

# 5 Liter Medical Oxygen Concentrator

Instruction **Manual** 

**Model: ZY-5AC** 

Number/Version Number: WI-704/A3 Hong Kong Version 2023.05.31

Warning - Please read this instruction manual before using an oxygen concentrator.

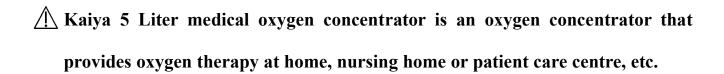
Danger - No smoking!



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### **Indications For Use**



Note - Kaiya 5 Liter medical oxygen concentrator is referred to as an oxygen concentrator in the following.

**⚠** Warning - In some cases, oxygen therapy can be dangerous. Please consult your doctor before using an oxygen concentrator.

⚠ Warning - You should follow the guidance of doctors when using oxygen at concentrations above 90%.

### **Important Safety Information**

1 The following terms are used throughout this manual to highlight important information.

DANGER: Urgent safety information for hazards that will cause severe injury or death.

WARNING: Important safety information for hazards that might cause serious injury.

CAUTION: Information for preventing damage to the product.

NOTE: Information to which you should pay particular attention.

Note - Important safety information is indicated in this guide.

Danger - No smoking!

Note - Please keep this instruction manual safe!

### **Symbol Definitions**

Symbol	Definition	Symbol	Definition
$\triangle$	Attention		Class II Equipment
~	AC Current	<b>†</b>	Type B Equipment
I	On (Power)	0	Off (Power)
	Smoking is Strictly Prohibited.		Up Position
	Keep Away from Rain		Fragile Items
ON	Turn On	OFF	Shut Down
سا	Date of Manufacture	SN	Manufacturer serial number

### **Overview**

This user guide will help you to familiarise yourself with Kaiya oxygen concentrators. Before operating the oxygen concentrator, please read and understand this manual. Important safety maintenance information is already indicated in this manual; please pay special attention to all safety information. If you have any questions, please contact Kaiya Medical authorised agent.

WARNING - For your safety, personal and household use of more than 90% oxygen should follow professional medical guidance.

<u>Manager</u> DANGER - Oxygen can contribute to combustion. Do not smoke when the oxygen concentrator is turned on or near the person being treated with the oxygen concentrator.

Do not use objects with high temperatures, sparks, and open flames within a range of 1.6m.

### Why Do Doctors Prescribe Supplemental Oxygen?

Today, many people suffer from heart, lung and other respiratory diseases. For the activity of specific organs, the body needs a steady supply of oxygen. Your doctor may ask for supplemental oxygen because you can't get enough oxygen from the indoor air. Supplemental oxygen can increase the total amount of oxygen your body gets.

### Scope Of Application

Using air as raw material, the molecular sieve pressure swing adsorption process produces oxygen with an oxygen concentration of 93% (V/V) or more.

### **How Oxygen Concentrators Work**

Oxygen concentrators are the most reliable, direct and convenient source of supplemental oxygen today. Oxygen Concentrators run on electricity. It separates and concentrates high oxygen concentrations from the indoor air and supplies it to you through the oxygen outlet. Although it separates and concentrates oxygen from the indoor air, it does not affect the usual amount of indoor oxygen.

### **Precautions, Warnings and Informative Instructions**

### *↑* Warning

- Do not unplug the power plug of the oxygen concentrator without turning off the power switch.
- Do not use an oxygen concentrator while bathing.
- Do not place or store the oxygen concentrator beside the bathtub or sink.
- If the oxygen concentrator falls into water or enters the liquid, do not touch it, and immediately unplug the power plug, do not use it again and notify the Kaiya Medical authorised agent.
- Do not place or store the oxygen concentrator beside the bathtub or sink.
- Do not place or store the oxygen concentrator in the kitchen, bathroom or outdoors (including the balcony).
- The oxygen concentrator should be placed to avoid pollution and smoke.
- The air inlet of the oxygen concentrator should be in a well-ventilated place.

- It takes 5 minutes for the oxygen concentrator to warm up.
- Using other suppliers' humidifier bottles may affect oxygen concentrator performance.
- The best position of the oxygen concentrator humidification bottle should be installed directly on the outlet of the oxygen concentrator.
- Oxygen concentrators must not be used for life support purposes.

