



北京松源华兴科技发展有限公司

Beijing Songyuan Huaxing Technology Development Co., Ltd.

LGJ-10F 压盖型 真空冷冻干燥机

Model LGJ-10F
vacuum freeze dryer





主要特点： Main characteristics

- 预冻干燥在原位进行，减少干燥过程的繁琐操作，实现了自动化；
- The process of pre-freezing and drying finishes in situ, so it changes the complicated operation and automates the dry process.
- 搁板温度误差 $\leq 5^{\circ}\text{C}$ ，干燥效果均匀；
- The temperature error is less than or equal 5°C . The drying effect is uniform.
- 隔板温度可调、可控、可摸索、中试和生产工艺；
- The partition board temperature is adjustable and controlled.
- 触摸屏操作，PID 控制，显示干燥曲线；
- Touching-screen operation, PID control, Display drying curve, the record device is optional.
- 方形托盘不易变形，易于操作，便于清洗；
- The sample tray is square so it's easy to clean and operate.
- 配置充气阀，可充干燥惰性气体；
- Valve with nitrogen is optional.
- 干燥室采用高透光无色透明有机玻璃门，在操作过程中能清晰观察物料的变化过程。
- The drying chamber adopts transparent organic glass door the changing process of material is clear.



主要技术参数 Main technical parameter

	项目 Item	LGJ-10F
干燥室 Drying chamber	干燥面积 Freeze-drying area	0.1m ²
	隔板层数 Layers of partition board	1
	隔板温度范围 Temperature scope of partition board	-50℃-+50℃ (空载 no-load)
	隔板温差 partition board temperature error	±5℃ (平衡时 in balance)
	隔板间距 partition board space	70mm
	西林瓶装量 Filling volume of vial	Φ22mm 220支 Φ16mm 434支
	隔板尺寸 Size of partition board	270mm*400mm*15mm
捕水冷阱 Cold trap	冷阱最低温度 Cold trap temperature	≤-50℃
	捕水能力 Water-capture capability	3Kg
	盘装液体 material	1L (按照厚度10mm 计算) (thickness 10 mm)
	化霜方式 Defrost mode	自然化霜 Naturalized cream
基本参数 Basic parameters	极限真空度 Vacuum degree	≤10Pa
	压盖方式 Gland way	手动压盖 Manual gland
	冷却方式 Style of cooling	风冷: 通风良好 室温≤25℃ Air cooling, draughty ambient temperature≤25℃



技术配置一览表 Technical parameters table

A、干燥箱（含 0.1m ² 板层） Chamber (with 1.08m ² shelves)			
序号 SN	名称 Name	型号/规格/材质 Model/Specifications/Material	数量 Number
1	干燥箱 Chamber	进口 AISI 304 不锈钢	1 套
2	板层 Shelves	进口 AISI 304 不锈钢	1 套
		尺寸：270×400×15mm Dimensions: 270×400×15mm	1 层
3	箱门 Door	进口亚克力板材(透明)	1 套
4	制品测温探头 Product sensors	Pt-1000 热电阻 A 级 Pt-1000 Hot resistance A Level	1 支
	隔板温度探头 Temperature sensors (thermal fluid)	Pt-1000 热电阻 A 级 Pt-1000 Hot resistance A Level	
6	冷凝盘管 Condenser coiled pipe	AISI 304 不锈钢	1 套
7	冷凝器测温探头 Temperature sensors (condenser)	Pt-1000 热电阻 A 级 Pt-1000 Hot resistance A Level	1 支
性能参数 Performance parameters			
1	设计压力 Design pressure	常压 Normal pressure	
2	设计温度 Design temperature	常温 Normal temperature	
3	光洁度 Finish	Ra≤1.6 μ m	
4	平整度 Level	1mm/m	
5	板层最低温度 Shelves temperature Min	-50℃	
6	板层最高温度 Shelves temperature Max	+50℃	
7	板层温度均匀性 Shelves temperature uniformity	±5℃（空载平衡后）	
		±5℃（soak stage）	
8	搁板间距 Spacing	70mm	
9	干燥箱外形 Chamber type	长方型 Rectangular	
10	保温层 Insulation	硅酸铝和聚氨酯发泡材料 Aluminum silicate and polyisocyanurate foam	
11	开门方向 Open direction	左侧开门	
12	开门角度 Open angle	大于 90 度 More than 90°	
13	盘管最低温度 Coiled temperature Min	-50℃	
14	冷凝器捕冰能力 Condenser frosting capacity	3Kg/批 3Kg/batch	



