

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

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Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

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- In stock / Ready-to-ship
- Leasing / Rentals / Demos
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Expert team | Trust guarantee | 100% satisfaction

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Find the *Thermo / Forma Scientific 7402* at our website: ***Click HERE***

Controlled Environment Equipment Solutions for the Lab



Forma® Cryopreservation Equipment

Analyze • Detect • Measure • Control™

Thermo ELECTRON CORPORATION

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Total Cryogenic Solution

Indefinite Storage ... Infinite Possibilities

Your mission is to maintain cell viability at ultra-low temperatures. Thermo Electron Corporation's role is to help make that happen. You can depend on our complete line of Forma Cryopreservation Equipment for improved viability and reliable long-term storage for your valuable biological specimens. Controlled rate freezers, storage solutions that vary by feature and capacity to suit every budget ranging from academic to biotech, a range of inventory control systems and other accessories, and a staff of specialists to answer your questions—it's your Total Cryogenic Solution!

- Use our CryoMed® Freezers for controlled rate freezing. Then, use the CryoPlus® or Cryo Series for long-term LN_2 storage. You will reap the rewards—**reliability for peace of mind, high performance for safe sample freezing and storage, and ease of use.**

- Rely on the CMR/CMC Series when portable LN_2 storage is critical to your success in the lab. These containers offer **high capacity for a wide range of applications and low LN_2 consumption for cost-effective use.**

- Transporting samples across town, across the country, or even across the world? Our CMD Series Dry Shippers are an ideal choice. They combine **temperature stability for safe sample storage during shipping, lightweight construction for easy handling, and ease of use.**

We'll also work as your partner to identify inventory control systems (e.g., racks, canisters, frames) for optimum storage, external alarms for added security, lab dewars for easy LN_2 transport, or other accessories that help you take full advantage of your Forma Cryopreservation Equipment ... now and in the future.

TOTAL CRYOGENIC SOLUTION

CryoMed Freezers 3
Accessories 7
CryoPlus & Cryo Series 10
Accessories 13
CMR/CMC Series 14
Accessories 14
CMD Dry Shippers 16
Accessories 16
General Accessories 17



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The Goal of Cryopreservation

The objective of cryopreservation is to minimize damage to biological materials, such as tissues, mammalian cells, bacteria, fungi, plant cells, and viruses, during low temperature freezing and storage.

The ultimate goal is to provide a continuous source of tissues and genetically stable living cells for a variety of purposes, including research and biomedical processes.

Why Is Controlled Rate Freezing Important?

Water, the major component of all living cells, must be present for chemical reactions to occur within a cell. During cryopreservation, the water changes to ice and cellular metabolism ceases. Dehydration also occurs, changing the concentration of salts and other metabolites and creating an osmotic imbalance that can be detrimental to cell recovery.

Detrimental effects of freezing biological materials can be minimized by controlling the cooling rate, using cryoprotective agents, maintaining appropriate storage temperatures, and controlling the rewarming rate.

Cooling rate is known to have the most significant influence on cell survival. A cooling rate too high or too low can result in low cell recovery due to dehydration or ice crystal formation. **Controlled rate freezing before long-term storage minimizes these variables to ensure maximum viability for a wide variety of cells.**

Programmed, uniform cooling rates are effective for a variety of freezing applications, including stem cells, embryos, heart valves, and cord blood.

Why Choose LN_2 Storage?

The temperature at which frozen cells are stored affects their viability after recovery. **The lower the temperature, the longer the viable storage period.**

At -196C (-320F), biologically relevant, thermally-driven chemical reactions are not known to occur. It is, therefore, believed that the majority of the population of stored cells will remain viable and unchanged for an indefinite period.[1]

Learn More about Cryopreservation

Request the *Cryopreservation Manual, A Guide to Cryopreservation Techniques,* or visit www.thermo.com.

CryoMed Freezers for Controlled Rate Freezing

Thermo's CryoMed Freezers provide the ultimate in controlled rate freezing flexibility. Three sizes and two styles provide the freedom to **choose a controlled rate freezer that meets your specific requirements.**

- Freezers are a complete, one-piece system. Control panel and thermal printer are integrated, **eliminating assembly and connection of electrical components.**
- Multiple freezing profiles can be modified to **tailor them to your specific protocols.**
- **Computer enhanced CryoMed Freezer can be created easily** by adding a PC, installing our MS Windows®-based Controlled Rate Freezing PC Interface software (included), and connecting an external inkjet printer.

Reliability for Peace of Mind

- Exterior has a powder coat paint finish for a high quality appearance that **resists scratches and chipping.**
- Ergonomically designed door handle with vise action latch is **easy to grasp** for front access to your product. Several models also provide convenient top access.



1. *Committee on Germ Plasm Resources, Division of Biological Sciences, Assembly of Life Sciences, National Research Council, 1978. Conservation of Germ Plasm Resources: An Imperative. 7:79-84.*

CRYOMED FREEZERS: THREE SIZES, TWO STYLES

- **0.6, 1.2, and 1.7 cu. ft. volume* chambers with front access**
- **0.6 and 1.2 cu. ft. volume chambers with front and top access, designed for human IVF use and easy "seeding" (FDA 510(k) number K021042)**

***Higher capacity custom sizes available**

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Reliability for Peace of Mind (continued)

- Quiet running units are constructed of Type 304 stainless steel for **durability and long life.**
- For added security, a modifiable access code (instead of a key) **prevents unwanted user profile changes or freezing run interruptions.**
- If a power outage lasting less than 10 seconds occurs, the freezer continues to operate without interruption or alarm when power resumes. If the outage lasts longer, the unit continues to operate after power resumes, but an audible/visual alarm occurs, and a message indicates the duration of the power outage.

High Performance for Safe Sample Freezing

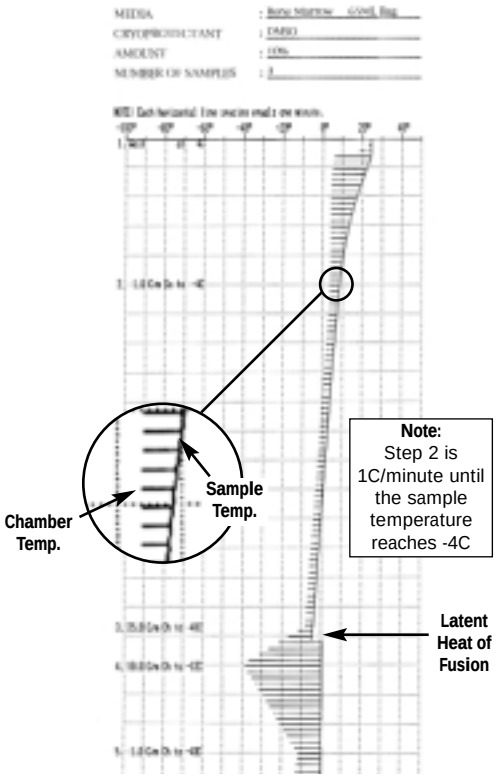
- Foamed-in-place polyurethane insulation creates an improved R factor that **minimizes cabinet condensation, ensuring that there is little moisture to wipe from your benchtop.**
- Dual solenoid valves increase LN_2 injection volume, ensuring **precise temperature control** and **accelerated freezing for optimum cell viability.**
- Specially designed air handling system and unique liquid nitrogen injection ring (U.S. Patent 6,044,648) work together to ensure optimum temperature control and uniformity.
  - Horizontally directed, recirculating airflow allows greater thermal heat/cooling transfer, **meeting the requirements of demanding protocols.**
  - LN_2 ring provides a continuous nitrogen vapor supply that **ensures optimum, uniform product cooling and prevents premature "seeding."**
- Heating element with overtemperature protection balances controlled freezing and rewarming, **minimizing the risk of cell damage.**

Ease of Use

- Specific models designed for human IVF use (510(k) number K021042)



  - allow **convenient top access** for manual sample "seeding" applications
  - include an external sample thermocouple that can be placed in a position similar to that of the remaining samples for a **truer representation of the entire product load**
- Unique signature freezing graph illustrates sample and chamber temperatures, and latent heat of fusion, ensuring a **documented process.** You can **easily see the correlation between time and sample/chamber temperature.**



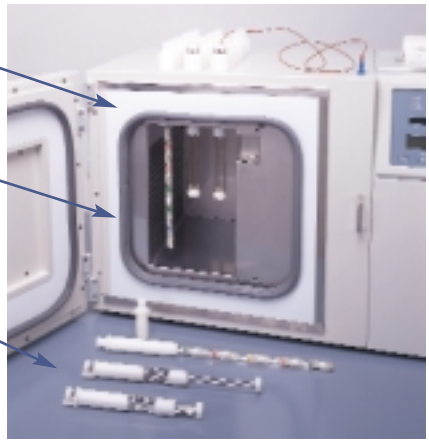
MAKE THE MOST OF YOUR CRYOMED FREEZER!