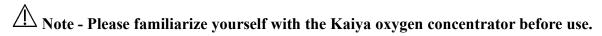
### **Precautions**

- When using an oxygen concentrator, someone must look after it.
- When using the oxygen concentrator, if there are children or disabled people next to it, there must be a particular person to supervise closely.
- Please use the oxygen concentrator within the scope of the application and follow the doctor's instructions.
- Use the oxygen concentrator while sleeping; there may be dangerous.
- Please do not block the air intake of the oxygen concentrator.
- Do not use the oxygen concentrator outdoors, do not use it with aerosol products, and do not use it in a sealed environment.
- The oxygen concentrator is oil-free and does not need to use lubricants.
- Do not disassemble the oxygen concentrator to prevent electric shock,
- When not using the oxygen concentrator, unplug the power plug of the oxygen concentrator from the power outlet.
- Do not use this oxygen concentrator for ozone therapy devices.

### **Essential Parts of Oxygen Concentrator**

It mainly comprises an oxygen host, flow meter, digital timer and humidification bottle.

### **Key Components**



- 1. Timing + button
- 2. Display Screen
- 3. Power LED (green) Lights to indicate that the unit is running
- 4. Normal indicator (green) lit to indicate that the device is operating normally
- 5. Abnormal indicator (yellow) illuminated indicates that the oxygen output concentration of the equipment is low or the pressure of the oxygen system is abnormal
- 6. Repair indicator (red) lit to indicate that the device needs to be repaired.
- 7. Timing press the key
- 8. Overload protector (circuit breaker) when the current is overloaded, the current will be cut off, and after troubleshooting, it can be manually reset
- 9. Power switch: ON = ON, OFF = Off
- 10. Air flow meter adjustment knob
- 11. Air flow meter 0-5 L/min

- 12. Handle
- 13. Oxygen outlet Oxygen is output through here
- 14. Air filter cover
- 15. Air filter pad (heat dissipation air inlet) prevents dirt, dust and fibres from entering the oxygen concentrator
- 16. Power plug
- 17. Power cord
- 18. Heat dissipation air exhaust outlet

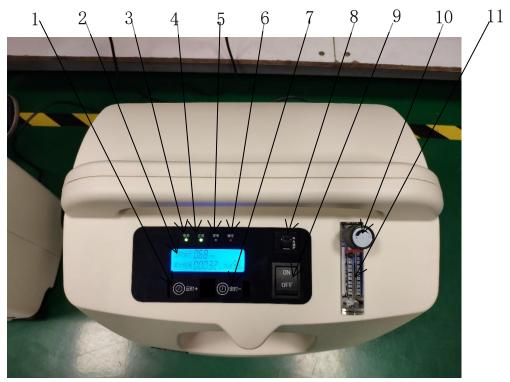
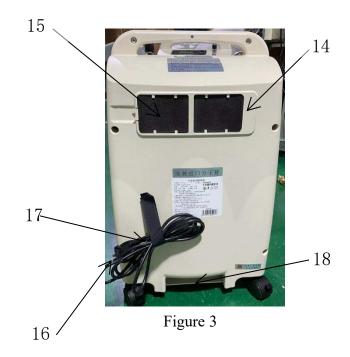


Figure 1



Figure 2



### **Setting Up Your Oxygen Concentrator**

1. Place the oxygen concentrator indoors next to the outlet where you spend the longest time, which can be the living room, study room, bedroom, etc., but do not place or store oxygen concentrators in kitchens, bathrooms, or outdoors (including balconies).

Danger - Do not place oxygen concentrators within 1.6 meters of objects with high heat, sparks, or flames.

Caution - Do not connect to a wall outlet controlled by a switch. Do not have other appliances plugged into the same wall outlet.

- 2. Place the oxygen concentrator at least 16 cm away from a wall, fabric, or other object to ensure sufficient air ventilation.
  - The air enters the oxygen concentrator and is discharged from the oxygen concentrator. The oxygen concentrator should be avoided in a position with pollutants, smoke, and moisture.
- 3. To breathe, use an oxygen tube longer than 500mm.

### **Before Operating Your Oxygen Concentrator**

1. Before using the oxygen concentrator each time, please check whether the air filter pad (behind the oxygen concentrator) is clean. The "Maintaining the Oxygen Concentrator" section of the instruction manual discusses how to clean the air filter pad properly.



Note - Please replace the intake silencer every 500 hours or so when the oxygen concentrator runs. Please clean the air filter cotton every 120 hours when the oxygen concentrator runs.

