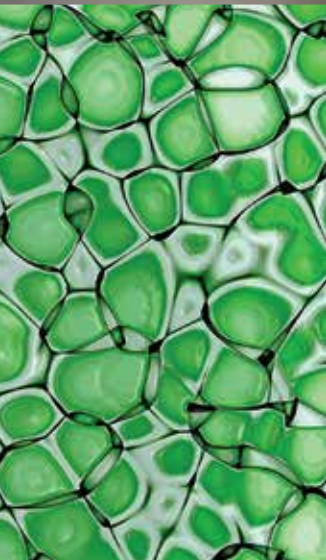


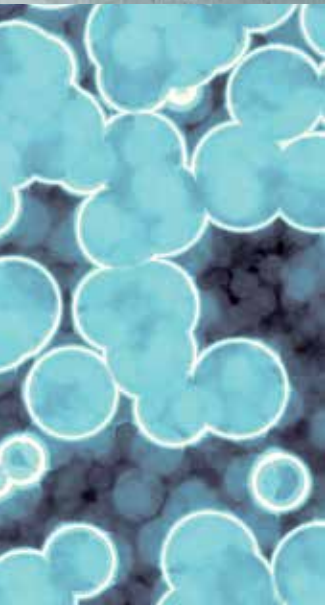
MVE Cryopreservation for Life Science

Storage & Transport Systems for MVE Cryopreservation



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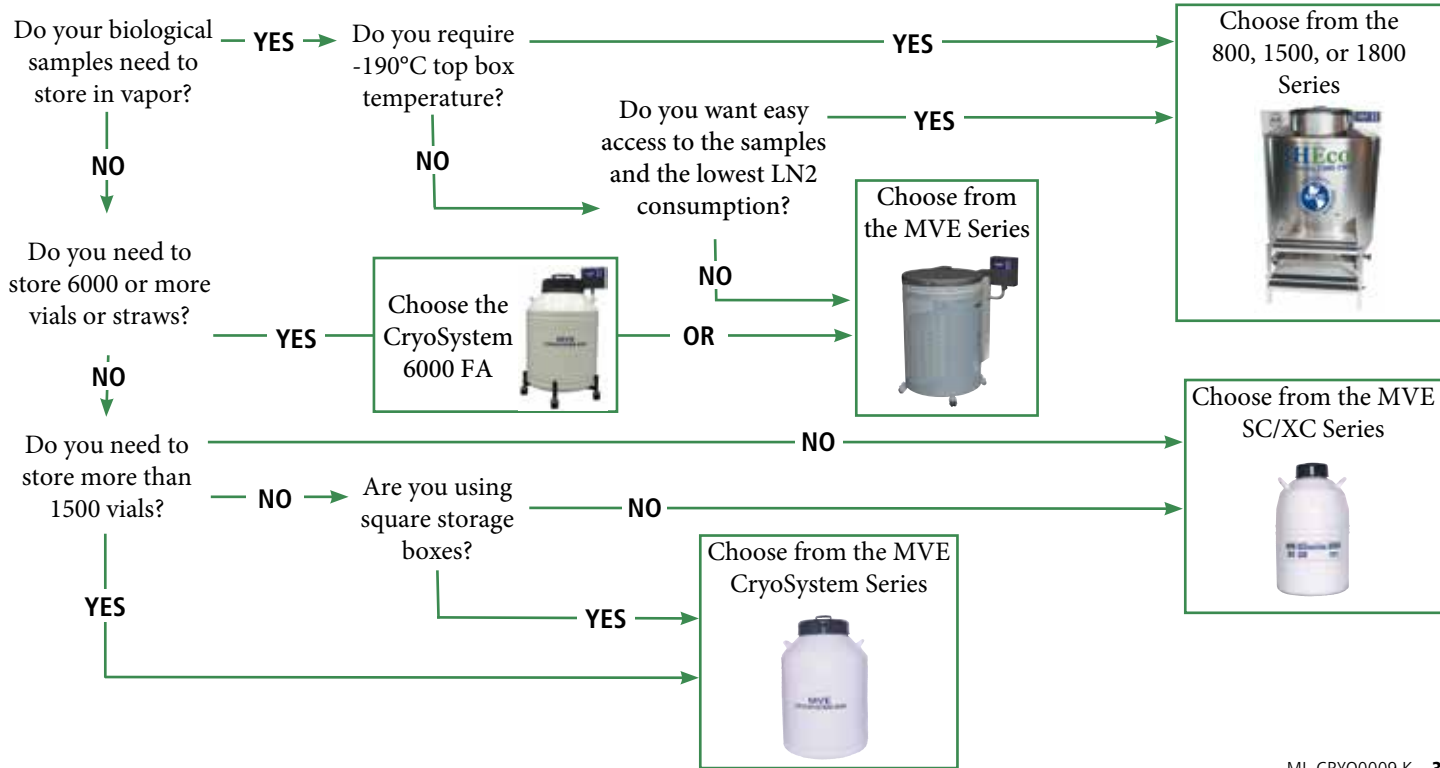
Temperature Chart

Chart MVE is the leading global manufacturer of vacuum insulated products and cryogenic systems. More than fifty years ago, we set the standard for storage of biological materials at low temperatures. Today, we continue to exceed these standards. Industries from around the world look to Chart MVE for excellence and innovation. Our solutions empower industries to better utilize cryogenic technology. In this manner, Chart MVE continues to make a vital contribution in today’s biomedical Life Sciences industry.

Recommended maximum temperature for storage of biological samples.

MATERIAL TO BE STORED	VOLUME	CONTAINER	INVENTORY CONFIGURATION	CRITICAL TEMPERATURE
Algae	0.5 - 1.0 mL	Cryovial	Boxes or canes	-150°C
Blood	0.5 - 500 mL	Cryovial/Blood Bag	Boxes or canes/bag rack	-150°C
Cells:				
Animals / Human	0.5 - 1.0 mL	Cryovial	Boxes or canes	-150°C
Plant	0.5 - 1.0 mL	Cryovial	Boxes or canes	-150°C
Embryos		Straw	Canes	-150°C
Fungi:				
Mycelium	0.5 - 1.0 mL	Cryovial	Boxes or canes	-150°C
Hybridomas	0.5 - 1.0 mL	Cryovial	Boxes or canes	-150°C
Phage:				
Libraries	0.5 - 1.0 mL	Cryovial	Boxes or canes	-150°C
Protozoa	0.5 - 1.0 mL	Cryovial	Boxes or canes	-150°C
Viruses: Animal				
In Cells	0.5 - 1.0 mL	Cryovial	Boxes or canes	-150°C

Product Selector Guide

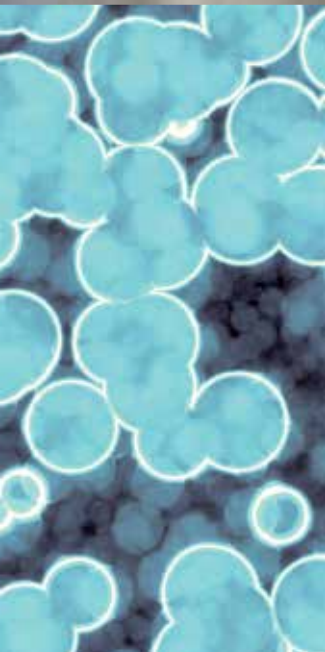


MVE High Efficiency 800 -190°C Series

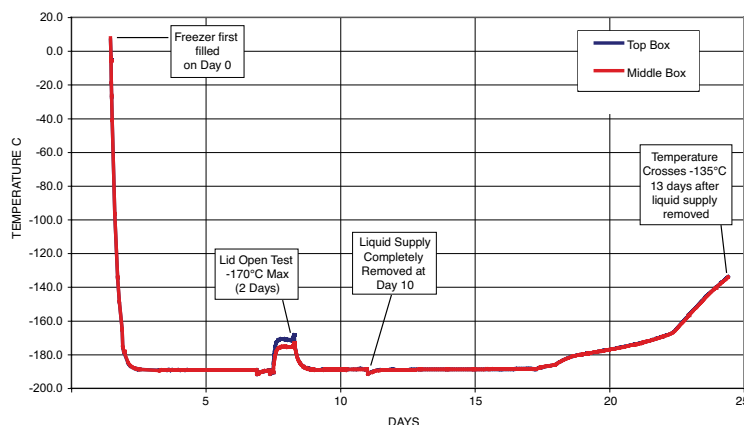
The MVE High Efficiency 800 Freezer Series provides vapor storage temperature at -190°C. Available in three unique sizes these freezers provide maximum storage density and provide the industry's longest hold time.

