USER MANUAL

Cryogenic Canister Freezer (CCF) Series

phasetwo®

www.phasetwoCCS.com

General Description

A cryogenic freezer is a double-walled, vacuum-insulated container made of aluminum with a fiberglass composite neck tube, providing the highest efficiency possible in cryogenic temperature preservation. Use the freezer with liquid nitrogen only. Liquid oxygen is not compatible with this unit and must not be used.

phasetwo Liquid Nitrogen Dewars and Freezers are designed with consideration for safety, durability, and performance. However, mishandling of the equipment, including transport or shipping units in an orientation other than upright and vertical, may damage the product. In addition, if a freezer suffers a drop, hit, or blow, it can suffer immediate or premature vacuum failure and loss of contents.

Upon receipt of the product, examine the freezer and packaging for any evidence of damage during shipping. Contact the carrier within the carrier's guidelines if there are signs of shipping damage.

Observe the container after the first fill for any signs of vacuum loss, such as excessive frost or sweating on the outside freezer. Some frost near the top just after the first fill is normal. The high-quality vacuum insulated unit is compatible with the temperature extremes and broad applications of cryobiology.

Safety

This manual details safety precautions and handling procedures that must be understood before using the device. Be sure to review entire manual before using any cryogenic container.

A replacement manual can be downloaded from the website or ordered from your supplier as needed at any point in time.

WARNING: Liquid nitrogen is extremely cold. To avoid injury by frostbite, take extreme care whenever handling liquid nitrogen, liquid nitrogen storage or transfer vessels, or any objects which have come in contact with liquid nitrogen.

- Leave no area of skin exposed.
- Always wear proper PPE attire over clothing: face shield, cryogenic gloves, and cryogenic apron.
- Use extreme care to prevent spilling and splashing liquid nitrogen during transfer.
- Always keep freezer in upright position. Do not tilt or lay the freezer on its side.
- Immediately remove any clothing or safety attire on which liquid nitrogen has spilled.
- Seek immediate medical attention for any frostbite injuries due to liquid nitrogen.

WARNING: The venting of nitrogen vapors may deplete oxygen in the air, possibly leading to asphyxiation or even death. Do not store or use containers in areas that are small and enclosed or have poor ventilation. The use of an oxygen monitoring system is recommended.

WARNING: Do not tightly seal liquid nitrogen container or prevent nitrogen gas from escaping. Also, excessive humidity levels or exposure to rainfall could result in freezing of the cap and possible failure.

WARNING: Never use a hollow tube to measure liquid nitrogen level. This could lead to personal injury.

Disposal of liquid nitrogen should only be done outdoors or in areas specifically designed for that purpose. Pour the liquid slowly on gravel or bare earth where it can evaporate without causing damage.

CAUTION: Handle the cryopreservation freezer with care.

- Never overfill freezers with liquid nitrogen. Overfilling can cause personal injury or damage to the freezer, voiding the limited warranty. The liquid nitrogen level should always be below the bottom of the neck tube. Overfilling the tank may cause immediate or premature vacuum failure to occur.
- Never ship Liquid Nitrogen Dewars or Freezers on their side or upside down. This can lead to vacuum failure and loss of contents.
- Remove and insert canisters carefully. Do not scratch neck tube area. Scratches can cause premature vacuum failure and loss of contents.
- Tampering with or removing the vacuum port will destroy vacuum and void warranty.
- Never drop, hit, or strike the unit.
- Never spill liquid nitrogen on or near vacuum port.
- Never leave the vessel outdoors.

- Keep the bottom of freezer clean and away from chemicals, fertilizers, soil, and moisture.
- Do not use phasetwo Liquid Nitrogen Dewars or Freezers for transportation.
- All performance data published for these products is based on static conditions only.

Actual performance will vary based on the nature of use. Manipulation of canisters and or accessories along with vibration will decrease the working duration of these products.

