



LONGFIAN SCITECH CO., LTD

**SERVICE MANUAL
FOR HIGH PRESSURE GENERATOR**

No.401,4th Floor, Block 1, Building 1, College Tech. Zone, No.5699 North

Second Circle Road, Baoding, Hebei, 071051, China

Tel: +86-312-3169262 Fax: +86-312-3169301

www.longfian.com

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External Structure

External Structure :see figure 1&2, the parts :See table1

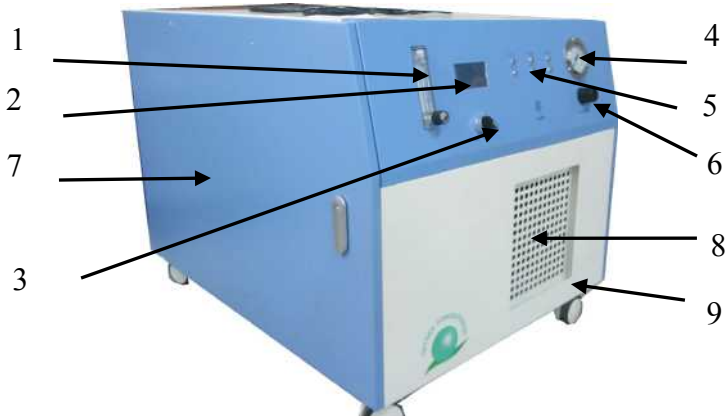


Figure 1

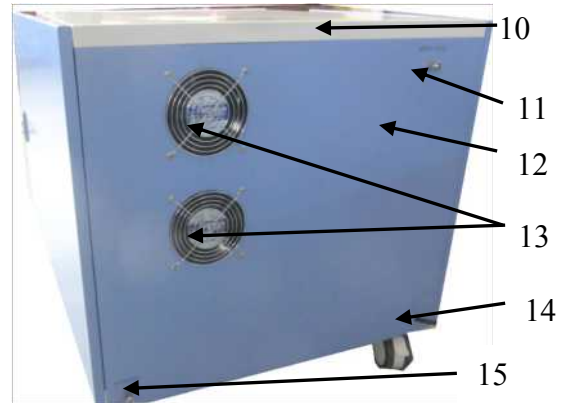


Figure 2

S/N	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Name	flowmeter	LCD display	power switch	pressure gage	indicating lamp	pressure regulating valve	side panel	Air filter	front panel	top panel	oxygen outlet	back panel	fan	power line	outfall

table1

Main Service Tools and Accessory Materials

Main Service Tools and Accessory Materials: see table 2

Tools		Accessory Materials	
Name	Model	Name	Model
Phillips screwdriver	400mm, 200mm	704 silica gel	704
Slotted screwdriver	200mm		
Impact wrench	6mm、9mm		
	8~10、12~14		
	13~15、14~17		
	19~22		
Peeling pliers			
Nipper pliers		PU tube nylon tube	Φ12×10
Diagonal cutting pliers			φ10×8
Tube cutter			Φ8×6
Electric soldering iron	35W		Φ6×4
Avometer	FLUKE 17B		
Oxygen density tester	handheld	Solder wire	0.6
Pressure gauge	0~0.4Mpa		

Table 2

Internal Structure and Name of Major Components

Front elevation : see figure 3; Left elevation: see figure 4; Right elevation :see figure 5; Back elevation: see figure 6

