



Locator[®] & Locator[®] Plus Cryobiological Storage Vessel and Liquid Nitrogen Level Monitor

Operation Manual
and Parts List

Model Numbers

		With Level Monitor	Plus Series	Plus Series with Level Monitor
LOCATOR Jr.	CY50925	CY50955	CY50925-70	CY50955-70
LOCATOR 4	CY50935	CY50965	CY50935-70	CY50965-70
LOCATOR 6	NA	NA	CY50985-70	CY50995-70
LOCATOR 8	CY50945	CY50975	CY50945-70	CY50975-70

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IMPORTANT INFORMATION

This manual contains important operating and safety information. The user must carefully read and understand the contents of this manual prior to the use of this equipment.

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Safety Information

Alert Signals

**Warning**

Warnings alert you to a possibility of personal injury.

**Caution**

Cautions alert you to a possibility of damage to the equipment.

**Note**

Notes alert you to pertinent facts and conditions.

Your Thermolyne LOCATOR and LOCATOR Plus Series have been designed with function, reliability and safety in mind. For safe operation, please pay attention to the alert signals throughout the manual.

Please Read

All cryopreservation vessels, regardless of who manufactures them, use a vacuum to provide the super insulative properties needed to keep nitrogen in a liquid form. They are very similar, in fact, to the thermos vessels you may have used to store coffee, soup or milk. Remember how fragile they were? Since no vacuum is perfect or will last forever, we suggest that you monitor the consumption of liquid nitrogen used by your vessel on a regular basis, i.e. every 1-2 days. By monitoring, you may be able to anticipate subtle changes in consumption and possibly react to problems before they arise. You may opt to use a level monitor for this purpose. (See page 7 for level monitor operation.)

Also, if your samples are super critical, one-of-a-kind, or irreplaceable, consider allocating your samples to 2 separate vessels. Remember the old adage about placing all your eggs into one basket....

Finally, because no vacuum will last forever, consider having your vessel tested by a qualified cryovessel manufacturer every 7-10 years, regardless of any problems (or lack thereof) you may have had in the past. This will help insure your samples against sudden loss of nitrogen due to vacuum failure.

Warnings

1. Liquid Nitrogen is extremely cold; it boils at -196°C.
2. To avoid injury due to frostbite or ruptured vials use extreme care whenever handling liquid nitrogen, liquid nitrogen storage or transfer vessels, or any objects which have come in contact with liquid nitrogen.
3. Leave no areas of skin exposed.

SAFETY INFORMATION



Caution

- Never overfill liquid nitrogen vessels. Liquid nitrogen level should never be above the tops of the racks inside the vessel. The excess weight will crack the neck and result in vacuum failure.
 - When inserting or removing racks be careful not to come in contact with the neck tube area of the vessel. Remove or insert racks slowly in a vertical manner. Scratches on the neck tube area can cause premature vacuum failure.
 - Do not tamper with or remove vacuum port (covered by a black plastic cap on side of vessel); this will void warranty.
 - Do not spill liquid nitrogen on vacuum port - this can cause vacuum failure.
 - Always keep liquid nitrogen vessel in an upright position.
 - Do not use this Locator vessel for transport.
4. Always wear proper safety attire over clothing: face shield, cryogenic gloves, cryogenic apron.
 5. Do not tightly seal liquid nitrogen containers or prevent nitrogen gas from escaping.
 6. Always handle ampules with tongs. They may explode when removed from the vessel.
 7. Use extreme care to prevent spilling and splashing liquid nitrogen during transfer and removal of storage contents and holders.
 8. Immediately remove any clothing or safety attire on which liquid nitrogen has been spilled or splashed.
 9. Get immediate medical attention for any frostbite injuries due to liquid nitrogen.
 10. Never overfill liquid nitrogen vessels. Liquid nitrogen level should never be above the tops of the racks inside the vessel. The excess weight will crack the neck and result in vacuum failure.
 11. When inserting or removing racks be careful not to come in contact with the neck tube area of the vessel. Remove or insert racks slowly in a vertical manner. Scratches on the neck tube area can cause premature vacuum failure.
 12. Do not tamper with or remove vacuum port (covered by a black plastic cap on side of vessel); this will void warranty.
 13. Do not spill liquid nitrogen on vacuum port - this can cause vacuum failure.
 14. Always keep liquid nitrogen vessel in an upright position.
 15. Do not use this Locator vessel for transport.

