

Deep Freezer & Freezer Dryer

Deep Freezer

- Power Freezer
- Programmable Freezer
- Deep Freezer
- Up-right Model
- Chest Model
- Accessories of Deep Freezer

Freeze Dryer

- Table Top Freeze Dryer
- Freeze Dryer
- Freeze Dryer with Shell Freezer
- Freeze Dryer with Concentrator
- Freeze Dryer for Acid Use
- Freeze Dryer (Tray Dryer)
- Programmable Freeze Dryer
- Features of Freeze Dryer
- Accessories of Freeze Dryer
- Flasks for Freeze Dryer

labkorea

POWER FREEZER

- 145`C



The existence of liquid nitrogen tank by Development of multi cascade heat exchanger has been endangered.

Multi-stage heat exchanger

Utilizing the condenser function to gain optimal evaporative temperature for refrigerant, the multi-stage heat exchanger arises from the highly difficult technology that is necessary to obtain the lowest evaporative temperature by condensing various types of mixed refrigerants gradually.

Energy-saver Deep Freezer

To lower the temperature to 145`C below zero, existing freezers implement either dual or triple freezing systems, consuming electric energies overly. However labkorea's super low temperature freezer, equipped with the multi-stage heat exchangers, are the single system freezer that is a super-saving type in the efficiency of energy consumption.

Maintaining stable temperature

Using one freezer, it decreased the elements of defect to one third, permitting to use it safely and conveniently.

Specification of Power freezer

Model No	Exterior Dimensions (WxDxHmm)	Interior Dimensions (WxDxHmm)	Temp. Range	Capacity (L)	Data Acquisition	Weight
PF 13507	1720 x 790 x 1030	830 x 450 x 540	-70 to -130`C	200	_____	320kg
PF 13507R					*	
PF 15007	1720 x 790 x 1030	830 x 450 x 540	-90 to -145`C	200	_____	330kg
PF 15007R					*	

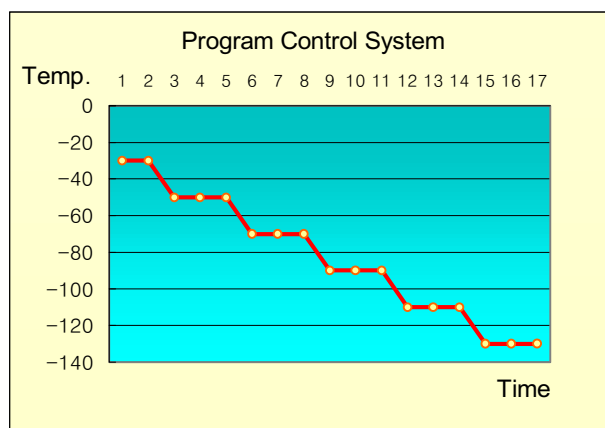
labkorea

PROGRAMMABLE FREEZER

Program Control System

Features of Programmable freezer

Although keeping by freezing seems proper for preserving a sample. The rate of subsistence of the sample decreases as the stage of a rapid change in surrounding temperature arises depending on the sample. The precision-designed control system to suppress alteration of a sample and to preserve the subsistence is the advantage of the programmed freezer.



Specification of Programmable freezer

Model No	Exterior Dimensions (WxDxHmm)	Interior Dimensions (WxDxHmm)	Temp. range	Capacity (L)	Data Acquisition	Weight
PDF 9007	1280 x 790 x 1030	570 x 500 x 700	-20 to -85`C	200	*	210kg
PDF 9007R						
PDF 9014	1880 x 790 x 1030	1170 x 500 x 700	-20 to -85`C	410	*	260kg
PDF 9014R						

labkorea

DEEP FREEZER

Features of Deep Freezer (Gudero) Series Up-right model

The up-right model has been designed to provide maximum space within a research chamber and the inner space, which has been divided into each shelf can store samples in the selected shelves depending in the types of sample, making in quite convenient. One can view the operational state of the freezer at one glance.



Cascade refrigeration
Temperature Range : -10`C to -80`C

Model No	Exterior Dimension (WxDxHmm)	Interior Dimension (WxDxHmm)	Capacity(L)	Data Acquisition	Weight
DF8514	920 x 900 x 2060	600 x 500 x 1280	384		334Kg
DF8514R				*	
DF8517	920 x 1050 x 2060	600 x 650 x 1280	500		380Kg
DF8517R				*	

Single stage refrigeration system

Temperature Range: 0`C to -35`C

Mode No	Exterior Dimension (WxDxHmm)	Interior Dimension (WxDxHmm)	Capacity (L)	Data Acquisition	Weight
DF3514	920 x 900 x 2060	600 x 500 x 1280	384		305Kg
DF3514R				*	
DF3517	920 x 1050 x 2060	600 x 650 x 1280	500		350Kg
DF3517R				*	

labkorea

DEEP FREEZER

Chest Models

Features of Deep Freezer (Gudero) Series

Ultra power-saving type freezer

The optimal designs for maintaining the temperature within the freezer minimize the power consumption. The chest type ultra power-saving freezer that extends the life cycle of the freezer by utilizing polyurethane.



Data Acquisition System?

Depending on the rapid freezing or sluggish freezing state between the freeze-storing methods for samples, a physical or a chemical change of the components of samples can occur during storage, influencing largely on the quality of sample itself and the quality of generated products using the sample as raw materials for experiment and production.

Therefore, by reviewing and confirming the forming range for maximal freezing and crystallizing of the sample, the Data Acquisition System will satisfy you in continued important experimental research and production of basic sciences.

