

# HyperVAC™ Centrifugal Vacuum Concentrator



## Features

- Modular configurations of centrifugal part, cold trapping, and vacuum pump for versatile applications
- Available for volatile chemical solvents by accommodating with water pump, diaphragm pump or oil pump
- Accommodate a wide range of sample containers : 0.5, 2.0, 15, 50 mL tubes and microplates
- Automatic control and digital reading of TIME, TEMP and VAC
- Efficient Concentration of diverse samples through selectable system combination of Drip Catcher (Ice temperature) or Hyper Cool Cold trap (-55°C, -110°C)

## Applications

- Nucleic acids (DNA/RNA) concentration
- HPLC, PCR, gel extraction, isolation, purification and concentration from solid phase extraction to solvent removal
- Combinatorial chemistry

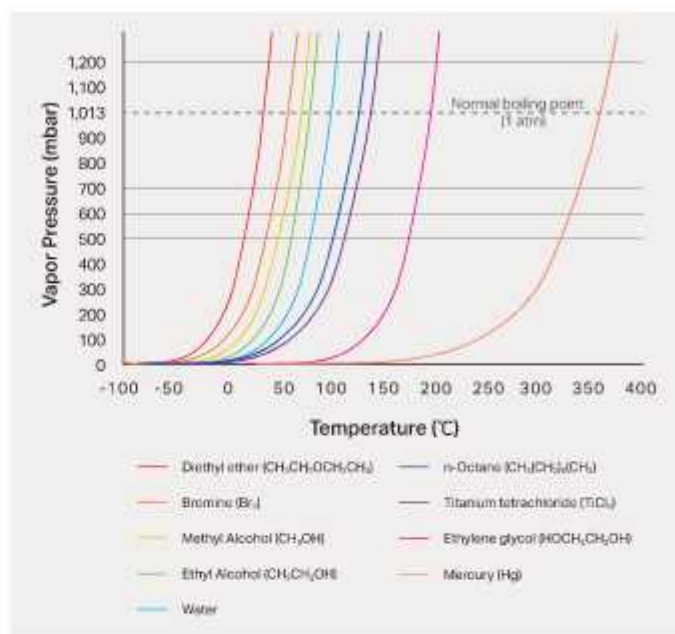
## Centrifugal Vacuum Concentration

The solvent removal is an essential process for the wide range of applications in genomics, proteomics, biochemistry, pharmaceutical study and analytical chemistry.

The energy as heat is applied during solvent removal process, so that the liquid is evaporated to gas.

The boiling point of solvent can be decreased by applying vacuum pressure, which enables liquid vaporization at lower temperature than its boiling temperature. Also decreased boiling points and centrifugal force give benefit to minimize boiling and bumping of solvents, and prevent cross contamination and sample loss.

HyperVac generates heat up to 80°C, accommodating with vacuum pump and cold traps provides enhanced evaporation of solvent and improved sample purity.



Vapor Pressure Diagram

### Vapor Pressure Lowering

$$P = X P^{\circ}$$

$P$  = Vapor pressure of the solution

$X$  = Mole fraction of the solvent

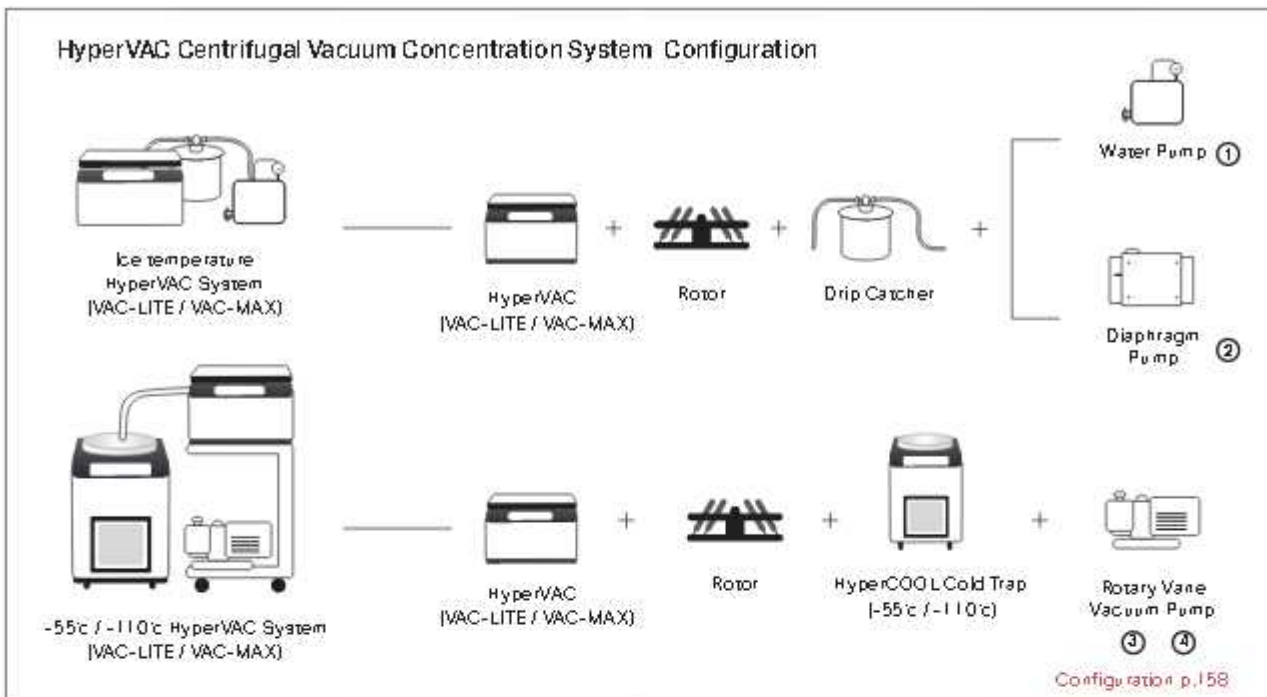
$P^{\circ}$  = Vapor pressure of the pure solvent

