



Oxygen Concentrator Service Manual



MN069-1
rev A



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Table of Contents

Section 1.0

Introduction

1.1	Equipment Provider Responsibility	1-1
1.2	Safety Guidelines and Important Notices	1-2
1.3	Safety Rules	1-3
1.4	QuietLife Product Warranty	1-4
1.5	How to Use this Service Manual	1-5
1.6	General Information	1-6
1.7	Functional Specifications	1-7

Section 2.0

Handling

Procedures

2.1	Unpacking	2-1
2.2	Operation Check	2-2
2.2.1	Initial Check	2-2
2.2.2	Oxygen Purity Test	2-2
2.3	Conditions & Procedure for Returning a QuietLife Unit	2-2
2.4	Packing for Shipment	2-3

Section 3.0

Patient

Instructions

3.1	General Instructions	3-1
3.2	Routine Maintenance by the Patient	3-1
3.2.1	Cleaning the Air Intake Gross Particle Filter	3-1
3.2.2	Checking the Alarm System Battery	3-1

Section 4.0

Operation

4.1	Description of Operation	4-1
4.2	Start-Up	4-1
4.3	Alarm System	4-1
4.3.1	Battery Test	4-2
4.3.2	Power Failure Alarm Test	4-2
4.3.3	High Pressure Alarm Test	4-2
4.3.4	Low Pressure Alarm Test	4-2
4.3.5	Oxygen Monitor Test	4-3
4.4	Operating Pressure Check	4-3

Service

5.1	Compressor Assembly Replacement	5-1
5.1.1	Compressor Assembly Removal	5-1
5.1.2	Compressor Assembly Installation	5-2
5.2	Sieve Bed Replacement	5-3
5.2.1	Sieve Bed Removal	5-3
5.2.2	Sieve Bed Installation	5-3
5.3	Exhaust Muffler Replacement	5-4
5.3.1	Blowdown Assembly Removal	5-4
5.3.2	Muffler Removal	5-4
5.3.3	Muffler Installation	5-4
5.4	Capacitor Replacement	5-5
5.4.1	Capacitor Removal	5-5
5.4.2	Capacitor Installation	5-5
5.5	Blower Replacement	5-5
5.5.1	Shelf Assembly Removal	5-6
5.5.2	Blower Removal	5-7
5.5.3	Blower Installation	5-7
5.6	Transformer Replacement	5-7
5.6.1	Transformer Removal (Main PCB)	5-7
5.6.2	Transformer Installation (Main PCB)	5-8
5.6.3	Transformer Removal (Oxygen Monitor PCB)	5-8
5.6.4	Transformer Installation (Oxygen Monitor PCB)	5-8
5.7	Solenoid Valves	5-8
5.7.1	Feed or Waste Valve Rebuilding	5-9
5.7.2	Feed or Waste Valve Re-assembly	5-9
5.7.3	Equalization (EQ) Valve Rebuilding	5-9
5.7.4	Equalization (EQ) Valve Re-assembly	5-10
5.7.5	Solenoid Valve Coil Replacement	5-10
5.7.6	Valve Cleaning	5-10
5.8	Control Panel Assembly Replacement	5-10
5.8.1	Control Panel Assembly Removal	5-10
5.8.2	Control Panel Installation	5-11
5.8.3	Control Panel Main PCB Replacement	5-11
5.8.4	Control Panel Main PCB Removal	5-11
5.8.5	Control Panel Main PCB Installation	5-12
5.8.6	Hour Meter / O2 Alarm PCB Replacement	5-12
5.8.7	Hour Meter / O2 Alarm PCB Removal	5-12
5.8.8	Hour Meter / O2 Alarm PCB Installation	5-12
5.8.9	Circuit breaker Replacement	5-13
5.8.10	Circuit Breaker Removal	5-13

	5.8.11	Circuit Breaker Installation	5-13
	5.8.12	Power (On/Off) Switch Replacement	5-13
	5.8.13	Power Switch Removal	5-13
	5.8.14	Power Switch Installation	5-13
	5.8.15	Flow Selector Replacement	5-14
	5.8.16	Flow Selector Removal	5-14
	5.8.17	Flow Selector Installation	5-14
	5.9	Main PCB Replacement	5-14
	5.9.1	Main PCB Removal	5-15
	5.9.2	Main PCB Installation	5-15
	5.10	O2 Monitor PCB Replacement	5-15
	5.10.1	O2 Monitor PCB Removal	5-15
	5.10.2	O2 Monitor PCB Installation	5-16
	5.11	Power Cord Replacement	5-16
	5.11.1	Power Cord Removal	5-16
	5.11.2	Power Cord Installation	5-17
Section 6.0			
Maintenance	6.1	Routine Maintenance	6-1
	6.2	Bacteria Filter Replacement	6-1
	6.3	Compressor Intake Filter	6-1
	6.3.2	Box Filter Replacement	6-2
	6.3.3	Filter Capsule / Felt Cylinder Replacement	6-2
	6.3.3.1	Felt Cylinder Replacement	6-2
	6.3.3.2	Filter Capsule Replacement	6-2
	6.4	Air Intake Gross Particle Filter	6-3
	6.5	Battery Replacement	6-3
Section 7.0			
Troubleshooting			
Appendix A			
	◆	Process Schematic	A-1
Appendix B			
	◆	Wiring Schematic	B-1
Appendix C			
Specifications	◆	Classification	C-1
	◆	Symbols	C-2

List of illustrations

Appendix A

Figure A.1 QuietLife Basic Unit - Process Schematic

Appendix B

Figure B.1 QuietLife Basic Unit - Wiring Schematic

1.0 Introduction

1.1 Equipment Provider Responsibility

All Home Care Equipment Providers of the QuietLife™ Oxygen Concentrator must assume responsibilities for handling, operational check-out, patient instruction, maintenance, repair, and parts replacement. These responsibilities are outlined below and throughout this manual.



QuietLife units must not be used for or with any life supporting applications. Geriatric, pediatric, or any other patients unable to communicate discomfort while using this machine may require additional monitoring. Advise patients to immediately notify their Equipment Providers and / or physicians in case of an alarm or any discomfort.

As an Equipment Provider, you must do all of the following:

- ◆ Inspect the condition of each QuietLife unit immediately upon delivery to your business location. Note any sign of damage, external or internal, on the delivery receipt, and report it directly to both the freight company and AirSep Corporation immediately.
- ◆ Check the operation of each QuietLife before delivery to a patient. Always operate the unit for a reasonable length of time (minimum 45 minutes), and check that the oxygen purity level is within specifications. (Test the alarm system as described in Section 4.3 of this manual.)
- ◆ Deliver QuietLife units only to patients authorized by a physician's prescription. The QuietLife must not be used as a life-supporting device. A backup supply of oxygen must be available.
- ◆ Instruct patients to notify their physicians and / or Equipment Providers if they experience any signs of discomfort.
- ◆ Instruct each patient how to perform routine maintenance of the air intake gross particle filter and how to check the alarm system battery. (Refer to Section 3.2.)
- ◆ Perform and record routine maintenance every 90 days and in between patient's use. Replace the bacteria filter after every 10,000 hours.
- ◆ Perform a test of oxygen purity on the QuietLife every 90 days. (Refer to Section 2.2.2.)
- ◆ Be available to service each patient at any time.
- ◆ Repair components and replace parts only as outlined in this manual. Use only AirSep parts for replacement in the QuietLife Oxygen Concentrators.

- ◆ Refer to the QuietLife Product Warranty if parts replacement is required within the warranty period.
- ◆ Return a QuietLife unit ONLY as described in the “Conditions and Procedure for Returning a QuietLife” section of this manual. (Refer to Section 2.3)

1.2 Safety Guidelines and Important Notices

To ensure safe operation and proper unit maintenance, AirSep Corporation recommends that you keep this service manual readily available for reference.

As you read the manual, pay special attention to the WARNING, CAUTION, and NOTE messages. They identify safety guidelines or other important information as follows:



Describes a hazard or unsafe practice that can result in severe bodily injury or death.



Describes a hazard or unsafe practice that can result in minor bodily injury or property damage.



Provides information important enough to emphasize or repeat

1.3 Safety Rules

Carefully review and familiarize yourself with the following important safety information about the QuietLife Oxygen Concentrator.



This device manufactures high purity oxygen, which promotes rapid burning. Allow no smoking by anyone (including the patient) or any open flames within five feet of this device or the oxygen carrying tubing. Use no oil, grease, or petroleum-based products on or near the unit. Disconnect the power cord before you clean or service it.



Electrical shock hazard. Do not remove covers while the unit is plugged in. Allow only a qualified service technician to remove the covers. Do not use extension cords with this unit.



The unit should be located so as to avoid pollutants or fumes.

