



Freeze dryers

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Selection guide

Constant temperature incubator shaker

CO₂ incubator shaker

Shaker

Mixer Rotator Stirrer

Bead beater homogenizer Ultrasonic homogenizer

Aluminum block bath Minisize bath

Water bath Shaking water bath Immersion cooler

Hybridization oven Constant temperature chamber

Centrifugal concentrator Cold trap

Freeze dryer

Electrophoresis and blotting apparatus

Constant temperature water circulating system [Chiller]

Appendix

Freeze dries the sample by sublimating the water with depressurization. TALTEC Freeze dryers for R&D labs etc.

Freeze dryers

VD-250R



VD-550R



VD-800R



Wide variety options are available to correspond various vessels. Cold trapped water can be easily removed by rapid thawing.

Page	Model	Applications
P.156	VD-250R	<ul style="list-style-type: none"> •Drying of samples such as Proteins etc. •Drying of Testing samples such as Foods etc.
P.156	VD-550R	
P.156	VD-800R	

Equipped with high accuracy vacuum gauge standardly (except for VD-250R)

Digital Pirani vacuum gauge of VD-550R/800R tells the degree of vacuum during drying. For example, the degree of vacuum drops slightly when sublimation begins and the degree of vacuum rises again when drying complete. The ultimate vacuum displayed with LED by dividing into three levels.



The transparent door to see the trap status. Functional horizontal trap.

As the cold trap installed horizontal in the body, easy to remove trapped ice and clean it easily. Besides, as the door of trapping room is transparent, the inside can be always observed.



Drying Chamber

DC-280



Bench-top Desiccator optimized for Vacuum drying and Freeze drying.

Page	Model	Applications
P.158	DC-280	<ul style="list-style-type: none"> •Drying of Biological samples •Drying of Testing samples such as Foods etc. •As a Storage for reagents and samples weak to moisture

Vacuum pumps

Oil-sealed Rotary Vacuum pumps (for Freeze dryers/Vacuum dryers)

-->P.151



Dry scroll type Pumps (for Vacuum dryers)

-->P.151



Vacuum pumps suitable for freeze drying

Oil-sealed vacuum pumps generally used for freeze drying. This is because for obtaining the required vacuum degree and needing above 10L/min of displacement to properly feed the dehumidifying volume of freeze dryer into the trap room.

Oil-less vacuum pumps (Diaphragm type etc.) are suitable for Centrifugal concentration while not suitable for Freeze drying.

Oil-sealed vacuum pumps require appropriate maintenance. First, necessary to attach a filter as oil mist is scattered from the exhaust port. For this reason, our pumps equipped with oil mist trap (Replacement required as necessary). Also, change the oil as necessary.

If solvent flows into the pump, it may cause failure. In case of solvents that erode metals in particular, they may be usable at only one time. Even with models that are resistant to chemicals, not 100% safe. Thus, safe to use a centrifugal concentrator for samples mixed with organic solvents and weak acids (Freeze drying is the drying technique based on the premise of water). Plus, even if water is left without changing the oil as it flows in, it will lead to failure and a decrease in vacuum. Change the oil as necessary and dry it following the dehumidified capacity.



	Features	Cooling temperature	Trapping volume	Vacuum gauge	Chemical resistance	Page
	<ul style="list-style-type: none"> Traps coldly the water sublimated into the cooling coil part Trapped water = Easy to remove Ice by rapid thawing 	-45°C	500mL	—	—	P.156
	<ul style="list-style-type: none"> Traps coldly the water sublimated into the cooling coil part Trapped water = Easy to remove Ice by rapid thawing Ultimate Vacuum range display 	-75°C	1L	Pirani vacuum gauge (Digital)		P.156
			2L	Pirani vacuum gauge (Digital)		P.156

Output for recorder of vacuum degree. Nitrogen purge leak combined use nozzle.

VD-550R/800R are equipped with output terminals for recorder of vacuum degree. Plus, all three models equipped with leak port on the side of body and enables nitrogen purge from here.



Multiple tubes, Chambers etc. available as an option.

Abundant Options for freeze drying of variety of vessels. The power supply for chamber heater can be taken from the service outlet in VD main unit.



Promotes drying by heating sample with Built-in Heater on each shelf in addition to decompression.

	Features	Number of Shelves	Vacuum gauge	Page
	<ul style="list-style-type: none"> Easily Vacuum drying by connecting vacuum pump Be a Freeze drying chamber by connecting it to Lyophilizer Equipped with Outlet inside chamber and Leak nozzle 	3 level	Bourdon tube	P.158

How to do freeze drying well

Cautions on pre-freezing samples beforehand

The time required for drying differs depending the manner of freezing. Ideal to freeze the sample as thin as possible considering the receding and area of sublimation surface as shown below. Recommended to slice as thin as possible for solid samples.