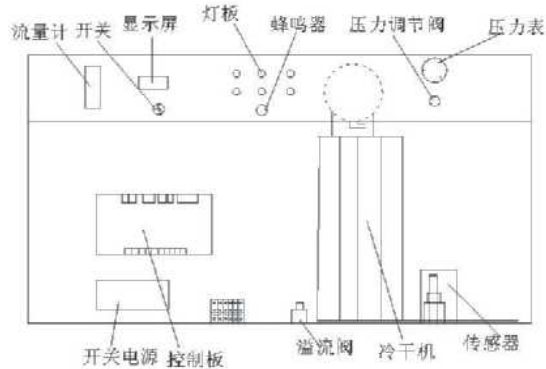


Figure 3

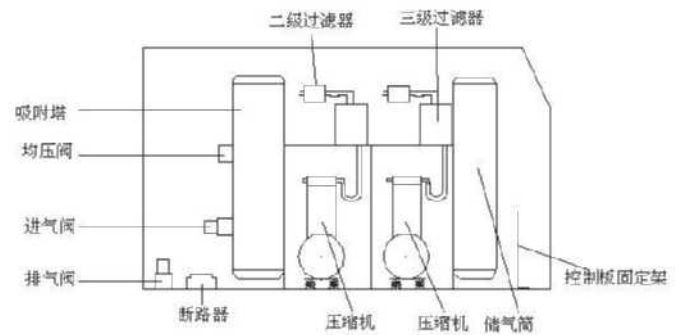


Figure 4

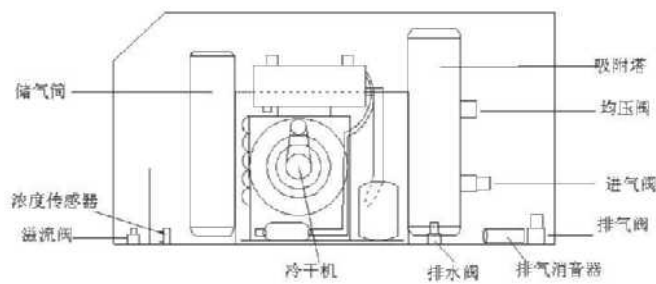


Figure 5

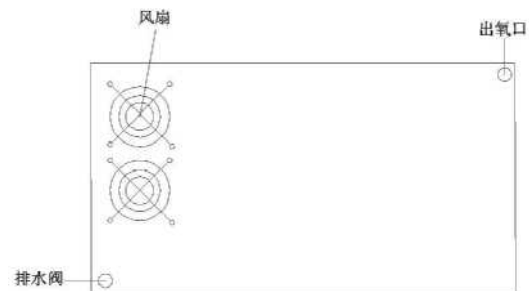


Figure 6

Dismantling Method

4.1 Dismantling the shell

4.1.1 Open the side panel, press/lift the hinges installed in the side panel(Two hinges),and then remove the side panel(See figure 7)

4.1.2 After removing the side panel, unscrew the retaining screw in the top panel, and then can remove the top panel(See figure 7)

4.1.3 Using Phillips screwdriver, unscrew the retaining screw in the front panel and then remove the front panel (See figure 8)

4.1.4 When removing the back panel, take down the fixed clamp of power line, take the power line of fan apart installed in the back panel and unscrew the retaining screw .



Figure 7

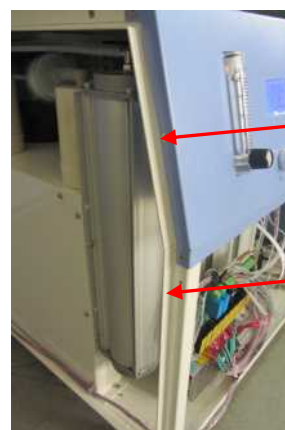


Figure 8

4.2 Dismantling front panel

Take the tube apart that connect with pressure valve and flowmeter, take down the 3 pin connector of LCD display, unscrew the retaining screw and then can remove the front panel (See figure 8)

4.3 Dismantling PCB board and power switch

After removing the front panel, the area of PCB board will be come into view. Take all the connector apart installed in the board, it include: valve's wiring (vent valve, inlet valve, balance valve, drain valve), fan's wiring, dryer's wiring, compressor's wiring, power switch's wiring(24V), 7-pin connector of LCD display, 5-pin connector of lamp panel, 3-pin connector of temperature sensor, power supply wiring of oxygen sensor (5V), 4-pin connector of power failure alarm, the connecting tube of pressure sensor, the power line in the Wire terminal. Using Phillips screwdriver, unscrew the retaining screw in the PCB board and switching power supply and then can remove the PCB board and switching power supply(See Appendix 2)

