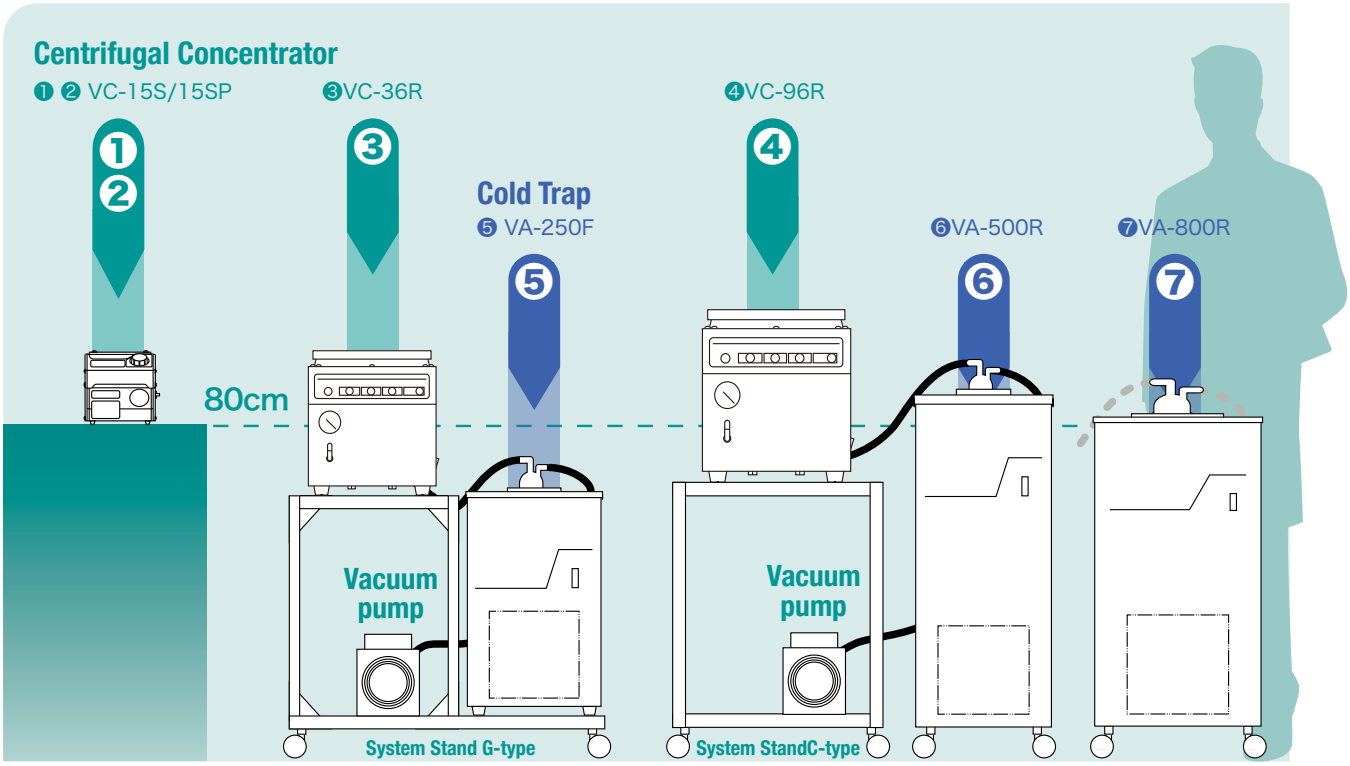
Centrifugal Concentrators Cold Trap

■ Model selection guide.....158
■Centrifugal Concentrators (Ultra small size)
Spin Dryer Mini VC-15S/SP.....160
■Centrifugal Concentrators
Spin Dryer Lite VC-36R.....162
Spin Dryer Standard VC-96R.....162
■Cold Trap (for VC-36R/96R)
Freeze Trap VA-250F/500R/800R.....164
■Cold Trap/Vacuum pump (for VC-36R/96R)
Diaphragm type Vacuum pump DTU-20/DTC-60.....165
Dry scroll type Vacuum pump VU-100HC.....165
Oil-sealed Rotary Vacuum pump GLD-051/137CC.....165
Oil-sealed Rotary Vacuum pump GCD-051XA/136XA.....165
■Aspirator
Aspirator Q-1.....167
■Test Tube Concentrator
Concentrator TC-8F.....168



❷ VC-15SP
(ⒺTHERMOBUCKET ETB)

❸ VC-36R
❺ VA-250F
Example of VC-36R System
Example of VA-250F System

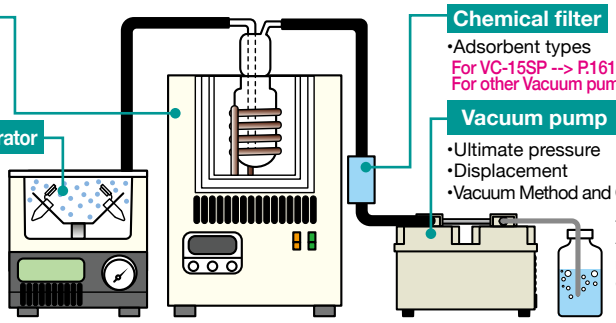
❹ VC-96R
❻ VA-500R
Example of VC-96R System
Example of VA-500R System

Basic configuration of system and Selection elements of each device

All models can be compared on this page for each device (except for chemical filters). See each page for details.

Cold Trap
- Cooling Temp.
- Trapping volume
- Other function

Centrifugal Concentrator
- Vessel types
- Number of racks
- Chemical resistance
- Temperature range
- Other function



Chemical filter
- Adsorbent types

For VC-15SP --> P.161
For other Vacuum pumps --> P.165

Vacuum pump
- Ultimate pressure
- Displacement
- Vacuum Method and Chemical resistance

To prevent pollution to the environment, it is recommended that the pump exhaust be aerated with water in gallon bottles, etc.