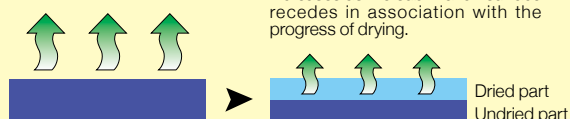
The importance on displacement of vacuum pump

The degree of vacuum is reduced inside vessels with the vapor of solvent when sublimation starts. As pumps with displacement of below 50L/min cannot discharge the steam efficiently, the sample may melt along the way (dissolved easily when the salt concentration of samples too high). Each freeze dryer has "dehumidifying capacity" limited. If the capacity of sample dried exceeds the limitation, the degree of vacuum decreases because aggregation and coagulation of steam cannot catch up it.

The necessity of heating

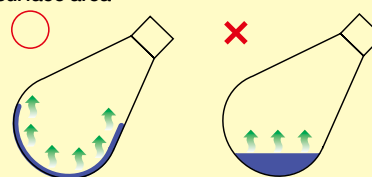
Please use Drying Chamber DC-280 to heat vessels such as vials etc. (except for egg-plant shaped flask).

Receding of sublimation surface



The resistance to sublimation increases as the sublimation surface recedes in association with the progress of drying.

Sublimation surface area



Freeze Dryer VD-250R/550R/800R

Suitable to use at Laboratories for R&D. Wide variety options are available to correspond various vessels. Cold trapped water can be easily removed by rapid thawing.

Vacuum Pumps for Freeze Dryers (Lyophilizers) --> P.151



Above combinations are examples. Each Chamber and Multiple tube sold separately.

Ultimate vacuum range display function

Displays Atmospheric pressure range/Vacuum drying range/ Lyophilization range in order with LED when decompression is started to notify the progress of decompression. When pump is changed, the setting can be changed according to the pump capacity.

Features

- Traps coldly the water sublimated into the cooling coil part
- Trapped water = Easy to remove Ice by rapid thawing
- Ultimate Vacuum range display [VD-250R/550R]

Applications

- Drying of samples such as Proteins etc.
- Drying of Testing samples such as Foods etc.

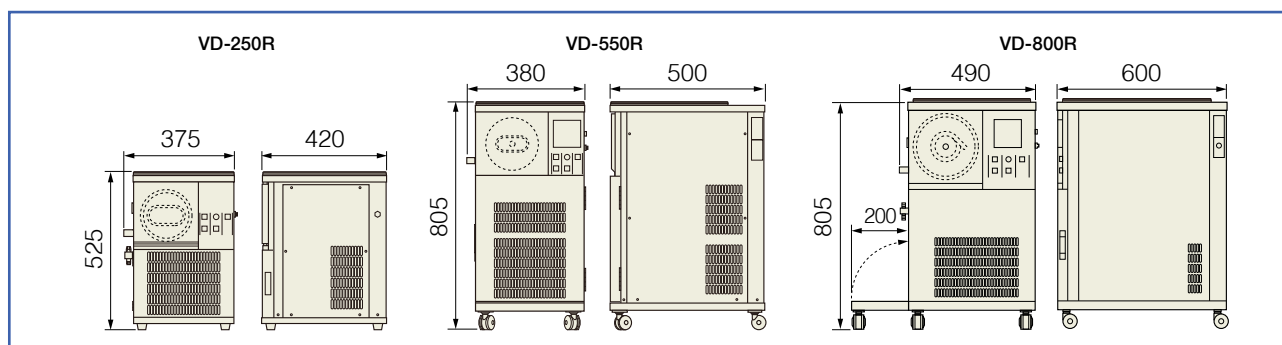
System example

Model	combined with	Features
VD-250R	2-Port multiple tube MP-020, Drying Chamber DC-280, Vacuum pump GCD-051XA, System stand C-type.	Enables to Vacuum/Lyophilize sample slices with multiple dishes by connecting Drying Chamber to Multiple tube. Eggplant-shaped flasks etc. can be connected to Multiple tube. -45°C, approx. 500mL/time.
VD-550R	Sealed Chamber SC-180, Vacuum pump GCD-051XA	Enables to seal without opening the chamber after drying vials with samples. -75°C, approx. 1000mL/time.
VD-800R	8-Port multiple tube MP-080, Vacuum pump GCD-136XA	Large capacity enables Mass processing with Eggplant-shaped flasks. -75°C, approx. 2000 mL/time.

