



CIRRUS 5

Maintenance Manual

3B MEDICAL, INC.

Cirrus 5 Maintenance Manual

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External Components

Referring to Figure 1 & 2, in Table 1.

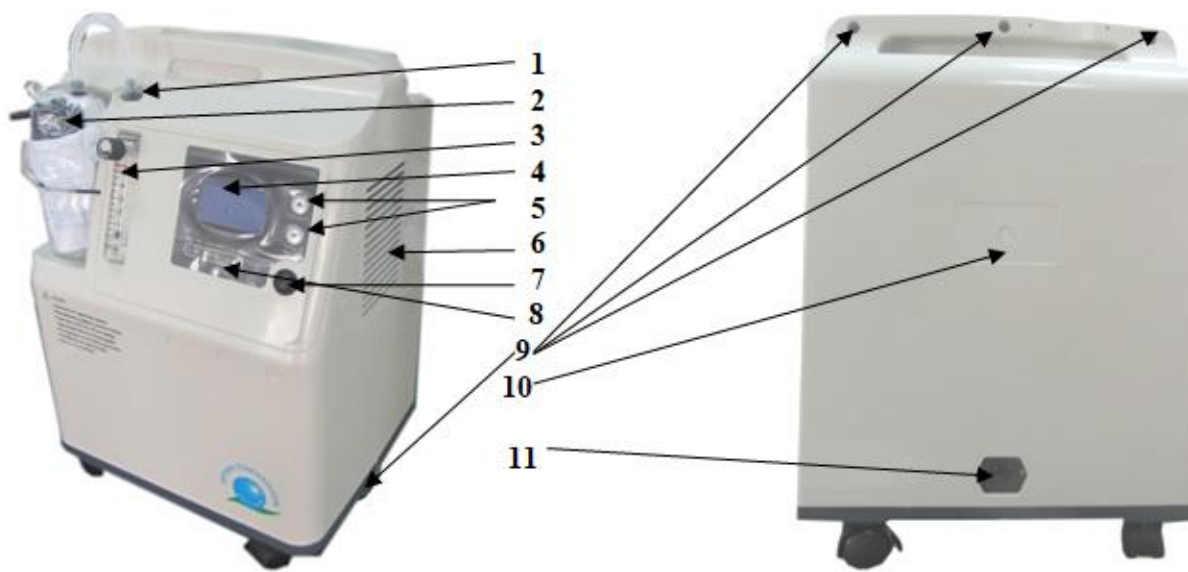


Figure 1

Figure 2

1	Oxygen Outlet	6	Cabinet Intake Filter	11	AC Power Cord Socket
2	Humidifier (optional)	7	Power Switch		
3	Flow Meter	8	LED Indicators		
4	LCD Display	9	Rear Panel Screws (5)		
5	Display Buttons	10	Model/SN Label		

Table 1

Internal Components

Location of major components in Figure 3 & 4, in Table 2.

