

FREEZE-DRYER



Instruction Manual



Model : LFD-100A

Please read this manual carefully before using the instrument

Labnics Equipment

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Chapter 1: Introduction

Vacuum freeze-dry technology, or sublimation dry, is a method of moisture-bearing substances frozen in advance become dry in the vacuum owing to vaporizing away the moisture. The substances frozen can be well preserved for a long time and returned to their former state once being watered without losing their bio-chemical properties. This technology has a broad use in medicine, pharmacy, food industries, bio-products fields etc.

There are two types of LGJ-10 Freeze-Dryer Series (both have pre-freeze function).

- General type: The substances are dried after pre-freeze.
- Capping type: After pre-freeze and dry, the ampicillin bottle containing substances can be capped with manual control under vacuum condition.

Chapter 2 : Characteristics and technical parameters

1. Main characteristics :

- (1) This machine is used Germanic compressor, which cools fast, and can get low temperature.
- (2) The temperature, vacuum are exactly and intuitionistic displayed with digital.
- (3) The cover of dry chamber is made of colorless and clarity organic glass. This makes it easily to observe the total vacuum process.
- (4) Vacuum pump is connected with main machine with international standard KF fast joint.
- (5) Can pre-freeze substances for saving the cost of refrigerator.
- (6) It is stable, easy to operate and low noise.

2. Technical parameters

- (1) Freeze-dryer temperature: -55°C (empty)
- (2) Vacuum: Below 15Pa (empty)
- (3) Dry volume:
General type: plate 4, $\phi 200\text{mm}$, contain 1200ml (thick 10mm); or ampicillin bottle 256.
Capping type: three levels of plates $\phi 180\text{mm}$, contain 680ml; or ampicillin bottle 135.
- (4) The thick of substance cannot be above 10mm. Freeze time is about 24 hours.

Chapter 3 : Use conditions

1. Normal work conditions:

environment temperature $-10^{\circ}\text{C} \sim 30^{\circ}\text{C}$

relative humidity $\leq 70\%$

power supply $220\text{V} \pm 10\%$ (single phase) 50Hz

Work environment should be no electric dust, explode and erode gases, and inference from high electromagnetic field.

2. **Transport and store conditions:**
environment temperature $-40^{\circ}\text{C} \sim 50^{\circ}\text{C}$
relative humidity $\leq 93\%$
store environment: drafty and no erode gases.
3. **Safety classification: I B.**

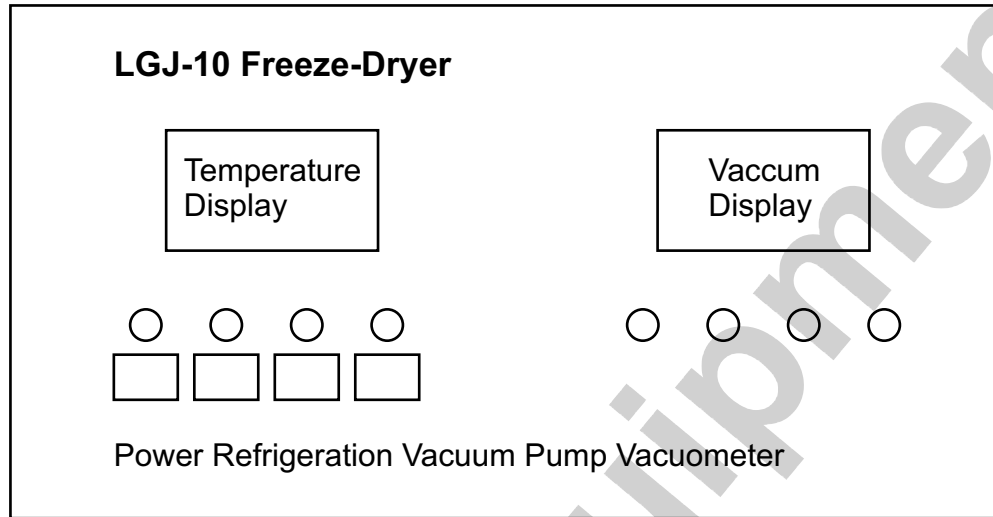
Chapter 4 : Install and prepare for dry

1. Connect the vacuum pump and host machine with compression resistance tube. Before connection, use vacuum fat spread the airproof ring of two ends.
2. Connect the power supply and the vacuum pump power.
3. Carefully read the user manual of vacuum pump. Check the oil level and make sure it's above the middle line of oil glass.
4. Make sure the airproof ring of trap clear. Before use, spread vacuum fat.
5. Put the substance on the plate and then on the pre-freeze shelf. Cover the lid and pre-freeze for 4~6 hours.
6. If use capping type, put the substances into ampicillin bottle and pre-freeze for 4~6 hours. After that, dry them on the plate.
7. Press the power button 3 seconds. And the power will supply to the control system. At this time the temperature window will display the temperature of the cooling system.
8. Press "Refrigeration" button, the cooling system starts to work and the temperature decrease dramatically. Begin to pre-freeze.