We offer a broad range of accessories for your controlled rate freezer, including quick-release vial, straw and cane holders; racks; presses; IQ/OQs; and thermocouple sensors.

Reliable Teflon heat breaks prevent the door from freezing closed

High performance bulb-style gaskets ensure a tight door seal

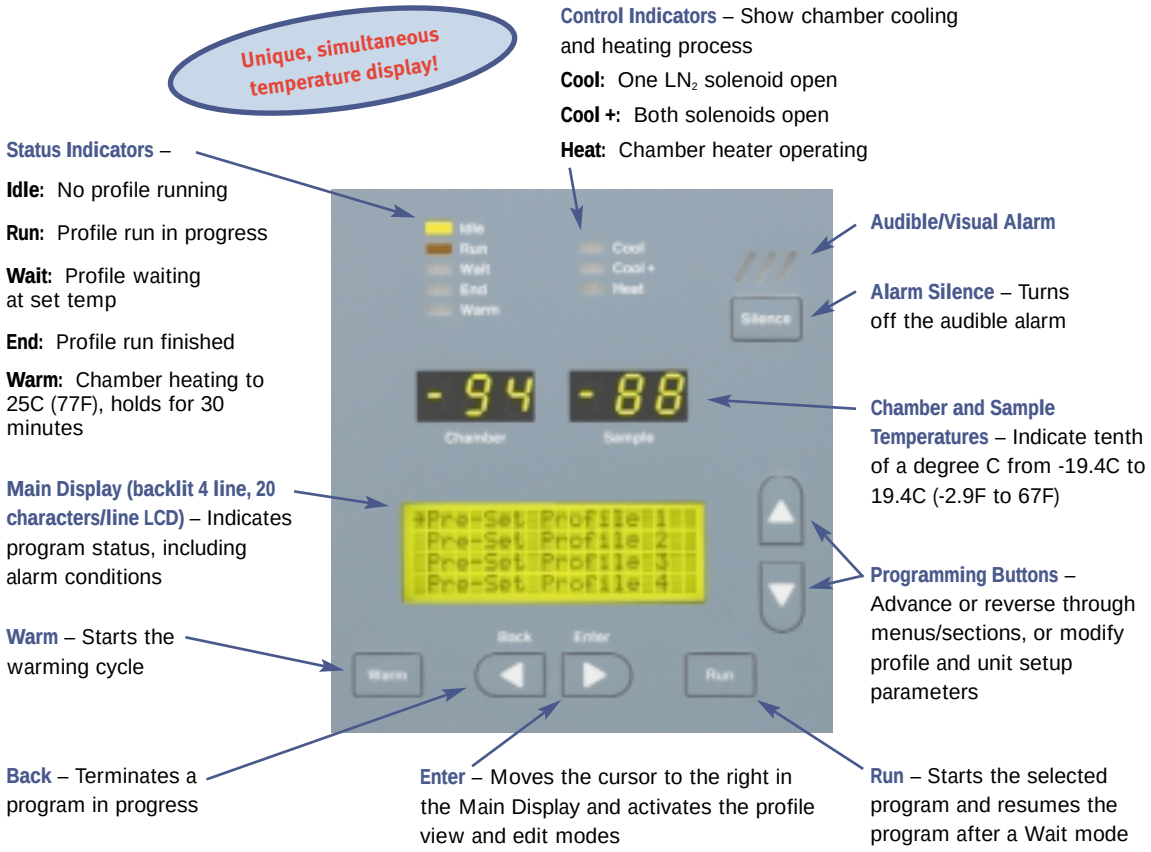
Optional, **easy-to-use, quick-release style holders for vial, straw, and cane freezing** prevent sample warm-up caused by handling. They eliminate the need to touch the sample during removal.



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Easy-to-Program and Monitor

- Intuitive controls interface ensures that you **quickly accomplish new tasks.**
- Six preset and ten user profiles are standard.
  - Preset profiles **reduce startup time** by serving as a starting point when your protocol is unknown.
  - Preset profiles can be copied and pasted to create new profiles. These new profiles **can be edited and named to meet your protocol requirements.**
  - Ten user profiles allow twenty steps each for **individual, user-created profiles.**
- Pre-Cool step automatically starts the temperature ramp when the chamber and sample temperatures are equilibrated within 1C, **eliminating the need for you to wait and initiate the run.**
- Double beep indicates that the Hold time has elapsed, **alerting you to a critical time in the run (i.e., "seeding").**
- Programmable chart resolution allows you to define the temp/time scales, making it possible to **conserve chart paper.**
- At-a-glance chamber and sample temperatures, and operation status **allow continuous monitoring and also eliminate confusion about which temperature is displayed.**



**Computer equipment is available from us, or you can use your own. Visit www.thermo.com and search for the CryoMed Freezers product page for details about hardware and software requirements and available equipment.*

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Easy-to-Create Computer Enhanced System for a Broader Range of Features

Each CryoMed Freezer can be enhanced by adding an IBM-compatible computer, installing our PC Interface software (CD-ROM included with every freezer), and connecting an external printer. Computer equipment is available from us, or you can use your own. Visit www.thermo.com and search for CryoMed Freezers for details about hardware and software requirements and available equipment.

A computer enhanced CryoMed Freezer provides **added features to your freezing system.** You can **capture graphs and freezing profile and sample information.** All controlled rate freezing processes can be completely monitored and controlled. For example, **you can create/edit freezing profiles; download profiles to the freezer; monitor the progress of those downloaded profiles; and analyze, export, print, and save the profile data.**

- Sample and chamber temperature, and operating status are monitored once per second to **ensure real time/real temperature accuracy.** Graphical data analysis and display update once every six seconds. Data is stored to the hard drive once per minute.
- Zoom functions make it **easy to monitor the controlled rate freeze.** The graph can display temperature ranges of 1C to 20C (33.8F to 68F) per division and time ranges from 6 seconds to 20 minutes per division.
- Storing graphs on the computer hard drive or diskettes **eliminates storing chart paper.**
- Twelve **user-defined, programmable information fields are available** and saved with the Run data.
- Stored data can be exported to a comma-separated variable format, **allowing data to be imported into a spreadsheet.**

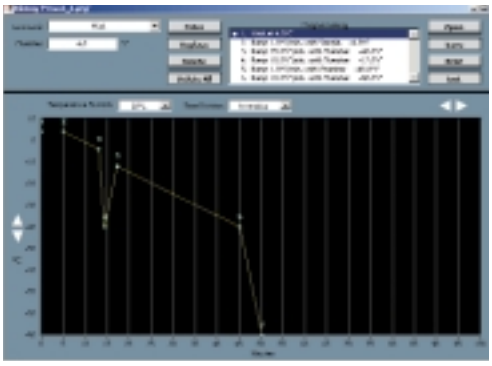
PC Software Overview



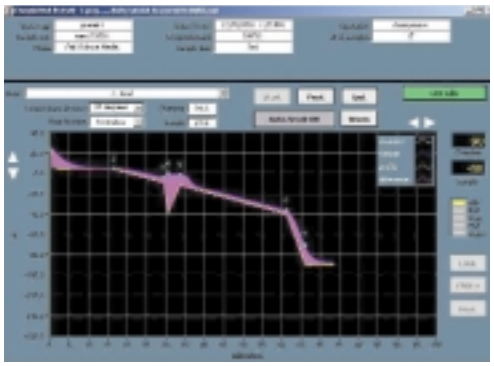
Main Menu – Select a function such as Edit, Run, Review, or Options; context-sensitive Help Screens (F1) are available throughout the software