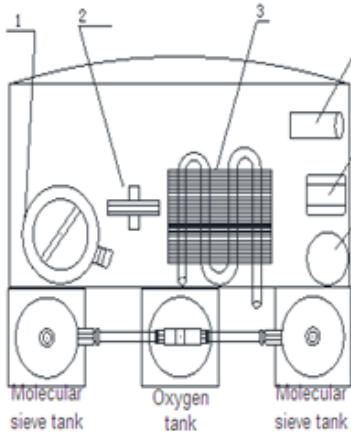


Figure 3

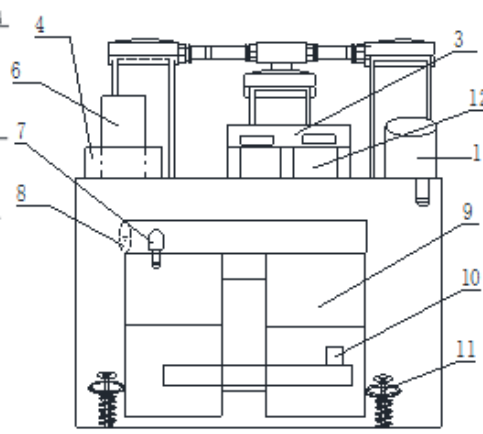


Figure 4

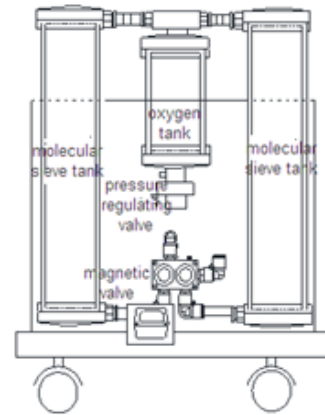


Figure 5

1	Compressor Inlet Filter	5	Transformer	9	Compressor
2	Bacterial Filter	6	Exhaust Dampener	10	Compressor Inlet
3	Cooling System	7	Compressor outlet	11	Compressor Shock Mounts
4	Capacitor	8	Safety valve	12	A/C Cooling Fan

Table 2

General User Maintenance

When using the Cirrus 5 please do not use lubricants, oils or grease

- Clean and replace the cannula/mask and tubing per manufacturer instructions.
- Empty and wash humidifier bottle with warm water and mild soap daily, as needed.

Cabinet Filter

- The Cabinet Filter is located on the side of the unit
- Remove plastic cover, slide out filter
- Wash with warm water and dish soap weekly or biweekly
- Allow to air dry or pat dry with towel before replacing in unit
- Do not allow water into the cabinet enclosure
- Visually inspect the filter and replace as needed

Maintenance Frequency

- The 3B Cirrus 5 stationary oxygen concentrator is specifically designed to minimize professional preventative maintenance to once a year. However certain environments may necessitate maintenance more frequently. To ensure years of reliable consistent oxygen please perform professional maintenance annually.
- Only authorized agents should perform maintenance on the Cirrus 5 Concentrator.
- Please ensure unit is disconnected from the power source prior to working on the unit.

Compressor Inlet Filter

- The Compressor Inlet Filter is a canister filter designed to be professionally checked, maintained and replaced.
- This filter is designed in normal environs to last for one full year of use, filter may need more frequent replacing depending on operating environment.

Cleaning the Cirrus 5 Exterior

- The body of the Cirrus 5 may be wiped with a damp cloth and a mild household cleaner.

Disassembly of Major Components

Removing Back Panel

Remove AC Power Cord. Locate and remove the 5 screws securing the back panel. Slide back panel away from front panel and set aside.

Removing Front Panel

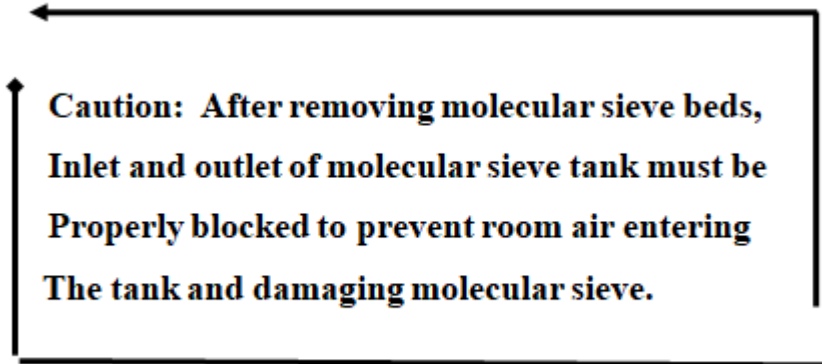
Disconnect PCB board connectors, Fan connector, Transformer connector, Compressor connector, Magnetic valve four-pin connector, Power failure two-pin connector. Disconnect silicone rubber tube on pressure sensor board and flow meter.

Disassembly of Molecular Sieve Beds and Oxygen Tank

Press down blue/white ring of the quick connector, and pull out connecting pipe between molecular sieve tank and oxygen tank.

Remove the screws located between molecular sieve tank and compressor. Pull out the connecting pipe between molecular sieve tank and magnetic valve. Remove molecular sieve tank.

As oxygen storage tank is removed, remove the screws between compressor cabinet, then pull off connecting pipe between casing and flow meter, remove molecular sieve tank.



Disassembly of the Magnetic Valve

Disconnect exhaust tube and air intake tube connecting magnetic valve.

