

USER MANUAL

HyperCOOL

HC3055, HC3110



HyperCOOL

Product info

- Research Use Only
- Product : Freeze Dryer & Cooling Trap
- Model : HC3055, HC3110
- Manufacturer: Hanil Scientific Inc.
- Manufacturer address: F5, 16 Arayukro, Gimpo, #10136, korea

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1. Safety warnings and precautions

1.1 Safety label



Caution sign indicating danger and warning



Electric shock hazard caution sign

1. Safety warnings and precautions

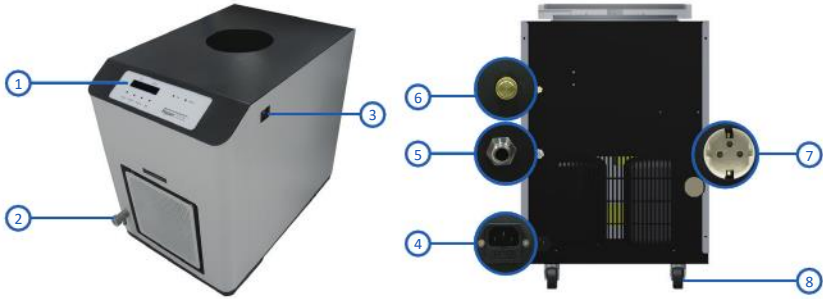
1.2 Precautions for safety

This can prevent malfunctions that may occur during use.

1. The freeze dryer must be installed horizontally on a flat surface; the device shouldn't move [or be moved] during operation
2. Install it at least 10 cm away from the wall as there must be a free space for air circulation.
3. Before connecting the lyophilizer to power, check the voltage to be used. Incorrect voltage can damage the device.
4. You must use only the accessories provided by Gyrozen Co., Ltd; Gyrozen will bear no responsibility for any problems caused by the use of unknown accessories. Only use accessories supplied by Gyrozen.
5. Use after removing foreign substances inside the product before operating the device.
6. Do not use flammable substances, hazardous substances, radioactive substances, etc. as samples.
7. When drying, place the sample on a flat surface so that it does not fall out of the container.
8. Repairs not mentioned in the user manual must be performed by qualified technicians who have completed the necessary training.
9. When requesting repair and maintenance from a technician, the user must thoroughly remove the contaminants in advance.
10. Accessories and trays must be kept dry at all times before operating the equipment to ensure long-term use.

2. Product composition and information

2.1 product composition



Front

Back

1. Control panel
2. Waterspout
3. Power switch
4. Power socket

5. Vacuum hose connector
6. Vacuum release knob
7. Vacuum pump power socket
8. Moving wheel

2.2 Components



User manual



AC Power Cord



Vacuum Hose



Clamp

※ When ordering HyperCOOL, the above accessories are provided.

※ Vacuum Pump is not included in the basic components and is sold separately.

2. Product composition and information

2.3 Technical Specifications

Model	HC3055	HC3110
Ultimate Chamber Temp. (at RT) (°C)	-55	-110
Chamber Volume (L)	4	
Trap (Chamber) Size (∅ x L)	165 x 202	
ICE Condensing Capacity (kg)	3	
ICE Condensing Performance (kg / day)	2.5	
Compressor	1/2HP	1/3HP x 2
Refrigerant	R507	R507/R1150
Digital Readout	Temperature, Time, Vacuum	
Function	KEYLOCK, DEFROST, VACUUM, TIME Actual vacuum sensing and display (optional)	
Power Requirement (Resting, VA)	2.0K	2.5K
Dimension (W x D x H, mm)	400 x 660 x 570	
Weight (kg)	58	72
CE mark	Yes	

3. Product assembly and installation

3.1 Open the product packing and fix the wheels

1. After purchasing the freeze dryer, open the packaged box and check the components.

- ▶ Components : Freeze dryer (Hypercool) / User manual
AC Power Cord / Vacuum Hose / Clamp



2. Place the machine horizontally on a flat surface, and hold the wheel by lowering the wheel fixing lever at the bottom of the machine.

3.2 Power connection

1. Connect the AC power cord to the power socket located at the bottom right of the rear of the main body, and then connect the power plug to an outlet.

- ▶ Please check the rated voltage to be used.