Cascade refrigeration system

Temperature Range : -20°C to -85°C

Model No	Exterior Dimension	Interior Dimension	Capacity (L)	Data Acquisition	Weight
DF9007	1280Wx790Dx1030H	570x500x700	200		211Kg
DF9007R				*	
DF9010	1590x790x1030	870x500x700	305		236Kg
DF9010R				*	
DF9014	1880x790x1030	1170x500x700	410		261Kg
DF9014R				*	
DF9017	2180x790x1030	1470x500x700	515		286Kg
DF9017R				*	
DF9020	2480x790x1030	1770x500x700	620		311Kg
DF9020R				*	

Single stage refrigeration system

Temperature Range : 0°C to -40°C

Model No	Exterior Dimension	Interior Dimension	Capacity (L)	Data Acquisition	Weight
DF4507	1280Wx790Dx1030H	570x500x700	200		185Kg
DF4507R				*	
DF4510	1590x790x1030	870x500x700	305		205Kg
DF4510R				*	
DF4514	1880x790x1030	1170x500x700	410		230Kg
DF4514R				*	
DF4517	2180x790x1030	1470x500x700	515		255Kg
DF4517R				*	
DF4520	2480x790x1030	1770x500x700	620		285Kg
DF4520R				*	

labkorea

Accessories of Deep Freezer

Inventory system :

Rack

Chest Model			Upright Model		
Model No	Box Size	For all Model	Model No	Box size	Section
CR0060	2"	hold 10 boxes	UR0062	2"	hold 12 boxes
			UR0063	3"	hold 9 boxes
CR0061	3"	hold 10 boxes	UR0064	2"	hold 16 boxes
			UR0065	3"	hold 12 boxes

Box

Model No	Description	Model No	Description
FB0060	2"	DV0049	Hold 49, 16mm Vials
FB0061	3"	DV0064	Hold 64, 14mm Vials
PP0060	2" hold 81	DV0081	Hold 81, 13mm Vials
PP0061	2" hold 49	DV0100	Hold 100, 12mm Vials

Divider



Quantity of rack needed to completely fill freezer

Rack Model	Chest Model					Upright Model		
	CR0060, CR0061					UR0062, UR0063	UR0064, UR0065	
Model No	DF9007	DF9010	DF9014	DF9017	DF9020	DF8514	DF8517	DF8520
Quantity	12	18	24	30	36	16	16	20

Back Up system, Voltage Booster & Recorders



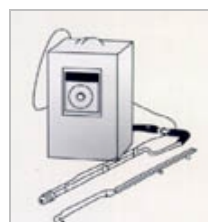
CO2 Back up system

Model No : LC 0070
Liquid CO2 Back up system
for Back up protection
Will maintain -70°C
at a 45Kg/Hr rate



Voltage Booster

Model No : VB 0081
Voltage booster Helps protect electrical
equipment burnout by boosting low voltage.
Provided with terminal board for direct
wiring Specify desired voltage
when ordering



N2 Back up system

Model No : LN 0073
Liquid N2 Back up system
for Back up protection
Will maintain -73°C
for 32 hours
from 160 Liters Liquid Nitrogen
supply



Chart Recorder

Model No : CH0067
6" Circular chart 7day, pressure writing
stylus includes one box of chart paper.
Factory installed

Model No : SA100P
Dimensions : 144W x 200D x 144H
10-20-40mm/hr
Limit Type 4 to 20mm Amp.

labkorea

FREEZE DRYER

Bondiro series

Feature of Freeze Dryer

Automatic Control System

From drying to defrosting, the comfortable functions of one touch operation make it easy to operate.

Automatic purge System

Equipped with an automated purge system to protect Samples by preventing of counter-flow of vacuum pump oil.

Safety valve function

At times of dissolving in vacuum via a valve to collect the sample in flask after freeze drying, it has been safely designed and manufactured to prevent contamination of the sample by inserting sterile air or nitrogen gas.

Features of Table Top Freeze Dryer

Development of the compact design permits Maximal utilization of the space in experimental chamber as well as easy of translocation

Utilizing a high capacity semi-closed freezing Compressor, it maximizes the collecting capability of the cold trap while the installation of a super Vacuum pump also maximizes the movement of moisture, a heat medium, enhancing the capacity of the freeze dryer.



Specification of Freeze Dryer and Table Top Freeze Dryer

Model No		TFD5505	FD5505	FD5508	FD5510	FD5512	FD5518	FD5525
Dimension	Cabinet	420x565x650	900W x 825D x 880Hmm					
	Trap Chamber	270D x 270H	300D x 250H mm	300D x 300Hmm	300x350	300x450		
Refrigeration Condenser system	Compressor	1/3HP	1/3HP	1/2HP	3/4HP	4/5HP	1HP	2HP
	Max. Capacity	5 L	5 L	8 L	10 L	12 L	18 L	25 L
	Liters/day	3 L	3 L	5 L	6 L	10 L	12 L	20 L
	Trap Temp.	- 54 `C						
Cascade Ref	Trap Temp.	Not App.	- 80 `C					
Vacuum system	Pump Capacity	120 L	120 L	120 L	200 L	200 L	250 L	340 L
	Vacuum Gauge	Digital Vacuum Gauge with a range of 0 to 999 microns						
	Ult-Pressure	2×10^{-4} Torr						
Defrosting System	Hot gas solenoid system & Heater Defrosting system							
Gross Weight(Kg)		38	118	120	121	122	130	180
Electrical Requirements		110, 220Volt			50/60Hz, single phase			

labkorea

FREEZE DRYER WITH SHELL FREEZER

Feature of Freezer Dryer with Shell Freezer

Shell freezing of the flask rolling type for freezing at a temperature below eutectic point.