Press down blue ring of the quick plug connector from molecular sieve tank and connecting tube between molecular sieve tank and magnetic valve (inlet of molecular sieve tank must be sealed to prevent room air from entering sieve tank). Disconnect power supply line from control panel to remove magnetic valve.

Disassembly Pressure Regulating Valve

Pull off the silicone tube between pressure regulating valve and flow meter. Revolve out the pressure regulating valve from oxygen tank by clockwise direction (see from top to bottom) to take out pressure regulating valve.

Caution: When carrying out installation, raw adhesive tape should be wound or silica gel is coated properly on the thread of pressure regulating valve to tighten the pressure regulating valve.

Disassembly of the Safety Valve

Take off left side panel on the compressor cabinet (facing oxygen machine), then unscrew safety valve using #14 wrench/spanner.

Caution: When mounting, raw adhesive tape should be twine properly on the thread of safety valve, and tighten the safety valve

Removing Exhaust Silencer

Remove side panel from compressor cabinet. Carefully hold exhaust tube connector and rotate exhaust silencer in counterclockwise direction.

Removing Compressor Inlet Filter

Open cabinet filter cover. Turn filter 1/4 turn counterclockwise. Remove filter assembly from intake port.



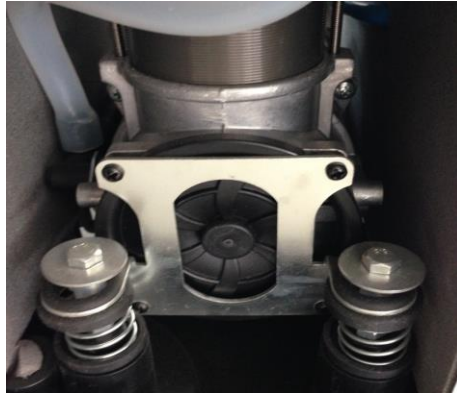
Removing Compressor

Remove rear panel by removing 5 rear panel screws. Remove front panel by disconnecting tubing and electrical connectors.

Disconnecting tube between compressor and air filter, exhaust silencer, and heat exchanger.

MAINTENANCE MANUAL

Remove side panels from compressor cabinet. Unscrew four shock mount bolts on compressor mount. Remove compressor.



Replacing Capacitor

Remove screws securing capacitor. Disconnect capacitor connecting capacitor to compressor. Replace with new capacitor.

Removing Flow meter

Remove rear panel. Remove two tubes on flow meter. Remove screws securing the flow meter. Remove flow meter.

Removing the PCB

Remove rear panel. Disconnect connector pin and tube on PCB board. Remove screws securing PCB. Remove PCB board.

Removing LCD panel

Remove rear panel. Disconnect LCD panel connector on PCB board. Remove screw securing LCD panel. Remove LCD.

Removing Button Circuit Board

Remove rear panel. Disconnect electrical connector from the Button Circuit Board and Control Panel. Remove screw and remove Button board.

Removing Indicator LED light

Remove rear panel. Disconnect electrical connector from the LED light and control panel. Remove screw securing the indicator LED light panel and remove.

Removing Castor

Access bottom of the unit. Remove screw securing castor.

Theory of Operation

The oxygen machine uses advanced PSA (Pressure Swing Adsorption) principle (Figure 6)