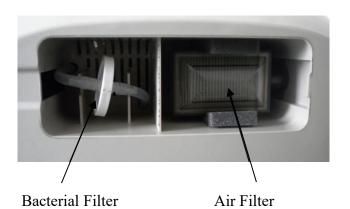
2. Install the appropriate accessories at the oxygen outlet of the oxygen concentrator.

#### **Connection of nasal straws:**

- a) Screw the oxygen output connector onto the oxygen outlet.
- b) Connect the nasal pipette to the oxygen output connector. (Figure 4).



Figure 4



#### **Connect to humidifier bottles:**

If your doctor prescribes oxygen humidification as part of your treatment, follow these steps to install it:

- a) Add distilled water to the humidified flask without spilling.
- b) Screw the butterfly nut on the top of the humidifier flask into the oxygen outlet; the humidifier flask is suspended (Figure 5) Please ensure its installation is secure.
- c) Connect the nasal pipette to the oxygen outlet of the humidifier bottle. Figure 6)







Figure 6

 $\overline{\mathbb{V}}$ 

Note - The water added to the humidifier bottle is between the maximum and minimum water level scale lines on the humidified flask bottle.



Note - Using certain humidification bottles or dosing accessories other than those the oxygen concentrator specifies may affect performance.

- 3. If the doctor prescribes the use of a suction tube or mask, or something else, then they are attached to the oxygen outlet. If not, please refer to the attached instructions for use.
- 4. Remove the power cord altogether from the strap, confirm that the "power switch" is in the off position (Figure 7), and then plug the plug into the wall outlet (Figure 8); this oxygen concentrator is double insulated to prevent electric shock.



Figure 7



Figure 8



WARNING - Improper power cords and plugs may cause burns, fire, or another risk of electric shock. Do not use an oxygen concentrator whose power cord has been damaged.

### **Operating Instructions**

- $\triangle$ 
  - Danger oxygen can contribute to combustion. Do not smoke when the oxygen concentrator is turned on or near the person being treated with the oxygen concentrator. Do not use an oxygen concentrator when there are high temperatures, sparks and open flames within the range of 1.6m.
- 3. "Power switch" press the button to (ON) position (Figure 9); when the oxygen concentrator starts to run, the screen, power indicator, and the screen will light up (Figure 10).





Figure 9

Figure 10



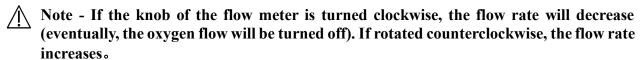
NOTE - If the service indicator is lit and an alarm can be heard, but the oxygen concentrator is not running, and there may be no power input into the oxygen concentrator, please consult the "Finding and Repairing Faults" section of this manual and contact the Kaiya Hong Kong Service Center if necessary.

- $\dot{\mathbb{N}}$
- NOTE If audible low-frequency vibrations are perceptible and the oxygen concentrator is not functioning correctly, consult this manual's "Finding and Repairing Faults" section; if necessary, please contact Kaiya Medical authorised agent.
- 4. Check the flow meter and ensure that the center of the float is on the scale line of the flow rate specified by the doctor (do not exceed the full-scale line in red of the flow meter); if it is not, the flow rate you need, you can rotate the flow adjustment knob of the flow meter to match the oxygen flow you need, at which time oxygen can be inhaled (Figure 11).



Figure 11

Be careful - the flow rate in the oxygen prescription is very important; Please strictly follow the doctor's instructions and do not increase or decrease the instructed flow rate.



3. When the whole machine is running, the display screen will show the running time of this boot and the cumulative running time of the whole machine, press any button on the touch screen, the display will light up and display the oxygen concentration percentage (Figure 12).



Figure 12

4.Press the "TIME +" and "TIME -" buttons on the touch screen when the whole machine is running to set the running time, and each time you press the "TIME+" button, the timing time increases by 10 minutes, and each time you press "TIME " -" button, the timing time is reduced by 10 minutes, the maximum set timing time is 120 minutes, the machine automatically stops running after reaching the set time, and the power indicator is still on. To restart the machine, the power switch must be turned off and turned on so the machine can run again (Figure 13).



Figure 13

5. When not using the oxygen concentrator, turn off the "power switch" (the power switch is in the OFF state) (Figure 14) and unplug the power supply from the outlet.



Figure 14

### **Alarm Messages**

/ Warning - When the oxygen concentration status indicator indicates an abnormal oxygen concentration, the operator is advised to take action.