### Technical Specifications











	HyperVAC-LITE	HyperVAC-MAX
Max. RPM	2,000	
Max. Capacity	Fixed Angle	120 x 1.5/2.0 mL microtubes or 48 x 1.5/2.0 mL + 76 x 0.5 mL microtubes, 6 x 50 mL
	Swing-out	200 x 1.5/2.0 mL microtubes 12 x 50 mL
	2 loadings of MTP	4 loadings of MTP or DWP
Auto Start / Stop of Vacuum	Yes	
Chamber Heating Temp. Range	R.T. ~ 80°C	
Vacuum Pressure (mbar)	1 ~ 1,013	
Operating Time	< 23 hr 59 min or continuous, Default value: 0 h 0 m (continuous)	
Weight (kg)	22.5 (without rotor)	37 (without rotor)
Power Requirement	700 VA (W/O pump 350 VA)	1,000 VA (W/O pump 700VA)
Power supply	AC 230 V, 50 Hz (AC 220-230 V, 50/60 Hz, 110 V optional)	
Centrifuge Dimension (w x d x h, mm)	375 x 445 x 252	475 x 560 x 350
Cat. No.	Hyper-VC2124	Hyper-VC2200












### HyperVAC Centrifugal Vacuum Concentration System Configuration



#### Rotors for HyperVAC-LITE p.143 ~

<p><b>GRV-50-6</b> incl. 6 ea x GLBV-50 6 x 50 mL conical</p> 	<p><b>GRV-15-12</b> incl. 12 ea x GLV-15/10A 12 x 15 mL</p> 	<p><b>GRV-m2.0-120</b> 120 x 1.5/2.0 mL</p> 	<p><b>GRV-m0.5/2.0-124</b> 48 x 1.5/2.0 mL +78 x 0.5 mL</p> 	<p><b>GRV-50c-6</b> 6 x 50 mL conical</p> 	<p><b>GRV-15c-12</b> 12 x 15 mL conical</p> 
<p><b>GRV-20-12</b> 12 x 20 mL vial tube</p> 	<p><b>GRV-10-32</b> 32 x 10 mL</p> 	<p><b>GRV-10-18</b> 18 x 10 mL vial tube</p> 	<p><b>GRV-nw-2</b> 2 badings of MTP</p> 		

#### Rotors for HyperVAC-MAX p.148 ~

<p><b>GRV-50-12</b> incl. 12 ea x GLBV-50 12 x 50 mL conical</p> 	<p><b>GRV-15-48</b> incl. 48 ea x GLV-15/10A 48 x 15 mL</p> 	<p><b>GRV-m2.0-200</b> 200 x 1.5/2.0 mL</p> 	<p><b>GRV-50c-12</b> 12 x 50 mL conical</p> 	<p><b>GRV-30-24</b> 24 x 30 mL vial tube</p> 	<p><b>GRV-15c-24</b> 24 x 15 mL conical</p> 
<p><b>GRV-8-60</b> 60 x 8 mL vial tube</p> 	<p><b>GRV-5-192</b> 192 x 5 mL</p> 	<p><b>GRV-nw-4</b> 4 badings of MTPDWP</p> 			

## Rotors for HyperVAC-LITE

## Angle Rotor, GRV-50-6 / GRV-c50-6

- Capacity : 12 x 50 mL or 50 mL Conical
- Max. RPM : 2,000
- Hole angle rotation :  $\geq 45^\circ$
- Hole dimension ( $\varnothing \times L, \text{mm}$ ) : 32 x 6



50 mL Sleeve  
GLBV-50

Max. RPM : 2,000  
Hole dimension ( $\varnothing \times L, \text{mm}$ ) : 30 x 99  
Hole bottom type : Flat bottom with rubber pad  
Max. height for tube fit (mm) : 130

Tube										
Tube capacity (mL)	8~10 mL VT	15	15 mL conical	25 mL conical	25 mL conical	30	50	50 mL conical	50 mL conical (skirt)	50
Tube Dimension ( $\varnothing \times L, \text{mm}$ )	16 x 100	16 x 120	17 x 120	28.8 x 83	28.8 x 78.5	25.7 x 101.4	29 x 108	29.5 x 118	29.5 x 118	29 x 108
Adapter									None	None
Cat. No.	GAS-10(F50)	GAS-15(F50)	GAS-c15(F50)	GAS-c25(F50)	GAS-c25(F50)	GAS-30(F50)	GAS-50(F50)	GAS-c50(F50)	-	-
Adapter hole dimension ( $\varnothing \times L, \text{mm}$ )	17.1 x 83	17.1 x 99.5	17.2 x 103	27.1 x 14.1	27.1 x 14.1	26 x 86.5	29.5 x 14	29.5 x 17.5	-	-
Adapter hole bottom type	Round	Round	Conical	Conical	Conical	Round	Round	Conical	-	-
Max. RPM	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000



50 mL Conical Sleeve  
GLBV-c50

Max. RPM : 2,000  
Hole dimension ( $\varnothing \times L, \text{mm}$ ) : 30.4 x 101  
Hole bottom type : Conical  
Max. height for tube fit (mm) : 130

Tube						
Tube capacity (mL)	15 mL conical	25 mL conical	25 mL conical	30	50	50 mL conical
Tube Dimension ( $\varnothing \times L, \text{mm}$ )	17 x 120	28.8 x 83	28.8 x 78.5	25.7 x 101.4	29 x 108	29.5 x 118
Adapter						None
Cat. No.	GAS-c15(c50)	GAS-c25(c50)	GAS-c25(c50)	GAS-30(c50)	GAS-50(c50)	-
Adapter hole dimension ( $\varnothing \times L, \text{mm}$ )	17 x 105	27.1 x 14.1	27.1 x 14.1	26 x 83.8	27.9 x 11	-
Adapter hole bottom type	Conical	Conical	Conical	Round	Round	-
Max. RPM	2,000	2,000	2,000	2,000	2,000	2,000












## Angle Rotor, GRV-15-12

- Capacity : 12x 15 mL
- Max. RPM : 2,000
- Hole angle rotation :  $\angle 45^\circ$
- Hole dimension ( $\varnothing \times L, \text{mm}$ ) : 20.4 x 6



15 mL Sleeve  
GLB-15/10A







Max. RPM : 2,000  
Hole dimension ( $\varnothing \times L, \text{mm}$ ) : 18 x 87  
Hole bottom type : Flat bottom with rubber pad  
Max. height for tube fit (mm) : 125 (120 for conical / wider cap)  
Sleeve dimension / weight (net  $\varnothing \times L, \text{mm} / \text{g}$ ) : 22.6 x 88.5 / 1.56 g

