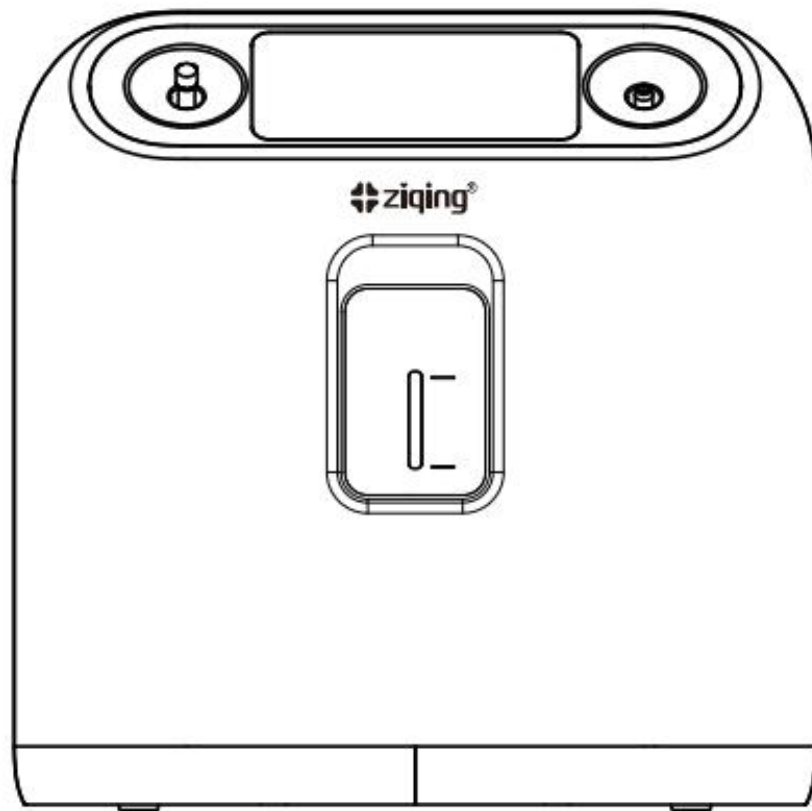




USER MANUAL

OXYGEN CONCENTRATOR
MODEL ZY-01 / ZY-02



Do not operate this unit without first reading and understanding this manual.

TABLE OF CONTENTS

| | |
|-------------------------------|----|
| SAFETY NOTES..... | 2 |
| FEATURES..... | 7 |
| HANDLING..... | 10 |
| OPERATING & INSTALLATION..... | 11 |
| MAINTENANCE..... | 17 |
| TROUBLESHOOTING..... | 20 |
| OTHER ATTENTION ITEMS..... | 21 |
| EMC GUIDELINES | 21 |
| SERVICE | 26 |





SAFETY NOTES

WARNING: INDICATION FOR USE

For avoiding power outage or oxygen concentrator operating failure, exigent oxygen user and serious patient must equip with reserve oxygen supply (for example: oxygen cylinder, oxygen bag). This device is to be used as an oxygen supplement. It is not used as life supporting or life sustaining.

WARNING: CONTRAINDICATIONS

The oxygen concentrator is not intended for life supporting or life sustaining applications, nor does it provide any patient monitoring capabilities.

| Symbol | Description |
|---|---|
|  WARNING | Describes a hazard or unsafe practice that if not avoided can result in severe bodily injury, death or property damage. |
|  CAUTION | Describes a hazard or unsafe practice that if not avoided can result in minor bodily injury or property damage. |
|  | Describes mandatory (something that must be followed). The specific mandatory content is indicated by words or pictures nearby. It represents “common mandatory”. |
|  | Describes prohibition (something that is not allowed). The specific mandatory content is indicated by words or pictures nearby. It represents “common prohibition”. |

1. IMPORTANT MESSAGE

- ▶ There is high voltage inside the oxygen concentrator, non-professionals should not disassemble the machine without authorization.
- ▶ Personal and family use of 93% oxygen should follow the instructions directed by professional doctors.
- ▶ Before operating the device, read and understand this manual.

2. BEFORE INSTALLATION

- ▶ The concentrator should always be kept upright to prevent cabinet damage while being transported.
- ▶ If the electrical source power voltage is unstable that beyond normal power range, please add the voltage stabilizer.
- ▶ Please use eligible, safe power set and junction box.
- ▶ Non-professional people DO NOT open oxygen concentrator's cabinet.