4.4 Dismantling dryer, molecular sieve and oxygen tank

- 1、unplug the connecting tube between dryer and compressor, dryer and inlet valve, dryer and drain valve; Unscrew the retaining screw installed in dryer and then can remove the dryer by using Impact wrench
- 2、unplug the connecting tube between valves , zeolite sieve and oxygen tank. Unplug the connecting tube between Exhaust valve and Intake valve using #19 wrench; Equalizing valve (#13 wrench); Using #13 wrench,unscrew the screws between molecular sieve and oxygen tank ,unplug the tube, take the retaining screws down in the holder of Intake valve and equalizing valve, remove the holder and then unscrew the retaining screws between the molecular sieve and cabinet using Phillips screwdriver. The molecular sieve was taken off. (See figure 9)

- 3、**Dismantling oxygen tank.** Unscrew the Retaining screw between oxygen tank and cabinet, unplug the connecting pipe, and then remove the oxygen tank.

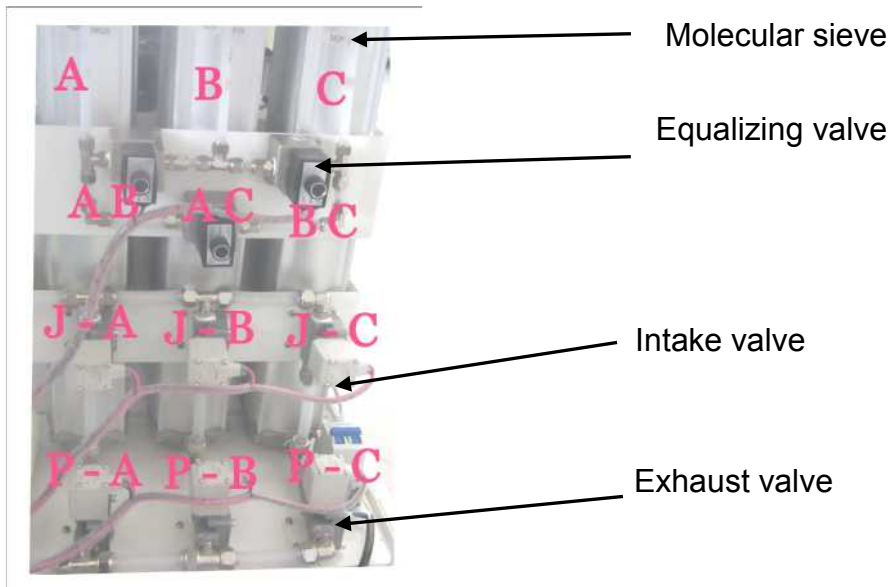


Figure 9

Caution: After removing molecular sieve,
Inlet and outlet of molecular sieve tank
must be properly blocked to
prevent damp air entering the tank,
and damaging molecular sieve.

4.5 Dismantling magnetic valve

Intake valve and equalizing valve were fixed in holder. Unscrew the screws which connect the elbow, unplug the connecting pipe and then take the screws down. The valve can be removed now (please remove the holder of equalizing valve, then the valve can be removed)

4.6 Dismantling Safety Valve

Unscrew the Retaining screws on the left of small casing (facing oxygen machine), then unscrew safety valve using #14 wrench. Please choose the correct Safety Valve (release pressure is 0.5MPa)

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

4.7 Dismantling Exhaust Muffler

With the connector connecting exhaust muffler and exhaust pipe, can remove the exhaust muffler.

