

Operating Instructions

SAFETY

Before using any cryogenic dewar, read the *Handle with Care* booklet provided with the unit. It details safety precautions that must be understood before using the equipment. If a replacement booklet is needed, order publication TW-10 *Handle with Care* from your supplier.

Following are a few of the safety precautions described in the *Handle with Care* booklet. Please be sure to read the entire booklet.

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

Do not touch liquid or cold metal surfaces with your bare skin. The liquid nitrogen refrigerant in these containers is **extremely cold**: -196° C (-320°F). Exposure of skin or eyes to liquid, cold gas or frosted parts could result in a severe frostbite-like injury. Because of the extremely low temperature, a face shield and gloves must be worn when transferring liquid nitrogen and material into or out of these containers.

Use only the necktube core supplied with this unit or a listed replacement part. A tight fitting plug or stopper will cause a pressure increase in the container that may damage the container and/or cause personal injury.

OPERATION

Filling: Adding liquid nitrogen to a warm container may cause splashing and will generate a significant volume of nitrogen gas as cold liquid contacts warm dewar surfaces. Add liquid slowly to minimize these effects. 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

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

DETERMINING LIQUID LEVEL: Liquid level must be checked at regular intervals. The liquid level in the container can be determined with a dipstick. Insert the dipstick straight into the container so that it rests on the bottom of the units. After 5 to 10 seconds, withdraw the dipstick and wave it back and forth in the air. A frosted section will form representing the depth of liquid in the container.

WARNING

Never use a hollow rod or tube as a measuring rod. When a warm tube is inserted into liquid nitrogen, liquid will spout from the top of the tube and may cause personal injury.

The liquid level chart shows volume of liquid nitrogen vs. depth for LD series dewars. These values are approximate and are based on a standard conditions.

Liquid Level Chart*		
Model	Liters/inch	Liters/cm
LD4	0.4	0.16
5LD	0.43	0.17
LD10	0.76	0.3
LD25	1.41	0.56
LD35, LD50	2.67	1.05

* Due to the spherical shape of the Classic-25, the linear calculations above will not apply.

ROUTINE CARE AND MAINTENANCE

If ice-build up interferes with normal operation of the dewar, the unit should be emptied and thawed. To thaw the unit, pour out the liquid, disposing of it out of doors where the cold liquid will not damage driveways and other surfaces. Warm the dewar by purging it with a stream of room temperature air. Continue purging with air even after the dewar has warmed to room temperature to evaporate any collected moisture. When the dewar is ice-free and dry, rinse the inner vessel with household bleach. Wash the inner vessel with a 40 to 1 ratio of water to laundry detergent solution. Rinse and dry inside and out thoroughly before placing the container back into service. Do not use sharp instruments to chip ice; permanent damage to the dewar could result. DO NOT attempt to fasten any device to the dewar. Welding, brazing, or piercing of the dewar in any manner will cause permanent damage.

Check liquid levels regularly. If high evaporation rates are apparent under normal operating conditions, the dewar may be losing its vacuum. Sweating and the formation of frost on the outer casing are indications that the dewar may be losing its vacuum. Sweating or freezing of the outside casing are definite indications that the insulation integrity is not normal. If these conditions persist, contact your supplier or Taylor-Wharton's Technical Response Department at 1-800-TW-TANKS (898-2657) or email us at cryotanks@taylorwharton.com for information on how to conduct a normal evaporation rate (NER) test in the field.

TRANSPORTATION

Although these dewars are rugged, they can be damaged if abuse or otherwise mis-handled. When moving or transporting a dewar, take every precaution to prevent tipping, bumping, or dropping the unit. **All dewars must be kept upright.** Dewars containing liquid nitrogen *must never* be transported in sealed compartments. Ventilation *must be* assured to prevent the displacement of air and the related suffocation hazard.

DEWAR CONSTRUCTION

A cryogenic dewar is really two containers, one within the other. High-technology insulation is used in a sealed vacuum space between the inner and outer containers. The integrity of the vacuum is the key to continued performance.

TW-349

Liquid Nitrogen
Dewars

LD SERIES

All dewars fail eventually. The most frequent cause of vacuum failure is abuse. The inner container is supported by the necktube, which supports the weight of the liquid contents as well. A blow to the dewar may cause the necktube to deform or break. Any units subjected to physical damage may fail more rapidly than one that has been carefully handled.

ORDERING INFORMATION

Order all replacement parts and accessories from your distributor. Please include the part and model number of your dewar, the part number, quantity, and description of each part requested. For more information or the name of your local distributor, contact Taylor-Wharton as the address listed.

RETURNS

Manufacturing defects are covered under the dewars limited warranty. Evidence of mishandling, such as dents on the outer vessel or misalignment of the inner vessel are not manufacturing defects. If you would like to return goods to Taylor-Wharton for any reason, you must first obtain a Material Return Authorization (MRA) number for tracking purposes. Please have a description of your symptoms and the dewar's serial number ready. Contact your supplier or call Taylor-Wharton's Technical Response Department at 1-800-TW-TANKS (898-2657) or email us at cryotanks@taylorwharton.com.

ACCESSORIES

The following accessories are available for LD Series dewars.

- **Roller Base** - with ball-bearing swivel casters to provide convenience and portability within a working area where frequent container movement is necessary and desirable..
 P/N R033-8C00 for LD35 & LD50
 P/N R018-8C00 for LD25
 P/N D024-8C02 for CLASSIC-25
- **Liquid Nitrogen Dipper** - for dispensing small quantities of liquid nitrogen.
 P/N R018-8C50 for LD10, LD25, CLASSIC-25, LD35 and LD50
- **Liquid Level Measuring Rod** - that is graduated in both inches and centimeters. This accessory is inserted into the cryogenic refrigerant in order to determine the actual liquid level.
 P/N R033-8C11 for all Dewars
- **Tipping Stand** – for dispensing liquid from the LD25. This easy-to-use stand supports the weight of the Dewar and allows convenient, safe pouring of liquid. Wheels add mobility and additional handling ease.
 P/N D025-8C00 for LD25 only
 P/N D024-8C00 for CLASSIC-25
- **Liquid Withdrawal Device** for convenient pressure-transfer of liquid from the LD25, LD30, LD50 dewars. Designed specifically for the LD Series Dewars, this accessory contains the appropriate relief devices, a pressure gauge and a means of refilling the Dewar with the withdrawal device installed.
 P/N D050-8C00 for LD25, LD35 or LD50

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REPLACEMENT PARTS

Dewars	LD4	5LD	LD10	CLASSIC-25	LD25	LD35	LD50
Cap/Necktube Core	D004-9C11	D005-9C16	D010-9C16	D024-9C16	D025-9C16	D050-9C16	D050-9C16

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