1.4 QuietLife Product Warranty

AirSep Corporation (“AirSep”) to the party purchasing from AirSep (the “original purchaser”) the QuietLife Oxygen Concentrator unit to be free from defect in parts and workmanship for two years from the date of shipment to the original purchaser under normal use, maintenance and operation. TO THE EXTENT PERMITTED UNDER APPLICABLE LAW, ALL WARRANTIES WITH RESPECT TO SUCH UNIT SHALL ONLY EXTEND TO AND BE FOR THE BENEFIT OF THE ORIGINAL PURCHASER AND SHALL NOT BE ASSIGNABLE TO, EXTEND TO OR BE FOR THE BENEFIT OF ANY OTHER PARTY. AirSep’s obligations under this warranty are limited, at AirSep’s option, to the repair, replacement or refunding the purchase price of any such unit of equipment (or part thereof) found by AirSep to be defective in parts or workmanship; provided, however, that AirSep shall have no obligation hereunder with respect to a defective part unless it receives written notice of such defect prior to the expiration of the applicable warranty period as referenced above.

Each unit of equipment for which a warranty claim is asserted shall, at the request of AirSep, be returned on a prepaid basis with proof of purchase date to the AirSep factory specified by AirSep at the expense of the original purchaser. Replacement parts shall be warranted as stated above for the unexpired portion of the original warranty. This warranty does not extend to any unit or part subjected to misuse, accident, improper maintenance or application, or which has been repaired or altered outside of the AirSep factory without the express prior written authorization of AirSep.

THE FOREGOING WARRANTY IS THE ONLY WARRANTY MADE BY AIRSEP WITH RESPECT TO THE EQUIPMENT (OR ANY PART THEREOF) AND IS IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IN FACT OR IN LAW, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY OR THE FITNESS FOR ANY PARTICULAR PURPOSE. IT IS EXPRESSLY UNDERSTOOD THAT THE SOLE AND EXCLUSIVE REMEDY FOR ANY DEFECT IN PARTS OR WORKMANSHIP IS LIMITED TO ENFORCEMENT OF AIRSEP’S OBLIGATIONS AS SET FORTH ABOVE, AND AIRSEP SHALL NOT BE LIABLE TO ORIGINAL PURCHASER OR ANY OTHER PARTY FOR LOSS OF USE OF THE EQUIPMENT, LOST PROFITS OR FOR ANY OTHER SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES (EVEN IF AIRSEP HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES).

Notwithstanding anything to the contrary contained herein, during the applicable warranty period, as specified above, AirSep will pay the cost of return freight charges to the original purchaser for any equipment found by AirSep to be defective. For warranty repairs performed during the first 90 days from the date of invoice, AirSep will pay freight both ways. After the applicable parts warranty has expired, the original purchaser is responsible for freight both ways.

1.5 How to Use this Service Manual

This manual specifically details for you, the Equipment Provider, the procedures to service the AirSep QuietLife Oxygen Concentrator.



This manual provides instruction for Equipment Providers only. This is not a manual for QuietLife patient use. Provide patients with the QuietLife Patient Manual.

To prevent unauthorized use, do not leave your QuietLife Service Manual or any reproduced pages at the patient location.

This manual includes complete sections in the following areas:

Introduction.....	(1.0)
Handling Procedures.....	(2.0)
Returning the QuietLife for Factory Service (RGA).....	(2.3)
Maintenance Performed by the Patient.....	(3.2)
Operation of the QuietLife.....	(4.0)
Service.....	(5.0)
Maintenance Performed by the Equipment Provider.....	(6.0)
Troubleshooting.....	(7.0)

All section titles and subject subtitles are listed in the Table of Contents on the first pages of this manual. A separate troubleshooting chart is located in the last section of this manual.

Appendix A provides a process schematic.

Appendix B includes a wiring schematic for your reference.

Appendix C provides CSA-approved specifications for the QuietLife Oxygen Concentrator and a list of symbols referenced on the unit.



When requesting parts or service, provide the unit's model, serial number, hour meter reading, oxygen purity level, and operating pressure. Check that all part numbers are listed correctly. Complete and accurate information helps to expedite your request.

1.6 General Information

This manual provides the information needed by Equipment Providers to perform periodic maintenance, to repair components, and to replace parts of the QuietLife Oxygen Concentrator. The QuietLife Oxygen Concentrator is a self-contained air separation device that can supply up to 3 liters per minute (lpm) of high purity oxygen. This device is intended for use by patients who require supplemental oxygen therapy as prescribed by their physicians.

The QuietLife unit uses a pressure swing adsorption (PSA) process to separate oxygen from room air. This process uses two sieve beds (canisters) filled with a molecular sieve material called zeolite. As room air enters the first sieve bed, the nitrogen in the air attaches (adsorbs) to the zeolite while the oxygen passes freely through the material and out of the bed for the patient's use. When the bed reaches its capacity to hold nitrogen, the process switches to the other bed, while the first bed is purged (cleaned) of the nitrogen. One bed makes oxygen while the other bed is purged of the nitrogen for the next cycle. The sieve material is completely regenerative and lasts indefinitely under normal conditions.



NOTE

The design of the QuietLife Oxygen Concentrator allows for home patient therapy under the direction of a qualified, licensed physician. An alternate source of oxygen must be available if a power failure or equipment malfunction occurs. Instruct the patients to consult their physicians or Equipment Providers for the type of backup system required.



WARNING

This unit must not be used for or with any life-support applications. Geriatric, pediatric, or any other patients unable to communicate discomfort while using this machine may require additional monitoring. Advise patients to immediately notify their Equipment Providers and / or physicians in case of an alarm or any discomfort.

1.7 Functional Specifications

The following table lists the specifications for the QuietLife.

Oxygen Concentration:*

Flow (LPM)	Oxygen Concentration (% O ₂)
0.25 - 1.0	90 +/- 3
1.5 - 3.0	90 +/- 3

Dimensions:	16.5 in. deep (419 mm) 13.62 in. wide (346 mm) 26.42 in. high (6671 mm)
Weight:	78 lbs. (34.5 KG)
Sound Level:	41 dBA or less (AS047-1) 40 dBA or less (AS047-2)
Voltage:	120 VAC, 60 Hz (AS047-1). 220 - 230 VAC, 50 Hz (AS047-2).
Power:	360 Watts maximum (AS047-1) 280 Watts maximum (AS047-2)
Response Time:	5 minutes to obtain maximum purity following initial start-up or after an extended shut-down.
Alarms:	Power failure Low Purity (85% ± 3%) Low Pressure (5 psig ± 2 PSIG) High Pressure (40 psig ± 2 PSIG)
Flow Rate:	3 lpm ± 0.15 lpm 0.25 - 2.5 lpm ± 10%
Maximum Outlet Pressure:	6.0 psig +/- 10%
Positioning:	Locate the back of the unit a minimum of 12 inches from the wall and clear of any obstruction. Operate the unit in an upright position.
Operating Temperature Range:	55°F (13°C) -100°F (38°C)

Storage Temperature Range: 45°F (7°C) – 120°F (49°C)

*Based on an atmospheric pressure of 14.7 PSIA at 70°F (21°C.)

2.0 Handling Procedures

2.1 Unpacking

- 1) Open and inspect all cartons (that contain units) upon delivery. If the exterior of a unit's carton is damaged, note it on the freight bill signed by the driver.
- 2) Unpack the unit at once. To remove the concentrator from its carton, lift the box up and over the top of the unit. Once the outer box is removed the concentrator must be lifted and the bottom carton removed.
- 3) Inspect the cabinet exterior thoroughly for damage.
- 4) Remove the cabinet cover and inspect the interior for damage.
- 5) If you find any concealed damage, do not discard the shipping carton. Call the freight company who made the delivery, and file a concealed damage claim.
- 6) Remove the 7 flat head screws from the side compartment cover and separate the cover from the chassis.
- 7) Inspect the inside of the compartment for shipping damage.
- 8) Cut and remove the two straps around the compressor. The straps may be removed by pulling them from underneath the compressor tray.
- 9) Remove the two foam blocks located below the compressor (save for later use).
- 10) Plug the two pin connector from the compressor into the connector from the shelf. Once connected, the wires and connector should be routed behind the tubing that runs along the side of the compressor.
- 11) Replace the compartment cover and tighten the 7 flat head screws to a maximum of 5 in-lb.



Over tightening of the screws will cause damage to the compressor compartment cover.

- 12) Slide the cabinet cover over the chassis of the unit. Do not force the cover over the chassis, if there is resistance, check for obstructions in the cover path. Tighten the 4 screws (with washers) to a maximum of 10 in-lb.
- 13) The unit is now ready for operation.



When the QuietLife unit is being transported by any means other than its own casters, the compressor must be supported by the two foam blocks that were removed in step 9. Once the unit reaches its destination, the foam blocks should be removed. Failure to adhere to this procedure may result in damage to the unit that will not be covered by the warranty.

2.2 Operation Check

AirSep tests every QuietLife thoroughly after manufacture. You must perform the following test to ensure that no damage occurred in shipping or handling.

2.2.1 Initial Check

- 1) Plug in the power cord of the unit, and set the ON/OFF switch to the *ON* position. Check to see if the following occurs:
 - a) The red alarm light and a continuous alarm sounds for approximately 5 seconds.
 - b) Oxygen monitor lamp will illuminate until the O₂ purity rises above 85% \pm 3% and then it will turn off.
 - c) The green *Power ON* lamp will remain illuminated while the ON/OFF switch is in the *ON* position.