Centrifugal Concentrator

Model		VC-15S	VC-15SP	VC-36R	VC-96R
Material	Chamber	Stainless steel SUS304 (Teflon coated)			
	Lid	Glass		PVC (*1)	
	Rotor	Aluminum (Alumite coated)			
Chemical resistance	Water	◎	◎	◎	◎
	Alcohol	◎	◎	◎	◎
	Weak acid	◎	◎	◎	◎
	Strong acid (20% hydrochloric acid, etc.)	◎	△ (When using the Built-in Vacuum pump)	△	△
	Organic solvent	◎	◎	○ (*1)	○ (*1)
	Alkaline solution	○	○	○	○
Temperature range		Approx. +55°C (fixed)		+4°C to +70°C (*2)	

◎ : Excellent ○ : Good △ : Fair

(*1)Please note that the lid is made of PVC and becomes cloudy if the adhesion is left alone after centrifuging DMSO.

(*2)Cannot be used below room temperature.

Vessels and Rotor					
	0.2 mL Microtube	32 pcs or Strips of 8 tubes × 4 pcs (15A)	-	-	Microtube
	0.5 mL Microtube	24 pcs (15B)	-	-	
	1.5/2 mL Microtube	12 pcs (15A, 15B) 20 pcs (15C)	40 pcs (36A)	96 pcs (96A)	
	5.0 mL Microtube	6 pcs (15E) *Screw cap type is not suitable.	8 pcs (36C)	-	
	2 mL Micro Vials for HPLC	12 pcs (15D)	32 pcs (36A2)	48 pcs (96A2)	Micro Vial
	ϕ10 to 12 mm Spitz tube	-	16 pcs (36B)	48 pcs (96B)	Spitz tube
	ϕ17.5 to 18 mm Test tube or 15 mL Glass centrifuge tube	-	-	36 pcs (96D) *ϕ17.5 to 18 mm	Test tube/ Centrifuge tube
	15 mL Disposable centrifuge tubes or equivalent Test tube	-	8 pcs (36C) *ϕ17.5 mm or smaller	36 pcs (96C) *ϕ16.5 to 18 mm	
	15/50 mL Disposable centrifuge tubes	-	6 pcs + 6 pcs (36E)	8 pcs + 12 pcs (96E)	

Vacuum pump

Required to decompress inside the chamber of the centrifugal concentrator. Select the model depending on the Ultimate pressure, displacement, and chemical resistance.


--> P.161/165


--> P.165


--> P.165


--> P.165


--> P.167

Model	DTU-20	DTC-60	VU-100HC	GLD series	GCD series	Q-1
Types	Teflon diaphragm		Rotary	Oil-sealed Rotary		Water aspirator
Chemical resistance	Water, Weak acid, Organic solvent		Water, Weak acid, Organic solvent	Water	Water, Organic solvent	Water, Alcohol
Ultimate pressure [Pa]	200	1000	70	0.67		Depending on the water Temp.
Displacement (50 Hz)	20 L/min	60 L/min	100 L/min	50 or 135 L/min		6 to 7 L/min

Cold Trap

Traps the solvent that is evaporated by the centrifugal concentrator when it is released to the atmosphere or when the vacuum pump is broken. It is required when concentrating not only organic solvents but also water in large volumes. The possibility of collection even with the same solvent and temp. varies depending on the degree of the vacuum.--> P.164

Model	VA-250F	VA-500R	VA-800R
Adaptive Centrifugal Concentrator	VC-36R/VC-96R		
Cooling temperature	-45°C	-75°C	-70°C
Glass condenser Trapping volume	Approx. 200 mL	Approx. 200 mL	Approx. 1000 mL

Spin Dryer Mini VC-15S/SP

Compact-size Centrifugal Concentrator is easy to use with Benchtops. Optimal for concentration in Microtubes or Vials. For drying after Ethanol precipitation, VC-15SP with a built-in pump. With 15S, combined with a general-purpose pump, the throughput is higher.

•Cold Trap and vacuum pump are optimum for this product --> P.161

VC-15S

VC-15SP

◀Compact with approx. B5 size footprint

Features

- Compact but full-scale chemical-resistant chamber
- Rotor that can be used while the tube lid is open
- Simple and easy-to-use controls

Applications

- Drying process after Ethanol precipitation, small volume concentration [15S]
- For concentration of water-soluble and solvent samples [15SP]
- A wide variety of rotors sold separately for small volume vessels

Easy Operation

Centrifugal concentration is started simply by turning on the timer and switching on the rotor, heater, and pump in that order.
In the VC-15SP, the built-in pump is operated by the pump switch; in the VC-15S (as well as the larger series VC-36R/96R), the pump switch and vacuum pump operation are interlocked by using the outlet on the rear panel.

Model	VC-15S	VC-15SP
Temperature range	Approx. +55°C when the Heater is turned on	
Rotational speed	Approx. 2000 r/min (fixed)	
Vacuum release	Timer automatic release (also Manual)	Manual
Rotor rotation system	Magnet drive	
Timer	60 min (Analog)	
Lid/Chamber material	Lid: Glass, Chamber: Stainless steel SUS304 (Teflon coated)	
Vacuum gauge	0 to -100 kPa (Bourdon tube)	
Vacuum Pump	Required separately (*1)	Built-in, Approx. -80 kPa, to -4 L/min (Another pump can be used) (*1)
Suction nozzle outer dia.	φ8 and φ14 mm (Exchangeable)	Pisco φ8 mm
Sterilization filter	0.2 μm	
Other function	Pump switch interlocking outlet × 1 (to 7 A) (VC-15S)	
Safe devices/ protections	Overheat protection, Thermal fuse, Heater and Rotation stop when lid is open	
Dimensions (W×D×H)	171 × 236 × 175 mm	
Weight	Approx. 3 kg	Approx. 4.8 kg
Power supply	AC100V/1A /Max.10A(*2) (Need a step-down transformer)	AC100V/1A (Need a step-down transformer)
Standard accessories	φ8 and φ14 mm Nozzle × 1 pc	15A Rotor × 1 pc Vacuum pump protection filter × 1 pc

(*1)When using an external pump, the Diaphragm vacuum pump (displacement up to 50 L/min) is recommended.
(*2)In VC-15S, the current will increase according to the use of the Pump interlocking outlet.

