

CRYO-PRESERVATION EQUIPMENT



CHART

LEADERS IN TECHNOLOGY, SOLUTIONS AND SUPPORT..

Chart-MVE is the world's leading manufacturer of vacuum insulated products and systems. More than thirty years ago, we first set the standard for storage of biological materials at low temperatures. Today, we continue to exceed these standards as industries from around the world look to Chart-MVE for excellence and innovation. Our solutions empower more industries to better utilize cryogenic technology than any other company. In this manner, Chart-MVE continues to make a vital contribution to the successes of today's biomedical breakthroughs.

Whatever you need to store, at whatever temperature, Chart-MVE has the solution. We offer the broadest range of storage capacities for your biological products with the most advanced vacuum technology.

Chart-MVE is the market leader in the manufacturing of Bulk Storage, Liquid Cylinder and Vacuum Insulated Pipe products. Chart-MVE applied this knowledge to the development and creation of "Turn Key" liquid nitrogen supply systems that can

provide your freezer with the most economical use of liquid nitrogen and the best return on your storage investment.

Every Chart-MVE freezer is designed for optimum vacuum performance for the duration of its use. Chart-MVE freezers are engineered to hold and maintain specific temperatures whether samples are in liquid or vapor. Chart-MVE has the widest range of storage capacities and storage options (from -125° to -196° C) for your biological product needs.

By choosing Chart-MVE, you are installing a secure, and viable environment free of the noise and heat created by mechanical refrigeration systems. Chart-MVE products meet worldwide standards of excellence such as CE, UL, IATA and ISO 9001. Chart-MVE vessels are factory tested to ensure reliability in the field and are backed by the strongest and longest warranty in the industry.

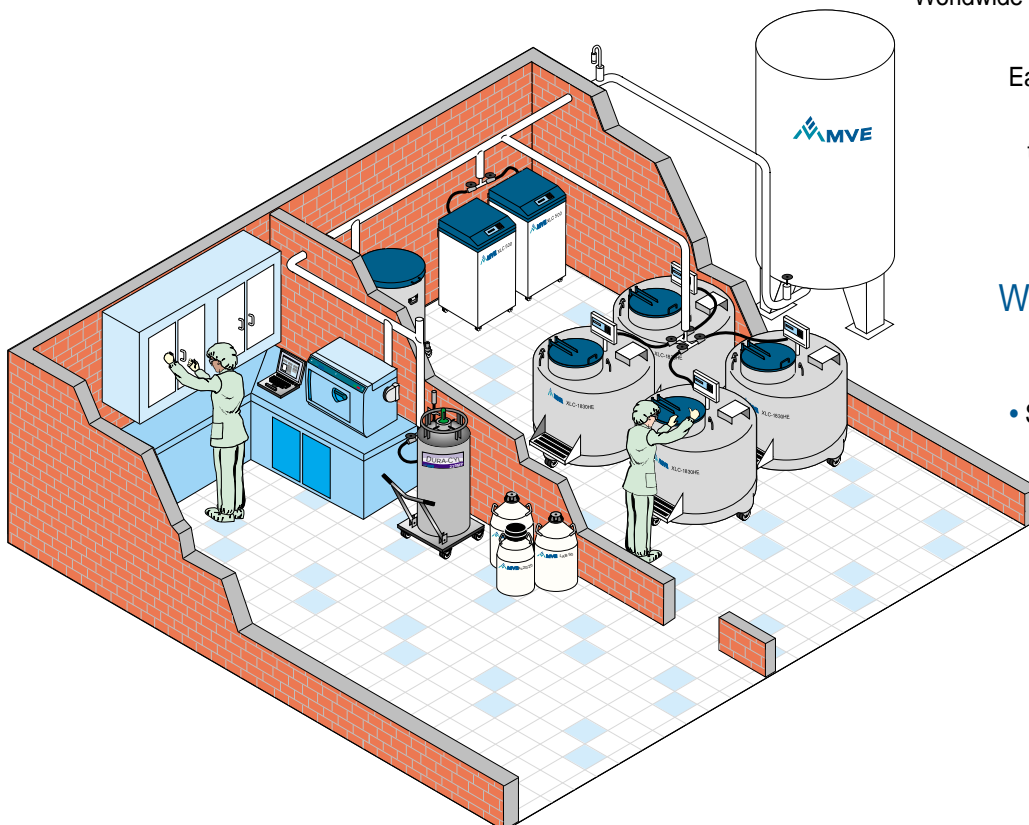
Service to Match Your Expectations.

- Worldwide network of distributors who are second to none.

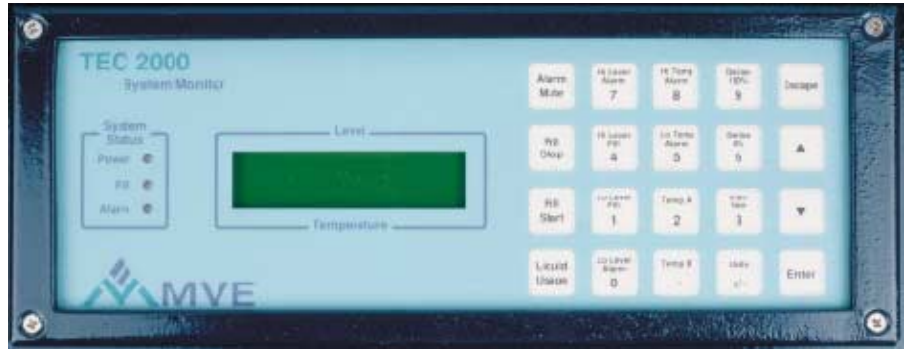
Each distributor is factory trained in sales and service designed to provide to you the expertise and assistance you need and deserve.

Warranties that Surpass Industry Standards.

- Standard one (1) year warranty on all equipment (parts and labor).
- Three (3) year warranty on CryoSystem Series and Vapor Shippers.
- Five (5) year warranty on Stainless Steel Freezers and Aluminum Units.



TEC 2000



All MVE's XLC's can be equipped with the most advanced electronic controller available today — the TEC 2000. The TEC 2000 provides:

- Two platinum RTD temperature probes to monitor both freezer and sample temperature.
- Keyless security system
- Liquid Nitrogen Usage Display
- Self Diagnostic Start Up
- RS-485 Communications Port
- Operates in either 120 VAC 60HZ or 230 VAC 50HZ environments
- One Year Warranty on parts and labor

Advanced Features/Options

- Battery Back-Up – All models equipped with the TEC 2000 Electronics can be supplied with a 72 hour “full-function” battery back-up option. Keeps your MVE freezer operating in both “Brown” and “Black” out conditions.
- Warm Gas Bypass
Prevents unwanted warm gas from entering your storage area.