Options Screen – Select colors for on-screen and color printout data, enter text labels (field names) for printed reports, select default directories for program and run data, and maintain user names and case-sensitive passwords



Edit Screen – Create new temperature profile programs, edit existing programs, select from a list of available program steps (e.g., Wait, Ramp), repeat portions of the program with Loop and Jump steps, print program listings on an external printer, and add comments that are saved with each profile program for specimen preservation history



Run Screen – Select and run a temperature profile program, monitor progress as the freezer operates, use the manual override buttons during a run to add heating or cooling, and print the run temperature profile on an external printer

Review Screen (not shown) – Select a previous program for review or analysis, compare two previous programs, review data at a specific point, export data, and print to a printer connected to the PC

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CryoMed Freezer Specifications

Temperature

Range . . . . . 50C to -180C (122F to -292F)

Capacities & Models*

Front Access Units

0.6 Cu. Ft. (17.0 liters) . . **Small: 7450 (7451, 7472)**
1.2 Cu. Ft. (34.0 liters) . . **Medium: 7452 (7453, 7473)**
1.7 Cu. Ft. (48.1 liters) . . **Large: 7454 (7455, 7474)**

Front & Top Access IVF Units

0.6 Cu. Ft. (17.0 liters) . . **Small: 7456 (7457, 7475)**
1.2 Cu. Ft. (34.0 liters) . . **Medium: 7458 (7459, 7476)**

Exterior Dimensions

Width (0.6)** . . . . . 31.7" (80.5cm)
Width (1.2)** . . . . . 37.7" (95.8cm)
Width (1.7) . . . . . 43.7" (111.0cm)
Height (front access units) . . 21.2" (53.8cm)
Height (front & top access units) . . . . . 22.5" (57.2cm)
F-B** . . . . . 20.4" (78.7cm)

Interior Dimensions

Width (0.6) . . . . . 7.0" (17.8cm)
Width (1.2) . . . . . 13.0" (33.0cm)
Width (1.7) . . . . . 19.0" (48.3cm)
Height . . . . . 12.0" (30.5cm)
F-B . . . . . 13.0" (33.0cm)

Utility Connections

Connections . . . . . 1/2" 45 degree flare, 6.0 ft. (1.8 m) flexible, stainless steel transfer hose (included)

Electrical

7450/7452/7454/7456/7458 . . . . . 120V, 60 Hz, 12.0 FLA (Operating range 108-130V)
7451/7453/7455/7457/7459 . . . . . 230V, 50/60 Hz, 5.5 FLA, (Operating range 207-253V)
7472/7473/7474/7475/7476 . . . . . 100V, 50/60 Hz, 10.5 FLA, (Operating range 90-110V)
Plug . . . . . 120V & 100V: NEMA 5-15P Plug
230V: CEE 7/7 Plug

Weight

Net

0.6 Cu. Ft. . . . . 140 lbs. (63.5 kg)
1.2 Cu. Ft. . . . . 160 lbs. (72.6 kg)
1.7 Cu. Ft. . . . . 180 lbs. (81.6 kg)

Shipping (Motor)

0.6 Cu. Ft. . . . . 200 lbs. (90.7 kg)
1.2 Cu. Ft. . . . . 215 lbs. (97.5 kg)
1.7 Cu. Ft. . . . . 235 lbs. (106.6 kg)

All units are UL Listed to United States and Canadian requirements and bear the CE Mark.
**All units include a 2.0ml sample thermocouple sensor, thermal paper, Controlled Rate Freezing PC software CD-ROM and manual, 25 pin to 9 pin serial interface cable/adapter, and 10 ft. (3.0 m) RS-232 cable.*
***Width includes the vent. Add 2.8" (7.1cm) to the F-B dimension for the door handle and LN_2 injection fittings.*

Accessories for CryoMed Freezers

We offer a full line of accessories to complement your cryopreservation equipment, allowing you to make the most efficient use of each CryoMed Freezer's chamber space.

This section describes the most common accessories used with our controlled rate freezers.

Refer to the *General Accessories* section for items such as a thermal data printer, waterproof gloves, aprons, markers, and vials, etc.

IQ/OQ Protocols

IQ/OQ includes MS-Windows-compatible document disk for process customization and fully detailed checklists to qualify unit setup and operation.

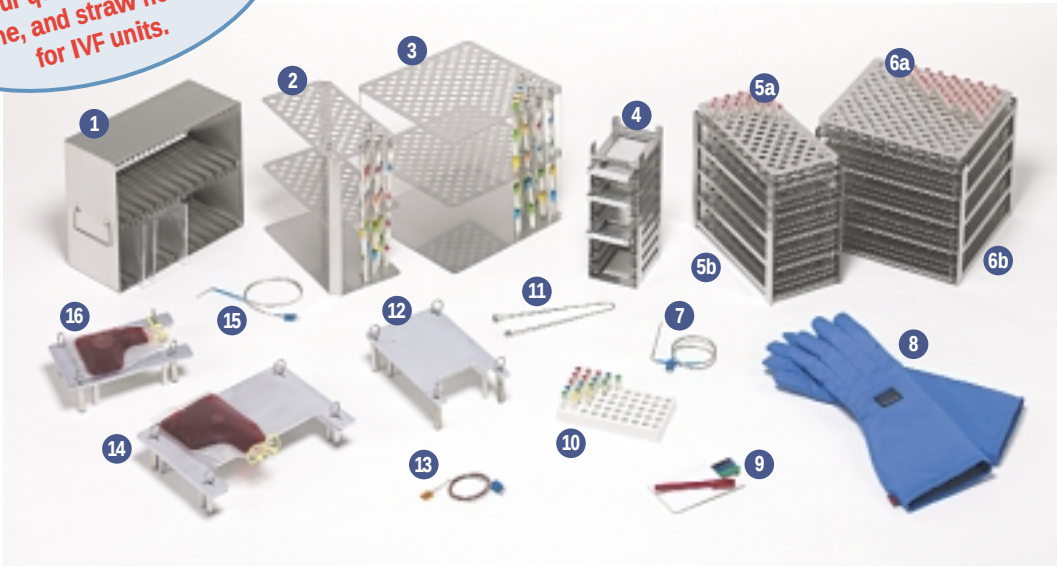
IQ/OQ Kits that include all items needed to perform the uniformity portion of the IQ/OQ are also available. Contact us for details.

Stock No.	Description
6007452	IQ/OQ for **front access units**
6007456	IQ/OQ for **top and front access units**

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Accessories for CryoMed Freezers (continued)

Prevent sample warm up caused by handling! Try our quick-release vial, cane, and straw holders for IVF units.



Racks and Holders

	Stock No.	Description	Rack or Holder Capacity	Max. Quantity Per Chamber 0.6 Cu. Ft.	1.2 Cu. Ft.	1.7 Cu. Ft.
	4000294	0.25/0.5ml Straw Rack	40 straws/rack	4	8	12
3	4000303	Cane Freezing Rack, shown with optional canes (1 cane = No. 4000211)	162 canes, 5-6 ampules/cane	–	1	1
2	4000700	Cane Freezing Rack, shown with optional canes (1 cane = No. 4000211)	77 canes, 5-6 ampules/cane	1	–	1
		Only for IVF models (front and top access)				
	4000710	0.25/0.5ml Straw Holder	4 straws	18	30	–
	4000711	1.2/2.0ml Vial Holder, includes a 1.2ml and a 2.0ml vial for a sample probe	1 vial	18	30	–
	4000714	1.2/2.0ml Cane Holder	Six 1.2ml vials or five 2.0ml vials	18	30	–
	180255	Sleeve Plug	–	18	30	–
5a	4000701	1.2/2.0ml Cryo Rack	76 ampules/rack	5	–	5
5b	4000702	1.2/2.0ml Cryo Rack Holder, shown with 5 optional racks (1 rack = No. 4000701)	5 racks, 76 ampules/rack	1	–	1
6a	4000703	1.2/2.0ml Cryo Rack	161 ampules/rack	–	5	5
6b	4000704	1.2/2.0ml Cryo Rack Holder, shown with 5 optional racks (1 rack = No. 4000703)	5 racks, 161 ampules/rack	–	1	1
	4000705	4.0/5.0ml Cryo Rack	76 ampules/rack	3	6	9
	4000706	4.0/5.0ml Cryo Rack Holder	Three 4.0/5.0ml Cryo Racks, 76 ampules/rack	1	–	1
	4000707	4.0/5.0ml Cryo Rack	161 ampules/rack	–	3	3
	4000708	4.0/5.0ml Cryo Rack Holder	Three 4.0/5.0ml Cryo Racks, 161 ampules/rack	–	1	1
	4000308	HLA Tray Rack	156 trays	–	1	1
1	4000310	2 Level Skin Rack	48 skin packets, 5.0" x 7.0" (12.7cm x 17.8cm) and 4.0" x 6.0" (10.2cm x 15.2cm)	1	2	3
	4000312	1 Level Skin Rack	24 skin packets, 5.0" x 7.0" (12.7cm x 17.8cm)	2	4	6

