



Model:

8126/8127

35/50 Liter LN₂ Supply Tank

**Operating and Maintenance Manual
Manual No: 8008126 Rev. 1**

Read This Instruction Manual.

Failure to read, understand and follow the instructions in this manual may result in damage to the unit, injury to operating personnel, and poor equipment performance.

The material in this manual is for information purposes only. The contents and the product it describes are subject to change without notice. Thermo Scientific makes no representations or warranties with respect to this manual. In no event shall Thermo be held liable for any damages, direct or incidental, arising out of or related to the use of this manual.

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Whatever Thermo Scientific products you need or use, we will be happy to discuss your applications. If you are experiencing technical problems, working together, we will help you locate the problem and, chances are, correct it yourself...over the telephone without a service call.

When more extensive service is necessary, we will assist you with direct factory trained technicians or a qualified service organization for on-the-spot repair. If your service need is covered by the warranty, we will arrange for the unit to be repaired at our expense and to your satisfaction.

Regardless of your needs, our professional telephone technicians are available to assist you Monday through Friday from 8:00 a.m. to 6:00 p.m. Eastern Time. Please contact us by telephone or fax. If you wish to write, our mailing address is:

Thermo Scientific
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International customers, please contact your local Thermo Scientific distributor.

Cryo-Cyl 35/50 LP dewars are pressurized to allow you to transfer liquid nitrogen without pouring. These units are constructed of stainless steel and have a convenient liquid contents gauge. The valving allows you to attach these dewars to any equipment that requires liquid nitrogen.

A. CAUTION (for using Cryo-Cyl 35/50 LP dewars)

- Liquid Nitrogen is extremely cold; it boils at -196°C (-320°F).

To avoid injury due to frostbite, use 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 areas of skin exposed.
- Use in well ventilated area.
- Always wear proper safety attire over clothing; face shield, cryogenic gloves, apron.
- Do not wear pants with cuffs.
- Never overfill liquid nitrogen vessels.
- Always keep liquid nitrogen vessel in an upright position.
- Do not tightly seal liquid nitrogen containers or prevent nitrogen gas from escaping.
- Use extreme care to prevent spilling and splashing liquid nitrogen during transfer.
- Immediately remove any clothing or safety attire on which liquid nitrogen has been spilled.
- Read all filling instructions carefully.
- Remove pressure and liquid nitrogen before working on vessel.
- Get immediate medical attention for any frostbite injuries due to liquid nitrogen.

WARNING: The venting of nitrogen vapors will create a dilution of the air's oxygen concentration necessary to support life. Exposure to this diluted atmosphere can cause asphyxiation or even death. **DO NOT** store or use liquid container in areas that have poor ventilation. Place liquid containers outdoors or in a well ventilated area. Failure to comply with this warning may cause serious personal injury including death.

WARNING: Extreme caution should be exercised in the handling of cryogenic liquids. Contact of the cryogenic liquid or cold gas may cause frostbite to unprotected areas of the body. Protect eyes and skin when transferring liquid. Insulated gloves that can be easily removed and long sleeves are recommended for arm protection. Cuffless pants should be worn outside boots or over shoes to shed spilling liquid. Goggles or face shields should be worn if the possibility of splashing liquid exists. Failure to observe this warning may lead to severe burns or eye injury.

WARNING: Due to the extreme cold and pressure that is seen by the Cryo-Cyl 35/50 LP, caution should be taken when removing parts or fittings until the liquid has been removed from the container and the pressure has been safely released. Wear eye protection and insulated, loose fitting gloves when removing parts or fittings. Failure to comply with this warning may result in serious personal injury.

CAUTION: Replacement components must be cleaned for oxygen service. **DO NOT** use regulators, valves, gauges, hoses, etc. that have been used in compressed air service. **DO NOT** use parts that are marked for oxygen service in a compressed air atmosphere. Failure to observe this caution could cause serious damage to your container and possible personal injury.

GENERAL DESCRIPTION

The most prevalent cause of failure of liquid nitrogen storage vessels is mechanical. The vessel neck tube supports the full weight of the inner vessel and all liquid nitrogen it contains. A side or corner blow to the vessel causes the inner vessel to swing in a pendulum motion causing the neck to be damaged. Any storage vessel which has been exposed to an accident, has been dropped or lowered to hit on one corner, will tend to fail more rapidly. The Cryo-Cyl 35/50 LP do have a support (top and bottom) but dropping or tipping over the vessel may cause functional damage.