Technical Specifications

- **Level Measurement**
 - Sensor Type– Dual Port Pressure Transducer Measurement Accuracy +/- .5 in; +/- 13mm (typical)
 - Liquid Usage Feature
 - Full Range Calibration Feature
- **Level Control**
 - Control Type – On/Off
 - Control Output – (Fill Solenoid Valve) 24VDC, 1.0 amp (max)

- **Temperature Measurement**
 - Two Sensors, Platinum RTD- Two Wire Element
 - Accuracy +/- 2.0 °C Full Scale
 - Altitude Compensation For Accuracy
 - Full Range Calibration Feature
 - Probe Heater for High Temp Alarm Testing
- **Front Panel Display**
 - LCD Readout
 - Level Display – Inches, mm
 - Temperature Display – Degrees Centigrade, Fahrenheit or Kelvin
- **Alarms**
 - One Alarm Relay
 - Both visual and audible alarms
 - Alarm Conditions
 - Low Liquid Level
 - High Liquid Level
 - Low Temperature (Probe A & B)
 - High Temperature (Probe A & B)
 - LN2 Supply Alarm,
 - Fill Valve Failure
 - Power Failure (remote only)
- **Optional Alarms**
 - Low Battery Voltage
 - Bypass sensor failure
 - Bypass Valve Failure
 - Power failure (audible and visual in addition to remote)
 - Low Battery Voltage
- **Controller Features**
 - Communication Interface – Serial Communication with RS-485
 - Memory – Stores time and date stamped information on the controllers 7,000 most recent events

XLC-HE SERIES

LIQUID NITROGEN “VAPOR PHASE” FREEZERS



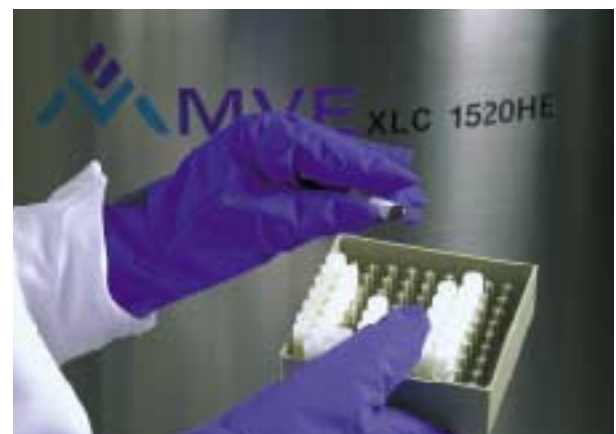
The XLC-HE (High Efficiency) series is designed for the user who needs everything, low temperature vapor storage, easy maintenance and low liquid nitrogen consumption. The offset neck and rotating tray design provides easy access to all stored product. The TEC 2000 control system combined with capacities from 16,000 to 70,000 vials makes the XLC HE series the most reliable, cost efficient product to purchase and operate.

Options:

- Battery Back-Up
- Gas Bypass

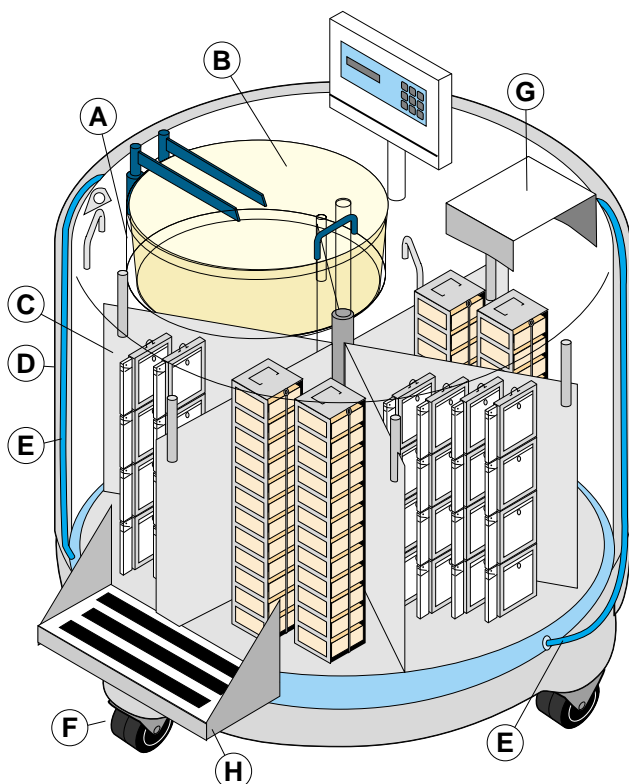
Accessories:

- Inventory Frames and Cassettes
- Square Racks– stainless or aluminum
- Cardboard Boxes (81 cell)
- Plastic Boxes (25 cell and 100 cell)
- Cryogenic Gloves



SPECIFICATIONS

MODEL	XLC 810 HE		XLC 1520 HE		XLC 1830 HE	
MAXIMUM STORAGE CAPACITY						
Number of 1.2 & 2.0 ml vials in racks	15,600		36,400		70,200	
Number of racks (100 vials)	12 (12/2 rack)		24 (13/2 rack)		54 (13/2 rack)	
Number of racks (25 vials)	4 (12/2 rack)		16 (13/2 rack)		-	
Total number of racks	16		40		54	
Number of blood bag stored Fenwal 4R9953	384		764		1656	
Number of SUC-1 canisters (2.5" x 2.5" x 11")	-		-		-	
Number of 1.2 & 2.0 ml vials on canes	-		-		-	
Number of 1/2 cc straws (10/cane)	-		-		-	
PERFORMANCE						
Liquid nitrogen capacity (liters)	290		620		1612	
Power supply	24 VDC		24 VDC		24 VDC	
UNIT DIMENSIONS						
Neck opening (in/mm)	12.13	308	17.5	444	25	635
Usable height (in/mm)	26.75	603	28.6	726	28.6	726
Overall height (in/mm)	53.9	1369	53.9	1369	58.4	1483
Outside diameter (in/mm)	31	787	42	1066	60	1528
Internal diameter (in/mm)	28.5	696	38.5	978	56.3	1430
Weight empty (lbs/kg)	425	193	620	281	1220	554
Weight full (lbs/kg) w/LN2	940	426	1720	780	4094	1859