General Specifications

LOCATOR Type	4	4 PLUS	6 PLUS	8	8 PLUS	JR.	JR. PLUS
Height (Including lid) ¹	37.5" (95.25 cm)	40" (101.6 cm)	38" (96.5 cm)	37.5" (95.25 cm)	40" (101.6 cm)	27.5" (69.85 cm)	30" (76.2 cm)
Diameter	22" (55.8 cm)	22" (55.8 cm)	26" (66 cm)	22" (55.8 cm)	22" (55.8 cm)	22" (55.8 cm)	22" (55.8 cm)
Vessel Volume	110L	111L	165L	110L	111L	50L	51L
LN₂ Capacity, Liquid Phase Storage	111L	91L	134L	111L	91L	51L	41L
Vapor Phase LN₂ Capacity	25L	26L	39L	25L	26L	20L	21L
Static LN₂ Evaporation Rate- L/Day	.99	.80	.80	.60	.58	.85	.80
Liquid Phase Capacity (in ampules) (Ampules actually submerged in liquid nitrogen.)	2916 * or 3600**	3240* or 4000**	4860 or 6000**	1800	2000	1296* or 1600**	1620* or 2000**
Vapor Phase Capacity (in ampules) (Ampules are kept slightly above the level of liquid nitrogen.)	2268* or 2800**	2592* or 3200**	3888* or 4800**	1400	1600	972* or 1200**	1296* or 1600**

¹The liquid nitrogen level monitor will add 1 inch to these heights. The transportation cart will add 4 inches to these heights.

**Using Nalgene cryoboxes with a 9 x 9 ampule configuration.*

***Using Nalgene System 100™ cryoboxes with a 10 x 10 ampule configuration. (Nalgene System 100™ ampules or equivalent are needed.)*

Unpacking

**Note**

The most prevalent cause of failure of liquid nitrogen storage vessels is mechanical. The vessel neck tube supports the full weight of the inner shell and all the liquid nitrogen it contains. A side blow to the vessel causes the inner shell to swing in a pendulum-like motion causing the neck tube to be damaged. Any storage vessel which has been in an accident, has been dropped or lowered to hit on its side will tend to fail more rapidly than one which has not.

**Caution**

Exercise caution when moving your LOCATOR or LOCATOR PLUS vessel. LOCATOR and LOCATOR Plus cryobiological storage systems are not transportation vessels. Transport carts are designed for mobility within the lab or lab to lab only. Moving full vessels long distances, over cracks in floor, thresholds, on inclined ramps or in elevators can cause premature vacuum failure.

**Note**

If you must transport samples under cryogenic conditions, consider the Arctic Express line of Dry Shippers found in the Thermolyne catalog.

Before using your new LOCATOR or LOCATOR Plus vessel, carefully inspect the vessel prior to use. Check for signs of damage which may have occurred in shipment. It is advisable to fill (See Filling Instructions) all new units with liquid nitrogen and watch liquid nitrogen loss rate for a few days. If there are any problems, call Customer Service as soon as possible.

The Warranty Registration card enclosed with the vessel must be completed and returned to the factory within 30 days to make warranty effective. This information must include the serial number, which is located on the label on the vessel.

Operation



Caution

- Never overfill your LOCATOR or LOCATOR Plus vessel with liquid nitrogen. The liquid nitrogen level in your tank (with racks inserted) should never be above 20 inches (50 cm) for LOCATOR 4 and LOCATOR 8, 10 inches (25 cm) for LOCATOR Jr., 22 inches (55.8 cm) for LOCATOR 4, 6 and 8 Plus and 12 inches for LOCATOR Jr. Plus. Filling the tank up to or above the bottom of the neck tube may cause immediate or premature vacuum failure to occur.
- When inserting or removing racks, be careful not to come in contact with the neck tube area of the vessel. Remove or insert racks slowly in a vertical manner. Scratches on the neck tube area can cause premature vacuum failure.
- Do not spill liquid nitrogen on vacuum port (covered by a black plastic cap on side of vessel) - this can cause vacuum failure.