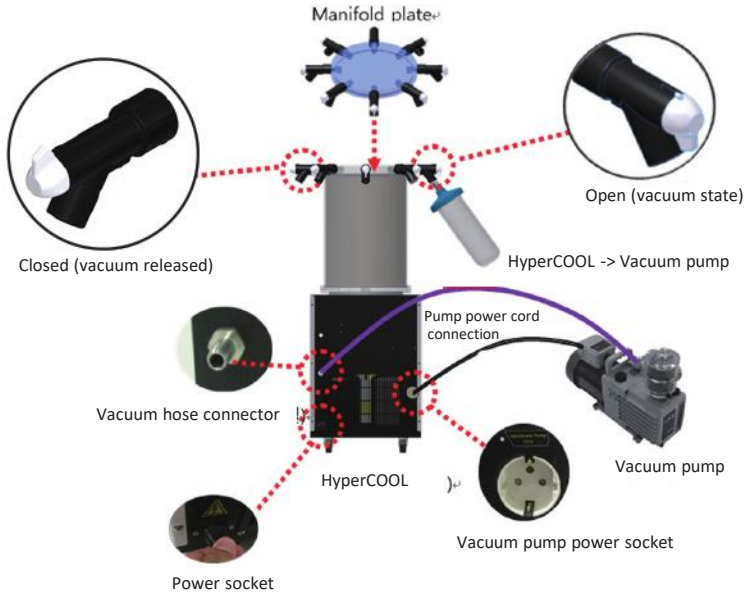
2. Raise the power switch located on the right side of the body in the upper [ON] direction (↑).



3. Product assembly and installation

3.3 Operation according to HyperCOOL configuration

HyperCOOL : Independent operation



► Check before operation

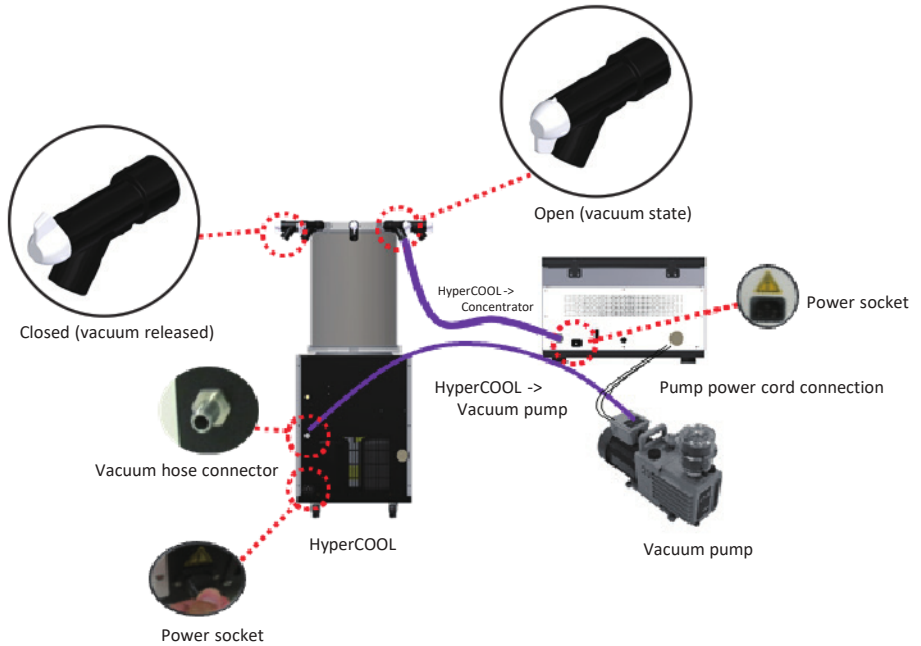
1. Make sure all vacuum valves are closed.
2. Place the chamber on the body. Make sure the chamber is well closed and that all connections are secured.
3. Check if there is any water left in the drain.
4. Make sure that both the drain valve and the vacuum release knob are closed.
5. Check that the valve handle of the manifold plate is 'closed'.



