 2)leak in the connection tubes. 3)The adjustment valve become loose	1) clean the lid of the bottle ,and turn it tight 2)reconnect the tubes again 3)tighten the adjustment valve	1) Inside parts should be checked by professionals. 2)Replace the soft suction tubes when it ruptured.
2	Negative pressure >0.04Mpa,but the gravitation of the tube opening is reduce or disappear.	1) Overflow device was turned off. 2) The tubes are jammed. 3) Air filter is jammed.	1) Turn off the machine, turn anti-clockwisely the pressure regulator, and tighten it when the negative pressure reduces. 2)Dredge, clean or change the soft tube. 3)Change the air filter.	1)Empty the liquid in the jar in time. 2)The blue marked side on the air filter is the inlet .

3.	The power indicator does not light	1) Cable pin loose 2) Fuse ruptured 3) The indicator light doesn't work.	1) Mend or replace the plug. 2) Replace the fuse 3) Replace the indicator light.	Check the machine by the professionals.
4	Fuse ruptured	1) Voltage overstandard 2) Failure of the internal circuits. 3) Relay failure 4) Pump resistance, the current increase.	1) Check the circuit, and solve the problem 2) Adjust or replace the relay. 3) Check the pump and machine	

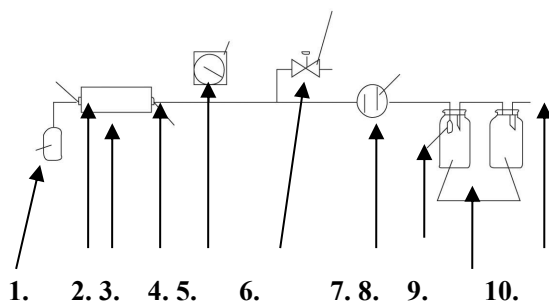
**Caution!**

As a condition of use, this device should only be used by qualified and authorized personnel. The user must have the necessary specialist knowledge of the specific medical application for which it is being used.

**Construction and Working Mechanism**

It adopts oil-free piston pump to avoid oil and smoke pollution.

It's composed of seat, board, control machine, pump, case, inner suction kit and jar etc. Complete plastic panel, good anti-erosion performance, low noise, large flux, optional manual and pedal switch design gives easy maneuverability and transportation to this fashionable suction unit. It can successfully prevent fluid flow back to the pump due to the overflow control mechanism. It can be adjusted to your desired negative pressure with the help of the pressure regulator. For better understanding of its working mechanism, please review the following graphic:



**Working Mechanism Graphic**

1. Muffler 2. Inlet 3. Piston Pump 4. Outlet 5. Vacuum Reader  
 6. Vacuum Regulator 7. Air Filter 8. Overflow Valve 9. Jar 10. Connect To Suction Tube

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**Principle technical data:**

- a. Suction pump: piston pump.
- b. Max negative pressure:  $\geq 0.09$  MPa
- c. Adjustable negative pressure: 0.02 MPa to Max negative pressure
- d. Pumping rate :  $\geq 30$  L/min
- e. Bottle capacity: 2500 mL/pc,two pieces..
- f. Noise :  $\leq 70$  dB (A).

Power : AC 220-240V 50/60HZ or AC110V 60HZ

- g. Power consumption:  $\leq 120$  VA
- h. Outside Dimension: 475\*415\*925 (mm<sup>3</sup>)
- i. Fuse : 2.0 A 250V
- j. Net Weight : 16.6 KGS

**Normal Working Conditions:**

Environment Temperature Scope: 5°C- 40 °C

Relative Humidity Scope:  $\leq 80\%$

Air Pressure Scope : 0.086MPa- 0.106 MPa

**Note:** If the device has been at temperature below freezing, the device must be brought to room temperature for at least 4 hours prior to use or the pump unit may be damaged.

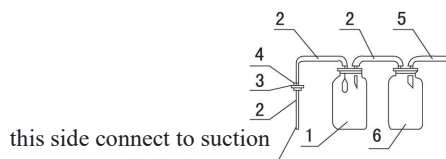
**Installation and Test**

**1. Unpacking Inspection**

Before installation and test of the product, first check if the appearance is in good condition and the items included in the package to see if it's identical with the manual list. Please immediately contact the authorized dealer or the manufacturer in case of missing or damage.

**2. Tube connection**

Connect the tubes as the following graphic shown:



1. Spare bottle 2. Suction tube 1 3. Air filter 4. Blue mark 5. Suction tube 2 6. Suction Bottle

**Caution:**

- 1.The blue mark on the air filter is air inlet. It's connected with the jar 2.
- 2. Put a little distilled water around the bottle lid for better air-tightness.

**3. Power connection**

Take out the power cable and insert the cable pin into the slot of 230

V alternating current. The power indicator turns on when the power is connected.