3. LOCATING

- ▶ You may select a room in your house where using your oxygen concentrator would be most convenient. Your concentrator can easily move from one room to other room by the wheels.
- ▶ Be certain to place the device so all sides are at least 10 cm (4 inches) away from walls, draperies, furniture, or other obstruction. DO NOT place the unit in a confined area.
- ▶ Oxygen concentrator must avoid heat source, fire source, wetness, exorbitant or over-low extra ventricular condition.
- ▶ Sundries and vessel do not be placed on top of the concentrator.

SAFETY NOTES

NEVER block the air openings of the unit or place it on a soft surface, such as a bed or couch, where the air opening may be blocked. Keep the openings free from lint, hair and the like.

4. USING

- ▶ The use of oxygen therapy requires that special care be taken to reduce the risk of fire. Users **MUST NOT SMOKE** while using this device. Keep all matches, lighted cigarettes or other sources of ignition out of the room in which this product is located. **NO SMOKING** signs should be prominently displayed. Textiles and other materials that normally would not burn are easily ignited and burn with great intensity in oxygen enriched air. Failure to observe this warning can result in severe fire, property damage and cause physical injury or death.
- ▶ For optimum performance, do not open or turn off the concentrator frequently, reset after 3-5 minutes. Shorter periods of operation may reduce maximum product life.
- ▶ A spontaneous and violent ignition may occur if oil, grease or greasy substances come in contact with oxygen under pressure. These substances **MUST** be kept away from the oxygen concentrator, tubing and connections, and all other oxygen device.
- ▶ **DO NOT** use any lubricants unless recommended by manufacturer.

5. MAINTENANCE

- ▶ Only dealers authorized by the manufacturer or trained personnel can carry out pre-maintenance or performance adjustment on the oxygen concentrator.
- ▶ The manufacturer recommends that the oxygen concentrator run for at least 30 minutes each time it is turned on. Do not turn on and off the oxygen concentrator frequently, and turn it on again after 3-5 minutes after it has been turned off, so as not to affect the life of the compressor.

6. RADIO FREQUENCY INTERFERENCE

This equipment generates, uses and can radiate radio frequency energy and, if not installed according with the instructions, may cause harmful interference to other devices in the vicinity. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to other devices, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving device.
- Increase the separation distance between the equipment.
- Connect the equipment into an outlet on a circuit different from that which the other device(s) are connected.
- Consult the manufacturer or service technician for help.

7. TO REDUCE THE RISK OF BURNS, ELECTROCUTION, FIRE OR INJURY TO PERSONS

- ▶ Avoid using while bathing. If continuous usage is required by the physician's prescription:
The concentrator must be located in another room at least 2.5m from the bath.
- ▶ DO NOT come in contact with the concentrator while wet.
- ▶ DO NOT place or store product where it can drop into water or other liquid.
- ▶ DO NOT reach for product that has fallen into water. UNPLUG IMMEDIATELY.
- ▶ A product should NEVER be left unattended when plugged in.
- ▶ This device is to be used only in accordance with the prescription of a physician and this User's Manual. If at any time the patient or attendant concludes that the patient is receiving an insufficient amount of oxygen, the supplier and/or physician should be contacted immediately. No adjustments should be made to the flow rate unless prescribed by a physician.
- ▶ Close supervision is necessary when this product is used near children or physically-challenged individuals.
- ▶ Use this product for only intended use as described in this manual.
- ▶ DO NOT use parts, accessories or adapters other than those authorized by manufacturer.
- ▶ DO NOT connect the concentrator in parallel or series with other oxygen concentrators or oxygen therapy devices.
- ▶ Use of some administration accessories or certain humidifiers not specified for use with oxygen concentrator may impair the performance.
- ▶ In certain circumstances oxygen therapy can be hazardous. Manufacturer recommends that you seek medical advice before using this product.
- ▶ Avoid creation of any spark near medical oxygen equipment. This includes sparks from static electricity created by any type of friction.
- ▶ The shelf life of the device is 5 years after starting operating.