6. When connecting a manifold or chamber, always make sure that all connections are tight.

3. Product assembly and installation

HyperCOOL (chamber) and vacuum centrifugal concentrator



► Check before operation

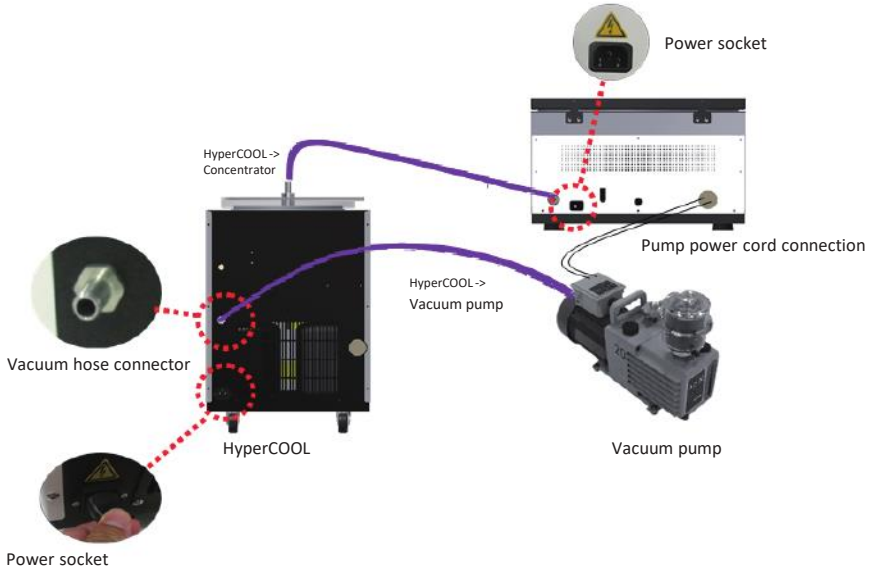
Reference when HyperCOOL independent operation

► Points to note when using integrated connection

When operating DEFROST in HyperCOOL, the concentrator must be used with the pump stopped.
(When the concentrator is stopped or operating below 1,000 rpm)

3. Product assembly and installation

HyperCOOL (chamber) and vacuum centrifugal concentrator



► Check before operation

Reference when HyperCOOL independent operation

4. Usage and precautions

4.1 Control Panel



DEFROST

- ▶ This is a function to remove frost (ice) in the chamber.
- ▶ Lamp ON : Defrost on / Lamp OFF :Defrost off

VACUUM

- ▶ This is a function for driving the pump and releasing vibration.
- ▶ Lamp ON : Pump on/ Lamp OFF : Pump off
- ▶ VACUUM button: Press for 3 seconds to check the vacuum value.
- Basic Model: 0~760 Torr (Vacuum value below "0" is not displayed)
- Optional Pirani sensor : 0.001~760 Torr

KEY LOCK

- ▶ Setting value change during operation. (set the Lock mode to prevent (DEFROST,VACUUM,TIME).)
- ▶ Lamp ON : KEY LOCK set mode / Lamp off: Key LOCK set mode off

TIME

- ▶ The operation time can be set as "hour" and "minute", and operation is possible up to 999 hours 59 minutes.
- ▶ Lamp ON : Time set mode / Lamp OFF : time set mode off

POWER Lamp

- ▶ Lamp ON : Power on / Lamp off: Power off

AWO Lamp

- ▶ This lamp allows you to check the temperature range in the chamber.
- ▶ Lamp lighting/flashing range

Status	Lamp changes	HC3055	HC3110
Alarm	Flashes every 5 second	-20°C <	
Flashes every 1 second	Flashes every 5 second	-20 ~ -50 °C	-20 ~ -90 °C
Flashes every 5 second	light on	-50°C >	-90°C >

4. Usage and precautions

4.2 Display

Temp display: It displays the current temperature, and the unit is °C.

Time display: It displays the operating time and is displayed in hours and minutes..

Vacuum value display: Vacuum value is displayed by pressing VACUUM button for 3 seconds.



► Displayed up to 999 hours and 59 minutes.

4.3 DEFROST

The DEFROST function is used to remove frost or ice in the trap by using hot gas.

1. During operation, the DEFROST LED is turned off, and when the DEFROST button is pressed, the LED lights up and the DEFROST function is activated.

► When using the DEFROST function, first open the vacuum release knob to release the vacuum in the trap for 1 minute to prevent water inflow into the pump, and then press the DEFROST button.