#### 1. Classification of alarms:

- The oxygen concentrator has an audible alarm and a visual alarm function, which can indicate
- situations that need your attention.
- There are three levels of alarms: high, medium, and low.
- High-level alarms indicate the dangerous condition of the critical patient's life and are the most severe warnings.
- Medium-level alarms are critical warnings.
- Low-level alarms are general warnings.
- The alarm characteristics are shown in Table 1 below.
- The priority level of the alarm is high-level alarm> medium-level alarm> low-level alarm that is, when the two alarm levels exist simultaneously, the alarm signal is the sound of the high-level alarm.

#### 2. Audible alarm indication:

When an alarm time occurs, the oxygen concentrator emits a "beep" alarm sound (60dB~120dB). Different levels of audible alarms have different audible frequencies.

- a) High-level alarm: "beep-beep-beep-beep-beep-beep-
- b) Medium-level alarm: pause after "beep-beep-beep" and then sound again after 16 seconds
- c) Low-level alarm: pause after "ding-dong" and sound again after 23 seconds
- d) The priority level of the alarm: high-level alarm > medium-level alarm > low-level alarm; when two alarm levels exist simultaneously, the alarm signal will be the high-level alarm.

#### 3. Visual alarm indication:

When an alarm event occurs, the alarm indicator will light up.

Table 1 Alarm characteristics

Alarm category	LED colour	Blinking frequency	Duty cycle
High-level alarms	Red	1.4Hz~2.8Hz	20%~60%
Medium level alarm	Yellow	0.4Hz~0.8Hz	20%~60%
Low-level alarms	Yellow	Always on	100%bright

The priority level of the alarm is: advanced alarm > intermediate alarm > low-level alarm, that is, when the two levels of alarm exist simultaneously, the alarm signal is an indicator light of a high-level alarm.

#### 4. Measures to be taken when the alarm occurs:

- a) Identify the status represented by the signal that is being alarmed
- b) To check the patient's condition.
- c) Identify the cause of the alarm.
- d) Take appropriate measures.

#### 5. Definition of alarm:

Item	Alarm	Category	Audible alarm	Visual alarm	Failure mode
1	After 5 minutes of turning on the oxygen concentrator, the oxygen concentration is lower than 73% ±3%	High	"Beep-beep-beep-beep-beep-beep-beep, 4 minutes interval	Red	Technical problem
2	When the whole machine is running, the power supply is cut off	Medium	"Beep-beep-beep-beep-beep-beep-beep, 4 minutes interval	Red	Technical problem
3	After 5 minutes of turning on the oxygen concentrator, the oxygen concentration is higher than 73%±3%, and the oxygen concentration is lower than 82%±3%	Medium	"Beep-beep-beep", 16 minutes interval	Yellow	Technical problem
4	Abnormal pressure	Low	"Ding-dong" with an interval of 23 seconds	Yellow	Technical problem

6. The time that the alarm setting can be automatically restored after power failure: ≤30 seconds.

### Spare Oxygen Concentrator

As a precaution, a spare oxygen concentrator will be provided at the Kaiya Medical authorised agent. If your oxygen concentrator does not work properly or does not work correctly, please switch to your own backup oxygen source (such as an oxygen cylinder) first and contact the Kaiya Hong Kong Service Center as soon as possible.

### **Routine Maintenance**



**CAUTION** - Do not use lubricants, oils and grease.



WARNING - Before any cleaning steps, turn the oxygen concentrator off.

#### Oxygen humidifier cleaning (reusable humidifier bottle)

If your doctor prescribes a humidifier bottle, clean the humidifier bottle daily. Follow the manufacturer's instructions for use, and if cleaning instructions are not available, follow these

- 1. Use detergent and hot water to wash the humidifier bottle separately.
- 2. Soak the separated humidification bottle in a solution of three parts white vinegar and three parts hot water for 30 minutes. This solution can be used as a fungicide.
- 3. Rinse thoroughly with tap water, then fill with distilled water and use, do not spill.

#### Nasal Cannula, masks, and suction tubes

Nasal Cannula, masks, and suction tubes are used one time only.

#### Air filter cotton, oxygen output connector

Air filters and connectors are cleaned every 120 hours; please follow the instructions below to clean.

- 1. Remove the air filter behind the oxygen concentrator. Remove the oxygen output connector).
- 2. Wash with detergent and hot water.
- 3. Rinse well with tap water and let dry. The filter cotton must be dried well before the next use.