Filling Instructions

To avoid damage to your LOCATOR or LOCATOR Plus cryogenic storage vessel which may result in premature vacuum loss, it is important that the following procedure be used when adding liquid nitrogen to a warm vessel:

1. Add only a small amount of liquid nitrogen (5-10 liters) to a new or warm vessel.
2. Allow this small amount of liquid nitrogen to sit in the covered vessel for a minimum of 2 hours. This will limit stress caused by the sudden temperature change associated with adding liquid nitrogen to a warm vessel.
3. Add an additional 15 liters of liquid nitrogen to the vessel.
4. Allow vessel to sit for 48 hours and monitor liquid nitrogen consumption with a wooden yardstick or Level Monitor.
5. Fill LOCATOR or LOCATOR Plus as indicated. (See Caution on this page.) Remember to allow for displacement of liquid nitrogen when racks and boxes are inserted.
6. Insert and remove racks slowly. Allow liquid nitrogen to run out of boxes and off of racks.

Measuring Liquid Nitrogen Quantity

1. Use a wooden yardstick to measure liquid nitrogen level. Never use a hollow tube or plastic dipstick to measure the liquid nitrogen level.
2. Level will be indicated by frost line which develops when dipstick is removed.
3. Level Monitor can be used for constant measurements.

Storing Samples in Vapor Phase

1. Remove the 2 bottom-most cryoboxes from each rack.
2. Measure the height of 2 cryoboxes stacked on top of each other.
3. Fill vessel with liquid nitrogen to the height obtained from step 2 using a yardstick to measure liquid level in vessel.
4. Place racks into vessel without the 2 bottom-most cryoboxes.

— Samples are now above the liquid nitrogen and are stored in the vapor phase.—

Important—A level monitor should always be used when you store your samples in the vapor phase because of the already low levels of liquid nitrogen. Please refer to page 12 for the correct level monitor for your system.

Locator and Locator Plus Replacement Parts

Model #	Description
CV509X12A	Replacement cork and glue for LOCATOR 4, LOCATOR 4 Plus, Jr and Jr. Plus
CV509X11A70	Replacement cork and glue for LOCATOR 8 and LOCATOR 8 Plus.
CV509X41A	Replacement cork and glue for LOCATOR 6 Plus.
ADX31	Glue for corks.

LOCATOR and LOCATOR Plus Vessels and Covers

TYPE	TANK ONLY No racks or covers	STANDARD COVERS	COVERS W/LEVEL MONITOR		
			240V	120V	100V
Locator Jr.	CS509X11	CV509X10	CN509X1	CN509X3	CN509X2
Locator Jr. Plus	CS509X20	CV509x10	CN509X1-70	CN509X3-70	CN509X2-70
Locator 4	CS509X12	CV509X10	CN509X4	CN509X6	CN509X5
Locator 4 Plus	CS509X21	CV509X10	CN509X4-70	CN509X6-70	CN509X5-70
Locator 6 Plus	CS509X22	CV509X40-70	CN509X11-70	CN509X10-70	CN509X12-70
Locator 8	CS509X13	CV509X9	CN509X7	CN509X9	CN509X8
Locator 8 Plus	CS509X23	CV509X9	CN509X7-70	CN509X9-70	CN509X8-70

All level monitors listed operate on 16 volts (DC) 0.2 amps and 3.2 watts.



Note

LOCATOR and LOCATOR Plus vessels include racks and covers. However, these items may also be ordered separately.



Note

Cork and glue cannot be replaced on covers with level monitor or level monitor will malfunction. Contact Customer Service for return authorization to send cover in for repair.