2. When the DEFROST function is activated, ice can be removed by melting between the Cold Trap chambers.

Removal of liquid inside the chamber!

If there is water due to melting ice in the chamber after DEFORST operation, open the drain hole on the front of the product to remove the water.

Open the valve handle by turning it counterclockwise.



4. Usage and precautions

4.4 VACUUM

Pressing the VACUUM button in the vacuum condition releases the vacuum condition by introducing external air. It is a function to create a vacuum environment by removing the air in the trap by pressing the VACUUM button in the vacuum release state.

1. Press the VACUUM button to create a vacuum environment in the trap.

▶ The VACUUM LED blinks and the LED lights up when the vacuum pump is operating.

2. If you press the VACUUM button once during operation of the vacuum pump, the operation of the vacuum pump is terminated.



The vacuum is released by opening the vacuum release knob or the valve on the manifold plate.

▶ You can check the vacuum value by pressing the [VACUUM] button for more than 3 seconds.

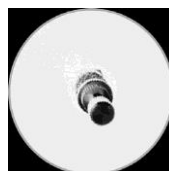
- Basic Model: 0~760 Torr (Vacuum value below "0" is not displayed)

- Optional Pirani sensor : 0.001~760 Torr

Vacuum release speed regulation!

You can adjust the vacuum release speed by turning the vacuum release knob on the back of the product.

- ▶ Clockwise rotation: Reduces vacuum release speed
- ▶ Counterclockwise rotation: Increases vacuum release speed



4. Usage and precautions

4.5 TIME

Up to 999 hours 59 minutes or continuous operation (0:00) can be set.

1. Press the [TIME] button once, use the ▲[DEFROST] and ▼[VACUUM] buttons to set the minute, then press the TIME button once more to set the “hour”.
 - ▶ 0:00 is continuous operation and TIME is counted up.
 - ▶ If you press and hold the DEFROST button in the TIME setting state, the minute value increases, and after 59 minutes, the hour value increases gradually and rapidly.
(Increases in increments of up to 10 hours)
 - ▶ When canceling the set value, press KEYLOCK.
 - ▶ When the product is shipped, continuous operation (0:00) is set.
2. After entering the set value, press the TIME button to save the time and count down the time.
3. When the set time is over, End is displayed and a buzzer sounds.
 - ▶ Press the KEYLOCK, DEFROST, VACUUM or TIME button to stop the buzzer sound.

Time LED operation status by situation

- ▶ LED OFF : Time count-up section during continuous operation (00:00)
- ▶ LED Flashing : The section in which the TIME setting is changed during operation or stop
- ▶ LED ON : The section that operates during the set time after setting TIME

4.6 KEYLOCK

Execute the lock function.

1. If you press the KEYLOCK button during operation, the KEYLOCK LED turns on, and all buttons except the KEYLOCK button cannot be input
2. To release KEYLOCK, press the KEYLOCK button again.

5. Maintenance

5.1 Inside the trap

1. If the inside of the trap is contaminated, clean it with a soft cloth moistened with soapy water and wipe it with a dry cloth, taking care not to leave any moisture.
2. Do not use chemicals such as alcohol, benzene, benzole, etc.
3. Be careful not to scratch the surface when cleaning or moving.
 - ▶ If there is a flaw on the trap surface, there is a risk of rust.
 - ▶ If rust is formed by leaving it wet for a long time, remove it with a neutral detergent and wipe it with a dry cloth.

5.2 Condenser dust removal

Remove dust periodically in order to maintain the refrigeration function of the condenser normally. Be sure to turn off the power during this operation.



It is separated by pulling the front air suction plate with both hands.

If foreign matter or dust is found on the condenser surface, remove it.

6. Problem solving

6.1 Checklist before reporting a malfunction

If an error occurs in the freeze dryer, check the following before requesting a service center.

Symptom	Checklist
No power	Refer to 3.2 Power Connection, check the grounding part of the outlet to see if the power plug is removed, and check the location of the ON/OFF button of the power switch.
No vacuum	Make sure that the silicone packing attached to the accessory is in place.

6.2 Error message

Before requesting repair, check the serial number on the label on the side of the device and contact the service center.