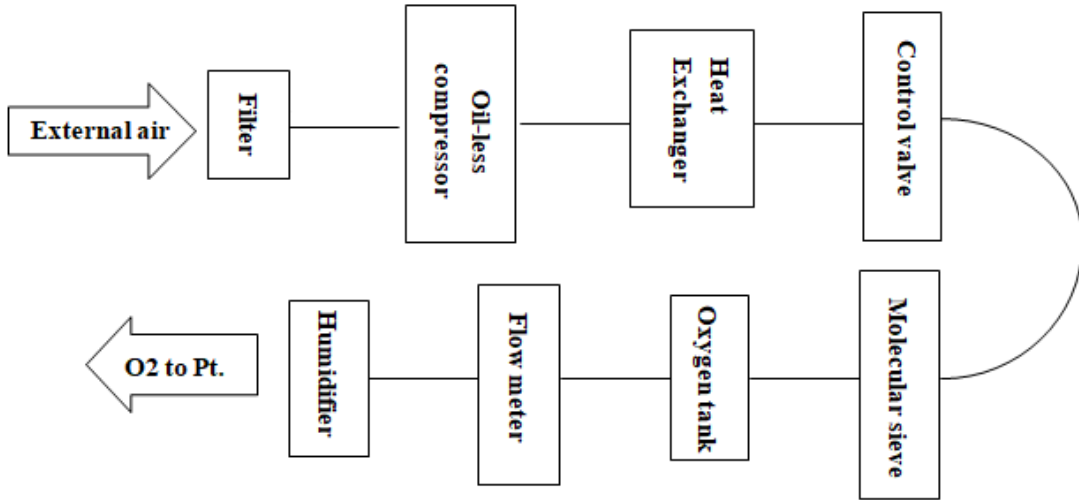


Figure 6

Electrical Components-Specs/LCD

Block Diagram of Circuit Board (Figure 7)

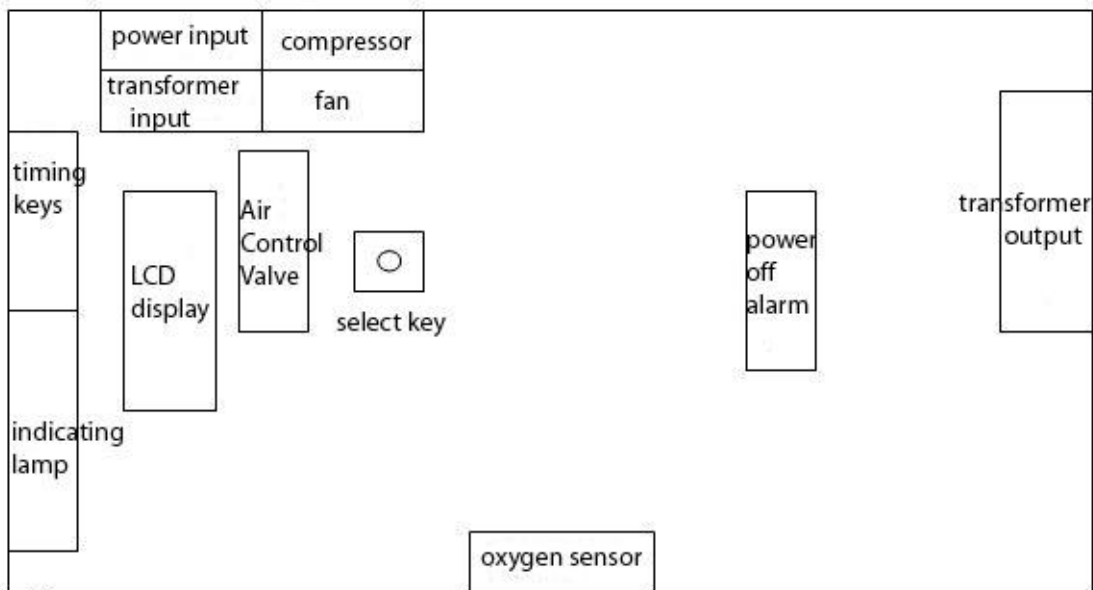


Figure 7

LCD display and Description for Regulating Circuit Board

LCD Display (See Figure 8)

- S. Times: Session times
- O.P. PSI System pressure
- O. Time: Session Operating Time (left four digitals indicate hour, last two digitals indicate minute)
- ACC Time: Accumulated (Total) working hours (calculated as hours)