4.8 Remove intake filter (replace filter)

1. Unscrew the screw of upper cover using Phillips screwdriver, then can change second filter and third filter.
2. Replace the first filter: the location as Picture1, the first filter can be replaced directly;
Replace the second filter: the location as Picture4, unplug the second filter, you can replace the filter cotton inside; replace the third filter: the location as Picture4, unplug the intake filter anticlockwise and take cotton filter and clean it according to user manual and change to new cotton filter and then screw the intake filter

4.9 Remove the compressor

- 1、 After remove the dryer, unplug the fastening screw of fan above the cabinet, remove the fan, and remove the baffles on the sides of cabinet, unplug the silicon tube between compressor and inlet air filter.
- 2、 Unplug the fastening screw of sides of cabinet, and remove the cabinet, and then Unplug the screw at the bottom of compressor bracket using Phillips screwdrivers

4.10 Replace the capacitor

Unplug the screw on the side of capacitor card, and take the capacitor out, and then cut the lines connecting to the compressor, and replace the start capacitor which is needed to replace.

4.11 Remove flow meter

Loose the screw on the top and bottom of flow meter using No.13 wrench, and unplug the connecting tube, and unscrew the fastening screw, and take the flow meter out from front panel.

4.12 remove the LCD screen

Unplug the plug between the LCD and control board, unscrew the fastening screw of LCD , take LCD. LCD connecting plug(refers to Appendix 2)

4.13 Remove universal caster

Mat pad under the machine, make all four castor of oxygen concentrator impending, then remove castor with Spanner no.14.

五、 Working Principle

This oxygen concentrator use advanced Pressure Swing Adsorption principle
(see Figure 10)

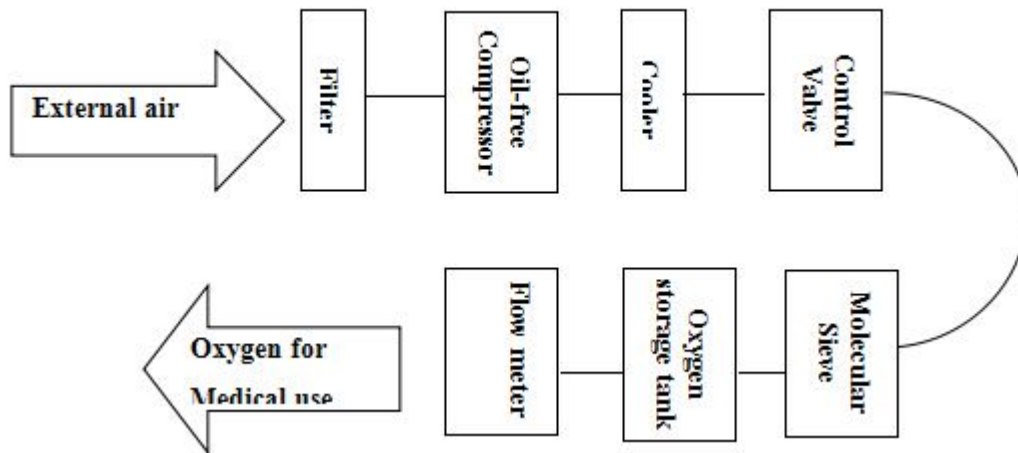


Figure10

六、Description of Circuit

6.1 Circuit structure and all joints diagram, As show in figure11, AC,BC,AB is equalizing valve interface, P-C、 P-B、 P-A is exhaust valve interface,J-A、 J-B、 J-C is inlet valve interface, each valve location as show in figure 9.

