



# Arctic Express™ Type CY50900

## Cryogenic Dry Shipper

Operation Manual and Parts List LT509X10 (7000813) Rev. 7

Visit us online to register your warranty  
[www.thermoscientific.com/labwarranty](http://www.thermoscientific.com/labwarranty)

**Thermo**  
SCIENTIFIC

<b>Catalog Number/ Model Number</b>	<b>Name</b>
CY50915	Arctic Express 5
CY50915D	Arctic Express 5 with Datalogger
CY50905DIATA	Arctic Express 10 with IATA Class B Kit
CY50905	Arctic Express 10
CY50905D	Arctic Express 10 with Datalogger
CY50910	Arctic Express 20
CY50910D	Arctic Express 20 with Datalogger
CY50920	Arctic Express 20 IATA Class A Approved

**MANUAL NUMBER LT509X10 (7000813)**

7	40578	2/23/16	Added symbols and cautions to match unit	ccs
6	31535	9/14/15	Consolidated 813 and 821 manuals - all CE, added datalogger & IATA models	ccs
5	31835	3/13/15	Added new IATA compliant and datalogger models	ccs
4	30559	11/12/13	Added warnings and cautions to pg 1-1, added environmental conditions to pg 2-2	ccs
3	27797	9/20/11	Added new icons and intended usage	ccs
2	27457/SI-10618	7/21/11	Added CE number to pg 2-1	ccs
1	26676/SI-10360	10/28/10	Updated per M Spence/E. Pickrell	ccs
0	--	5/13/10	Transfer to Marietta (was LT509X10 -8/12/09)	ccs
<b>REV</b>	<b>ECR/ECN</b>	<b>DATE</b>	<b>DESCRIPTION</b>	<b>By</b>



**Important** 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. ▲



**Caution** All internal adjustments and maintenance must be performed by qualified service personnel. ▲



**Caution** It is recommended to have this vessel tested by manufacturer or qualified cryovessel service technician every 5 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 liquid nitrogen due to vacuum failure. ▲



**Warning** Nitrogen gas can cause suffocation without warning. Store and use liquid nitrogen only in a well-ventilated place. As the liquid evaporates, the resulting gas displaces the normal air in the area. (The cloudy vapor that appears when liquid nitrogen is exposed to the air is condensed moisture, not the gas itself. The issuing gas is invisible.) In closed areas, excessive amounts of nitrogen gas reduces the concentration of oxygen and can result in asphyxiation. Because nitrogen gas is colorless, odorless, and tasteless, it cannot be detected by the human senses. Breathing an atmosphere that contains less than 19.5% oxygen can cause dizziness and quickly result in unconsciousness and death. Therefore, the use of oxygen monitoring equipment is strongly recommended. ▲



**Warning** Contact of liquid nitrogen with the skin or eyes may cause serious (freezing) injury. ▲



**Warning** Do not roll. Always keep liquid nitrogen vessel in an upright position. Exercise caution to prevent spilling and splashing. ▲

Material in this manual is for information purposes only. The contents and the product it describes are subject to change without notice. Thermo Fisher 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.

#### Intended Use:

The Thermo Fisher Scientific cryogenic transport vessels are intended to ship biological samples at cryogenic temperatures. These products are comprised of a vessel and a lid, with or without a data-logger.

#### Unintended Use:

These products are not intended for use within the patient environment.  
These products are not intended for the storage of samples.

© 2010 Thermo Fisher Scientific. All rights reserved. Printed in U.S.A.



Important operating and/or maintenance instructions. Read the accompanying text carefully.



Extreme temperature hazards. Only qualified persons should perform procedures associated with this symbol.



Marking of electrical and electronic equipment, which applies to electrical and electronic equipment falling under the Directive 2002/96/EC (WEEE) and the equipment that has been put on the market after 13 August 2005.



This product is required to comply with the European Union's Waste Electrical & Electronic Equipment (WEEE) Directive 2002/96/EC. It is marked with the WEEE symbol. Thermo Fisher Scientific has contracted with one or more recycling/disposal companies in each EU Member State European Country, and this product should be disposed of or recycled through them. Further information on Thermo's compliance with this directive, the recyclers in your country and information on Thermo Scientific products will be available at [www.thermofisher.com](http://www.thermofisher.com).

- ✓ Always use the proper protective equipment (clothing, gloves, goggles, etc.)
- ✓ Always dissipate extreme cold or heat and wear protective clothing.
- ✓ Always follow good hygiene practices.
- ✓ Each individual is responsible for his or her own safety.