During drying in accordance with the design structure of the flask rolling type, the complete elimination of effervescence and dissolution of a sample and the preliminary freezing of the sample's surface and the freezing state of concentration and aging, obtaining the result of desiccation.



During desiccation, the display of degree of vacuum must be clear to recognize the sample temperature accurately. Developing and installing a digital vacuum indicator to improve an the disadvantage of the existing analog indicator led to a further improvement in quality of the freeze-during products.

It has been designed to have preliminary freezing of the four liters of samples at one time. It has an advantage of obtaining precise rotation by activation of one chain starts four rollers.

Cooling the interior chamber to -40°C below zero with in a short time by installing high capacity semi-closed freezing system. It performs preliminary freezing of the sample in the container. Thus, it brings on the result of maximally supressing the alteration-state of the sample by the heat.

Model No		FD5505S	FD5508S	FD5510S	FD5512S	FD5518S	FD5525S
Dimension	Cabinet	1210W x 800D x 880Hmm					
	Trap Chamber	300D x 250H		300D x 300H		300 x 350	300 x 450
Refrigeration Condenser System	Compressor	1/3Hp	1/2Hp	3/4Hp	4/5Hp	1 Hp	2 Hp
	Max. Capa.	5 L	8 L	10 L	12 L	18 L	25 L
	Liters/day	3 L	5 L	6 L	10 L	12 L	20 L
	Trap Temp.	-60°C					
Cascade Ref.	Trap Temp.	-80°C					
Vacuum System	Pump Capa.	120 L	120 L	200 L	200 L	250 L	340 L
	Vacuum Gaug.	Digital Vacuum Gauge with a range of 0 to 999 microns					
	Ultimate Pres.	2 x 10 ⁻⁴ Torr					
Defrosting System		Hot gas solenoid system & heater defrosting system					
Shell Freezing System	Bath Dimension	250W x 500D x 300Hmm					
	Compressor	High capacity 1/2 HP					
	Temperature	Below -40°C					
	Flask Capacity	2000ml x 2 Ea					
Gross Weight(Kg)		178	180	181	182	190	240
Electrical Requirements		220/110V, 50/60Hz, single Phase.					

labkorea

FREEZE DRYER WITH CONCENTRATOR

Implementation the high concentrating 'concentrator' which prevents bubbling phenomenon of the sample by spin concentrating, permits 100% recovery of the sample without a damage.



Since the freeze-drying of concentrating-drying system is operating by an independent control it is an economic multi-function type that can be operated depending on the purpose of the sample desiccation.

The concentrating freeze-drying can concentrate and dry using various capacity tubes from micro-tube of 1.5ml to 50ml tube during freeze-drying, allowing one to utilize the optional space while making it economic.

Preventing bubbling of sample within the tube by a strong centrifugal force permits 100% recovery. Installation of MPB brushless D.C Motor provides the convenience of eliminating the need for brush replacement and the prevention of contamination within the experimental chamber.

Specification of Freeze dryer with concentrator

Model No		MCFD5505	MCFD5508	MCFD5510	MCFD5512	MCFD5518	MCFD5525
Dimension	Cabinet	1000W x 800D x 880H mm					
	Trap Chamber	300D x 250H		300D x 300H		300 x 350	300 x 450
Refrigeration Condenser System	Compression	1/3 HP	1/2 HP	3/4 HP	4/5 HP	1 HP	2 HP
	Max. Capacity	5 L	8 L	10 L	12 L	18 L	25 L
	Liters/day	3 L	5 L	6 L	10 L	12 L	20 L
	Trap Temp.	-54° C					
CascadeRef-	Trap Temp.	-85° C					
Vacuum System	Pump Capacity	120 L	120 L	200 L	200 L	250 L	340 L
	Vacuum Gauge	Digital Vacuum Gauge with a range of 0 to 999 microns					
	Ultimate Press.	2 x 10 ⁻⁴ Torr					
Defrosting System		Hot gas solenoid system & Heater defrosting system					
Concentration System	Vac. chamber	Coated aluminum casting					
	Heater	Built-in tubular type with single setting at 44° C with over temperature protecting					
	Driver	MPB Brushless DC Motor					
	Rotor	Interchangeable rotor available for most stand and special tubes(Order separately)					
Gross Weight(Kg)		124	126	127	128	136	186
Electric Requirement		220/110V, 50/60 Hz, single phase					

labkorea

FREEZE DRYER FOR ACID USE



Feature of Freeze Dryer for Acid Use

"Bondiro" has completely conquered the acids in freeze-drying.

It is not only provides a safe design and the complete protecting for the Teflon-conduction deposited-coated drying chamber and collection section drying chamber and collecting section from the acid, but also is safe and practical by installing an erosion proof pump.