LOCATOR AND LOCATOR PLUS REPLACEMENT PARTS

LOCATOR and LOCATOR Plus Racks and Boxes

Type	<u>Standard Rack(1.8 ml vials)</u>			<u>Special Rack (5.0 ml vials)</u>	
	Rack Part No.	1.8 ml 81 or 100 ampule box	1.8 ml 25 ampule box	Rack Part No.	5.0 ml 81 ampule box
Locator Jr.	HR509X15A 4/VESSEL	CS509X15 16/VESSEL 4/RACK	X	HR509X19A 4/VESSEL	CS509X10 8/VESSEL 2/RACK
Locator Jr. Plus	HR509X15A-70 4/Vessel	CS509X15 20/Vessel 5/Rack	X	HR509X19A-70 4/Vessel	CS509X10 8/Vessel 2/Rack
Locator 4	HR509X2A 4/Vessel	CS509X15 36 Vessel 9/Rack	X	HR509X20A-70 4/Vessel	CS509X10 20/Vessel 5/Rack
Locator 4 Plus	HR509X2A-70 4/Vessel	CS509X15 40/vessel 10/Rack	X	HR509X20A 4/Vessel	CS509X10 20/Vessel 5/Rack
Locator 6 Plus	HR509X31A-70 6/Vessel	CS509X15 60/Vessel 10/Rack	X	HR509X32-70 6/Vessel	CS509X10 30/Vessel 5/Rack
Locator 8	HR509X1A 8/Vessel	X	CS509X16 72/Vessel 9/Rack	X	X
Locator 8 Plus	HR509X1A-70 8/Vessel	X	CS509X15 8/Vessel 10/Rack	X	X

LOCATOR Accessories

AY509X33	1.5 ml cryoampules (500 per case) for System 100™ boxes.
AY509X32	1.0 ml cryoampules (500 per case) for System 100™ boxes.
AY509X12	2.0 ml cryoampules (500 per case) will not fit in System 100™ boxes.
AY509X13	1.2 ml cryoampules (500 per case) will not fit in System 100™ boxes.
CS509X17	Nalgene plastic boxes (System 100™) for LOCATOR Jr. and LOCATOR Jr. Plus (for use with System 100™ ampules or equiv., case of 20)
CS509X18	Nalgene plastic boxes (System 100™) for LOCATOR 4 and LOCATOR 4 Plus (for use with System 100™ ampules or equiv., case of 40)
CS509X5	Nalgene plastic boxes for LOCATOR Jr. and LOCATOR Jr. Plus (case of 20) holds 81 ampules per box.
CS509X4	Nalgene plastic boxes for LOCATOR 4 and LOCATOR 4 Plus (case of 40) holds 81 ampules per box.
CS509X3	Nalgene plastic boxes for LOCATOR 8 and LOCATOR 8 Plus (case of 80) holds 25 ampules per box.
CS509X10	Nalgene plastic 4" box for 5 ml ampules. (Fits LOCATOR 4, LOCATOR 4 Plus, LOCATOR Jr. and LOCATOR Jr. Plus.) Holds 81 ampules per box.
AY509X1	Transportation cart (fits all LOCATORS except LOCATOR 6 Plus)
AY509X1-70	Transportation cart (LOCATOR 6 Plus).
AY509X18	Cryoclaw (AY509X19 Suction Cups(2) used to remove floating ampules and boxes
LT509X5	Logbook for LOCATOR 4, LOCATOR 4 Plus, LOCATOR Jr. and LOCATOR Jr. Plus.
LT509X6	Logbook for LOCATOR 8 and LOCATOR 8 Plus.

Cryo Accessories

Nalgene Cryogenic vial Closure Color Coders, polystyrene (Package of 100)

Model No.	AY509X27	AY509X28	AY509X29	AY509X30	AY509X31
Color	White	Yellow	Blue	Green	Red

Nalgene Cryogenic vials (ampules), polypropylene; high density polyethylene closure (Case of 500), will not work with System 100™ cryoboxes. Call for part numbers or compatibility with current ampules.

