TAHOE

OXYGEN CONCENTRATOR

USER'S MANUAL

VETLAND
Medical Sales & Services, LLC

www.VetlandMedical.com

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User's Manual	
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Oxygen Hose	

INSPECT BOX FOR SHIPMENT DAMAGE

- Notify shipping company if a damage claim needs to be filed
- Take pictures of the box and damaged items
- Retain box and all items as evidence

Vetland Medical will assist in any way possible in the event of loss or damage to merchandise and any subsequent claim against the carrier, but the responsibility for reporting such loss or damage and filing any claims remains with the customer.

INSPECT BOX FOR SHIPMENT DAMAGE

All merchandise is sold FOB Louisville, Kentucky. The purchase accepts these terms upon the issuance of a purchase order. Under the terms of FOB Louisville, Kentucky, all goods become the property of the customer upon Vetland Medical's delivery to its designated freight carrier. It is the responsibility of Vetland Medical to convey the goods to the carrier and provide a clean Bill of Lading (when applicable) or proof of shipment. The customer is responsible for transportation costs.

Vetland Medical will assist in any way possible in the event of loss or damage to merchandise and any subsequent claim against the carrier, but the responsibility for reporting such loss or damage and filing any claims remains with the customer

Any shortages or errors in shipment of goods must be reported to Vetland Medical within two (2) weeks of date of shipment in order for corrective action to be taken.

All merchandise to be returned must have prior authorization by Vetland Medical. An authorization number will be issued by Vetland Medical. This number must appear on the label, packing slip, and any other related documents. Goods received without authorization will be refused at Vetland Medical's receiving dock and returned at customer's expense

Notify shipping company if a damage claim needs to be filed. Take pictures of the box and damaged items. Retain box and all items as evidence.

NOTICE

The information contained in this manual is subject to change without notice.

COMMENTS

As part of our continuing effort to maintain the highest standards of quality in our manuals, we ask for your comments on this manual's accuracy, organization, clarity, and usefulness.

Please sent any comments by mail or email to the address below:

CONTACT US

Address:	Vetland Medical Sales & Services, LLC 2601 Holloway Road Louisville, KY 40299 USA
Phone:	1-502-671-1014
Toll Free (USA):	1-866-476-0589
Fax:	1-502-671-1019
E-mail:	info@vetlandmedical.com
Website:	www.VetlandMedical.com

When contacting us, please provide the model name, serial number, purchasing date, when trouble occurred, and the service needed.

PREFACE

To ensure safe operation and long-term performance stability, it is essential that you fully understand the equipment functions, operation, and maintenance before using the equipment. Please keep this manual in a safe place for easy retrieval.

To ensure operator and patient safety, use only parts and accessories that meet the manufacturer's requirements as recommended by Vetland Medical Sales & Services, LLC. Parts used which are not authorized by the manufacturer may cause damage to the product and may void the product warranty.

Symbols are used in this manual to help users operate this product safely and appropriately and to prevent any risk to patients or damage to materials.

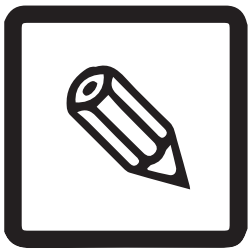
Please read and understand all warnings and precautions.

SAFETY SYMBOLS

WARNING
WARNING is used to indicate the presence of a hazard which can cause severe personal injury, death, or substantial property damage if the warning is ignored.

CAUTION
CAUTION is used to indicate the presence of a hazard which will or can cause minor personal injury or equipment damage if the caution is ignored

NOTE SYMBOL



NOTE
NOTE is used to notify the user of installation, operation, or maintenance information which is important but not hazard related

PRE-USE SAFETY PRECAUTIONS

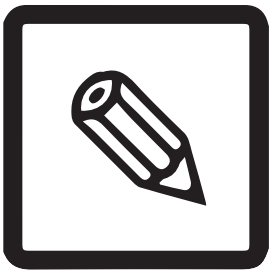
Please review the following before using the system:

WARNING

- △ The Tahoe Oxygen Concentrator is intended only to provide oxygen supply. It must be used in conjunction with oxygen devices that confirm proper pressures, flows, and oxygen concentrations are being used
- △ Always provide flow regulation and flow metering for the oxygen outlet
- △ Only qualified personnel should use the oxygen concentrator. Please read this User Manual before use.
- △ A backup source of oxygen supply is highly recommended for continued operation in the event of power failure.
- △ Use of this product is prohibited during Magnetic Resonance Imaging (MRI). A fire may break out from the induced current and the accuracy of the product and the MRI may be influenced by cross-interference.
- △ When the product is to be moved, make sure to turn it off and secure all electrical cords/cables and accessories for transport. Damaged cords or cables may cause fire or electric shock.
- △ All equipment should be checked regularly to ensure proper operation.
- △ Oxygen accelerates combustion, therefore, do not use this device near any volatile agents, oils, grease, solvents, or heat sources.
- △ Modification to the device may damage the device or create an environment of risk. Modifications will void all warranties and shall not be attempted.
- △ The device shall only be serviced by a qualified, competent technician.
- △ Use only the 2-prong double insulated power cord provided with the device.
- △ Clean the removable inlet filter routinely in order to keep device cool. Higher than normal temperatures indicate filter occlusion or fan malfunction.

WARNING 	△ Do not operate the Tahoe in an extremely wet environment. The Tahoe is protected against water vapor with the .3 micron filters. However, condensing water droplets could damage sieve material. △ In the event that you suspect the unit is not performing properly, discontinue use and contact technical support at Vetland Medical Sales & Services, LLC △ This unit provides life-sustaining oxygen but is not equipped to provide positive pressure ventilation alone, therefore, it is not to be used in life-support applications without first being connected to respiration equipment △ Electrical Shock Hazard - DO NOT remove covers connected to appropriate power source while connected to live AC
CAUTION 	o The Tahoe Oxygen Concentrator's intended use is to supply oxygen to anesthesia machines, utilizing flows up to 5 LPM. The Tahoe has the ability to produce beyond these flows, however, extended use beyond scope of intended purpose voids warranty protection. o When the Tahoe is set on the floor, take precaution to prevent tipping. Keep hoses and power cords away from foot traffic. o Place device in a dust-free environment that has adequate airflow for cooling. o Place unit in a safe manner, clear of obstructions. o Keep display visible so device status can be viewed during operation o Only connect the oxygen outlet to devices that are designed for 45-65 PSI oxygen operation. Use hoses rated for 100 PSI oxygen service o Do not operate the Tahoe in an unattended manner. o Keep the Tahoe in an upright position at all times. o Do not operate in a confined area.

PRE-USE SAFETY PRECAUTIONS

CAUTION 	△ Prior to operation, verify the air intake filter is clear of obstruction and is positioned properly. △ Damaged cords or cables may cause fire or electrical shock. △ Internal connections should be inspected by a competent technician on a routine basis during normal service cycles. △ Only manufacturer replacement parts shall be used for service or repair. △ Set the power switch to the OFF position when unit is not in use.
NOTE 	◘ Operation beyond the intended scope of the Tahoe Oxygen Concentrator for extended periods is not recommended as compressor and sieve material degradation will be accelerated and void the warranty. (The Tahoe may be operated at up to 20 liters per minute for short purge operation). ◘ The Class B compressor is thermal overload protected at 290° F. ◘ Moisture drastically degrades the sieve material life expectancy. DO NOT operate the unit in a high humidity environment. DO NOT allow moisture to enter the intake filter ◘ The Tahoe specifications of performance are based on operation at sea level.

HOW TO UNBOX SAFELY:

- Place Tahoe box in upright position
- Open the top flaps and remove the foam positioner
- Remove the Tahoe from the box by lifting it by the handle indentations upward and out of the box
- Remove the accessory bag with the manual, power cord, and oxygen hose

Return all foam packaging to the box and store in a cool, dry place for future shipping needs.

Read full manual before beginning Tahoe operation.

HOW TO MOUNT THE TAHOE TO A MACHINE OR STATION ON THE FLOOR:

The Tahoe is designed to be stationed on a base plate or set on the floor.

Take precautions to prevent tipping. Keep hoses and power cords away from foot traffic.

Place device in a dust-free environment that has adequate airflow for cooling. Keep display visible so device status can be viewed during operation.

If placing on the floor, be sure to maintain distance between the Tahoe and the device for which it is supplying oxygen as to not compromise the oxygen supply hose.