Use caution before using your new Cryo-Cyl vessel. Carefully inspect the vessel prior to use. Check for signs of damage which may have occurred in shipment. It is advisable to fill all new units with liquid nitrogen and watch liquid nitrogen loss rate for a few days. If there are any problems, call MVE as soon as possible.

B. FILLING INSTRUCTIONS

To avoid damage to your dewar, it is important that only the two following methods be used to fill your Cryo-Cyl dewar. Failure to follow each step may result in damage to your cylinder which is not covered by the warranty. Read all instructions carefully, if you have any questions call MVE at 1-800-253-1769 before proceeding.

1. Funnel filling method

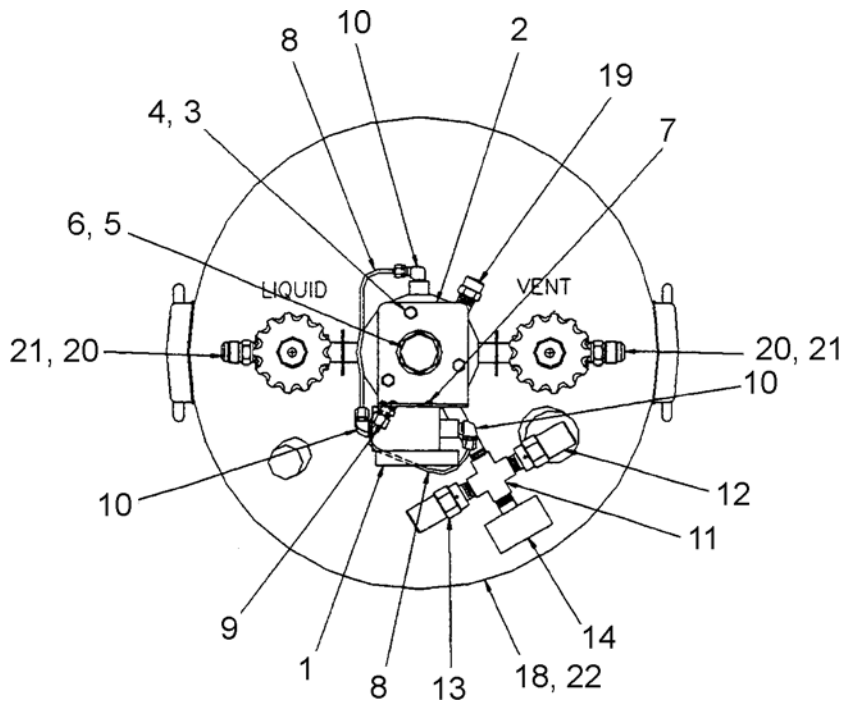
- Cryo-Cyl 35/50 LP cylinders can be filled by removing the brass plug on the top center of the tank and inserting a funnel in the hole. Liquid nitrogen can then be poured directly into the cylinder through this hole.
 1. Open vent valve completely, releasing any pressure built up inside the cylinder.
 2. Remove brass plug located on the top center of the cylinder.
 3. Insert funnel into hole.
 4. Pour liquid nitrogen into cylinder until level gauge reads 7/8 full or liquid nitrogen begins spitting from the vent valve.
 5. Reinsert brass plug and tighten.
 6. Close vent valve completely.

WARNING: Overfilling cylinders may result in damage to level and pressure gauges. If overfilling should occur, remove excess liquid nitrogen by opening the liquid nitrogen withdrawal valve immediately.

- Stand clear of vent during filling.
 - Always wear proper safety attire while handling liquid nitrogen.
- ### 2. Filling from low pressure liquid nitrogen supply
- The Cryo-Cyl 35/50 LP liquid nitrogen cylinders can be filled from a pressurized source of liquid nitrogen by attaching a transfer hose to the liquid withdrawal valve on the Cryo-Cyl cylinders. The liquid nitrogen source pressure must not exceed 45 psi. Please read all instructions carefully before filling.
 1. Attach transfer hose from liquid nitrogen source to the liquid withdrawal valve on the Cryo-Cyl cylinder.
 2. Open withdrawal valve completely.
 3. Open withdrawal valve on liquid nitrogen source. Liquid nitrogen source pressure must not exceed 45 psi or damage to gauges and relief valves may occur. Optimum filling pressure is 35 psi.
 4. Open vent valve until the pressure gauge reads 22 psi.
 5. Continue to fill until cylinder weight is 140 lbs.. for Cryo-Cyl 35 LP or 180 lbs.. for Cryo-Cyl 50 LP. If scale method is not possible, fill until liquid nitrogen begins spitting from vent valve.