						
Tube						
Tube capacity (mL)	1.6 ~ 5	5 mL conical	5 mL conical	8 ~ 10 mL VT	15	15 mL conical
Tube Dimension ( $\varnothing \times L, \text{mm}$ )	13 x 75	16 x 59	16 x 67	16 x 100	16 x 120	17 x 120
Adapter				None	None	None
Cat No.	GAS-3(F15)	GAS-c5(F15)	GAS-c5(F15)	-	-	-
Adapter hole dimension ( $\varnothing \times L, \text{mm}$ )	13.5 x 61	14 x 20	14 x 20	-	-	-
Adapter hole bottom type	Round	Conical	Conical	-	-	-
Max. RPM	2,000	2,000	2,000	2,000	2,000	2,000

## Angle Rotor, GRV-m2.0-120

- Capacity : 120 x 1.5 / 2.0 mL
- Max. RPM : 2,000
- Hole angle from axis during rotation :  $\angle 30^\circ$
- Hole dimension ( $\varnothing \times L, \text{mm}$ ) : 11.1 x 2
- Hole bottom type : Open
- Max. height for tube fit (mm) : 60









				
Tube				
Tube capacity (mL)	0.2	0.5	1.5/2.0	20 mL screw cap
Tube Dimension ( $\varnothing \times L, \text{mm}$ )	6 x 8	8 x 30	11 x 38	10.1 x 46
Adapter			None	None
Cat No.	GAS-m0.2(2)	GAS-m0.5(2)	-	-
Adapter hole dimension ( $\varnothing \times L, \text{mm}$ )	6.5 x 23	8 x 31	-	-
Adapter hole bottom type	Open	Open	-	-

## Angle Rotor, GRV-m0.5/2.0-124

- Capacity : 48 x 1.5 / 2.0 mL + 76 x 0.5 mL
- Max. RPM : 2.000
- Hole angle from axis during rotation :  $\angle 30^\circ$
- Hole dimension ( $\varnothing \times L$ , mm) : 11.1 x 2
- Hole bottom type : Open
- Max. height for tube fit (mm) : 60



Tube				
Tube capacity (mL)	0.2	0.5	1.5/2.0	2.0 mL screw cap
Tube Dimension ( $\varnothing \times L$ , mm)	6 x 8	8 x 30	11 x 38	10.1 x 46
Adapter			None	None
Cat. No.	GAS-m0.2(2)	GAS-m0.5(2)	-	-
Adaptor hole dimension ( $\varnothing \times L$ , mm)	6.5 x 23	8 x 31	-	-
Adaptor hole bottom type	Open	Open	-	-

## Angle Rotor, GRV-c50-6

- Capacity : 6 x 50 mL conical
- Max. RPM : 2.000
- Hole angle from axis during rotation :  $\angle 40^\circ$
- Hole dimension (W x D x L, mm) : 30 x 49.5 x 2.5
- Hole bottom type : Open
- Max. height for tube fit (mm) : 125
- Min. height for tube fit (mm) : 91



Tube/Plate type	
Tube capacity (mL)	50 mL conical
Tube dimension ( $\varnothing \times L$ , mm)	29.5 x 118

## Angle Rotor, GRV-20-12

- Capacity : 12 x 20 mL vial
- Max. RPM : 2.000
- Hole angle from axis during rotation :  $\angle 45^\circ$
- Hole dimension (W x D x L,mm) : 29 x 42.5 x 2.5
- Hole bottom type : Open
- Max. height for tube fit (mm) : 70
- Min. height for tube fit (mm) : 40



Tube/Plate type	
Tube capacity (mL)	20 mL vial
Tube Dimension (Φ x L, mm)	27.5 x 58

## Angle Rotor, GRV-c15-12

- Capacity : 12 x 15 mL conical
- Max. RPM : 2.000
- Hole angle from axis during rotation :  $\angle 40^\circ$
- Hole dimension (W x D x L,mm) : 15 x 22 x 2.5
- Hole bottom type : Open
- Max. height for tube fit (mm) : 125
- Min. height for tube fit (mm) : 84



Tube/Plate type	
Tube capacity (mL)	15 mL conical
Tube Dimension (Φ x L, mm)	17 x 120

## Angle Rotor, GRV-10-32

- Capacity : 32 x 10 mL
- Max. RPM : 2.000
- Hole angle from axis during rotation :  $\angle 45^\circ$
- Hole dimension (W x D x L,mm) : 18 x 30 x 2.5
- Hole bottom type : Open
- Max. height for tube fit (mm) : 105
- Min. height for tube fit (mm) : 71



Tube/Plate type	
Tube capacity (mL)	10 mL
Tube Dimension (Φ x L, mm)	13 x 88

## Angle Rotor, GRV-10-18

- Capacity : 18 x 10 mL vial
- Max. RPM : 2.000
- Hole angle from axis during rotation :  $\angle 45^\circ$
- Hole dimension (W x D x L, mm) : 15.5 x 25 x 2.5
- Hole bottom type : Open
- Max. height for tube fit (mm) : 60
- Min. height for tube fit (mm) : 37



Tube/Plate type

Tube capacity (mL)	10 vial
Tube Dimension (Φ x L, mm)	15 x 45



## Angle Rotor, GRV-mw-2

- 2 loadings
- Max. RPM : 2.000
- Angle from axis during rotation :  $\angle 90^\circ$
- Rotor dimension / weight (W x D x L, mm / g) : 188 x 156.5 x 67.4 / 735



Microplate Bucket  
GLP-mw

Max. RPM : 2.000  
Hole dimension (W x d, mm) : 88.5 x 130.3  
Max. height for tube fit (mm) : 35  
Hole bottom type : Flat bottom

Tube/Plate type

Tube capacity (mL)	MTP
Tube Dimension (Φ x L, mm)	88 x 130 x 15
Bucket capacity / 2	2/4





## Rotors for HyperVAC-MAX



















### Angle Rotor, GRV-50-12 / GRV-c50-12

- Capacity : 12 x 50 mL or 50 mL Conical
- Max. RPM : 2,000
- Hole angle rotation :  $\angle 45^\circ$
- Hole dimension ( $\varnothing \times L, \text{mm}$ ) : 32 x 6
- Rotor dimension / weight (net.  $\varnothing \times L, \text{mm} / \text{g}$ ) : 259 x 78 / 995



50 mL Sleeve  
GLBV-50












Max. RPM : 2,000  
Hole dimension ( $\varnothing \times L, \text{mm}$ ) : 30 x 99  
Hole bottom type : Flat bottom with rubber pad  
Max. height for tube fit (mm) : 130