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Bag Freezing Presses

	Stock No.	Description	Press Capacity	Max. Quantity Per Chamber 0.6 Cu. Ft.	1.2 Cu. Ft.	1.7 Cu. Ft.
16	4000314	Nexell R4R9953 (Fenwal 4R5461)	2 bags/press	4	8	16
	4000316	Gambro DF-200	2 bags/press	–	4	8
	4000317	Delmed 2030-2	4 bags/press	–	4	8
14	4000318	Nexell (Fenwal 4R5461)	Double, 4 bags/press	–	4	4
	4000320	Gambro DF-200	4 bags/press	–	4	8
	4000321	Gambro DF-700	2 bags/press	–	4	8
4	4000340	Cord Blood Freezer Rack, shown with optional swing arm canister No. 4000610	10 place	3	6	9
12	4000555	Fenwal 4R5462	2 bags/press	4	8	12

Sample Thermocouple Sensors

Stock No.	Description*	0.6 Cu. Ft.	1.2 Cu. Ft.	1.7 Cu. Ft.
4000381	Thermocouple Sensor, 1.2/2.0ml Cryo Tube	•		
4000382	Thermocouple Sensor, 4.0/5.0ml Cryo Tube	•		
4000383	Thermocouple Sensor, 0.25/0.5ml Straw	•		
4000384	Thermocouple Sensor, 0.25/0.5ml Straw		•	•
15 4000385	Thermocouple Sensor, 1.2/2.0ml Cryo Tube		•	•
7 4000386	Thermocouple Sensor, 4.0/5.0ml Cryo Tube		•	•
13 4000393	Thermocouple Sensor, Ribbon Type for Bags		•	•
4000402	Thermocouple Sensor, 0.020 Sheath, Straw Sample	•	•	
4000403	Thermocouple Sensor, 0.062 Sheath, Vial Sample	•	•	

**All sensors are provided with a male plug.*

Additional Accessories

	Stock No.	Description
	4000211	One cane
	4000610	Fenwal 4R9951 Swing Arm Canister
9	4000221	Cryo Marker Pens, set of 4 pens (black,blue, green, red)
11	4000388	Cryo Tongs
10	4000226	Cryo Vial Filling Rack (holds 50)
8	189446	Elbow-Length Cryo Gloves (size large)
	820010	2.0" (5.1cm) High Polycarbonate Box with 100-Cell Divider, includes a numerical grid system printed on the cover
	820011	2.0" (5.1cm) High Polycarbonate Box with 81-Cell Divider, includes a numerical grid system printed on the cover
	820013	3.0" (7.6cm) High Polycarbonate Box with 81-Cell Divider, includes a numerical grid system printed on the cover
	820014	3.8" (9.5cm) High Polycarbonate Box with 81-Cell Divider, includes a numerical grid system printed on the cover



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CryoPlus and Cryo Series for Long-Term Storage

CryoPlus and Cryo LN_2 Storage Systems provide the ideal combination of liquid nitrogen storage reliability and microprocessor technology. Both series feature an auto-filling system. The primary difference is in the controls.

Four sizes, including a unique 24.0" (61.0cm) diameter unit, provide the proper size needed while minimizing your LN_2 storage costs.

Reliability for Peace of Mind

- Exterior cabinet is constructed of 18 gauge, cold-rolled steel with powder coated paint for **durability** and a **high quality, uniform finish that resists chipping and rust.**
- Liquid level sensor and fill port are located within the vacuum space, ensuring **maximum storage area** and **protection of the sensor from damage that could be caused during inventory rack movement.**
- Digitally displayed under-the-lid temperature (CryoPlus Series only) notifies you of high temperature conditions by **indicating the highest temperature reading inside the tank.**
- Microprocessor controls on CryoPlus Series allow **precise and accurate control over all 16 parameters without complicated programming.** Cryo Series controls feature audible/visual alarms so you can **easily check performance.**
- Unique 24 tri-color LEDs on CryoPlus Series continuously display the actual liquid nitrogen level and high level/low level setpoints so you **know the system's status and any level alarm conditions at all times.**
- All units include alarm contacts for **remote monitoring** of storage tank conditions.

High Performance for Safe Sample Storage

- LN_2 storage tanks are vacuum insulated with a stainless steel chamber to **minimize the risk of condensation and ensure optimum temperature for safe product storage.**
- Lid incorporates foamed-in-place, high density polyurethane insulation with a dedicated vent (U.S. Patent 5,779,089) to **prevent ice build up and provide added user safety.**



- Two independent, flexible gaskets around the lid opening reduce moisture migration into the chamber, **eliminating ice build up so the lid functions properly.**
- Temperature sleeve included with CryoPlus (optional for Cryo Series) provides colder temperatures and **more efficient vapor phase operation.**

Ease of Use

- Low tank profile and patented counterbalanced lid (U.S. Patent 5,779,089) with 100% clearance allow **easy access and sample retrieval.**
- Heavy-duty casters provide **mobility within the lab.**
- Optional racks, canisters, frames, and risers allow you to create an **organized inventory system that meets your specific needs** and provides **optimum storage in liquid or vapor phase.** Custom inventory systems are available. Contact us for details.

CRYOPLUS & CRYO: FOUR SIZES, RANGE OF CAPACITIES

- **16.0", unique 24.0", 31.0", and 39.5" diameter sizes**
- **6,318, 13,000, 24,000, and 38,500 vial (2.0ml) capacities**



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Easy-to-Program and Monitor – CryoPlus Series

Top-mounted control panel on CryoPlus Series **ensures convenient access to the microprocessor controller for easy programming via the touchpad.** These controls provide 16 audible/visual alarms and include a digital temperature display.

Temperature – Indicates actual temp under the lid and high temp alarm setpoint

Status Indicators & Visual Warnings –

Level Sensor: Level sensor malfunction

Fill Valve: Fill solenoid valve malfunction

LN_2 Source: Insufficient LN_2

By-Pass Sensor: Malfunction or disconnection of by-pass sensor (with gas by-pass option)

By-Pass Valve: Solenoid valve malfunction (with gas by-pass option)

Open Valve: Fill solenoid valve stuck open



Fill Valve Open – Indicates solenoid valve is open

Lock – Two-position switch allows access to all controller functions

Alarm Silence

Programming Touchpad – Incorporates eight functions for selecting/operating all control features

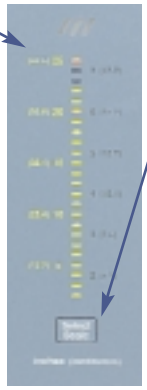
Unique to Thermo!

24 Tri-Color LEDs – Continuously display actual LN_2 level, high level/low level setpoints, and alarm conditions for **at-a-glance monitoring of all parameters**

Yellow: Remaining space above the high level flashing indicator. Flashing yellow upper section indicates the stop fill and high level alarm setpoints. Lower section indicates the start fill and low level alarm setpoint.

