Instructions

on

7E-D AC/DC Absorb Phlegm Unit

Please carefully read the instructions

before attempting to operate this unit

Product Features

1. Summary

Model 7E-D (AC/DC) absorb phlem unit is a novel, portable, AC/DC powered medical suction unit. It is suitable for giving emergency treatment to a respiratory tract patient in hospital, first-aid teams, home care, or social medical services. It is able to clean secretion, blood, vomitus by which the tract blocked so that breathe unobstructed, especially available for patient first-aid and health care in patient transport and place without AC/DC.

2. Characters

- Oill-less piston driven vacuum pump assures steam free and lubrication free that prevents bacteria contamination.
- Lower noise.
- Overflow device prevents liquid entering pump.
- Vacuum adjustable system can be adjusted according to using.
- Small volume, light weight convenient for hand carry.
- Full outer plastic body features superior resistance to rust and corrosion, and easy for cleaning.
- Powered by three kind of power supply AC, external DC, and internal battery, continuous movenent time $\geqslant$ 0.5 hr when fully charged, rechargeable, attach the unit to the car lighter (DC12V) by wire when use on the vehicles such as ambulance.
- Charge method is constant current, and integral trickle type. When plugged into AC power, the internal battery maintenance control system will bright the battery to full charge, illuminating the green light on the unit.
- Working rationale (Figure1)

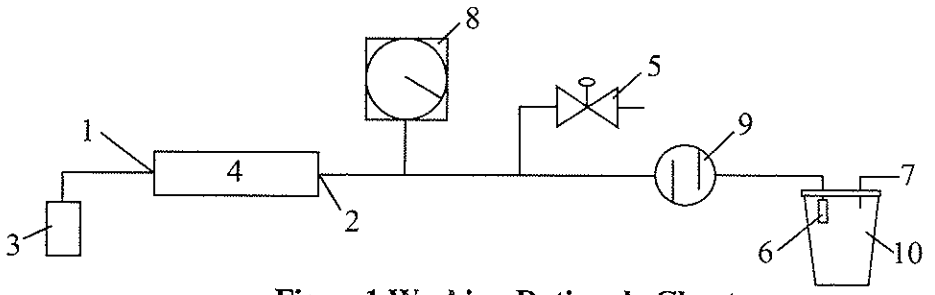


Figure1 Working Rationale Chart

1.Exhaust outlet 2.Suction inlet 3.Muffle 4.Vacuum pump 5.Negative pressure regulator 6.Overflow device 7.To suction catheter 8.Vacuum meter 9.Air filter 10.Liquid holder

3. Specifications

(1) Max vacuum: ≥0.075 MPa(560mmHg)

(2) Adjustable vacuum range: 0.02 MPa(150mmHg)~Max vacuum

(3) Max airflow: ≥15 LPM (4) Sound level: ≤65dB (A)

(5) Net weight: 6.5kg (6) Suction bottle: 1000mL/PC

(7) Input power: 44VA (8) Overall dimension: 280×196×285(mm)

(9) Power supply:

☐ AC110V ☐AC120V ☑AC220V ☐AC230V; DC12V

☑ 50HZ ☐60HZ

(10) Fuse tude: RF 1.5A/Φ5×20 (for net power, AC220V~230V)

RF 2A/Φ5×20 (for net power, AC110V~120V)

RF 3A/Φ5×20 (for chargeable power)

- Not to be used in inflammable or explosive place.
- Working system: continuous operation with intermittent load, maximum continuous working time is 30 min, rate of continuity is 50%.
- Electric classification: II Class, internal power, B type.

4. Normal working Conditions

- Temperature range: 5℃~40℃
- Relative humidity: ≤80%
- Atmosphere pressure: 86 kPa~106 kPa

Installing And Debugging

1. Unpacking and Inspection

Examine exterior of the unit for nicks, dents scratches or other damages, check for kinds and quantities to the accessories before installing and debugging. If damage is evident, if accessories have any doubt, please notify the local dealer or manufacturer.