Tube										
Tube capacity (mL)	8 ~ 10 mL VT	15	15 mL conical	25 mL conical	25 mL conical	30	50	50 mL conical	50 mL conical (skin)	50
Tube Dimension ( $\varnothing \times L, \text{mm}$ )	16 x 100	16 x 120	17 x 120	28.8 x 83	28.8 x 78.5	25.7 x 101.4	29 x 108	29.5 x 118	29.5 x 118	29 x 108
Adapter									None	None
Cat No.	GAS-10(F50)	GAS-15(F50)	GAS-c15(F50)	GAS-c25(F50)	GAS-c25(F50)	GAS-30(F50)	GAS-50(F50)	GAS-c50(F50)	-	-
Adapter hole dimension ( $\varnothing \times L, \text{mm}$ )	17.1 x 83	17.1 x 99.5	17.2 x 103	27.1 x 14.1	27.1 x 14.1	26 x 86.5	29.5 x 14	29.5 x 17.5	-	-
Adapter hole bottom type	Round	Round	Conical	Conical	Conical	Round	Round	Conical	-	-
Max. RPM	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000



50 mL Conical Sleeve  
GLBV-c50

Max. RPM : 2,000  
Hole dimension ( $\varnothing \times L, \text{mm}$ ) : 30.4 x 101  
Hole bottom type : Conical  
Max. height for tube fit (mm) : 130

Tube						
Tube capacity (mL)	15 mL conical	25 mL conical	25 mL conical	30	50	50 mL conical
Tube Dimension ( $\varnothing \times L, \text{mm}$ )	17 x 120	28.8 x 83	28.8 x 78.5	25.7 x 101.4	29 x 108	29.5 x 118
Adapter						None
Cat No.	GAS-c15(F50)	GAS-c25(F50)	GAS-c25(F50)	GAS-30(F50)	GAS-50(F50)	-
Adapter hole dimension ( $\varnothing \times L, \text{mm}$ )	17 x 105	27.1 x 14.1	27.1 x 14.1	26 x 83.8	27.9 x 11	-
Adapter hole bottom type	Conical	Conical	Conical	Round	Round	-
Max. RPM	2,000	2,000	2,000	2,000	2,000	2,000










## Angle Rotor, GRV-15-48

- Capacity : 48 x 15 mL
- Max. RPM : 2,000
- Hole angle rotation :  $\angle 45^\circ$
- Hole dimension ( $\Phi \times L$ , mm) : 20.4 x 6
- Rotor dimension / weight (net.  $\Phi \times L$ , mm / g) : 266 x 80 / 975



15 mL Sleeve  
GLB-15/10A







Capacity : 15 mL  
Max. RPM : 2000  
Hole dimension ( $\Phi \times L$ , mm) : 18 x 87  
Hole bottom type : Flat bottom with rubber pad  
Max. height for tube fit (mm) : 125 | 120 for conical / wide cap)

Tube						
Tube capacity (mL)	1.6 ~ 5	5 mL conical	5 mL conical	8 ~ 10 mL VT	15	15 mL conical
Tube Dimension ( $\Phi \times L$ , mm)	13 x 75	16 x 59	16 x 67	16 x 100	16 x 120	17 x 120
Adapter				None	None	None
Cat. No.	GAS-3(f15)	GAS-c5(f15)	GAS-c5(f15)	-	-	-
Adapter hole dimension ( $\Phi \times L$ , mm)	13.5 x 61	14 x 20	14 x 20	-	-	-
Adapter hole bottom type	Round	Conical	Conical	-	-	-
Max. RPM	2000	2000	2000	2000	2000	2000

## Angle Rotor, GRV-m2.0-200

- Capacity : 200 x 1.5 / 2.0 mL
- Max. RPM : 2,000
- Hole angle from axis during rotation :  $\angle 23.5^\circ$
- Hole dimension ( $\Phi \times L$ , mm) : 11.1 x 2
- Hole bottom type : Open
- Max. height for tube fit (mm) : 60
- Rotor dimension / weight (net.  $\Phi \times L$ , mm / g) : 362 x 84 / 640



Tube				
Tube capacity (mL)	0.2	0.5	1.5/2.0	2.0 mL screw cap
Tube Dimension ( $\Phi \times L$ , mm)	6 x 8	8 x 30	11 x 38	10.1 x 46
Adapter			None	None
Cat. No.	GAS-m0.2(2)	GAS-m0.5(2)	-	-
Adapter hole dimension ( $\Phi \times L$ , mm)	6.5 x 23	8 x 31	-	-
Adapter hole bottom type	Open	Open	-	-

## Angle Rotor, GRV-c50-12

- Capacity : 12 x 50 mL conical
- Max. RPM : 2.000
- Hole angle from axis during rotation :  $\leq 45^\circ$
- Hole dimension (W x D x L,mm) : 30 x 45 x 2,5
- Hole bottom type : Open
- Max. height for tube fit (mm) : 125
- Min. height for tube fit (mm) : 83



Tube/Plate type

Tube capacity (mL) 50 mL conical

Tube Dimension (Φ x L, mm) 28,5 x 118

## Angle Rotor, GRV-30-24

- Capacity : 24 x 30 mL vial
- Max. RPM : 2.000
- Hole angle from axis during rotation :  $\leq 50^\circ$
- Hole dimension (W x D x L,mm) : 28 x 40 x 2,5
- Hole bottom type : Open
- Max. height for tube fit (mm) : 90
- Min. height for tube fit (mm) : 61



Tube/Plate type

Tube capacity (mL) 30 mL vial

Tube Dimension (Φ x L, mm) 27 x 72

## Angle Rotor, GRV-c15-24

- Capacity : 12 x 24 mL conical
- Max. RPM : 2.000
- Hole angle from axis during rotation :  $\leq 45^\circ$
- Hole dimension (W x D x L,mm) : 18 x 27 x 2,5
- Hole bottom type : Open
- Max. height for tube fit (mm) : 125
- Min. height for tube fit (mm) : 77



Tube/Plate type

Tube capacity (mL) 15 mL conical

Tube Dimension (Φ x L, mm) 17 x 120

## Angle Rotor, GRV-8-60

- Capacity : 60 x 8 mL vial
- Max. RPM : 2.000
- Hole angle from axis during rotation :  $\angle 50^\circ$
- Hole dimension (W x D x L,mm) : 18 x 25.5 x 2.5
- Hole bottom type : Open
- Max. height for tube fit (mm) : 70
- Min. height for tube fit (mm) : 52