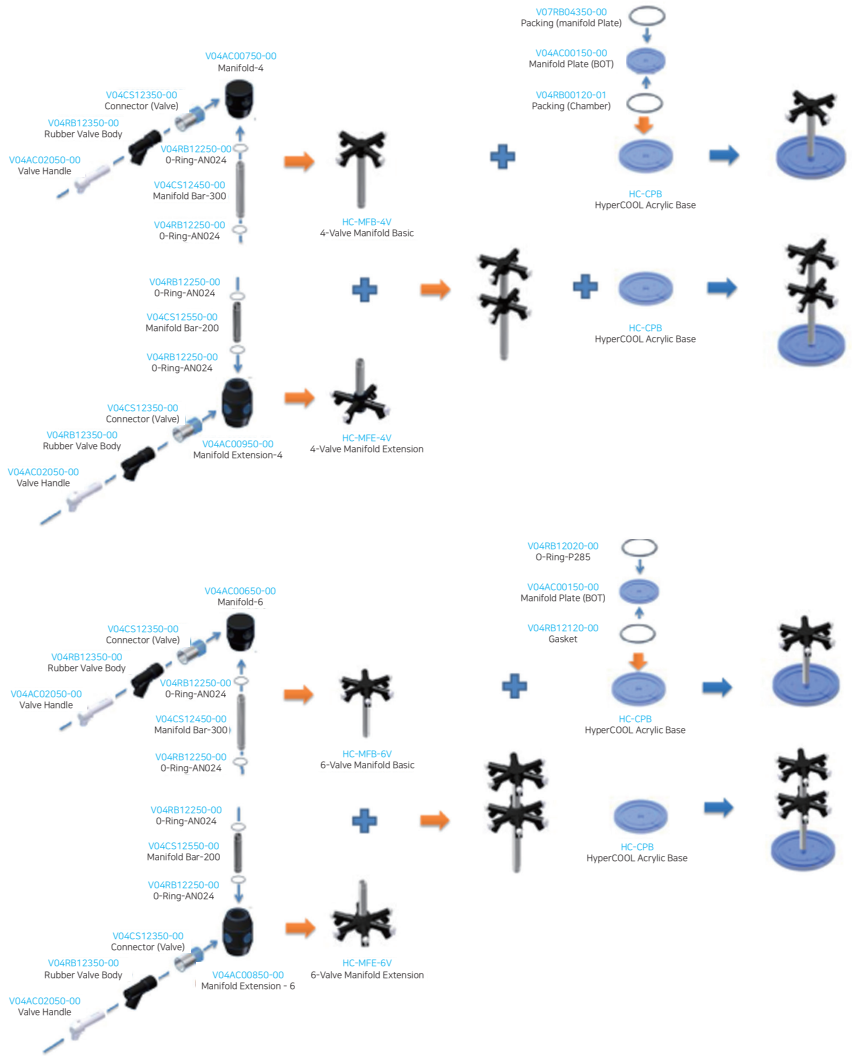
Type	Type	Action
Error 1	Temp inside the chamber	It appears when the temperature inside the chamber is outside the normal allowable range. Turn off the power and contact the service center.
Error 3	Comp1 temp	Appears when the Comp1 temperature is outside the normal allowable range. Turn off the power and contact the service center.
Error 4	Comp2 temp	Appears when the Comp2 temperature is outside the normal allowable range. Turn off the power and contact the service center. (Occurs only on HC3110 products)
Error 5	Comp1 temp sensor	Appears when the Comp1 temperature sensor does not operate normally.
Error 6	Comp2 temp sensor	Turn off the power and contact the service center. (Occurs only on HC3110 products)
Error 7	Chamnber temp sensor	Appears when the Comp2 temperature sensor does not operate normally. (Occurs only on HC3110 products)