15	门密封条 Sealing strips for doors	医用硅橡胶 Medical silicone rubber	
技术优势 Technical advantages			
1	箱体表面光洁度，保证无菌要求；		
2	板层具有很高强度，耐压试验可到 0.9Mpa，能够耐受长期使用； Shelves has high intensity and its maximum valve reaches to 0.9Mpa in the pressure test which can be able to bear the long term usage.		
3	板层通过机械加工，可保证高要求平整度； Shelves are processed by machining which can ensure the demanding level.		
4	板层控温精度 $\pm 0.5^{\circ}\text{C}$ (PID 调节)； Temperature control accuracy $\pm 0.5^{\circ}\text{C}$ (adjusted by PID)		
5	医用硅橡胶门密封条，更加符合无菌要求；		
C、制冷系统 Refrigeration system			
序号 SN	名称 Name	型号/规格/材质 Model/Specifications/Material	数量 Number
1	压缩机型号及数量 Compressor model and number	法国泰康全封闭系统	1 台
2	制冷剂 Refrigerant	绿色环保型 Environment Friendly	适量 Right quantity
3	除酸干燥过滤器 Filter for disacidifying and drying	丹麦 DANFOSS	1 套
4	膨胀系统 Expansion system	丹麦DANFOSS	2 套
5	电磁阀 Solenoid valve	丹麦DANFOSS	2 个
6	单向截止手阀	DANFOSS	2 个
7	板式换热器	国产	
性能参数 Performance parameters			
1	板层制冷速度（空载） Shelf cooling time (empty)	$+20 \sim -50^{\circ}\text{C} \leq 60$ minutes	
2	冷凝器制冷速度（空载） Condenser cooling time (empty)	$+20 \sim -50^{\circ}\text{C} \leq 60$ minutes	
技术优势 Technical advantages			
1	压缩机采用进口泰康全封闭压缩机组，性能更加稳定、可靠； Adopting the BITZER compressor makes the performance be more stable and relibale.		
2	采用符合蒙特利尔公约的环保型制冷剂； Adopt the environmental protection type refrigerant which accords with the Montreal Convention.		
3	制冷系统具有保护功能； The refrigeration system has protection functions.		
C、真空系统 Vacuum system			
序号	名称	型号/规格/材质	数量



SN	Name	Model/Specifications/Material	Number
1	真空泵 Vacuum pump	浙江临海谭氏真空	1 台
2	真空探头 Vacuum gauge	山东济宁	1 个
性能参数 Performance parameters			
1	极限真空 Final vacuum	≤10Pa	
2	抽气速度 Evacuation time	从大气压抽至 10pa≤30min From atm to 10pa≤30min	
D、电气控制系统 Electric control system			
序号 SN	名称 Name	型号/规格/材质 Model/Specifications/Material	数量 Number
1	电气标准 Electric standard	GB/T 4573.1	/
2	液晶屏 Touch screen		
3	空气开关 Breaker	正泰	1 个
4	交流接触器 AC contactor	正泰	/
5	电气保护等级 Protection class	IP22	/
控制方式 Control type		自动控制 automatic	
软件功能 Software function			
1	按照设定好的冻干工艺运行。支持 16 组冻干工艺，每组有 32 段。		
2	工艺设定（配方管理）Technique setting (recipe management)		
技术优势 Technical advantages			
1	友善的人机界面具有各种部件、阀门工作状态及温度、真空度参数显示； There are working state of all kinds of parts and valves and parameter display of temperature and vacuum degree on the friendly human machine interface.		
2	“冷冻干燥”过程中可对配方进行随时调整； The recipe can be adjusted momentarily in the “freeze drying” process.		
3	具有数据、曲线两种记录功能； There is a function for recording both data and curves.		
4	可存储数据、曲线记录； It can save countless data and curves records.		
5	可根据用户实际使用需要增加相应软件功能； It can increase corresponding software function according to actual requirements of customer.		
E、公用工程清单 Utility list			
1	总装机功率 Electricity-total electrical load	3Kw (220V, 50Hz, 2Phase, 5Wire)	
F、设备主要参数 The equipment' s main technique parameter			
1	整机结构 Machine construction	一体式 Union	
2	外型尺寸 Dimension of unit	约 750×800×1390 (mm)	
3	整机重量 Weight of unit	约 260Kg (About) 260Kg	
4	西林瓶装量 Filling volume of vial	Φ 22mm 220 支 Φ 16mm 434 支	
5	冻干原料装量（建议值） Capacity of raw material for freeze drying (suggestive value)	1Kg/批（按照厚度 10mm 计算）	