Tube/Plate type	
Tube capacity (mL)	8 mL vial
Tube Dimension (Φ x L, mm)	16.5 x 60.5

## Angle Rotor, GRV-5-192

- Capacity : 192 x 5 mL
- Max. RPM : 2.000
- Hole angle from axis during rotation :  $\angle 55^\circ$
- Hole dimension (W x D x L,mm) : 15.5 x 25 x 2.5
- Hole bottom type : Open
- Max. height for tube fit (mm) : 75
- Min. height for tube fit (mm) : 55



Tube/Plate type	
Tube capacity (mL)	5 mL
Tube Dimension (Φ x L, mm)	11 x 66

## Angle Rotor, GRV-mw-4

- 4 loadings
- Max. RPM : 2.000
- Angle from axis during rotation:  $\angle 90^\circ$
- Rotor dimension / weight (Ø x L,mm / g) : 315 x 63.5 / 96.8



Microplate Bucket,  
GLP-mw

Max. RPM : 2.000  
Hole dimension (w x d, mm) : 88.5 x 130.3  
Max. height for tube fit (mm) : 35  
Hole bottom type : Flat bottom



Tube/Plate type		
Tube capacity (mL)	LTP	DWP
Tube Dimension (Φ x L, mm)	88 x 130 x 16	87 x 128 x 60
Bucket capacity (ea / 2)	2 / 4	1 / 4



# HyperCOOL™ Freeze Dryer



## Features

- Provides wide solvent coverage by dropping temperature down to -55°C, 80°C, -110°C
- HyperCOOL by itself, when equipped with manifolds or chambers, becomes a versatile freeze dryer
- The compatible vacuum rotary vane pump generates vacuum down inside the chamber
- Defrost Function available (Hot-gas)
- Magnet embedded front cover of the condenser for very convenient cleaning
- Extended applications for concentrating wider range or larger volume of solvents
- Basic Model : 0 ~ 760 Torr (Vacuum value below "0" is not displayed)
- Optional Pirani Sensor to display precise vacuum value below 1Torr (0.001~760 Torr).

## Applications

- Pharmaceutical study and production
- Research and production of vaccine and antidote
- Drying and preservation of plants, food and etc.
- Archaeological study



## Freeze Drying

The freeze drying, also known as lyophilization is a dehydration technique through sublimation process, the shift from the solid directly into the gas without passing through liquid phase. The materials must be frozen completely to remain as solid state during sublimation process. Additionally, applying vacuum enables to lower the pressure below triple point, which to avoid the liquid phase. The freeze drying technique is used in various applications in food industry, pharmaceutical and biotechnology field and other industrial areas. HyperCOOL system allows complete removal of residual moisture.

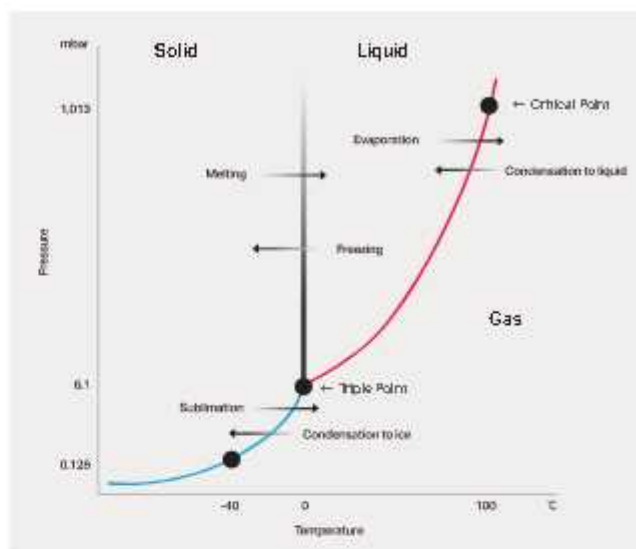
### Freezing Point Depression

$$\Delta T = iK_f m$$

$\Delta T$  = Decrease in solution freezing point

$K_f$  = Freezing point depression constant for the solvent

$m$  = Molality

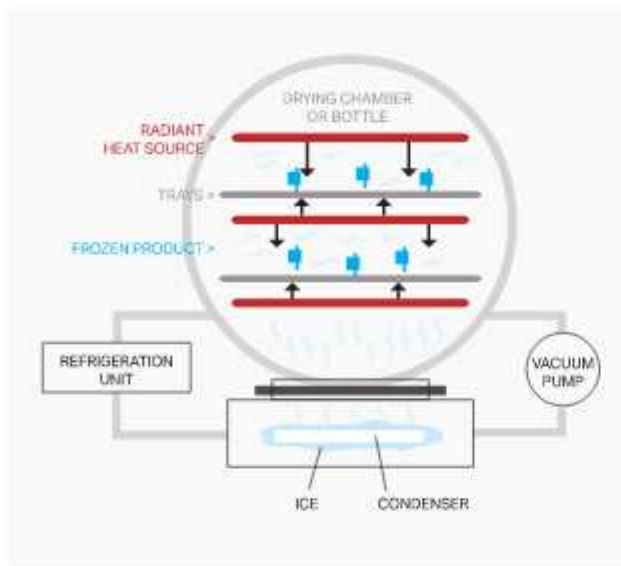


Typical Phase Diagram of Water

### Technical Specifications

	HyperCOOL HC3055	HyperCOOL HC3110	HyperCOOL HC8080
Ultimate Chamber Temp (at RT) (°C)	-55	-110	-80
Chamber Volume (L)	4	25	25
Trap (Chamber) Size (Ø x L)	165 x 202		305 x 355
ICE Condensing Capacity (kg)	3		8
Ice condensing performance (kg/day)	2.5		3
Digital Readout	Time, Temperature, Vacuum Pressure		
Function	KEYLOCK, DEFROST, VACUUM, TIME		DEFROST, VACUUM, TIME
Built in Vacuum Pump	No		Yes
Power supply	AC 230 V, 50 Hz (AC 220-230 V, 50/60 Hz, 110 V optional)		
Power Requirement (KVA)	2 KVA	2.5 KVA	5 KVA
Dimension (W x D x H, mm)	400 x 660 x 570		710 x 610 x 960
Weight (kg)	58	72	195
Cat. No.	Hyper-HC3055	Hyper-HC3110	Hyper-HC8080
CE Mark	Yes	Yes	Yes





Fully Teflon coated condenser chamber and top plate provides consistent resistance against aggressive solvents and acids.