**Warning:** The cable pin is intended for power plug in and shut up. The power outlet must be safely connected to underground.

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#### **4 Checking the tubes:**

Turn the pressure regulator clockwise and block the suction area with fingers or rubber tips or by folding and holding tight the hoses. Turn on the suction switch to run it. When the hoses is in right connection, there is no abnormal sound and the panel needle will increased to max negative pressure rapidly; Unblock the suction area or loosen the tubes, the needle will indicate to below 0.02 MPa.

**Note:** Care must be taken to ensure tubing is installed completely and without any kinks to avoid leaks in the suction circuit.

#### **5. Negative pressure adjustment**

Block the suction area and turn on the suction switch, the pressure panel will read during 0.02 MPa and max negative pressure while turning the pressure regulator clockwise.

Use the pressure regulator to monitor the negative pressure needed for the suction in surgical operations.

The negative pressure increases while turning the pressure regulator clockwise.

The negative pressure must be lower than 0.02 Mpa before turning off the suction switch.

#### **6. Check and Test Overflow Control Mechanism**

(1). Loosen the bottle lid and clean the valve orifice. Then level down the valve rubber tip on the buoyant so that the valve rubber tip must not be crooked, broken, kinked etc and has a good link with the buoyant. The buoyant is supposed to move flexibly in the buoyant frame and there is no counter-force.

(2). Lift the bottle lid to get the buoyant perpendicular to the water. Lower the lid slowly until the buoyant floats on the water.

(3). Tighten the bottle lid. Connect the suction tube onto the suction area, turn clockwise the pressure regulator and run the suction unit.

(4). Drop the suction tube into a bucket of clean water or imitate the working condition, the suction unit will attract the water into the bottle with overflow control mechanism. The buoyant will rise with the going up of the water level. The suction will stop when the valve shuts. The water level varies with different suction methods.

(5). Turn anti-clockwise the pressure regulator and turn off the suction switch. Open the bottle lid and empty the bottle. The buoyant should be at the bottom of the buoyant frame and the valve orifice is open when the bottle lid is retightened.

The overflow control mechanism works in the above circumstances and is suitable for surgical operations.

**Caution:**

The following conditions must be handled with CARE.

(1) In two cases the liquid level still rises when the overflow control mechanism is closed:

- a. Due to the remaining negative pressure inside the reservoir.
- b. The valve orifice is not completely closed.

In previous circumstance, the liquid level will stop going up when the suction tube leaves the liquid being suctioned and put into it again. In the later circumstance, the liquid level still

rises. Be careful with this condition. Lift the suction tube from the liquid being suctioned when the bottle is almost full. Turn off the suction switch to stop suction and find the cause for valve failure.

(2).The buoyant is likely to be suctioned onto the valve when the valve closes.

This is caused by the negative pressure in the tubes. Turn anti-clockwise the pressure regulator or turn off the suction unit (to release the negative pressure in the tubes). The buoyant will drop from the valve due to the gravity. (Pulling down the buoyant by hand is forbidden in case the rubber tip disconnect with the buoyant.)

(3). Release the negative pressure before opening the bottle lid when the suction switch is turned off.







(4). Using the suction unit without overflow control mechanism and soft tubes is forbidden.

### 7. Cut off the power

Turn off the switch on the suction unit. Pull the cable pin out of the power slot and cut off the power.

#### Warning:

Please read the following symbols carefully for safety purpose.

	AC		Notice
	Connect to Ground		B type Equipment
	Disconnect		Power Connected

### Use Method and Maintenance

#### 1. Easy Operation

a. Check the suction device according to the installation and adjustment procedures before use to ensure good performance then connecting disinfected soft suction tube and inner suction tube.

b. Adjust the negative pressure by pressure regulator, and pay attention to the level of the liquid.

c. When the suction volume is not large, under normal circumstances, the liquid is not allowed to enter spare liquid storage bottle. If the liquid level rises to the former level of prescribed liquid storage capacity (tilt 10 degrees still applicable) please stop suction there. Pour out and clean the bottle. The spare bottle is used as temporary storage bottles to prevent liquids from entering the pump.



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d. When suction a large volume, the liquid has to enter the spare bottle. Pour out the liquid before overflow device works. Otherwise, Level will float buoy up until the valve closed, causing suction to stop automatically.

e. If the overflow device is closed, the liquid still rises. Please check and handle it according to “the inspection and testing of the overflow device”.

**Warning:**

1. The suction device is unsuitable for use in areas where there is danger of explosion.

2. The suction can only work in cycles. Every working cycle is 30 minutes.

2. Replace the air filter

When the air filter sucks foam or dust, the color of its film will get darker, and the gravitation will be reduced or disappear. If the negative pressure still goes up to above 0.04Mpa, please replace the air filter through our company.