Green: Actual LN_2 level

Red: LN_2 high or low level alarm conditions



Select Scale – Indicates which phase scale is in use; low and high factory preset levels are 3.0" (7.6cm) and 5.0" (12.7cm), respectively
Liquid Phase: 2.0" to 25.0" (5.1cm to 63.5cm)
Vapor Phase: 1.5" to 7.25" (3.8cm to 18.4cm)

Easy-to-Monitor – Cryo Series

Front-mounted control panel on Cryo Series provides audible/visual alarms so you can **easily check unit performance.** Access plate at the top of the unit makes it **easy to adjust** the liquid level sensor.

Choice of **manual fill or built-in automatic liquid level control system** to the following factory preset levels:
Low: 3.0" (7.6cm)
High: 5.0" (12.7cm)



Audible/VIsual Alarm

Alarm Silence

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CryoPlus and Cryo Series Specifications

Tank Diameters & Models

16.0" (40.6cm)
- CryoPlus 1 . . . . . **7400 (7401)**
- Cryo 100 . . . . . **740 (741)**

24.0" (61.0cm)
- CryoPlus 2 . . . . . **7402 (7403)**
- Cryo 200 . . . . . **742 (743)**

31.0" (78.7cm)
- CryoPlus 3 . . . . . **7404 (7405)**
- Cryo 300 . . . . . **744 (745)**

39.5" (100.3cm)
- CryoPlus 4 . . . . . **7406 (7407)**
- Cryo 400 . . . . . **746 (747)**

Interior Height (All) . . . . . 27.5" (69.9cm)

LN_2 Capacity

16.0"	90 Liters
24.0"	200 Liters
31.0"	340 Liters
39.5"	552 Liters

Static Evaporation Rate*

16.0"	3 Liters/Day
24.0"	5 Liters/Day
31.0"	8 Liters/Day
39.5"	10 Liters/Day

Static Holding Time

16.0" (40.6cm)	30 Days
24.0" (61.0cm)	40 Days
31.0" (78.7cm)	42.5 Days
39.5" (100.3cm)	55 Days

Exterior Dimensions

Width (16.0")	21.5" (54.6cm)
Width (24.0")	28.5" (72.4cm)
Width (31.0")	34.5" (87.6cm)
Width (39.5")	43.5" (110.5cm)
Height (16.0", 24.0", 31.0")	41.0" (104.1cm)
Height (39.5")**	47.0" (119.4cm)
F-B (16.0")	26.0" (66.0cm)
F-B (24.0")	34.0" (86.4cm)
F-B (31.0")	41.5" (105.4cm)
F-B (39.5")	50.0" (127.0cm)

Clearance Requirements

F-B	Add 5.0" (12.7cm) to F-B for utilities and lid opening

Maximum Capacity (2.0ml Vial Size)

16.0"	6 No. 4000044 arrowhead racks, 6,318 vials; 11 No. 4000012 vertical racks, 5,500 vials
24.0"	10 No. 4000006 square racks, 13,000 vials; 26 No. 4000012 vertical racks, 13,000 vials
31.0"	17 No. 4000006 square racks, 22,100 vials; 48 No. 4000012 vertical racks, 24,000 vials
39.5"	28 No. 4000006 square racks, 36,400 vials; 77 No. 4000012 vertical racks, 38,500 vials

Electrical

7400/7402/7404/7406/ 740/742/744/746	100-120V, 50/60 Hz, 0.8 FLA (Operating range 90-132V)
7401/7403/7405/7407/ 741/743/745/747	200-230V, 50/60 Hz, 0.5 FLA, (Operating range 180-253V)
Plug	100-120V: NEMA 5-15P Plug 200-230V: CEE 7/7 Plug

Utility Connection

All Models	1/2" 45 degree flare, 4.0 ft. (1.2 m) flexible, hose included for Models 7400 (7401) and 740 (741); 6.0 ft. (1.8 m) hose for all other models

Weight

Empty
- 16.0" . . . . . 214 lbs. (97.1 kg)
- 24.0" . . . . . 325 lbs. (147.4 kg)
- 31.0" . . . . . 416 lbs. (188.7 kg)
- 39.5" . . . . . 820 lbs. (371.9 kg)

Full
- 16.0" . . . . . 354 lbs. (160.6 kg)
- 24.0" . . . . . 680 lbs. (308.4 kg)
- 31.0" . . . . . 1,021 lbs. (463.1 kg)
- 39.5" . . . . . 1,620 lbs. (734.8 kg)

Shipping (Motor)
- 16.0" . . . . . 260 lbs. (117.9 kg)
- 24.0" . . . . . 480 lbs. (217.7 kg)
- 31.0" . . . . . 550 lbs. (249.5 kg)
- 39.5" . . . . . 1,070 lbs. (485.3 kg)

All units are UL Listed to United States and Canadian requirements and bear the CE Mark.
**Rate is based on new container performance. Actual performance may vary with individual applications. Excludes supply tank evaporation rate.*
***39.5" tank has a total height of 93.5" (237.5cm) with the lid open.*

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Accessories for CryoPlus and Cryo Series

Accessories designed specifically for the CryoPlus and Cryo Series are listed here. **All accessories are customer installed unless noted otherwise.** Refer to the *General Accessories* section for additional items, such as a thermal data printer, waterproof gloves, vials, and canes.

Recorder Kit

Stock No.	Description
201175	6.0", 7 day temperature recorder, pen, and chart drive (specify top, left side, or right side mount)

Sensaphone® Telephone Dialing Systems

Stock No.	Description
	Sensaphone Telephone Dialing Systems, continuously dial pre-programmed numbers in sequence until one user is reached –
400047	For up to four input channels
400134	For up to eight input channels
400142	RJ-11 Remote Alarm Cable Kit, used to connect remote alarm contacts of equipment, such as a Sensaphone Telephone Dialing System

Gas By-Pass Temperature Controllers

Stock No.	Description
	Gas By-Pass Temperature Controllers, divert warm nitrogen to atmosphere until control probe senses LN_2 in the line –
195021	120V, factory installed
195023	230V, factory installed
195700	120V, must be installed by qualified personnel
195701	230V, must be installed by qualified personnel

IQ/OQ Protocols

Stock No.	Description
6007400	IQ/OQ for the CryoPlus Series
6000740	IQ/OQ for the Cryo Series

Inventory Control Systems

Organize your biological specimens with our line of inventory control systems.

Racks and Risers

Inventory systems are available in **vapor or liquid phase capacities for 2.0ml, 4.0ml, or 5.0ml samples.** Vertical racks, which allow you to work conveniently in the vapor or liquid phase, are available in 4 or 5 box configurations, each with 100-cell dividers. Conventional square and arrowhead racks with 11 to 13 boxes are also available. All racks are **shipped complete with boxes, dividers, and locking rods.** Risers are available for vapor phase storage.

Examples of inventory racks, boxes, and other accessories are shown and identified on page 17.

Canisters, Frames, and Risers

Our **standard size canister/frame systems are ideal when you are storing blood, blood components, or bone marrow.** These inventory systems maximize capacity and protect your samples' integrity. Durable stainless steel frames coupled with lightweight aluminum canisters **protect your samples throughout inventory retrieval processes.**

Riser selection for commonly used racks and frames is described below.

Choosing a Riser for Commonly Used Frames and Racks

For This Tank	and This Frame	or This Rack	Use Riser	Riser Height
16.0" CryoPlus 1/Cryo 100	–	4000106, 4000110	4000060	3.5" (8.9cm)
	4000660	4000011, 4000106, 4000108	4000056	4.0" (10.2cm)
24.0" CryoPlus 2/Cryo 200	4000371, 4000372	4000001	4000060	3.5" (8.9cm)
	4000660	4000005	4000062	4.0" (10.2cm)
	–	4000003, 4000011	4000061	5.0" (12.7cm)
31.0" CryoPlus 3/Cryo 300	4000371, 4000372	4000001	4000063	3.5" (8.9cm)
	4000660	4000005	4000065	4.0" (10.2cm)
	–	4000003, 4000011	4000064	5.0" (12.7cm)
39.5" Cryoplus 4/Cryo 400	–	4000001	4000066	3.5" (8.9cm)
	4000660	4000005	4000068	4.0" (10.2cm)
	–	4000003, 4000011	4000067	5.0" (12.7cm)

Want to know more about our inventory systems and how you can maximize your storage capacity? Visit www.thermo.com and locate the cryopreservation products, or give us a call!