Hot-gas de-ice function of chamber heating makes fast ice removal.



Diverse sample containers can be used both in the chamber plate and flasks through manifold tree with 3/4 inch rubber valves.

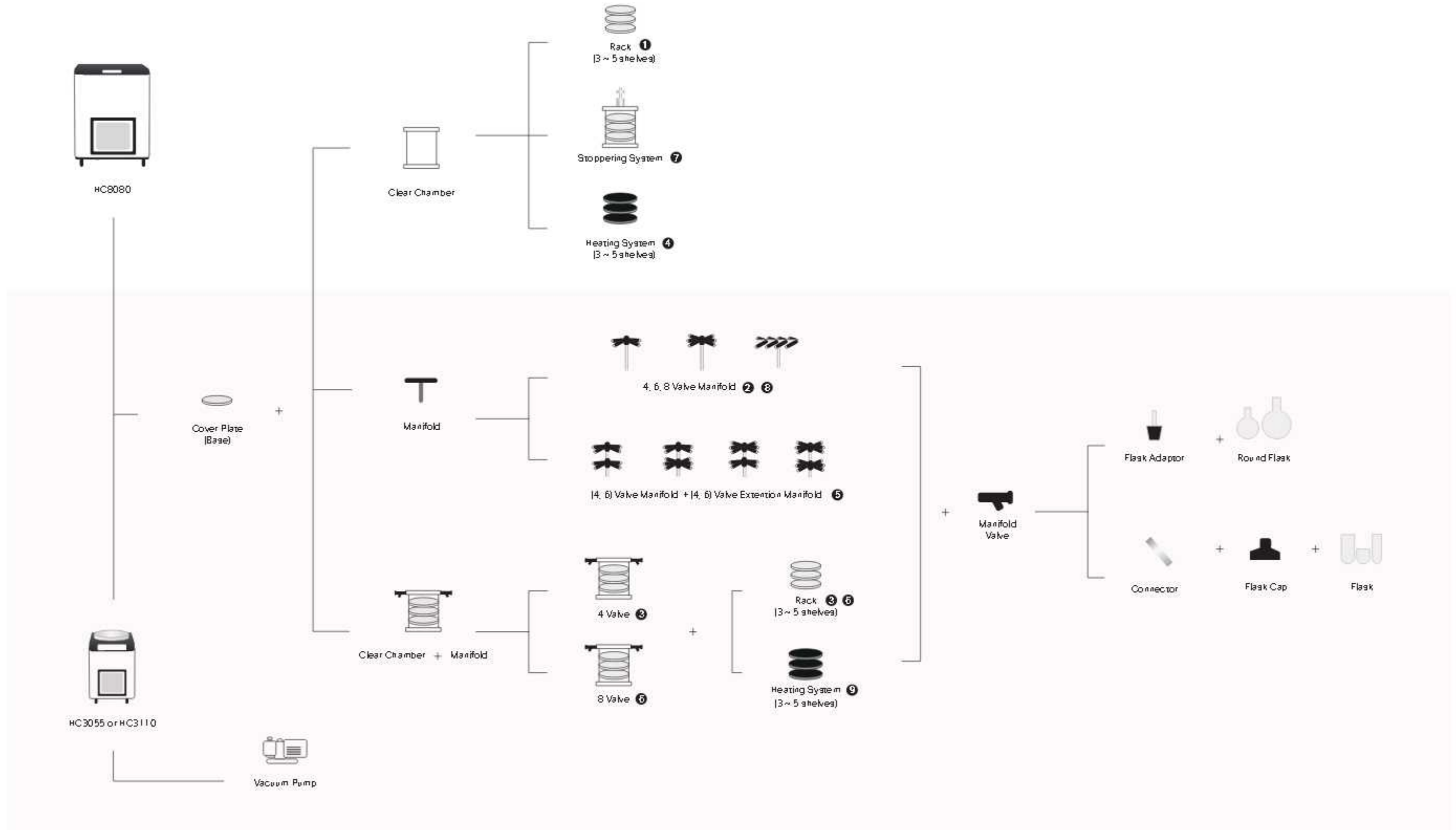


Front installed condenser pins are easily de-dusted by detaching a magnet door.



A screw capped drainage in the front body for easy and quick cleaning.

HyperCool Freeze Dry System Configuration



Can be configured with HyperVAc (Lite / Max) for multi-purpose (Cold trap freeze drying)

## HyperCool (Freeze Drying) Configuration

HyperCool(3055, 3110) needs to be configured with Rotary Vane Pump (GVP-W2V20)

**1** Basic Chamber

HyperCool(3055, 3110, 8080) + Acrylic Base + Stainless Steel Rack (3~5 shelves) + Acrylic Chamber

**2** Basic Manifold (4,6)

HyperCool(3055, 3110, 8080) + Acrylic Base + Basic Manifold (4,6)

**3** Acrylic Chamber with Rubber Valve (4)

HyperCool(3055, 3110, 8080) + Acrylic Base + Acrylic Chamber with Rubber Valve (4) + Stainless Steel Rack (3~5 shelves)

**4** Heating Chamber

HyperCool(3055, 3110, 8080) + Heating Rack (Base Included) (3~5 shelves) + Acrylic Chamber

**5** 2 Step Manifold

HyperCool(3055, 3110, 8080) + Acrylic Base + Basic Manifold (4, 6) valve extendable with (4, 6) valve regardless of basic Manifold

**6** Acrylic Chamber with Rubber Valve (8)

HyperCool(3055, 3110, 8080) + Acrylic Base + Acrylic Chamber with Rubber Valve (8) + Stainless Steel Rack (3~5 shelves)

**7** Stopping Chamber

HyperCool(3055, 3110, 8080) + Acrylic Base + Stopping Rack + Stopping Acrylic Chamber

**8** Basic Manifold (8)

HyperCool(3055, 3110, 8080) + Acrylic Base + Basic Manifold (8)

**9** Acrylic Chamber with Rubber Valve (4, 8) (Heating)

HyperCool(3055, 3110, 8080) + Acrylic Chamber with Rubber Valve (4, 8) + Heating Rack (3~5 shelves)

