

Pureline®





OXYGEN CONCENTRATORS









USER'S GUIDE OC4000

OXYGEN CONCENTRATOR
FOR VETERINARY USE ONLY

GLOSSARY OF SYMBOLS

-  : ON (power switched on)
-  : OFF (power switched off)
-  : Class II protection
-  : Do not expose to open flames

-  : Do not use oil or grease
-  : Technical information
-  : Consult the accompanying documents
-  : Keep in the vertical position
-  : Fragile - handle with care
-  : Oxygen concentration warning light

For Veterinary Use Only

SUPERA | ANESTHESIA
INNOVATIONS

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Examination and Preparation for Use

Thank you for ordering an Supera Anesthesia Innovations anesthesia machine!

We are delighted to have you as a Supera Anesthesia Innovations customer and want you to be completely satisfied with your purchase. Please inspect the contents of your order to see if everything is as you expected. Should anything not be exactly right or if anything was damaged in shipping, please contact your sales representative right away for help.

Our goal is to make your new anesthesia machine as easy to use and care for as possible.

This device is meant to be operated under the normal surveillance and control of a veterinarian trained in its use. However, you need to know more about this device than just how to operate it.

Please read this manual in its entirety before using the anesthesia machine.

If you have any comments or questions, we welcome the opportunity to address them.

Please contact us directly at 877-620-1500.

Thank you!

Brian Lawson

President,
Supera Anesthesia Innovations

**Proudly Designed and
Made In Oregon, USA**

GENERAL SAFETY GUIDELINES

Only persons who have read and understood this entire manual should be allowed to operate the *O2 concentrator*



The WARNINGS below indicate a potential hazardous situation. If conditions are not avoided a situation could occur that results in serious injury or death.

- Oxygen is not a flammable gas, but it accelerates the combustion of materials. Do not use in explosive atmosphere. To avoid risk of fire and explosion the concentrator should be kept away from Flames, Heat sources, Incandescent sources, Smoking Materials, Matches, Oil, Grease, Solvents, Aerosols, etc.
- Use of other accessories not described in this User's Guide are not recommended.
- No modification to the equipment is allowed.
- Device must have power to operate. In the event of power loss and for continued operation a backup source is recommended.
- DO NOT disassemble due to danger of electrical shock. Refer servicing to qualified service personnel.



The CAUTIONS below indicate a potentially hazardous situation. If conditions are not avoided a situation could occur that results in property damage or minor injury or both.

- Use the power cord provided, and check that the electrical characteristics of the power socket used match those indicated on the manufacturer's plate on the rear panel of the device.
- We recommend against the use of extension cords and adapters, as they are potential sources of sparks and fire.
- The concentrator has an audible alarm to warn the user of problems. In order that the alarm may be heard, the maximum distance that the user can move away from it must be determined to suit the surrounding noise level.
- Do not use in a specifically magnetic environment (MRI, X-ray, etc.). May cause device malfunction.
- This unit may be equipped with a polarized plug. That is one blade wider than the other. If it does not fit into the outlet, reverse the plug. If it still does not fit, contact a qualified electrician. Do not defeat this safety feature.

CONFORMITY WITH IEC60601-1 (2nd Edition)

"The manufacturer, assembler, installer or distributor are not considered to be responsible themselves for the consequences on the safety, reliability and characteristics of a device unless the:

- Assembly, fitting, extensions, adjustments, modifications or repairs have been performed by persons authorized by the party in question.
- Electrical installation of the corresponding premises complies with local electrical codes. (e.g. IEC / NEC).
- Device is used in accordance with the instructions for use.

If the replacement parts used for the periodic servicing by an approved technician do not comply with the manufacturer's specifications, the manufacturer is not responsible in the event of an accident.

1. UNPACKING and PACKAGING

The Oxygen Concentrator is packaged to protect the device from damage while being transported and stored. Check for damage to the packaging. After device is removed from the package inspect for damage. If damage is detected please contact your equipment provider. Operating environmental condition guidelines are discussed later in another section of this User's Guide.

1.1 METHOD FOR WASTE DISPOSAL

All waste from the device (Patient Circuit, Filters, Etc.) must be disposed of using methods appropriate to the civil authority of the location where disposed.

2.0 METHOD FOR DISPOSING OF DEVICE

This device has been supplied by an environmentally aware manufacturer. A majority of the parts in the device are recyclable.

Follow local governing ordinances and recycling plans regarding disposal of the device or components normally used in operation. Any accessories not original to the device must be disposed of in accordance with the individual product markings for disposal.

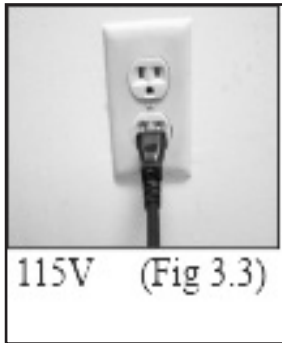


2.1. Front panel (Fig. 2.1)

- 1 - I/O (ON/OFF) switch
- 2 - Indicator lights
- 3 - Oxygen product outlet
- 4 - Circuit breaker
- 5 - Pre-set flow meter (non-adjustable)

3.1 Turning on device

a. Plug the power cable into a power outlet (Fig. 3.3) of the correct voltage and frequency as defined on the manufacturer's technical label (Fig 2.2).



b. Press the power switch (I/O) (item 1 in Fig.2.1) to the ON position (I). The green indicator light flashes until concentration is achieved.