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CMR/CMC Series for Portable Storage

Choose our CMR/CMC Series when you require the utmost portability in the lab. **Maximum storage capacity combined with minimum LN_2 consumption makes these the most cost-effective units available.**

High Capacity for a Wide Range of Applications

Multiple-sized CMR/CMC Series LN_2 Storage Containers are available in a variety of capacities and are ideal for many sample sizes, including 2.0ml, 4.0ml, and 5.0ml vials.

- Container capacities **range from 20.5 to 110.0 liters. Rack or canister storage ranges from 180 to 3,564 vials (2.0ml).**
- CMR containers include racks. CMC containers include canisters.



- Color-coded/numbered inventory racking systems are included to help **reduce the risk of misplacing specimens.** A lockable clasp (lock not included) **provides specimen security.**

Low LN_2 Consumption for Cost Effective Use

The unique container design achieves long-term storage and provides easy sample retrieval. Our CMR/CMC Series storage containers are constructed of durable, lightweight aluminum with vacuum insulation that **minimizes LN_2 consumption while maximizing capacity.**



Accessories for the CMR/CMC Series

Accessories designed specifically for the CMR/CMC Series are listed here. **Accessories are customer installed unless noted otherwise.** Refer to the *General Accessories* section for additional items, such as the universal roller base for easy mobility, waterproof gloves, vials, and canes.

Low Level Alarms (with Sensor)

Stock No.	Description
4000574	For Model 8033, 18.0" (45.7cm) sensor, 115V, factory installed
4000576	Same as No. 4000574 but 230V
4000575	For Models 8030 and 8031, 27.0" (68.6cm) sensor, 115V, factory installed
4000577	Same as No. 4000575 but 230V
8130	For any standard-size LN_2 container, includes dry contacts for connection to a telephone dialing system or remote alarm

Vial Racks and Canister

	Vial Racks for Model 8030
4000556	5.0ml Vial Rack, includes five 3.8" (9.5cm) boxes with 100-cell dividers
4000557	4.0ml Vial Rack, includes six 3.0" (7.6cm) boxes with 100-cell dividers
4000558	2.0ml Vial Rack, includes nine 2.0" (5.1cm) boxes with 100-cell dividers
	Vial Racks for Model 8031
4000559	5.0ml Vial Rack, includes five 3.0" (7.6cm) boxes with 100-cell dividers
4000561	2.0ml Vial Rack, includes nine 2.0" (5.1cm) boxes with 40-cell dividers
4000562	Canister for Model 8033

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CMR/CMC Series Specifications

LN_2 Capacities and Models

CMR Series
- 110.0 Liters **8030/8031**

CMC Series
- 20.5 Liters **8036**
- 33.4 Liters **8037**
- 47.4 Liters **8038**
- 79.0 Liters **8033**

Static Evaporation Rate*

8030	0.7 Liter/Day
8031/8038/8033	0.4 Liter/Day
8036/8037	0.1 Liter/Day

Static Holding Time

8030	169 Days
8031	275 Days
8036	186 Days
8037	303 Days
8038	121 Days
8033	196 Days

Dimensions

Diameter

8030/8031/8033	22.0" (55.9cm)
8036	14.5" (36.8cm)
8037	18.2" (46.2cm)
8038	20.0" (50.8cm)

Height

8030/8031	37.1" (94.2cm)
8036	25.7" (65.3cm)
8037	25.9" (65.8cm)
8038	26,5" (67.3cm)
8033	29.5" (74.9cm)

Neck Diameter

8030	8.5" (21.6cm)
8031/8033	6.0" (15.2cm)
8036/8037	2.0" (5.1cm)
8038	5.0" (12.7cm)

Racks with Boxes – Included with CMR Series

Number of Racks & Rack Size . . . . . 8030: 4 racks, 5.5" x 5.5" (14.0cm x 14.0cm)
8031: 8 racks, 3.3" x 5.0" (8.4cm x 12.7cm)

Canisters – Included with CMC Series

Number of Canisters & Canister Diameter . . . 8036/8037: 6 canisters, 1.5" (3.8cm)
8038: 6 canisters, 4.0" (10.2cm)
8033: 8 canisters, 4.8" (12.2cm)

Vial Capacity – 6 Vials (2.0ml)/Cane

2.0ml	8030: 3,564
	8031: 2,808
	8036/8037: 180
	8038: 1,512**
	8033: 2,880
4.0ml	8030: 2,376
	8031: 1,872
	8036/8037: 90
	8038: 756
	8033: 1,440
5.0ml	8030: 1,980
	8031: 1,560
	8036/8037: 60
	8038: 504
	8033: 960

Straw Capacity – 10/Cane (CMC Series Only)

Straws	8036/8037: 540
	8038: 4,500
	8033: 5,000

Weight

Empty

8030/8031	60 lbs. (27.2 kg)
8036	26 lbs. (11.8 kg)
8037	34 lbs. (15.4 kg)
8038	36 lbs. (16.3 kg)
8033	52 lbs. (23.6 kg)

Full

8030/8031	255 lbs. (115.8 kg)
8036	63 lbs. (28.2 kg)
8037	94 lbs. (42.7 kg)
8038	120 lbs. (54.5 kg)
8033	192 lbs. (87.2 kg)

Shipping (Motor)

8030	130 lbs. (27.2 kg)
8031	114 lbs. (51.7 kg)
8036	28 lbs. (12.7 kg)
8037	38 lbs. (17.2 kg)
8038	46 lbs. (20.9 kg)
8033	95 lbs. (43.1 kg)

**Rate is based on new container performance. Actual performance may vary with individual applications.*

***Optional Square Rack Kit (No. 195749) for Model 8038 holds 750 vials (2.0ml).*

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CMD Series for Safe Sample Transport



Available in three sizes, CMD Series Dry Shippers have **capacities ranging from 9 to 966 vials (2.0ml).**

Temperature Stability for Safe Sample Storage During Shipping

- Interior is lined with an absorbent material that allows the samples to be transported in a dry vapor condition, **eliminating the risk of LN_2 spillage and injury of those handling the shipper.**
- CMD Series containers can **retain temperatures as low as -190C (-310F).** All models provide **long holding times for reliable, worldwide shipping convenience.**

Lightweight Construction for Easy Handling

Our dry shippers have handles, are constructed of lightweight aluminum, and are vacuum insulated to **ensure easy handling and temperature stability for safe sample storage.**

Ease of Use



- Easy-to-grasp handle provides a **comfortable grip.**
- Lockable clasp (lock not included) provides **product security.**
- Models 8039 and 8040 include canisters. These two models provide **easy transfer of small quantities of 2.0ml vials.**
- Model 8032 includes a cardboard shipping container (No. 4000073) and is a **convenient method of transporting bone marrow, heart valves, and oversized samples.**

Accessories for the CMD Series

Stock No.	Description
189705	Hard Shell Shipping Container for Models 8039 and 8040
195460	Hard Shell Shipping Container for Model 8032



CMD Series Specifications

LN_2 Capacities and Models

1.6 Liters **8039**
4.3 Liters **8040**
10.0 Liters **8032**

Static Evaporation Rate*

8039/8040 . . . . . 0.1 Liter/Day
8032 . . . . . 0.7 Liter/Day

Static Holding Time*

8039 . . . . . 8 Days
8040 . . . . . 14 Days
8032 . . . . . 11 Days

Dimensions

Diameter
- 8039 . . . . . 7.3" (18.5cm)
- 8040 . . . . . 8.7" (22.1cm)
- 8032 . . . . . 15.0" (38.1cm)

Height
- 8039 . . . . . 13.5" (34.3cm)
- 8040 . . . . . 19.4" (49.3cm)
- 8032 . . . . . 23.0" (58.4cm)

Neck Diameter
- 8039 . . . . . 1.4" (3.6cm)
- 8040 . . . . . 2.0" (5.1cm)
- 8032 . . . . . 8.5" (21.6cm)