Features include:

- Dry sample storage
- -190°C top box temperature
- Lowest liftover height
- Largest LN2 capacity at vapor platform
- Optional Battery Backup



- Optional One-Tier and Two-Tier Steps

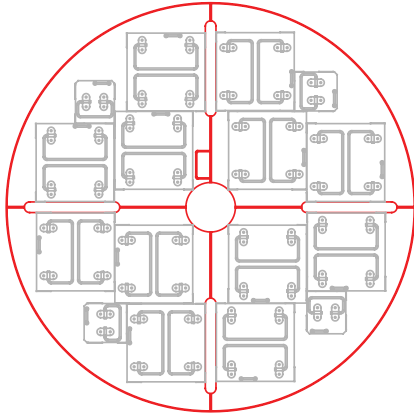


Temperature Test Graph

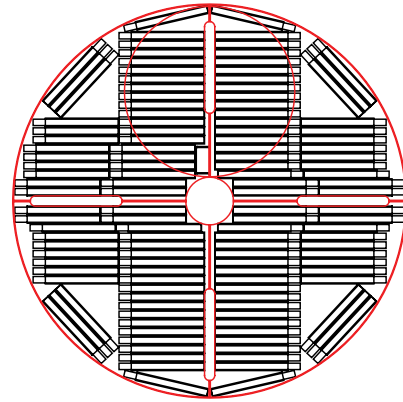
* Temp Test indicates typical performance of 800 Series -190°C freezer with full inventory system and factory recommended level settings. Actual performance may vary with atmospheric conditions and usage.

Rack Layouts (P)

Square Rack Layout



4R9951 Layout



	MVE 815P-190			MVE 818P-190			MVE 819P-190		
Maximum Storage Capacities									
1.2 & 2 ml Vials (Internally Threaded)	15,600			18,200			19,500		
Quantity of Large Racks 100 cell boxes	12			12			12		
Quantity of Mini Racks 25 cell boxes	4			4			4		
Number of Shelves per Rack	12			14			15		
High Security Straw Capacity (0.5 ml)	36,960			46,200			55,440		
Number of Canisters (73 mm)	55			55			55		
Goblets/Canister : Straws/Goblet	4:168			5:168			6:168		
Performance									
LN2 Capacity w/o Inventory L est.	370			420			463		
LN2 Capacity at Vapor Platform L est.	52			55			55		
Unit Dimensions									
Neck Opening in. (mm)	12.5 (317)			12.5 (317)			12.5 (317)		
Usable Internal Height in. (mm)	26.5 (673)			30.7 (781)			34.5 (877)		
Inner Diameter in. (mm)	28.8 (731)			28.8 (731)			28.8 (731)		
Overall Height w/Autofill in. (mm)	57.0 (1448)			61.3 (1556)			65.0 (1651)		
Door Width Requirement** in. (mm)	32.0 (813)			32.0 (813)			32.0 (813)		
Door Width Requirement** with handles in. (mm)	33.2 (843)			33.2 (843)			33.2 (843)		
Weight Empty* lb. (kg)	475 (215)			495 (225)			515 (234)		
Weight Liquid Full* lb. (kg) est.	1134 (514)			1168 (530)			1340 (608)		
Blood Bag Capacities	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames
791 OS/U Medsep (25 ml)	1,224	6	204	1,632	8	204	1,836	9	204
4R9951 (50 ml)	768	6	128	896	7	128	1024	8	128
4R9953 (250 ml)	416	4	104	416	4	104	520	5	104
4R9955 (500 ml)	304	4	76	304	4	76	380	5	76
DF200 (200 ml)	236	4	59	236	4	59	295	5	59
DF700 (700 ml)	44	3	132	44	4	176	44	5	220

TWO Year Parts Warranty • FIVE Year Vacuum Warranty

Conforms to MDD 93/42/EEC, the Medical Device Directive for the EU. Freezer systems UL/C-UL Listed.

* Without inventory

**Minimum width required for vessel to pass through opening. Footprint may vary. Contact Tech Service for detailed drawings.

MVE High Efficiency 1500 -190°C Series

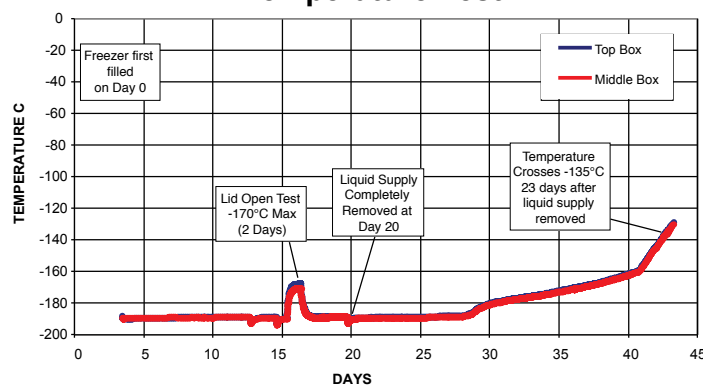
The MVE 1500 Series -190°C freezers provide cryogenic storage for up to 42,000 1.2 / 2.0 ml vials. Available in three unique sizes, these freezers provide maximum storage density and provide the industry's longest hold time.

Features include:

- Dry sample storage
- -190°C top box temperature
- Lowest liftover height
- Largest LN2 capacity at vapor platform
- 2-tier folding step
- Optional Battery Backup



Temperature Test*

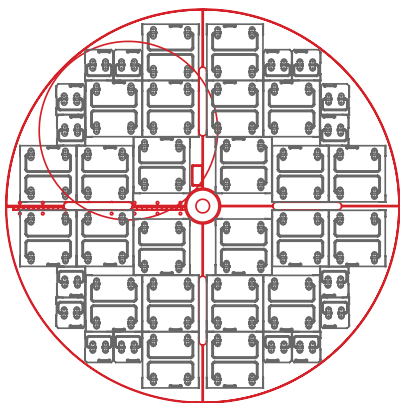


Temperature Test Graph

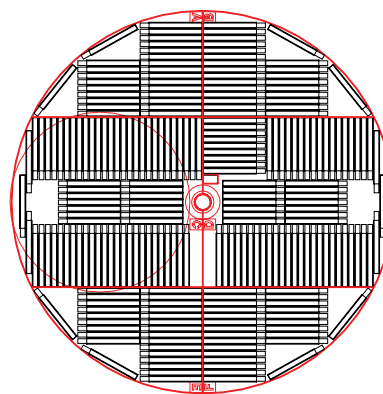
* Temp Test indicates typical performance of 1500 Series -190°C freezer with full inventory system and factory recommended level settings. Actual performance may vary with atmospheric conditions and usage.

Rack Layouts

Square Rack Layout (P)



4R9551 Layout (R)



	MVE 1536P-190			MVE 1539P-190			MVE 1542R-190		
Maximum Storage Capacity									
1.2 & 2 ml Vials (Internally Threaded)	36,400			39,200			42,000		
Quantity of Large Racks 100 cell boxes	24			24			26		
Quantity of Mini Racks 25 cell boxes	16			16			16		
Number of Shelves per Rack	13			14			14		
High Security Straw Capacity (0.5 ml)	80,640			100,800			100,800		
Number of Canisters (73 mm)	120			120			120		
Goblets/Canister : Straws/Goblet	4:168			5:168			5:168		
Performance									
LN2 Capacity w/o Inventory L est.	756			797			797		
LN2 Capacity at Vapor Platform L est.	133			133			133		
Unit Dimensions									
Neck Opening in. (mm)	17.5 (445)			17.5 (445)			17.5 (445)		
Usable Internal Height in. (mm)	28.8 (732)			30.8 (782)			30.8 (782)		
Inner Diameter in. (mm)	38.5 (978)			38.5 (978)			38.7 (983)		
Overall Height w/ AutoFill in. (mm)	61.3 (1556)			63.3 (1608)			63.3 (1608)		
Liftover Height in. (mm)	37.1 (942)			39.2 (995)			39.2 (995)		
Door Width Requirement** in. (mm)	42.0 (1067)			42.0 (1067)			42.0 (1067)		
Depth of Extended Step in. (mm)	7.9 (201)			7.9 (201)			7.9 (201)		
Weight Empty* lb. (kg)	690 (313)			720 (327)			720 (327)		
Weight Liquid Full* lb. (kg) est.	2037 (924)			2140 (971)			2140 (971)		
Blood Bag Capacities	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames
791 OS/U Medsep (25 ml)	2,905	7	415	3,320	8†	415	3,184	8†	398
Compact Medsep (25 ml)	4,338	9	482	4,338	9	482	4,464	9	496
4R9951 (50 ml)	1,488	6	248	1,736	7	248	1,687	7	241
4R9953 (250 ml)	812	4	203	812	4	203	768	4	192
4R9955 (500 ml)	608	4	152	608	4	152	576	4	144
DF200 (200 ml)	496	4	124	496	4	124	488	4	122
DF700 (700 ml)	256	4	64	256	4	64	264	4	66

TWO Year Parts Warranty • FIVE Year Vacuum Warranty

Conforms to MDD 93/42/EEC, the Medical Device Directive for the EU. Freezer systems UL/C-UL Listed.

* Without inventory

**Minimum width required for vessel to pass through opening. Footprint may vary. Contact Tech Service for detailed drawings.