- Always wear proper safety attire and stand clear of vent valve during filling.
 6. Shut liquid nitrogen source valve completely.
 7. Shut liquid nitrogen withdrawal valve completely.
 8. Carefully remove transfer hose from cylinder. Some liquid nitrogen will remain in hose under pressure after filling.
 9. Close vent valve completely.
 - Always wear proper safety attire when transferring liquid nitrogen into or out of a cylinder.
3. Liquid withdrawal from Cryo-Cyl 35/50 LP
- The Cryo-Cyl 35/50 LP is to be used only for low pressure liquid withdrawal. The primary relief valve is set at 22 psi from the factory. The secondary safety relief is set at approximately 35 psi. Transferring liquid at higher pressures increases the flash-off rate of the liquid and adds to the danger of sparking.
 - To transfer liquid attach the transfer hose or withdrawal spout to the liquid connection. Slowly open the liquid valve to flow the liquid. The liquid will vaporize at first until the transfer line or withdrawal valve cools down. If using a transfer hose to extract liquid from the Cryo-Cyl 35/50 LP into an open dewar a phase separator is recommended on the end of the transfer line.
 - Transfer pressure should be kept to a minimum. The normal evaporation of the liquid will usually maintain enough pressure for transferring.

WARNING: The container can become contaminated, once it is emptied, if the liquid or vent valve is not closed.



PARTS LIST

| Item # | Part # | Description | Qty Per |
|--------|----------|--------------------------------------|---------|
| 1 | 2013709 | DIFF PG 0-20"H2O FULL SCALE | 1.0 |
| 2 | 5576961 | BRACKET DIFF PG | 1.0 |
| 3 | 2910501 | HHMS SS 1/4-20*5/8"LG | 3.0 |
| 4 | 2910601 | WASHER SPLIT LOCK SS 1/4 18-8 | 3.0 |
| 5 | 2300094 | O-RING .924 ID*1.130OD | 1.0 |
| 6 | 10676485 | PLUG KNUCKLE(7/8"-14UNF) | 1.0 |
| 7 | 2911401 | PHP NHMS SS #8-32*3/8"LG | 2.0 |
| 8 | 6910683 | TUBE CU .125"OD D&S SOFT | 2 ft |
| 9 | 10501571 | CONN BRS 1/8ODT*1/4MPT | 1.0 |
| 10 | 10501618 | ELBOW BRS 90D 1/8ODT*1/8MPT | 3.0 |
| 11 | 1212922 | CROSS BRS 1/4FPT FORGED | 1.0 |
| 12 | 1810012 | RV BRS 1/4MPT 22PSI | 1.0 |
| 13 | 1810022 | RV BRS 1/4MPT 35PSI | 1.0 |
| 14 | 2015169 | PG 2"DIAL 0-100PSI 1/4"CBM | 1.0 |
| 15 | 10980962 | LABEL CRYO-CYL 35LP | 1.0 |
| 16 | 10980954 | LABEL CRYO-CYL 50LP | 1.0 |
| 17 | 10980971 | LABEL NITROGEN 5*7 W/HAZARD | 1.0 |
| 19 | 1210752 | CAP BRS 1/4FPT | 1.0 |
| 20 | 1110072 | CONN BRS 1/2ODT*3/8MPT 45D FL | 2.0 |
| 21 | 4010542 | CAP INERT SVCE FILL & VENT FTG | 2.0 |
| ACC | 9713159 | Transfer Hose 1/2 ODT * 4 Ft. O.A.L. | |
| ACC | 9715759 | Valve Repair Kit | |

VALVES

The valves that are used on the Cryo-Cyl 35/50 LP have a spring loaded rotary stem. This automatically compensates for thermal shrinkage and wear.