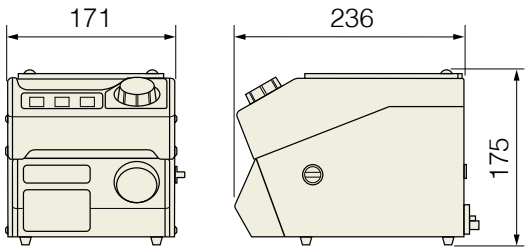
Optional accessories: Angle Rotors

▲5.0 mL
Screw cap type is not suitable.

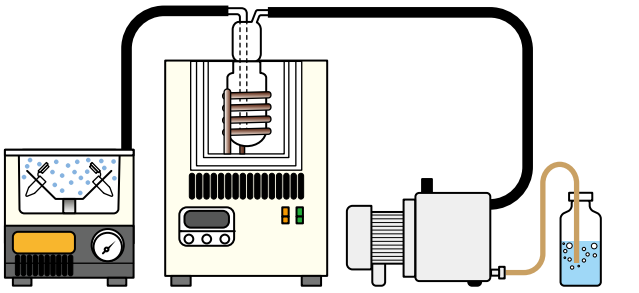
Model	Vessels and Capacity	Approximate processing capacity (*)
15A	Microtubes: 1.5/2.0 mL × 12 pcs + 0.2 mL × 32 pcs (included in VC-15SP)	12 mL
15B	Microtubes: 1.5/2.0 mL × 12 pcs + 0.5 mL × 24 pcs	12 mL
15C	Microtubes: 1.5/2.0 mL × 20 pcs	20 mL
15D	Micro vials: 1.5/2.0 mL × 12 pcs	12 mL
15E	Microtubes: 5 mL × 6 pcs (Screw cap type is not suitable.)	15 mL

(*)This is when a pump is connected to VC-15S. The maximum processing capacity of a 2.0 mL vessel and a 5.0 mL tube is 1/2 the volume of the vessel. The total processing capacity of the VC-15SP should be limited to a total of 2 mL.

Dimensions (Common in all models)



System upgrade for the VC-15 Series



When centrifugally concentrating ethanol precipitation samples with the VC-15SP, which has a built-in pump, the heater should basically be turned on.
If the total liquid volume of the sample exceeds 2 mL or if the sample can be disturbed by turning on the heater, select the VC-15S. In such cases, we recommend combining with the Teflon diaphragm pump DTU-20 (see above right), connecting a hose to the vacuum pump's exhaust port for exhausting, and "aeration" with water in a chemical bottle, etc.
When concentrating a high salt concentration sample, it is recommended to run the unit dry for 15 minutes after the completion of the concentration in order to reduce the valve deterioration of the vacuum pump.

Optional accessories: Diaphragm-type Vacuum Pump


DTU-20

Model	DTU-20
Chemical resistance (*)	Water, Mild acidity, Organic solvent
Displacement	20 L/min
Ultimate pressure	to 0.2 kPa (adjustable by valve)
Standard accessories	Vacuum hose (2 m), Nozzle port

(*)As it is not completely resistant, keep in mind that when use it.

About the Cold Trap

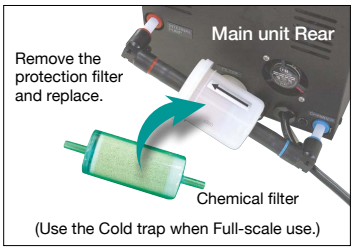

Cold Trap


Lid with nozzles


Glass condenser

Use a cold trap to collect vaporized or sublimated solvents.
Select a lid with nozzles (NF-025/040) or a glass condenser (GC-035/070) according to the solvent to be collected, and then use in combination with the cold trap.

About the disposable chemical filter



(Use the Cold trap when Full-scale use.)

The VC-15SP can be equipped with an optional disposable chemical filter.
As shown in the left figure, the filter is installed in place of the vacuum pump protection filter (standard accessory).
Refer to the table below for application guidelines.
After concentration, remove the filter and dry it before the next use.

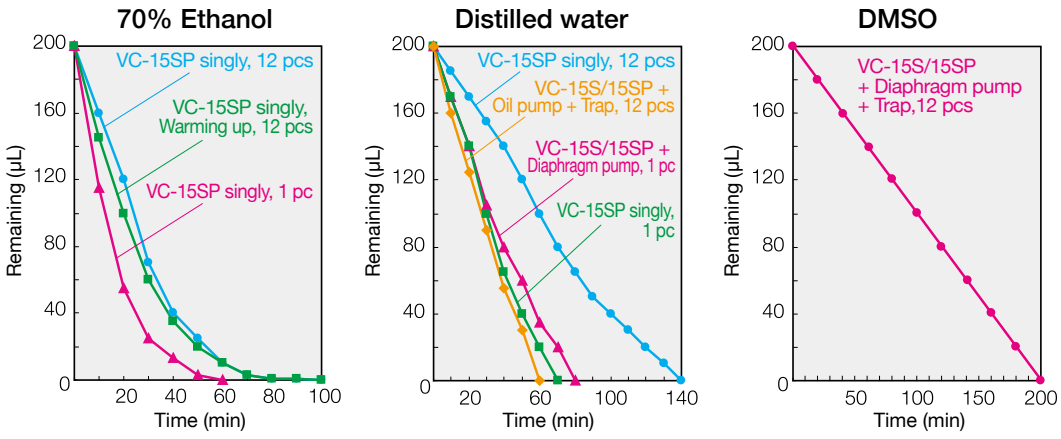
For the VC-15S, please perform aeration on the exhaust side of the pump without using a chemical filter. Please dispose of the water used for aeration as industrial waste in a timely manner.

Option: Disposable Chemical Filters (for the VC-15SP) (Replace every 1 to 2 months when used frequently.)

