In This Issue

January 2013

MVE Chart Tech Tips

PRODUCT INFORMATION

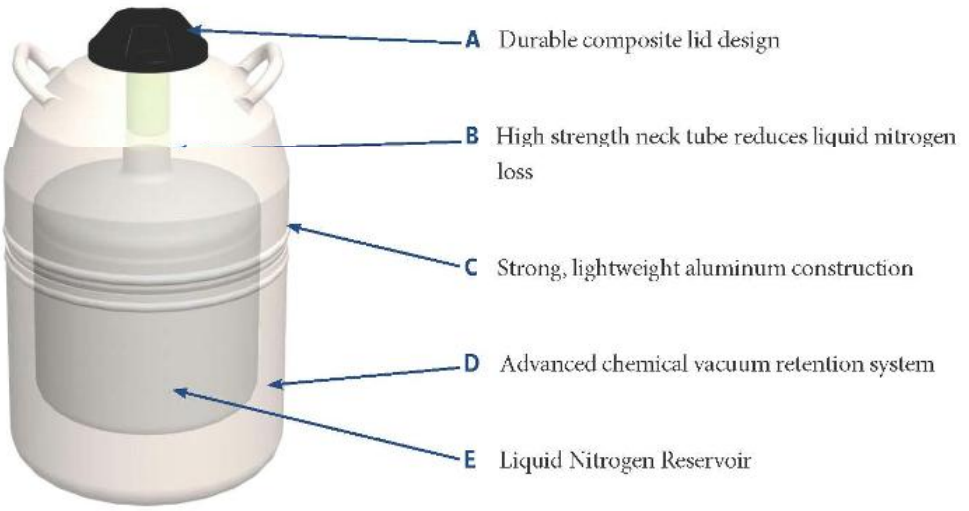
Chart MVE Lab Series LN2 Liquid Tanks

The Lab Series cryogenic liquid dewars are named for their acceptance in laboratories and medical facilities worldwide. These high-efficiency, super insulated dewars are the most convenient, economical way to store and dispense liquid nitrogen. Many lab units can be fitted with pouring spouts, pressurized dispensing devices or dippers to aid in the transfer of liquid nitrogen.

- Easy maintenance lid design
- High strength neck tube reduces liquid nitrogen loss
- Advanced Chemical Vacuum Retention System- designed for superior vacuum performance over the life of the product
- Superior strength, lightweight aluminum construction
- Insulation - MVE's advanced insulation system provides maximum thermal performance

The Lab Series LN2 Tanks have a five year vacuum warranty and conform to MDD 93/42/EEC (the Medical Device Directive for the EU). Please refer to the table below for additional unit specifications of each available Lab Series LN2 Tank.

Tank Features



	LAB 4	LAB 5	LAB 10	LAB 20	LAB 30	LAB 50
Performance						
LN2 Capacity L	4	5	10	20	32	50
Static Evaporation Rate* L/day	0.19	0.15	0.18	0.18	0.22	0.49
Unit Dimensions						
Neck Opening in. (mm)	1.40 (35)	2.18 (56)	2.18 (56)	2.18 (56)	2.50 (64)	2.50 (64)
Useable Height in. (mm)	7.8 (198)	10.5 (266)	13.5 (343)	13.7 (348)	14.9 (378)	22.0 (559)
Overall Height in. (mm)	16.8 (426)	18.2 (462)	21.5 (546)	24.5 (622)	24.0 (610)	30.5 (775)
Outer Diameter in. (mm)	7.3 (185)	8.8 (222)	10.3 (260)	14.5 (368)	17.0 (432)	17.0 (432)
Internal Diameter in. (mm)	5.5 (139)	6.5 (165)	8.3 (210)	11.4 (289)	14.0 (356)	14.0 (356)
Weight Empty lb. (kg)	6 (2.7)	8 (4)	12 (5.4)	19 (9)	25 (11.4)	31 (14)
Weight Full lb. (kg)	13 (6)	17 (8)	31 (14)	55 (25)	82 (37.2)	120 (54.4)