FEATURES

1. APPLICATIONS

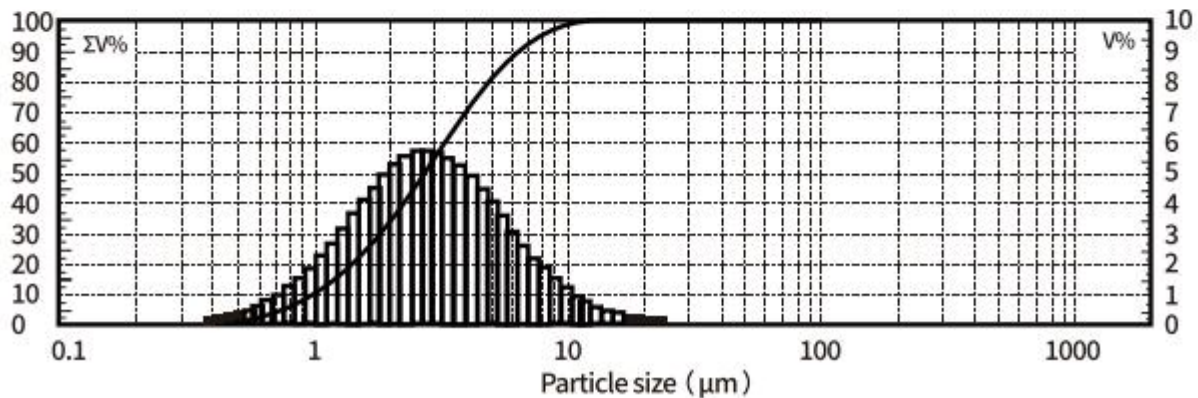
- ▶ The oxygen concentrator uses air as the raw material and uses the molecular sieve pressure swing adsorption process to produce oxygen-enriched air with an oxygen concentration range of 90% to 96% (V/V), providing oxygen therapy or relieving discomfort caused by hypoxia.
- ▶ Product contraindications: It is forbidden for patients with oxygen poisoning and oxygen allergy.

2. WORKING CONDITION

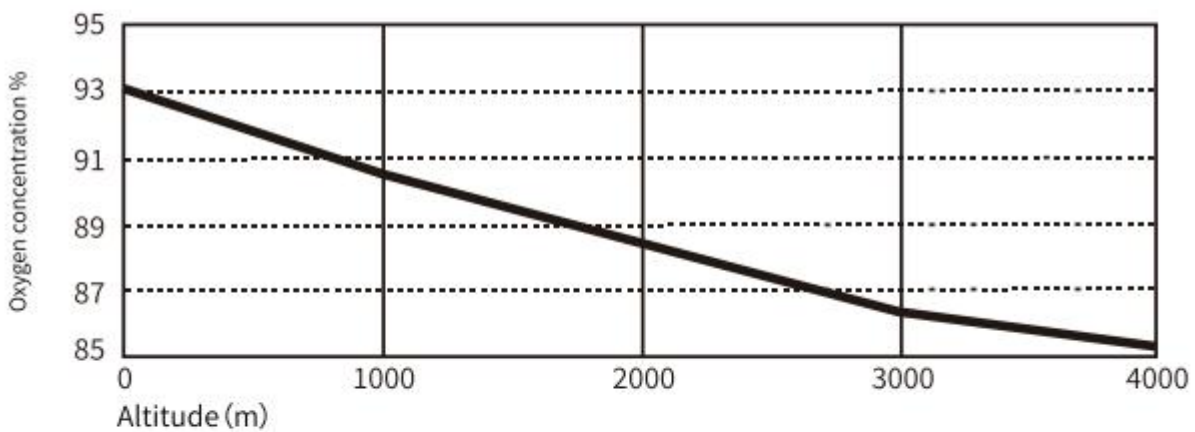
- ▶ Working Temperature: 10-40°C
Do not use the oxygen concentrator when the temperature is too high or too low. When the storage and transportation temperature is lower than 5°C, the equipment should be placed in the normal working temperature environment for more than four hours before use.
- ▶ Relative humidity: 30%-75%
- ▶ Atmospheric pressure range: 86kPa-106kPa
- ▶ Rated voltage: AC220V, 50Hz
- ▶ Input power: ZY-01, 150VA; ZY-02, 200VA
- ▶ Overcurrent protector: 250V, 5A

3. SPECIFICATIONS

1. Maximum Recommend Flow Rate: ZY-01, 1L/min; ZY-02, 2L/min
2. The oxygen concentration at the maximum recommend flow rate: $\geq 90\%$
3. Noise Level: $\leq 60\text{dB(A)}$
4. Net Weight: ZY-01, 5.4kg; ZY-02, 6.1kg
5. Dimension: L339mm*W160mm*H338mm
6. Installation: Non-permanent
7. Working Method: Continuous
8. The particle equivalent volume particle size distribution curve generated by the nebulization function (under the condition of ambient temperature of $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ and humidity of 57%, distance to mist outlet is 10cm, test liquid: 0.9% normal



9. The relationship of oxygen concentration and altitude: In the plateau environment, as the altitude increases, the atmospheric pressure gradually decreases, and the air intake of the oxygen concentrator also decreases. Under the same scale value flow rate, the oxygen output concentration in the plateau environment is lower than that in the plain environment. At the same flow rate, the relationship of oxygen concentration and altitude is as follows:




Safety System:

- Cooling fan failure: Unit Shut Down

HANDLING

1. UNPACKING

 **CAUTION** Unless use the oxygen concentrator, retain containers and packing materials for storage until use of the concentrator is required.