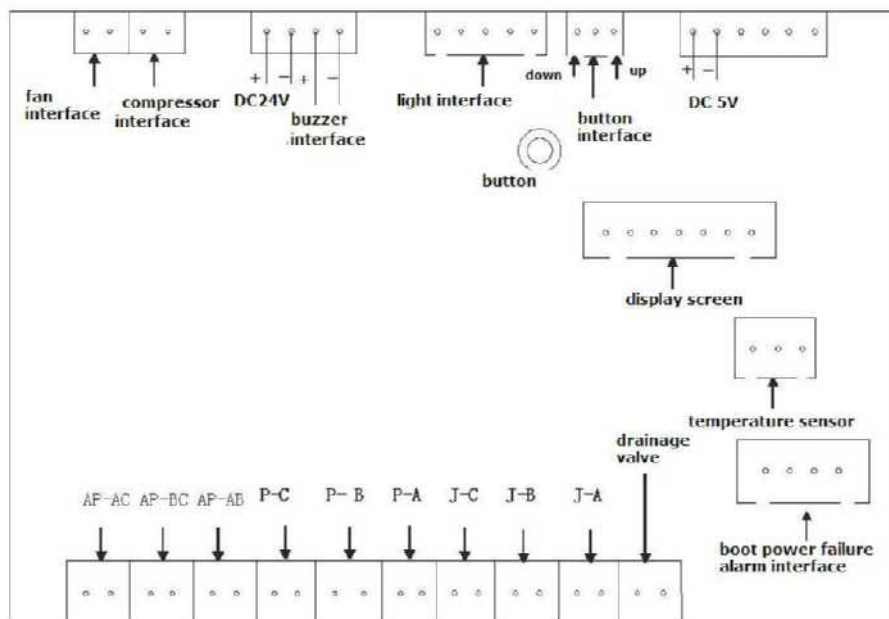


Figure 11

6.2 Description of LCD screen and Circuit

1. Start-up display: The first line shows the pressure of the machine; The second line shows the temperature; The third line shows the present working time; The fourth line shows accumulating machine.(as show in figure12)

Pressure MPa:	0.378
Temperature °C:	25.8
Present time :	0000:10
Accumulating time :	000000

Figure 12

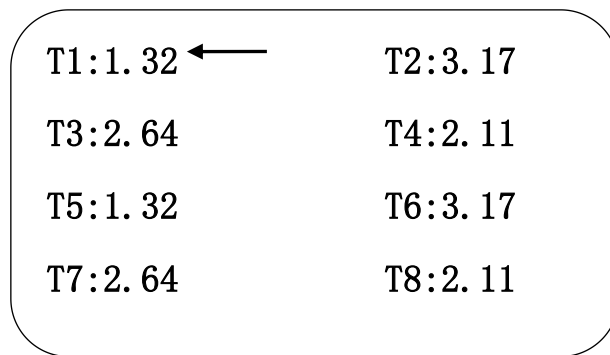


Figure 13

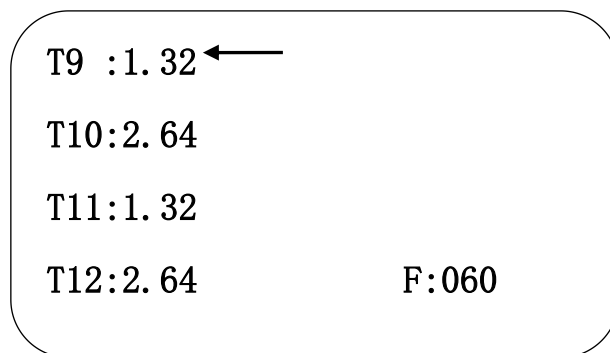


Figure 14

2. Press button on control board one time, it will show as figure13,figure14. Every time press button, it can change the item which arrows indicate. The item which arrows indicate is the time which can be changed.(T1---T12、F)。

3. After select the item (T1---T12、F), push button +- to plus and minus for this item, as show on figure11.

20L basic parameter as follows:

T1: 0.77 ; T2: 1.848 ; T3: 1.54 ; T4: 1.232 ; T5: 0.77 ; T6: 1.848 ; T7: 1.54 ; T8: 1.232 ; T9: 0.77 ; T10: 1.848 ; T11: 1.54;
T12: 1.232 ; F: 60