Model	VD-250R	VD-550R	VD-800R
Cooling temperature	-45°C (at no load) (*)	-75°C (at no load) (*)	
Trapping volume	Approx. 500mL/time	Approx. 1000mL/time	Approx. 2000mL/time
Volume inside chamber	Approx. 4L (Inner dia. 160 x 205mm)	Approx. 4L (Inner dia. 160 x 205mm)	Approx. 11.7L (Inner dia. 210 x 345mm)
Vacuum gauge	-	Pirani gauge	
Compressor	250W	2 x 250W (Cascade refrigerating system)	2 x 400W (Cascade refrigerating system)
Recommended vacuum pump	Oil-sealed Rotary Vacuum pump (Ultimate pressure below 50Pa, Displacement above 100L/min)		
Vacuum hose connection port	Outer dia. φ22mm (Rc 3/8 Thread on inner surface, Convertible to different dia.)		
Vacuum release	Leakage port with filter on the side of body (N2 Gas purge combined use, Hose attachment port, Pisco φ6mm), automatically released by halting vacuum pump.		
Other functions	Hot gas defrosting (thawing in approx. 30 minutes, outlet for vacuum pump interlocking (Max. 3 sockets, 9A, with operation switch), outlet for chamber interlocking (up to 2 sockets, 3A) Ultimate pressure display function (VD-550R/800R), Recorder output for degree of vacuum pressure (0 to 5V, VD-550R/800R)		
Dimensions/Weight	375(W) x 420(D) x 525(H)mm, Approx. 34kg	380(W) x 500(D) x 805(H)mm, Approx. 75kg	490(W) x 600(D) x 805(H)mm, Approx. 97kg
Power supply	AC100V/6A (Main unit only) AC100V/15A (at Max. use of outlet for interlocking)	AC100V/9A (Main unit only) AC100V/19A (at Max. use of outlet for interlocking)	AC100V/13A (Main unit only) AC100V/30A (at Max. use of outlet for interlocking)
Standard accessories	1 x Table mat	1 x Power plug (20A), 1 x Table mat	1 x Power plug (30A), 1 x Table mat

(*)1 The value under ambient temperature 5°C to 35°C? Vacuum gauge and Solenoid valve not operated unless the operation switch of service outlet for pump turned on. The power supply from the switchboard recommended at the interlocking.
•See right page for optional accessories such as various chambers, multiple tubes, vessel adaptors etc. See page 151 for vacuum pumps.

Dimensions



Optional accessories

● Vacuum pumps for Freeze dryers → P.151

Multiple tubes (for Egg-plant shaped flasks/Test tubes/Drying vials)

Model	MP-020	MP-060	MP-080
Number of ports	2	6	8
Applicable vessels(*)	Egg-plant shaped flasks(Optional AD-0181 required in \$29 and \$24), Test tubes, Drying vials		
Mounting cock interval	—	75mm	
Dimensions	300×50×250Hmm	300×230×310Hmm	300×305×310Hmm
Standard accessories	Adaptor for Egg-plant shaped flasks (AD-0180, \$29)		

(*)Test tubes require Optional adapter (below). Ask us when using for Ampoule filling etc.

Adaptors / Cocks For Multiple tubes MP-020/060/08



AD-0550

For exchange when breakage etc. Lure lock filter (φ 13 mm type) can be attached to leak port.



AD-0180 (\$29)

AD-0181 (\$24)

AD-0180 included in Multiple tubes is compatible with 500 mL to 1 L eggplant type flasks. Use AD-0181 for 300 mL.



AD-0401

Rimmed test tube (φ12 to φ21mm) can be used. The buccinal part can be removed and attached vacuum hose.

Enables drying processing for plural Egg-plant shaped flasks/Test tubes (Adaptor required)/Drying vials.



MP-020 with Freeze-dried Bottle (sold separately)



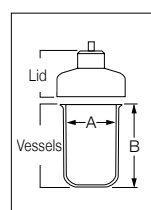
MP-060 with Egg-plant shaped flasks



MP-080 with Egg-plant shaped flasks

Freeze-dried Bottle

● Put vessels into bottle and use it. Be careful as frozen samples thawed when the amount of evaporation is large.
● When Microtubes used secure the sublimation drying path using vessel holder (commercial item).



Model	Dimensions		Volume
	A	B	
FB-4007	40mm	80mm	75mL
FB-4010		100mm	100mL
FB-4015		140mm	150mL
FB-6020	60mm	100mm	200mL
FB-6030		130mm	300mL
FB-6050		200mm	500mL
FB-9075	90mm	140mm	750mL
FB-9100		180mm	1000mL
FB-9120(*)		220mm	1200mL

(*)Enables 2pcs in MP-020, 4pcs in MP-060 and 4pcs in MP-080 mounted.

Drying Chamber

Dries samples in various small vessels as they are. Built-in Silicone rubber heater on each shelf promotes drying samples.