Technical specifications

CCF-Series Model	CCF35H	CCF35V
LN2 Capacity (L)	35	35
Outer Diameter (in/mm)	18.8 (448)	18.8 (448)
Overall Height (in/mm)	26.3 (668)	26.3 (668)
Neck Opening (in/mm)	4.7 (119)	4.7 (119)
Canister Dims. (in/mm)	2.64x11 (67x279)	3.7x11 (94x279)
Weight Full (lbs/kg)	101 (45.9)	100 (45.5)
Weight Empty (lbs/kg)	39 (17.7)	38 (17.3)
Evaporation Rate (L/day)	0.27	0.27
Static Holding Time (days)	130	130
Number of Canisters	10	6
1.2 & 2ml Vial (6/cane)	1020	1260
1/2cc Straws (10/cane)	2800	3000

Evaporation Rate and Static Holding Time are nominal. Actual Evaporation rate and static holding time will be affected by application, atmospheric conditions, and manufacturing tolerances.

- Note: For guidance regarding NER, please contact technical support or your supplier.

Operations

CAUTION: Consider the value of stored samples when choosing freezers and distribution of samples among different freezers.

CAUTION: Appropriate liquid level and temperature monitoring equipment is recommended.

CAUTION: Failure to follow phasetwo's best operating practices as set forth in this manual can result in loss of contents.

ENVIRONMENTAL CONDITIONS

- Indoor use only.
- Operating temperature: -29 deg C to +60 deg C.
- Relative humidity: 10% to 95%, non-condensing
- Storage temperature: -29 deg C. to +60 deg C.
- Storage relative humidity: 10% to 95%

CAUTION: Liquid nitrogen is extremely cold. Make sure to wear proper PPE before operation. Avoid spilling liquid nitrogen over the vacuum port as this can shrink the seal and allow air to leak into the vacuum space causing premature vacuum failure.

To ensure maximum performance from your phasetwo Liquid Nitrogen Dewar or Freezer simply follow the steps below:

1. Remove the freezer from the factory packaging and remove the cap and any accessories. Lift cap straight up (do not twist).
2. Fill unit to desired level. Liquid level should never be above the bottom of the neck tube.
    a. If you are working with a warm freezer, it is phasetwo's recommendation to slowly add a small amount of liquid to the bottom of unit and allow it to sit until the liquid nitrogen stops rapidly boiling to cool the unit. Position the vacuum port facing away from the operator or other personnel.
    b. Follow established safety practices and procedures for transferring LN2.
    c. Fill the vessel with a funnel or transfer line when possible. Transfer using an LN2 hose with phase separator or pour LN2 into the freezer using a funnel.
    d. If you are filling your vessel from a pressurized source, make sure it is a low-pressure source (22 psi / 1.5bar / 150kPa or below).
3. Replace cap and allow unit to cool.
    a. If there is excessive frost or sweating on the outside vessel after the first few hours, it would indicate either a weak or no vacuum. Examine the unit carefully.
4. Using the canisters if applicable, place the sample inventory into unit, wipe water and moisture from outside of the foam plug and inside the neck tube and reinsert the cap into the freezer.

SHIPPING INSTRUCTIONS

phasetwo Liquid Nitrogen Dewars and Freezers are primarily designed to be storage containers. Using them for transport purposes could cause permanent damage to the unit. If you need to transport your inventory at cryogenic temperature, please consider using a phasetwo Vapor Shipper. When transferring empty units to a location, ensure the containers are kept upright. Shipping units in any orientation other than upright can cause permanent damage to the tank causing loss of vacuum.

GENERAL CLEANING

Do not use any petroleum-based cleaning solutions.

Inside the vessel: Any cleaning solution that does not react with aluminum, stainless steel, or G10 composite can be used in the sanitation process of a phasetwo Dewar or Freezer. In most cases, any household detergent or mild soap solution is suitable. Other cleaners and disinfectants that can be used safely include hydrogen peroxide, a chlorine/water mixture, and denatured alcohol. The generally accepted practice of using 10% chlorine bleach with 90% water solution is the best method for decontamination for aluminum freezers. It is important that all surfaces being sanitized are thoroughly rinsed and that all cleaner solution residues are removed after cleaning. Allow the unit to dry completely before putting it into service. It is suggested that the unit is inverted to drain and dry completely.

Outside the vessel: Use a lightly dampened cloth with a mild soap solution.

MEASURING LIQUID NITROGEN LEVEL

1. Always wear proper safety attire – face shield, cryogenic gloves, and cryogenic apron.

2. Use a plastic measuring rod for liquid level measurement inside a unit. Using a hollow tube can cause liquid nitrogen to flash through the tube and result in personal injury.