Of which: T1-T12: represents cycle swith time, unit: second F:represents drainage interval time, unit: minute

6.3 Gas circuit wiring diagram (see appendix 1)

6.4 Wiring diagram (see appendix 2)

七、Main technical parameter

1. Oil free air compressor: voltage: C 220V/AC230V/AC110V

Wiring diagram (see appendix 2)

Frequency: 50Hz/60Hz

2.Oxygen output pressure: 0.14-0.4 MPa

3.Safety valve start pressure: 0.5 MPa

4. Oxygen purity: 93%±3%

JAY-20-4.0 ≤60dB

Machine noise JAY-20-4.0 ≤60dB

八、Common trouble shooting:

Trouble 1:

Phenomenon: the unit does not operate, and power supply indicating lamp does not light.

Cause: no power on.

Trouble shooting method: Check if there is power supply, and check if fuse is defective.

Inspect whether there is break in power cord or not.

Trouble2:

Phenomenon: the unit doesn't operate, but power supply indicating lamp lights.

Cause:

1. Connecting line is not connected well
2. Starting capacitance of compressor is defective or compressor defective.
3. Low voltage (less than 187v), lower than the start voltage of compressor

Trouble shooting method:

Trouble shooting method:

1. to check voltage is 200V (+10%/-15%) using avometer
2. Check related lines if connected well;
3. Remove starting capacitance to test capacitance defective or not by avometer, or change a capacitance. If starting capacitance is not defective, then compressor is probably defective. Replace a new compressor: (If machine operates for a long time without stopping, or suddenly halts at some day and is capable of operating after the machine is closed for cooling, indicating that automatic stopping is due to the long operating time of compressor, hence causing compressor overheat to make compressor open overheat protection. For this reason, it is necessary to avoid machine continuously operate without stopping for a long time as can as possible. It is better to operate for 12 hours with 30 minutes of stopping.)

Trouble 3:

Phenomenon: Oxygen machine sounds toot in regularity, or noise in compressor increases.

Cause: System pressure increases to cause self protection of the system. Starting pressure of safety valve becomes low. solenoid valve damage or solenoid valve doesn't work; pressure sensor ruins.

Trouble shooting method:

1. Open the casing of oxygen concentrator to connect a pressure gauge in series at the inlet of air dryer, then start up the machine and monitor the reading of pressure. If system pressure is over 0.45 Mpa, system pressure is considered to be high, and somewhere in the system is blocked up. Please inspect air dryer, valve and molecular sieve. If system pressure does not exceed 0.45Mpa, starting pressure of the safety valve becomes low. At this time reset starting pressure of the safety valve to 0.45 Mpa or replace a new safety valve with its pressure being properly adjusted. (Remove the baffle on one side

of air intake tank of small casing (or cover piece), then remove the safety valve on compressor. Select a qualified safety valve and place it on its position and tighten. Caution: Thread button on safety valve must be tied with raw adhesive tape). Trouble is removed at the time.

2. Check the solenoid valve connection, measuring the resistance between each valve should be $121 \pm 10\%$ ohms, or solenoid valve is damaged, need to change.

3. Connect to the power supply, measure voltage between inlet solenoid valve socket (the voltage change following with valve indicator switch, when the the corresponding indicator lights up, voltage value for DC24V), if no voltage, the control panel is damaged and needs to change.

Trouble 4:

Phenomenon: exhaust sounds loud or no exhaust sound

Cause:

1. Exhaust muffler joint falls off
2. Exhaust muffler broken
3. exhaust valve doesn't work

Trouble shooting method:

For exhaust sounds loudly: check joints falls off or not, if falls, connect to joints well, if no falls, check exhaust muffler is broken or not, if broken, then need to replace exhaust muffler. without exhaust, check whether the joint of the control panel on the exhaust solenoid valve has DC24V voltage, if there is voltage, the exhaust solenoid valve has a problem, if no voltage, the control board has a problem (electromagnetic valve connection in the following LED indicator, should be 24 v voltage).