Specification

Model No		TFDA5505	FDA5505	FDA5508	FDA5510	FDA5512	FDA5518	FDA5525
Dimension	Cabinet	420x565x650 900W x 825D x 880H mm						
	Trap Chamber	270 x 270	300 x 250		300D x 300H mm		300 x 350	300 x 450
Refrigeration Condenser System	Compressor	1/3 HP	1/3 HP	1/2 HP	3/4 HP	4/5 HP	1 HP	2 HP
	Max capacity	5 L	5 L	8 L	10 L	12 L	18 L	25 L
	Liters/day	3 L	3 L	5 L	6 L	10 L	12 L	20 L
	Trap Temp.	-60°C						
Cascade Ref	Trap Temp	Not App	- 85°C					
Vacuum System	Pump capacity	25L	160L	160 L	160 L	300 L	300 L	300 L
	Vacuum gauge	Digital vacuum Gauge with a range of 0 to 999 microns						
	Ult-Pressure	2 x 10 ⁻⁴ Torr						
Defrosting System	Hot gas solenoid system & Heater defrosting system							
Gross Weight(Kg)		38	118	120	121	122	130	180
Electrical Requirements	110/220V, 50/60Hz, Single phase							

labkorea

TRAY DRYER

It materialized the artificial intelligence control that operates the freeze dryer optimally even in the cases where one does not know the Conditions for freeze-drying of particular samples.



Feature of tray dryer

It uses a complex control method that a user can operated it with ease using a computer for gradual control of shelf-temperature for heating and cooling during freeze-drying.

It has been designed to proceed in a step by step manner in 'window' format, which is a user oriented computer program.

Specification

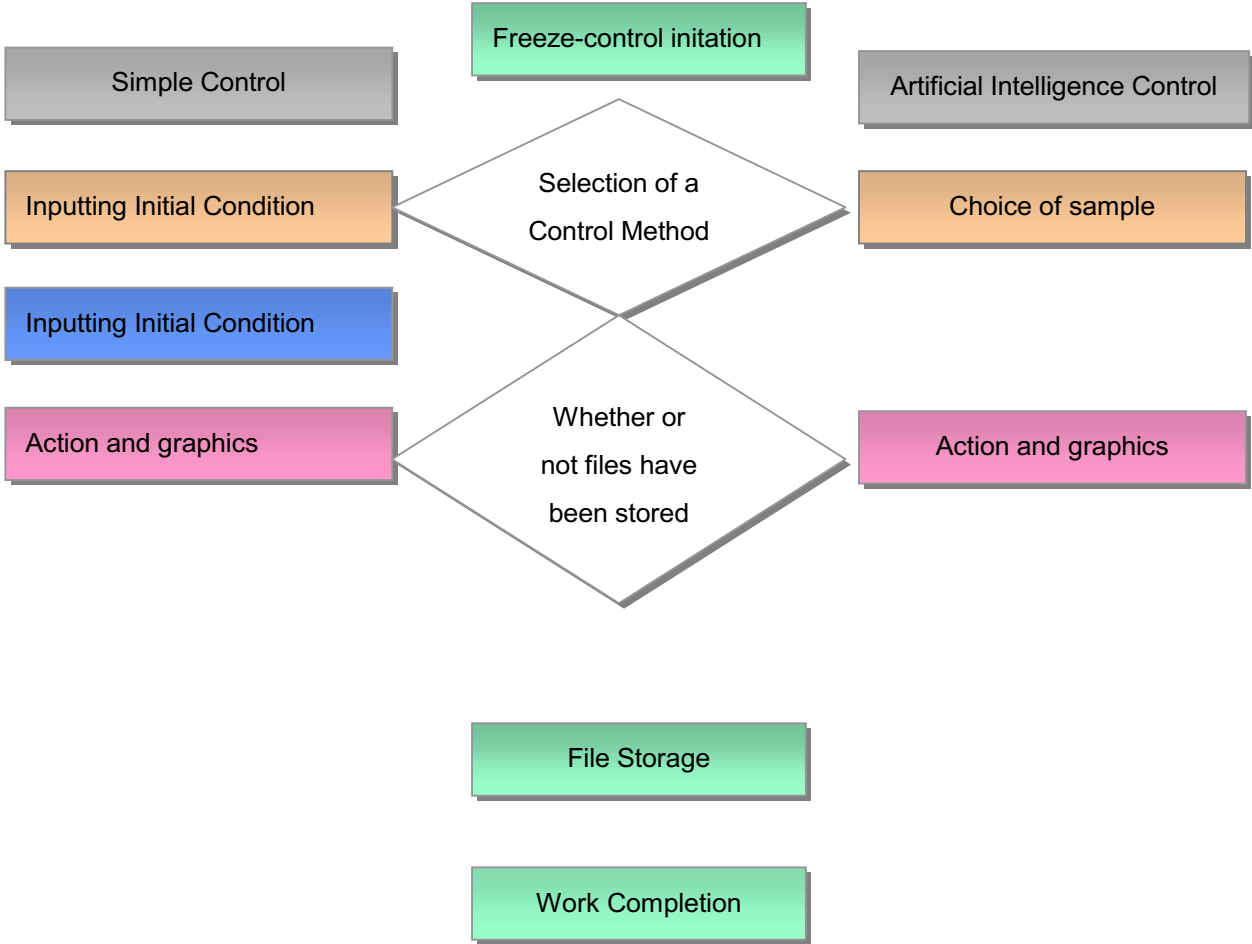
Model No		TD5070A	TD5070R	TD5070AP	TD5070RP	TD5070RS	TD5070RPS
Dimension	Cabinet	800W x 660D x 1220Hmm					
	Sample Chamber	500Dia x 520 L mm					
Shelf	Dimension	320W x 350D x 20Hmm					
	Material	Stainless steel Mold Plate					
	Temp Range	Amb~80°C	-30°C+50°C	Amb+80°C	-30°C + 50°C		
	Program Control	Not App		Yes		Not App	Yes
	Stoppering system	Not App				Yes	
Complete Flask Valve		6 Ports with 3/4" Valve(neoprene & polypropylene stems)					
Tray Dimension & Materials		300W x 350D x 40H mm, stainless steel tray					
Electrical Requirements		110/220V, 50/60Hz, Single phase					

labkorea

PROGRAMMABLE FREEZE DRYER



From simple control to artificial intelligence control



PROGRAMMABLE FREEZE DRYER



Features of Programmable Freeze Dryer

By controlling temperature by forceful circulation of the heat medium of shelf inside, it obtains a further precise distribution of temperatures.