3. Level will be indicated by frost line, which develops when dipstick is removed. The frost line will be U-shaped; read the level at the bottom of the U.

4. You should also consider purchasing a low level & temperature alarm to monitor the liquid level and temperature.

WARNING: DO NOT OVERFILL.
Over-filling may result in personal injury due to liquid nitrogen spillage.

CAUTION: When filling the unit, avoid liquid nitrogen coming in contact with the vacuum plug. Do not pour the liquid nitrogen on the same side of the vacuum plug.

MONITORING LIQUID LEVEL AND TEMPERATURE

phasetwo offers optional Low Level and Temperature Alarms (LLTA) for peace of mind when storing valuable inventory in liquid nitrogen containers. Contact Customer or Technical Service for assistance in selecting the proper LLTA for your product.

Care & Maintenance

Normal Evaporation Rate Test:

1. Fill the unit to approximately half full. Refer to OPERATION section step 1, 2 & 3 for details.
2. Allow the unit to stand for a minimum of 24 hours.
3. Weigh unit and record as First Weight [lb.].
4. Allow filled unit to sit undisturbed for another 24 (+/-0.25) hours.
    a. Consider the accuracy and resolution of your scale to determine if additional days are required between the first and second weights to obtain an accurate NER. Make sure to record the number of hours between the first and second weights.
5. Weigh a second time and record as Second Weight, [lb.].
6. Calculate evaporation rate by using equation below. The difference between the first weight and the second weight is the daily evaporation rate in lbs. This figure roughly signifies the normal evaporation rate, or N.E.R. [Liter/Day] NER = (First Weight – Second Weight) x 13.468/Number of Hours

If there is major frost or condensation on the outside of the container during this time, it would indicate either a weak or bad vacuum. Refer to the static NER specifications on the applicable specification sheet for your model of tank on our website: www.phasetwoCCS.com. Factors such as age of unit, quantity of inventory, ambient environment, shipping condition, and use of accessories, etc. can negatively affect unit NER.

Note: phasetwo recommends the customer keeps a spare tank filled with liquid nitrogen on hand for emergency use should a tank in service become damaged or lose vacuum, thus being able to save valuable contents by transferring them into the spare tank.

Warranty

phasetwo warrants to the first end user purchaser that all products will be free of defects in materials and workmanship and will perform in accordance with phasetwo published specifications under normal conditions of installation and use. All warranty coverage periods run from the date of shipment of the goods to the original purchaser.
Cryogenic Dewars & Freezers are warranted for a period of two (2) years, except for vacuum failure which is warranted for a period of five (5) years.

Returns

Limited warranty: Manufacturing defects are covered under the containers limited warranty.

Evidence of mishandling, such as dents on the outer vessel or misalignment of the inner vessel are not considered manufacturing defects.

If you would like to return goods to phasetwo for any reason, you must first obtain a Material Return Authorization (MRA) number for tracking purposes.

Please have the unit serial number and symptoms avaiable.

Contact your supplier or call phasetwo's Customer Service Department at +1 770.985.1313 or email us at customerservice@phasetwoccs.com

Accessories & Replacement parts

Ordering Information: Order replacement parts and accessories from your local distributor.

For more information or the name of your local distributor, contact phasetwo at the phone number or email listed on the next page.

CCF Accessories & Replacements		
Canister		
CCF35V-6	P2-2012512	Canister 11" (279 mm)
CCF35H-10	P2-2018572	Canister 11" (279 mm)
Center Canister	P2-2020308	Center, 7, CCF35V-6 & CCFH-10
Roller Bases	P2-2015325	Roller Base 18.7" (475 mm)
Low Level & Temperature Alarm	P2-2018557	CCF35V-6 & CCFH-10
Sensor Guide, LLTA	P2-2023544	Guide, Temperature, & Level

CCF Accessories & Replacements		
Lid Assembly		
CCF35V-6	P2-2024222	Lid Assembly w/o Sensor Slot
	P2-2020335	Lid Assembly with Sensor Slot
CCF35H-10	P2-2012654	Lid Assembly w/o Sensor Slot
	P2-2020317	Lid Assembly with Sensor Slot
Measuring Rod	P2-2016283	

Contact Us

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