Model No.	AY509X13	AY509X12
Capacity, ml	1.2	2.0
O.D., mm/in.	13.5/0.5	13.5/0.5
Height, mm/in.	38.1/1.5	48.3/1.88

Accessory Liquid Nitrogen Level Monitor Operation

Intended Use

Provides a constant indication of liquid nitrogen level and alerts you to low level conditions through audible and visual alarms. The accessory Liquid Nitrogen Level Monitor can be wired to a remote alarm system, to alert you to problems when you are not in your laboratory.

Function

Safeguards your precious samples by informing you when your vessel needs filling and alerting you to excessive liquid nitrogen loss conditions.

Installation

1. Remove the level monitor and LOCATOR or LOCATOR Plus cover from box.
2. Remove present cover from your LOCATOR or LOCATOR Plus and replace with your new level monitor and cover.
3. Check the electrical specifications on the power supply for electrical data and plug into appropriately grounded receptacle.



Note

If the level monitor was purchased as part of a LOCATOR or LOCATOR Plus system, skip to step #3. If it is a retrofit for an existing LOCATOR or LOCATOR Plus, begin with step #1.



Note

Level monitor is shipped mounted directly to the appropriate LOCATOR or LOCATOR Plus cover.

Level Monitor Remote Alarm

When connected to your remote alarm system, the Liquid Nitrogen Level Monitor will alert you to a problem even when your laboratory is unoccupied. The Liquid Nitrogen Level Monitor's alarm contacts are activated at the same time the Monitor's audible alarm sounds (see Microprocessor Functions).

Liquid Nitrogen Level Monitor's Alarm Contact Specifications

The Liquid Nitrogen Level Monitor's alarm contact is a Photomos type relay.

Contact Form: Type 1 form A (AC/DC)
Load Voltage Maximum: 400 Volts (peak)
Load Current Maximum: 120 mA (continuous)
Peak Load Current: 300 mA
Typical On Resistance: Maximum 50 Ω

Connection to Remote Alarms

1. Disconnect the Liquid Nitrogen Level Monitor from the power supply. Disconnect power to your alarm system.
2. Remove the three screws securing the Liquid Nitrogen Level Monitor's cover. Pull the cover up and out of the way. (See Figure 1.)
3. Remove the black plug from the side of the cover. Insert the wires for the remote alarm through this hole.
4. Connect the remote alarm wires as shown in Figures 1, 2 and 3.
5. Set the jumpers J4 and J6 according to the type of operating mode necessary. For a normally open mode of operation, place the jumper on J6. For a normally closed mode of operation, place the jumper on J4. (See Figure 2).
6. Place the cover back into position and secure with the three screws removed in Step 2 above.