## Do You Need Information or Assistance on Thermo Scientific Products?

If you do, please contact us 8:00 a.m. to 6:00 p.m. (Eastern Time) at:

1-740-373-4763

1-800-438-4851

1-877-213-8051

<http://www.thermoscientific.com>

[service.led.marietta@thermofisher.com](mailto:service.led.marietta@thermofisher.com)

[www.unitylabservices.com](http://www.unitylabservices.com)

Direct

Toll Free, U.S. and Canada

FAX

Internet Worldwide Web Home Page

Tech Support Email Address

Certified Service Web Page

Our **Sales Support** staff can provide information on pricing and give you quotations. We can take your order and provide delivery information on major equipment items or make arrangements to have your local sales representative contact you. Our products are listed on the Internet and we can be contacted through our Internet home page.

Our **Service Support** staff can supply technical information about proper setup, operation or troubleshooting of your equipment. We can fill your needs for spare or replacement parts or provide you with on-site service. We can also provide you with a quotation on our Extended Warranty for your Thermo Scientific products.

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 Fisher Scientific (Asheville) LLC  
401 Millcreek Road, Box 649  
Marietta, OH 45750

International customers, please contact your local Thermo Scientific distributor.

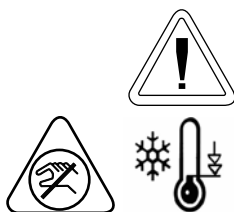
# Table of Contents

<b>Section 1</b>	<b>Safety Information</b> .....	<b>1-1</b>
	Warnings .....	1-1
<b>Section 2</b>	<b>Specifications</b> .....	<b>2-1</b>
<b>Section 3</b>	<b>General Information</b> .....	<b>3-1</b>
	Filling Instructions .....	3-1
	Datalogger Operations .....	3-2
	Cleaning Procedures .....	3-3
	Replacement Parts .....	3-4
	Transportation Guidelines .....	3-5
	Ordering Procedures .....	3-6
<b>Section 4</b>	<b>Warranty Information</b> .....	<b>4-1</b>



## Section 1 Safety Information

### Warnings



- This unit is intended to be used by trained personnel in a well-ventilated environment.
- Liquid nitrogen is extremely cold; it boils at  $-196^{\circ}\text{C}$ .
- Follow all necessary precautions and warnings relevant to applicable hazards such as frostbite, contact burn, asphyxiation, etc. in cryogenic areas.
- 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.
- Leave no areas of skin exposed.
- Wear adequate PPE where necessary: face shield, cryogenic gloves, cryogenic apron.
- Only use the power supply provided by the unit.
- 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.
- Always handle vials with tongs.
- Use extreme care to prevent spilling and splashing liquid nitrogen during transfer and removal of storage contents and holders.
- Immediately remove any clothing or safety attire on which liquid nitrogen has been spilled or splashed.
- Get immediate medical attention for any frostbite injuries due to liquid nitrogen.

Have this vessel tested by the manufacturer or qualified cryovessel service technician every 5 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 liquid nitrogen due to vacuum failure.





## Section 2 Specifications

	Arctic Express 5 **	Arctic Express 10**	Arctic Express 10 ** with IATA Class B Kit	Arctic Express 20**	Arctic Express 20** IATA Class A Approved
Liquid nitrogen capacity (liters)	1.5	4.3	4.3	10	10
Static holding time (days)*	8	21	21	14	14
Vial capacity (2.0 ml)	9	48	48	966	400
<b>Vessel Dimensions</b>					
Height: Inches (cm)	13.5 (34.3)	19.4 (49.2)	19.4 (49.2)	23 (58.4)	23 (58.4)
Diameter: Inches (cm)	7.3 (18.5)	8.7 (22.1)	8.7 (22.1)	15 (38.1)	15 (38.1)
Neck opening: Inches (cm)	1.4 (3.5)	2 (5)	2 (5)	8.5 (21.6)	8.5 (21.6)
<b>Weight</b>					
Empty: Pounds (kg)	6 (2.7)	13 (5.9)	13 (5.9)	30 (13.6)	36 (16.4)
Full: Pounds (kg)	8.8 (4.3)	20 (9.1)	20 (9.1)	47 (21.4)	53 (24.1)
Shipping: Pounds (kg)	24 (10.9)	29 (13.2)	29 (13.2)	52 (23.6)	58 (26.4)
<b>Canisters</b>					
Number per vessel	1	1	1	N/A	N/A
Height: Inches (cm)	5 (12.7)	11 (27.9)	11 (27.9)	N/A	N/A
Inside Diameter: Inches (cm)	1.22 (3.1)	1.81 (4.6)	1.81 (4.6)	N/A	N/A

\* Actual working time may vary due to current atmospheric conditions, container history, manufacturing tolerances, and any individual patterns of use.