If placing the Tahoe on the anesthesia machine plate:

1. Remove the anesthesia machine "head"
2. Slide Tahoe plate over the pole until the plate rests on the caster base
3. Replace anesthesia machine "head"
4. Adjust plate caster and spacers until plate is level
   (See base plate instruction manual)
5. Lift Tahoe and place Tahoe casters into the openings of the plate so that the Tahoe cabinet rests on the plate with the power switch and machine status display facing forward
6. Connect O_2 supply hose to the Tahoe and the anesthesia machine O_2 DISS connectors
7. Connect power cord

HOW TO CONNECT POWER & OXYGEN HOSE:

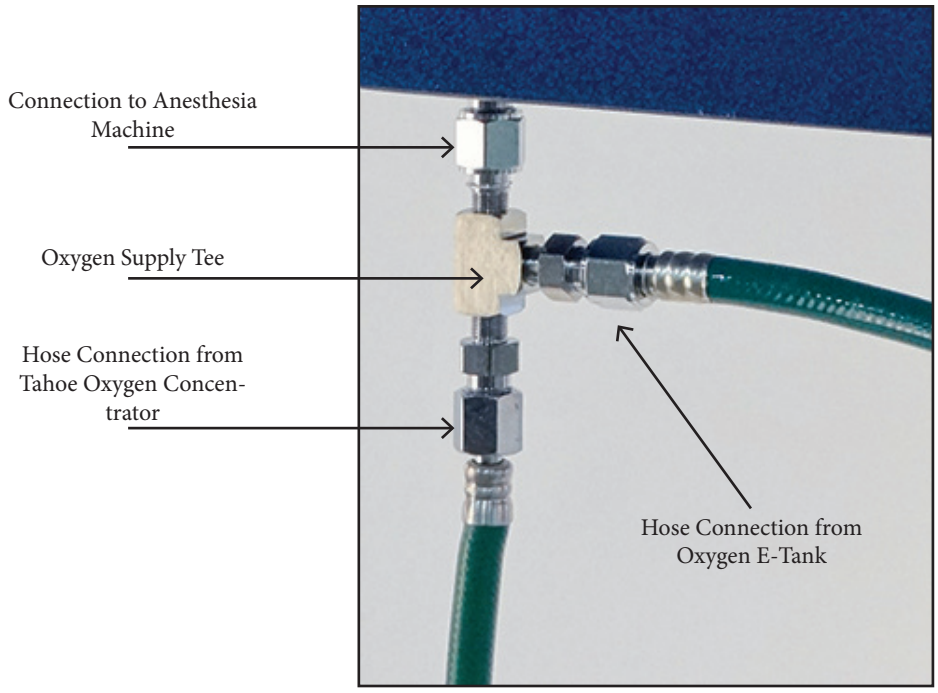
Use the two-prong double insulated cord supplied with the device. Be certain that the power supply is of the proper voltage, frequency, and amperage for the device.
(In USA, 120 VAC, 60 cycles per second, 10 amps)

In the USA, use DISS type oxygen fitting and hose for connection between Tahoe oxygen outlet (located at back of device) and receiving device. This hose connection must be wrench tight.

Only connect the oxygen outlet to devices that are designed for 45 to 65 PSI oxygen operation. Use hoses rated for 100 PSI oxygen service. When connecting in parallel to a regulated cylinder supply, always connect to the low pressure side of the regulator.

NEVER CONNECT HIGH PRESSURE (UNREGULATED) TO A DEVICE OR THE TAHOE

Always provide flow metering downstream from the Tahoe.



OPERATING PRINCIPLES

The power light will illuminate and valves to the sieve vessels and reservoir chambers are opened to release any trapped pressure. The 20,000 hour rated compressor then energizes and begins pulling room air to the air reservoir chamber, all the while, building pressure.

Valves opening and closing control air flow to the sieve vessels. Using pressure swing adsorption, the air passes through the sieve vessel and the nitrogen molecules are attached to the sieve zeolite, thereby allowing oxygen to pass through. The oxygen is stored in the oxygen reservoir chamber at >50 PSI and is ready for output to the facility's devices.

The processor controls the startup routine, compressor, valve timing, temperature monitoring, visual LED display, audio alarms, oxygen monitoring and hour meter. As your device requires it, the Tahoe supplies a regulated flow of oxygen at 50 PSI.

There are two over-temperature protections. The first is set at 140°F and if exceeded, will trigger an audio and visual alarm. The second is located directly within the compressor and is set at 290°F and if exceeded, will shut down the compressor.

The valves are rated for millions of cycles equivalent to 8 hours a day/every day for 11 years in a normal operational environment.