Model	DC-120	DC-260	DC-280
Applicable models	VD-250R/550R/800R		
Temperature range	30°C Only		
Number of Shelves	1 level	3 levels	
Heater	70W×1	100W×3	
Shelf size	φ180mm	φ185mm	258×250mm
Dimensions	φ225×200Hmm	φ225×380Hmm	430×400×615Hmm
Power supply	AC100V·0.7A	AC100V·3A	



MP-010(for DC-280)



Attached to VD series

In Box shaped DC-280 that can be used singly, easy to remove even large vessels that can easily obtain sublimation areas such as petri dishes and plates and can be done while adjusting the speed of vacuum release by oneself. When connecting to the VD series, enables to put it on VD unit and use it by using Optional MP-010 (see page 158 for details on DC-280).

Sealed Chamber

Enables to dry samples and seal the vessel caps of samples by making vacuum state. Built-in Silicone rubber heater promotes drying samples.



Model	SC-180	SC-305
Applicable models	VD-250R/550R	VD-800R
Temperature range	Fixed at 30°C	
Number of Shelves	1 level	2 levels (Sealed is only the upper level)
Heater	70W×1	100W×2
Cap pushing distance	25mm	
Dimensions	φ225×300Hmm	φ225×450Hmm
Power supply	AC100V·0.7A	AC100V·2A

- When frozen sample (beforehand) thawed using dry chamber, it can be considered that the sample volume (sublimation amount) might be large to the displacement of vacuum pump or sublimation does not progress well as resistance might be occurred due to chemical filter placed before pump. Put small amount samples that can obtain the surface area but not large amount samples in one time to solve the problem. In case even not improved review the pump displacement.
- Ask us when lyophilizing ampoule tubes with our/TAITEC equipment.

Drying Chamber DC-280

Bench-top Desiccator optimized for Vacuum drying and Freeze drying. Promotes drying by heating sample with Built-in Heater on each shelf in addition to decompression.

Freeze dryer (Lyophilizer) "Freeze Dryer VD-250R/550R/800R" --> P.156 Vacuum Pumps --> P.151



Model	DC-280
Number of Shelves/Size	Three shelves (aluminum made), 258 x 250 mm
Heater	on the back of each shelf, can be turned ON/OFF by each shelf Shelf surface approx. 30°C when ON turned (under reduced pressure)
Vacuum gauge	Bourdon tube Vacuum gauge
Suction nozzle outer dia.	φ14mm
Vacuum release	Manually operated, by outer dia. φ 9 mm Needle valve (gas purge combined use)
Outlet inside chamber	Max. AC100V/3A
Dimensions	430(W) x 400(D) x 615(H)mm
Weight	Approx. 21kg
Power supply	AC100V/3A (Main unit only) AC100V/7A (at Max. use of outlet for interlocking)
Standard accessories	3 x Acrylic shelf without heater

•Use a vacuum pump with displacement 50 to 100l/min. It might be distorted or broken if use a pump that is larger than 100l/min. Suction work slowly using valve. Vacuum pumps are listed on 151 page.

Combined with Freeze Dryer/Lyophilizer (VD series)

Enables to put the trapping for plural dryers together into one by using "Freeze Dryer VD-250R/550R/800R" (See page 156) with Multiple tubes mounted as a cold trap. Although each dryer is switched and used while not used simultaneously the number of Multiple tubes and dryers such as DC-280 can be connected (Max. 8 ports in Multiple tubes of VD series). VD-250R and DC-280 2-port multiple tubes (MP-020) in combination shown in right for reference. DC-280 is connected to Multiple tubes with vacuum hose.



DC-280 (Vacuum dryer)

VD-250R (Freeze Dryer --> P.156)

MP-020 (2-port multiple tubes --> P.157)

GCD-051XA (Oil-sealed Rotary pump --> P.151)

System stand (C-type --> P.151)

Features

- Easily Vacuum drying by connecting vacuum pump
- Be a Freeze drying chamber by connecting it to Lyophilizer
- Equipped with Outlet inside chamber and Leak nozzle

Applications

- Drying of Biological samples
- Drying of Testing samples such as Foods etc.
- As a Storage for reagents and samples weak to moisture

Built-in Heater on each shelf promotes Drying efficiency.

Enables valued samples dried efficiently. It can be turned ON/OFF by each shelf (cannot be changed during decompression). Effective to use thin and wide containers such as Petri dishes to dry paste samples.

Easy to store wide thin containers that raise drying efficiency.

AS back side of each large shelf Heater provided, promotes the drying efficiency thanks to the large surface area of heating.

Outlet inside chamber and Two nozzles

Equipped with Outlet inside chamber and Two nozzles (for suction and leak/gas purge combined use). Suction and Gas replacement can be done delicately from here.



Outlet inside chamber



Suction nozzle and Leak/Gas purge combined use nozzle

Dimensions