2. Connect tubing (Figure2, with suction catheter not connected)

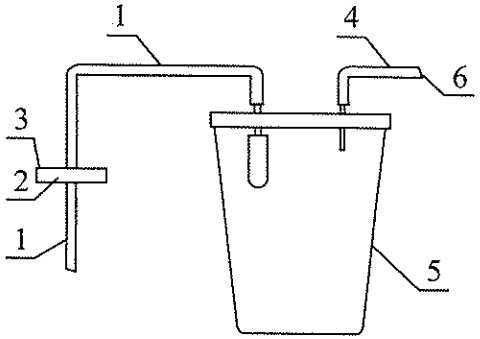


Figure2 Tube Connecting Chart

1.Suction tube 2.Air filter 3.Blue mark 4.Suction conductor 5.Liquid holder 6.To suction catheter

Note: Apply small amount of distilled water around the part (pressed into the holder mouth) of holder plug during installing, which is good for tightly pressing the holder plug and enhancing its sealing.

3. Connect power

First fuse tube (Type:RF3A/Φ5×20) shall be installed for chargeable power. Connect the plug with the power, and charging indicator will be bright.

Warning:

1) If the unit has a damaged cord, if it is not working properly, if it has been dropped or damaged, or dropped into liquid, call qualified service personnel for examination and repair.

2) Keep the cord away from HEATED or HOT surfaces.

4. Verify tubing

● Screw pressure regulator knob clockwise, and block up air entrance with fingers or rubbers, or pinch soft tube.

● Starting the unit without abnormal noise, the needle on the vacuum meter rise to maximum vacuum immediately. Unloosening air entrance, the needle will be below 20 kPa. That is to say that tube connections are right.

● Attach the phlegm suction catheter. The vacuum value shall be less than 0.06 MPa at the time of attaching F6 suction catheter, less than 0.04 MPa when attaching F8 suction catheter and less than 0.03 MPa when attaching F12 suction catheter. If so, the phlegm suction is considered as being in normal condition.

Note: Dredge the suction catheter if blocked as per the following method: Bend the suction conductor in "V" form (with no liquid in the holder), and release it to the original status when the vacuum reaches up to the maximum value. Repeat this procedure several times till the suction catheter is not blocked.

5. Adjust vacuum

Block up air entrance, switch on the unit, and adjust pressure regulator. The readings on vacuum meter shall be within 0.02 MPa ~ Max vacuum.

● Control vacuum with pressure regulator in clinic.

● Increase vacuum by turning pressure regulator clockwise.

● Reduce vacuum below 0.02 MPa defore switching off the unit.

6. Examine, try overflow device

● Open the holder plug, clean up the valve mouth, and leveling the rubber valve slice on the float. The valve slice shall not be warped, bent and broken, but well connected with the float. The float shall be able to move agility in the float frame.

● Lift the holder plug with hand to make the float contact the water

surface uprightly, then lower the holder plug gradually to let the float rise.

● Close the hold plug, attach the suction conductor at the inlet, and screw pressure regulator, then, switch on thre unit.

● Put the suction conductor into a clean water pail or attempt to simulate actual application to suction the liquid into the holder with overflow device. As a result, the float will rise as the liquid level ascends until the valve mouth is closed and suction stops automatically. The final position of liquid level depends on the suction process adopted.

● Unscrew pressure regulator, switch off the unit, then open holder plug and empty the liquid in the holder. The float shall be at the bottom of float frame and valve mouth is open in case of retightening firmly the holder plug. If so, the overflow device is considered as being in normal condition, which can be used in clinic.

Caution:

1. The liquid level still ascends after the overflow device has been closed possibly due to:

(1) Remainder vacuum was still in the holder.

(2) Valve mouth is incomplete closed up.

For Item (1), the liquid level in the holder will not ascend when the suction tube conductor is placed again into the liquid as suctioned.

For Item (2), the liquid level still ascends. Thus, it is required to observe carefully, and lift immediately the conductor out of the suction liquid when the holder is close to full, then, switch off the unit to stop suction, and examine the possible reason of the valve fault.

2. The float is still adhered on the valve mouth as already closed by thefloat, possibly due to the vacuum in the tubing. At this moment, unscrew the regulator or shut off the unit to release the vacuum in the tubing, the float will fall from valve mouth under the action of gravity (Forbid to pull the float with hand in order to

avoid the rubber valve slice being separated from the float).