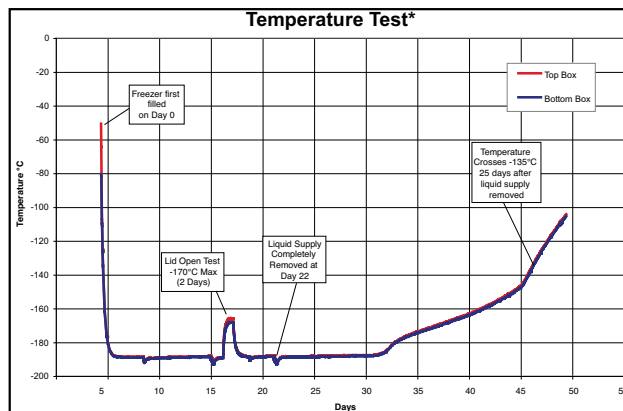
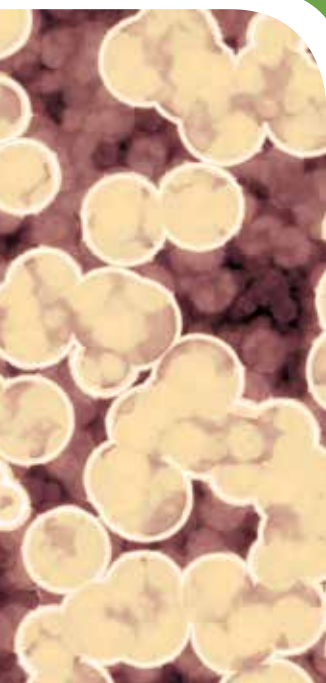
† Between usable height and clearance. Please refer to specifications.

MVE High Efficiency 1800 -190°C Series

The MVE 1800 Series -190°C freezers provide cryogenic storage for up to 94,500 1.2 / 2.0 ml vials. These freezers provide maximum storage density and provide the industry's longest hold time.

Features include:

- Dry sample storage
- -190°C top box temperature
- Lowest liftover height
- Largest LN2 capacity at vapor platform
- Two tier folding step
- Optional Battery Backup

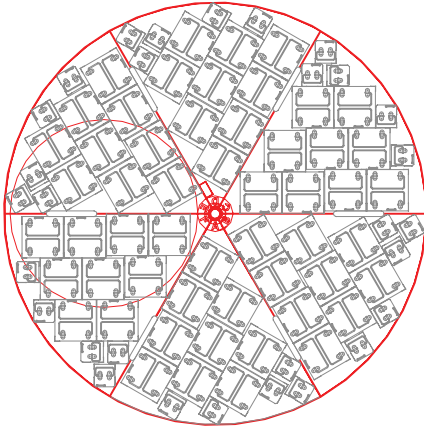


Temperature Test Graph

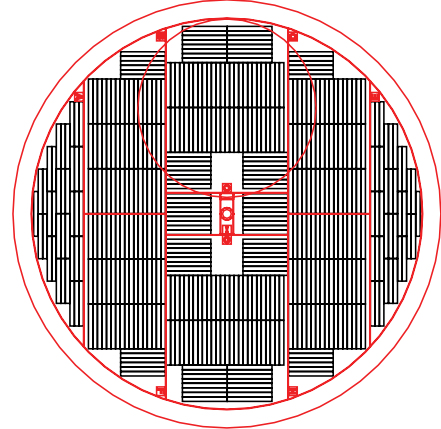
* Temp Test indicates typical performance of 1800 Series -190°C freezer with full inventory system and factory recommended level settings. Actual performance may vary with atmospheric conditions and usage.

Rack Layouts

Square Rack Layout (P)



4R9951 Layout (R)



	MVE 1879P-190			MVE 1881R-190			MVE 1892P-190			MVE 1894R-190		
Maximum Storage Capacity												
1.2 & 2 ml Vials (Internally Threaded)	79,950			81,900			92,250			94,500		
Quantity of Large Racks 100 cell boxes	54			60			54			60		
Quantity of Mini Racks 25 cell boxes	30			12			30			12		
Number of Shelves per Rack	13			13			15			15		
High Security Straw Capacity (0.5 ml)	236,880			213,360			284,256			256,032		
Number of Canisters (73 mm)	282			254			282			254		
Goblets/Canister : Straws/Goblet	5:168			5:168			6:168			6:168		
Performance												
LN2 Capacity w/o Inventory L est.	1745			1745			1770			1770		
LN2 Capacity at Platform Vapor L est.	318			318			295			295		
Unit Dimensions												
Neck Opening in. (mm)	25.0 (635)			25.0 (635)			25.0 (635)			25.0 (635)		
Usable Internal Height in. (mm)	29.5 (749)			29.2 (742)			34.5 (876)			34.2 (868)		
Inner Diameter in. (mm)	56.0 (1422)			54.8 (1391)			54.8 (1391)			54.8 (1391)		
Overall Height w/AutoFill in. (mm)	68.2 (1732)			68.2 (1732)			73.2 (1860)			73.2 (1860)		
Door Width Requirement** in. (mm)	60.0 (1524)			60.0 (1524)			60.0 (1524)			60.0 (1524)		
Weight Empty* lb. (kg)	1721 (781)			1721 (781)			1721 (781)			1721 (781)		
Weight Liquid Full* lb. (kg) est.	4830 (2191)			4830 (2191)			4875 (2211)			4875 (2211)		
Blood Bag Capacities												
	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames
791 OS/U Medsep (25 ml)	5,866	7	838	5,628	7	804	6704	8	838	6,432	8	804
Compact Medsep (25 ml)	8,622	9	958	9,414	9	1,046	10,538	11	958	11,506	11	1,046
4R9951 (50 ml)	2,952	6	492	2,940	6	490	3,936	8	492	3,920	8	490
4R9953 (250 ml)	1,584	4	396	1,608	4	402	1,980	5	396	2,010	5	402
4R9955 (500 ml)	1,104	4	276	1,240	4	310	1,380	5	276	1,550	5	310
DF200 (200 ml)	960	4	240	984	4	246	1,200	5	240	1,230	5	246
DF700 (700 ml)	504	4	126	544	4	136	630	5	126	680	5	136

TWO Year Parts Warranty • FIVE Year Vacuum Warranty

Conforms to MDD 93/42/EEC, the Medical Device Directive for the EU. Freezer systems UL/C-UL Listed.

* Without inventory

**Minimum width required for vessel to pass through opening. Footprint may vary. Contact Tech Service for detailed drawings.

MVE HEco™ 800 Series Freezers

The MVE HEco Series is the next generation High Efficiency freezer from Chart BioMedical. With their unique shroud design, streamlined LN2 plumbing, and vacuum jacketed transfer hose, the MVE HEco 800 Series freezers provide a reduction in LN2 usage, making them the most efficient vapor freezers available. These next generation high efficiency freezers incorporate hinged work surfaces that fully enclose all electronics and plumbing to enhance overall safety and usability.

The technical and visual improvements combine to create a more aesthetically pleasing freezer that offers greater functionality. As with all of MVE's cryogenic freezers, the MVE HEco 800 Series freezers are available in three unique sizes and provide maximum storage density as well as the longest hold time and highest sample security in the industry.

Available now for ease of ordering, HEco Series with Battery Backup has one part number.

Features include:

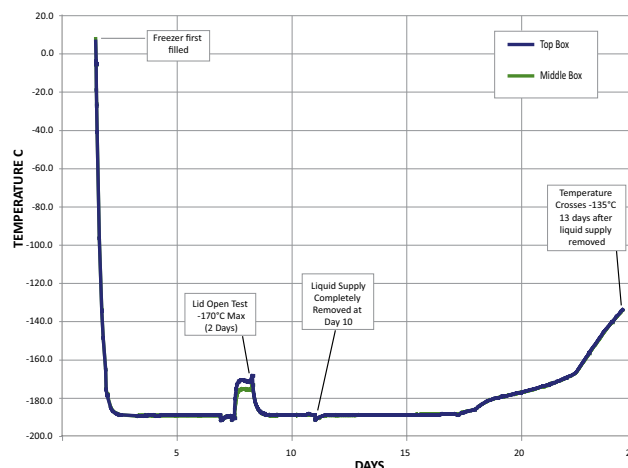
- LN2 usage reduction
- Fully enclosed wiring and plumbing
- Vacuum jacketed transfer hose
- Dry sample storage
- -190°C top box temperature
- Lowest liftover height
- Single step standard
- Optional double-tier step
- Optional battery backup—ask about one part number to order HEco with battery backup installed!



- Standard One-Tier Step
- Optional Two-Tier Steps



MVE HEco 800 Temperature Test*

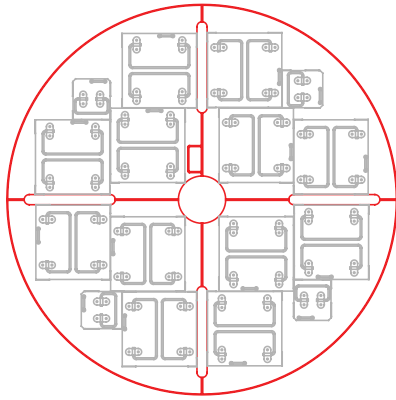


Temperature Test Graph

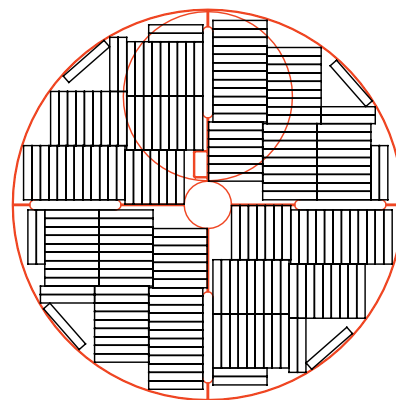
* Temperature test indicates typical performance of HEco Series freezer with full inventory system and factory recommended level settings. Actual performance may vary with atmospheric conditions and usage.