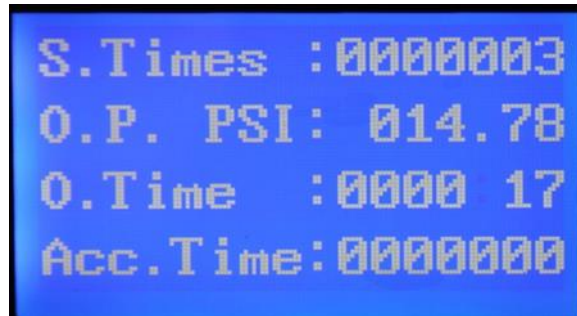
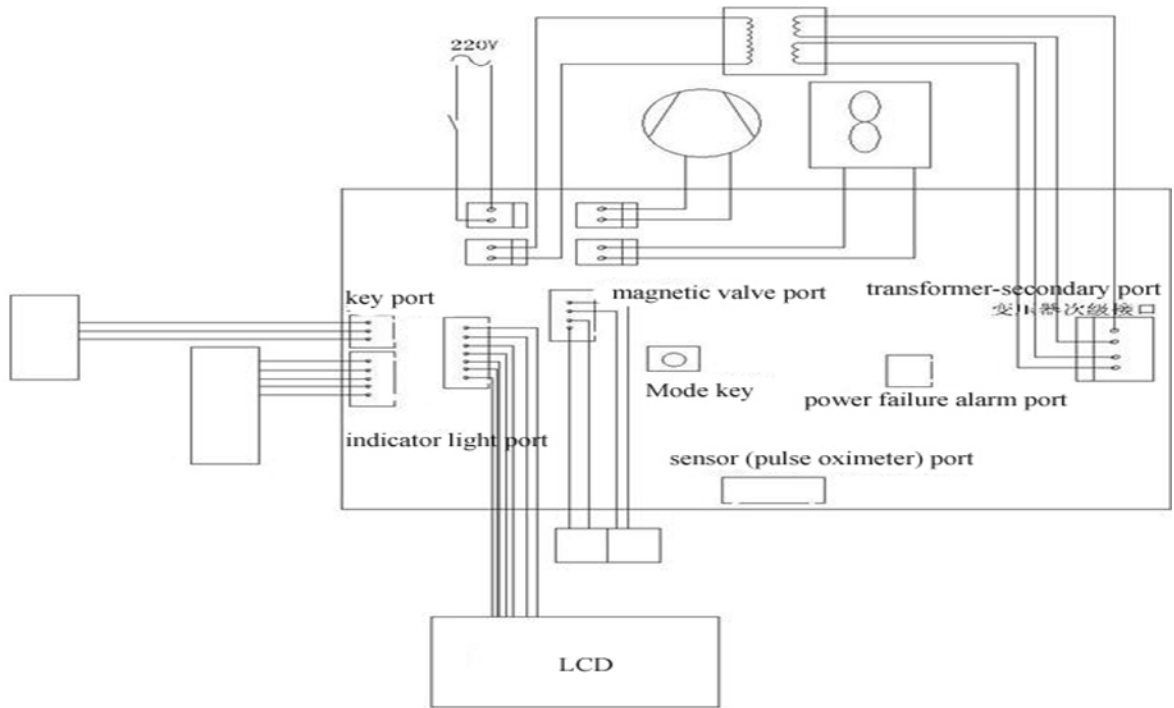


Figure 8

Electrical/Pressure/Noise Specification

- Compressor is oil-free compressor: Voltage: 120(AC) Frequency: 60Hz
- Output pressure of oxygen: 5 PSI – 10 PSI (+/- 2 PSI)
- Starting pressure of safety valve: 36 PSI
- Output oxygen purity: 90% +/- 3 %
- Noise Level: >40 dBA



Troubleshooting Guide

Fault 1:

Problem: Concentrator does not operate with no power on indicating lamp.

Most Likely Cause: No power.

Troubleshooting: Ensure unit is properly connected to power. Check circuit breaker located in AC Power Cord receptacle. Reset

Fault 2:

Problem: Machine does not operate, but power on indicating lamp is lit.

Most Likely Cause: Compressor Capacitor is defective or Compressor is defective.

Troubleshooting: Remove rear panel. Check if there is 120V for compressor power supply on the PCB. If no, possible defective PCB. If yes, remove Compressor Capacitor, and detect if the Capacitor is defective by checking with a Volt Meter or replace another capacitor. If Capacitor checks OK, compressor may be defective. Replace compressor.

Fault 3:

Problem: Output Flow low.

Most Likely Cause:

1. Check for leak in humidifier bottle (if connected)
2. Check proper operation of Flow Meter
3. Check Output Pressure (5 PSI – 10 PSI +/- 2 PSI)

Troubleshooting: Remove rear panel. Use a pressure gauge to test the pressure between the flow meter and pressure regulating valve. Using a screw driver, adjust the pressure regulating valve until the pressure gauge indicates 5 PSI.