ACCESSORY LIQUID NITROGEN LEVEL MONITOR OPERATION

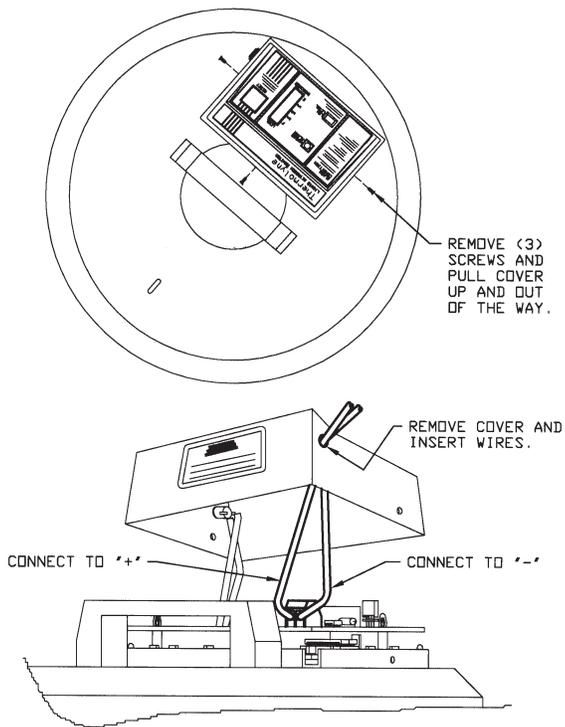


Figure 1

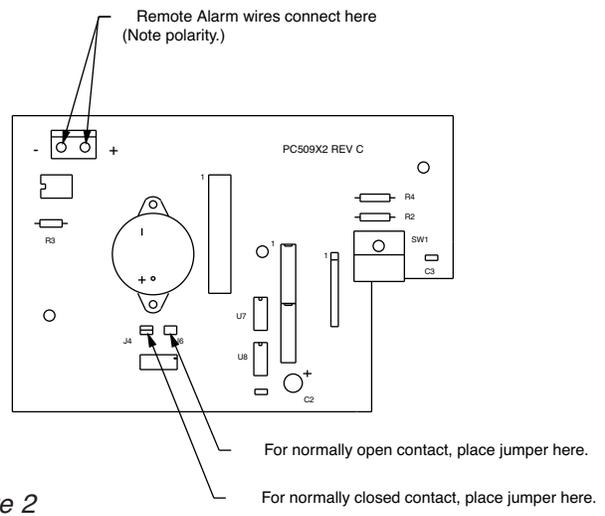


Figure 2

Remote Alarm Connections Schematic

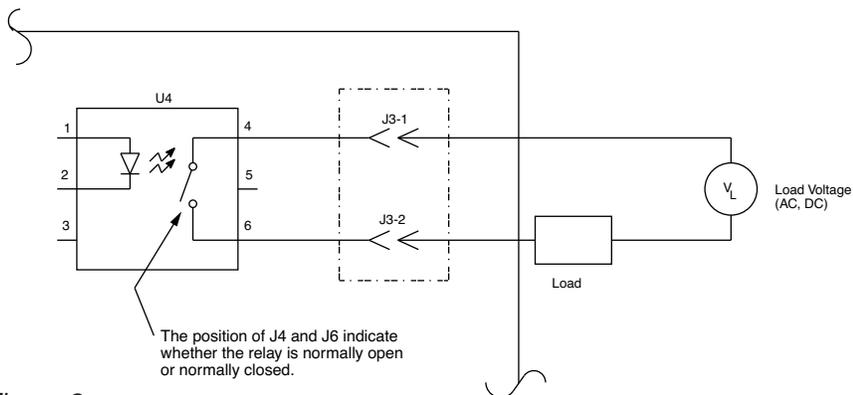


Figure 3

Principles of Operation

The innovative LIQUID NITROGEN LEVEL MONITOR from THERMOLYNE utilizes ultrasonic sound waves to sense the level of liquid nitrogen inside a LOCATOR or LOCATOR Plus cryogenic storage vessel. A microprocessor control provides continuous indication of the liquid nitrogen level inside the LOCATOR or LOCATOR Plus. Audible and visual alarms also provide an early warning of low level conditions.

ULTRASONIC sound waves sense the level of liquid nitrogen inside the LOCATOR or LOCATOR Plus vessel.

By using ultrasonic sound waves to sense the level of liquid nitrogen, no physical probe is required to sense the level of liquid nitrogen. Conventional devices use probes which must be in physical contact with the liquid. This physical contact increases liquid nitrogen consumption. There is NO increase in liquid nitrogen consumption by using the THERMOLYNE LEVEL MONITOR.

Microprocessor Functions

5 segment LED indication of the liquid nitrogen level.

The LED display is graduated in 5 segments; Full, 3/4, 1/2, 1/4 and Empty, similar to a fuel gauge on an automobile. The bright orange LED display provides quick and reliable visual indication of the level of liquid nitrogen inside the LOCATOR or LOCATOR Plus vessel.

Audible and Visual alarms

1. "LOW LEVEL" indicator light flashes on and off when 2" of liquid nitrogen remains inside the LOCATOR or LOCATOR Plus vessel. In this situation, the level of liquid nitrogen is low, and you are alerted to re-fill the vessel as soon as possible.
2. An AUDIBLE alarm will sound intermittently when 1" of liquid nitrogen remains inside the LOCATOR or LOCATOR Plus vessel. The "LOW LEVEL" light described above will continue to flash as well. In this situation, the liquid nitrogen

ACCESSORY LIQUID NITROGEN LEVEL MONITOR OPERATION

is dangerously low, and you are alerted to re-fill the vessel immediately.