Rack Layouts

Square Rack Layout (P)



791 OS/U Layout



	MVE HEco 815P-190	MVE HEco 818P-190	MVE HEco 819P-190						
Maximum Storage Capacity									
1.2 & 2 ml Vials (Internally Threaded)	15,600	18,200	19,500						
Quantity of Large Racks 100 cell boxes	12	12	12						
Quantity of Mini <i>Racks</i> 25 cell boxes	4	4	4						
Number of Shelves per Rack	12	14	15						
Performance									
LN2 Capacity w/o Inventory L est.	370	420	463						
LN2 Capacity at Vapor Platform L est.	52	55	55						
Static Hold Time—Vapor days	10	11	11						
Static Hold Time—Liquid Full days est.	74	84	92						
Unit Dimensions									
Neck Opening in. (mm)	12.5 (317)	12.5 (317)	12.5 (317)						
Usable Internal Height in. (mm)	26.5 (673)	30.7 (781)	34.5 (877)						
Inner Diameter in. (mm)	28.8 (731)	28.8 (731)	28.8 (731)						
Overall Height in. (mm)	49.5 (1257)	53.9 (1370)	57.70 (1465)						
Liftover Height in. (mm)	40 (1016)	43.8 (1115)	47.63 (1209)						
Door Width Requirement** in. (mm)	32.0 (813)	32.0 (813)	32.0 (813)						
Door Width Requirement, with handles** in. (mm)	33.2 (843)	33.2 (843)	33.2 (843)						
Weight Empty* lb. (kg)	475 (215)	495 (225)	515 (234)						
Weight Liquid Full* lb. (kg) est.	1134 (514)	1168 (530)	1340 (608)						
Blood Bag Capacities	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/Frame	No. Frames
791 OS/U Medsep (25 ml)	1,224	6	204	1428	7	204	1,836	9	204
4R9951 (50 ml)	768	6	128	896	7	128	1024	8	128
4R9953 (250 ml)	416	4	104	416	4	104	520	5	104
4R9955 (500 ml)	304	4	76	304	4	76	380	5	76
DF200 (200 ml)	236	4	59	236	4	59	295	5	59
DF700 (700 ml)	132	3	44	176	4	44	220	5	44

TWO Year Parts Warranty • FIVE Year Vacuum Warranty

Conforms to MDD 93/42/EEC, the Medical Device Directive for the EU. Freezer systems UL/C-UL Listed.

* Without inventory

**Minimum width required for vessel to pass through opening. Footprint may vary. Contact Tech Service for detailed drawings.

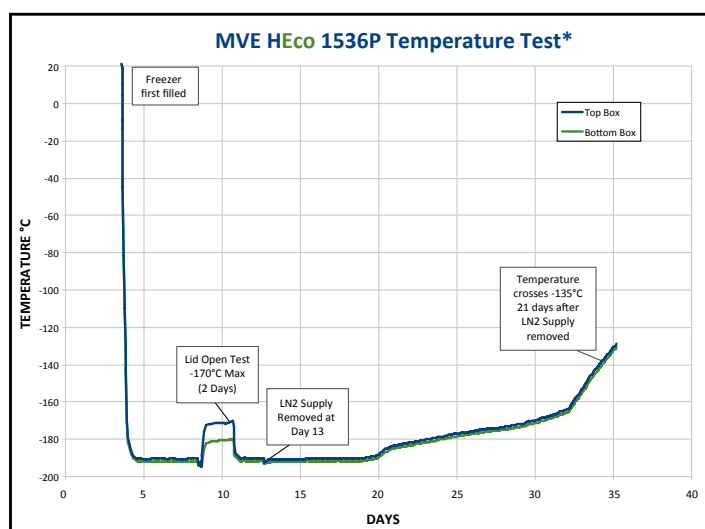
MVE HEco™ 1500 Series Freezers

The MVE HEco 1500 Series freezers provide a 20% reduction in LN2 usage, making them the most efficient vapor freezers available. These next generation high efficiency freezers incorporate a hinged work surfaces that fully enclose all electronics and plumbing to enhance overall safety and usability. The technical and visual improvements combine to create a more aesthetically pleasing freezer that offers greater functionality. As with all of MVE's cryogenic freezers, the MVE HEco 1500 Series freezers are available in three unique sizes and provide maximum storage density as well as the longest hold time and highest sample security in the industry.

Available now for ease of ordering, HEco Series with Battery Backup has one part number.

Features include:

- 20% reduction in LN2 usage
- Fully enclosed wiring and plumbing
- Vacuum jacketed transfer hose
- Dry sample storage
- -190°C top box temperature
- Lowest liftover height
- Two tier folding step
- Optional battery backup—ask about one part number to order HEco with battery backup installed!

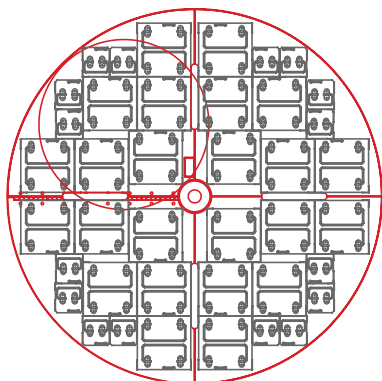


Temperature Test Graph

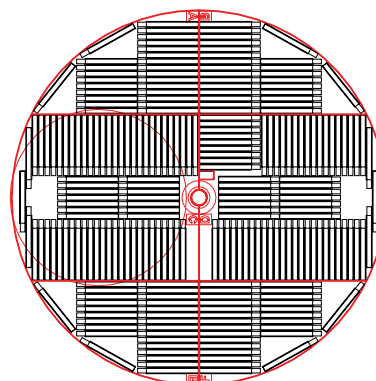
* Temperature test indicates typical performance of HEco Series freezer with full inventory system and factory recommended level settings. Actual performance may vary with atmospheric conditions and usage.

Rack Layouts

Square Rack Layout (P)



4R9951 Layout (R)



	MVE HEco 1536P-190			MVE HEco 1539P-190			MVE HEco 1542R-190		
Maximum Storage Capacity									
1.2 & 2 ml Vials (Internally Threaded)	36,400			39,200			42,000		
Quantity of Large <i>Racks</i> 100 cell boxes	24			24			26		
Quantity of Mini <i>Racks</i> 25 cell boxes	16			16			16		
Number of Shelves per Rack	13			14			14		
Performance									
LN2 Capacity w/o Inventory L est.	730			768			768		
LN2 Capacity at Vapor Platform L est.	115			115			115		
Static Hold Time—Vapor days	20			20			20		
Static Hold Time—Liquid Full days est.	112			118			118		
Unit Dimensions									
Neck Opening in. (mm)	17.4 (442)			17.4 (442)			17.4 (442)		
Usable Internal Height in. (mm)	28.8 (732)			30.2 (767)			30.8 (782)		
Inner Diameter in. (mm)	38.5 (978)			38.5 (978)			38.5 (978)		
Overall Height in. (mm)	54.7 (1389)			56.8 (1442)			56.8 (1442)		
Liftover Height in. (mm)	37.3 (947)			39.4 (999)			39.4 (999)		
Door Width Requirement** in. (mm)	42.0 (1067)			42.0 (1067)			42.0 (1067)		
Door Width Requirement, with handles** in. (mm)	43.3 (1099)			43.3 (1099)			43.3 (1099)		
Weight Empty* lb. (kg)	700 (318)			700 (318)			700 (318)		
Weight Liquid Full* lb. (kg) est.	2000 (907)			2100 (953)			2100 (953)		
Blood Bag Capacities									
	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames
791 OS/U Medsep (25 ml)	2,905	7	415	3,320	8 [†]	415	3,184	8 [†]	398
4R9951 (50 ml)	1,488	6	248	1,736	7	248	1,687	7	241
4R9953 (250 ml)	812	4	203	812	4	203	768	4	192
4R9955 (500 ml)	608	4	152	608	4	152	576	4	144
DF200 (200 ml)	496	4	124	496	4	124	488	4	122
DF700 (700 ml)	256	4	64	256	4	64	264	4	66

TWO Year Parts Warranty • FIVE Year Vacuum Warranty

Conforms to MDD 93/42/EEC, the Medical Device Directive for the EU. Freezer systems UL/C-UL Listed.

* Without inventory

**Minimum width required for vessel to pass through opening. Footprint may vary. Contact Tech Service for detailed drawings.

† Between usable height and clearance. Please refer to specifications.