可选配件 Optional accessory

<p>1. 法国泰康压缩机 France tecumseh compressor</p> 	<p>主要特点:</p> <ol style="list-style-type: none"> 1、超高能效: 能效比比目前市场上最先进的活塞式压缩机还高 12%; 2、杰出的可靠性: 运动部件少,轴向及径向的泰康专利柔性设计提供了前所未有的耐液击和容忍杂质的能力; 3、内置电机断路装置: 能有效保护电机免受高温及高电流之损坏; 4、低噪音/低排气脉冲: 噪音值比活塞式压缩机低 5 分贝以上; 5、简化系统设计:独特的卸载启动设计使单相压缩机启动时无需启动电容/继电器; 6、近 100%的容积效率带来超常的制热能力; <p>Main features:</p> <ol style="list-style-type: none"> 1.high efficiency, it can effect comparing than the most advanced piston compressor on the market at present higher by 12%; 2. excellent reliability, few movement part, axial and radial tecumseh patent flexible design provides unprecedented liquid impact resistance and the ability to tolerate impurities; 3.built-in electrical disconnecting device, can effectively protect the motor from the damage of high temperature and high current; 4. low noise/low exhaust impulse: the noise value is lower than piston compressor 5 decibels; 5. simplify the system design: unique uninstal start design makes ac compressor start without start relay; 6. nearly 100% of the volumetric efficiency brings extraordinary heating capacity;
<p>2. 德国莱宝真空泵 (天津产): Germany Lebold vacuum pump (Tianjin production)</p> 	<p>莱宝公司是世界上最大的真空设备供应商之一。德国“核心”技术, 设备可靠性高。 Lebold company is one of the world's largest vacuum equipment suppliers. Germany's "core" technology, the equipment has high reliability.</p>
<p>3. 格兰富循环泵 Grundfos circulating pump</p>	

	<p>格兰富是全球泵业的领导者之一，其年生产量每年近1600万台。用于供热空调的循环泵，用于工业、供水及污水处理的离心泵和计量泵是其主要的产品。今天，格兰富已是世界上最大的循环泵生产制造厂，此类泵产品覆盖了大约全世界50%的市场。</p> <p>Grundfos is one of the leaders of global pump industry, its capacity nearly 16 million units a year. Used for heating air-conditioning circulation pump, centrifugal pump used for industrial, water supply and sewage treatment and the metering pump are its main products. Today, grundfos is the world's largest circulating pump production factory, such pumps products covers about 50% of the world's market.</p>
<p>4. 丹佛斯膨胀阀 Danfoss expansion valve</p> 	<p>其主要特点</p> <ol style="list-style-type: none"> 1、蒸发温度范围大：-60℃到+50℃可适用于冻结、冷藏和空气调节装置。 2、可互换的流口组件：更易于库存、便于容量匹配、更好的维修服务。 3、用于R22时，名义制冷量从0.5到1890KW(0.15到540TR)。 4、可提供MOP（最大操作压力）限制功能保护压缩机电机，防止由于过高蒸发压力导致其损坏。 5、专利的双接触感温包、安装迅速便利、管路与感温包之间良好的传热效果。 <p>Its Main Features</p> <ol style="list-style-type: none"> 1.Evaporation temperature range: -60 °C to + 50 °C can be applied to frozen, refrigeration and air conditioning. 2.Interchangeable head piece components: easier to inventory, to facilitate matching capacity and better maintenance service. 3. When used for R22, nominal refrigerating capacity from 0.5 to 1890 kw (0.15 to 540 TR). 4.It Can provide the MOP (the maximum operating pressure) protect the compressor motor limit function, prevent its damage due to high evaporation pressure. 5. Patent double contact Thermal bulb, installation convenience, rapid installation and good effect of heat transfer between thermal bulb and tubes.
<p>5. 丹佛斯电磁阀 Danfoss solenoid valve</p>	<p>其主要特点：</p> <ol style="list-style-type: none"> 1、蒸发温度范围大：-60℃到+50℃可适用于冻结、冷藏和空气调节装置。 2、可互换的流口组件：更易于库存、便于容量匹配、更好的维修服务。 3、用于R22时，名义制冷量从0.5到1890KW(0.15到



540TR)。

4、可提供 MOP (最大操作压力) 限制功能保护压缩机电机, 防止由于过高蒸发压力导致其损坏。

5、专利的双接触感温包、安装迅速便利、管路与感温包之间良好的传热效果。

Its Main Features

1.Evaporation temperature range: $-60\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$ can be applied to frozen, refrigeration and air conditioning.