Fault 6:

Problem: Concentrator is running, but no outlet flow (ball does not move in flow meter). There is a continuous audible alarm and “LP” led indicator is lit

Most Likely Cause:

1. Flow meter knob was tightly closed or damaged.
2. Large leak inside the machine. Inspect flow meter, pressure regulating valve, oxygen storage tank, radiator or other major components)

Troubleshooting:

1. Flow meter knob was tightly closed or damaged. Check flow meter knob for damage and to ensure it is able to be properly turned counterclockwise (on). If not, replace flow meter.
2. Large leak inside the machine. Inspect flow meter, pressure regulating valve, oxygen storage tank, radiator or other major components)

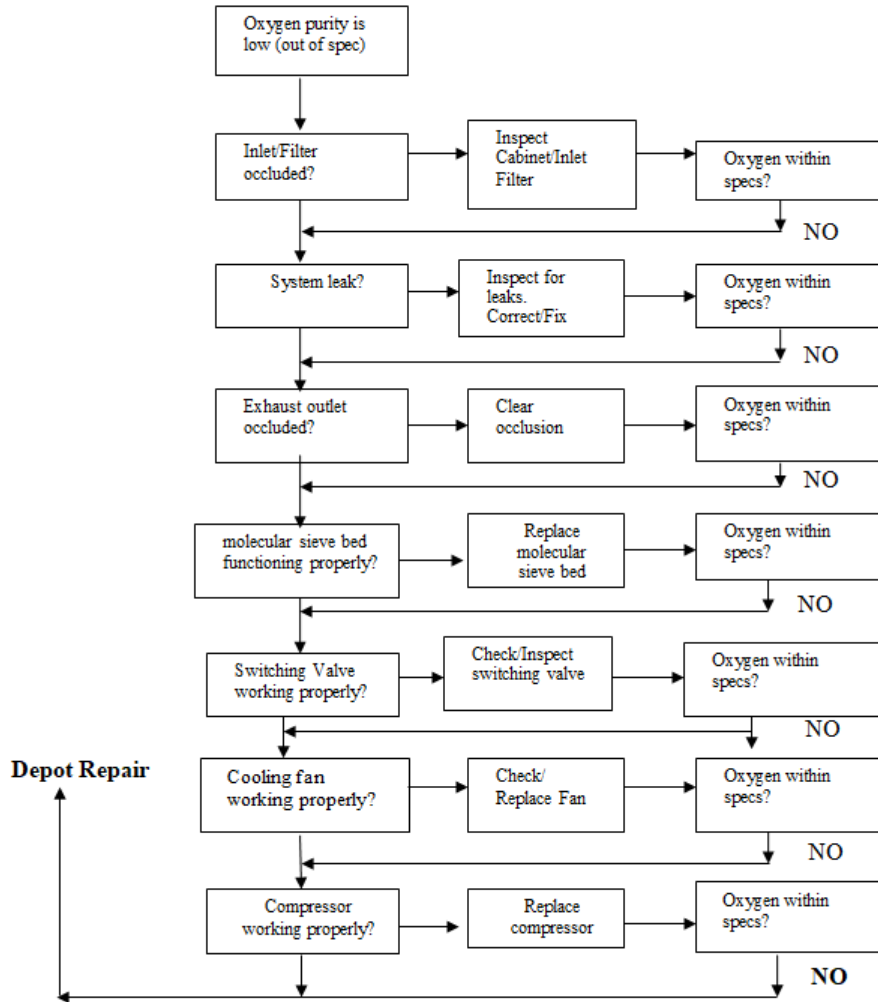
Fault 7:

Problem: Oxygen concentration is low (out of spec)

Most Likely Cause:

1. Air intake occluded
2. Compressor defective.
3. Exhaust outlet occluded
4. Internal Leak
5. Defective/Improper function of molecular sieve bed.
6. Defective Circuit Board
7. Switch valve is defective.

Trouble shooting method: (See Flow Chart on next page)



Fault 8:

Problem: There is large vibration when oxygen machine is working

Most Likely Cause:

1. Improper installation of the intake-tube between air intake filter and compressor.
2. Improper installation of compressor exhausts dampener assembly.

1. Readjust the position of air intake filter and intake-tube.
2. Remove the side panel of compressor and ensure compressor exhaust dampener is properly installed