1. Check for any obvious damage to the carton or its contents. If damage is evident, please notify the carrier or local dealer.
2. Remove all loose packing from the carton.
3. Carefully remove all the components from the carton.

2. INSPECTION

1. Examine exterior of the oxygen concentrator for nicks, dents, scratches or other damages.
2. Inspect all components.

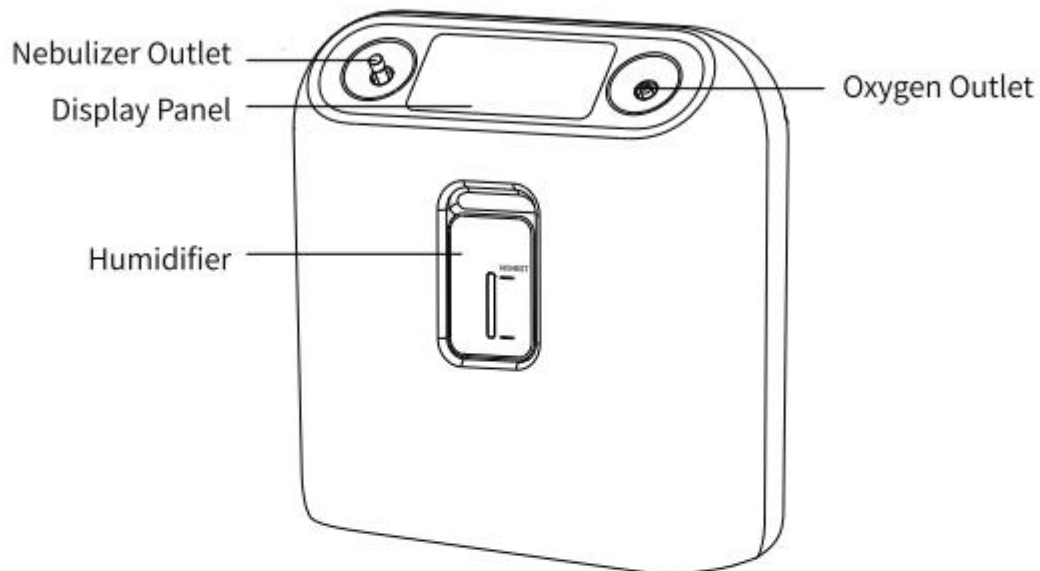
3. STORAGE

1. Store the repackaged oxygen concentrator in a dry area.
2. DO NOT place other objects on top of the repackaged concentrator.