IMPORTANT!

TURN THE ANESTHESIA MACHINES OXYGEN FLOW METER ON TO A MINIMUM FLOW RATE OF 0.25 LPM

A “NO FLOW” ALARM MAY SOUND IF THE FLOW METER ISN’T OPEN

3.2 Turning off device

At the end of the usage, press the I/O Switch to place it in the O (OFF) position to stop the device. The oxygen enriched air flow continues for approximately one minute after the device is stopped.

4. CLEANING - MAINTENANCE

Only the outside of the concentrator is to be cleaned. Use a damp sponge or cloth with water only.

Acetone, solvents or any other inflammable products **must not be used**.

Do not use abrasive powders.

FILTERS - IMPORTANT!

Fine Filter (#1 fig. 4.1) and Cabinet Filter Cleaning (#2)

The cabinet filter (#2 Fig.4.1) must be cleaned in warm water and household detergent weekly or after approximately **100 hours** of use. Dry before reinstalling. More frequent cleaning is recommended in dusty environments.

Cabinet filter: p/n OC4000-1

The fine intake filter should be replaced annually or every 2000 hours of use. More frequently dusty /dirty environments..

Fine filter p/n OC4000-2

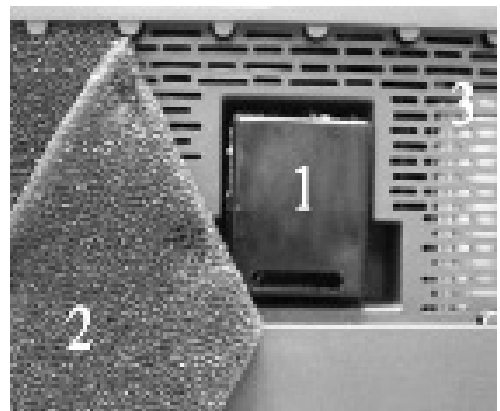


Fig. 4.1

- 1. Filter / Silencer**
- 2. Cabinet filter**
- 3. Ventilation grill**

Note: Shown with grate removed

4.3. Maintenance

NO INTERNAL MAINTENANCE IS REQUIRED OR SHOULD BE PERFORMED.

OPENING THE CASE WILL VOID THE WARRANTY.

5. USEFUL INFORMATION

5.1. Accessories and spare parts

The accessories used with the *O2 concentrator* must:

- be oxygen compatible.
- be biocompatible.

The connectors, tubes must be designed for oxygen usage.

5.2. Materials in direct or indirect contact with the product output

Concentrator casing	ABS
Power Cord	PVC
Cabinet Air Filter	Polyester
I/O (On/Off) switch.....	Nylon
Casters.....	Nylon
Oxygen product outlet	Aluminum
Printed labels.....	Polycarbonate
Pipe/Tubing.....	Aluminium,PVC, polyurethane or silicone

5.3. Operating principle

The compressor sends filtered room air to a solenoid valve, which allows compressed air to pass to the column in production. The columns contain a molecular sieve, whose function is to adsorb the nitrogen and thus allow oxygen to pass. The oxygen enriched product is then directed through a pressure reducing valve continuing to the oxygen product outlet fitting.

During this time, the column which is being "regenerated" is connected to the ambient air and flow of oxygen enriched product is passed through it (from the column "in production"). In this way, when one column is in production, the other is in a nitrogen desorption or "regeneration" phase. The oxygen enriched product finally passes through a final product filter located prior to the oxygen outlet fitting.

5.4. Alarms - Safety devices - Indications

5.4.1. Alarms

- **No voltage detection**

In the event of a loss of mains power, an intermittent audible alarm is activated and the green light turns off. Test alarm by actuating the I/O (ON/OFF) switch when the power cord is not plugged into the wall outlet.

- **Process fault**

In the case of a process fault, a visible and audible alarm is activated (continuous red light or lighted alarm and audible alarm).

- **Oxygen Concentration**

If the oxygen concentration level falls below the required range the red light comes on and the green light goes out. After a 15 minute delay the audible alarm will sound.

5.4.2. Safety devices

- **Compressor motor**

Thermal safety is ensured by a thermal switch situated in the motor winding (145 ± 5 °C).

- **Electrical protection**

A 5 amp circuit breaker is incorporated into the front cabinet of all models.

Class II devices with insulated casings (EN60601-1 standard)

- **Safety valve**

This is fitted on the compressor outlet and is calibrated to 2.7 bar (40 psig).

5.4.3 Indicators

- The green indicator light (Fig.5.1) indicates that power is applied to the device. When first turned on the indicator will flash until correct oxygen concentration is achieved. At that time the green indicator will remain illuminated and the device is ready to provide oxygen enriched air to the patient.