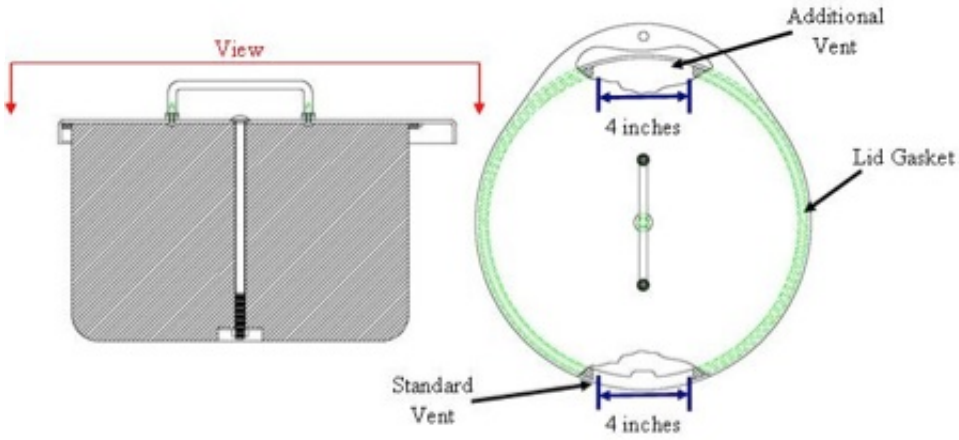
* Static evaporation rate and static holding time are nominal. Actual rate and holding time will be affected by the nature of container use, atmospheric conditions, and manufacturing tolerances.

The part number listed below may be used to order each respective Lab Series model.

- **Lab 4** P/N 9922219
- **Lab 5** P/N 9918079
- **Lab 10** P/N 10740281
- **Lab 20** P/N 13492631
- **Lab 30** P/N 9918099
- **Lab 50** P/N 9918109

High Efficiency Freezer Lid Gasket

The lid gasket on the MVE High Efficiency Series is designed specifically with a second vent gap in the gasket. This will reduce the possibility of condensation on the lid that may lead to frost buildup. Freezers without the second vent can be easily modified by removing approximately four inches of the gasket; on the opposite side of the standard gap. See diagram below. Replacement lids are also available for all Chart MVE HE Series. When ordering, please provide the freezer serial number for the replacement lid.

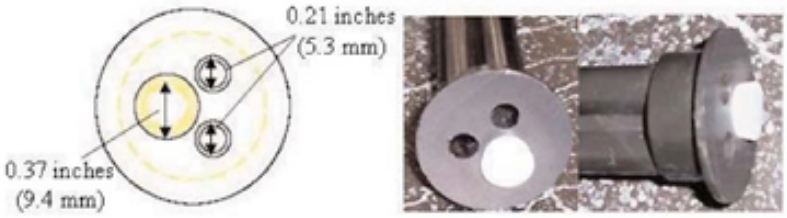


Three-Tube Sensor Assembly

Chart MVE has a three-tube temperature sensor assembly available. The three-tube sensor assembly is standard on MVE High Efficiency/Vapor Series Freezers. The three-tube assembly is designed to allow a third party temperature sensor for easy validation. The assembly is equipped with a removable plug installed in the third hole. High Efficiency freezers with the two sensor tube assembly can upgrade to the three sensor tube assembly.

Specifications: The new injection molded XENOY material will provide thermal performance as well as lasting durability. Below are pictures of the new assembly and the inner diameters of the sensor tubes. Please see the "Accessories" section for part numbers and specifics.

Chart recommends verifying the preferred height of the temperature probe before applying silicone.



HELPFUL HINTS / FAQS

Q: What is the maximum allowable pressure for the Lab 4 and Lab 5 Series?

A: The Lab 4 and 5 Series dewars are non-pressurized vessels.

Under normal working conditions, pressure caused by evaporation will vent adequately from the neck and cork. There is no residual pressure buildup inside of the tank because the cork is loosely fitted and is not sealed.

Q: How is the LN2 liquid transferred?

A: Easy-to-use handles are manufactured on the side of every Lab 4 and 5 Series dewar which allows for the easy tipping of the dewar to pour out the liquid.

MVE Lab 10, 20, 30 & 50 Series Functionality and how to withdraw LN2 Liquid

Q: What is the maximum allowable pressure for the Lab 10, 20, 30 & 50 Series?

A: The Lab 10, 20, 30 & 50 Series dewars are non-pressurized vessels. Under normal working conditions, pressure caused by evaporation will vent adequately from the neck and cork. There is no residual pressure buildup inside of the tank because the cork is loosely fitted and is not sealed.