3. After stopping the unit, release the vacuum, then open the holder plug.

4. Never use the unit when the overflow device was taken down.

7. Stopping unit.

Turn off the unit switch, and pull out power cord from the socket to shut off net power supply.

8. Symbol and signification

Symbol	Signification	Symbol	Signification
~	Alternating current	⚠	Note! Refer to the manual
⏚	Protection earthing		

Operating And Maintenance

1. Operating

● Check the unit before using as per the installing and debugging sequence to ensure its good performances, afterwards, start operation by connecting the suction conductor and the phlegm suction catheter already sterilized.

Note: Please refer to the instructions before attempting to use the suction catheter supplied with the unit.

● Regulate the vacuum as required for suction through the pressure regulator, on/off the switch based on the situation, and observe frequently the liquid level in the holder in the process of operation. Stop suction if the liquid level in the holder ascends to the rated capacity (the unit tilted through an angle of 10° is still applicable), and reuse it after empty and clean up. Otherwise, the float will rise as the liquid level till the valve mouth is closed and suction stops automatically.

Note: Adopt the procedures mentioned in "Examine, try overflow device", if the liquid level still ascends after the overflow device has been shut off.

● Emergency measures in the process of operating:

--- Quickly loosen the pressure regulator to release the vacuum if the suction catheter is blocked by thick phlegm and mucus, and start suction again after changing the suction catheter.

--- Adopt the above method to unscrew pressure regulator to release vacuum if it is not easy to take out the suction catheter after completion of suction or the suction catheter is adhered to human body tissue.

Note 1: Bend the suction catheter tube in "V" form prior to starting suction, insert the suction catheter into the location of existing phlegm on the patient when the vacuum reaches the desired range after start-up, then, recover the tube to its

original status. This will lead to quicker suction effect.

Note 2: The medical personnel shall select the proper suction catheter according to the clinical requirement.

Note 3: The unit shall be operated under the medical personnel's instructions strictly according to the scope of the operating sequence listed in the instruction manual. Please contact the supplier or manufacturer if there is any question.

2. Usage of battery

Please check the internal battery if it is charged fully before using.

1) Connect the power cord to a properly grounded AC outlet, the charging light is bright shows the power supply and charges internal battery. The charging light gleams to mean the battery charging fully.

2) Break net power, then use the internal battery.

3) The internal battery shall be charged fully about 4 hr when it was been used up (the red light is bright). The internal used battery is charged according to residual power capacity in order to power capacity is full.

4) The internal battery shall be charged and discharged once a month to maintain if it was not use for a long time.

Note: The unit has internal charger and shall be not used any other specification battery. The batter shall be not used over 50 minutes once.

3. The power for car lighter(DC 12V)

Attach car lighter plug to the connector in the back of the unit and insert the car lighter cord to the socket when the unit was used to in patient transport. The light of car lighter is bright to mean that the DC power supply.

4. Changing air filter

It is required to change air filter with the one produced by us in case of foam or dusts fully accumulated in the air filter, which leads to

gradually darkening of the color of filter diaphragm and obviously reducing or even disappearing of suction force at the inlet of tube while the negative pressure indicated on the vacuum meter climbs up to 0.04 MPa or more.

Note 1: The suction force will diminish or disappear, and the negative pressure ascend if the overflow device is closed, and the tube blocked in the process of application. Please refer to "Trouble Shooting".

Note 2: Necessary to frequently change air filter and destroy it centrally.

5. Changing the fuse tube

The fuse tube is mounted in the rear of the base. Switch off the power supply, and turn it counterclockwise and open, then, start changing the tube.

6. Maintenance

- It is recommended to have the suction tube suctioned small amount of clean water for cleaning up the inner wall.
- After use, empty the holder, clean up dirt on the holder and cover with soft brush or rag, flush it with water and conduct sterilization (including the overflow device, the seal ring and various tubes). Unscrew the overflow device, and separate the float from its support for completely cleaning up, if necessary.

Note: The rubber valve slice shall not be separated from the float.

- Use the physiological saline to clean out the residual thick phlegm and mucus in the tube after used. Replace the suction tube if not smooth. It is recommended to adopt one-time suction catheter.
- Place the holder, cover and all tubes into the disinfectant compounded with the Kangweida disinfector tablets (0.5 g per tablet) in 1:500 concentration for 1 hour.