3. The 5 segment LED display becomes lit and an audible alarm sounds continuously when the LOCATOR or LOCATOR Plus vessel has no more liquid nitrogen or if the level inside the vessel is falling at a rate of 1/2" per hour or more. In this situation, you are alerted that an emergency exists. Either there is no more liquid nitrogen inside the LOCATOR or LOCATOR Plus vessel, or the level of liquid nitrogen is dropping rapidly, due to a vacuum failure of the LOCATOR or LOCATOR Plus vessel.

Safety Feature

A "RESET" switch lights and an audible alarm sounds intermittently if the user does not reset the monitor after removing vessel cover. The microprocessor must be reset each time the cover is removed from the LOCATOR or LOCATOR Plus.

Before removing the cover, the reset button must be pushed, illuminating the reset light. While in this reset/hold mode, the monitor is not sensing. After five minutes in the reset/hold mode, an audible alarm will sound, alerting you to deactivate the reset/hold mode and replace the cover on the vessel.



Note

Important: The Level Monitor may take up to 10 minutes to establish a reading after the unit is placed on the cryovessel. Remember to press "Reset" after placing unit on the vessel. The green LED on the switch should be "OFF."

Operation of Level Monitor

Once the cover with the monitor has been placed on the vessel and plugged in, it will take the system about 15 minutes to equilibrate before an accurate measurement of the liquid nitrogen will be indicated. This equilibration process will occur each time the vessel is used. Each time a vessel is opened, the stabilized chamber temperature is disrupted. The system requires a stable temperature to determine an accurate liquid nitrogen level.

If you have just purchased a new LOCATOR or LOCATOR Plus along with your monitor, allow at least 1 day for the liquid nitrogen to equilibrate the vessel before plugging in the unit. This will avoid false alarms.

Liquid Nitrogen Troubleshooting

Problem	Cause	Solution
Level monitor alarm sounds intermittently. Unit measuring liquid level incorrectly.	Ice or frost buildup on the transducer.	Remove level monitor from vessel and place in room for approximately twenty minutes. Make sure lid is standing upright on the cork to allow moisture to drain out of level monitor. Place level monitor back on unit. (Remember to press "Reset" button.)
Level monitor measuring "Full" after removing samples and replacing lid.	Fog in top part (neck area) of cryogenic vessel.	The density of the fog that is formed samples is dependent on the humidity after removing the lid and accessing of the room where the cryovessel is found. The fog dissipates after about fifteen minutes and at this time the level monitor will take an accurate reading of the liquid nitrogen level.

Level Monitor Replacement Parts

Part	Volts	Locator Jr.	Locator Jr. Plus	Locator 4	Locator 4 Plus	Locator 6 Plus	Locator 8	Locator 8 Plus
Liquid Nitrogen Level Monitor	120V	CN509X3	CN509X3-70	CN509X6	CN509X6-70	CN509X10-70	CN509X9	CN509X9-70
	100V	CN509X2	CN509X2-70	CN509X5	CN509X5-70	CN509X12-70	CN509X8	CN509X8-70
	240V	CN509X1	CN509X1-70	CN509X4	CN509X4-70	CN509X11-70	CN509X7	CN509X7-70
Transducer		CV509X21B	CV509X21B	CV509X21B	CV509X21B	CV509X21B	CV509X20B	CV509X20B
PC Board		PC509X1A	PC509X4A	PC509X3A	PC509X5A	PC509X5A	PC509X3A	PC509X5A
Display Board		SCX509X2B	PC509X2B	PC509X2B	PC509X2B	PC509X2B	PC509X2B	PC509X2B
Single Bar LED		SCX113	SCX113	SCX113	SCX113	SCX113	SCX113	SCX113
Four Bar LED		SCX114	SCX114	SCX114	SCX114	SCX114	SCX114	SCX114
Cover		CV509X13	CV509X13	CV509X13	CV509X13	CV509X13	CV509X13	CV509X13
Power Supply, 120V		TN509X2	TN509X2	TN509X2	TN509X2	TN509X2	TN509X2	TN509X2
Power Supply, 100V		TN509X1	TN509X1	TN509X1	TN509X1	TN509X1	TN509X1	TN509X1
Power Supply, 240V		TN509X3	TN509X3	TN509X3	TN509X3	TN509X3	TN509X3	TN509X3