* If any of the items listed above do not occur, refer to the troubleshooting section of this manual.

- 2) Turn the flow selector dial to the 3 lpm setting.
- 3) Perform an oxygen purity test as described in the next section of this manual.

2.2.2 Oxygen Purity Test

To ensure that the unit's output of oxygen is within specification, you must perform an oxygen purity test regularly. Test the unit upon delivery to a patient and at periodic intervals (at least every 90 days).

- 1) If an oxygen humidifier bottle is used, remove it from the oxygen outlet.
- 2) Attach a calibrated oxygen purity analyzer to the oxygen outlet.
- 3) Set the product flow rate to 3 lpm or to the rate that matches the patient's prescription.
- 4) Set the unit's ON/OFF power switch in the *ON* position (it takes approximately five minutes for the oxygen purity to stabilize). Take an oxygen purity reading. If the purity reading is not within specification, refer to the troubleshooting section of this manual.
- 5) Disconnect the oxygen analyzer, and reconnect the humidifier bottle if used.
- 6) Adjust the flow selector knob to the prescribed level.

2.3 Conditions & Procedure for Returning a QuietLife Unit.

If you need to return a unit for repair, you must obtain PRIOR APPROVAL, in the form of a Return Goods Authorization (RGA) number from AirSep Corporation.

Write the RGA number clearly on the outside of the shipping carton. To obtain an RGA number, call either the Customer or Technical Service Department at (716) 691-0202 with the serial number and hour meter reading on the unit.

- ◆ Return each QuietLife unit in its original packaging.
- ◆ Be certain to insure merchandise, and properly pack it for shipping. AirSep assumes no responsibility for damage that occurs in transit.
- ◆ UPS returns of a QuietLife unit must have a minimum of \$2,000 in declared value.
- ◆ You must prepay shipping charges on all returns.



Do not return any unit to AirSep without an RGA. AirSep refuses any unauthorized returns.



If you need to call for service assistance, have the Model, Serial Number, Hour Meter Reading, Oxygen Purity Level, and Operating Pressures readily available

2.4 Packing for Shipment

It is very important to properly pack the QuietLife unit for shipment. This helps to prevent shipping damage. Follow the steps below:

- 1) Remove the humidifier bottle if attached.
- 2) Wrap the power cord onto the power cord holders on the back of the unit.
- 3) Place the two foam blocks between the compressor and compressor plate.
- 4) Be sure the compressor compartment cover and outside cover are fastened.
- 5) Place the unit on the original bottom insert, make sure the casters and exhaust duct fit into the holes in the insert.



When the four casters and exhaust duct line up with the cutout section of the bottom insert, the unit is in the box properly.

- 6) Place the plastic shipping bag over unit.

- 7) Place the top insert on the unit. Place the original shipping carton over the top of the unit.
- 8) Use two banding straps around the outer carton and bottom inserts to secure the carton.
- 9) Write the Return Goods Authorization (RGA) number on the outside of the shipping carton.

3.0 Patient Instructions

3.1 General Instructions

It is important that patients thoroughly understand how to operate the AirSep QuietLife unit. This enables proper treatment as prescribed by a qualified, licensed physician. You must explain that the purpose of this therapy is to alleviate symptoms. If patients experience any discomfort or the unit alarms, they must notify their Equipment Provider and / or physician immediately.

You, as the Equipment Provider, are responsible to see that each patient receives the Patient Manual. Explain each step in the operation of the unit to the patient in reference to this manual.

3.2 Routine Maintenance by the Patient

To ensure accurate output and efficient operation of the unit, the patient must perform two simple routine maintenance tasks:

- ◆ Clean the air intake gross particle filter
- ◆ Check the alarm system battery

3.2.1 Cleaning the Air Intake Gross Particle Filter



The patient must clean this filter weekly, as described below. The filter may require daily cleaning if the QuietLife unit operates in a harsh environment such as a house heated by wood, kerosene, or one with excessive cigarette smoke.

Remove the dirty filter from the filter holder, and wash it in a warm solution of soap and water.

- 1) Rinse the filter thoroughly, and remove excess water with a soft absorbent towel.
- 2) Replace the filter.

3.2.2 Checking the Alarm System Battery

The alarm system battery is tested each time the ON/OFF switch is set to the *ON* position. A continuous alarm sounds for approximately five seconds to indicate a good battery. If the alarm sounds weak, or no alarm sounds at all, instruct the patient to call the Equipment Provider immediately. Refer to section 6.5 for the battery replacement procedure.

4.0 Operation

4.1 Description of Operation

The process schematic (appendix A) shows the normal flow of air through the QuietLife™ Oxygen Concentrator. Air is drawn into the QuietLife cabinet through an external air intake gross particle filter. Before this air enters the compressor it is filtered once again by an additional filter. Pressurized air then exits the compressor and passes through a heat exchanger. The heat exchanger reduces the temperature of the compressed air. Next, a two-way solenoid feed valve directs the air into one of the two sieve beds that contain molecular sieve. The unique property of molecular sieve enables it to physically attract (adsorb) nitrogen when air passes through this material, thus producing high purity oxygen.

There are two sieve beds: while one produces high purity oxygen, the other is purged of the nitrogen it adsorbed (collected) while it made oxygen. Each adsorber produces oxygen for approximately 7 seconds and delivers it to the mixing tank. Oxygen exits the mixing tank through two pressure regulators, bacteria filter and flow control valve. The flow control valve controls the amount of oxygen delivered to the patient. The QuietLife unit can deliver up to 95% pure oxygen at flow rates from 0.25 - 3 lpm.

4.2 Start-Up

The QuietLife Oxygen Concentrator accepts household electrical power.

- 1) Uncoil the power cord *completely* from its holder before use, and plug in the unit.
- 2) Set the ON/OFF switch to the *ON* position, and observe the following:
 - ◆ The green light on the front panel will light.
 - ◆ The audible alarm sounds loudly for approximately 5 seconds. This indicates the battery for the alarm is good.
 - ◆ The red alarm light will remain on for approximately 5 seconds.
 - ◆ The Oxygen Monitor's Alarm light remains on until the oxygen purity reaches $85\% \pm 3\%$ (approximately two minutes)

4.3 Alarm System

The QuietLife Oxygen Concentrator is equipped with a battery-powered alarm system, which sounds a continuous and loud alarm when a power failure occurs. It sounds an intermittent alarm if the high or low pressure switches are activated or if the oxygen monitor detects lower than therapeutic levels of oxygen purity. The alarm remains *ON* until you correct the alarm condition or you set the ON/OFF switch to the *OFF* position. Refer to section 7.0 for a list of probable alarm causes

4.3.1 Battery Test

When the QuietLife unit is turned *ON*, an audible alarm sounds for 5 seconds to indicate the condition of the battery.



The audio alarm must sound loudly for approximately five seconds when the unit is turned *ON* to indicate the battery is in good condition.

4.3.2 Power Failure Alarm Test

To test the power failure alarm, take the following step:

Unplug the unit, and set the ON/OFF switch to the *ON* position.

This should immediately activate the audio alarm. If it does not, refer to the troubleshooting chart in Section 7.0 of this manual.

4.3.3 High Pressure Alarm Test

- 1) Remove the orange plug and connect a pressure gauge (0-60 psig.) to the test port located on the top deck of the concentrator.
- 2) Remove the connector with the brown wire from the left rear terminal on the valve block.
- 3) Turn the concentrator *ON*.
- 4) Observe the pressure gauge and record the point that the concentrator alarms. This value should be within the acceptable limit of 38 - 42 psig for the High Pressure Alarm.
- 5) Turn the unit's ON/OFF switch to the *OFF* position and replace the brown wire that was removed from the valve block.

4.3.4 Low Pressure Alarm Test

- 1) Remove the orange plug from the pressure test port and connect a pressure gauge (0-60 psig).
- 2) Remove the 7 flat head screws from the compartment cover and separate the cover from the chassis.
- 3) Remove the 1/8" OD tubing from the connector on the front of the valve block.
- 4) Turn the unit's ON/OFF switch to the *ON* position.

- 5) An alarm should continually sound. Slowly insert the 1/8"OD tubing back into the connector on the front of the valve block while watching the pressure gauge. The alarm should stop when the pressure rises above 5 psig \pm 2 psig.
- 6) Turn the unit's ON/OFF switch to the *OFF* position and replace the tubing on the front of the valve block.
- 7) Replace the compartment cover and tighten the 7 flat head screws to a maximum of 5 in-lb.



Over tightening of the screws will cause damage to the compartment cover.

4.3.5 Oxygen Monitor Test

A test may be performed to verify the operation and "set point" of the oxygen monitor.

- 1) Connect a tube from the oxygen outlet on the front of the concentrator to an oxygen analyzer.
- 2) Turn the concentrator *ON* and set the flow rate to 3 lpm.
- 3) The O2 "Alarm" light should be on at this point.
- 4) Once the oxygen purity of the concentrator is above 85% \pm 3% the O2 alarm light should go out.
- 5) Remove the connector with the purple wire from the terminal of the EQ valve solenoid. The oxygen purity will slowly begin to drop, as the purity drops observe the O2 alarm light, it should illuminate when the oxygen purity drops below 85% \pm 3%.
- 6) After 15 minutes an audible alarm should sound.
- 7) Turn the concentrator *OFF* and replace the connector removed from the EQ valve.