Model	Adsorbent	Main Adsorbable substances
CT-000-3	Activated carbon	Compressor oil vapor, C5 and other Hydrocarbons, Ketones, Alcohols, Esters, Organic acids, Aromatic, Oxides of Hydrocarbons, Chlorinated organic substances, Freon™, and Carbon disulfide
CT-103-3	Molecular sieve 13X	Carbon dioxide, Ammonia, Sulfur dioxide gas, Hydrogen sulfide, Acetylene, Propylene, Methane, Ethane, Ethylene oxide, Carbon disulfide linear Mercaptans, Linear Hydrocarbons (to C22), Cyclohexane, Butane-1, Isopentane, Benzene, Toluene, Xylene diphenyls, Triethylamine, and other Amines.

•Dispose the Organic solvents contained in the exhaust from the pump in the draft or by aeration.

Reference Line graph



Meaning of each label

- ●VC-15SP singly…Built-in pump is used
- ●Oil… Oil-sealed Rotary Vacuum pump is used (GLD-051: page 165)
- ●Trapping…Cold Trap is used
- ●Diaphragm…Diaphragm type Vacuum pump (equivalent to 1000 Pa)
- ●12 pcs…200 µL in 1.5 mL Microtube × 12 pcs
- ●1 pc…200 µL in 1.5 mL Microtube × 1 pc
- ●Warming up…Heater is turned on 15 min before the start

Spin Dryer Lite VC-36R/Spin Dryer Standard VC-96R

Microtubes, Vials, Test tubes, and Disposable centrifuge tubes can be used. Two models with the different capacities.

•Cold Traps and Vacuum pumps for VC-36R / 96R --> P.164-165

VC-36R VC-96R

(Rotors are sold separately.)

Features

- Teflon coated Chamber having excellent chemical resistance
- Digital settings, numerical values to check concentration settings
- Various rotors sold separately for Test tubes and tube vessels

Applications

- Concentrating water-soluble samples and solvents
- Concentrating in HPLC and other analytical pretreatments samples before and after analysis such as HPLC
- Concentration and drying by centrifugal

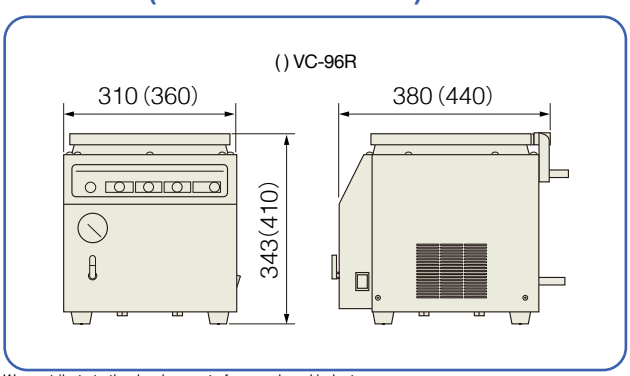
Versatile and Easy operation

Memorizes Temp., Rotational speed, and Time. Invokes those and enables the start of operation just by pressing the start button. Also, it can turn off of the Heater or cancel the Timer during operation.

Model	VC-36R	VC-96R
Temperature range	+5°C above RT to +70°C	
Rotational speed	300 to 2000 r/min (*1)	
Vacuum release	Timer automatic release (also Manual)	
Rotor rotation system	Magnet drive	
Timer	1 min to 99 h 59 min (Digital)	
Lid/Chamber material	Lid: PVC, Chamber: Stainless steel SUS304 (Teflon coated)	
Vacuum gauge	0 to -0.1 MPa (Bourdon tube)	
Suction nozzle outer dia.	Rc 1/2 (ϕ13.8 mm)	
Sterilization filter	0.2 μm	
Other function	Pump switch interlocking outlet × 1 (to 7 A) (The Pump starts after reaching 85% of the preset rotational speed.)	
Safe devices/ protections	Overcurrent protection, Heater/Rotation/Pump is stopped when the Lid is open, High temp., Various indication (Non-volatile memory, Temp. sensor, Heater output, High/Low temp., Motor, Rotational speed limit).	
Dimensions (W×D×H)/ Weight	310 × 380 × 343 mm Approx. 24 kg	360 × 440 × 410 mm Approx. 36 kg
Power supply (*2)	AC100V/2.7A /Max.10A (Need a step-down transformer)	AC100V/3.3A /Max.10A (Need a step-down transformer)

(*1)VC-36R: Max. 440 x g, VC-96R: Max. 590 x g *Reference value in the Outer perimeter of the 36R/96R Rotor. (*2)The current will increase according to the use of the Pump interlocking outlet.
•The Diaphragm-type Vacuum pump (DTU-20/DTC-60, etc.) or Dry scroll type with chemical resistant (VU-100HC, etc.) is recommended for use. Besides, the Oil-sealed rotary vacuum pump is required for Lyophilization.

Dimensions (Common in all models)



"Freeze Dryer" mode

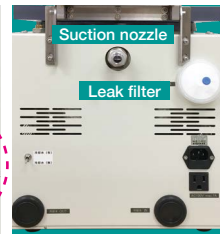
This mode uses the main unit as a vessel drying chamber for Lyophilization. In this mode, after the set time has passed, the Vacuum pump remains running while the centrifugation stops and the Heater is turned off.
By setting the timer to turn off at the stage before drying, the drying of samples can be completed without giving unnecessary heat load.
This mode can be used for samples that would melt during normal Lyophilization or for samples that are difficult to freeze. (The Oil-sealed rotary vacuum pump is required for Lyophilization.)

Automatic/Manual Vacuum release

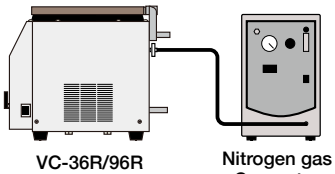
In centrifugal concentration, vacuum release by the auto-leak function is standard. For samples that are sensitive to oxidation, a Nitrogen gas Generator (or a sampling bag filled with nitrogen gas, etc.) can be connected to a leak filter that also serves as a nitrogen purge port, and manual operation of the Leak Control valve can be used to prevent sample dispersal while minimizing the effects of oxidation.

Leak Control valve ▶
Reduce dispersal of completely dried out samples with manual leakage.