Vacuum Backfilling System:

As far as the permanent preservation of the sample desiccation is concerned it protects a sample by inserting sterile air and nitrogen gas with back filling system for preventing contamination of the sample.

Safety stoppering System:

For the purpose of permanent preservation of a sample after freeze drying, the stoppering system, which seals under a vacuum state, consists of an option that installs moving guides of four shelves delicately and that has a function to seal safely and precisely using an oil-hydraulic cylinder.

Specification of Programmable Freeze Dryer

Model No.	PVTFD10A	PVTFD10R	PVTFD30A	PVTFD30R	
Cabinet Dimension	1500W x 900D x 1700Hmm		1100Wx1620Dx1700Hmm		
Condenser (Cold trap)	Dimension	300Dia x 300Lmm	500Dia x 650Lmm		
	Compressor	2 Hp	2Stage,5Hp		
	Max. Capacity	10 Litres	30 Litres		
	Litres/day	8 Litres	25 Litres		
	Temperature	-60`C			
Cascade refrigeration	-80`C to -140`C Optional				
Vacuum Pump	Capacity	415 Litres/Min	650 Litres/Min		
	Gauge	Electronic vacuum gauge with a range of 0 to 999 microns.			
	Pressure	Ultimate 2 x 10 ⁻⁴ Torr			
Defrosting system	Hot gas solenoid or water rinse				
Drying Chamber	Dimension	500Dia x 500Lmm	650Dia x 800Lmm		
	Material	Stainless steel			
Shelf System	Dimension	320W x 350D x 15Tmm	440W x 590D x 20Tmm		
	Quantity	4 Ea	4 Ea		
	Material	Stainless steel moulded			
	Temp. Range	+30 to +80`C	-35 to +50`C	+30to +80`C	-35 to +50`C
	Compressor	Not App	2Hp	Not App	5Hp
Electrical requirements	220Voitage, 50/60Hz, 1 Phase or 380 Voltage, 50/60Hz. 3Phase.				

* labkorea reserve the right to make changes without notice.

labkorea

PROGRAMMABLE FREEZE DRYER

Features of Programmable Freeze Dryer



By controlling temperature by forceful circulation of the heat medium of shelf inside, it obtains a further precise distribution of temperatures.

Vacuum Backfilling System:

As far as the permanent preservation of the sample desiccation is concerned it protects a sample by inserting sterile air and nitrogen gas with back filling system for preventing contamination of the sample.

Safety stoppering System:

For the purpose of permanent preservation of a sample after freeze drying, the stoppering system, which seals under a vacuum state, consists of an option that installs moving guides of four shelves delicately and that has a function to seal safely and precisely using an oil-hydraulic cylinder.

Specification of Programmable Freeze Dryer

Model No.		PVTFD50A	PVTFD50R	PVTFD100A	PVTFD100R	PVTFD200A	PVTFD200R
Cabinet Dimension		1300Wx1950Dx1870Hmm		1500Wx2500Dx1990Hmm		2000Wx3500Dx1990Hmm	
Condenser (Cold trap)	Dimension	700Dia x 650Lmm		650Dia x 1100Lmm		1000Dia x 1000Lmm	
	Compressor	2Stage,7.5Hp		2Stage,10Hp		2Stage,20Hp	
	Max. Capacity	50 Litres		100 Litres		200 Litres	
	Litres/day	40 Litres		80 Litres		150 Litres	
	Temperature	-60°C					
Cascade refrigeration		-80°C to -140°C Optional					
Vacuum Pump	Capacity	840 Litres/Min		1500 Litres/Min		3000 Litres/Min	
	Gauge	Electronic vacuum gauge with a range of 0 to 999 microns.					
	Pressure	Ultimate 2×10^{-4} Torr					
Defrosting system		Hot gas solenoid or water rinse					
Drying Chamber	Dimension	800Dia x 900Lmm		1100Dia x 1200Lmm		1500Dia x 1600Lmm	
	Material	Stainless steel					
Shelf System	Dimension	530W x 650D x 20Tmm		720W x 900D x 25Tmm		720W x 1200D x 25Tmm	
	Quantity	5 Ea		8 Ea		8 Ea	
	Material	Stainless steel moulded					
	Temp. Range	+30 to +80°C	-35 to +50°C	+30 to +80°C	-35 to +50°C	+30 to +80°C	-35 to +50°C
	Compressor	Not App	7.5Hp	Not App	10Hp	Not App	20Hp
Electrical requirements		220Voitage, 50/60Hz, 1 Phase or 380 Voltage, 50/60Hz. 3Phase.					