*If any of the items listed above do not occur, refer to the troubleshooting section of this manual.

4.4 Operating Pressure Check

- 1) Remove the orange plug from the pressure test port and connect a pressure gauge (0-60 psig).
- 2) Turn the unit's ON/OFF switch to the *ON* position.
- 3) Turn the flow selector to the 3 lpm setting.
- 4) Allow the unit to run for a minimum of 5 minutes.
- 5) The maximum operating pressure can be determined when the pressure gauge is at its highest point.
- 6) The minimum operating pressure will be when the pressure gauge is at its lowest point.



Maximum operating pressure range is typically between 23 - 27 psig.
Minimum operating pressure range is typically between 11 - 14 psig.

- 7) Turn the unit's ON/OFF switch to the *OFF* position.
- 8) Remove the pressure gauge from the pressure test port and replace the plug.

*If any of the items listed above do not occur, refer to the troubleshooting section of this manual.

5.0 Service

5.1 Compressor

The compressor is the “pump” within the oxygen concentrator that pushes the room air into the bottom of the sieve beds. This allows oxygen to flow out of the top.

Two different aspects of the compressor cause concern: the output and the sound level.

◆ Output

Compressor output refers to how much compressed air the compressor can produce. The model of the compressor, the stroke of the piston, and the condition of the cup seals determine this. The QuietLife uses a twin piston compressor with a .38” stroke. Stroke refers to how far the piston moves. In the QuietLife unit, the piston moves only 38/100 of an inch, requiring less electricity to operate than other comparable models.

The cup seals form the seal between the piston and the cylinder wall. As the cup seals wear, the compressor’s output begins to gradually decrease. This reduction in compressor output results in less air for the sieve beds. Therefore, the production of oxygen decreases.

This drop in oxygen production occurs over a long time period. You can detect it first at 3 lpm, then 2.5 lpm, then 2.0 lpm, etc. You can continue a patient’s therapy on the QuietLife unit as long as that unit’s oxygen purity level at the prescribed liter flow rate meets AirSep’s specifications (90% ± 3%).

◆ Sound Level

The condition of the compressor’s bearings mainly determine its sound level.

There are four bearings located within the compressor that allow the inner components of the compressor to rotate. These sealed bearings are sensitive to high temperatures, which can cause the lubricant to leak out. If the bearings wear to the point that they become noisy, the compressor becomes noticeably loud and needs servicing.

5.1.1 Compressor Assembly Removal

To remove the compressor assembly for exchange, follow the steps listed below:

- 1) Set the unit’s ON/OFF switch to the *OFF* position, and unplug the power cord.

- 2) Remove the cover (4 screws) and side panel (7 screws).
- 3) Disconnect the suction tube from the compressor by simultaneously pushing up on the release ring on the compressor fitting and pulling down on the tubing.
- 4) Disconnect the white 2 pin power connector that runs between the compressor and shelf assembly.
- 5) Remove the protective rubber boot the covers the two capacitor leads.



With the unit turned *OFF* and unplugged, simultaneously touch both spades of the capacitor with an insulated screwdriver as a precaution to eliminate any charge the capacitor may be storing.

- 6) Disconnect the two leads to the capacitor.
- 7) Disconnect the exhaust tubing that runs between the compressor and the valve block by pushing up on the release ring on the fitting and simultaneously pulling down on the tubing. The valve block may be lifted slightly to obtain better access to the release ring on the fitting.
- 8) Slide the compressor assembly out of the unit.

5.1.2 Compressor Assembly Replacement

To install the compressor assembly, follow the steps listed below:

- 1) Perform the compressor removal procedure in reverse order.
- 2) Make sure the compressor lead wires are secured to the wire clip and not touching the compressor.



The compressor should move freely and should not contact the interior walls of the unit. Any contact may cause excessive noise or vibration.

Leak test all fittings on the compressor and the connection point where the compressor exhaust tubing connects with the valve block. To check for leak, take the following steps.

- a) Uncoil the power cord from its holder and plug in the unit.
- b) Set the unit's ON/OFF switch to *ON* for three minutes with the flow selector set to "0" to pressurize the system.
- c) Set the unit's ON/OFF switch to *OFF*, and unplug the power cord.
- d) Using a small brush, apply soapy water around the valve block connection point and check for leaks. The valve block may be lifted slightly to allow better access to the fitting.

5.2 Sieve Bed Replacement



Do not expose molecular sieve (contents of bed) to air for an extended period of time. Prolonged exposure of molecular sieve to the moisture in room air results in contamination and permanent damage to the sieve material. Keep all openings to the sieve beds sealed.



If replacement is necessary, you must replace both sieve beds at the same time.

5.2.1 Sieve Bed Removal

- 1) Set the unit's ON/OFF switch in the *OFF* position, and unplug the power cord.
- 2) Remove the outside cover from the unit.
- 3) Cut the green tie-wraps at the brass "T" fittings on the top of the beds, and disconnect the green 1/4-inch product and equalization tubes.
- 4) Remove the black 5/16-inch tube from the bottom of each sieve bed.
- 5) Cut the black tie-wraps, and remove the sieve beds.
- 6) Plug the opening on the top and bottom of the sieve beds.

5.2.2 Sieve Bed Installation

To install the sieve beds, follow the sieve bed removal procedure in reverse order. It is very important to tighten all tubes to eliminate leaks. However, do not over tighten.

To check for leaks, take the following steps:

- 1) Uncoil the power cord *completely* from its holder before use, and plug in the unit.
- 2) Set the unit's ON/OFF switch to *ON* for three minutes with the flow selector set at "0".
- 3) Set the unit's ON/OFF switch to *OFF*, and unplug the power cord.
- 4) Using a small brush, carefully apply soapy water around the sieve bed tube connections, and check for leaks.



Leaks can be so small in air loss that purity is not affected immediately. The sieve material can become contaminated gradually. Careful leak testing is important.

5.3 Exhaust Muffler Replacement

The QuietLife uses two plastic sintered mufflers to help suppress the noise generated during the blow down step of the PSA cycle. The two mufflers are located inside of the blowdown muffler assembly. To remove the mufflers the compressor assembly must be removed to gain access to the blowdown muffler assembly. Remove the compressor according to the compressor assembly removal procedure.



If replacement is necessary, you should replace both mufflers at the same time.

5.3.1 Blowdown Assembly Removal

- 1) Remove the 8-32 hex kep nut that secures the blowdown muffler assembly to the cabinet shelf.
- 2) Separate the blowdown from the cabinet by disconnecting the black 5/16-inch tube from the blowdown assembly.

5.3.2 Muffler Removal

- 1) Remove the 8-32 screw and nut from the blowdown assembly.
- 2) Remove the aluminum screen and felt cylinder.
- 3) The two white plastic mufflers can be removed individually by unscrewing them from the exhaust manifold.

5.3.3 Muffler Installation

To install the plastic mufflers, follow the muffler removal procedure in reverse order. Each muffler can be installed and tightened by hand. It is very important to tighten each muffler completely. Replace the blowdown and compressor assembly by following their removal procedures in reverse order.

5.4 Capacitor Replacement

The capacitor starts the compressor. If the compressor will not start, the capacitor may be defective and require replacement.

To replace the capacitor, take the following steps:

5.4.1 Capacitor Removal

- 1) Set the unit's ON/OFF switch in the *OFF* position, and unplug the power cord.
- 2) Remove the outside cover from the unit.
- 3) Remove the inside cover (7 screws) from the unit to expose the compressor and shelf assembly.
- 4) Remove the rubber boot that covers the two capacitor leads.



With the unit turned *OFF* and unplugged, simultaneously touch both terminals of the capacitor with an insulated screwdriver as a precaution to eliminate any charge the capacitor may be storing.

- 5) Remove the compressor assembly according to the compressor assembly removal procedure.
- 6) Loosen the 6-32 hex nuts that hold the two capacitor clamps in place.
- 7) Slide the capacitor out of the clamps.

5.4.2 Capacitor Installation

To install the capacitor, follow the capacitor removal procedure in reverse order.

5.5 Blower Replacement

The blower is used to circulate air within the cabinet for cooling purposes and consists of two parts; the blower/motor and the blower capacitor. The shelf assembly must be removed to obtain access to the blower components.

If replacement is necessary, you should replace the blower / Motor and the blower capacitor.



5.5.1 Shelf Assembly Removal

- 1) Set the unit's ON/OFF switch in the *OFF* position, and unplug the power cord.
- 2) Remove the outside cover from the unit.
- 3) Remove the inside cover (7 screws) from the unit to expose the shelf assembly.
- 4) Disconnect the two pin connector from the compressor assembly.
- 5) Disconnect from the terminal block on the shelf the black wire from the top deck.
- 6) Disconnect from the terminal block on the shelf the white wire from the top deck.
- 7) Remove the 5/16-inch tube from the bottom of each sieve bed.