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技术培训 Technical training

1 北京松源华兴科技发展有限公司根据合同向每一位用户提供全面、系统的技术培训工作，主要内容：

Beijing Songyuan Huaxing Technology Develop Co.,Ltd. Provide complete and systematic training for customer according to contract:

2 北京松源华兴科技发展有限公司为用户提供及时、迅速、优质服务，免费负责冻干机设备的指导安装及调试，并同时对操作人员进行技术培训。

Beijing Songyuan Huaxing Technology Develop Co.,Ltd. Provide timely ,fast and good service for customers, free installation and test of freeze dryer , free training for operation staff

3 在设备保修期内，设备损坏时的一切备品、配件，北京松源华兴科技发展有限公司负责免费提供，并迅速派人员及时解决，并同时对操作人员进行技术培训。

Beijing Songyuan Huaxing Technology Develop Co.,Ltd. Provide all spare piece and accessory for free, when machine do not work during warranty period. Repair Staff will be sent to resolve problems and help train operation worker.

4 北京松源华兴科技发展有限公司及时向用户提供设备使用和维护方面的信息与技术资料。

Beijing Songyuan Huaxing Technology Develop Co.,Ltd. Provide information about usage and maintenance of machine and other technical date in time .

5 用户接受前期的理论及整机结构的基础认识，由冻干技术工程师讲授针对每位用户所冻产品所需涉及的冻干工艺过程（有详细的培训资料）。

User accept early theory and whole machine structure. Engineers tell freeze drying technical process according to material each user want to do freeze drying.

6 通过实际运行冻干机，冻出成功的产品。在冻干过程中，对用户进行整个冻干周期内的系统培训，包括冻干机自动系统与手动系统两套独立系统的操作培训。

Good products are made by running this machine. Systematic training are done during whole freeze and drying process, including automatic system and manual system training

7 对用户进行冻干机的安全操作、保养与应急维修等方面的培训，以便在冻干过程中出现问题时，确保冻干产品的安全。

Training of safety operation, maintenance and emergence maintenance to suer, to make sure products safe when there is problem during freeze drying process

8 在用户现场安装、调试期间，还可为用户的操作人员提供现场培训服务。

We provide site training service during installation and test period

在以上培训完成之后，北京松源华兴科技发展有限公司的技术人员还将定期与用户进行技术交流，包括国内外先进的冻干工艺、用户使用中产生的常见性问题以及对用户所冻干产品的一些优化建议等。

After finishing above training, technical staff in our company will make technical communication with user regularly. There are following items: advanced freeze drying process at home and abroad, normal problems in operation and suggestion to products for better freeze drying, etc.

优惠条件：上述的培训工作、资料、服务及技术交流都是免费的。

Favorable condition : above training service, data ,service and technical communication

售后服务承诺 Aftersales service

1. 质保期内不少于一次的巡回服务。

北京松源华兴科技发展有限公司（以下简称“本公司”）在质保期内对用户的设备进行一次以上技术指导性的维护保养咨询。

1. At least one time tour service in warranty

Beijing Songyuan Huaxing Technology Develop Co.,Ltd (“the company” for short in following parts) give more than one time consultation about technological instruction and maintenance during warranty.

2. 负责对相关人员的培训工作。



本公司负责免费对客户相关人员的理论和操作培训工作，培训内容见《技术培训计划》

2. Training to technical staff

The company takes charges of free training to technical staff about theory and operation, training content refers to 《 technical training plan 》

3. 设备发货承诺。

本公司在收到用户书面通知后五日内将用户所需规格数量的货物运抵用户现场。

3.Machine delivery promise

The company will deliver the requested machine to user's site within 5 days since receiving customer's written notice

4. 质保期。

本公司提供给用户的设备整机进行保修的服务,质量保证期为系统调试验收后壹年。质保期内我对设备的升级、维护、解决设备缺陷和运行中的各类问题都是免费的。

4.Warranty

The company provides user repair service for whole machine, warranty is one year after system adjustment and acceptance of machine.

5. 本公司承担技术培训费用。

本公司对用户的操作人员进行免费的现场技术培训。

5.Free technical training

The company make free site technical training to operation staff

6. 终身维修。

本公司对所制造的设备终身维修。质保期后的维修费用按材料及人工的成本价收取。

6.All life maintenance

The company takes charges of all life maintenance for machine. Maintenance charge calculated as material and labor cost beyond warranty.

售后服务所具备的条件：

Ready condition for aftersales service

1、人员齐备

本公司现有大、中专以上水平的服务人员十余人，可随时对客户进行优质、快捷的售后服务。

1. Qualified staff

There are more than ten staffs with high education in our company, good and fast service is available at any time.