### HyperVAC (Centrifugal Concentration) Configuration



① Drip Catcher (Ice Temperature), Water Pump

HyperVAC (LITE, MAX) + Drip Catcher + Water Pump



② Drip Catcher (Ice Temperature), Diaphragm pump

HyperVAC (LITE, MAX) + Drip Catcher + Diaphragm Pump



③ Cold Trap (-55°C, -110°C), Rotary Vane Pump, Table A

HyperVAC (LITE, MAX) + HyperCool (-55°C, -110°C) + Acrylic Base  
Rotary Vane Pump, Table A (HyperCool underneath, Vacuum pump in the back)



④ Cold Trap (-55°C, -110°C), Rotary Vane Pump, Table B

HyperVAC (LITE, MAX) + HyperCool (-55°C, -110°C) + Acrylic Base  
Rotary Vane Pump, Table B (HyperCool inside, Vacuum Pump underneath)

### Multi-Purpose Configuration (Centrifugal Concentration + Freeze Drying)

Only HyperCool(3055, 3110) applicable to Multi-Purpose Configuration\*



Centrifugal Concentration + Freeze Drying (Manifold)

HyperVAC (LITE, MAX) + configuration (p.157 2, 5, 6) + Table B



Centrifugal Concentration + Freeze Drying (Acrylic Chamber + Rubber Valve + Stainless Steel Rack / Heating Rack)

HyperVAC (LITE, MAX) + configuration (p.157 3, 6, 9) + Table B





## Rotary Vane Pump

Configured with Hyper Cool (3055, 3110), the ultimate pressure of the Rotary Vane Pump keeps the solvents frozen during lyophilization (freeze drying) at  $1.3 \times 10^{-1}$  Pa. Low noise and low vibration offers a comfortable working environment. Simple structure, Easy to use and maintain.

CAT. NO.	GVP-W2V20	
Pumping Speed	200 L/min	
Ultimate Pressure (Torr)	Gas Ballast Close	$\leq 1 \times 10^{-2}$ ( $1.3 \times 10^{-1}$ Pa)
	Gas Ballast Open	$5 \times 10^{-2}$ (6.7 Pa)
Motor Speed	1,700 rpm	
Oil Capacity	600 cc (0.6 L)	
Weight	23.3 kg	
Overall Dimension (W x L x H)	150 mm X 423 mm X 250 mm	



## Diaphragm Pump

Configured with Hyper VAC (Max, LITE) All parts in contact with the sample are made of aluminum and selected plastics allowing a wide range of applications for non-corrosive gases. The highly flexible fabric-reinforced double diaphragm made of FKM extends the lifespan of the pump.

CAT. NO.	GVP-MP001	
Pumping Speed	40 L/min	
Ultimate Pressure (Torr)	5.2	
Motor Speed (min-1)	1800	
Weight	11 kg	
Overall Dimension (W x L x H)	243 mm x 239 mm x 198 mm	



## Water Pump

Configured with Hyper VAC (MAX, LITE). The parts in contact with the sample solvent during concentration are made of polypropylene with excellent chemical resistance. Ideal for chemical concentration.

CAT. NO.	GVP-VE11	
Pumping Speed	18L / min x 2EA	
Ultimate Pressure (Torr)	748.56	
Motor Speed	150W	
Weight	5.7 kg	
Overall Dimension (W x L x H)	330 mm x 265 mm x 390 mm	

### Cover Plates for HyperCOOL

<p><b>HHC-CPP</b> HC3055, HC3110 Top Plate for Connector Vacuum Hose to Vacuum Concentrator</p> 	<p><b>HHC-CPB</b> HC3055, HC3110 Acrylic Base for Manifold or Chamber</p> 	<p><b>HHC-CPM</b> HC3055, HC3110 Acrylic Base for HHC-MFB-8V</p> 	<p><b>HHC-CPP(8)</b> HC8080 Top Plate for Connector Vacuum Hose to Vacuum Concentrator</p> 	<p><b>HHC-CPB(8)</b> HC8080 Acrylic Base for Manifold or Chamber</p> 	<p><b>HHC-CPM(8)</b> HC8080 Acrylic Base for HHC-MFB-8V</p> 
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### Manifolds for HyperCOOL

<p><b>HHC-MFB-4V</b> Incl 4 rubber valves on a strain less steel bar, 30 cm</p> 	<p><b>HHC-MFB-6V</b> Incl 6 rubber valves on a strain less steel bar, 30 cm</p> 	<p><b>HHC-MFE-4V for extension</b> Incl 4 rubber valves on a strain less steel bar, 20 cm</p> 	<p><b>HHC-MFE-6V for extension</b> Incl 6 rubber valves on a strain less steel bar, 20 cm</p> 	<p><b>HHC-MFB-8V</b> Incl 8 rubber valves on a strain less steel bar, 30 cm</p> 
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### Chambers for HyperCOOL

<p><b>HHC-CH30P</b> Acrylic Chamber Tank and Plain Top, ø30 cm, height 40 cm</p> 	<p><b>HHC-CH30-4V</b> Acrylic Chamber Tank and Top with 4 rubber valves, ø30 cm, height 40 cm</p> 	<p><b>HHC-CH30-8V</b> Acrylic Chamber Tank and Top with 8 Rubber valves, ø30 cm, height 40 cm</p> 	<p><b>Stoppering Assembly</b></p> 
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### Racks For HyperCOOL

<p><b>HHC-CR25</b> Stainless Steel Rack with 3 tiers of shelves and trays, ø25cm (Trays can be inserted up to 3)</p> 	<p><b>HHC-CR-TS</b> A Set of a Tray and a Shelf</p> 	<p><b>HC-HP6003</b> Heating Plate (built c.3 shelves)</p> 	<p><b>HC-HP6005</b> Heating Plate (5 shelves)</p> 	<p><b>HC-HPS</b> Heating Plate (Sheet for additional order)</p> 
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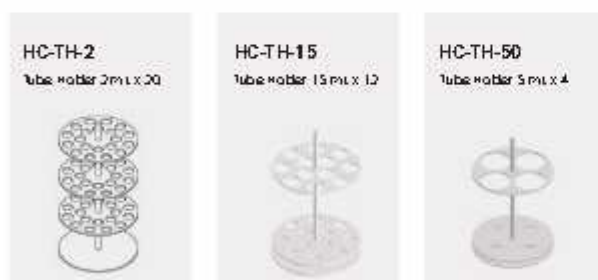
## Stoppering Assembly