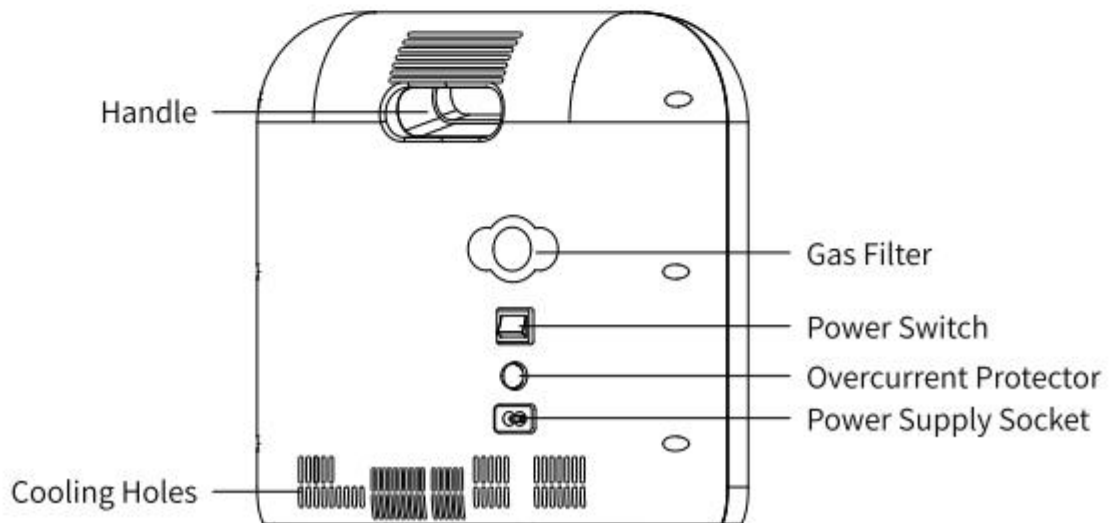
OPERATING & INSTALLATION

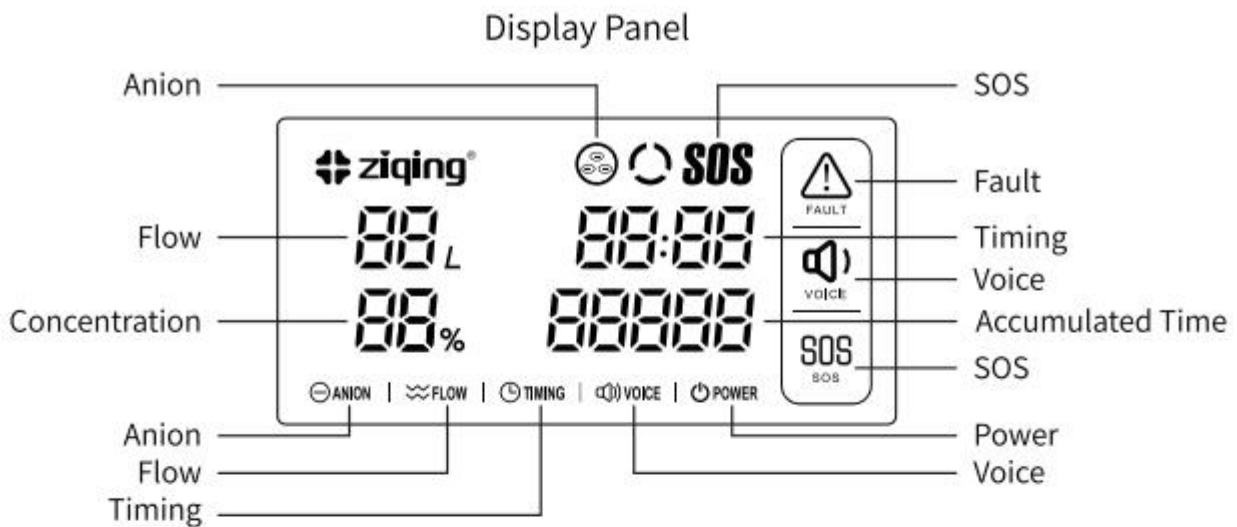
1. FEATURE VIEW

Fullview(front)



Fullview (Back)





2. PREPARE WORK

1. Unscrew the bottle from the humidifier clockwise. Fill the bottle with pure water (or distilled water) to the level between MAXIMUM and MINIMUM. DO NOT fill humidifier bottle over MAXIMUM level.
2. Screw securely the bottle back counterclockwise.
3. Connect the power supply.

⚠ CAUTION

- 1) If the concentrator has a damaged cord or plug, 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.
- 3) Do not move or relocate concentrator by pulling on the cord.
- 4) Do not use extension cords with this unit.

NOTE: Concentrator may be used during the initial start warm-up time (approximately 30 min) while waiting for the O₂ purity to reach maximum.

3. OXYGEN ABSORBING OPERATION

1. Turn on the power switch, the display screen lights up, and the green, yellow, and red indicators light up at the same time, indicating that the machine works normally. After 1 second, only the green light is on. After a few seconds, the display shows "timing and accumulated time", and the oxygen concentrator enters the normal operation state. When the oxygen concentrator is working, the sound of reversing and exhausting is emitted every few seconds.

2. Adjust the flow adjustment knob to the desired flow (the reading is based on the center of the black float). Rotate the adjustment knob upward to increase the flow, and turn it downward to decrease the flow. At the same time, there should be air bubbles around the filter element in the humidification bottle, and the oxygen outlet of the humidifier.

3. Connect one end of the oxygen inhalation tube to the output port of the humidifier, and the other end (nasal suction head end) is worn with the patient, and the oxygen inhalation can be started.

- Patients with severe lung disease should consult a professional physician for the choice of oxygen intake.
- Oxygen inhalation time and oxygen flow adjustment, please follow the doctor's advice.
- The humidifier emits a continuous sound of deflation, which is the sound of the humidifier safety valve opening, indicating that the oxygen suction pipe is blocked, please clear the pipe.