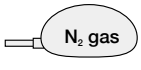
Leak Control valve on Main unit Front



Main unit Rear



VC-36R/96R Nitrogen gas Generator



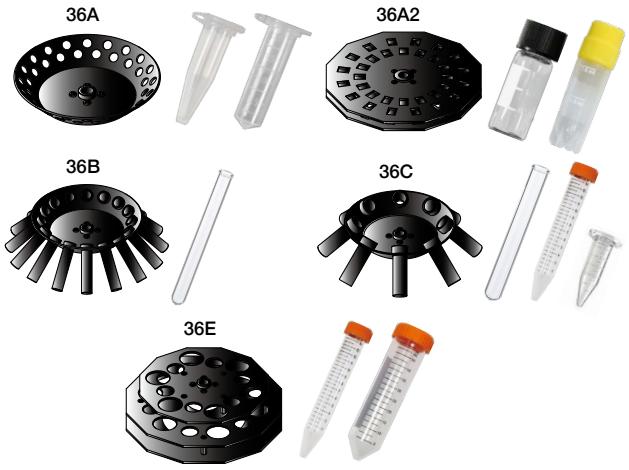
(Or connect a commercially available sampling bag, etc.)
Reference: Capacity of VC-36R: approx. 8.5 L
Capacity of VC-96R: approx. 13 L

Introduction on Options/Optional parts and Systems

•Suitable Cold Traps/Vacuum pumps for VC-36R/96R --> P.164-165

Angle rotors for VC-36R

(36A/36B/36C are the same type for the former models VC-36S/36N)

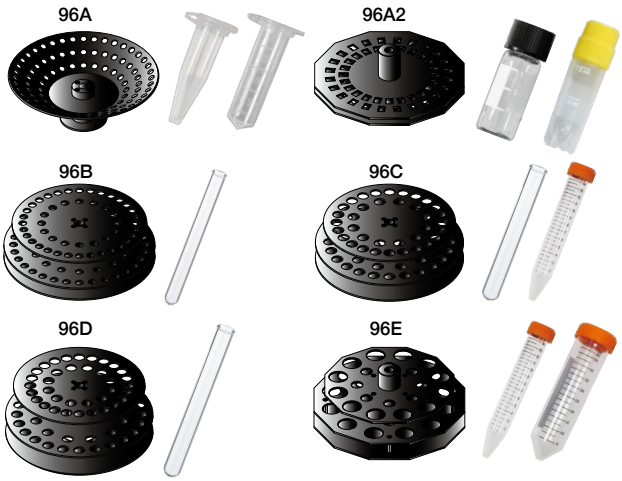


Model	Vessels/Capacity	Approximate processing capacity (*1)
36A	Microtubes: 1.5/2.0 mL × 40 pcs	40 mL
36A2	Micro Vials: 1.5/2.0 mL × 32 pcs/Cryo tubes: 2.0 mL × 32 pcs	32 mL
36B	Test tubes (Below ϕ13 mm, Length 80 to 125 mm) × 16 pcs	64 mL
36C	Test tubes (Below ϕ17.5 mm, Length 80 to 125 mm)/15 mL Disposable centrifuge tubes × 8 pcs/5 mL tubes (*2) × 8 pcs	64 mL
36E	Disposable centrifuge tubes:15 mL × 6 pcs + 50 mL × 6 pcs	150 mL

(*1)Liquid volume: 1 mL/1.5 mL tube, 4 mL/ϕ13 mm Test tube, 8 mL/15 mL Centrifuge tube, 25 mL/50 mL Centrifuge tube (*2)Eppendorf Safe-lock tubes are recommended for 5 mL tubes.
•The applicable vessels in length are different from when 36A/36B/36C/96A/96B/96C/96D used in the former models.

Angle rotors for VC-96R

(96A/96B/96C/96D are the same type for the former model VC-96N)



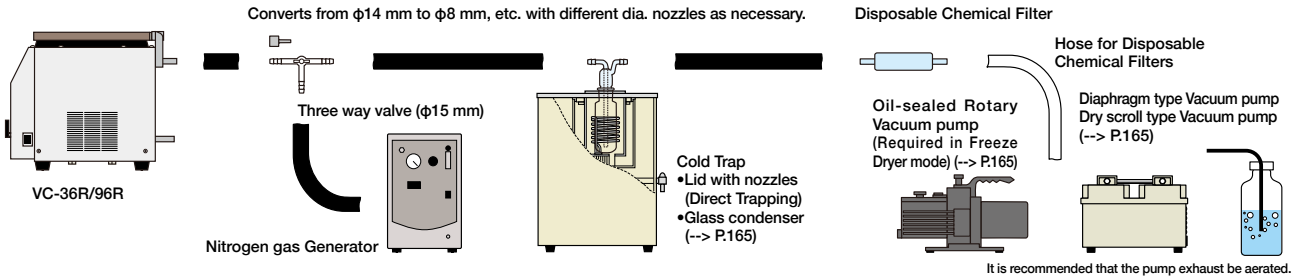
Model	Vessels/Capacity	Approximate processing capacity (*)
96A	Microtubes: 1.5/2.0 mL × 96 pcs	96 mL
96A2	Micro Vials: 1.5/2.0 mL × 48 pcs/Cryo tubes: 2.0 mL × 48 pcs	48 mL
96B	Test tubes (ϕ10 to 12 mm, Length 80 to 125 mm) × 48 pcs	192 mL
96C	Test tubes (ϕ16.5 to 18 mm, Length 80 to 125 mm)/ 15 mL Disposable centrifuge tubes × 36 pcs	288 mL
96D	Test tubes (ϕ17.5 to 18 mm, Length 130 to 165 mm) × 36 pcs	360 mL
96E	Disposable centrifuge tubes:15 mL × 8 pcs + 50 mL × 12 pcs	300 mL

(*)Liquid volume: 1 mL/1.5 mL tube, 4 mL/ϕ13 mm Test tube, 8 mL/15 mL Centrifuge tube, 10 mL/ϕ18 mm Test tube, 25 mL/50 mL Centrifuge tube

Optional accessories: Nitrogen gas Generator, Three way valve

Model	N_2 GENESIS 200	Three way valve for VC ϕ15 (Polypropylene made)
Remarks	 Collects Nitrogen from the atmosphere and concentrates it Max. 99.0% (See page 51 for details). •Supply pressure: Max. 0.5 MPa •Flow Rate and Concentration: 99.9% at 1.0 L/min, 99.5% at 3.0 L/min •Size (W×D×H): 300 × 526 × 481 mm	 Connects to the suction nozzle. Nitrogen is fed instead of air to the centrifugal concentrator during the process of changing the samples in the concentrator one after another without stopping the pump (see figure below for details). Outer dia. ϕ15 mm, Polypropylene made

The connection when System upgrade



It is recommended that the pump exhaust be aerated.