Do not expose molecular sieve (contents of bed) to air for an extended period of time. Prolonged exposure of molecular sieve to the moisture in room air results in contamination and permanent damage to the sieve material. Keep all openings to the sieve beds sealed.

- 8) Plug the opening on the bottom of each sieve bed.
- 9) Disconnect the exhaust tubing that runs between the compressor and the valve block by pushing up on the release ring on the fitting and simultaneously pulling down on the tubing. The valve block may be lifted slightly to obtain better access to the release ring on the fitting.
- 10) Remove the rubber boot that covers the two capacitor leads.



With an insulated screwdriver, simultaneously touch both terminals of the capacitor as a precaution to eliminate any possible charge the capacitor may be storing.

- 11) Disconnect the two leads to the capacitor.
- 12) Slide the shelf assembly approximately half way out of the cabinet.
- 13) Remove the two 5/16-inch tubes from the fittings on the side of the valve block assembly.

- 14) Remove the eight connectors from the valve solenoids, note the position of each wire.
- 15) Remove the shelf assembly from the cabinet.

5.5.2 Blower Removal

- 1) Disconnect the two wires that run from the blower to the terminal block. Note the position of each wire.
- 2) Loosen the screw on the top of the blower bracket until the blower / motor can be removed.
- 3) Remove the screw holding the blower capacitor.
- 4) Separate the blower/motor and capacitor from the shelf.

5.5.3 Blower Installation

To install the blower, follow the blower removal procedure in reverse. Replace the shelf assembly by performing the shelf assembly removal procedure in reverse.

5.6 Transformer Replacement

There are two transformers used on the QuietLife unit, one is used for the main PCB and the other is used for the oxygen monitor PCB.

5.6.1 Transformer Removal (Main PCB)

The main PCB transformer is located next to the main PCB and has a 3-pin connector.

- 1) Set the unit's ON/OFF switch in the *OFF* position, and unplug the power cord.
- 2) Remove the outside cover from the unit.
- 3) Disconnect the three pin connector from the main PCB.
- 4) Disconnect the two transformer wires from the terminal strip "Terminal 2".



The 250V transformer will have orange and white wires on the primary side. The 120V transformer has two black wires.

- 5) Remove the two screws that attach the transformer to the cabinet.
- 6) Separate the transformer from the cabinet.

5.6.2 Transformer Installation (Main PCB)

To install the main PCB transformer , follow the transformer removal procedure in reverse order.

5.6.3 Transformer Removal (Oxygen Monitor PCB)

The oxygen monitor transformer is located next to the oxygen monitor PCB and has a 6-pin connector.

- 1) Set the unit's ON/OFF switch in the *OFF* position, and unplug the power cord.
- 2) Remove the outside cover from the unit.
- 3) Disconnect the 6-pin connector from the oxygen monitor PCB.
- 4) Disconnect the 3-pin connector from the main PCB (J5).
- 5) Remove all tie wraps that secure the transformer wires to other wire harnesses.
- 6) Disconnect the two transformer wires from the terminal strip "Terminal 2". Cut the black and white wire as close to the 0.250 connectors as possible.
- 7) Remove the two screws that attach the transformer to the cabinet.
- 8) Separate the transformer from the cabinet.

5.6.4 Transformer Installation (Oxygen Monitor PCB)

To install the main PCB transformer, follow the removal procedure in reverse order. Crimp one of the two wires from the primary side of the transformer together in a 0.250 connector with the white wire from the main PCB. The other wire from the primary side of the transformer should be crimped together with the black wire from the main PCB in a 0.250 connector.



The 250V transformer will have orange and white wires on the primary side. The 120V transformer has two black wires.

5.7 Solenoid Valves

The QuietLife uses 5 two-way solenoid valves: two feed, two waste, and one equalization. Each valve has an open (energized) and closed (de-energized) position. As the QuietLife operates, a minimum of two valves are always energized.

The solenoid valves of the QuietLife unit require no scheduled maintenance. If a valve becomes noisy, you can easily replace the internal valve parts. To identify the noisy valve, observe which green circuit board light illuminates at the time of the noise. The lighting matrix on the circuit board is labeled with letters that designates each valve (“LF” = Left Feed).



The left and right feed and waste valves may be determined by viewing the valve block with the units inside cover removed. The valves located on the front of the valve block are the feed valves and the valves on the back of the valve block are the waste valves. The left feed valve is located on the left/front side of the valve block.

5.7.1 Feed or Waste Valve Rebuilding

- 1) Remove the shelf assembly according the shelf assembly removal procedure.
- 2) Remove the red cap from the appropriate valve with a slotted head screwdriver.
- 3) Lift off the solenoid coil.
- 4) Loosen and remove the solenoid base with a one-inch deep well socket. Note the direction the spring is facing.
- 5) Install the rebuild kit, which contains all parts of the solenoid assembly except the solenoid coil.

5.7.2 Feed or Waste Valve Re-assembly

To reassemble the feed or waste valves, follow the feed or waste valve rebuilding procedure in reverse order, and test for leaks.



Correct direction of the spring is required for proper valve function.

5.7.3 Equalization (EQ) Valve Rebuilding

- 1) Set the unit’s ON/OFF switch to the *OFF* position, and unplug the power cord.
- 2) Remove the outside cover from the unit.
- 3) Remove the red cap from the EQ valve with a slotted-head screwdriver.
- 4) Lift off the solenoid coil.
- 5) Secure the EQ plate with pliers or channel locks.

- 6) Loosen and remove the solenoid base with an 8-inch adjustable wrench.
Install the rebuild kit, which contains all parts of the solenoid valve assembly except the solenoid coil.

5.7.4 Equalization (EQ) Valve Re-assembly

To reassemble the EQ valve, follow the EQ valve rebuilding procedure in reverse order, and test for leaks.

5.7.5 Solenoid Valve Coil Replacement

If a solenoid valve coil does not operate, its corresponding green light on the circuit board does not illuminate.

- 1) Set the unit's ON/OFF switch to the *OFF* position, and unplug the power cord.
- 2) Remove the outside cover from the unit.



If replacing the Feed or Waste solenoids, it will be necessary to remove the shelf assembly according to the shelf assembly removal procedure.

- 3) Remove the red cap with a slotted-head screwdriver.
- 4) Disconnect the solenoid leads, and lift off the solenoid coil.
- 5) Replace with the new coil.
- 6) Press the red cap back on tip of the coil, and reconnect the solenoid leads.

5.7.6 Valve Cleaning

Clean any of the feed or waste valves by removing the valve from the valve block assembly, as described in Section 5.7.1. Then firmly tap it on a hard surface such as a table to dislodge any debris that may be inside the solenoid valve body.

5.8 Control Panel Assembly Replacement

5.8.1 Control Panel Assembly Removal

- 1) Set the unit's On/Off switch in the *OFF* position, and unplug the power cord.
- 2) Remove the outside cover from the unit.
- 3) Disconnect the tubing connected to the flow selector
- 4) Remove tie wraps that secure the wires together from the control panel
- 5) Disconnect the Brown or Black wire that connects the power cord to the circuit breaker.
- 6) Disconnect the back wire that runs from the On/Off switch to "Terminal 1".

- 7) Disconnect the 7 pin connector that comes from the main PCB
- 8) Remove the 2 flat head screws that hold sides of the control panel.
- 9) Remove the 3 remaining screws that hold the front of the control panel, there is a single washer between the control panel and cabinet for each of the 3 screws.
- 10) Separate the control panel from the cabinet by gently pulling out on the control panel.

5.8.2 Control Panel Installation

To install the Control Panel Assembly, follow the steps listed below:

- 1) Perform the control panel removal procedure in reverse order.
- 2) Make sure the 3 flat washers are placed between the control panel and the cabinet where the 3 screws are used to secure the control panel to the front of the cabinet.
- 3) Replace all tie wraps on the tubing connections and wires.

5.8.3 Control Panel Main PCB Replacement

The Main control panel PCB is the large printed circuit board located on the back of the Control Panel. The Control Panel Assembly must be removed from the cabinet to replace this PCB.



The Printed Circuit Boards (PCBs) contain components that are sensitive to electrostatic discharge (ESD) that can damage the board if not handled properly. As when handling any ESD-sensitive PCB, observe standard ESD safety procedures. These procedures include the following:

- ◆ Handle the PCB by the edges only.
- ◆ Work on a grounded ESD mat.
- ◆ Wear a grounded wrist strap.
- ◆ Store PCB's only in anti-static bags.

5.8.4 Control Panel Circuit Board Removal

- 1) Remove the Control Panel Assembly as outlined in steps 1-10 of the control panel assembly removal procedure (5.8.1).
- 2) Remove the flow selector knob from the front of the control panel. This may be done by removing the cover from the knob and turning the screw in a counter-clock-wise direction until it is loose. Once the screw is loose the knob can be removed by pulling straight out away from the control panel.

- 3) Remove the flow selector assembly from the back of the control panel by removing the 4 metric (M3) hex nuts surrounding the flow selector valve.
- 4) Disconnect the two pin connector from the ON/OFF switch.
- 5) Disconnect the 6 pin connector from the Hour Meter / O2 Alarm PCB.
- 6) Remove the 3 screws holding the PCB to the control panel and separate the PCB from the control panel.