- A Offset neck design to maintain -150°C in vapor storage and provide low liquid nitrogen consumption with standard racks
- B Durable metal lid— designed for longer life
- C Rotating interior tray provides easy access to cryo-biological samples
- D Low Maintenance, all-stainless steel construction
- E Annular filling lines reduces frost and ice formation near lid
- F Super-tough, durable casters
- G Rack Stand
- H Step-up platform (XLC 1520HE, 1830HE and 1830 2T)

Five year vacuum warranty

XLC 500 AND XLC 1200 SERIES

LIQUID NITROGEN FREEZERS



The XLC 500 and the XLC 1200 Cryo-Preservation Systems are designed to provide vapor storage of biological products at or below -125°C . The large neck opening provides easy access to all samples. While the tanks' large storage capacity holds 10,000 to 23,400 vials. Combined with a low maintenance design and the TEC 2000 electronics, the XLC 500 and XLC 1200 series are the perfect choice for low temperature vapor storage.

Accessories:

- Inventory Frames and Cassettes
- Square Racks– stainless or aluminum
- Cardboard Boxes (81 cell)
- Plastic Boxes (25 cell and 100 cell)
- Cryogenic Gloves

Accessories (continued):

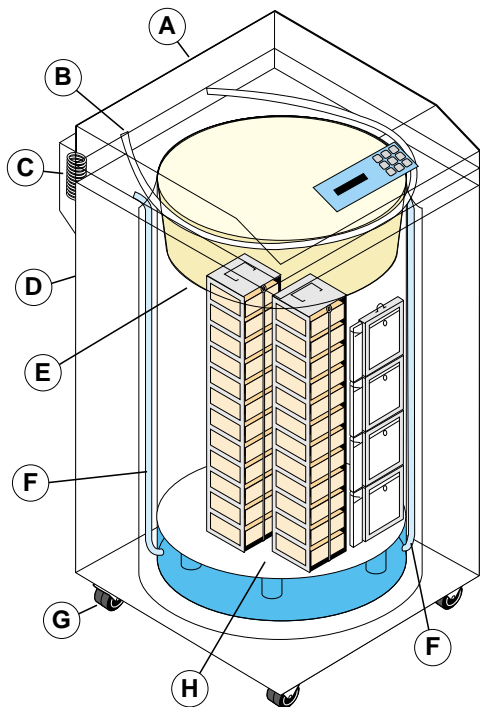
- Transfer Hose (Standard)
- Magnetic Reference Guide
(Standard on XLC 500 and XLC1200 only)

Options:

- Battery Back-Up
- Gas Bypass

SPECIFICATIONS

MODEL	XLC 500	XLC 1200		
MAXIMUM STORAGE CAPACITY				
Number of 1.2 & 2.0 ml vials in racks	10,400	23,400		
Number of racks (100 vials)	7 (13/2 rack)	17 (13/2 rack)		
Number of racks (25 vials)	4 (13/2 rack)	4 (13/2 rack)		
Total number of racks	11	21		
Number of blood bag stored (Fenwal 4R-9953)	224	480		
Number of 1.2 & 2.0 ml vials on canes	-	-		
Number of 1/2 cc straws (10/cane)	-	-		
PERFORMANCE				
Liquid nitrogen capacity (liters)	158	354		
Power supply	24 VDC	24 VDC		
UNIT DIMENSIONS				
Neck opening (in/mm)	20.8	528	31	788
Usable height (in/mm)	28.6	726	28.6	726
Overall height (in/mm)	44.5	1130	44.8	1138
Outside dimensions (in/mm)	24.7 x 33.9	627 x 861	34.7 x 42.6	881 x 1082
Internal diameter (in/mm)	20.8	528	31	788
Weight empty (lbs/kg)	310	141	530	240
Weight full (lbs/kg) w/LN2	592	269	1167	529



- A Durable, metal lid— designed for longer life
- B Advanced gasket design restricts ambient air flow into freezer
- C Industrial-strength hinges
- D Low Maintenance cabinet
- E Maintains -125°C under the lid temp in Vapor Phase Storage
- F Annular filling lines to reduce frost and ice formation
- G Tough, durable casters
- H Optional vapor platform

Five year vacuum warranty

XLC SERIES

LIQUID NITROGEN FREEZERS



The XLC 230, 511, 1211, and 1841 Cryo-Preservation Systems are designed for the user who needs either vapor storage or liquid storage. A large neck opening and stainless steel construction provides the most durable environment for your biological samples. With advanced features and storage from 5,000 vials to 30,000 vials, the XLC series is the cryological choice.

Options:

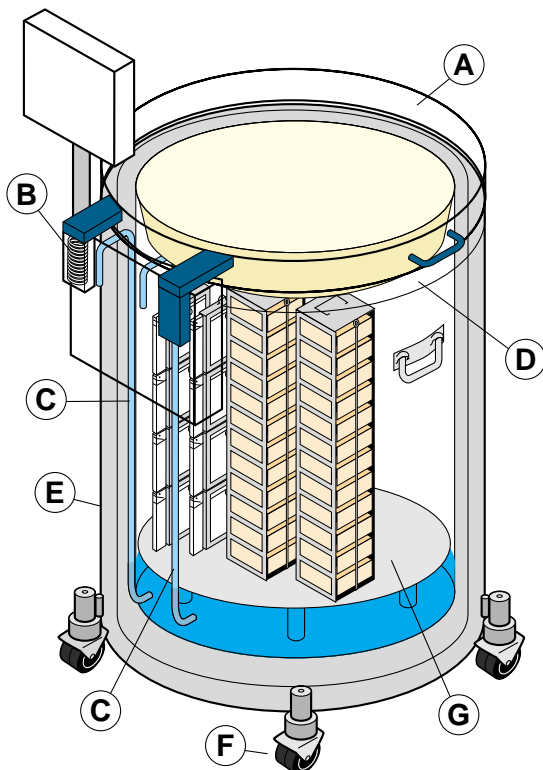
- Battery Back-Up
- Gas Bypass

Accessories:

- Inventory Frames and Cassettes
- Square Racks– stainless or aluminum
- Cardboard Boxes (81 cell)
- Plastic Boxes (25 cell and 100 cell)
- Cryogenic Gloves
- SUC Boxes
- Canes and Protectors