Example of VC-36R System

•Microtube 1.5/2.0 mL × 40 pcs
•Ultimate pressure: 200 Pa
•Displacement: 20 L/min
•Trapping temp.: -45°C
•Trapping volume: 200 mL
•Power consumption: 869 W

VC-36R (Centrifugal Concentrator)
36A (Rotor)
VA-250F (Cold Trap)
GC-035 (Glass condenser)
DTU-20 (Vacuum pump)
System Stand G-type

Example of VC-96R System

•Disposable centrifuge tubes (15 mL × 8 pcs + 50 mL × 10 pcs)
•Ultimate pressure: 1000 Pa
•Displacement: 60 L/min
•Trapping temp.: -45°C
•Trapping volume: 200 mL
•Power consumption: 1157 W

VC-96R (Centrifugal Concentrator)
96E (Rotor)
VA-250F (Cold Trap)
GC-035 (Glass condenser)
DTC-60 (Vacuum pump)
System Stand G-type

We contribute to the development of research and industry.
[General Catalog] TAITEC

Freeze Trap VA-250F/500R/800R

This device efficiently collects water sublimated by centrifugal concentration, assists the displacement volume of the pump, and directly contributes to the concentration speed. It reduces cross-contamination by agglomerating the vapor phase of the concentrated and sublimating sample.

•Centrifugal Concentrator "Spin Dryer VC-36R/96R" --> P.162

VA-250F VA-500R VA-800R

Features

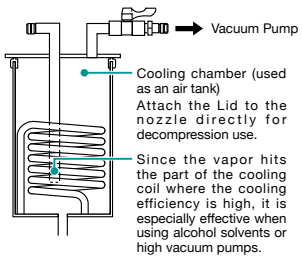
- Traps vapor into Cooling chamber directly (Direct cooling in the chamber for high efficiency) or Glass condenser (sold separately) (For corrosive solvents)
- Equipped with a temp. Monitor inside the Cooling chamber [VA-800R]

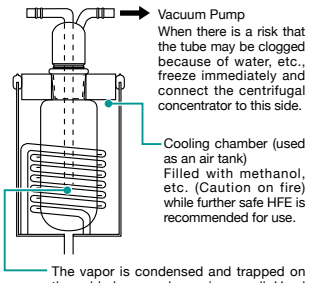
Applications

- As a Cold Trap for the Centrifugal Concentrator
- As a preliminary freezing tank for Lyophilization
- As a freezing tank during freeze-fracturing

Direct collecting into a Cooling chamber or trapping into a Glass condenser

Use the Lid with nozzle (sold separately) when trapping vapors directly to the Cooling chamber (See left figure below). The advantage of directly trapping is that the collection efficiency is very high. This is because it is directly cooled by a cooling pipe while maintaining capacity. The solvents are limited to water and non-corrosive alcohol as the solvent is directly in contact with the unit. For other solvents, trap by using the Glass condenser (sold separately) (See right figure).





Cooling chamber inside (VA-800R)

Model	VA-250F	VA-500R	VA-800R
Cooling temp./range	-45°C	-75°C	-70°C
Trapping volume (*)	Approx. 200 mL/time		Approx. 1000 mL/time
Cooling chamber inside dimensions	Inner ϕ135 × H215 mm (Volume: Approx. 3 L)		Inner ϕ210 × H250 mm (Volume: Approx. 8.6 L)
Cooling coil inner dia.	ϕ90 mm		ϕ160 mm
Compressor	250 W	250 W × 2	400 W × 2
Dimensions (W×D×H)	325 × 435 × 540 mm	330 × 470 × 835 mm	420 × 490 × 810 mm
Weight	Approx. 35 kg	Approx. 75 kg	Approx. 82 kg
Power supply	AC100V/6A (Need a step-down transformer)	AC100V/10A (Need a step-down transformer)	AC100V/13A (Need a step-down transformer)

(*)The value when the Glass condenser (sold separately) is used.
•Ask us when used as a preliminary freezing tank or a cool circulating water bath.

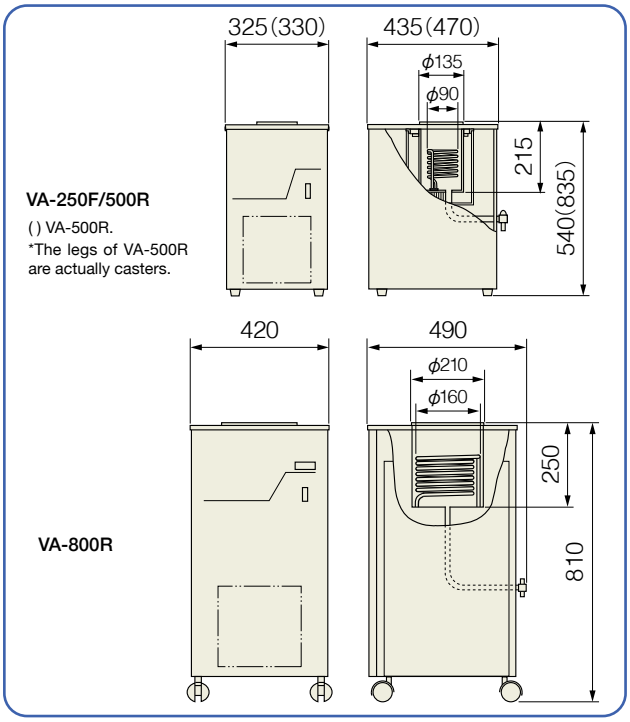
Digital Temperature Monitor [VA-800R]

The temp. inside the Cooling chamber can be checked in the VA-800R (Slight deviations may occur in the displayed temp. depending on the usage conditions.).