Note: Keep the plastic holder away from any sharp utensils to

avoid drop in the process of cleaning and application.

● Wipe the case outer surface with lightly wet rag already soaked in the disinfectant, and prevent any liquid seeping into the interior. Never wipe the places marked with letters and patterns.

● Place the machine in dry and clean places, and periodically start running once a time (normally one time every month).

Note: Install the overflow device, conductor and other tubes as per the connecting mode before re-use.

7. Trouble shooting

No.	Problem	Reason	Possible Solution	Remarks
1	Max vacuum< 0.075 MPa	a.Holder mouth leakage. b.Leakage on connecting points. c.Pressure regulator loose or released.	a.Remove dirt, tighten or change the holder cover, seal ring, and connector. b.Re-tighten each connection point. c.Turn tightly the pressure regulator.	b.Change the broken suction tube or suction tube.
2	Max vacuum> 0.04 MPa, with distinct reduction or disappearing of suction force at tube outlet.	a.Overflow device shut-off. b.Tube blockage. c.Air filter blockage.	a.After shut-off, turn the pressure regulator loose counterclockwise to release negative pressure in tube, then re-screw. b. Dredge, clean or replace the tube. c. Replace it with air filter produced by us.	a.Empty the holder timely. c.The end (in blue mark) of air filter is the air inlet.

No.	Problem	Reason	Possible Solution	Remarks
3	Normal power voltage, but the unit doesn't work.	a. Loose socket. b. Fuse broken.	a. Repair or change the socket; b. Replace the fuse tube of net power	b.Type: RF1.5A/Φ5×20 (AC220V~230V); RF2A/Φ5×20 (AC110V~120V)
4	Net power is shut off, but the unit dosen't work	a. Refill indicator is bright. b.Refill indicator is not bright.	a.Charging. b.Replace the fuse tube of chargeable power.	a.Connect net power. b. Type: RF3A/Φ5×20
5	Normal working for not power, but charging indicator isn't bright	a.Fuse broken.	a.Replace the fuse tube of chargeable power.	a.Type: RF3A/Φ5×20
		b.Charging indicator damaged.	b.Replace indicator.	By the specialized maintenance worker (Refer to Electric therory chart).
6	Fuse tube broken	a.Voltage over high. b. Internal circuit in fault. c.Pump blocked, and current increasing.	a. Adjust voltage. b. Check the circuit, and correct. c. Check the pump body and motor.	

Note: The dismantling & repair on the pump body if fault shall be conducted by the specialized worker. Please contact the manufacturer if required.

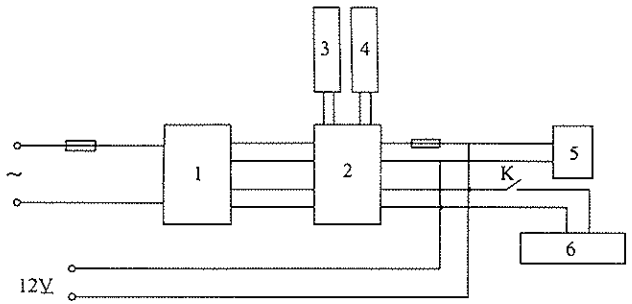
Others Attention Items

1. Handling and storage environment conditions

- Ambient temperature: -40℃ ~ 55℃
- Relative humidity: ≤95%
- Atmospheric pressure: 50kPa ~ 106kPa

Note: It is required to store the unit in the well-ventilated room without corrosive gas, and avoid any violent shock while handling.

2. Electric theory chart (Figure3)



1、Transformer　　2、Circuit board
3、Charging indicator　　4、Refill indicator
5、Battery　　6、DC motor

Figure 3 Electric theory chart

Electric repair to be conducted by the specialized operator.

3. Attachments

- Suction conductor (2m long): one pc
- Air filter: two pcs
- Fuse tube two sets respectively
  □RF1.5A/Φ5×20 □RF2A/Φ5×20; RF3A/Φ5×20
- Suction catheter (for child and adult) one pc respectively
- Instruction manual: one copy

Be subject to any change on the circuit and outward appearance due to modification without notice.