5.8.5 Circuit Board Installation



Handle the new circuit board only by the edges to prevent electrostatic damage to the unit.

To replace the Main Control Panel PCB, follow the steps below:

- 1) Perform the Circuit board removal procedure in reverse order.
- 2) When replacing the flow selector knob be sure that the line on the knob aligns with the proper flow setting.
- 3) Install the Control panel on the cabinet by following the control panel replacement procedure.

5.8.6 Hour Meter / O2 Alarm PCB Replacement

The Hour Meter / O2 Alarm PCB is located on the back of the control panel assembly near the bottom edge.

5.8.7 Hour Meter / O2 Alarm PCB Removal

- 1) Remove the control panel assembly as outlined in steps 1-10 of the control panel assembly removal procedure (5.8.1).
- 2) Disconnect the 6 pin connector that runs between the main control panel PCB and the hour meter / O2 alarm PCB.
- 3) Remove the two screws holding the PCB to the control panel assembly.
- 4) Separate the PCB from the control panel assembly.

5.8.8 Hour Meter / O2 Alarm PCB Installation



Handle the new circuit board only by the edges to prevent electrostatic damage to the unit.

Perform the Circuit board removal procedure in reverse order.

- 1) Install the Control panel on the cabinet by following the control panel replacement procedure (5.8.2).

5.8.9 Circuit Breaker Replacement

The Circuit Breaker may be removed without removing the control panel from the cabinet. Follow the steps listed below for removal.

5.8.10 Circuit Breaker Removal

- 1) Set the unit's On/Off switch in the *OFF* position, and unplug the power cord.
- 2) Remove the outside cover from the unit.
- 3) Disconnect the two wires connected to the back of the circuit breaker.
- 4) Grasp the circuit breaker from the back and push in toward the front of the unit while slightly moving it from side to side until it is free from the control panel assembly.

5.8.11 Circuit Breaker Installation

- 1) Perform the circuit breaker removal procedure in reverse order.
- 2) Make sure the circuit breaker locks into position on the control panel assembly.

5.8.12 Power (On/Off) Switch Replacement

The power switch is located on the control panel assembly. The control panel assembly must be removed from the cabinet to replace the power switch. To remove the power switch follow the steps below:

5.8.13 Power Switch Removal

- 1) Remove the control panel assembly as outlined in steps 1-10 of the control panel assembly removal procedure (5.8.1).
- 2) Remove the control panel main PCB as outlined in steps 1-6 of the control panel main PCB removal procedure (5.8.4).
- 3) Grasp the back of the power switch and push toward the front of the control panel while pressing in on one side of the metal tabs that hold the switch to the control panel until the switch is free of the control panel assembly.

5.8.14 Power Switch Installation

- 1) Perform the power switch removal procedure in reverse order.

- 2) Make sure the switch is positioned so that the two black wires are facing the two pin connector (J3) on the control panel main PCB.
- 3) Replace the control panel main PCB and control panel assembly as outlined in steps 1 & 2 of the control panel main PCB installation procedure (5.8.5).

5.8.15 Flow Selector Replacement

The flow selector is located on the back of the control panel assembly. The control panel assembly must be removed from the cabinet to replace this component.

5.8.16 Flow Selector Removal

- 1) Remove the control panel assembly as outlined in steps 1-10 of the control panel assembly removal procedure.
- 2) Remove the flow selector knob from the front of the control panel. This may be done by removing the cover from the knob and turning the screw in a counter-clock-wise direction until it is loose. Once the screw is loose the knob can be removed by pulling straight out away from the control panel.
- 3) Remove the flow selector assembly from the back of the control panel by removing the 4 metric (M3) hex nuts surrounding the flow selector valve.
- 4) Remove the encoder dial from the flow selector shaft by loosening the 4-40 set screw in the shaft collar. A 0.050" hex wrench may be used to loosen the 4-40 set screw. Once the set screw is loose the encoder dial may be removed by pulling it out over the flow selector shaft.
- 5) Separate the mounting plate from the flow selector by removing the two screws and lock washers.

5.8.17 Flow Selector Installation

- 1) Perform the flow selector removal procedure in reverse order.
- 2) Replace the control panel assembly as outlined in the control panel installation procedure.

5.9 Main PCB Replacement

The main PCB is located inside of the unit, in the center of the top deck. To replace the main PCB, follow the steps below:



The Printed Circuit Boards (PCBs) contain components that are sensitive to electrostatic discharge (ESD) that can damage the board if not handled properly. As when handling any ESD-sensitive PCB, observe standard ESD safety procedures. These procedures include the following:

- ◆ Handle the PCB by the edges only.
- ◆ Work on a grounded ESD mat.
- ◆ Wear a grounded wrist strap.
- ◆ Store PCB's only in anti-static bags.

5.9.1 Main PCB Removal

- 1) Set the unit's On/Off switch in the *OFF* position, and unplug the power cord.
- 2) Remove the outside cover from the unit.
- 3) Disconnect the 5 electrical connectors on the main PCB.
- 4) Disconnect the tubing that is connected to the pressure sensor on the main PCB.
- 5) Remove the 3 screws that secure the PCB to the cabinet and separate the PCB from the cabinet.

5.9.2 Main PCB Installation



Handle the new circuit board only by the edges to prevent electrostatic damage to the unit.

- 1) Perform the main PCB removal procedure in reverse order.
- 2) Install a tie wrap on the tubing connected to the pressure sensor.
- 3) Make sure the 3 spacers are installed between the main PCB and the cabinet.

5.10 O2 Monitor PCB Replacement

The O2 Monitor PCB is located inside of the unit, near the back of the top deck. To replace the O2 monitor PCB, follow the steps listed below:

5.10.1 O2 Monitor PCB removal

- 1) Set the unit's On/Off switch in the *OFF* position, and unplug the power cord.
- 2) Remove the outside cover from the unit.
- 3) Disconnect the electrical connector from the O2 monitor PCB.

- 4) Disconnect the green tubing by removing the tie wrap and pulling the tubing off of the hose barb connector.
- 5) Remove the 4 screws that secure the PCB to the cabinet. Note the location of the two nylon washers and the 4 spacers.

5.10.2 Monitor Installation

Perform the O2 monitor PCB removal procedure in reverse order.

Make sure the two nylon washers are between the two screws that are closest to the back of the unit and the PCB.

5.11 Power Cord Replacement

5.11.1 Power Cord Removal

- 1) Set the unit's ON/OFF switch to the *OFF* position, and unplug the power cord.
- 2) Remove the cover (4 screws).
- 3) Uncoil the power cord completely from the cord wrap bracket on the back of the unit.
- 4) Cut the tie-wraps that are around the power cord wires on the top deck.
- 5) Remove the power cord wire that is connected to the circuit breaker by holding the circuit breaker while pulling the connector off.



A 220-230 VAC unit will have brown colored wire and a 120 VAC unit uses a black colored wire from the power cord to the circuit breaker.

- 6) Remove the power cord wire that is connected to the terminal marked with an "N" on *Terminal 1*.



A 220-230 VAC unit will have a blue colored wire and a 120 VAC unit uses a white colored wire from the power cord to *Terminal 1*.

- 7) Cut off and discard the two connectors that are hanging free from the end of the power cord.
- 8) Using a Phillips-head screw driver remove the wire clip located below the bacteria filter that is holding the power cord. Save for reuse.

- 9) Pull the power cord down through the hole in the top deck and remove the remaining length of the cord from the inside of the unit by pulling it out through the cord strain relief on the back of the unit.
- 10) Remove and save for reuse the three pieces of the strain relief that remained on the power cord when it was separated from the unit. Note the orientation and sequence of the three pieces before removal.

5.11.2 Power Cord Installation

- 1) Place the three pieces of the strain relief removed in step 10 of 5.11.1 on the new power cord and feed the cord through the strain relief on the back of the cabinet. Run the cord along the same path of the old power cord. Place the end of the cord through the hole in the top deck and adjust the length of the cord so that the outer jacket of the cord ends at the top deck.
- 2) Slide the three pieces of the strain relief down the cord and tighten the outer nut hand tight.
- 3) Secure the cord to the cabinet using the wire clip and the Phillips-head screw that were removed during step 8 of 5.11.1.
- 4) If necessary, cut the power cord black or brown wire down to 2.5 inches and the white or blue wire down to 4.0 inches.
- 5) Crimp a 0.250 inch connector onto the end of the black or brown wire and reconnect this wire to the circuit breaker.



Hold the circuit breaker in position while inserting the connector to prevent damage to the circuit breaker

- 6) Crimp a 0.187 inch connector onto the end of the white or blue wire and reconnect this wire to the open terminal on *Terminal 1* that is marked with an "N".
- 7) Place two tie-wraps spaced approximately 1 inch apart around the white or blue and black wires running from *Terminal 1* to the power cord and power switch. Place a second tie-wrap around the two wires that are connected to the back of the circuit breaker.
- 8) Replace the unit cover and 4 screws.