WARNING: If the flow range on the flow meter is below 0.5L/min, check the lines or accessories for blockages, kinks, or defective humidification bottle.

4.NEBULIZATION OPERATION

- 1.Add an appropriate amount of liquid medicine to the nebulization cup (please follow the doctor's advice), and it must not exceed the maximum scale line of the nebulization cup.
- 2.Before turning on the machine, unscrew the nebulization cover at the end of the nebulization port of the main engine counterclockwise, and connect the two ends of the air tube to the nebulization cup and the nebulization port of the main machine respectively.
- 3.When the machine starts to nebulize, the flow and pressure of the compressed gas cannot be adjusted. In normal working condition, the pressure range is 90kPa~160kPa and the flow rate ≥ 6 L/min. While in abnormal working condition, the maximum pressure range is 120kPa~220kPa and the tube will not break.
- 4.After starting the nebulization treatment, the oxygen concentration display is locked at the current oxygen concentration value. (Please follow the doctor's advice for the atomization time).
- 5.After the nebulization is done, unplug the air duct at the nebulization port, turn off the power switch, and then unplug the power plug to cut off the network power.
- 6.After stopping the machine, screw the nebulization cap clockwise into the nebulization port and tighten it.

WARNINGS:

- 1.Pentamidine drug can't be nebulized by this product;
- 2.The nebulization function of this product cannot be applied to respiratory anesthesia systems and ventilator systems;
- 3.The nebulization device supporting this product cannot be driven by oxygen;
- 4.When multiple people use this product, please do not share the same set of nebulization device, otherwise it may cause infection;
- 5.DO NOT use suspension or high-concentration liquid medicine, please follow the doctor's advice about the type and volume of the medicine liquid, and please follow the doctor's advice for patients with coma and thick phlegm;
- 6.Keep out of reach of infants and mentally ill patients during storage or use;
- 7.Do not place or carry the liquid medicine in the liquid medicine cup.

5.REMOTE CONTROL OPERATION

- 1.The remote control can remotely control the machine,and its key functions are same with the push buttons.
- 2.When operating, align the transmitting end of the remote control with the infrared receiving hole on the panel of the oxygen concentrator. when the remote control is found to be insensitive or inoperable, please check whether the battery of the remote control is sufficient. The distance between the remote control and the main unit is not suitable. The remote control should not be too far away from the main unit, or it will cause insensitive operation of the remote control.

WARNING: There is a battery in the remote control and the type is CR2025. Please remove the battery from the remote control if you don't use it for a long time.

6. ALARM SIGNAL

Concentrator has following failure alarm function:

- 1) Cooling fan failure will show E1

7. SETTING TIMING UP

- ▶ User can press the timing button to set the operating time in (0~360) minutes.
- ▶ Press the "Timing" button, the timing time can be continuously adjusted every 30 minutes within (0-360) minutes (add 30 minutes each time you press the button, and then start from 0 after adding to the maximum). The system runs continuously when 000 displays on the screen timing setting area. The system runs continuously when 000 displays on the screen timing setting area.
- ▶ The device will auto turn off and the display will show "000 and accumulated time" when finishing timing. Press "Timing" to reset timing function.


8. TURNING OFF

- ▶ During using the device, user can press down the "Oxygen Concentrating" button, mounted in control panel, to stop/start oxygen supply.
- ▶ Take off oxygen cannula from oxygen outlet first, turn off power switch, and then cut off the power source.

MAINTENANCE

NOTE: Power should be disconnected before beginning preventive maintenance on the concentrator. The concentrator is specifically designed to minimize routine preventive maintenance at intervals of once per year. In places with high dust or soot levels, maintenance may need to be performed more often. The following must be performed at a minimum of one year in service to assure years of additional reliability.

1. CLEAN CABINET

 **WARNING** CUT OFF the power supply first to avoid electrical shock. DO NOT remove device cabinet.

Clean the cabinet with a mild household cleaner and non-abrasive cloth or sponge at least one time a month. Do Not drop any liquid into the seam of the device.

2. CLEAN OR REPLACE FILTER

Please clean or replace the filters in time, it's very important to protect compressor and to extend the device life.

▶ Disassembly Filter


Remove the filter cover and take out the filter.

▶ Clean Filter

1) Clean the filter with a soft cleaner or wash in warm soapy water and rinse thoroughly.