When a defective valve is suspected, follow this procedure to repair it:

1. Void the tank of liquid product and release any pressure that is in the container.
2. If the valve to be repaired is the vent valve allow it to warm up before it is disassembled.
3. Remove the valve handle screw, washer, retainer cap and spring assembly.
4. Remove the valve handle and Teflon thrust washer.
5. Unscrew bonnet to remove the stem and stem seal.
6. Pick out body insert and plug assembly.
7. Clean seat.
8. Replace parts as needed and reassemble in reverse order.

SPECIFICATIONS CRYO-CYL 35LP & 50LP

| | MODEL | 35LP | 50LP |
|--------------------|--------------|-------------|-------------|
| | PART NO. | 10980671 | 10980663 |
| LN2 CAPACITY | (LITERS) | 3.5 | 50 |
| STATIC EVAP. RATE | (liters/day) | 2.9 | 2.9 |
| Diameter | (inches) | 16 | 16 |
| Height | (inches) | 28.5 | 35.5 |
| Weight empty | (pounds) | 76 | 90 |
| Weight full | (pounds) | 140 | 180 |
| Operating pressure | (psi) | 22 | 22 |



WARRANTY

MINNESOTA VALLEY ENGINEERING ("MVE") warrants to the purchaser of any MVE manufactured equipment that for 1 year after purchase said MVE manufactured equipment shall be free from any defects in workmanship and materials and that for five (5) years after the date of shipment to the original purchaser said MVE manufactured equipment will maintain all vacuum and performance standards for said equipment as published by MVE on the date of purchase.

Purchaser agrees that as a pre-condition to any MVE liability hereunder, purchaser shall fully inspect all goods immediately upon delivery to purchaser and shall give MVE written notice of any claim or purported defect within ten (10) days after discovery of such defect. As a further precondition to any MVE liability hereunder, purchaser shall return said purportedly defective equipment, freight prepaid, to the plant of the manufacturer. MVE shall inspect all returned equipment, and, if said equipment is found defective, shall, at its option as purchaser's sole and exclusive remedy, repair or replace such equipment or any defective component or part thereof which proves to be defective, or refund the net purchase price paid by the original purchaser. Alterations or repairs by others or operation of such equipment in a manner inconsistent with MVE accepted practices and all operating instructions, unless pre-authorized in writing by MVE, shall void this warranty. MVE shall not be liable for defects caused by the effects of normal wear and tear, erosion, corrosion, fire or explosion.

MVE's sole and exclusive liability under this Warranty is to the original purchaser and shall not exceed the lesser of the cost of repair, cost of replacement, or refund of the net purchase price paid by the original purchaser. MVE is not liable for any other losses, damages, or costs of delays, including incidental or consequential damages. MVE SPECIFICALLY MAKES NO WARRANTIES OR GUARANTEES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, OTHER THAN OR WHICH EXTEND THOSE WARRANTIES EXPRESSED HEREIN.

THERMO FISHER SCIENTIFIC STANDARD PRODUCT WARRANTY (LN₂ Vacuum)

The Warranty Period starts two weeks from the date your equipment is shipped from our facility. This allows for shipping time so the warranty will go into effect at approximately the same time your equipment is delivered. The warranty protection extends to any subsequent owner during the first year warranty period.

During the first year, component parts proven to be non-conforming in materials or workmanship will be repaired or replaced at Thermo's expense, labor included. *LN₂ Vacuum Integrity is covered for two years.* Installation and calibration are not covered by this warranty agreement. The Technical Services Department must be contacted for warranty determination and direction prior to performance of any repairs. Expendable items, glass, filters and gaskets are excluded from this warranty.

Replacement or repair of components parts or equipment under this warranty shall not extend the warranty to either the equipment or to the component part beyond the original warranty period. The Technical Services Department must give prior approval for return of any components or equipment. At Thermo's option, all non-conforming parts must be returned to Thermo postage paid and replacement parts are shipped FOB destination.

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Your local Thermo Sales Office is ready to help with comprehensive site preparation information before your equipment arrives. Printed instruction manuals carefully detail equipment installation, operation and preventive maintenance.

If equipment service is required, please call your Technical Services Department at 1-888-213-1790 (USA and Canada) or 1-740-373-4763. We're ready to answer your questions on equipment warranty, operation, maintenance, service and special application. Outside the USA, contact your local distributor for warranty information.



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