6.0 Maintenance

6.1 Routine Maintenance

The QuietLife unit has either three or four filters and a 9-volt battery that require scheduled maintenance and replacement.

In addition, you must perform a test of purity concentration on the unit at least every 90 days.

AirSep does not require preventative maintenance on the compressor. You do not need to perform any compressor maintenance as long as the QuietLife remains within specification at the desired flow rate.

6.2 Bacteria Filter Replacement

The bacteria filter must be replaced after every 10,000 hours of use.

- 1) Set the unit's ON/OFF switch to the *OFF* position, and unplug the power cord.
- 2) Remove the cover and locate the bacteria filter.



Observe the position of the filter before removal (one side of the filter is labeled "*INLET*").

- 3) Remove the tubing from the clip, cut the tie-wraps and separate the green tubing from both sides of the filter.
- 4) Install the new filter with the inlet side in the same position as before. Push the tubing together so that the tubing overlaps the bacteria filter connections, and secure it with tie-wraps.
- 5) Replace the unit cover.

6.3 Compressor Intake Filter

The QuietLife unit will be equipped with one of two different styles of compressor intake filters. A single "Box" filter located inside the unit on the shelf assembly, or a felt cylinder / filter capsule configuration. Both styles of filter should be replaced after every 6 months of use.



AS047-1 units with serial numbers before ***001028*** and AS047-2 units with serial numbers before ***001255*** will use the “Box” filter. All other units will use the “Felt cylinder / Filter capsule” configuration.

6.3.2 Single “Box” Filter Replacement

- 1) Set the unit’s ON/OFF switch to the *OFF* position and unplug the power cord.
- 2) Remove the cover and side panel to locate the compressor intake filter box.
- 3) Grasp the handle on the filter housing and pull the filter out of the filter box.
- 4) Remove the filter from the housing by pushing up or down on the filter.
- 5) Place a new filter (**MI042-1**) into the housing and perform the removal procedure in reverse to replace the filter housing.
- 6) Replace the side panel and cover on the unit.

6.3.3 Felt Cylinder / Filter Capsule Replacement

The Felt Cylinder and the Filter Capsule should be replaced at the same time.

6.3.3.1 Felt Cylinder Replacement

- 1) Set the unit’s ON/OFF switch to the *OFF* position and unplug the power cord.
- 2) Remove the cover and right side panel to locate the Felt Cylinder.
- 3) Remove the felt cylinder by lifting it “UP” and “OFF” of the fitting.
- 4) Place a new felt cylinder (**MI161-1**) over the fitting.
- 5) Replace the side panel and cover on the unit.

6.3.3.2 Filter Capsule Replacement

- 1) Set the unit’s ON/OFF switch to the *OFF* position and unplug the power cord.
- 2) Remove the cover and the lower left side panel to locate the Filter Capsule.
- 3) Cut the tie wrap that holds the filter in place.
- 4) Remove the filter by pushing in on the release rings on each fitting and disconnecting the tubing.
- 5) Place a new filter (**FI092-1**) in line with the “Flow” direction pointing toward the back of the unit. Reconnect the tubing at each end of the capsule.
- 6) Place a tie wrap (**TW004-1**) around the filter and through the clip located on the back wall of the chamber. Pull the tie wrap tight to keep the filter from moving.

- 7) Check all tubing connections to make sure they are secure in the fittings.
- 8) Replace the side panel and cover on the unit.

6.4 Air Intake Gross Particle Filter

The external air intake gross particle filter is located on the front of the unit. You can easily remove it by hand. Instruct the patient to clean this filter weekly.



The patient must clean this filter weekly, as described below. The filter may require daily cleaning if the QuietLife unit operates in a harsh environment such as a house heated by wood, kerosene, or one with excessive cigarette smoke.

- 1) Remove the dirty air intake gross particle filter from the filter housing on the front of the QuietLife unit.
- 2) Wash the dirty filter in warm soapy water, and rinse thoroughly.
- 3) Use a soft absorbent towel to remove excess water.
- 4) Place the clean air intake gross particle filter back into the filter housing and install the housing on the front of the unit.

6.5 Battery Replacement

Each time the ON/OFF switch is placed in the *ON* position the alarm will sound. An alarm that sounds faint indicates a weak battery. If the unit fails to alarm or sounds faint, the battery requires replacement.



The QuietLife unit does not need to be plugged into the AC outlet to test the battery.

To replace the battery, take the following steps:

- 1) Set the unit's ON/OFF switch to the *OFF* position, and unplug the power cord. Remove the unit's cover (4 screws).
- 2) Release the Velcro strap, and lift the battery out of the battery holder.
- 3) Install the new battery maintaining proper polarity, and secure it with the Velcro strap.
- 4) Set the ON/OFF switch to the *ON* position to test the alarm.
- 6) Replace the unit cover and screws.

7.0 Troubleshooting

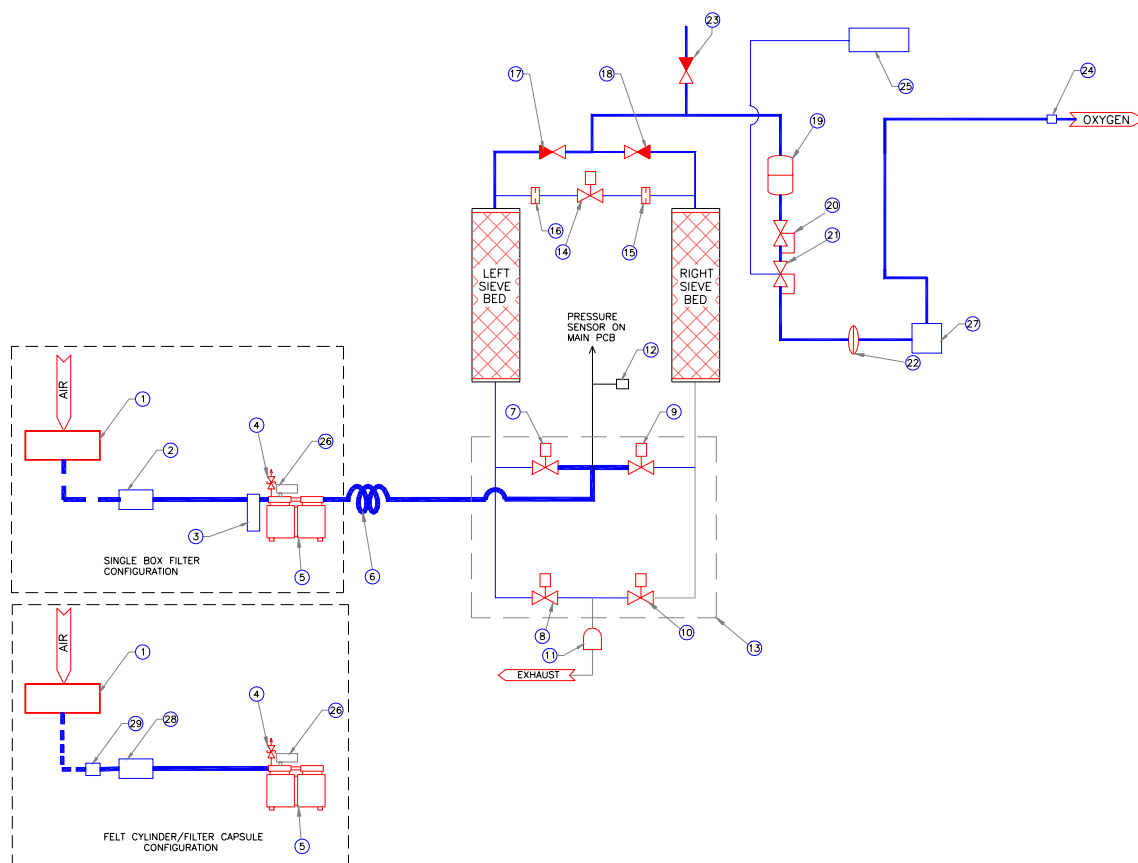
Problem	Probable Cause	Solution
Compressor does not run. Constant audio alarm with ON/OFF power switch in <i>ON</i> position. Blower not operating.	No Power to unit.	Check wall outlet for power.
	Unit circuit breaker tripped or faulty.	Reset or replace circuit breaker.
	Faulty electrical connections.	Check all electrical connections.
	Defective ON/OFF power switch.	Replace ON/OFF power switch
Compressor does not start. ON/OFF power switch in <i>ON</i> position, and cabinet blower operates.	Faulty electrical connections for compressor.	Check electrical connections to compressor.
	Defective compressor capacitor.	Replace capacitor
	Defective compressor.	Replace compressor
Compressor shuts down intermittently.	Defective compressor capacitor.	Replace capacitor.
	Defective compressor.	Replace compressor.
	Defective blower.	Replace blower.
	Restricted air flow through unit.	Clean inlet filters, or remove obstruction.
Compressor relief valve releases (popping sound)	Defective circuit board.	Check circuit board for valve LED rotation / replace circuit board.
	Defective or sticking solenoid valve.	Repair or replace solenoid valve.
	Defective relief valve	Replace relief valve.
	Faulty electrical connection on main PCB or valve block.	Check electrical connections / repair.
	Contaminated sieve beds	Replace sieve beds.
Constant alarm with ON/OFF switch in the <i>ON</i> position. Circuit breaker repeatedly trips.	Defective circuit breaker.	Replace circuit breaker.
	Faulty electrical connection.	Check electrical connections / repair.
	Defective compressor capacitor.	Replace compressor capacitor.
	Defective compressor.	Replace compressor.
Alarm does not sound.	Dead battery.	Replace battery.
	Faulty electrical connection.	Check electrical connections / repair.
	Defective ON/OFF switch.	Replace ON/OFF switch.
Abnormal operation (Red) LED on front panel constantly <i>ON</i> , or <i>ON</i> intermittently, no audio alarm.	Defective front panel.	Replace front panel.
	Defective main PCB.	Replace main PCB.
O2 alarm LED on front panel constantly <i>ON</i> .	Oxygen purity below specification.	Verify oxygen purity.
	Defective O2 monitor PCB.	Verify O2 monitor set-point / replace O2 monitor PCB.
	Restriction in O2 monitor tubing.	Check tubing for obstructions / remove obstructions.