Q: How is the LN2 liquid transferred?

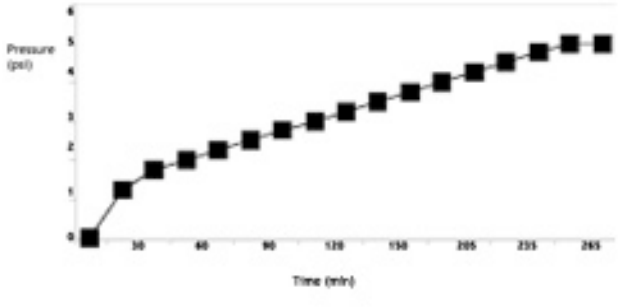
A: Using the optional manual discharge device will enable the safe transfer of LN2 liquid. The maximum pressure with the manual discharge attached will be 5psi. There are two relief valves on the manual discharge device rated at 5psi each.

Discharge Device for Lab Series

The manual discharge device offers a convenient,safe method to withdraw liquid nitrogen. Turning the flow knob will extract liquid nitrogen and allow it to transfer into another dewar. This ergonomical method provides a good way to transfer liquid without having to lift a dewar to physically pour the liquid. Contact Chart for further product details, part numbers, and information.

Manual Discharge Device Operation

Q: How long does it take for the manual discharge device to build pressure?
A: Depending on atmospheric conditions it can take anywhere from two to four hours to build to 0.3 bars (5psi). The manual discharge device operates using temperature difference. Since the nozzle is exposed to the atmospheric temperature, this heat conducts down to the dip tube and makes contact with the liquid nitrogen. The liquid nitrogen is much colder than the dip tube (carrying the heat from the nozzle), which causes the liquid to begin boiling off. When the discharge device is installed correctly (properly seated, vent valve closed), the head pressure pushes down on the liquid nitrogen, allowing it to be forcefully expelled from the nozzle. A warm full dewar will build pressure more quickly.



The graph above illustrates a discharge device and a Lab 10 pressure build to 0.3 bars (5psi) occurring throughout a four hour period.

Q: How does one install the discharge device?
A: Fill the Lab unit to its approximate liquid capacity; slowly insert the discharge device allowing it to rest on the neck for

Installing the Liquid Discharge Device

insert the discharge device allowing it to rest on the neck for about 30 seconds, allowing it to cool to LN2 temperature. Next, slowly tighten the wing nut. The discharge device will build pressure to 0.3 bars (5psi) and will be ready for use.

Temperature Probe Removal and Installation for High Efficiency Series

Q: What are the steps to remove a frozen temperature sensor and sensor assembly?
A: Please follow the steps below:

1. Disconnect the power from the controller, including the Battery Backup.
2. Disconnect the temperature probes from the controller.
3. If the temperature probes do not remove easily, do not force or pull them out, the sensor tube will need to thaw. If the probe can be removed easily, proceed with slowly removing the temperature probes. See the below figure.
4. Unscrew the brass nut at the base of the temperature tube assembly. Allow the tube sensor assembly to thaw out completely.
5. Remove both temperature probes.
6. Reinsert the temperature sensor tube into the freezer.
7. Insert the temperature probes.

This picture illustrates the turning of the brass nut counter-clockwise at the base of the temperature sensor tube assemble. If the temperature probes do not remove easily, do not force or pull them out, the sensor tube will need to thaw.

ACCESSORIES

Three-Hole Sensor Tube Assembly

Replacement three-hole sensor tube assembly for HE Series Freezers are available. Part numbers for the available lengths are below.

Part Number	Description	Freezer Models
14248744	3 Tube Sensor Assembly - 26" Long	MVE 1842P-150F
14248816	3 Tube Sensor Assembly - 39" Long	MVE 800 and 1500 Series
14248752	3 Tube Sensor Assembly - 44" Long	MVE 1800 Series

Brass Nut Replacement for Three-Hole Sensor Tube Assembly

A replacement brass nut is available for the three-hole sensor tube assembly for HE Series Freezers. The brass nut is not included in the Sensor Tube Assembly.

To order, please use **P/N 10539413**.

Silicone for the Temperature Probes

To order silicone for the temperature probes, please use **P/N 14243599.**