SPECIFICATIONS

MODEL	XLC 230		XLC 511		XLC 1211		XLC 1841	
MAXIMUM STORAGE CAPACITY								
Number of 1.2 & 2.0 ml vials in racks	5200		10,400		23,400		39,000	
Number of racks (100 vials)	4 (13/2 rack)		7 (13/2 rack)		17 (13/2 rack)		28 (13/2 rack)	
Number of racks (25 vials)	-		4 (13/2 rack)		4 (13/2 rack)		8 (13/2 rack)	
Total number of racks	4		11		21		36	
Number of blood bag stored (Fenwal 4R-9953)	132		224		480		856	
Number of SUC-1 canisters (2.5" x 2.5" x 11")	22		-		-		-	
Number of 1.2 & 2.0 ml vials on canes	3696		-		-		-	
Number of 1/2 cc straws (10/cane)	6820		-		-		-	
PERFORMANCE								
Liquid nitrogen capacity (liters)	89		158		354		669	
Power supply	24 VDC		24 VDC		24 VDC		24 VDC	
DIMENSIONS								
Neck opening (in/mm)	16	408	20.8	528	31	788	39.5	1003
Usable height (in/mm)	26.9	683	28.6	726	28.6	726	33.3	846
Overall height (in/mm)	45.25	1150	44.2	1123	48	1219	48	1219
Outside dimensions (in/mm)	18	457	22.75	579	33	838	42	1067
Internal diameter (in/mm)	16	408	20.8	528	31	788	39.5	1003
Weight empty (lbs/kg)	125	57	242	110	460	209	675	306
Weight full (lbs/kg) w/LN2	283	129	524	238	1091	495	1867	847



- A Metal lid construction—designed for longer life
- B Tough, durable hinges
- C Annular filling lines to reduce frost and ice formation
- D Maintains -125°C under the lid temp in Vapor Phase Storage, -196°C Liquid Phase Storage
- E Low maintenance, all-stainless steel construction
- F Tough, durable casters
- G Optional vapor platform

Five year vacuum warranty

XLC SERIES

LIQUID NITROGEN “LIQUID OR VAPOR PHASE” FREEZERS



The XLC Cryo-Preservation Systems are designed for the user who needs either vapor storage or liquid storage. A large neck opening and stainless steel construction provides the most durable environment for your biological samples. With advanced features and storage from 4,000 vials to 56,000 vials, the XLC series is the cryological choice.

Accessories:

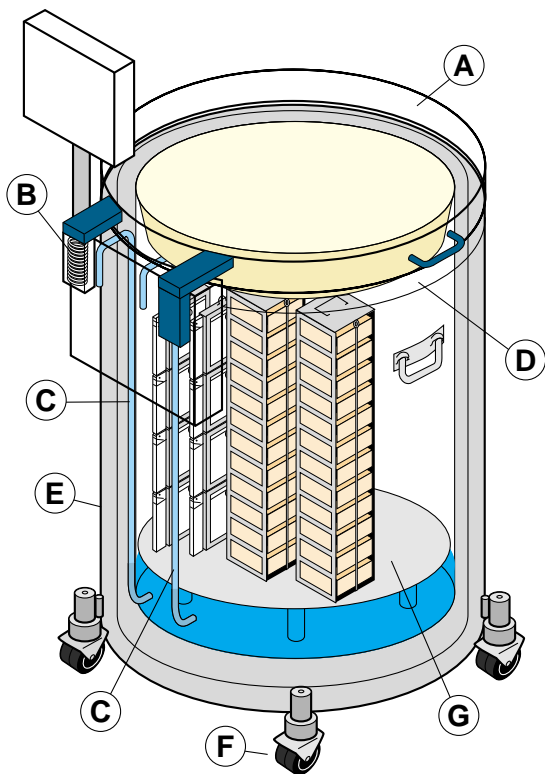
- Square Racks—stainless or aluminum
- Cardboard Boxes (81 cell)
- Plastic Boxes (25 cell and 100 cell)
- SUC Boxes
- Canes and Protectors
- Cryogenic Gloves

Options:

- Battery Back-Up
- Gas Bypass

SPECIFICATIONS

MODEL	XLC 140		XLC 810		XLC 1370		XLC 1830		XLC 1830 2T	
MAXIMUM STORAGE CAPACITY										
Number of 1.2 & 2.0 ml vials in racks	-	-	11,700		24,000		-	-	-	-
Number of racks (100 vials)	-	-	12 (9/2 rack)		28 (8/2 rack)		-	-	-	-
Number of racks (25 vials)	-	-	4 (9/2 rack)		8 (8/2 rack)		-	-	-	-
Total number of racks	-	-	16		36		-	-	-	-
Number of blood bag stored (Fenwal 4R-5461)	-	-	N/A		N/A		-	-	-	-
Number of SUC-1 canisters (2.5" x 2.5" x 11")	22	22	76		152		306	306	561	561
Number of 1.2 & 2.0 ml vials on canes	3696	3696	14,136		28,272		56,916	56,916	104,346	104,346
Number of 1/2 cc straws (10/cane)	6820	6820	23,560		47,120		94,680	94,680	187,550	187,550
PERFORMANCE										
Liquid nitrogen capacity (liters)	39	39	230		482		860	860	1400	1400
Power supply	-	-	24 VDC		24 VDC		24 VDC	24 VDC	24 VDC	24 VDC
UNIT DIMENSIONS										
Neck opening (in/mm)	16.0	406	25	635	35.5	902	25	635	25	635
Usable height (in/mm)	12.0	305	21.4	544	19.4	492	13	330	2 x 13	2 x 330
Overall height (in/mm)	17.5	445	41.5	1054	44	1172	40.9	991	53.9	1368
Outside diameter (in/mm)	18.0	457	31	787	42	1067	60	1524	60	1528
Internal diameter (in/mm)	16.0	406	28.2	716	39.5	1003	56	1422	56.3	1430
Weight empty (lbs/kg)	48	22	250	114	410	186	984	447	1184	538
Weight full (lbs/kg)	117	53	660	300	1269	577	2517	1144	3700	1682



- A Metal lid construction—designed for longer life
- B Tough, durable hinges
- C Annular filling lines to reduce frost and ice formation
- D Maintains -125°C under the lid temp in Vapor Phase Storage, -196°C Liquid Phase Storage
- E Low maintenance , all-stainless steel construction
- F Tough, durable casters
- G Optional vapor platform

Five year vacuum warranty

SC SERIES

LIQUID NITROGEN FREEZERS



The SC series is designed for the user who has small capacity needs, but requires long-term storage and low liquid nitrogen consumption in a convenient lightweight package. By integrating features users requested with the widest variety of holding times and storage capacities, MVE Aluminum Freezers are the units of choice.