2) DRY the filter thoroughly before reinstallation.

3) The filter must clean or replace.

 **CAUTION** DO NOT operate the concentrator without installing filter, or while filter is wet. These actions could permanently damage the concentrator.

▶ Clean Humidifier

- 1) Remove the humidifier bottle from the humidifier cap then clean the bottle.
- 2) Remove the humidifier tube and diffuser then clean them.

▶ Replacement of breaker

Warning: Cut off the power first before replacing the breaker.

- 1) Cut off the power supply first and lay down the machine to its side, then unscrew the fuseholder cover counterclockwise to remove and replace it.
- 2) Breaker model: T5AL250V, D5x20

3. USUAL MAINTENANCE

- ▶ Please unplug the machine in time when the timer and air supply are totally completed. (the whole machine is turned off)
- ▶ Please replace the side filter cotton in time. If the filter is blocked by dirt, it will affect the oxygen production.
- ▶ Please do not disassemble the machine without authorization to avoid the unnecessary damage inside the machine. You must unplug the machine before cleaning and maintenance. Only professional technicians can repair the equipment. No-authorized technicians are not allowed to disassemble the machine.
- ▶ Please do not use lubricants, oils and greases.
- ▶ Please go to the nearest service apartment for testing and calibration after 1000 hours of use.

► Maintenance when not used for a long time:

1.Remove the humidifier, pour out the water and dry it before getting it back into the main unit.

2.Turn the machine on to work for 30 minutes, then wait for natural cooling.

3.Cut off the power supply and put the oxygen concentrator back into the packing box.

4.Pack and seal accessories such as oxygen inhaler, oxygen delivery tube and remote control in plastic bags.

5.Do not install batteries in the remote control when it is sealed to stock. In case that the battery leakage will damage the remote control.

► Component Maintenance

1.Maintenance of humidifier:

In order to ensure the cleanliness of the humidifier, please use pure water or cool boiled water and try to replace it every day. It is recommended to clean the humidifier once a week.

2.The standard model of the humidifier is:

HN-S01 (with nut), if you need to replace it, please contact the supplier or the manufacturer. Using a non-standard humidifier may result in reduced reduced product performance.

3.Maintenance of oxygen delivery tube and oxygen inhaler:


It is recommended to clean once a week and the oxygen delivery tube should not be use for more than half a year.

4.Maintenance of air filter cotton:

The main function of air filter cotton is to filter and absorb dust and impurities in the air. Over time without cleaning, the filter will be blocked and affect the oxygen production. It is recommended to change once a quarter. If the environment is too dusty, it is recommended to replace it every two months.

TROUBLESHOOTING

| Symptom | Probable cause | Solution |
|--|--------------------------|---|
| It shows "E1" on the oxygen concentration area and the machine is in standby mode. | E1: Cooling fan failure. | Stop using the device, please contact the supplier immediately. |

 **CAUTION** If you have **all** other problems, **TURN OFF** the concentrator first, use your reserve oxygen supply, and contact the supplier immediately.

Important information regarding Electro Magnetic Compatibility(EMC)

Oxygen Concentrator needs special precautions regarding EMC and put into service according to the EMC information provided in the user manual; Oxygen Concentrator conforms to this IEC 60601-1-2:2014 standard for both immunity and emissions. Nevertheless, special precautions need to be observed: Oxygen Concentrator with no Essential Performance / Following Essential Performance is intended used in Professional healthcare facility environment.

- ▶ **WARNING:** Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30cm (12 inches) to any part of the Oxygen Concentrator, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

- ▶ The use of accessories, transmitters and cables other than those specified by Ziqing, with the exception of accessories and cables sold by Ziqing of Oxygen Concentrator as replacement parts for internal components, may result in increased emissions or decreased immunity of the Oxygen Concentrator.

- ▶ **WARNING:** Use of this equipment Oxygen Concentrator adjacent to or stacked with other equipment should be avoided because it could result in improper operation.

EMI Compliance Table

Table 1 - Emission

| Phenomenon | Compliance | Electromagnetic environment |
|-------------------------------------|-------------------------------|------------------------------|
| RF emissions | CISPR 11, Group 1, Class B | 30 MHz to 1 GHz 3m |
| Harmonic distortion | IEC 61000-3-2 Class A | 100Hz to 2kHz, 2.5minutes |
| Voltage fluctuations and flicker | IEC 61000-3-3 | 2 hours, Clause 5 |

NOTE: The Emissions characteristics of this equipment make it suitable for use in industrial areas and hospitals (CISPR 11 class A). If it is used in a residential environment (for which CISPR 11 class B is normally required) this equipment might not offer adequate protection to radio-frequency communication services. The user might need to take mitigation measures, such as relocating or re-orienting the equipment.