\*\* See Page i for catalog model numbers and descriptions

### **Environmental Conditions**

Indoor use only

Operating temperature: 17°C - 27°C

20% to 80% relative humidity, non-condensing.

Installation Category II (overvoltage) in accordance with IEC 664.

Pollution Degree 2 in accordance with IEC 664.

Altitude limit: 2,000 meters.

Storage: -25°C to 65°C; 10% to 85% relative humidity.

(CE models only) We hereby declare under our sole responsibility that this product conforms with the technical requirements of the following standards:

Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU  
EN 50581; 2012



Copies of the Declaration of Conformity are available upon request.

## Section 3 General Information

The on-line warranty registration address is listed on the front of this manual. The unit should be registered within 30 days to make warranty effective. This information must include the serial number which is located on the bottom of the vessel.

### Filling Instructions

To avoid damage to your Arctic Express dry shipper, fill only with liquid nitrogen and never overfill. Never add more than;

- 1.6 liters of liquid nitrogen at a time to the Arctic Express 5,
- 4.3 liters of liquid nitrogen at a time to the Arctic Express 10,
- 10 liters of liquid nitrogen at a time to the Arctic Express 20 & IATA.

1. Record the empty weight of the vessel alone.
2. Add liquid nitrogen to vessel by removing the lid and pouring liquid nitrogen in through the neck. Allow the liquid nitrogen to be fully absorbed before adding more.
3. Repeat the addition of liquid nitrogen up to two more times until no more can be absorbed.
4. Pour off excess liquid nitrogen and re-weigh vessel.
  - Seven (7) pounds of liquid nitrogen should have been absorbed by the Arctic Express 10,
  - Two pounds, 13 ounces (2.8) by the Arctic Express 5,
  - Seventeen (17) pounds by the Arctic Express 20 and IATA.

If less than the above stated has been absorbed, repeat Steps 2 and 3.

5. Place your samples in the Arctic Express, seal and ship.

**Note** If the Arctic Express is prepared for shipping ahead of time, leave a small excess of liquid nitrogen in the vessel until just before shipment. At that time, pour off the excess liquid nitrogen, place your samples in the Arctic Express, seal and ship.

## Datalogger Operations

For operating instructions for datalogger included with model CY50915D, CY50910D and CY50905D, refer to the ElPro LIBERO PDF Logger Operations Manual (included).

- Refer to Section 4.1 of the ElPro Operations Manual to determine battery lifetime remaining and when to replace existing datalogger.
- Purchasing a non-calibrated datalogger will require the customer to self-calibrate the system. See Section 5 of the ElPro Operations Manual. If a calibrated system is required, AEDL10 and AEDL20 are recommended, pre-calibrated options.

## Cleaning Procedures

Thermo Scientific Dewars are constructed with an aluminum inner liner, which utilizes a fiberglass neck support. Any cleaning solution that reacts well with aluminum or stainless steel can be used in the sanitation process of these Dewars. In most cases, any household detergent or mild soap solution is suitable. The U.S. Custom service uses a solution called EXPOR for incoming shipments from abroad. This is mixed 9 parts water to 1 part EXPOR, and is applied with a spray nozzle. EXPOR is a sporocidal agent, mixed with sodium chloride and a lactic acid. However, as mentioned above, any household cleaning solution can be used. These include bleach, detergents, and mild soaps. Other cleaners and disinfectants that can be safely used include hydrogen peroxide, chlorine/water, and denatured alcohol.

**Note** DO NOT USE ANY PETROLEUM-BASED CLEANING SOLUTION. It is important that the inner vessel is thoroughly rinsed with water until all cleaner residues have been removed. Spraying the solution into the inner vessel is preferred, although agitation of the solution inside will suffice.

Vapor shippers require filling to its full capacity with the cleaning mixture and then rinsing. Allow the unit to dry thoroughly before putting into service. With vapor shippers (dry shippers), it is suggested to place the dewar inverted, to drain and dry. This process is not intended for use in older vapor shipper models manufactured prior to 1994.