Trouble 5:

Phenomenon: Oxygen outlet flow is small

Cause:

1. air filter blocks
2. Connection pipe is not tight, oxygen leaking
3. Oxygen sensor flow big

Trouble shooting method:

1. Clean filter cotton and cloth;
2. Check the pipeline, if has slight leakage. Brush soapy water in front of the flowmeter I and gas circuit interface, check whether there are air bubbles, if has slow bubbles, there is slight leakage, access line again.
3. Check and adjust pressure regulating valve which connects to oxygen sensor, oxygen out from the sensor should be a bubble per second

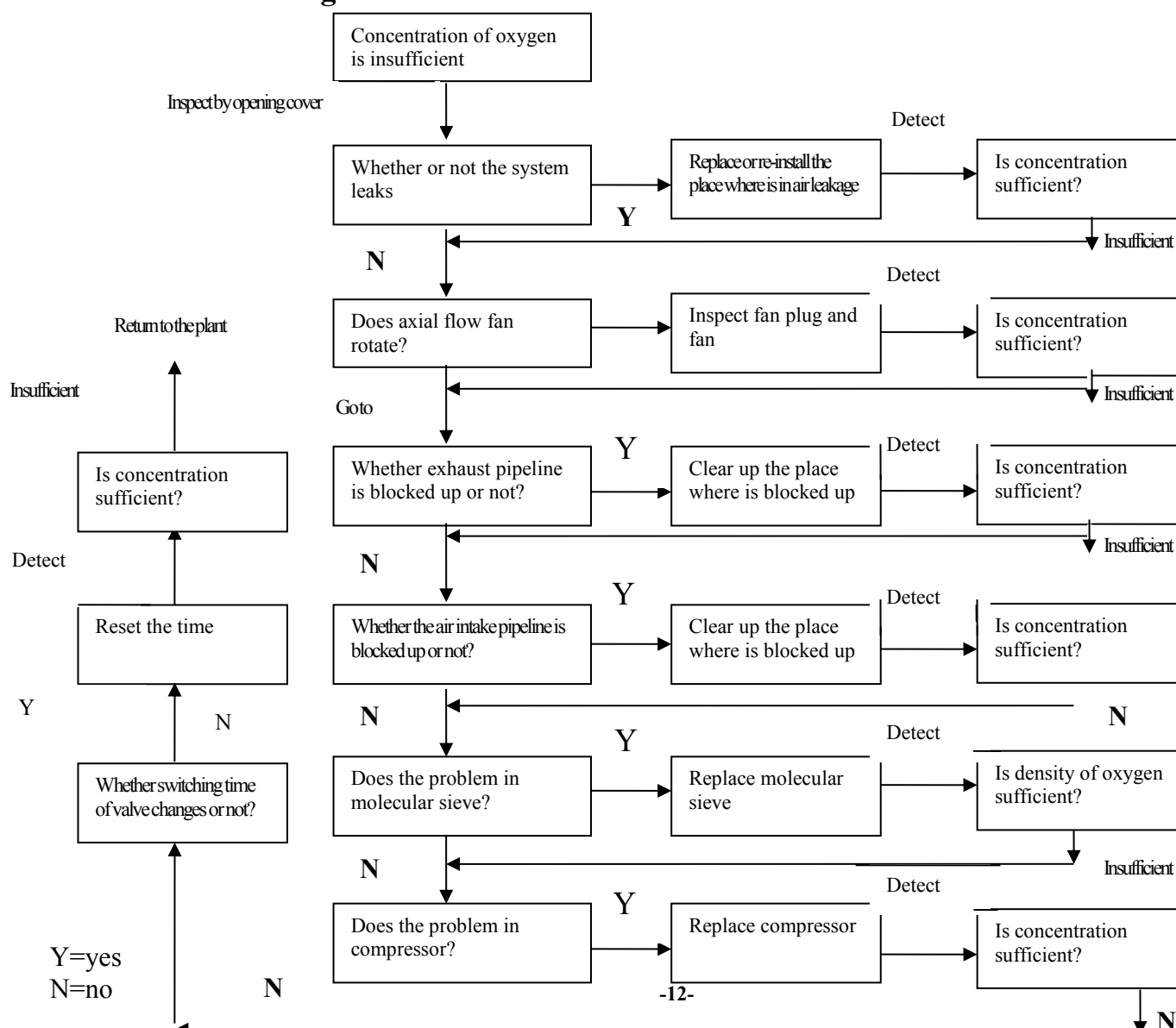
Trouble 6 :