2、技术先进

本公司的服务人员全部为在冻干技术及工艺方面资质较深的技术人员，大部分有5年以上从业和服务经验，能做到及时彻底的解决问题。

2. Advanced technology

Technical staff have rich experience in freeze drying technology and process , most of them have more than 5 years service experience. Problems can be totally resolved in time.

售后服务保证措施

Ensuring measure for aftersales service

1、对售出产品实行质量保证，在质保期内，如出现由产品质量引起的问题，本公司负责及时的维修与更换；对由于其它原因造成的问题，本公司积极协助用户解决问题，以保证产品及时恢复正常运行，把故障损失降低到最低程度。



1. The company guarantee product quality, in charge of timely maintenance and change if problem caused by quality during warranty; If problem caused by other facts, company assist to resolve problems to ensure machine run as soon as possible , make loss to lowest level.
 - 2、重要设备的安装、调试，现场技术服务由总工程师为首的技术专家带队上门服务，以解决设备在用户方可能出现的各种问题。
 2. Main machine 's installation, test, site technical service are given by engineers , to resolve every possible problems
 - 3、建立产品质量档案，定期实行质量跟踪，发现问题及时解决。
 3. Establishing product quality documents, quality tracking regularly, finding problems and resolve in time.
 - 4、积极配合用户搞好产品的现场运行和维护管理工作，可随时向用户以成本价提供产品的备品备件及易耗品。
 4. Supporting user for site running and maintenance work, providing spare parts and consumable parts at cost value.
 - 5、坚持质量第一、用户至上的原则，随时满足用户的需求。
 5. Principle of quality first, customers first , to meet user's requirement at anytime.
 - 6、技术支持服务。本公司提供的技术支持服务包括电话支持、现场技术支持服务等多种形式。用户在维护过程中出现暂时不能解决的问题时，可通过电话或以传真的方式向本公司服务部进行咨询，寻求技术支持，本公司的服务人员接到技术支持的要求后，将首先通过电话对服务要求进行响应。如仍无法解决问题，将立即提供现场技术服务。
 6. Technology support service
- Support service from our company include telephone support, site technology support and other kinds. If user have problems during maintenance which can not resolved by themselves, they can call or fax to get inquiry and help. When our service staff receive call and inquiry, we will feedback timely by phone. If problems can not be resolved, site technical service will be provided.

(1)电话支持服务：

本公司提供的电话支持服务包括电话咨询和电话技术指导两项服务。

电话咨询服务：对于用户非故障类问题，本公司技术人员提供全天 8 小时的咨询接收服务和全天 8 小时的咨询受理服务。

电话技术指导服务：对于用户故障类问题，本公司技术人员提供全天候 24 小时电话技术指导服务，通过电话指导用户排除设备故障。

(1)telephone support service

Including telephone consultation and technical instruction

Telephone consultation service: as for non breakdown problems , technical staff provide consultation acceptance in daytime for 8 hours .

Telephone technical instruction service: as for breakdown problems, technical staff provide technical instruction service in 24 hours.

(2)硬件支持服务

硬件支持服务包括硬件维修、硬件更换、硬件销售三项服务。

- ① 硬件维修：保修期内免费保修，保修期后只收取成本费；
- ② 硬件更换服务：质保期内，实行易损件、故障件的免费更换；
- ③ 硬件销售服务：提供备件销售服务。

(2) hardware support service

Hardware support include hardware maintenance, hardware change, hardware sell



- ① hardware maintenance: free during warranty, cost value only charged beyond warranty;
- ② hardware change: free change for easily damage parts, defective parts during warranty
- ③ hardware sell: providing hardware selling service for spare

(3) 投诉受理服务

本公司设立技术服务热线，随时接待客户的技术咨询

技术支持电话（白天）：010—83390610

(3) complaint acceptance service

The company set technical service hot line to receive any technical inquiry at any time

Hot line (daytime) : 010—83390610

(4) 培训与服务

① 现场培训服务：本公司在现场进行安装、调试、巡检服务时，对用户技术人员进行设备安装、运行及维护方面的培训；

② 集中培训服务：在用户所在地提供短期集中技术培训。

(4) training and service

① Site training service: when our technical staff are at site to do installation and test work, they will making training to user's staff about equipment installation, running and maintenance.

② Centralized training: short time centralized training at user's site

(5) 资料服务

本公司提供的资料服务包括网上资料、资料索取和用户设备档案等服务。发放资料的内容包括技术手册、GMP 认证资料、技术手册光盘、设备档案等。

(5) technical material and file service

The company provide technical data service include data on internet, information and data request and user's equipment documents, etc.

Content include technical manual, GMP Approved information , technical manual CD, and equipment files.

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