The generally accepted practice of using 10% chlorine bleach with 90% water solution still holds as the best method for decontamination. However, with some of the bovine and swine virus strains today, you may want to increase the mixture of 30% chlorine bleach and 70% water.

## **Cleaning Procedures (continued)**

To perform this sanitizing procedure, cover all inner surfaces with the solution, let stand for 30 minutes, and remove. Rinse the decontaminated surfaces with clean water and remove rinse water. Allow the Dewar to dry before putting back into service. For vapor shippers and dual units, this means to place the Dewar on end (inverted) and allow to dry.

## **Transportation Guidelines**

Liquid nitrogen is classified under the name “Nitrogen, refrigerated liquid” and has a UN 1977 code number. The name classification and UN Code Number must be indicated on the shipping carton in addition to a “Gas non-flammable” label. Packing and labeling requirements can be obtained from the organizations listed below.

Liquid nitrogen is classified as “Dangerous Goods” by the Department of Transportation (DOT). At least three regulatory agencies publish dangerous goods regulations:

DOT - Department of Transportation,  
IATA - International Air Transport Association,  
ICAO - International Civil Aviation Organization.

Contact any of the aforementioned agencies regarding your specific shipping requirements or contact your common carrier or airlines for specific handling instructions. In addition, you should also contact either the foreign embassy or customs officials of your shipment’s final destination.

Keep in mind that regulations do change or undergo revisions. For the most current shipping information, contact your carrier.

In order to maintain IATA compliance for the Arctic Express 10 IATA model(CY50910DIATA), the packout kit provided with the unit must be used and the associated packout instructions (provided with the kit) must be followed. This kit and the associated instructions are not intended to be used with any other vessel. Failure to follow these instructions will result in non-compliance to the associated IATA standards.

Vials that were tested and which are considered approved for use with the IATA pack out kit include:

- Nalgene™ General Long-Term Storage Cryogenic Tubes, 1.2mL
- CryoTube Vials, Round Btm, - Starfoot Ext Thread, PE Screw, NUNC (50 per sample pkg)
- CryoTube Vial Conical Btm, - Starfoot Int Thd, PP Screw Sto, NUNC (50 per sample pkg)
- Nalgene™ General Long-Term Storage Cryogenic Tubes, 2mL

## Replacement Parts

ABS Plastic Shipping Case for Arctic Express 5 and 10 (one size fits all)  
ZP509X11A: Has locking latches. Lid is round so unit cannot be shipped upside down.

Lid and Cork Assembly Replacement Numbers		
Description	Name	Catalog Number
If Serial Number begins with "DW"	Arctic Express 5 and 10	CV509X24A
If Serial Number begins with anything other than "DW"	Arctic Express 5	CV509X27A
	Arctic Express 10	CV509X28A
Lid and Cork Assembly with Datalogger:	Arctic Express 10	AEDL10
	Arctic Express 20	AEDL20
Replacement Datalogger (uncalibrated)	All models	AEDLACC
Stainless Steel Datalogger Bracket	All models	AEDLB
Temperature Sensor	Arctic Express 10 and 20	AEDLTP
Replacement IATA Packout Kit	Arctic Express 10	AE10IATA
Replacement Datalogger Kit	Arctic Express 5	1850819G01

\* The same replacement numbers apply to IATA versions of these unit names, where applicable.

## Ordering Procedures

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, check first with your dealer. If the dealer cannot process your request, then contact our Technical Services Department.

Prior to returning any materials, contact Technical Services for a "Return Materials Authorization" number (RMA). Material returned without an RMA number will be refused.

## THERMO FISHER SCIENTIFIC STANDARD PRODUCT WARRANTY (LN<sub>2</sub> 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. *LN<sub>2</sub> Vacuum Integrity is covered for three 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.

**THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER WRITTEN, ORAL OR IMPLIED. NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY.** Thermo shall not be liable for any indirect or consequential damages including, without limitation, damages relating to lost profits or loss of products.

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 1-800-438-4851 (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.



Rev. 0 5/10





**thermoscientific.com**

© 2014 Thermo Fisher Scientific Inc. All rights reserved. All trademarks are the property of Thermo Fisher Scientific and its subsidiaries. Specifications, terms and pricing are subject to change. Not all products are available in all countries. Please consult your local sales representative for details.



**Thermo Fisher Scientific (Asheville) LLC**

401 Millcreek Road  
Marietta, Ohio 45750  
United States

**Thermo**  
S C I E N T I F I C

A Thermo Fisher Scientific Brand