Table 2 - Enclosure Port

| Phenomenon | Basic EMC standard | Immunity test levels |
|--|--------------------|--|
| | | Professional healthcare facility environment |
| Electrostatic Discharge | IEC 61000-4-2 | ±2kV, ±4kV, ±6kV contact ±2kV, ±4kV, ±8kV air |
| Radiated RF EM field | IEC 61000-4-3 | 3V/m 80MHz-2.5GHz 80% AM at 1kHz |
| Proximity fields from RF wireless communications equipment | IEC 61000-4-3 | Refer to table 3 |
| Rated power frequency magnetic fields | IEC 61000-4-8 | 3A/m 50Hz & 60Hz |

Table 3 - Proximity fields from RF wireless communications equipment

| Test frequency (MHz) | Band (MHz) | Immunity test levels |
|----------------------|------------|--|
| | | Professional healthcare facility environment |
| 385 | 380-390 | Pulse modulation 18Hz, 27V/m |
| 450 | 430-470 | FM, ± 5 kHz deviation, 1kHz sine, 28V/m |
| 710 | 704-787 | Pulse modulation 217Hz, 9V/m |
| 745 | | |
| 780 | | |
| 810 | 800-960 | Pulse modulation 18Hz, 28V/m |
| 870 | | |
| 930 | | |
| 1720 | 1700-1990 | Pulse modulation 217Hz, 28V/m |
| 1845 | | |
| 1970 | | |
| 2450 | 2400-2570 | Pulse modulation 217Hz, 28V/m |
| 5240 | 5100-5800 | Pulse modulation 217Hz, 9V/m |
| 5500 | | |
| 5785 | | |

Table 4 - Input AC power Port

| Phenomenon | Basic EMC standard | Immunity test levels |
|---|--------------------|---|
| | | Professional healthcare facility environment |
| Electrical fast transients/burst | IEC 61000-4-4 | ± 2 kV 5kHz repetition frequency |
| Surges Line-to-line | IEC 61000-4-5 | ± 0.5 kV, ± 1 kV |
| Surges Line-to-ground | IEC 61000-4-5 | Do not apply |
| Conducted disturbances induced by RF fields | IEC 61000-4-6 | 3V, 0.15MHz-80MHz 80%AM at 1kHz |
| Voltage dips | IEC 61000-4-11 | < 5% of UT for 0.5 Period & 5s At 0°, 180° |
| | | 40% of UT for 5 Periods At 0°, 180° |
| Voltage interruptions | IEC 61000-4-11 | 70% of UT for 25 Periods At 0°, 180° |

Table 5 - Signal input/output parts Port

| Phenomenon | Basic EMC standard | Immunity test levels |
|---|--------------------|--|
| | | Professional healthcare facility environment |
| Electrical fast transients/burst | IEC 61000-4-4 | ± 2 kV 5kHz repetition frequency |
| Conducted disturbances induced by RF fields | IEC 61000-4-6 | 3V, 0.15MHz-80MHz 80%AM at 1kHz |

SERVICE

In the normal condition of usual use and storage, the company is responsible for free repair and replacement if the concentrator cannot be used within a week after sold (within 12 months of commercial storage). The user can take the oxygen concentrator to the company following service department or agency or distributor for free repair with the invoice and warranty card if the equipment cannot be used within 12 months after sold. More than 12 months, the company provides the parts to repair with reasonable charge if it could not be used.

The following conditions are not included within the warranty coverage:

1. damage and deformation caused by crush;
2. damage caused by water and rain;
3. abnormal working state caused by self-dismantle of user.

Notes:

1. Please take care of the purchase invoice and maintenance card for service.
2. The non-controllable factor or the artificial damage is not applicable to maintenance scope.
3. This picture in this manual is for reference only. Please take the real product you receive as standard. No notice will be made in case of any update.
4. Pictures for reference only, subject to our available products.

Manufacturer:

Shenzhen Ziqing Medical Equipment Co.,Ltd.

9 Floor, Building 4#, Dongweifeng Xincailiao Industry, No. 2 Shengjia Road, Gaoqiao Community, Pingdi Street, Longgang, Shenzhen, China

Copyright © 2021 Shenzhen Ziqing Medical Equipment Co.,Ltd.