Phenomenon: Low oxygen purity alarm lamp (L.02) Light

Cause: 1.The operation Voltage not on the rated voltage;

- 2.System is in air leakage.;
- 3.Exhaust pipeline is blocked up.;
- 4.Air intake pipeline is blocked up.;
- 5.Separating function of molecular sieve decreases.;
- 6.Power of compressor reduces.;
7. the valve wiring is incorrect

Trouble shooting method:



Trouble 7 :

Phenomenon: The unit operates, but there is no oxygen coming out. Flowmeter float remains static at bottom. There have continue alarm voice .The low pressure yellow lamp "L.P." long bright .

Cause:

1. Flowmeter knob is tightly closed or defective;
2. Low voltage, the compressor running under the rated condition;
3. There exists serious leak in the machine---- (for instance: Flow meter, pressure stabilized valve, oxygen storage tank, radiator or other pipelines)

Trouble shooting method:

1. Check the power voltage use multimeter;
2. Open power switch of oxygen concentrator and rotate flow meter knob clockwise to see if flow meter knob rod rotates with it. If not rotate, flow meter is broken. Replace or repair flow meter. Otherwise, there is serious air leak in the machine. Please inspect internal pipeline and components of the machine. The Soap water can be painted in the each gas line interface, check whether have air bubbles, if bubbles, then there is leakage , re-examine and access lines.

Trouble 8:

Phenomenon: There is large vibration when the unit operates.

Cause:

1. Improper connection installation of air intake pipe between air intake tank and compressor.
2. Improper installation of damping device of compressor
3. The location screws deformation is used for compressor.

Trouble shooting method:

1. Readjust the position of air intake tank and air intake pipe to enable it not to produce effect on the damping device of compressor. Swing motion of compressor is required to freely swing.
2. Remove compressor and its chassis, and reset position of damping spring and fixed screws.

Trouble 9:

Phenomenon: Gas at inlet and outlet are felt to be hot and the rear casing is also hot as it is touched by hands when oxygen concentrator operates for 10 minutes or so.

Cause:

1. Circuit board is defective, causing fan stop.
2. Plug of fan drops.
3. Fan is defective.

Trouble shooting method: Open the rear casing to see if there is drop in fan plug of circuit board or not. If it drops, plug in the plug. Otherwise, check if there exists power in fan plug. (Fan

voltage is 220V AC). If there is no electricity, indicating a trouble in circuit board (repair or replace circuit board). If there is electricity, indicating that fan is damaged (replacing fan).

Trouble 8:

Phenomenon: Liquid crystal display is short of strokes.

Cause:

- 1.Liquid crystal display is deffective.
- 2.Due the false alarm ,backlight extinguished

Trouble shooting method:

Reconnect the main power, restart the machine, see the backlight is bright; if not light, replace the LCD screen

九. Accessories

9.1.12X10NYLON TUBE	1.5M
9.2.10X8 NYLON TUBE	1M
9.3.8X6 NYLON TUBE	2M
9.4.The first filter	1
9.5.The second filter	12
9.6.The third filter	4

+、Appendix