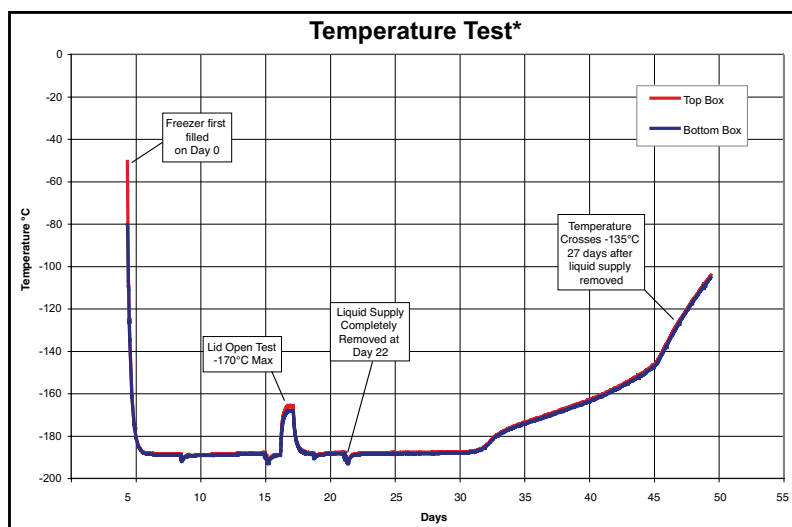
MVE HEco™ 1800 Series Freezers

The MVE HEco 1800 Series freezers provide a reduction in LN2 usage, making them the most efficient vapor freezers available. When an LN2 fill is initiated, the redesigned plumbing system optimizes the LN2 flow and reduces transfer loss, increasing efficiency and LN2 cost savings. The 1800 series provides option for greater storage in one freezer. These next generation high efficiency freezers incorporate a hinged work surfaces that fully enclose all electronics and plumbing to enhance overall safety and usability. The technical and visual improvements provide an aesthetically more pleasing freezer while offering greater functionality. As with all of MVE's cryogenic freezers, the MVE HEco 1800 Series freezers provide maximum storage density as well as the longest hold time and highest sample security in the industry.

Available now for ease of ordering, HEco Series with Battery Backup has one part number.

Features include:

- LN2 usage reduction
- Fully enclosed wiring and plumbing
- Vacuum jacketed transfer hose
- Dry sample storage
- -190°C top box temperature
- Lowest liftover height
- Two tier folding step
- Optional battery backup—ask about one part number to order HEco with battery backup installed!

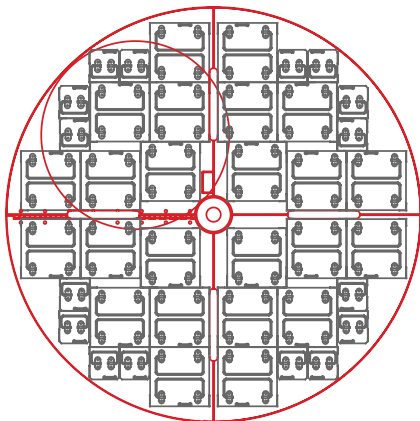


Temperature Test Graph

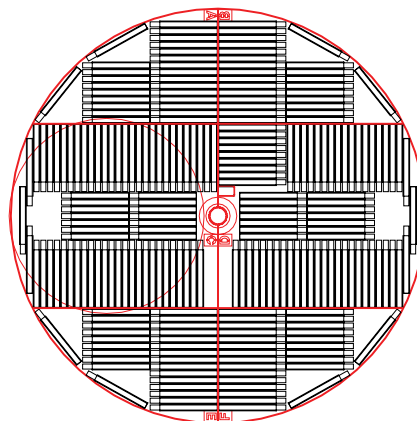
* Temperature test indicates typical performance of HEco Series freezer with full inventory system and factory recommended level settings. Actual performance may vary with atmospheric conditions and usage.

Rack Layouts

Square Rack Layout (P)



4R9951 Layout (R)



	MVE HEco 1879P-190	MVE HEco 1892P-190	MVE HEco 1894R-190						
Maximum Storage Capacity									
1.2 & 2 ml Vials (Internally Threaded)	79,950	92,250	94,500						
Quantity of Large Racks 100 cell boxes	54	54	60						
Quantity of Mini <i>Racks 25 cell boxes</i>	30	30	12						
Number of Shelves per Rack	13	15	15						
Performance									
LN2 Capacity w/o Inventory L est.	1745	1770	1770						
LN2 Capacity at Vapor Platform L est.	318	295	295						
Static Hold Time—Vapor days est.	35	30	30						
Static Hold Time—Liquid Full days est.	174	177	177						
Unit Dimensions									
Neck Opening in. (mm)	24.7 (627)	24.7 (627)	24.7 (627)						
Usable Internal Height in. (mm)	29.5 (749)	34.5 (876)	34.2 (868)						
Inner Diameter in. (mm)	56.0 (1422)	56.0 (1422)	54.7 (1389)						
Overall Height in. (mm)	63.7 (1618)	68.6 (1742)	68.6 (1742)						
Liftover Height in. (mm)	38.8 (985)	44.0 (1118)	44.0 (1118)						
Door Width Requirement** in. (mm)	60.0 (1524)	60.0 (1524)	60.0 (1524)						
Weight Empty* lb. (kg)	1712 (781)	1721 (781)	1721 (781)						
Weight Liquid Full* lb. (kg) est.	4830 (2191)	4875 (2211)	4875 (2211)						
Blood Bag Capacities	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames
791 OS/U Medsep (25 ml)	5,866	7	838	6,704	8	838	6,432	8	804
4R9951 (50 ml)	2,952	6	492	3,936	8	492	3,920	8	490
4R9953 (250 ml)	1,584	4	396	1,980	5	396	2,010	5	402
4R9955 (500 ml)	1,104	4	276	1,380	5	276	1,550	5	310
DF200 (200 ml)	960	4	240	1,200	5	240	1,230	5	246
DF700 (700 ml)	504	4	126	630	5	126	680	5	136

TWO Year Parts Warranty • FIVE Year Vacuum Warranty

Conforms to MDD 93/42/EEC, the Medical Device Directive for the EU. Freezer systems UL/C-UL Listed.

* Without inventory

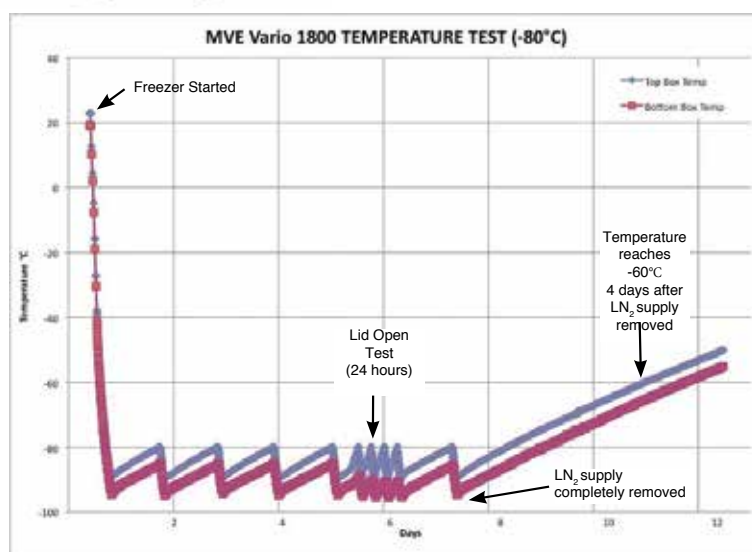
**Minimum width required for vessel to pass through opening. Footprint may vary. Contact Tech Service for detailed drawings.

MVE Variō™ Series

The MVE Variō™ Series is the innovative and energy efficient alternative for ultra low temperature to cryogenic storage. The completely dry sample storage area will maintain a user-defined temperature anywhere between -20°C and -150°C. The MVE Variō Series significantly reduces the possibility of sample contamination via contact with LN₂ while providing the safety margin and consistent temperature profile, even with the lid open, that is associated with LN₂ based cryogenic storage. The MVE Variō Series is able to provide all of this with less than 1% of the power consumption and approximately 70% overall operating cost savings when compared to the leading mechanical freezers.

Features include:

- Approximately 70% operating cost savings compared to leading mechanical freezers (-80 °C)
- Less than 1% of the electricity consumption compared to leading mechanical freezers (-80 °C)
- Completely dry storage area
- Consistent temperature profile, even with lid open
- Improved processing time, minimal increase in temperature when warm samples introduced
- No thermal load; no heat introduced into room and no additional HVAC required
- No more expensive compressors to replace
- Convertible asset: can be retrofitted to expand temperature range to -190

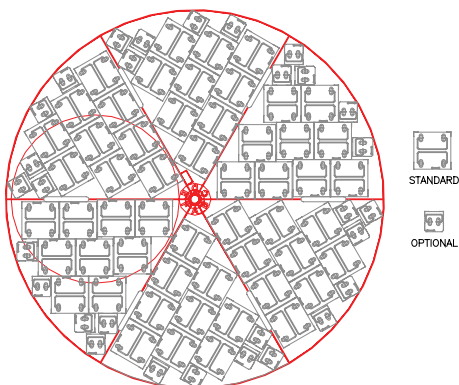


Temperature Test Graph

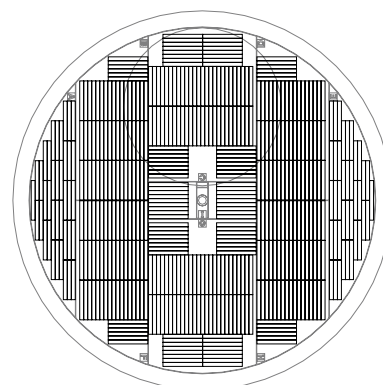
* Temp Test indicates typical performance of MVE Variō Series freezer with full inventory system and factory recommended level settings. Actual performance may vary with atmospheric conditions and usage.