Accessories:

- Caster Base
- Canister
- Spare Corks
- Liquid Level Measuring Stick

Accessories (continued):

- Transfer Hose
- Phase separator
- Level Alarm

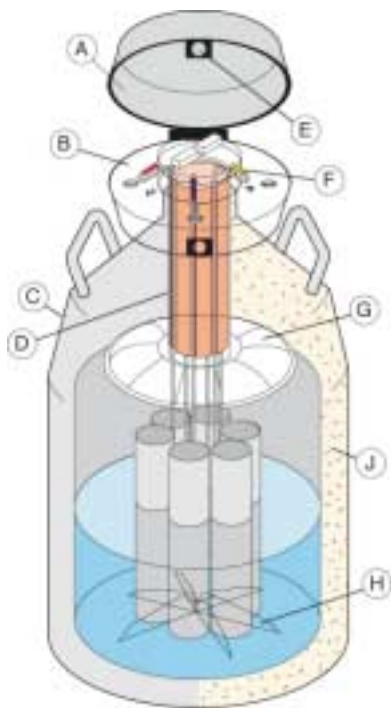
*Actual temperature may be +/- 10°C depending on current atmosphere condition, container history and actual product being stored.

SPECIFICATIONS

MODELS	SC 3/3	SC 8/5	SC 11/17	SC 16/11	SC millennium 20	SC 20/20	SC 36/32	SC 33/26
MAX. STORAGE CAPACITY								
Number of canisters	6	6	6	9	6	6	6	6
No. of 1/2 cc straws (10/cane)	-	-	540	-	540	540	540	540
No. of 1/2 cc straws (1 Level Bulk)	732	732	732	1098	780	780	780	780
No. of 1.2 & 2.0 ml vials (5/cane)	-	-	150	-	150	150	150	150
PERFORMANCE								
Liquid nitrogen capacity (liters)	3.6	8.4	11.0	16.4	20.5	20.5	36.5	33
Static evaporation rate (liters/day)*	0.12	0.15	0.15	0.14	.095	0.09	0.10	0.13
Normal working duration (days)**	19	35	46	74	135	142	224	182
UNIT DIMENSIONS								
Neck opening	in (mm)	2 (51)	2 (51)	2 (51)	2 (51)	2.18 (55.4)	2 (51)	2 (51)
Overall height	in (mm)	16 (406)	18.5 (470)	21.6 (549)	17.5 (444)	25.7 (652)	25.7 (652)	27.2 (690)
Outside diameter	in (mm)	8.7 (222)	10.2 (260)	10.2 (260)	17.2 (438)	14.5 (368)	14.5 (368)	18.2 (464)
Canister height	in (mm)	5 (127)	5 (127)	11 (279)	5 (127)	11 (279)	11 (279)	11 (279)
Canister diameter	in (mm)	1.5 (38)	1.5 (38)	1.5 (38)	1.5 (38)	1.5 (38)	1.5 (38)	1.5 (38)
Weight empty	lbs (kg)	8 (3.6)	12 (5.3)	17 (7.7)	14 (6.4)	26 (11.8)	26 (11.8)	34 (15.4)
Weight full	lbs (kg)	14.4 (6.5)	27 (12.1)	36.6 (16.6)	43 (19.6)	62.5 (28.3)	62.5 (28.3)	93.4 (42.4)

* Static evaporation rate and static holding time are nominal. Actual rate and holding time will be affected by the nature of container use, atmospheric conditions, and manufacturing tolerances.

** Normal Working Duration is an arbitrary reference, to estimate container performance under normal operating conditions. Actual working time may vary due to current atmospheric conditions, container history, manufacturing tolerances and any individual patterns of use.



- A Durable, tamper-proof lid design
- B Easy maintenance lid design
- C Superior strength, lightweight aluminum construction
- D High strength neck tube reduces liquid nitrogen loss
- E Locking tab
- F Color-coded canister/lid numbering system
- G Advanced Chemical Vacuum Retention System - designed for superior vacuum performance over the life of the product
- H Spider design - for easy retrieval and insertion of product canisters
- J Insulation - MVE's advanced insulation system provides maximum thermal performance

Five Year Vacuum Warranty

XC SERIES

LIQUID NITROGEN FREEZERS



The XC series is designed for the user who requires large capacity storage and low liquid nitrogen consumption in a convenient lightweight package. By integrating features users requested with the widest variety of holding times and storage capacities, MVE XC Aluminum Freezers are the units of choice.

Accessories:

- Caster Base
- Canister
- Spare Corks
- Liquid Level Measuring Stick

Accessories (continued):

- Transfer Hose
- Phase separator
- Square Racks
- Plastic Boxes (47/11-6 only)
- Liquid Level Alarm

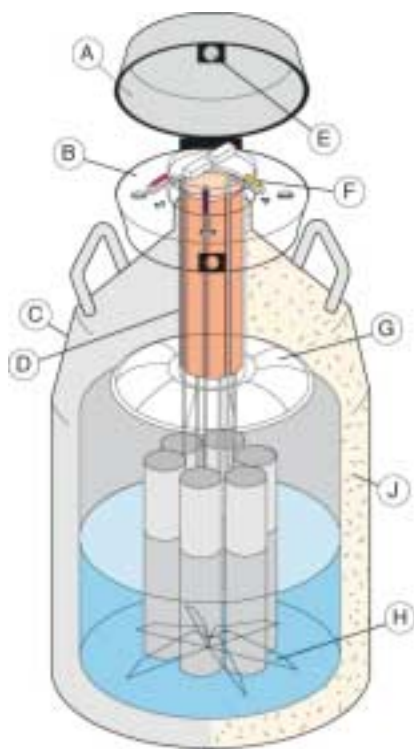
*Actual temperature may be +/- 10°C depending on current atmosphere condition, container history and actual product being stored.