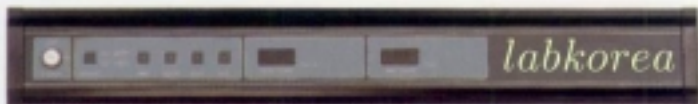
* labkorea reserve the right to make changes without notice.

labkorea

Features of Freeze Dryer

1. Lyophilization is the most way to preserve living cells, whole blood, vaccines, biological specimens.
2. Temperature and vacuum gauge are easy to monitor
3. Clear lid provides view of ice build-up on condenser. The condenser compartment is visible through a clear acrylic cover so ice build-up on the condenser coil can be monitored during lyophilization.
4. Up-right, Stainless steel condenser chamber includes heater to speed and simplify defrost.
5. Retractable drain hose are easily accessible for convenient service.
6. Modular refrigeration system lifts out for service.
7. Removable front panel provides easy access to vacuum pump and refrigeration system.
8. System shall be able to connect centrifugal concentrator and Gel dryer
9. Keyed on/off power switch.
10. Visual indicator lights eliminate the guesswork of loading samples.
11. High capacity refrigeration system ensures rapid cooling.
12. Easy-to-follow operating instructions give instant direction.
13. Mobile cabinet is attractive and durable
14. Attachment port makes connection of accessories easy.
15. Front panels are removable for service.
16. Shelf-safety system of auto leak valve products sample contamination by a counter-face of vacuum oil at power failure, stopped vacuum pump or operating.
17. For power failure plug, over current plug, over load relay are equipped.
18. Specification subject to change without notice by an order-made or promotion of product.

Control System



Features of Freeze Dryer with Shell Freezer

Features are the same as for Freeze Dryer except for the following changes.

1. Built-in shell freezer permits sample preparation while other sample Freeze Dry.
2. Shell Freezer instrumentation and controls shall include an display to monitor bath temperature, mounted on the front, with indication in 'C and shall have a switch with indicator lighter for shell freezer refrigeration and roller rotation.

Control System



Features of Multi Concentration Freeze Dryer

Features are the same as for Freeze Dryer except for the following changes.

1. Multi Concentration Freeze Dryers combine high vacuum and centrifugal action for efficient evaporation and volume reduction of biological solution.
2. Recovers 100% of sample from aqueous or organic solutions.
3. Gentle processing preserves sample integrity.
4. Concentrates dry or reduce liquid volume for further processing.

Optional Features

1. IBM interface, Single vacuum or temperature recorder, and multipoint data logging of all monitored parameters.
2. Automatic start up is quick and easy to use.
3. Power failure indicator light flashes when power has been interrupted for more than five second.
4. Dual digital display is equipment and easy to monitor.
5. Automatic purge System.
6. Digital indication of condenser temperature, ambient temperature, bath temperature, line voltage elapsed run time, and vacuum pressure.
7. System run status indication system.
8. Instrument & controls: Front panel shall have separate switches with indicator lights for automatic/manual condenser refrigeration, automatic/manual vacuum control and defrost. shall include an LED digital temperature indicator calibrated in 'C.
9. Front panel shall also include in DIN receptable, 5 pin, 180 recorder jack and indicator, lights for power interruption, condenser temperature and vacuum.
10. Microprocessor control for automatic operation

Control System



Features of Tray Dryer (Bath type chamber)

1. Vacuum release valve carefully returns samples to equilibrium.
2. Easy-to-read LED prompts researcher to set programming parameters and display system and probe temperatures in °C and vacuum.
3. Warnig lights alert the researcher that samples may have been exposed to a power failure, temperature fluctuation or vacuum decay.
4. Backfill port introduces sterile air or insert gas.
5. Separate high capacity 1/2Hp refrigeration system and 1000-watt heater assure efficient cooling and heating of shelves.
6. Automatic control of temperature enhances consistency and convenience of repetitive protocols.
7. Probes monitor product temperature for quality assurance.
8. Clear acrylic viewing door provides complete visibility
9. Chamber pre-freezes samples to save time and money
10. Four shelves accommodate batches of serum bottles, vials or ampules.
11. Built-in pneumatic mechanism stoppers containers on all three shelves (optional)
12. Support stand simplifies connection to 12, 18 or 25 liter freeze dry system,
13. Tray Dryer attached the 6-port valve to use flask and amplue, serum bottle separately.
14. Specification subject to change without notice by an order-made or promotion of product

Control System



Optional Features

1. Tray Dryer instrumentation and controls shall include electronic digital display located on front panel for continuous indication of system and sample temperature in °C and chamber vacuum in 10^{-3} Torr in one of three selected modes-"monitor", "automatic" and "manual". Microprocessor based controller shall permit 5 segments. Shelf refrigeration and heating shall be selected and automatically controlled from -35°C to 80°C Microprocessor shall have built-in memory to allow repetition of identical protocols. Three probes shall be included to monitor temperature of samples. Front panel shall include three programming switches, display selector switch, run/stop, switch, mode selector switch, power switch, stoppering control, vacuum release valve, 1/8" OD backfill port and DIN, 7 pin, 240 degree recorder jack.

Features of Food Industry & Production Freeze Dryer

1. Advanced Labkorea technology has added new dimensions in speed and certainty to Freeze Drying.
2. Fast acting heat transfer delivery systems in concert with specially designed logic activated controls now respond with computer precision to subtle signals from within the product, automatically eliminating the expensive excesses of traditional blind processing and the degrading effects of over freezing and over drying.
3. Shortened process cycles, reduced energy requirements, increased production, and vastly improved product quality and shelf life are now the routine results of precision Freeze Drying,
4. Pilot plant work done on a PVFFD10 may be transferred without delay to a full production PVTFD 200 with complete confidence, and products may be freeze dried at separate locations on a same protocol with identical results.
5. Shelf system: Material-Stainless steel 304. Refrigeration system-High capacity from 2Hp to 20Hp two stage refrigeration system to shelf temperature from -35°C to +80°C by brine heat exchange.
6. Condenser: Refrigeration System-High capacity from 2Hp to 20Hp two stage refrigeration system to cool condenser to -60°C
7. Instrument & control system