6. Problem solving

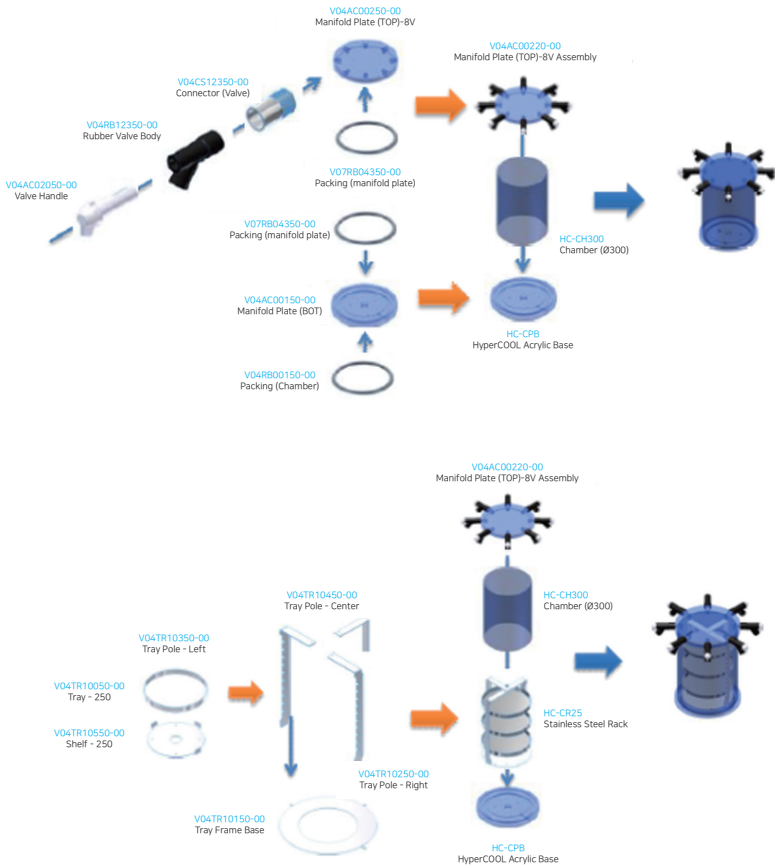
6.3 Etc

1. Be sure to follow the warnings and instructions on the label attached to the body.
2. Use genuine devices and parts from the designated place of purchase.
If you use other (unknown) equipment, the performance of the main unit may be degraded, and you may not receive proper customer service.
3. The power is connected to the power socket at the bottom left of the back of the main body, and disconnect the power cord to cut off the main body.
4. Do not open or disassemble this device at your discretion.