For simple Lyophilization

Simple Lyophilization can be performed in a cold trap by combining the VD series Multiple tubes (page 173) and the FK-2100 freezing option (VA-250F/500R).
Ask us for details.

Dimensions (Common in all models)



Introduction on Options/Optional parts

•Centrifugal Concentrator "Spin Dryer VC-36R/96R" --> P.162

Lid with nozzles / Glass condenser

NF-025/040
(mounted on VA series)

GC-035

GC-070

Model	Applicable models and Trapping volume etc.
NF-025	**Lid with nozzles for VA-250F/500R (*)** Made of stainless steel, Nozzle outer dia. ϕ13.8 mm, Trapping volume Approx. 300 mL
NF-040	**Lid with nozzles for VA-800R (*)** Made of stainless steel, Nozzle outer dia. ϕ13.8 mm, Trapping volume Approx. 1000 mL
GC-035	**Glass condenser for VA-250F/500R** Nozzle outer dia. ϕ13.8 mm, Trapping volume Approx. 200 mL
GC-070	**Glass condenser for VA-800R** Nozzle outer dia. ϕ13.8 mm, Trapping volume Approx. 1000 mL

(*)NF is recommended for large temperature differences.

System Stand

System Stand D-type

System Stand G-type
Examples of Use

Product/Model	Remarks	Applicable models
System Stand C-type	405 × 500 × 655H mm	VA-500R/800R
System Stand D-type	800 × 580 × 600H mm, with Outlet	VA-250F
System Stand E-type	450 × 580 × 600H mm, with Outlet	VA-500R/800R
System Stand G-type	750 × 500 × 623H mm	VA-250F

•Select it according to the applicable model. Each comes with castors.

Vacuum pump

•Centrifugal Concentrator "Spin Dryer VC-36R/96R" --> P.162

Diaphragm/Dry scroll type Vacuum pumps

(Accessories: Vacuum hose and nozzle port)

Model	Chemical resistance (*)	Displacement	Ultimate pressure
DTU-20	Water, Weak acid, Organic solvent, etc.	20 L/min	up to 200 Pa (Adjustable by valve)
DTC-60	Water, Weak acid, Organic solvent, etc.	60 L/min	up to 1000 Pa (Adjustable by valve)
VU-100HC	Water, Weak acid, Organic solvent, etc.	100 L/min	up to 70 Pa (Adjustable by valve)

(*)Pump resistance and Solvent release to the environment are irrelevant. In particular, it is recommended to use the Cold Trap or Chemical filter in order to avoid emissions.
•Vacuum hose as consumable (for connection to VC-36R/96R, inner dia. ϕ12 mm) is sold per metric units. Ask us if necessary.

DTU-20
(Diaphragm type)

DTC-60
(Diaphragm type)

VU-100HC
(Dry scroll type)

Select the DTU-20 when combined with VC-15 and VC-36R (for small volume processing), and DTC-60 for Test tubes. Select the VU-100HC when processing large volumes of water or alcohol.

Oil-sealed Rotary Vacuum pumps

(Comes with Vacuum hose, Nozzle port and Oil mist trap)

Model	Chemical resistance (*1)	Displacement	Ultimate pressure (*2)
GLD-051	Water	50 L/min	0.67 Pa
GLD-137CC	Water	135 L/min	
GCD-051XA	Water, Organic solvent	50 L/min	
GCD-136XA	Water, Organic solvent	135 L/min	

(*1)Pump resistance and either Solvent release to the environment and Oil deterioration are irrelevant. It is recommended to use the Cold Trap or Chemical filter in order to avoid emissions. Oil change is required if the solvent is inhaled. (*2)The value when the pump with no load. Decreases due to the piping resistance when in use.
•Vacuum hose as consumable (for connection to VC-36R/96R/96W, inner dia. ϕ12 mm) is sold per metric unit. Ask us if necessary.

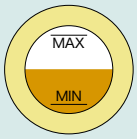
*Oil-sealed Rotary types are required when Lyophilization with VC-36R/96R.

Optional chemical filters
installation example

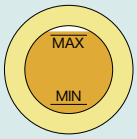
GLD-051
(Oil-sealed Rotary)

GCD-136XA
(Oil-sealed Rotary)

Changing the oil in the Oil-sealed Rotary pumps

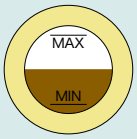


When adding new oil, fill the pump with oil between MIN and MAX.



If too much oil is added, the vacuum may not be fully raised.

If the oil becomes cloudy, change the oil immediately.



If the oil becomes opaque, change the oil.

Disposable Chemical filters

Ask us for details about this filter.

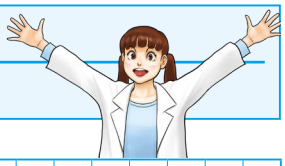
Model	Adsorbent	Main Adsorbable substances	Remarks
CT-301SE	Activated carbon	Ketones, Alcohol, Esters, Organic solvent vapor, Organic acids, Aromatic, Oxides of Hydrocarbons, Chlorinated organic substances, and Organochloride	Comes with the Connection hose and Fixture for Oil-sealed Rotary vacuum pump
CT-302SE	Anhydrous calcium sulfate	Water, Acids in Aeration	

•The lead time may take long depending on the timing of receipt of order. •Filters (model: CT-301, CT-302) are sold separately.
•Replace every 1 to 2 months when used frequently. Replace CT-302 when its color changes from Blue to Pink. The appearance of CT-301 does not change.

Note

Date Author

Title



Aspirator Q-1

Circulates water in the water bath and exerts suction with the water flow. The suction depends on the water temp. The water circulates in the tank makes no concern for discharge of contaminated water.