Canisters** – Included for Models 8039 and 8040

Number of Canisters 8039/8040: 1
Canister Diameter . . . . . 8039: 1.2" (3.1cm)
8040: 1.8" (4.6cm)

Vial Capacity

2.0ml 8039: 9
8040: 48
8032: 966
4.0ml 8039: 6
8040: 24
8032: 483
5.0ml 8039: 3
8040: 16
8032: 322

Straw Capacity

Straws 8039: 15 (5/cane)
8040: 120 (10/cane)
8032: 1,610 (10/cane)

Weight

Empty
- 8039 . . . . . 6 lbs. (2.7 kg)
- 8040 . . . . . 13 lbs. (5.9 kg)
- 8032 . . . . . 30 lbs. (13.6 kg)

Full
- 8039 . . . . . 8.8 lbs. (4.0 kg)
- 8040 . . . . . 20.6 lbs. (9.4 kg)
- 8032 . . . . . 47 lbs. (21.3 kg)

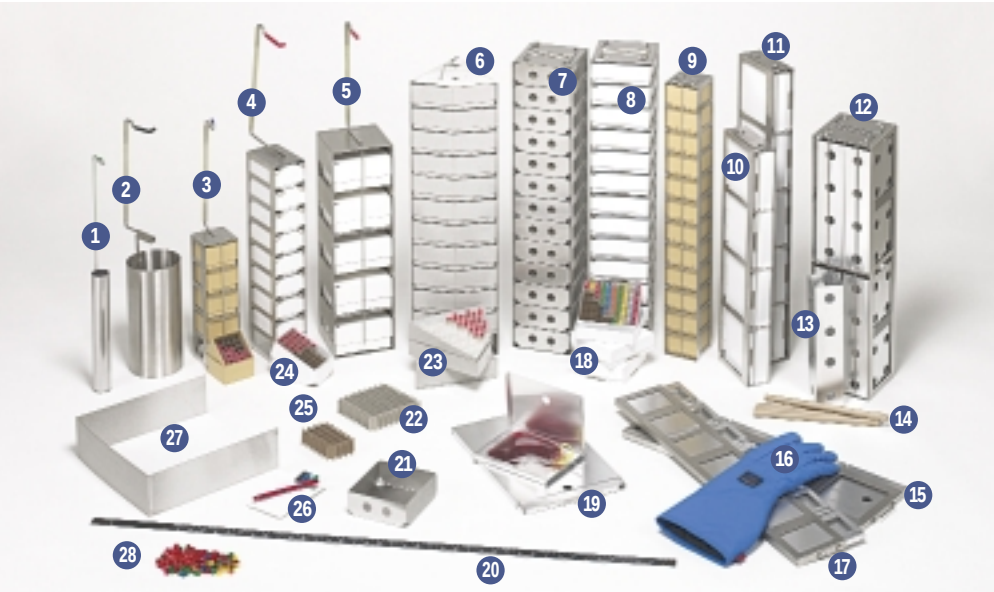
Shipping (Motor)
- 8039 . . . . . 9 lbs. (4.1 kg)
- 8040 . . . . . 16 lbs. (7.3 kg)
- 8032 . . . . . 41 lbs. (18.6 kg)

**Static evaporation rates and holding times are based on new container performance. Actual performance may vary with individual applications.*
***Interior measures 8.5" diameter x 11.0" height (21.6cm x 27.9cm) storage capacity. Shipments of bone marrow, heart valves, or other large samples require specific package size to determine the Model 8032 capacity.*

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General Accessories

This section describes many general accessories designed for your cryopreservation equipment. In addition, this quick reference ID chart allows you to identify the most common accessories. **Accessories are customer installed unless noted otherwise.**



Item	Stock No.	Description
1	189746	Canister included with Models 8036 and 8037, 1.5" (3.8cm) diameter
2	4000562	Canister included with Model 8033, 5.0" (12.7cm) diameter
3	195555	Square Inventory Rack for Model 8038 (optional), includes 2.75" (7.0cm) square boxes (No. 189470)
4	4000561	2.0ml Vial Rack for Model 8031, includes 2.0" (5.1cm) boxes (No. 4000189)
5	4000556	5.0ml Vial Rack for Model 8030, includes 3.0" (7.6cm) boxes (No. 4000015)
6	4000112	Jumbo Arrowhead Rack for CryoPlus 1 and Cryo 100, includes arrowhead boxes (No. 4000193)
7	4000007	Square Rack with Stainless Steel Boxes (13 boxes, each box (No. 4000238) is 2.0" (5.1cm) high)
8	4000006	Square Rack with Cardboard Boxes (13 boxes, each box is 2.0" (5.1cm) high)
9	4000260	Square Mini Vertical Rack, includes 2.75" (7.0cm) square boxes (No. 189470)
10	4000011	Vertical Rack (four box vapor phase rack), includes 2.0" (5.1cm) boxes (No. 4000014)
11	4000012	Vertical Rack (five box liquid phase rack), includes 2.0" (5.1cm) boxes (No. 4000014)
12	4000379	SUC-1 Square Rack, includes eight SUC-1 canisters
13	4000176	SUC-1 Canister (holds 16 canes with sleeves or 25 canes without sleeves, 10 straws/cane)
14	4000218	Cryo Sleeve (case of 100) with optional cane (No. 4000217)
15	4000371	Nexell R4R9953 (Fenwal 4R5461) 4 Place Frames with 4 optional Nexell sliding canisters (No. 4000335)
16	189446	Elbow-Length Cryo Gloves (size large)
17	4000670	Nexell R4R9951 (Fenwal 4R9951) 7 place frame with 7 optional Nexell swing arm canisters
18	4000014	2.0" (5.1cm) Square White Box with Hole and 100-Cell Divider (included)
19	4000335	Nexell R4R9953 (Fenwal 4R5461) Sliding Canister and Delmed 8000/9000 Swing Arm Canister (No. 4000354)
20	180143	LN_2 Measuring Stick
21	4000238	2.0" (5.1cm) Square Stainless Steel Box with optional 100-cell divider (No. 4000013)
22	4000013	100-Cell Divider
23	4000193	2.0" (5.1cm) Jumbo Arrowhead Cardboard Box with optional 81-cell divider (No. 4000181)
24	4000189	2.0" (5.1cm) Rectangular Cardboard Box with optional 40-cell divider (No. 4000174)
25	4000174	40-Cell Divider
26	4000221	Cryo Marker Pens, set of 4 pens (black, blue, green, red)
27	4000060	3.5" (8.9cm) Riser
28	4000389	Cryo Tube Color Coding Caps (rainbow)

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Waterproof Cryo Gloves

Mid-Arm, 14.0" to 15.0" (35.6cm to 38.1cm)



Stock No.	Description
189441	Small
189442	Medium
189443	Large
189444	Extra-Large

Elbow-Length, 18.0" to 20.0" (45.7cm to 50.8cm)

Stock No.	Description
189445	Medium
189446	Large
189447	Extra-Large

Shoulder-Length, 28.0" (71.1cm)

Stock No.	Description
189448	Medium
189449	Large
189450	Extra-Large

Aprons

Stock No.	Description
189451	Small, 36.0"W (91.4cm)
189452	Medium, 42.0"W (106.7cm)
189453	Large, 48.0"W (121.9cm)

Recorder Accessories



Stock No.	Description
4000394	Chart Paper for Model 8028 (8029) and 8034 (8035) Recorder (4 rolls/package)
4000395	Pen Kit for Model 8028 (8029) and 8034 (8035) Recorder (5 pens/kit)
4000396	Chart Paper for Model 500 Bausch & Lomb Recorder (4 rolls/package)
4000397	Pen Kit for Model 500 Bausch & Lomb Recorder (4 pens/kit)

Cryo Marker Pens

Stock No.	Description
4000221	Set of four fine tip pens—black, blue, green, and red—with fast drying, non-smearing, permanent ink; recommended for all Cryogenic vials at -200C (-328F)
4000222	Black, set of 12
4000223	Blue, set of 12
4000224	Green, set of 12
4000225	Red, set of 12

Thermal Data Printer and Paper



This printer **for CryoMed Freezers and the CryoPlus Series** produces a hard copy of operational functions and alarm sequences logged to document system performance (i.e., temperature, time, date, liquid level, number of lid openings/lid closings). A total of 16 alarms can be tracked and documented.