Lack of adequate airflow is the most likely cause for high internal temperatures; therefore, it is important to keep the air inlet filter and the secondary filters clean and free of debris and dust. The processor also houses the oxygen monitoring, which is performed with a high-tech Zirconium-based sensor that outputs varying voltages based on oxygen concentration. This sensor is rated for 10,000 hours of continuous use at 95% oxygen concentration.

- Green Light/Normal Output- Illuminated when oxygen concentrations are above medical grade percentages
- Yellow Light/Reduced Output- Illuminated when oxygen concentrations drop below medical grade percentages but above 70% oxygen
- Red Light/Low Output- Illuminated when oxygen concentrations drop below 70%.
  A single audible beep will sound every 30 seconds until oxygen percent rises above 70%
- Red Light/Service Needed- Illuminated when an over temperature situation has occurred or the oxygen sensor has failed.
  Multiple audible beeps will sound every 30 seconds

After all oxygen and electrical connections have been made and the device has been physically secured, the Tahoe is ready for operation.

1. Turn the Power switch to ON. After a few moments, you will hear the cooling fan turn on.
2. The device is in "Boot Up" mode. The valves will cycle for 12 seconds to relieve any pressure. The display LED lights will cycle on, then off. The compressor will then start.
   (Alarms are inactive during warm up)
3. Allowing flow will facilitate the oxygen percentage to rise quicker as the sieve must be cycled and purged to create oxygen. Without any flow, the sieve is idle. It is advisable to set the flow on the anesthesia machine between 2-4 liters per minute to allow the device to build up oxygen.
4. After 45-60 seconds, in normal condition, the system is supplying medical grade oxygen.
5. Verify before use:
   A. Verify that there is no mechanical risk
   B. Verify all connections are secure
   C. Verify adequate pressures and concentrations have been achieved
   D. Verify there is a reserve oxygen supply in the event of power outage or malfunction
6. The Tahoe is now ready for continuous operation.
7. To turn the device off, position the Power switch to OFF. The unit will shut down the compressor and all electronic circuits and open valves will release any residual pressures.

CLEANING

DO NOT use alcohol, chlorine, or oil based products to clean the unit.
Use only mild detergent and a damp cloth to clean the unit.
Keep the device and accessories away from any liquid.
Clean air filter by vacuuming accumulated dirt.
DO NOT place a damp filter into the unit

NOTE: Air enters the Tahoe Oxygen Concentrator via the air intake filter located on the front of the unit. The air intake filter removes particles from the air to protect the unit. As a result, the air intake filter must be cleaned of debris from time to time.
Remove the filter, brush out debris and vacuum particles. You may wash with warm, soapy water - rinse and allow to thoroughly dry before reinstalling.

(See NOTE on Page 8. Read: Moisture)
Verify the air intake filter is clean and positioned correctly prior to operation.

A secondary particulate filter (.3 micron) will need to be replaced as needed, depending on usage and environment.
Expectation is 6 months- 1 year.

Problem	Probable Cause	Solution
Unit does not power up	• AC fail • Cord disconnect • No AC at outlet • Internal circuit breaker has been activated	• Check that power cord is properly attached to unit and to live AC unit • Call technical support
My pressure does not seem to be adequate	• System has an external or internal leak • Elevation is significantly greater than sea level • Compressor performance has degraded	• Check all connections are tight • Operate at zero flow and note pressure status • Contact technical support with details for help determining leak cause • Rebuild compressor • See performance specs on Page 21
My oxygen % is not reaching correct levels	• Flows supplied exceed capabilities (see specs of oxygen concentration, page 21) • System has a leak • Elevation is significantly greater than sea level • Sieve degradation • Oxygen sensor issue	• Reduce flows to under 5 LPM and allow 3 minutes for oxygen sensor to respond • If your Tahoe has been operating normally for some time, check for leaks in hoses and connections. (Your flow gauge may be indicating a lower flow than is being produced by the Tahoe due to leakage) • A clogged internal filter may also cause reduced purity • Check your hour meter to determine if maintenance may be due • Contact technical support with details for help determining causes