5.4.3 Indicators (continued)

- The red indicator warns of a process fault. One event that can cause the red indicator to be illuminated is low oxygen concentration. The low oxygen concentration red indicator will light when oxygen concentration falls below a predetermined set point. Another event that will cause the red indicator to light is a blocked oxygen flow. In this case the green indicator and red indicator will be illuminated simultaneously.

5.5. OCSI (oxygen concentration status indication module) function

5.5.1. Operating principle

The oxygen monitor (Item 2 Fig 2.1) is an electronic module capable of checking the effective oxygen concentration supplied by the concentrator.

The oxygen monitor measures the concentration and activates an audible and visual alarm if it falls below the alarm set point percentage.

(Refer to Section 5.4 for information on the operation of the indicators and alarms for the OCSI function)



(Fig. 5.1)

5.5.4 Maintenance of the Device Alarms

No special maintenance is required. The alarm set-point is factory set and the setting cannot be adjusted. All models are set at 84%.

The equipment supplier verifies that the device is still operating correctly when the routine checks are performed.

5.6. Technical characteristics

Dimensions:

LxWxH: 36 x 23 x 58.5 cm (14 x 9 x 23 in.)

Caster diameter: 3.8 cm (1.5 in.).

Weight: 14.5 kg. (32 lbs) varies by model.

Noise level less than 58dBA.

Oxygen Concentration - USP93%

- at 2 l/min: >90%.
- at 5 l/min: 90%. (+6.5%/-3%)

(Values at 21°C and at one atmosphere pressure).

Maximum flow: 5 lpm.

The variation of the maximum flow does not exceed $\pm 10\%$ of the indicated value when a back pressure of 7 kPa (1 psig) is applied to the output of the device. The maximum outlet pressure is 50 kPa (7 psig).

Electrical power supply:

Rating:	115/230V 60Hz	230V 50Hz
Average Power:	330W(avg)	300 W(avg)
Protection Class:	Class II	Class II
Mains Protection:	5A	5A

Filters:

At the rear of the device: a cabinet air filter.

At the compressor input: an inlet air filter, 5 µm, located behind the cabinet air filter.

Air circulation

A tubeaxial fan cools the compressor compartment.

Environmental limit conditions

The performances of the device (especially the oxygen concentration) are quoted at 21°C (70°F) and one atmosphere. They may change with temperature and altitude.

- The device must be stored, transported and used in the vertical position only.
- Ambient temperature of between 5°C and 40°C (40°F to 104°F) operation.
- Storage temperature from -20°C to 60°C (-4°F to 140°F).
- Relative humidity of between 15% and 95% operation and storage, both non-condensing.
- Altitude(21°C): Up to 2,286m (7,500ft) without degradation; Consult your equipment provider for further information regarding 2,286m to 4000m (7500 to 13000 ft)
- Complies with EN60601-1 standard; spilling a glass of water.

5.7. Standards

EN 60601-1[UL60601-1:2003],
CAN/CSA-C22.2 No.601.1-M90 w/A1&A2:
Electrical Safety- Medical Devices.

EN60601-1-2:2001
Electromagnetic Compatibility

PREVENTIVE MAINTENANCE

- a. Wash cabinet filter weekly.
- b. The fine intake filter should be replaced annually or every 2000 hours of use. More frequently dusty /dirty environments.
- c. Check oxygen concentration every 15,000 hours or 3 years of operation to verify the continuing OCSI function.

Use original parts only

**Contact Supera Anesthesia Innovations
for additional information**

877-620-1500

5.8. Troubleshooting.

Observations	Possible Causes	Solutions
The I/O (ON/OFF) button is in the "I" (ON) position but the device does not operate. The audible alarm sounds intermittently.	Power cord is not correctly plugged into the wall outlet. Power failure.	Check the cable connection. Check the circuit breaker (5) on the front of the unit; Reset if necessary.
Yellow light remains lighted.	Oxygen concentration is too low.	Contact your equipment supplier.
The alarm test does not work. See 5.4.1.	Capacitor is not charged Internal electrical fault.	Backup capacitor has discharged operate unit for approximately 10 minutes and retest Contact your equipment supplier.
The compressor operates and the I/O (ON/OFF) button is in the "I" (ON) position but the green indicator is not lighted.	Faulty indicator.	Contact your equipment supplier.
The I/O (ON/OFF) button is in the "I" (ON) position but there is no flow. The audible alarm sounds continuously.	Pneumatic connection broken or other pressure problem.	Stop the device by pressing the I/O (ON/OFF) button and contact your equipment supplier.
The I/O (ON/OFF) button is in the "I" (ON) position, the compressor is operating and there is a flow but the audible alarm sounds continuously.	Internal electrical fault. Pneumatic circuit fault.	Stop the device and contact your equipment supplier.
The compressor stops in mid-cycle, then starts again after a few minutes.	Dirty Filters, blockage Fan is not working.	Clean cabinet filter. Restart. Clear blockage. Restart Reset circuit breaker. If the device does not start, contact your equipment supplier.



Maintenance Items

Cabinet Air Filter:

Ref: OC4000-1;

Wash weekly; Replace as needed.

Inlet Air Filter:

Ref: OC4000-2;

Replace minimum every 2000 hours
(depending on environment)



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