- 1) Program PID control function: in case of freeze drying of food and pharmaceuticals, enables to know the characteristic and status of sample adding temperature variation to it by each time and as enabling to select a suitable program according to sample, reduces the drying time and enables to connect with production line direct.
- 2) 3 way select sample temperature digital indicator : As continuously displaying chamber temperature of each shelf, shows drying process of sample by a select switch.
- 3) Chamber temperature digital indicator: As continuously displaying chamber temperature, shows sample status depending on changing of chamber temperature.
- 4) Electronic Vacuum gauge : The electronic vacuum gauge registers the constant, in-process vacuum level during lyophilization on its color coded dial.
- 5) Recording System : Easy to monitor of the drying process and status of sample, enables to select optimum drying program as recording a vacuum(option) and the temperature of sample #1, #2, #3, shelves and chamber.
- 6) Pressurised steam sterilization (Optional) : All Labkorea steam sterilization Freeze Dryers are built on special order, and can be specially laid out to conform to the space available in your plant. steam sterilization up to 120.c, complying with steam pressure and safety pressure valves.
8. Specification subject to change without notice by an order-made or promotion of product

Accessories of freezer dryer



Vacuum Pumps : VP Series

MDL	8907	8912	8917	8920	8925	8834	8851	1398	1396
CAP	70L	108L	173L	218L	325L	430L	625L	1500	2800

- Type : Direct Driven
- Gas Ballast : Equipped with Vacuum Pumps

- Comprehensive range : 1.5 to 465m³h⁻¹
- High ultimate vacuum : down to 10⁻⁴ Torr
- High quality, corrosion resistant materials
- Advanced oil lubrication : ensures reliable running even at high gas loads
- Proven oil and air suck-back protection
- Complete range of easy-to-fit accessories to protect both pumps and the environment
- Low noise levels and minimum vibration
- Direct drive : built to exacting safety standards
- Opposed two-vane design helps prevent blades sticking
- Easy maintenance with effective international service back-up

Electronic Vacuum Gauge	EVG 2150	0 to 5000m Torr
Hig Vacuum Oil	V04000	4L/Pkg
High Vacuum Grease	VG5400	5.4 Oz/Ea
Flask Filter Paper	FP0012	1000 Ea/Pkg



SAT 0001 Soda Acid Trap

Secondary trap connects in series with freeze dry system and vacuum pump to prevent migration of corrosive chemicals into pump interior. Clear acrylonitrile body allows visual check of color indicating media



IF2560 Pump Inlet Filter

Disposable filter prevents oil back streaming from the vacuum pump and protects the pump from damage from submicron particles. Includes filter assembly and one set of filter cartridges. Life approximately 1000 hours at 10 microns vacuum



EF2561 Pump Exhaust Filter

Disposable filter removes all visible oil mist from vacuum pump exhaust. May be exhausted into work area without duct. Includes filter assembly, one set of filter tubes mesh pad and back pressure gauge, 0-15psig. Life approximately 2500 hours at 10microns vacuum.



RH 1024 Rotor
10ml x 24Hole
RH 1560 Rotor
1.5ml x 60Hole



DI2110 Secondary Trap Chamber

Increase condenser capacity and avoid vacuum pump oil contamination by catching vapors which bypass the primary condenser during large volume dehydrations. Center well may be used for shelling and cones out for cleaning and defrosting.



VI2000
Concentrator



GD 3445 Gel Dryer

Gel Dryer dries electrophoresis gels for preservation or subsequent processing such as auto-radiography or densitometry. The Gel Dryer dries large gels up to 34 x 45cm or any combination of smaller gels

labkorea

Accessories of Freeze dryer



Shell Freezer

Model No.		SF0020	SF0010
Dimensions (WxDxHmm)	Cabinet	490x750x950	280x500x140
	Chamber	260x500x300	2 Liters x 2
Refrigeration System	Compressor	1/2HP	Non
	Capacity	4 Liters	
	Temperature	-40°C	Non

- Epoxy coated steel front panel with white side and work surface. Cabinet shall include four 77mm diameter hard rubber casters for mobility
- Shall be stainless steel insulated with urethane foam and shall include stainless steel cover.
- Four shall driven rollers and switches.
- SF0010 : Portable Shell Freezer

Drying chamber & Manifold Chamber



DC 1212 Drying Chamber
275 H x 230 Dia mm, 12-Port, 304 stainless steel

DC 1316 Drying Chamber

320x 300Dia mm, 16-Port, 304 stainless steel

HDC 1316 Heated Drying Chamber

320Hx300Dia mm 304 stainless steel. Complete with a 3-shelf product heater with +43°C high Limit thermostat.

DC 1218 Drying Chamber

320H x 300Diamm, 18-Port, 304 stainless steel

MC 1224, MC3412, MC1324, MC1204, Manifold Chamber

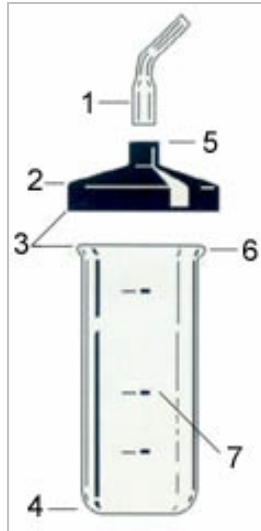


Manifolds are ideal for lyophilizing in serum bottles, ampules or small flasks. Fabricated of type 304 stainless steel the manifolds are complete with neoprene valves which snap into place, eliminating weldment which may corrode and leak.