TROUBLESHOOTING

Problem	Probable Cause	Solution
At higher flows, my oxygen concentration drops	• This is normal operations for flows above 5 LPM	• See specs/oxygen concentration page 21
My unit shuts down after a few minutes of operation	• The temperature sensor safety is triggered due to occluded inlet fan filter • Faulty AC outlet	• See page 14: Cleaning • Clean the filter by removing it from the case and vacuuming off accumulated dirt • Do no put damp filter in the Tahoe, as this may cause the molecular sieve to fail • Make sure fan is operating and the outlet vents are not restricted • Call technical support if unable to resolve • Verify unit is placed in area with adequate airflow • Confirm AC supply
At higher flows, my supply pressure drops	• This is normal operation for flows above 5 LPM	• See specs page 21
My device is much louder now	• Internal muffler connection has been dislodged • Compressor bearings are sealed and normally are serviceable for thousands of hours of operation. Occasionally, bearing wear will cause a change in sound level	• Very sudden changes in noise levels should be referred to technical support

PRODUCT WARRANTY

Vetland Medical Sales & Services, LLC's Tahoe Oxygen Concentrators are guaranteed to perform per specifications noted on page 21 for a period of one (1) year from the date of delivery. The compressor is provided a three (3) year warranty period from the date of delivery. Authorized warranty repairs shall include workmanship and material.

The following are exceptions to this warranty:

- Defects caused by abuse, misuse, mishandling, or by modifications not authorized by Vetland Medical Sales & Services, LLC.
- Deficiencies caused by operations outside the scope of intended use beyond published operating specifications (see page 21)
- Rubber/plastic goods, hoses, power cord and consumable components and materials are warranted to be free of defects at time of delivery
- Deficiencies caused by inadequate maintenance

Application of this warranty is subject to the following conditions:

- Merchandise returned for warranty credit or replacement must have been purchased from Vetland Medical within the specified warranty period or proof of installation within that time will be required
- Vetland Medical must promptly be notified upon detection of the defective product or material
- If the defective product or material cannot be repaired at the customer's site, it must be returned to Vetland Medical.
  Shipping costs are the responsibility of the customer, both to and from Vetland Medical
- Examination of the product or material by Vetland Medical must confirm that the defect is covered by the terms of this warranty
- Notification of the defective product or material must be received by Vetland Medical no later than two (2) weeks following the expiration of this warranty
- A Returned Goods Authorization number must be obtained from Vetland Medical and shall accompany any equipment being returned under this warranty.
  Refer to the Returned Goods Policy (page 19)

RETURNS

The following are accepted reasons for return of merchandise:

- Defective goods
- Customer order error
- Vetland Medical order or shipping error

Goods returned are subject to the terms of any applicable warranty. Defective products will be accepted for return only during the warranty period and only when accompanied by a Returned Goods Authorization (RGA) number provided by Vetland Medical. Goods to be returned due to customer's order error must have been received by the customer within thirty (30) days prior to the request of return.

They must be received by Vetland Medical within thirty (30) days after the return authorization was issued. These goods must be returned unused in the original shipping container and are subject to a 20% restocking charge. The restocking charge will not be applied for defective goods or those shipped due to Vetland Medical's error.

The following merchandise is not eligible for return unless proven to be defective:

- Merchandise for which no Returned Goods Authorization (RGA) was issued by Vetland Medical Sales & Services, LLC
- Merchandise specially ordered by or manufactured for the customer/ special orders/custom orders
- Used merchandise or products not in the original container
- Merchandise held over thirty (30) days from day of receipt by the customer
- Merchandise which has been altered or abused

Upon receipt of Returned Goods Authorization, an inspection of the merchandise will be conducted and appropriate action will be taken.

Vetland Medical's decision regarding deposition of these goods is final

All items to be returned should be shipped, prepaid to:
Vetland Medical Sales & Services, LLC
2601 Holloway Road
Louisville, KY 40299 USA
Returned Goods Authorization Number (when applicable)

The preceding information is the sole warranty provided by Vetland Medical. No other warranty, expressed or implied, is intended. Representatives of Vetland Medical or its agents are not authorized to modify the terms of this warranty without the signature of approval from Vetland Medical's current president.

PAYMENT TERMS

Merchandise is shipped prepaid or COD. FOB Louisville, Kentucky. Net 30 days to customers with established credit. Please contact the Customer Service Department concerning credit information

SHIPPING

All merchandise is sold FOB Louisville, Kentucky. The purchaser accepts these terms upon the issuance of purchase order. Under the terms of FOB Louisville, Kentucky, all goods become the property of the customer upon Vetland Medical's delivery to its designated freight carrier. It is the responsibility of Vetland Medical to convey the goods to the carrier and provide a clean Bill of Lading (when applicable) or proof of shipment. The customer is responsible for transportation costs.