Problem	Probable Cause	Solution
O2 alarm LED on front panel does not illuminate.	Defective LED on front panel.	Replace control panel or O2 alarm PCB.
	Faulty electrical connections.	Check electrical connections / repair.
	Defective O2 monitor PCB.	Verify O2 monitor set-point / replace O2 monitor PCB.
Limited or low flow at all flow selector settings.	Product regulator set too low.	Adjust regulator setting.
	Leak.	Leak test and repair leak.
	Weak compressor.	Check system pressure and rebuild or exchange compressor.
	Defective solenoid valve.	Repair or replace solenoid valve.
	Reduced air intake (suction).	Check intake filter resonator and tube for restriction.
Limited or low flow at one setting only.	Plugged flow selector.	Replace flow selector.
Low Purity.	Leak.	Leak test and repair.
	Weak compressor.	Check system pressure, and rebuild or replace compressor.
	Units internal temperature too high.	Blocked air intake or defective blower / clear obstruction, or replace blower.
	Defective main PCB.	Check main PCB for correct valve cycle sequence / replace main PCB.
	Contaminated sieve beds	Replace sieve beds
	Defective solenoid valve.	Repair or replace solenoid valve.
	Restriction in exhaust muffler.	Check / replace exhaust muffler.
	Restriction in intake resonator.	Check intake filter, resonator and tube obstruction / replace filter.
	High flow rate.	Verify flow rate / adjust flow rate.
High / Low pressure alarm out of specification.	Defective main printed circuit board.	Replace main printed circuit board.

Appendix A

◆ **Process Schematic**

QuietLife Basic Unit - Process Schematic



Legend

- | | |
|------------------------------|------------------------------|
| 1. Control Panel Filter | 15. Right Bed Orifice |
| 2. Intake Filter & Resonator | 16. Left Bed Orifice |
| 3. Intake Resonator | 17. Left Bed Check Valve |
| 4. Pressure Relief Valve | 18. Right Bed Check Valve |
| 5. Compressor | 19. Mixing Tank |
| 6. Heat Exchanger | 20. Primary Regulator |
| 7. Left Feed Valve | 21. Secondary Regulator |
| 8. Left Waste Valve | 22. Bacteria Filter |
| 9. Right Feed Valve | 23. Vacuum Break Check Valve |
| 10. Right Waste Valve | 24. Oxygen Outlet Coupler |
| 11. Blowdown Muffler | 25. Oxygen Monitor PCB |
| 12. Pressure Test Port | 26. Compressor Capacitor |
| 13. Valve Block | 27. Flow Selector |
| 14. EQ Valve | 28. Filter Capsule |
| | 29. Felt Cylinder |

Figure A.1: QuietLife Basic Unit – Process Schematic

Appendix B

◆ Wiring Schematic

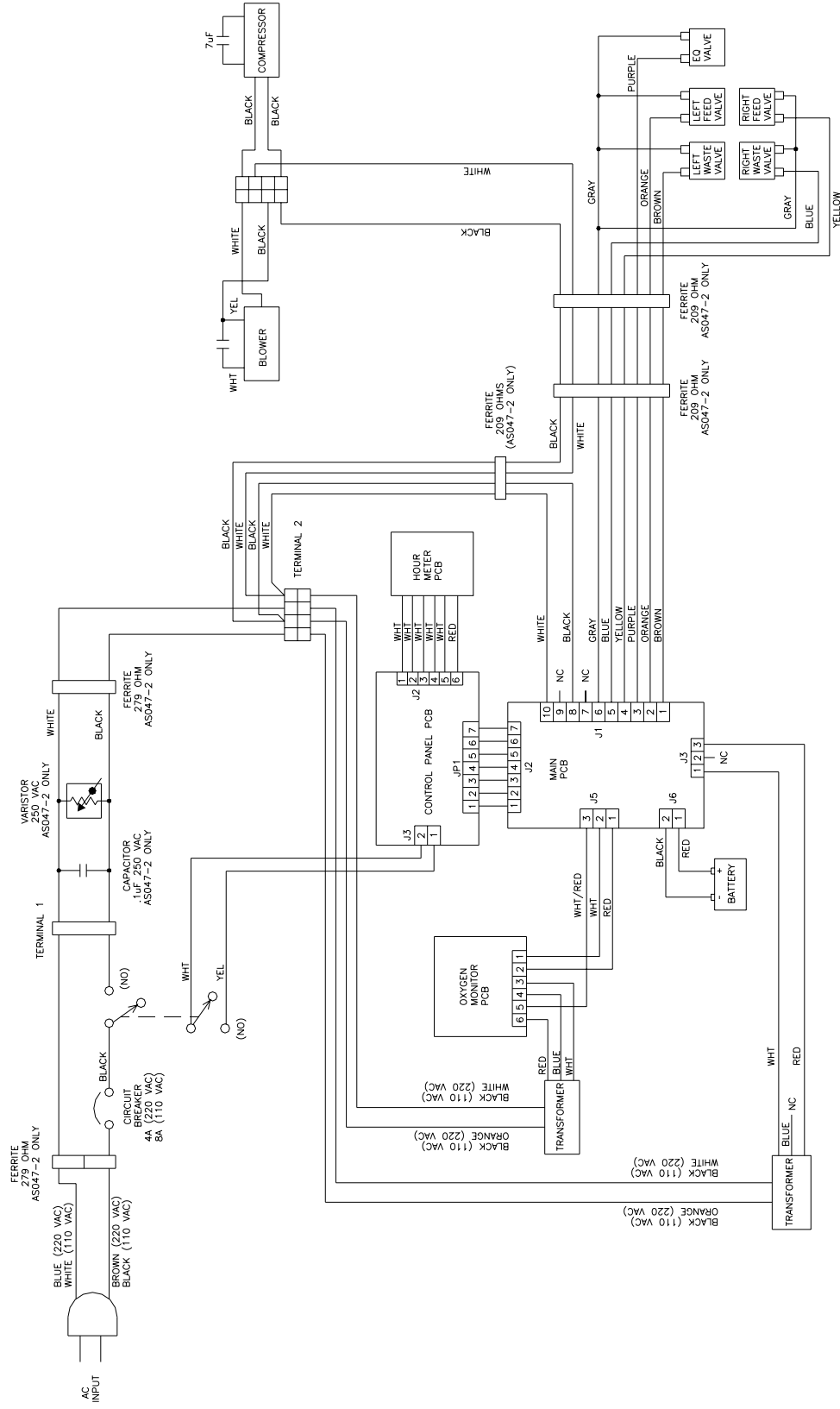


Figure B.1: QuietLife Basic Unit – Wiring Schematic

Appendix C

◆ **Specifications (AS047-2 Only)**

Classification

Symbols

Classification (AS047-2 only)

Type of protection against electric shock:

Class II Protection from electric shock is achieved by DOUBLE INSULATION. Protective earthing or reliance upon installation conditions are not required.

Degree of protection against electric shock:

Type B Equipment providing a particular degree of protection against electric shock, particularly regarding:

- 1.) allowable leakage current;
- 2.) reliability of protective earth connection (if present).

Not intended for direct cardiac application.

Degree of protection against harmful ingress of water:

Drip-proof equipment - IPX1

Equipment provided with an enclosure preventing entry of such an amount of falling liquid as might interfere with the satisfactory and safe operation of the equipment.

Degree of safety of application in the presence of flammable anesthetic gases:

Equipment not suitable for such application.




Mode of operation:

Continuous duty.

Symbols (AS047-2 only)

Symbols are frequently used on equipment in preference to words with the intention of obviating language differences and permitting easier comprehension of a marking or indication, sometimes in a restricted space.

The following table is a list of symbols and definitions used with the QuietLife Oxygen Concentrator. These symbols are taken from the appropriate International Electrotechnical Commission (IEC) standards:

Symbol	IEC Publication	Description
	878-02-02	Type B Equipment
	417-5032	Class II Equipment
IPXI	529	Protected against dripping water
	348	Attention, consult ACCOMPANYING DOCUMENTS