SPECIFICATIONS

MODEL	XC millennium 20	XC21/6	XC 22/5	XC 32/8	XC 33/22	XC 34/18	XC 35/12	XC 43/28	XC 4711-6 SQ	XC 47/11-6	XC 47/11-10
MAX. STORAGE CAPACITY											
Number of canisters	6	9	6	9	6	6	10	6	6 Sq.	6	10
No. of 1/2 cc straws (10/cane)	720	N/A	2,400	2,520	1,260	2,100	2,800	1,260	-	4,500	3,500
No. of 1/2 cc straws (1 Level Bulk)	1122	3,870	3,666	3,960	1,764	3,000	4,400	1,764	-	6,216	5,000
No. of 1.2 & 2.0 ml vials (5/cane)	210	N/A	810	855	360	630	950	360	-	1,320	1,050
No. of Racks (25 Vials)										6 (5/2)	
PERFORMANCE											
Liquid nitrogen capacity (liters)	20.5	21	22.4	32	33.4	34.8	34.8	42.2	47.4	47.4	47.4
Static evaporation rate (liters/day)*	.095	.25	0.35	0.35	0.14	0.18	.24	0.14	0.39	0.39	0.39
Normal working duration (days)**	140	53	40	57	154	123	90	193	76	76	76
UNIT DIMENSIONS											
Neck opening in (mm)	2.18 (55.4)	3.5(89)	3.81 (97)	3.81 (97)	2.75 (70)	3.5 (89)	4 (102)	2.75 (70)	5 (127)	5 (127)	5 (127)
Overall height in (mm)	25.7 (652)	17.2(438)	22 (559)	21.5 (546)	26 (660)	26.6 (675)	25 (635)	26.4 (670)	26.5 (673)	26.5 (673)	26.5 (673)
Outside diameter in (mm)	14.5 (368)	18.2(464)	14.5 (368)	18.2 (464)	18.2 (464)	18.2 (464)	18.25 (456)	20 (508)	20 (508)	20 (508)	20 (508)
Canister height in (mm)	11 (279)	5(127)	11 (279)	11 (279)	11 (279)	11 (279)	11 (279)	11 (279)	11 (279)	11 (279)	11 (279)
Canister diameter in (mm)	1.65 (41.9)	2.75(70)	3.09 (79)	2.62 (67)	2.22 (56)	2.81 (71)	2.6 (66)	2.22 (56)	4 (102)	4 (102)	2.81 (71)
Weight empty lbs (kg)	26 (11.8)	30 (26.9)	26 (11.8)	30 (13.6)	34 (15.4)	34 (15.4)	34 (15.4)	36 (16.4)	36 (16.4)	36 (16.4)	36 (16.4)
Weight full lbs (kg)	62.5 (28.3)	62.5 (28.3)	66 (30)	87 (39.5)	94 (42.5)	96 (43.5)	95 (43.1)	111 (50.5)	120.4 (54.6)	120.4 (54.6)	120.4 (54.6)

* Static evaporation rate and static holding time are nominal. Actual rate and holding time will be affected by the nature of container use, atmospheric conditions, and manufacturing tolerances.

** Normal Working Duration is an arbitrary reference, to estimate container performance under normal operating conditions. Actual working time may vary due to current atmospheric conditions, container history, manufacturing tolerances and any individual patterns of use.



- A Durable, tamper-proof lid design
- B Easy maintenance lid design
- C Superior strength, lightweight aluminum construction
- D High strength neck tube reduces liquid nitrogen loss
- E Locking tab
- F Color-coded canister/lid numbering system
- G Advanced Chemical Vacuum Retention System - designed for superior vacuum performance over the life of the product
- H Spider design - for easy retrieval and insertion of product canisters
- J Insulation - MVE's advanced insulation system provides maximum thermal performance

Five Year Vacuum Warranty

CRYOSYSTEM SERIES



From the global leaders in biological preservation, comes the next generation of large aluminum freezers designed specifically for vial storage. The MVE Cryosystem 2000, 4000 and 6000 combine the benefits of low nitrogen consumption with mid-range vial capacity to meet the versatile needs of today's professional worldwide. The light weight and low space demands of these containers make them the most economical units in their class. Leading through innovation, super insulation and vacuum technology, these MVE units are the performance leaders.

The Cryosystem Series offers the following features:

- Large Neck Opening
- Long Nitrogen Holding Times
- 3 Year Vacuum Warranty
- Lightweight Aluminum Design
- Easy Access To Stored Samples

SPECIFICATIONS

MODEL	CRYOSYSTEM 2000	CRYOSYSTEM 4000	CRYOSYSTEM 6000
MAXIMUM STORAGE CAPACITY			
Number Of Racks	4	4	6
Vials	2000	4000	6000
Boxes Per Rack Vials	5	10	10
PERFORMANCE			
Liquid nitrogen capacity (liters)	61	121	175
Static Evaporation Rate (liters/day)	.85	.99	.99
Working Volume (liters)	51	111	165
Normal Working Days	38	70	104
UNIT DIMENSIONS			
Neck opening (in/mm)	8.5 (216)	8.5 (216)	8.5 (216)
Overall height (in/mm)	27.5 (680)	37.5 (950)	37.5 (950)
Outside diameter (in/mm)	22 (559)	22 (559)	26 (665)
Weight empty lbs (kg)	53 (24)	96 (43)	107 (48)
Weight full lbs (kg)	161 (73.3)	312 (141.5)	419 (190)

* Static evaporation rate and static holding time are nominal. Actual rate and holding time will be affected by the nature of container use, atmospheric conditions, and manufacturing tolerances.

** Normal Working Duration is an arbitrary reference, to estimate container performance under normal operating conditions. Actual working time may vary due to current atmospheric conditions, container history, manufacturing tolerances and any individual patterns of use.

- Durable, tamper-proof lid design
- Easy maintenance lid design
- Superior strength, lightweight aluminum construction
- High strength neck tube reduces liquid nitrogen loss
- Advanced Chemical Vacuum Retention System - designed for superior vacuum performance over the life of the product
- Spider design - for easy retrieval and insertion of product canisters
- Insulation - MVE's advanced insulation system provides maximum thermal performance

Accessories:

- Caster Base
- Spare Corks
- Liquid Level Measuring Stick
- Transfer Hose
- Phase Separator
- Boxes (2" or 3" Plastic or Cardboard)

VAPOR SHIPPERS

-150°C SPECIMEN TRANSPORT

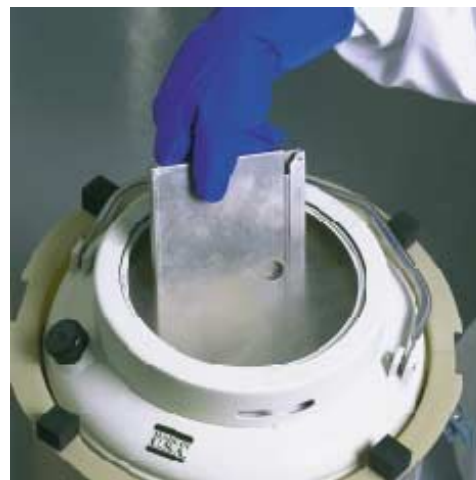


The MVE Vapor Shipper containers are designed for the safe transportation of biological samples at cryogenic (-150°C) temperatures. Fabricated from durable, lightweight aluminum, they contain a hydro-phobic absorbent that contains the liquid nitrogen. The absorbent also repels moisture and humidity, assuring the maximum holding time.