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RETURNED GOODS POLICY

When requesting authorization to return merchandise, the following information should be provided:

- Customer purchase order number and date
- Vetland Medical shipping date and method of shipment
  (See packing slip or Bill of Lading)
- Vetland's invoice date and number
- Reason for return

LIMITATION OF LIABILITY

All Vetland Medical products are ONLY to be used for VETERINARY purposes. Vetland Medical products are NOT designed to be used for human patients.

Vetland Medical's liability, whether arising out of or related to manufacture and sale of goods, their installation, demonstration, sales representation, use, performance or otherwise, including any liability based upon Vetland Medical's Product Warranty is subject to and limited to the exclusive terms and conditions as forth above, whether based upon breach of warranty or any other cause of action whatsoever, regardless of any fault attributable to Vetland Medical and regardless of the form of action (including without limitation, breach of warranty, negligence, strict liability or otherwise).

The stated Express Warranties are in lieu of all warranties, express or implied, included without limitation warranties of merchantability, fitness or any particular purpose or non-infringement.

Vetland Medical shall not be liable for, nor shall buyer be entitled to recover any special incidental or consequential damages or for any liability incurred by buyer to any third party in any way arising out of or relating to the goods.

In the unlikely event of a disagreement, the place of venue is:
Louisville, KY 40299

SPECIFICATIONS

Power Consumption	<400 Watts	5 Amps (Power Supply UL Labeled)	
Compressor Range *1	35-65 PSI/regulated output pressure 50 PSI ± 5 PSI (Compressor UL Labeled)		
High Elevation Operation	For every 1,000 feet increase in elevation above 5,000 feet, PSI will drop approximately 2 PSI		
Dimensions	Height: 24.5"	Width: 15.5"	Depth: 14.5"
Weight	51 Pounds		
Noise	44 dB (± 4 dB)		
Electrical	110 - 120 VAC	60 Hz	5 Amps
	2-prong double insulated plug (USA)		
Storage Temperature	-5°F - 110°F		
Operating Temperature	50°F - 95°F		
Operating Humidity *1	0 - 95%	Non-Condensing	
Oxygen Concentration[*1 *2 *3]	1-5 LPM 5-8 LPM 8+ LPM	93% 80-90% Range 70-80% Range	±3%
Oxygen Supply Pressure *1 *2 *3	1-5 LPM 5-8 LPM 8+ LPM	50 PSI 40-50 PSI Range 30-40 PSI Range	±5 PSI
Oxygen Pressure Relief	75 PSI		
Output Connection	Oxygen DISS Male		

*1 Based on atmospheric pressure of 14.7 PSI (sea level) at 70°F

*2 Extended periods of usage beyond intended scope of 5 LPM flow will void the warranty

*3 Operating the unit outside the intended use specifications of temperature range, humidity range or flow range will negatively effect performance and may cause damage to the unit, which voids the warranty

ALERTS

AUDIO/VISUAL ALERTS		
Hour Meter	Displays run time	
High Temperature	Multiple Audible Tone Every 30 Seconds	**Red** LED Illuminated
Medical Grade Oxygen % **Normal Function**	No Tone	**Green** LED Illuminated
Oxygen Concentration >70% < Medical Grade Oxygen **Reduced Output**	No Tone	**Yellow** LED Illuminated
Oxygen Concentration <70% **Low Output**	Single Audible Tone	**Red** LED Illuminated
Oxygen Sensor Failure	Multiple Audible Beep Sequence Every 30 seconds	**Red** LED Illuminated

MAINTENANCE SCHEDULE

Daily	• Inspect & clean air inlet filter [*1] (Perform more often if in dusty environment or if operating temperature of compressor is exceeded)
As Needed	• Replace inlet secondary filter as needed • Replace secondary .3 micron filter as needed (normal usage would require replacement every 6 months-1 year) • Replace compressor cups & seals as needed (normal usage would require rebuild at 20,000-35,000 hours)

[*1] Filter must be completely dry before reinserting
Use caution that NO moisture ever enters the device, as the sieve material will be rendered useless and the warranty will be void

Address:	Vetland Medical Sales & Services, LLC 2601 Holloway Road Louisville, KY 40299 USA
Phone:	1-502-671-1014
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Manufactured in the USA for/by
Vetland Medical Sales & Services, LLC.
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