## FD Glass Flasks



## Tube Holder for 900, 1,200 mL Flasks



## Ordering Information of ARA Glass Flasks

HC-AGF120	120 mL Flask + Rubber Lid + Stainless Adaptor (Diameter 60 mm)
HC-AGF150	150 mL Flask + Rubber Lid + Stainless Adaptor (Diameter 60 mm)
HC-AGF300	300 mL Flask + Rubber Lid + Stainless Adaptor (Diameter 60 mm)
HC-AGF300W	300 mL Flask + Rubber Lid + Stainless Adaptor (Diameter 90 mm)
HC-AGF600	600 mL Flask + Rubber Lid + Stainless Adaptor (Diameter 90 mm)
HC-AGF900	900 mL Flask + Rubber Lid + Stainless Adaptor (Diameter 90 mm)
HC-AGF1200	1,200 mL Flask + Rubber Lid + Stainless Adaptor (Diameter 90 mm)
V04FL80050-00	Flask Adapter Ø29 ~ 32 Cap + Flask Adapter Pipe

# HyperVAP™

## Gas Purging Evaporation Concentrator



### Features

- Accelerated evaporation performance by gas purging mechanism
- Automated, programmable and reproducible
- Proprietary semi-helical gas flow mechanism to achieve the highest evaporation rate
- Diverse dimensions of nozzles and tube racks can be tailored upon customer needs
- Four independent timer settings for different solvents
- Dual-step control of gas pressure and time to prevent "bumping" of the sample on startup
- Differentiated monitoring functions: 3-side transparent glass panels, blue backlight (on/off switchable) and traffic lights
- Optimized for evaporating organic solvents including sample preparations for chromatography
- Safety features: tempered glass panels, automatic gas shutoff function, traffic lights (fan, door, heater)

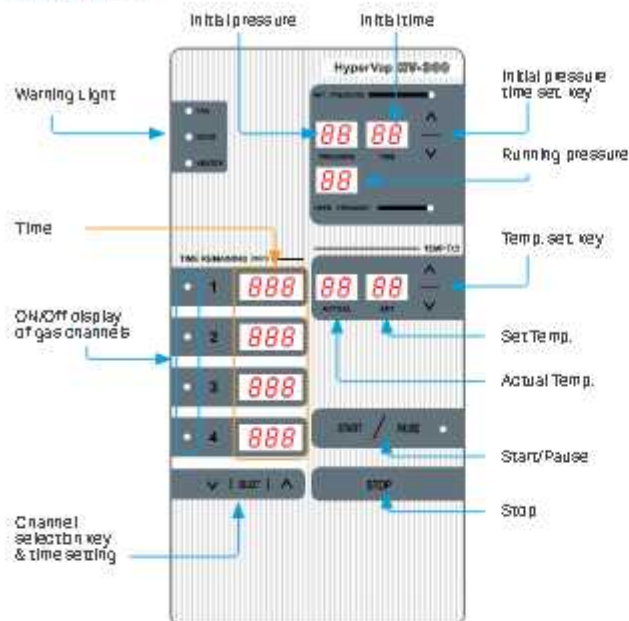
### Applications

Evaporation of solvents after solid phase extraction clean-up for:

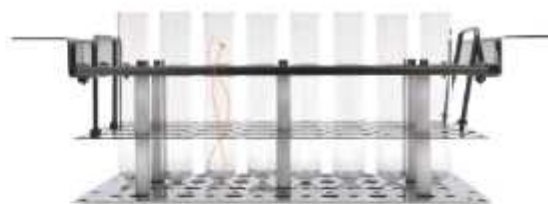
- Pharmaceutical biotech compounds
- Clinical samples
- Environmental samples
- Forensic and crime samples
- Drugs of abuse samples
- Food and beverage analysis
- Agrochemical samples



## Control Panel

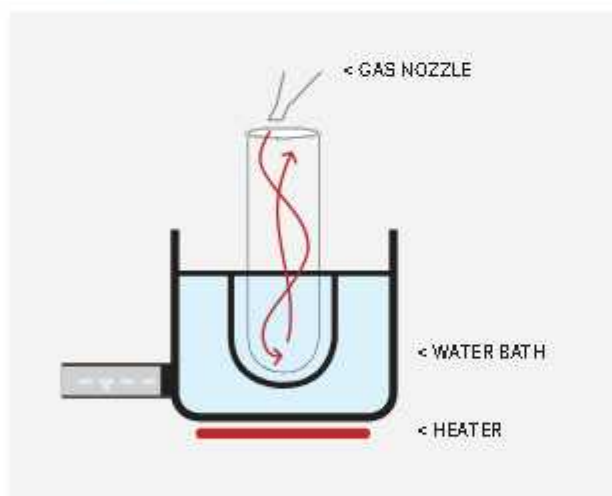


## Maximizing Efficiency



Proprietary semi-helical gas flow mechanism to achieve the highest evaporation rate.

## System Diagram



Gas purging accelerates the evaporation of a liquid by decreasing the partial vapor pressure of the solvent just above the liquid interface. Proprietary semi-helical gas flow mechanism to achieve the highest evaporation rate.

	40 psi	30 psi	20 psi
Hexane	1:50	2:10	3:20
Methanol	5:50	6:30	9:50
Acetonitrile	5:45	7:10	11:40
Ethanol	6:10	8:30	15:30

\* Experimental Conditions (min/sec)

- Sample volume : 5 mL in 20 mL tube
- Temperature : 40°C
- Gas : nitrogen gas

## Technical Specifications

Number of Samples	6~32
Sample Volume (mL)	5~300 mL
Gas	Compressed air, Nitrogen, etc.
Operating Gas Pressure (psi)	Max 50 psi
Pressure Control	Automated dual-step control (initial & running pressure)
Max Time for Initial Pressure	~999 min
Max Time Control	~999 min (4 independent channels)
Individual Time Setting for Each Channel	Yes

Light On/Off	Yes
Water Bath Temperature	~99°C
Forced Vapor Evacuation	Yes (by fan)
Power Supply	AC 230 V, 50 Hz (AC 220-230 V, 50/60 Hz, 110 V optional)
Power Requirement	800 VA
Dimension (w x d x h)	594 x 340 x 320 mm
Weight	26.5 kg
Cat No.	Hyper-HV300 (Hyper-HV300-110)