/\ CAUTION - To prevent damage to the oxygen concentrator, do not attempt to operate the oxygen concentrator when there is no air filter or when the filter cotton is not completely dry.

#### Intake silencer

The intake silencer is replaced every 500 hours of operation. Follow these steps:

- 1. Remove the used intake silencer behind the oxygen concentrator.
- 2. Put in a new intake silencer.

#### Enclosure

Clean the outer shell of the oxygen concentrator with a damp cloth or sponge stained with a mild household cleaner and wipe dry.

/ WARNING - To avoid electric shock, do not open the case. An authorised technician can only open the enclosure. Do not use any oily solvents or cleaners on the shell.

#### Annexe

The following accessories are allowed for the ZY-5AC oxygen concentrator:

- 1. Humidification flask (400 ml capacity)
- 2. Nasal cannula, oxygen masks, and oxygen tubes, with medical device registration certificates, are recommended.
- 3. Oxygen outlet connector.



NOTE - The use of humidifier bottles and accessories that are not specific to the above may affect the performance of the oxygen concentrator.



/NOTE - If the service indicator is lit and an alarm can be heard, but the oxygen concentrator is not running, and there may be no power input into the oxygen concentrator; please check with the "Finding and Repairing Faults" section.

An alarm device for oxygen output is designed in the ZY-5AC oxygen concentrator. When the oxygen concentrator is turned on, the normal condition power indicator and normal indicator will be on.

#### The detailed description of the lights on the panel is as follows:

- a) Power indicator (green) illuminated to indicate that the device has started operation;
- b) Normal indicator (green) lit to indicate that the device is operating normally;
- c) Abnormal indicator (yellow) lit to indicate that the oxygen output concentration of the equipment is low or the pressure of the oxygen system is abnormal;
- d) Service indicator (red) illuminated to indicate that the device needs to be repaired; please contact the Kaiya Medical Devices supplier.

If the oxygen concentration is below acceptable standards, the green normal indicator will turn off, and the yellow abnormal indicator will turn on. Please switch to your spare oxygen system. Consult this manual's "Finding and Repairing Faults" section and contact Aiya Hong Kong Service Center if necessary.



Note - As more alarms are added, oxygen concentrations may continue to decrease and intermittent audible alarms will sound. Please get in touch with Kaiya Hong Kong Service Center and do not attempt to attempt any other repairs.

# **Troubleshooting Guide**

Symptoms	Possible causes	Remedial Actions	
A. When the "Power Switch" is	1.The power cord is not correctly plugged into the electrical outlet.	Check the connection of the power cord to the electrical outlet, and the power supply system should match the specifications indicated on the nameplate •	
turned on and the "On/Off" button is pressed, the oxygen concentrator does not run, the power indicator does not light	2. There is no power in the electrical outlet.	Check the disconnect switch in your home and restart it. If the same problem occurs again, use another outlet. Please contact the Kaiya Medical authorised agent if it still does not work after the above methods.	
up, the alarm sounds and the maintenance light flashes.	3.The "overload protector off" of the oxygen concentrator is disconnected.	Press the button that pops up the "Overload Protector Off" of the oxygen concentrator. "Overload protector off" is next to "Power switch". If the same problem occurs again, use another outlet. If it still does not work after the above methods, please contact Kaiya Medical authorised agent.	
	1.The air filter is blocked.	Check the air filter and clean it if it is dirty according to the instructions in the "Maintaining the oxygen concentrator" section of the manual.	
B. When the switch is on, the	2.The exhaust is blocked.	Check the exhaust port to ensure nothing is blocking the oxygen concentrator's exhaust.	
oxygen concentrator is running, the power indicator is on, the red maintenance indicator is on, and an alarm sound may be heard.	3.The intake silencer is blocked.	Check the intake silencer and, if dirty, replace it according to the instructions in the "Maintaining the oxygen concentrator" section of the manual.	
	4.A snort, mask, or oxygen connection tube is blocked or defective.	Separate the suction tube or mask. If the flow is restored, then it is necessary to replace. Disconnect the suction tube from the oxygen outlet and if flow picks up, check the suction tube for blockage as described in the guidelines and replace it if necessary.	
C. When the switch is turned on, the oxygen concentrator is running, the power indicator is on, and a low-frequency vibration sound can be heard.	The solenoid valve is not working correctly.	Immediately turn off the oxygen concentrator, switch to the backup oxygen system, and contact Kaiya Medical authorised agent.	
D. If something else goes wrong with the oxygen concentrator.		Immediately turn off the oxygen concentrator, switch to the backup oxygen system, and contact Kaiya Medical authorised agent.	
E. Both Green and yellow indicators light up or not at all.	The oxygen concentration sensor is faulty.	Contact Kaiya Medical authorised agent.	
	1The flow meter is probably not adjusted correctly.	Be sure that the flow meter is adjusted to the specified position.	
F. Both green and yellow indicators light up, with intermittent alarm sound.	2. The air filter is blocked.	Check the air filter and if dirty, follow the cleaning instructions in the "Routine Maintenance" section of the manual.	
	3. The exhaust device is blocked.	Check the exhaust port to ensure nothing is blocking the oxygen concentrator's exhaust.	
	1.The flow meter is probably not adjusted correctly.	Be sure that the flow meter is adjusted to the specified position.	
G. The red indicator lights up with intermittent alarms sound.	2. The air filter is blocked.	Check the air filter and if dirty, follow the cleaning instructions in the "Routine Maintenance" section of the manual.	
	3. The exhaust device is blocked.	Check the exhaust port to ensure nothing is blocking the oxygen concentrator's exhaust.	

