

3K CRYOSTORAGE SYSTEM

Operating Instructions

The 3K Liquid Nitrogen Refrigerator features a wide neck opening for easy, unobstructed access to its large storage compartment. This makes the 3K ideal for a wide range of applications including storage and retrieval of large volumes of biological specimens and storage of bulky materials. It is also well suited to many industrial applications such as cryoquenching, shrink fitting, etc.

The storage compartment is 14 in. (356 mm) in diameter and 19.2 in. (488 mm) deep, giving a usable volume of 1.7 cu. Ft (.048 m³).



Safety

Before using any cryogenic refrigerator, read the "Handle with Care" TWj-10 booklet provided with the unit. It details safety and unit care precautions that must be read and understood before you use the equipment.

Use only liquid nitrogen or liquid argon in this refrigerator. The use of liquid air or liquid oxygen may cause explosion or fire.

Do not touch liquid or cold metal surfaces with your bare skin. The liquid nitrogen used in these units is extremely cold: -320°F (-196°C). Exposure of skin or eyes to liquid, cold gas, or frosted parts could result in a frostbite-like injury.

Because of these hazards, a face shield and gloves must be worn when transferring liquid or stored product to or from the refrigerator.

Store and use this refrigerator only in well ventilated places. In a confined area, nitrogen gas from the unit may cause suffocation by displacing air needed for breathing.

Improper handling or operation can cause personal injury. Subjecting the refrigerator to severe impact or vibration may cause damage or spill liquid. Move the unit carefully to prevent liquid sloshing.; Heavy stored product/liquid loads should be emptied before moving the unit. Do not tilt unit or place on its side.

Specifications

Physical Dimensions

Height, Overall	29.7 in. (754 mm)
Diameter	15.4 in. (391 mm)
Usable Height	19.2 in. (488 mm)
Necktube Inside Diameter	14.0 in. (356 mm)
Weight, Empty (approx.)	42.0 lb. (19.1 kg)
Weight, Full	125 lb. (56.7 kg)
Liquid Nitrogen Capacity	48 liters

Thermal Performance

Static Holding Time	19 days
Working Time*	12 days
Nominal Evaporation Rate	2.6 liters/day
Number of Racks	6
Capacity (2ml vials)	3024

Specifications subject to change without notice.

*Working time is an arbitrary, reference-only value to estimate container performance under the actual operating conditions. Actual working time may vary widely depending on individual use patterns.



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Operation

Filling – Adding liquid nitrogen to a warm container may cause splashing and will generate a significant volume of nitrogen gas when cold liquid contacts warm refrigerator surfaces. To minimize the splashing effects add liquid slowly or use a phase separator on the end of a transfer hose. Be sure there is adequate ventilation. Keep your head clear of the heavy volume of vapor that may be produced; it is extremely cold and could cause personal injury.

Warning

To prevent liquid spills do not overfill. Keep liquid nitrogen level at least 7 in. (178 mm) below top rim of the container when an inventory control system is in place. Bottom of lid must remain above the liquid level at all times or liquid may be forced out as lid is inserted.

Store and use these containers only in well ventilated places. In a confined area, nitrogen gas from these units may cause suffocation by displacing air needed for breathing.

Inserting and Removing Product – To prevent unnecessary loss of liquid refrigerant, the cover lid should remain in place on the container except when the stored material is being accessed. To remove the lid, lift it straight up. If moisture condenses on the lid, wipe it dry with a clean cloth before replacing it.

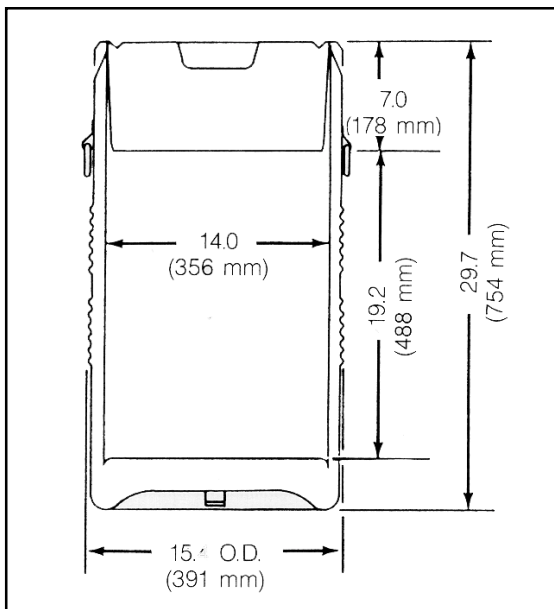
Use tongs or other suitable tools for inserting and removing product stored below the liquid level. Use gloves for handling product stored above the liquid level.

Use reasonable care when placing products in contact with the inner container. Sharp edges and undue force should be avoided.

If warm material is to be immersed in the liquid, lower it slowly and carefully to minimize the rapid boiling of the liquid that will occur. Keep clear of the heavy vapor and possible splashing liquid from the container opening.

Replacement Parts

Lid, Booted R03K-9C69



All Dimensions shown in inches unless otherwise indicated.

Accessories

The following accessories are available for the 3K Cryostorage System:

- **A Roller Base** with swivel casters to provide convenience and portability within an area where frequent container movement is necessary or desirable
..... P/N R018=8C00
- **Inventory Control Systems** of racks and boxes provide flexible storage arrangements to meet individual requirements
..... P/N CS-0302
- **A Low Liquid Level Alarm** for passive monitoring of refrigerant level. This battery powered alarm is available for units that may be used for long term storage, where an unusual low liquid level could go unnoticed
..... P/N R03K-8C50

Ordering information: Order all replacement parts and accessories from your supplier. Please include the part and model number of your refrigerator and the part number, quantity, and description of each part requested.



Taylor-Wharton
4075 Hamilton Blvd.
Theodore, AL 36590
Phone: (334) 443-8680
(800) TW TANKS (898-2657)
Fax: (334) 443-2209