MDL	DC1212	DC1316	DC1218	HDC1316	MC1224	MC3412	MC1324	MC1204
1/2 Valve	12 ea	8 ea	18 ea	8 ea	24 ea	Non	12 ea	4 ea
3/4 Valve	Non	8 ea	Non	7 ea	Non	12 ea	12 ea	Non
Materials	Stainless steel 304 Clear acrylic cover				Stainless steel 304			

labkorea

Flasks for freeze Dryer



Features

1. Variety of adapters available. You may select from glass or stainless steel adapters available straight and with 45 degree bend.
2. Top Seals easily. The flexible silicone rubber top snaps on and off easily, yet provides a reliable high vacuum seal.
3. Only two pieces per flask. The complete Fast-Freeze Flask has only two components.
 - a) high strength borosilicate glass bottom to withstand extreme temperatures
 - b) Flexible , non-contaminating silicone rubber top.
4. Flat bottom reduces spills, provides better balance.
5. No complex filter retainer is necessary. For those who use filters, they are easily inserted between the adapter and top of the flask. Filters are each supplied with flask.

6. Wide mouth opening loads fast. Cleans easily. No vacuum grease is necessary. No treads, hooks or springs are needed.

Horizontal shell freezing-Flask may be placed in a horizontal position in shell freezer, allowing more surface area for faster freezing. Entire flask is autoclavable.

7. Convenient volumetric guides indicate quantity in flask, and in reconstitution of sample.

Specifications of Flask

Flask Size	Complete Flask	Flask Bottom	Flask Top	Diameter	Flask Bottom H/I.D
40ml	CF0040	FB0040	FT0034	1/2"	76 x 34mm
80ml	CF0080	FB0080			115 x 34mm
120ml	CF0120	FB0120	FT0059	3/4"	69 x 60mm
150ml	CF0150	FB0150			85 x 60mm
300ml	CF0300	FB0300			145 x 60mm
600ml	CF0600	FB0600	FT0090		135 x 90mm
900ml	CF0900	FB0900			190 x 90mm
1200ml	CF1200	FB1200			240 x 90mm
2000ml	CF2000	FB2000		380 x 90mm	

Adapter of Flask

Material	Diameters	Straight Adapter	45° Bend Adapter
Borosilicate Glass	1/2" Flask Top to 1/2" Valve	SA0012	BA0012
	3/4" Flask Top to 3/4" Valve	SA0034	BA0034
	1/2" Flask Top to 3/4" Valve	SA1234	BA1234
	3/4" Flask Top to 1/2" Valve	SA3412	BA3412
Stainless steel	1/2" Flask Top to 1/2" Valve	SA0021	BA0021
	3/4" Flask Top to 3/4" Valve	SA0043	BA0043
Multi Adapter	1/2" 3-way	SA0003	



Valve Size	Complete Valve	Polypropylene Stem Only	Neoprene Body Only
1/2"	CV0012	PS0012	NB0012
3/4"	CV0034	PS0034	NB0034
3/8"	CVA0012	PS0012	NBA0012

labkorea

Accessories of Freeze Dryer

erum Bottles



1. 20mm Corkage
2. 20mm Corkage
3. Spilt Stopper
4. Aluminum Seals
5. Sleeve Stoppers

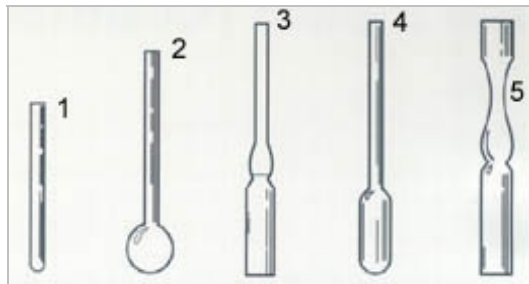
Size	1	2	3	4	5
2ml		SB0002			
3ml		SB0003	SPS-13	ALS-13	
5ml	SB0005				
10ml	SB0010				
20ml	SB0020				
30ml	SB0030		SPS-20	ALS-20	SLS-20
50ml	SB0100				
100ml	SB0100				
125ml	SB0125				



PH1316, PH1212, Product Heater

Three shelf Product Heaters fit inside Drying Chamber for Bulk drying operation.
 PH1316 : for Drying Chamber DC 1316
 PH1212 : for Drying Chamber DC 1212

Ampules



Size	Straight Type	Bulb Type	Flat bottom	Round Bottom	Stoppering
1ml	AST01	ABT01	AFB01		ASP01
2ml			AFB02		ASP02
4ml	AST04				
5ml		ABT05	AFB05		ASP05
10ml			AFB10	ARB10	ASP10
25ml			AFB20	ARB20	
50ml			AFB50	ARB50	



CDC3333 Clear Drying Chamber

330Hx330 Dia. Includes 20mm thick, clear acrylic cover, gaskets and electrical pass through for transform cords. Provides visibility into chamber during bulk drying.



STK0001 Sealing Torch

Specifically designed for flame sealing Freeze Dry Ampules.



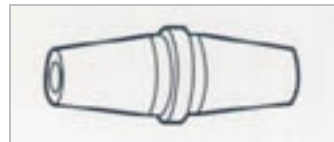
Vacuum Stoppering Adapter

VSA-13 13mm
 VSA-20 20mm



Sealed Crimper

SC-13 : For 13mm Corkage
 SC-20 : For 20mm Corkage



AA-12 Adapter

Connects Ampules to 1/2" Valves : 10Ea/Pkg.



AS-10 Stopper

Stopper for Stoppering Ampules. 100 Ea/Pkg

labkorea