Stock No.	Description
4000565	Printer, with cable assembly and RS-232 connector kit, 120V, 60 Hz
4000665	Same as No. 4000565 but with a 220V, 50 Hz AC adapter
4000566	Thermal Printer Paper (5 rolls/package)

Cryo Tube Color Coding Caps

Stock No.	Description
4000230	White, one case of 500
4000231	Red, one case of 500
4000232	Yellow, one case of 500
4000233	Green, one case of 500
4000234	Blue, one case of 500
4000235	Orange, one case of 500
4000236	Tan, one case of 500
4000237	Violet, one case of 500
4000389	Rainbow (assortment of all colors above), one case of 400

Canes

Stock No.	Description
4000211	1.2ml – 6 Ampule
4000214	5.0ml – 2 Ampule
4000216	Aluminum Cane for 9.2ml and 10.0ml Goblets
4000217	Aluminum Cane for storage of all 12.5mm diameter Cryo tubes

Cryo Sleeve

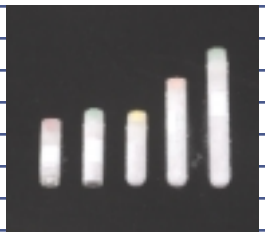
Stock No.	Description
4000218	Cryo Sleeve, 0.6" (1.5cm) interior diameter, 10.8" (27.4cm) long, case of 100 each

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Cryogenic Vials

Each vial is constructed of sterile polypropylene with a white marking area and includes a screw cap.

Stock No.	Size	Description	Case Quantity
4000197	1.2ml	Self-standing, conical interior bottom, silicone washer	2,000
4000198	1.2ml	Self-standing, conical interior bottom, silicone washer	500
4000199	2.0ml	Self-standing, round interior bottom, silicone washer	1,800
4000200	2.0ml	Self-standing, round interior bottom, silicone washer	450
4000201	2.0ml	Round bottom, silicone washer	2,000
4000202	2.0ml	Round bottom, silicone washer	500
4000203	2.0ml	Self-standing, external threads	1,800
4000204	2.0ml	Self-standing, external threads	450
4000205	4.0ml	Round bottom, silicone washer	1,600
4000206	4.0ml	Round bottom, silicone washer	400
4000207	5.0ml	Round bottom, silicone washer	1,200
4000208	5.0ml	Round bottom, silicone washer	300



Vial Filling Rack

Stock No.	Description
4000226	Cryo Vial Filling Rack, holds 50 Cryogenic vials

LN_2 Transfer Hoses and Phase Separator

Stock No.	Description
4000400	4.0 ft. (1.2m) Flexible Metal Hose, 1/2", 45 degree flare, swivel ends
4000401	6.0 ft. (1.8m) Flexible Metal Hose, 1/2", 45 degree flare, swivel ends
4000571	Phase Separator, 1.3" (3.3cm) diameter x 3.0" (7.6cm) long x 1/4" FPT

Cane Canister, Tongs, and Low Level Alarm*

Stock No.	Description
4000176	SUC-1 Aluminum Cane Canister, 2.5" x 2.5" x 11.1" (6.4cm x 6.4cm x 28.2cm),16 holes/canister
4000388	Cryo Tongs
8130	Low Level Alarm with Sensor for any standard-sized LN_2 container, includes dry contacts for remote alarm

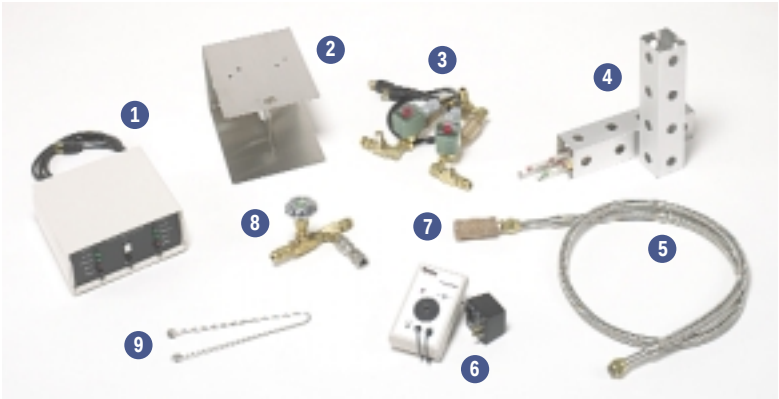
Tank Switchers*

Stock No.	Description
8182	Tank Switcher Control and Sensor, No. 4000272 and No. 4000273 are recommended when ordering Model 8182
4000272	Solenoid Valve Assembly for Model 8182, includes 100 psi valves, relief valves, one-way check valve, and TC fitting
4000273	Wall Mount Bracket for Model 8182 and No. 4000272
4000274	Floor Stand for Model 8182 and No. 4000272, 5.0 ft. (1.5m) high, includes No. 4000273 wall mount bracket
8185	Interface Box for Model 8182 when monitoring two or three level controls

Solenoid Valve and Valve Assembly

Stock No.	Description
4000285	Solenoid Valve, 1/4" NPT, 7/32" orifice, 100 psi
4000290	T-Valve Assembly with manual valve and T fitting, used to connect two transfer hoses to a supply tank

(continued)



**115V, where applicable. Contact us for 230V options.*

ACCESSORIES

1. **Model 8182 Tank Switcher**
2. **No. 4000273 Wall Mount Bracket for Model 8182 and Solenoid Valve Assembly (No. 4000272)**
3. **No. 4000272 Solenoid Valve Assembly for Model 8182**
4. **No. 4000176 SUC-1 Cane Canister**
5. **No. 4000401 6.0 ft. Flexible Metal Hose**
6. **Model 8130 Low Level Alarm with Sensor**
7. **No. 4000571 Phase Separator**
8. **No. 4000290 T-Valve Assembly**
9. **No. 4000388 Cryo Tongs**

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Lab Dewars

Lab dewars are handy containers that provide **convenient LN_2 storage in the lab.**



Model	8122	8123	8124	8125
LN_2 Capacity (liters)	5.0	10.0	21.0	32.0
Static Evap. Rate (liters/day)	0.15	0.18	0.18	0.25
Neck Opening*	2.2/56	2.2/56	2.0/5.01	2.5/64.0
Overall Height*	18.2/462	21.5/546	24.7/627	24.1/11
Outside Diameter*	8.8/222	10.3/260	14.5/368	17/432

**Measurements are inches and millimeters (in/mm).*

LN_2 Withdrawal Devices

Stock No.	Description
4000071	LN_2 Transfer Unit for Model 8124 only, supplied with 2" (5.1cm) stopper and 19" (48.3cm) stainless steel draw tube
4000072	LN_2 Transfer Unit for Model 8125 only, supplied with 2.5" (6.4cm) stopper and 20.5" (52.1cm) stainless steel draw tube

Universal Roller Base

Stock No.	Description
195230	Fits 14.5" to 22.0" (36.8cm to 55.9cm) diameter tanks, 325 lbs. (147.4 kg) capacity, adds 3.6" (9.1cm) to the height

Stainless Steel LN_2 Supply Tanks

All LN_2 supply tanks are rated at 22 psi. Supply tank evaporates 2% of its volume/day.

Stock No.	Description
8126	35 Liter Pressurized LN_2 Supply Tank
8127	50 Liter Pressurized LN_2 Supply Tank
8120	180 Liter Low Pressure LN_2 Supply Tank, 210 lbs. (95.3 kg) empty
8121	230 Liter Low Pressure LN_2 Supply Tank with caster base and fold-down handle, 54.8" x 26.0" (139.2cm x 66.0cm), 290 lbs. (131.5 kg), dimensions are 27.0"W x 28.0"F-B (68.6cm x 71.1cm) at the caster base
4000173	LN_2 Cylinder Hand Truck with pneumatic wheels for use with Model 8120
4000175	LN_2 Cylinder Roller Base for use with Model 8120, base dimensions are 22.0"W x 3.5"H x 30.0"F-B (55.9cm x 8.9cm x 76.2cm)



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