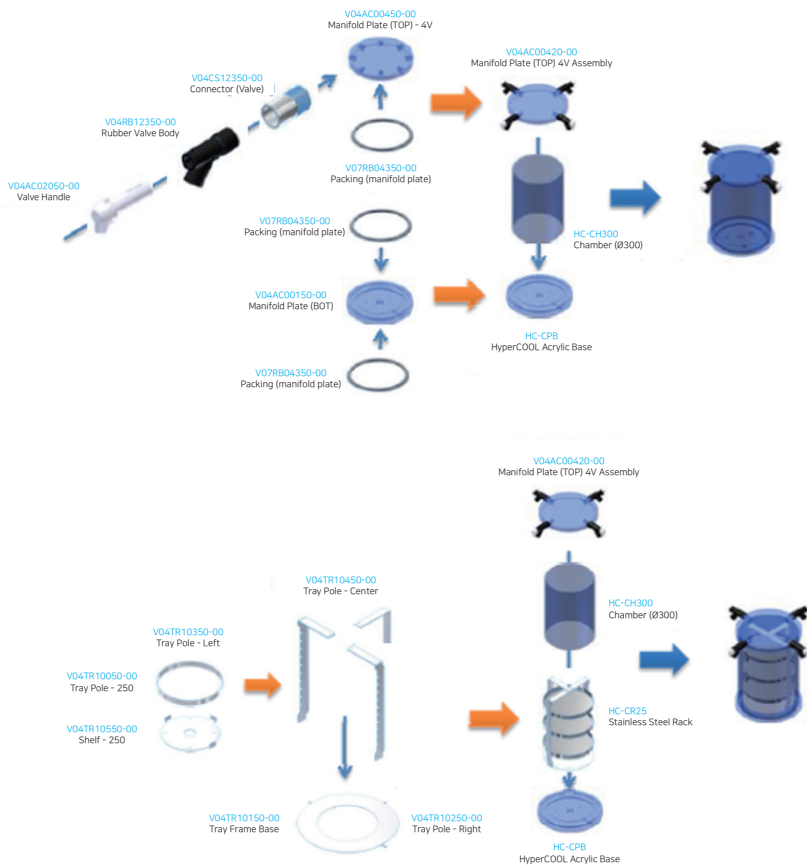
7. Accessories



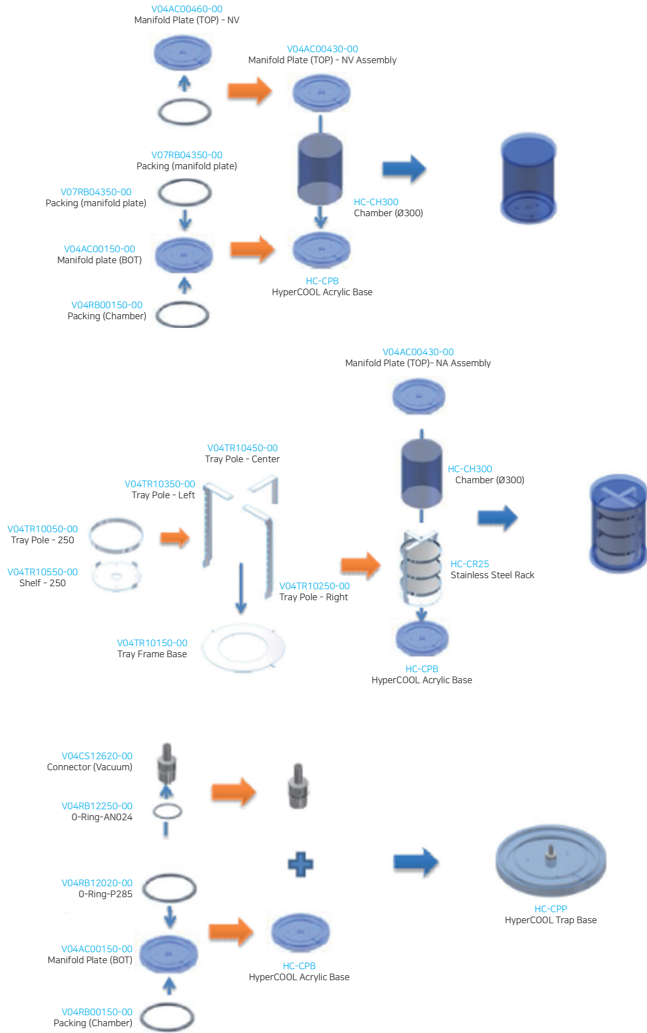
7. Accessories



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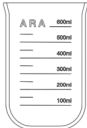
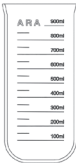
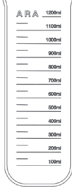
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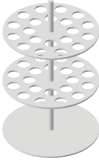





Flask

Flask				
Tube capacity (mL)	Flask cap-Ø60	120 mL Flask	150 mL Flask	300 mL Flask
Tube Dimension (Φ x L, mm)	glass flask 120~300 mL	60 x 85	60 x 95	60 x 165
Cat. No.	V07AC02520-01	V07FL00420-00	V07FL00320-00	V07FL00220-00








Flask					
Tube capacity (mL)	Flask cap-Ø90	300 mL Flask	600 mL Flask	900 mL Flask	1,200 mL Flask
Tube Dimension (Φ x L, mm)	glass flask 300~1,200 mL	93 x 93.5	93 x 149	93 x 204.5	93 x 260
Cat. No.	V07AC02620-01	V04FL00220-00	V04FL00320-00	V04FL00420-00	V04FL00520-00

7. Accessories

Tube Holder

Tube Holder			
Capacity	Tube Holder 2 mL x 20	Tube Holder 15 mL x 12	Tube Holder 5 mL x 4
Cat. No.	HC-TH-2	HC-TH-15	HC-TH-50
Tube Holder Assembly (900 mL flask only)			

Stoppering Assembly

Stoppering Assembly							
Name	Stoppering Plate (TOP)	Chamber (Ø300) HyperCOOL	Manifold Plate (Bottom)	Packing (Chamber) HyperCOOL	Packing (manifold Plate) HyperCOOL	Stainless Steel Rack -Stoppering	ex
Cat. No.	HC-SP30M-TOP	HCCH300-01	V04AC 00150-01	V04RB00 120-01	V07RB04 350-00	HC-CR25-SP	

MEMO

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