If it still does not work after the above methods, please contact Kaiya Medical authorised agent.

## **Specifications**

Model	ZY-5AC
Flow Rate Range	0∼5 L/min
Max Flow Rate	5 L/min
Flow rate at nominal outlet pressure 0Kpa	5 L/min
Flow rate at nominal outlet pressure 7kPa	5 L/min
Outlet pressure	60±5 kPa
Specification	5 L/min
Power Supply	AC220V/50Hz
Current	1.6 Amp
Oxygen Purity	≥93% @ 0~5 L/min
Operating environment	Temperature+5°C~+40°C, Humidity ≤80%RH Atmosphere Pressure 86~106kPa
Power Consumption	340W
Weight	16.5 kg
Sound Level	≤50 dB(A)
Dimensions	36cm x 29cm x 58cm
Storage and transportation conditions	Temperature -20 °C~+50 °C Humidity<93% Relative Humidity Atmosphere Pressure 50~106 kPa
The level and type of device	Equipment: Class II. Insulation class Type B
OCSI Alarm point for abnormal oxygen concentration	Turn on the oxygen concentrator for 5 minutes, Oxygen concentration <82% (tolerance ± 3%)
OCSI Use temperature	+5 °C∼+40 °C
OCSI Use the atmospheric pressure range	Atmosphere Pressure 86~106 kPa
Alarm sound level	>60 dB(A)
Molecular sieve element service life	5000 hours or 2 years (whichever comes first)
Compressor service life	5000 hours or 2 years (whichever comes first)

### **Warranty Information**

- 1. Warranty coverage: problems with the product's material, process or quality.
- 2. Non-warranty coverage:
  - a) Damage to this product caused by incorrect use or mishandling
  - b) Damage caused by unauthorised disassembly or alteration of any part of this product
  - c) Damage to this product caused by failure to use it in accordance with the precautions in the manual
  - d) Damage to this product caused by abnormal voltage or accidents (such as fire, flood, etc.) and any other force majeure factors
  - e) No warranty certificate or altered warranty certificate
  - f) The product has passed the warranty period.
  - g) Wearing parts such as air intake filters are not covered by the warranty.
- 3. Warranty period: from the date of purchase, the whole machine is guaranteed for two years or 5000 hours (whichever comes first), and free maintenance during the warranty period. If it is not used generally according to the precautions, man-made damage or beyond the warranty period will be repaired for a fee. For warranty or repair, please contact Kaiya Medical authorised agent. Please show the warranty certificate when repairing; if you need to charge, the service staff will explain the composition of the charge, and only after obtaining your consent will the paid repair be carried out.
- 4. In order to avoid accidental losses, please repair the oxygen concentrator at Kaiya Medical authorised agent.

### **Packing Checklist**

Item	Description	Quantity	Equipped
1	Oxygen Concentrator	1 unit	V
2	Instruction Manual	1 set	<b>V</b>
3	Nasal pipette/nozzle	1 pc	<b>V</b>
4	Humidifier bottle	1 pc	<b>V</b>
5	Quality Certificate	1	<b>V</b>
6	Oxygen output connector	1 set	<b>V</b>
7	Air filter pad	1 set	V



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