Note: The air filter needs regular replacement. The discarded air filter should be destroyed as instructed.

3. Replace the fuse tube

The fuse tube is on the rear side of the pedestal. Turn off the power and counter-clockwise turn it when you change it.

4. Maintenance and Cleaning

Adherence to facility directives concerning hygiene is of prime importance.

The instruction supplied with all cleaning agents as well as sterilization and/or disinfection units must be followed. The following points are to be used as general guidelines.

a. Suction a little pure water to clean the tube before stopping the suction unit.

b. After turning off the machine, pour the liquid out of the bottle, clean the bottle and lid with soft brush or cloth, then clean and disinfect them with clean water(including the overflow valve, the orifice and float can not be separated).

Notice: Spare bottle is made of glass. Don't let it collide with the sharp things fall onto the ground.

c. Casing: The outside of the pump should be cleaned with a damp cloth. Cleaning agents and disinfectants should not be used in an undiluted form. Ensure that the cleaning agent is compatible with plastics.

**Warning:**

When operating, transporting, repairing, or disposing of the suction machine and its accessories, the risk of infectious liquids being aspirated or contaminated of the pump assembly through incorrect use can not be eliminated. Universal precaution should be observed whenever working with potentially contaminated parts or equipment.

No liquid may enter the device. If any liquid penetrate the device contact your distributor or an authorized Medical Provider for assistance.

The pump should be visually inspected before each use, including the overflow control filter and the suction bottle and tubing.

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## Storage

The device should be stored in a clean and dry place where the temperature is below 25 °C for optimal performance. During long term storage, turn on the suction machine and start suction every month.

The use of suction personnel should be under the guidance of the medical person, used in strict accordance with the specification of the scope, procedure. Please contact the supplier or factory when you in doubt (Please turn off the power before checking the circuit or opening the machine).

### Transport and storage environmental conditions

Environmental temperature range : -40 ° C ~ 55 ° C

Relative humidity range:  $\leq 95\%$

Atmospheric pressure range : 0.05MPa~0.106Mpa

The suction should be kept in no corrosive and good ventilation room, avoid violent vibration during transportation.

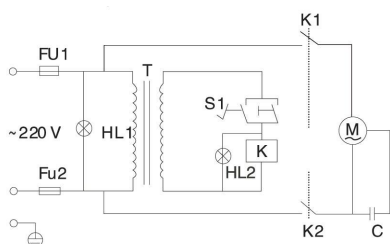
### After Sale Service:

We will repair or replace the suction device that can not work correctly in one week from the date of sale if it's in normal use and keeping within one year. If it can not work correctly in half a year, please go to authorized distributor for free repair. If it can not work after half a year, we will repair it with related charges. The following conditions are not covered in our service:

1. Damage or distortion caused by collision;
2. Water or rain enters the device
3. Water, blood, phlegm or other liquid enter the pump due to careless use by users

Notice: We can provide electrical circuit graphic and other information for repair if necessary. Please contact the manufacturer if there is problem or doubt about the check and repair of the electrical circuits.

4. The check and repair of the electrical circuits can only be done by a electrician or a professional. You can review the following graphic as reference:



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### **Vacuum Variation**

The maximum vacuum pressure given below have been measured at sea level. The maximum vacuum varies according to altitude or barometric pressure. Multiple by the following factors to adjust maximum vacuum pressure according to altitude or barometric pressure.

<b>Location</b>	<b>0 meters above sea level</b>	<b>500 meters above sea level</b>	<b>1000 meters above sea level</b>	<b>2000 meters above sea level</b>
<b>Multiplication factor</b>	<b>1.00</b>	<b>0.94</b>	<b>0.88</b>	<b>0.78</b>

### **Limited Warranty**

#### **What is covered by Warranty**

The manufacturer will at its option repair or replace any part found to be defective in material or workmanship without charge for parts and labor for original purchaser within 2 years of purchase.

#### **What is not covered by Warranty**

This warranty does not apply to parts that have been damaged by accident, alteration, misuse, abuse, neglect, improper maintenance, vandalism, fire, theft, water, terrorism, war, or damage because of peril or other natural disaster. Warranty does not cover normal wear and tear, charges for pick up or delivery and service calls, or parts that are not genuine replacement parts.

#### **How to obtain Warranty service**

Warranty service is available with proof of purchase for the original purchase through your local distributor.

The provision set forth in this warranty provide the sole and exclusive remedy arising from the sale. The manufacturer shall not be liable for incidental or consequential damage or expense of any kind including but not limited to cost of equipment rental, and loss of profits.

Any implied warranty including implied warranty of merchantability or fitness for a particular purpose shall be limited in duration to the period of ownership by the original purchaser.

Some countries do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions may not apply to you.

The limited warranty gives you specific legal rights, and you may have others that vary from province to province or country to country.



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