A protective shipping carton is available for all models which protects the container from being placed on its side and helps in withstanding the rigors of transportation. These containers can be used to ship your samples with a “non-hazardous” classification throughout the world.

Accessories:

- Shipping Carton
- Canisters
- Spare Corks
- Cryo-Shipper Frame



SPECIFICATIONS

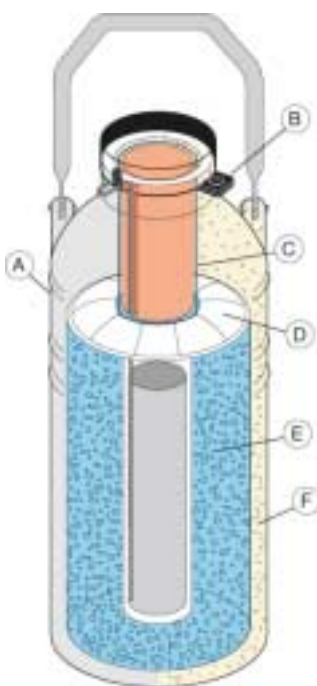
MODEL	Mini	Cryo	Cryo	Cryo						
	SC 2/1V	SC 4/2V	SC 4/3V	SC 20/12V	XC 14/2V	XC 20/3V*	Moover	Moover	Shipper	Shipper XC
MAX. STORAGE CAPACITY										
Number of canisters	1	1	1	6	2	4 + 1 Center	1	7	1 Rack	-
No. of 1/2 cc straws (10/cane)	-	280	120	540	1,000	2,500/2,000*	60	3080	-	-
No. of 1/2 cc straws (1 Level Bulk)	88	440	210	780	1,500	3,750/3,000*	88	4354	-	-
Number of 1/4 cc straws (1 Level Bulk)	182	938	452	452	3,000	6,750/6,000*	182	8904	-	-
No. of 1.2 & 2.0 ml vials (5/cane)	-	95	40	150	300	750/600*	20	945	-	-
No. of 1.2& 2.0 ml vials (6/cane)	9	106	48	180	360	900/720*	24	1134	500	966 (Bulk)
Number of blood bag stored (4R9953)	-	-	-	-	-	-	-	-	10	10
PERFORMANCE										
Liquid nitrogen capacity (liters)	1.5	3.6	4.3	12.3	8.7	6.8	2.9	4.2	8.5	10
Static evaporation rate (liters/day)	0.19	0.26	0.20	0.09	0.35	0.3	0.20	0.35	0.85	.7
Static holding time (days)	8	14	21	85	25	23	14	12	10	14
UNIT DIMENSIONS										
Neck opening in (mm)	1.4 (35)	2.75 (70)	2 (51)	2 (51)	3.81 (97)	3.81 (96.7)	1.4 (35)	3.8 (97)	8.5 (216)	8.5 (216)
Overall height in (mm)	13.5 (343)	18.4 (468)	19.4 (492)	25.7 (652)	22.0 (559)	25 (635)	19.5 (495)	22 (558)	21.5 (546)	23 (584)
Outside diameter in (mm)	7.25 (184)	8.7 (222)	8.7 (222)	14.5 (368)	14.5 (368)	14.5 (368)	7.2 (184)	18.3 (464)	14.5 (369)	15 (381)
Canister height in (mm)	5 (127)	11 (278)	11 (278)	11 (279)	11 (278)	11 (278)	11 (278)	11 (278)	-	12.5 (317.5)**
Canister diameter in (mm)	1.2 (31)	2.62 (67)	1.81 (46)	1.5 (38)	3.7 (94)	3.2 (80)	1.2 (31)	3.1 (79)	-	-
Weight empty lbs (kg)	6 (2.7)	11 (5)	13 (5.9)	30 (13.6)	24 (10.9)	23 (50.5)	88 (4)	30.5 (13.8)	27 (12.1)	30 (13.6)
Weight full lbs (kg)	8.8 (4)	18 (8.1)	20.6 (9.3)	52 (23.6)	39 (18)	35 (77)	11.6 (5)	38 (17.2)	37.5 (17)	47 (103.4)

Static evaporation rate and static holding time are nominal. Actual rate and holdint time will be affected by the nature of container use, atmospheric conditions, and manufacturing tolerances.

* With center absorbent canister (3 week holding time)

** Useable Height

Without center absorbent canister two week holding time, greater storage capacity



- A Lightweight aluminum design reduces shipping costs
- B All models come with locking tab for shipments
- C Neck Tube— High strength neck tube reduces liquid nitrogen loss
- D Advanced Chemical Vacuum Retention System provides superior vacuum performance for the life of the product
- E Superior hydrophobic absorbent— repels moisture and humidity while maintaining a -150°C chamber environment
- F Insulation — MVE’s advanced insulation system provides maximum thermal performance

One model designed and approved to meet IATA and U.N. requirement for the shipment of infectious substances.

Three Year Vacuum Warranty

IATA SHIPPER

-150°C SPECIMEN TRANSPORT



IATA Dewar

IATA Dewar has been independently tested and approved with the above accessories to meet current UN and IATA regulations concerning the transportation of potentially infectious substances.

Actual temperature may be +/- 10°C depending on current atmosphere condition, container history and actual product being stored.

Test Data and Reports available per request. Please contact MVE or your Authorized Distributor.