•Test tube concentrators "Concentrator TC-8F" --> Next page, Chiller for open circuit "Coolpomp CP-80R" --> P.189

Features

- The suction generated with the Venturi effect by water flow
- The water flow by circulation inside water bath (w/o Tap water connection)
- Properly dispose of contaminated water in the water bath after use

Applications

- Aspiration of Waste liquid in experimental operation
- Depressurization of Test tube Concentrator TC-8F and suction filtration

Equipped with Two Suction ports

The Pressure reducing Valve (sold separately) can be attached to either ports. The suction (vacuum degree) can be stabilized by using the Pressure reducing Valve while keeping the water temp. constant. See below for stabilization on water temp.

Water temperature and Suction (vacuum degree) in relation.

As the vacuum degree that is obtained from the Venturi effect varies depending on the water vapor pressure, the water temp. is related to the suction. It is easier to maintain suction (vacuum degree) and improve reproducibility by throwing Ice or the Cooling pipe into the tank or cooling the water inside bath with the Circulator for Open circuit (See right table). Also, when the Cooling pipe or Circulator is used, the samples that are limited to those materials are not damaged.

Tap temp	Max. Suction (Ultimate pressure)
+5°C	0.866 kPa (6.5 mmHg)
+10°C	1.226 kPa (9.2 mmHg)
+15°C	1.813 kPa (13.6 mmHg)
+20°C	2.333 kPa (17.5 mmHg)
+25°C	3.106 kPa (23.3 mmHg)
+30°C	4.239 kPa (31.8 mmHg)
+35°C	5.439 kPa (40.8 mmHg)
+40°C	7.371 kPa (55.3 mmHg)

The disposal of water in the water bath.

Aspirator mixes the aspirated waste fluid and the evaporated solvent into the water stream in principle. Dispose the water in the tank after drying the organic solvent, etc. under the reduced pressure or suck up the waste liquid according to regulations (Be careful in particular with the Low boiling point solvents that can easily be liquefied and mixed at once).

Combined with Circulator for Open circuit

Combined with Test tube Concentrator TC-8F

"Aspirator" generates suction by water flow

The simpler device than Vacuum pump to get suction effect by Venturi effect by water flow. As it causes the water flow by circulating the water in the bath, it is suitable for long-time use compared to the method of connecting to the tap water supply. No concern for discharge of contaminated water.

Model	Q-1
Ultimate pressure	Depends on the water vapor pressure (See left table)
Displacement	6 to 7 L/min
Suction nozzle	Outer dia. 9 mm, Two ports (2 pcs of Metal-made Aspirators built-in)
Pump motor	90 W
Dimensions inside bath (W×D×H)	220 × 250 × 220 mm (Approx. 10 L)
Dimensions (W×D×H)	230 × 260 × 425 mm
Weight	Approx. 9 kg
Power supply	AC100V/2A (Need a step-down transformer)
Standard accessories	PVC-made Transparent Lid × 1 pc

Combined with the Pressure reducing Valve

Optional accessories

Product	Remarks
Pressure reducing Valve (*)	Comes with the Bourdon tube Vacuum gauge

(*)Keep water in the bath constant to stably adjust the pressure.

Concentrator TC-8F

Promotes concentration by adding stirring to the decompression and heating. TC-8F is dedicated for Rimmed Test tubes.

TC-8F

Features

- Concentrating with Rimmed Test tube × 8 pcs

Applications

- Concentrating Analytical samples extracted with solvent
- Concentration drying of Glycoproteins, Sugar chains, Peptides, etc.
- For applications where Concentration drying in test tubes are required

Stirring function

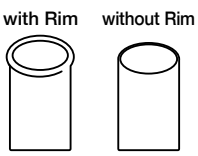
Equipped with the Stirring function. Promotes Concentration drying with the evaporation area increased by stirring the sample solution.

Model	TC-8F
Temperature range	Up to +60°C
Temp. control accuracy	±0.2 to 0.3°C
Stirring motion	Pendular stirring (Stepless transmission)
Capacity (Test tubes)	8 pcs (Less than 8 pcs cannot be used) (*)
Heater	150 W
Dimensions (W×D×H)	190 × 285 × 355 mm
Weight	Approx. 10.5 kg
Power supply	AC100V/2A (Need a step-down transformer)
Standard accessories	Test tube (φ17.5 to 18 mm) adapter ring × 8 pcs Test tube (φ17.5 mm × L130 mm) × 20 pcs Clamp for Cassette × 1 pc Cassette stand × 1 pc Drip tray rubber × 1 pc

(*)When using Commercial Test tubes, use one with the same rim shape and outer dia. for all eight tubes.
•A pump for pressure reduction is required separately. Ask us for compatible pumps other than Q-1.

Concentrate Rimmed Test tubes collectively

Makes the 8-Rimmed Test tubes in close contact with each other without the Teflon made Suction Cup Cassette with/without Rim and decompress them collectively (On the premise that the 8-Rimmed Test tubes are used for close contact).
It cannot be used with less than 8-bottles due to its mechanism.



The Time for Concentrating and Drying (Reference)

Sample (3 mL × 8)	Boiling point	Heating temp.	Vacuum degree of used decomp. pump [kPa]	Time
Tap water	100°C	+40°C	3.20 to 4.00	10 min 00 sec
Benzene	80°C	+40°C	16.00 to 21.33	2 min 20 sec
Ethanol	78.5°C	+40°C	8.00 to 12.00	3 min 30 sec
Hexane	69.0°C	+40°C	21.33 to 28.00	1 min 20 sec
Chloroform	61.2°C	+40°C	30.66 to 34.66	1 min 50 sec
Acetone	56.5°C	+40°C	32.00 to 38.66	1 min 15 sec

Optional accessories (for Replacement)

The parts shown below are required for replacement when consumed or when using a Test tube with a different diameter from the included ones.

Product	Applicable models	Remarks
Test tube Adapter Ring (φ12 to 13 mm)	TC-8F	Incl. 8 pcs
Test tube Adapter Ring (φ15 to 16.5 mm)	TC-8F	Incl. 8 pcs
Test tube Adapter Ring (φ17.5 to 18 mm)	TC-8F	Incl. 8 pcs