Chapter 5 : Dry operation

1. **General Type**
 - (1) Install plate on the dry shelf. Cover the glass lip. Make sure the bottom of cover contact with the "O" shape airproof ring tightly.
 - (2) Screw the vacuum valve tightly clockwise. Press "Vacuometer" key. It indicates the vacuum $100 \sim 110 \times 103$. Press "Vacuum pump" key, the vacuum pump starts work till below 15Pa.
 - (3) 24 hours latter, observe the substances and feel it total dry. Open the vacuum valve counter-clockwise and charge. Press "Vacuum Pump" key, the vacuum pump stop work, Press "Vacuometer" key, the vacuum disappears.
 - (4) Open the cover, finish the dry process.
2. **Capping Type**
 - (1) Put the ampicillin bottle on the plate. Install plate on the dry shelf. Cover the glass lip. Make sure the bottom of cover contact with the "O"-shape airproof ring tightly.
 - (2) Screw the vacuum valve tightly clockwise. Press "Vacuometer" key. It indicates the vacuum $100 \sim 110 \times 103$. Press "Vacuum pump" key, the vacuum pump starts work till below 15Pa. Start to dry.

- (3) 24 hours later, observe the substances and feel it total dry. Turn the cover counter-clockwise and pull down the bar. Cap tightly.
- (4) Open the vacuum valve counter-clockwise. Press "Vacuum Pump" key, the vacuum pump stop work. Pull down the cover, and store the substances.



Control Panel

Chapter 6 : Turn off the machine

1. Press "Power" key.
2. Pull down the electric plug, vacuum pump power plug.
3. Clear the trap, shelf, and cover.
4. If the vacuum pump stops work, please cover exhaust hole to proof dust.

Chapter 7 : Notes

1. Vacuum pump set on the ground and keeps a suitable high with the host machine. When power off suddenly, this will prohibit the oil return. If power off suddenly, screw the air-charge valve. Get the substance out and store carefully.
2. Work environment temperature $\leq 32^{\circ}\text{C}$, humidity $\leq 80\%$.
3. Before shut down the machine, charge air and then switch off the vacuum pump. This will prohibit the oil return and contaminate the substances.
4. The cover is tightly connected with the "O"-shape airproof ring. Make sure it is clear. Should not use organic compound to clear it. Prohibit collide, lacerate or damage them.
5. After continually work for 200 hours according to the use manual, should change oil. Pay attention to maintenances.
6. Cannot turn on and off the power and refrigeration frequently. After shut down the machine, wait for at least three minutes and restart the machine.
7. Use electrical outlet with grounded line.

Chapter 8 : Frequency failure and eliminate

1. Vacuum below 15Pa

- (1) Check the connection between the vacuum pump and the host machine. Make sure the trap is tight.
- (2) Check the bottom of the cover. Make sure it is clear and integrate.
- (3) Check the "O"-shape airproof ring. Make sure it is clear and in correct position.
- (4) Check the vacuum pump. Make sure it is work normally and the oil is clear.
- (5) Check the vacuum valve. Make sure it is tightly screwed.

2. Leak oil from vacuum pump: Check it and change parties damaged.

3. The temperature is too high: The environment temperature is too high and hard to cool down. If cooling system has trouble, please contact with our technicians.

Chapter 9 : Accessory

No.	Name	Quantity	Remarks
1	Host Machine	1	√
2	Organic Glass Cover	1	√
3	Shelf	1	√
4	Capping Shelf	1	
5	Capping Organic Glass Cover	1	
6	Plate 200 ml	4	√
7	Capping Plate 180 mm	3	
8	Vacuum Pump	1	√
9	Pre-freeze Shelf	1	√
10	Heat Preservation Cover	1	√
11	Cover	1	
12	Vacuum Compression Resistance Tube (2 traps)	1	√
13	"O"-Shape Airproof Ring	1	√
14	Electrical Wire	1	√
15	User Manual	1	√
16	Certification	1	√
17	Guarantee Card	1	
18	Vacuum Fat	1	√
19	Consumer Feedback Card	1	√
20	Fuse 5X20 10A	4	√

Notes: "√" means contain this items.

SERVICE REPORT

Customer's Address : _____ _____	Tel.No.: _____ Fax No.: _____ Weekly Off.: _____
Contact Person / Designation : _____	Dept.: _____

Date	Time		System Configuration	Model	Serial No.	Date :	SR. No.	
	From	To					Status : OK <input type="checkbox"/>	Not OK <input type="checkbox"/>
						Installation <input type="checkbox"/>	Warranty <input type="checkbox"/>	
						Demonstration <input type="checkbox"/>		
						Maintenance <input type="checkbox"/>	Contract <input type="checkbox"/>	
						Repairs <input type="checkbox"/>		
						Application <input type="checkbox"/>	Billable <input type="checkbox"/>	
						Calibration <input type="checkbox"/>		
						Validation <input type="checkbox"/>	Courtesy <input type="checkbox"/>	

Nature of Problem : _____

Observation & Action Taken : _____

Customer's Remarks : _____

Parts Replaced : _____

Parts Recommended / Action Required : Yes <input type="checkbox"/> No <input type="checkbox"/>		Requisition Number :
Service Engineer's Name & Signature	Customer's Name, Signature, Date & Stamp	