MODEL	CRYO-SHIPPER EXTRA CAPACITY W/IATA
PN	10777411
Maximum Working Cavity Dimensions	8-1/2" dia * 8-3/4" deep
IATA Secondary Container Dimensions	7-3/8" dia * 8-3/4" deep
MAXIMUM STORAGE CAPACITY	
Number of secondary containers	1
Number of 1 ml vials	450 (5 level bulk)
Number of 2 ml vials	350 (4 level bulk)
Number of 3 ml vials	250 (3 level bulk)
Number of 4 ml vials	250 (3 level bulk)
Number of blood bags stored (4R9951)	22
PERFORMANCE	
Liquid nitrogen capacity (liters)	11.8
Static evaporation rate (liters/day)	0.80
Static holding time (days)	14
UNIT DIMENSIONS	
Neck opening (in/mm)	8.5 (216)
Overall height (in/mm)	24 (610)
Outside diameter (in/mm)	15 (381)
Weight empty (lbs/kg)	29 (13.1)
Weight full (lbs/kg)	50.5 (22.9)



CRYOCYL SERIES



CryoCyl Series

CryoCyl LP units are specifically designed for low pressure. The low center of gravity and clean, polished stainless steel outer shell make these units perfect for laboratory and hospital applications.

- Easy to handle 26" diameter 230L model (low center of gravity)
- Extended stem liquid valve
- Rugged oversize casters

Warranty: 5 year vacuum, 90 days parts

CryoCyl 35 & 50 Series

- Same rugged design of the larger Cryo Cyl units
- Operates at 22 psig
- Complete with pressure and liquid level gauge

Warranty: 5 year vacuum, 90 days parts

Accessories:

- Transfer Hoses
- Phase Separators
- Roller Bases

	Size	35	50	120	180	230RB*	230SB**
MODEL	Pressure	LP	LP	LP	LP	LP	LP
	Part Number	10980671	10980663	10648396	10648450	10648599	10648556
CAPACITY							
Liquid (Gross)	(liters)	35	50	120	196	240	240
Liquid (Net)	(liters)	N/A	N/A	110	185	230	230
PERFORMANCE							
NER (LN2)	%/Day	4%	4%	2.0%	1.5%	1.5%	1.5%
DIMENSIONS & PRESSURE RATINGS							
Diameter	in/cm	16 (40.6)	16 (40.6)	20 (50.8)	20 (50.8)	26 (66.0)	26 (66.0)
Height	in/cm	28.5 (72.3)	35.5 (90.1)	51 (129.5)	63.5 (161.3)	54.8 (139.1)	54.8 (139.1)
Empty Weight	lb/kg	76 (34.5)	90 (40.9)	165 (74.8)	210 (95.2)	275 (125)	311 (141)
Relief Valve Setting	psig/bar	22 (1.5)	22 (1.5)	22 (1.5)	22 (1.5)	22 (1.5)	22 (1.5)
DOT/CTC Rating		n/a	n/a	4L100	4L100	4L100	4L100

* Round caster base.

**Square caster base.

LAB SERIES

LIQUID NITROGEN STORAGE CONTAINER



The Lab Series of cryogenic dewars earned their name from their acceptance in laboratories and medical offices worldwide. These high-efficiency, super insulated dewars are the most convenient, economical way to store and dispense liquid nitrogen. Many lab units can be fitted with pouring spouts, pressurized dispensing devices or dippers to aid in the transfer of liquid nitrogen.

Accessories:

- Transfer Hose
- Phase Separator
- Pouring Spout
- Swivel Dipper
- Dipper
- Spare Corks

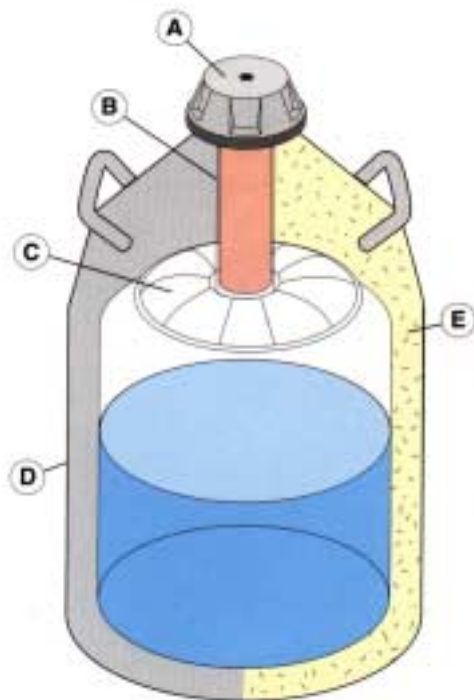
Accessories (continued):

- Pressurized Discharge Device
- Caster Base



SPECIFICATIONS

MODEL	LAB 4	LAB 5	LAB 10	LAB 20	LAB 30	LAB 50	SS TRANSFER UNIT
Net Capacity (liters)	4	5	10	21	32	50	5
PERFORMANCE							
Static Evaporation Rate (liters/day)	0.19	0.15	0.18	0.18	0.22	0.49	N/A
UNIT DIMENSIONS							
Neck opening (in/mm)	1.4 (35.5)	2.2 (56)	2.2 (56)	2 (51)	2.5 (64)	2.5 (64)	6 (152)
Usable height (in/mm)	7.8 (198)	10.5 (266)	13.5 (343)	13.7 (348)	14.9 (378)	22 (559)	14 (356)
Overall height (in/mm)	16.8 (426)	18.2 (462)	21.5 (546)	24.7 (627)	24.1 (611)	30.7 (779)	16.5 (419)
Outside diameter (in/mm)	7.3 (185)	8.8 (222)	10.3 (260)	14.5 (368)	17 (432)	17 (432)	8 (203)
Internal diameter (in/mm)	5.5 (139)	6.5 (165)	8.3 (210)	11.4 (289)	14 (356)	14 (356)	6 (152)
Weight empty (lbs/kg)	6 (2.7)	8 (4)	13 (6)	19 (9)	27 (12)	34 (15)	11 (5)
Weight full (lbs/kg)	13 (6)	17 (8)	31 (14)	56 (26)	84 (38)	123 (56)	20 (9)



- A Easy maintenance lid design
- B High strength neck tube reduces liquid nitrogen loss
- C Advanced Chemical Vacuum Retention System— designed for superior vacuum performance over the life of the product
- D Superior strength, lightweight aluminum construction
- E Insulation — MVE's advanced insulation system provides maximum thermal performance

Five year vacuum warranty



Leading Through Innovation

As a result of Chart-MVE's leadership in cryogenic technology, an ever expanding world of applications and possibilities will continue to enhance our lives today, and create new opportunities for the future. Whatever you need to store, at whatever temperature Chart-MVE has the solution. Chart-MVE is the "technology behind -your technology".

When it comes to cryogenic storage systems there is none better. Chart-MVE continues to lead the way in the cryogenic preservation of life so vitally important to the growing biomedical industries.