Rack Layouts

Square Rack Layout (P)



4R9951 Layout (R)



	MVE Variō 1536P			MVE Variō 1539R			MVE Variō 1879P			MVE Variō 1881R			MVE Variō 1894R		
Maximum Storage Capacity															
1.2 & 2 ml Vials (Internally Threaded)	36,400			39,000			79,950			81,900			94,500		
Quantity of Large Racks 100 cell boxes	24			26			54			60			60		
Quantity of Mini Racks 25 cell boxes	16			16			30			12			12		
Number of Shelves per Rack	13			13			13			13			15		
Performance															
Temperature Range	-20°C, -150°C			-20°C, -150°C			-20°C, -150°C			-20°C, -150°C			-20°C, -150°C		
LN2 Usage at -80°C L/day	9			9			12			12			15		
Power consumption (cont.) W	8			8			8			8			8		
Unit Dimensions															
Neck Opening in. (mm)	17.5 (445)			17.5 (445)			25.0 (635)			25.0 (635)			25.0 (635)		
Usable Internal Height in. (mm)	28.8 (732)			28.8 (732)			29.5 (749)			29.2 (741)			34.2 (868)		
Inner Diameter in. (mm)	38.5 (978)			38.5 (978)			56.0 (1,422)			54.8 (1,391)			54.8 (1,391)		
Overall Height in. (mm)	61.3 (1,556)			61.3 (1,556)			62.1 (1,577)			61.3 (1,556)			66.3 (1,683)		
Door Width Requirement** in. (mm)	42.0 (1,067)			42.0 (1,067)			60.0 (1,524)			60.0 (1,524)			60.0 (1,524)		
Weight Empty* lb. (kg)	690 (313)			690 (313)			1,606 (728)			1,721 (781)			1,721 (781)		
Blood Bag Capacities	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames
791 OS/U Medsep (25 ml)	3,080	7	440	2,786	7	398	5,866	7	838	5,628	7	804	6,432	8	804
Compact (25 ml)	4,338	9	482	3,924	9	436	8,622	9	958	9,414	9	1,046	11,506	11	1,046
4R9951 (50 ml)	1,488	6	248	1,446	6	241	2,952	6	492	2,940	6	490	3,920	8	490
4R9953 (250 ml)	812	4	203	768	4	192	1,584	4	396	1,608	4	402	2,010	5	402
4R9955 (500 ml)	608	4	152	576	4	144	1,104	4	276	1,240	4	310	1,550	5	310
DF200 (200 ml)	496	4	154	488	4	122	960	4	240	984	4	246	1,230	5	246
DF700 (700 ml)	256	4	64	204	4	66	504	4	126	544	4	136	680	5	136

TWO Year Parts Warranty • FIVE Year Vacuum Warranty

Conforms to MDD 93/42/EEC, the Medical Device Directive for the EU. Freezer systems UL/C-UL Listed.

* Without inventory

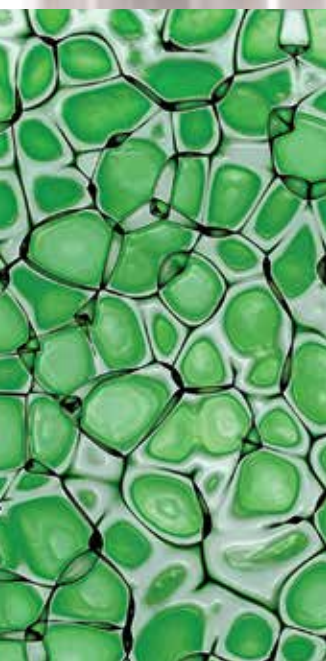
**Minimum width required for vessel to pass through opening. Footprint may vary. Contact Tech Service for detailed drawings.

MVE Series

The MVE Series freezers provide stable cryogenic storage for up to 39,000 1.2 / 2.0 ml vials. These freezers provide maximum storage density and provide the industry's longest hold time. MVE Series are primarily designed for liquid storage.

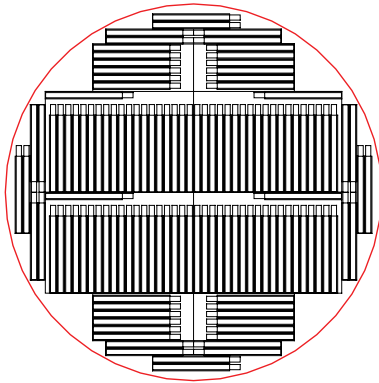
Features include:

- Liquid sample storage
- Wide neck opening
- Lowest liftover height
- Largest LN2 capacity
- Optional Battery Backup

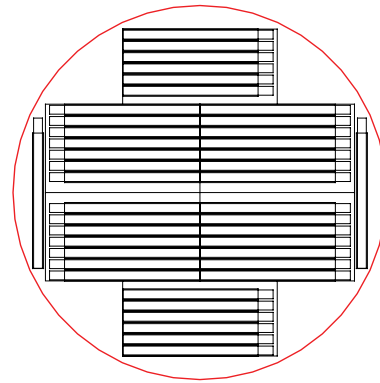


Rack Layouts

4R9953 Layout



DF700 Layout



	MVE 204 [†]			MVE 205			MVE 510			MVE 616			MVE 1426			MVE 1839		
Maximum Storage Capacity																		
1.2 & 2 ml Vials (Internally Threaded)	3,200			5,200			10,400			16,900			26,650			39,000		
Number of Large Racks 100 cell boxes	4			4			7			12			18			28		
Number of Mini Racks 25 cell boxes	-			-			4			4			10			8		
Number of Shelves per Rack	8			13			13			13			13			13		
High Security Straw Capacity (0.5 ml)	11,592			19,320			32,760			50,400			79,800			151,200		
Number of Canisters (73 mm)	23			23			39			60			95			150		
Goblets/Canister : Straws/Goblet	3:168			5:168			5:168			5:168			5:168			6:168		
Performance																		
LN2 Capacity w/o Inventory L	65			95			166			240			388			673		
Unit Dimensions																		
Neck Opening in. (mm)	16.00 (406)			16.00 (406)			20.70 (527)			25.10 (638)			31.75 (806)			39.40 (1002)		
Usable Internal Height in. (mm)	19.7 (502)			28.9 (735)			30.0 (762)			29.5 (749)			29.3 (745)			33.6 (854)		
Inner Diameter in. (mm)	16.00 (406)			16.00 (406)			20.70 (527)			25.1 (638)			31.75 (806)			39.40 (1002)		
Overall Height w/ AutoFill in. (mm)	30.8 (784) [†]			46.3 (1176)			46.7 (1185)			45.8 (1161)			46.8 (1188)			54.0 (1372)		
Door W x D Requirement** in. (mm)	18.0 (457)			23.6x22.7 (601x577)			30.6x29.7 (778x754)			33.5x34.6 (852x878)			40x41.6 (1017x1056)			46.8x48.9 (1187x1242)		
Weight Empty* lb. (kg)	79 (36)			195 (88)			281 (127)			320 (145)			490 (222)			750 (341)		
Weight Liquid Full* lb. (kg) est.	195 (88)			365 (166)			577 (262)			748 (339)			1181 (536)			1950 (885)		
Blood Bag Capacities	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames	Total Bags	Bags/ Frame	No. Frames
791 OS/U Medsep (25 ml)	-	-	-	539	7	77	882	7	126	1,372	7	196	2,226	7	318	3,968	8	496
4R9951 (50 ml)	-	-	-	228	6	38	420	6	70	612	6	102	924	6	154	1,856	8	232
4R9953 (250 ml)	-	-	-	128	4	32	224	4	56	336	4	84	512	4	128	1,010	5	202
4R9955 (500 ml)	-	-	-	96	4	24	160	4	40	248	4	62	424	4	106	770	5	154
DF200 (200 ml)	-	-	-	80	4	20	128	4	32	200	4	50	336	4	84	610	5	122
DF700 (700 ml)	-	-	-	40	4	10	68	4	17	116	4	29	168	4	42	380	5	76

TWO Year Parts Warranty • FIVE Year Vacuum Warranty

Conforms to MDD 93/42/EEC, the Medical Device Directive for the EU. Freezer systems UL/C-UL Listed.

* Without inventory

**Minimum width required for vessel to pass through opening. Footprint may vary. Contact Tech Service for detailed drawings.

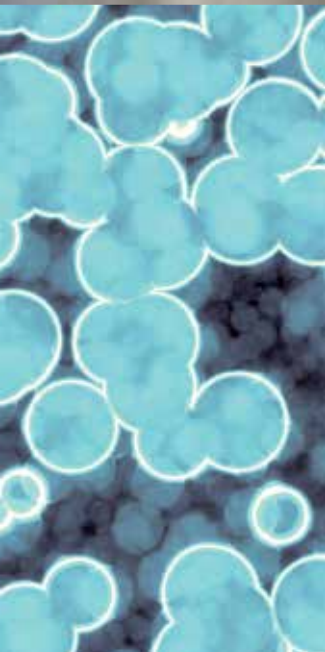
† Not available with Auto Fill.