**Will include cover, cork, transducer and aluminum bottom of control section. Does not include items 2-9 listed above.*

Ordering Procedures

Please refer to the Specification Plate for the complete model number, serial number, and series number when requesting service, replacement parts or in any correspondence concerning this unit.

All parts listed herein may be ordered from the **Thermo Scientific** dealer from whom you purchased this unit or can be obtained promptly from the factory. When service or replacement parts are needed we ask that you check first with your dealer. If the dealer cannot handle your request, then contact our Customer Service Department at 563-556-2241 or 800-553-0039.

Prior to returning any materials, please contact our Customer Service Department for a "Return Materials Authorization" number (RMA). Material returned without an RMA number will be refused.

One Year Limited Warranty for Cryobiological Storage Vessels Three Year Limited Warranty for Vessel Vacuum

THERMO SCIENTIFIC warrants that if a product manufactured by Thermo Scientific shall be free of defects in materials and workmanship for one (1) year from the first to occur of (i) the date the product is sold by THERMO SCIENTIFIC or (ii) the date the product is purchased by the original retail customer (the "Commencement Date"). Except as expressly stated above, THERMO SCIENTIFIC MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, WITH RESPECT TO THE PRODUCTS AND EXPRESSLY DISCLAIMS ANY AND ALL WARRANTIES, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF DESIGN, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

An authorized representative of THERMO SCIENTIFIC must perform all warranty inspections. In the event of a defect covered by THERMO SCIENTIFIC's warranty, THERMO SCIENTIFIC shall, as its sole obligation and exclusive remedy, provide free replacement parts to remedy the defective product. In addition, for products sold by THERMO SCIENTIFIC within the continental United States or Canada, THERMO SCIENTIFIC shall provide free labor to repair the products with the replacement parts, but only for a period of ninety (90) days from the Commencement Date.

THERMO SCIENTIFIC's warranty provided hereunder shall be null and void and without further force or effect if there is any (i) repair made to the product by a party other than THERMO SCIENTIFIC or its duly authorized service representative, (ii) misuse (including use inconsistent with written operating instructions for the product), mishandling, contamination, overheating, modification or alteration of the product by any customer or third party or (iii) use of replacement parts that are obtained from a party who is not an authorized dealer of THERMO SCIENTIFIC.

Heating elements, because of their susceptibility to overheating and contamination, must be returned to the THERMO SCIENTIFIC factory and if, upon inspection, it is concluded that failure is due to factors other than excessive high temperature or contamination, THERMO SCIENTIFIC will provide warranty replacement. As a condition to the return of any product, or any constituent part thereof, to THERMO SCIENTIFIC's factory, it shall be sent prepaid and a prior written authorization from THERMO SCIENTIFIC assigning a Return Goods Number to the product or part shall be obtained.

IN NO EVENT SHALL THERMO SCIENTIFIC BE LIABLE TO ANY PARTY FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, OR FOR ANY DAMAGES RESULTING FROM LOSS OF USE OR PROFITS, ANTICIPATED OR OTHERWISE, ARISING OUT OF OR IN CONNECTION WITH THE SALE, USE OR PERFORMANCE OF ANY PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, TORT (INCLUDING NEGLIGENCE), ANY THEORY OF STRICT LIABILITY OR REGULATORY ACTION.

The name of the authorized Thermo Scientific dealer nearest you may be obtained by calling 1-800-446-6060 (563-556-2241) or writing to: 2555 Kerper Blvd. Dubuque, IA 52004