MVE 816P-2T-190

The MVE 816P-2T-190 freezer is designed with the fertility market in mind. With its unique two-tier tray design, it can hold vials, straws and SUC-1 canisters which are used by leading fertility clinics worldwide. A constant temperature allows for vapor storage throughout the freezer at near liquid nitrogen temperatures. The innovative inventory system incorporates a two level storage arrangement that utilizes an access portal to allow removal of product stored on the lower level.

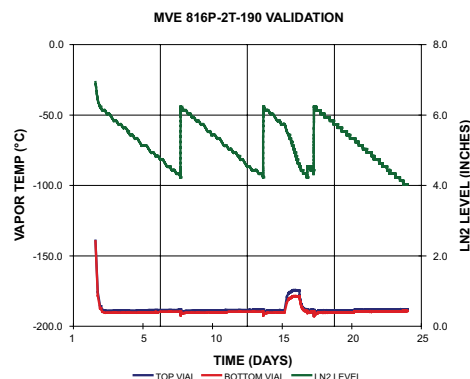
Features/Benefits:

- Vapor phase storage temperature of -190°C^*
- Two tier storage system maximizes capacity while minimizing floor space
- High efficiency design with offset neck for lowest possible LN2 consumption
- Optional Battery Backup
- TEC 3000 control system with liquid level control and temperature alarms
- Optional one-or two-tier step



Innovative Inventory System

Two tier storage (with cutout in top tier) allows convenient access to bottom tier.



Temperature Test Graph

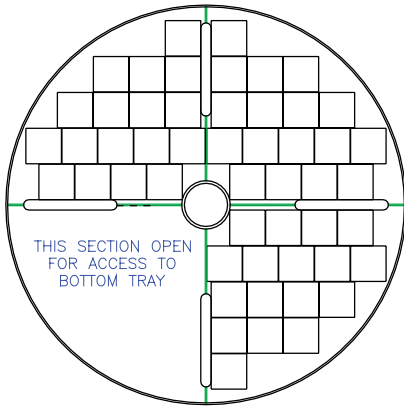
* Temp Test indicates typical performance of MVE 816P-2T-190 freezer with full inventory system and factory recommended level settings. Actual performance may vary with atmospheric conditions and usage.



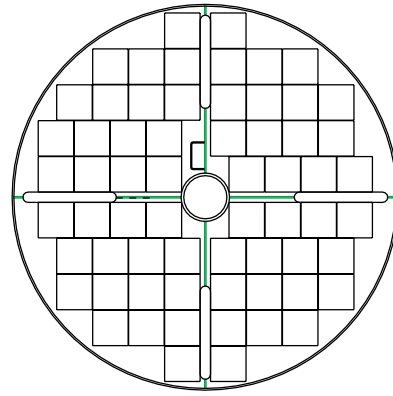
Rack Layouts

115 SUC Boxes Total

Top Tray



Bottom Tray



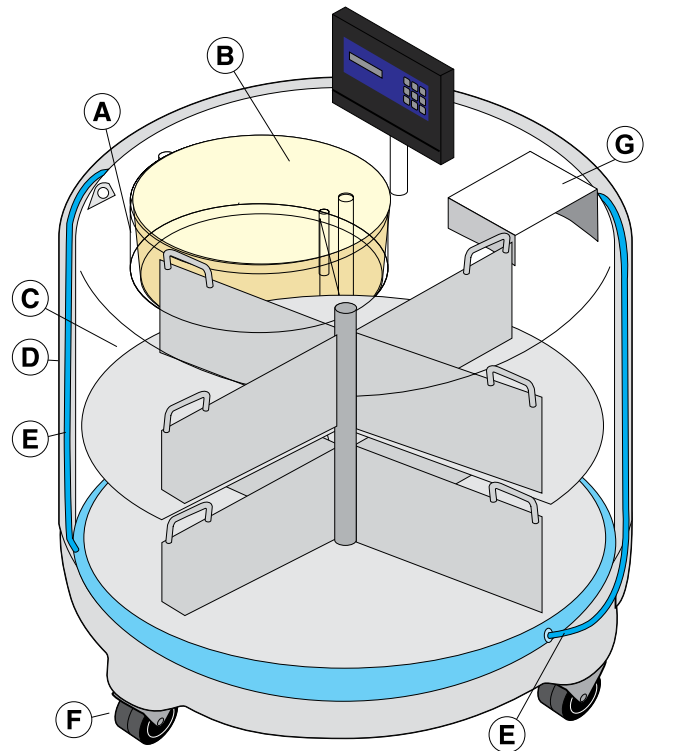
	MVE 816P-2T-190
Maximum Storage Capacity	
1.2 & 2 ml Vials (Internally Threaded)	10,500
Quantity of Large Racks 100 cell boxes	-
Quantity of Mini Racks 25 cell boxes	-
Number of Shelves per Rack	-
High Security Straw Capacity (0.5 ml)	31,584
Number of Canisters (73 mm)	94
Goblets/Canister : Straws/Goblet	2:168
Number of SUC-1 Canisters (2.5"x2.5"x11)	115
Number of 1.2 ml Vials on Canes	16,560
Number of 2.0 ml Vials on Canes	9,200
Number of 1/2 cc Straws 10/cane	35,650
Performance	
LN2 Capacity w/o Inventory L est.	381
LN2 Capacity at Platform Vapor L est.	56
Unit Dimensions	
Neck Opening in. (mm)	12.5 (317)
Usable Internal Height in. (mm)	13.0 (330) per level
Inner Diameter in. (mm)	28.70 (728) top tier 27.70 (702) bottom tier
Overall Height with Auto Fill in. (mm)	58.0 (1473)
Door Width Requirement** in. (mm)	32 (813)
Weight Empty* lb. (kg)	475 (215)
Weight Liquid Full* lb. (kg) est.	1155 (524)

TWO Year Parts Warranty • FIVE Year Vacuum Warranty

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* Without inventory

**Minimum width required for vessel to pass through opening. Footprint may vary. Contact Tech Service for detailed drawings.



- A Offset neck design minimizes liquid nitrogen consumption
- B Lightweight composite lid is scratch and dent resistant
- C Two level rotating tray provides easy access to samples
- D Stainless steel construction reduces maintenance
- E Annular (internal) filling lines minimizes frost build up and reduces maintenance requirements
- F Durable casters equipped with brakes
- G Lid Stand

MVE Stock Series

The MVE Stock Series provides the ultimate in security for the breeding industry and are primarily used to store semen and embryos. The freezers are designed for pull and pack shipment, with a wide neck opening for easy access. Although engineered for liquid storage, most MVE Stock Series can be used to store in vapor.

Features include:

- Wide neck opening
- Lowest liftover height
- Largest LN2 Capacity
- Optional Battery Backup





	MVE 103	MVE 808	MVE 816P-2T-190	MVE 1318	MVE 1842P-150	MVE 1877P-2T-150
Maximum Storage Capacity						
1.2 & 2 ml Vials (Internally Threaded)	-	11,700	10,500	20,800	-	-
Quantity of Large Racks 100 cell boxes	-	12	-	24	-	-
Quantity of Mini Racks 25 cell boxes	-	4	-	8	-	-
Number of Shelves per Rack	-	9	-	8	-	-
High Security Straw Capacity (0.5 ml)	7,728	37,296	31,584	76,104	-	347,424
Number of Canisters (73 mm)	23	74	94	151	-	517
Goblets/Canister : Straws/Goblet	2:168	3:168	2:168	3:168	2:168	4:168
Number of Canisters (2.5"x2.5"x11)	22	61	115	129	294	539
Number of 1.2 ml Vials on Canes	3,168	8,784	16,560	18,576	42,336	77,616
Number of 2.0 ml Vials on Canes	1,760	4,880	9,200	10,320	23,520	43,120
Number of 1/2 cc Straws 10/cane	6,820	18,910	35,650	39,990	91,140	167,090
Performance						
LN2 Capacity w/o Inventory L est.	39	230	381	482	872	1456
LN2 Capacity at Platform Vapor L est.	-	-	56	-	-	250
Unit Dimensions						
Neck Opening in. (mm)	16.0 (406)	25.0 (634)	12.5 (317)	35.5 (901)	25.0 (635)	25.0 (635)
Usable Internal Height in. (mm)	12.0 (305)	22.0 (558)	13.0 (330) per level	18.8 (479)	13.0 (330)	13.0 (330) per tray
Inner Diameter in. (mm)	16.00 (406)	28.30 (720)	28.70 (728) top tier 27.70 (702) bottom tier	39.60 (1007)	56.1 (1425)	56.25 (1429) top and bottom tiers
Overall Height with Auto Fill in. (mm)	16.4 (415)	53.5 (1359)	58.0 (1473)	58.7 (1491)	51.1 (1296)	64.6 (1639)
Door Width Requirement** in. (mm)	18 (457)	31 (787)	32 (813)	42 (1067)	60 (1524)	60 (1524)
Weight Empty* lb. (kg)	48 (22)	250 (114)	475 (215)	469 (213)	1167 (530)	1721 (781)
Weight Liquid Full* lb. (kg) est.	117 (53)	660 (300)	1155 (524)	1328 (602)	2721 (1234)	4316 (1958)

TWO Year Parts Warranty • FIVE Year Vacuum Warranty

Conforms to MDD 93/42/EEC, the Medical Device Directive for the EU. Freezer systems UL/C-UL Listed.

* Without inventory

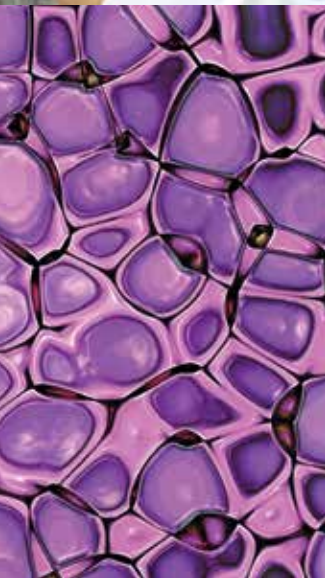
**Minimum width required for vessel to pass through opening. Footprint may vary. Contact Tech Service for detailed drawings.

MVE Cabinet Series

The MVE Cabinet Series provides stable cryogenic storage for up to 26,550 1.2 / 2.0 ml vials in a square outer package. These freezers provide maximum storage density and the industry's longest hold time. MVE Cabinet Series are primarily designed for liquid storage.

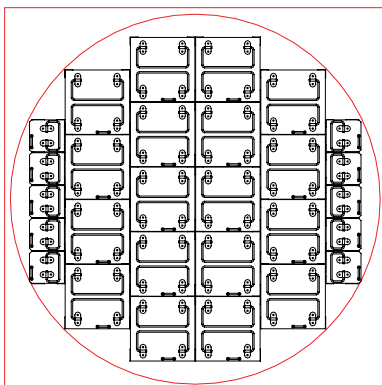
Features include:

- Liquid sample storage
- Ergonomic design
- Largest LN2 Capacity
- Optional Battery Backup

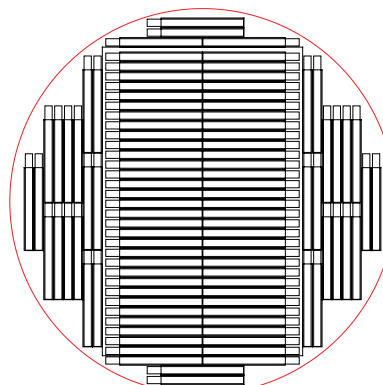


Rack Layouts

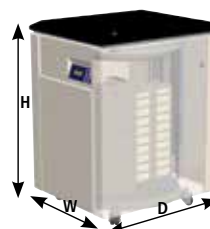
Square Rack Layout



4R9951 Layout



MVE 616C				MVE 1426C			
Maximum Storage Capacity							
1.2 & 2 ml Vials (Internally Threaded)	16,900			26,650			
Quantity of Large Racks 100 cell boxes	12			18			
Quantity of Mini Racks 25 cell boxes	4			10			
Number of Shelves per Rack	13			13			
High Security Straw Capacity (0.5 ml)	50,400			79,800			
Number of Canisters (73 mm)	60			95			
Goblets/Canister : Straws/Goblet	5:168			5:168			
Performance							
LN2 Capacity w/o Inventory L est.	240			388			
Unit Dimensions							
Neck Opening in. (mm)	25.1 (638)			31.8 (806)			
Usable Internal Height in. (mm)	30.0 (762)			29.9 (759)			
Overall Height in. (mm)	41.4 (1051)			42.3 (1075)			
Outside Dimensions (H x W x D) in. (mm)	41.4 x 28 x 35.1 (1052 x 711 x 892)			42.3 x 34.8 x 41.1 (1075 x 884 x 1044)			
Inner Diameter in. (mm)	25.1 (638)			31.8 (806)			
Door Width Requirement** (W X D) in. (mm)	28x35.1 (711x892)			34.8x41.1 (884x1044)			
Weight Empty* lb. (kg)	352 (160)			530 (240)			
Weight Liquid Full* lb. (kg) est.	785 (356)			1198 (543)			
Blood Bag Capacities							
	Total Bags	Bags/Frame	No. Frames	Total Bags	Bags/Frame	No. Frames	
791 OS/U (25 ml)	1,372	7	196	2,226	7	318	
4R9951 (50 ml)	612	6	102	924	6	154	
4R9953 (250 ml)	336	4	84	512	4	128	
4R9955 (500 ml)	248	4	62	424	4	106	
DF200 (200 ml)	200	4	50	336	4	84	
DF700 (700 ml)	116	4	29	168	4	42	



TWO Year Parts Warranty • FIVE Year Vacuum Warranty

Conforms to MDD 93/42/EEC, the Medical Device Directive for the EU. Freezer systems UL/C-UL Listed.

* Without inventory

**Minimum width required for vessel to pass through opening. Footprint may vary. Contact Tech Service for detailed drawings.

MVE CryoCart

MVE CryoCarts are designed for the loading of biological samples into canes, boxes, racks or frames. When used as a portable workbench, the unit will provide a safe and controlled environment for your samples for up to eight hours with the lid open. MVE CryoCart is ideal for transporting large quantities of samples from one tank to another within the same facility.

Features Include:

- Approximate hold time of 18 hours with lid closed
- Temperature monitor with type T Thermocouple
- Optional Temperature monitor and LN2 transfer hose connection with plumbing system (manual lever)



MVE CryoCart	
Performance	
LN2 Capacity w/o Inventory To Top of Platform L est.	53
Unit Dimensions	
Overall Length in. (mm)	51.7 (1313)
Overall Width in. (mm)	17.6 (447)
Overall Height in. (mm)	38.9 (988)
Lift Overall Height in. (mm)	36.3 (922)
Inside Length in. (mm)	41.0 (1041)
Inside Width in. (mm)	13.2 (335)
Inside Depth in. (mm)	15.4 (391)
Platform Height in. (mm)	6.0 (152)
Footprint in. (mm)	17.6x51.7 (447x1313)
Weight Empty lb. (kg)	241 (109)
Weight w/LN2 Filled to Top of Platform lb. (kg) est.	356 (161)
Approximate Hold Time with Lid on hrs	18
Number of Racks (15-2)	2

90 Days Parts Warranty • One Year Vacuum Warranty

MVE TEC 3000



The TEC 3000 employs a variety of advanced features that enable the controller to monitor and control the environment inside a freezer with a high level of precision.

Liquid Nitrogen Level Measurement

The TEC 3000 uses a differential pressure system to determine the LN2 level to an accuracy of ± 0.5 in. (15 mm) and a resolution of 0.1 in. (5.0 mm). Unlike alternative level sensing systems, differential pressure allows the exact level to be measured and displayed. Using the simple single point calibration in a range of 3.0 in. to 48.0 in. (75 mm to 1220 mm), the patented, self-maintaining, closed-loop system displays in inches, millimeters, or a percentage full.

Automatic Liquid Nitrogen Level Control

The fully automated LN2 level control system is based on user-defined parameters that can be electronically adjusted over the entire level range. The parameters include Low Level Alarm, Low Level Fill Point, High Level Fill Point and High Level Alarm. The redundant Dual Solenoid Valves for overfill protection run on 24 VDC, 1.0 amp (max).

Liquid Usage

This exclusive feature provides an estimation of liquid usage to track LN2 consumption and can provide an early failure warning to allow sufficient time to implement corrective action and save irreplaceable samples.

User-Defined Alarms

A total of 17 audio/visual alarms are used to alert the user to any potential or developing problems. The alarms include: High Temperatures, Low Temperatures, High Level, Low Level, Liquid Usage, Maximum Fill Time, Gas Bypass, Temperature Calibrations, Low Battery, Power Failure, Lid Open and Communication Loss.

Remote Alarm Monitoring

The TEC 3000 Alarm monitoring includes a Global Remote Alarm Relay, as well as four discrete contacts for High Level, Low Level, Temp A High and Low Battery.

Temperature Measurement

Two independent temperature measurement channels are employed to accurately measure the temperature across the entire storage space. The two platinum RTD sensors have an accuracy of $\pm 1.0^\circ\text{C}$ and a resolution of 0.1°C . The temperature can be displayed in $^\circ\text{C}$, $^\circ\text{F}$ or K. The single or two point calibration also has altitude compensation for the highest accuracy.

Hot Gas Bypass

This unique feature is able to vent warm nitrogen gas from the supply line before initiating a fill. This prevents warm gas from entering the freezer space, which helps maintain a stable temperature gradient and increases the efficiency by reducing excess LN2 evaporation.

Event Log / Data Storage

The TEC 3000 is able to store vital, unalterable, time-stamped data in nonvolatile memory. This is a great tool for assessing freezer performance and troubleshooting any problems. The memory can store 30,000 events, an estimated 10 years of storage capacity. The data includes time-stamped temperatures, LN2 level, liquid usage, and any alarms or events.

Password Security

The multilevel security system comprised of up to ten user-specific programmable passwords and four security levels can be customized to grant or restrict personnel access to certain menus and settings.

Communication Capabilities

Two independent ports can be used to communicate with other TEC 3000 controllers, a remote PC, serial printer, or other RS-485 networks and devices. Options include ASCII, MODBUS, Printer and One Fill All Fill (OFAF).

MVE CryoSystem 6000 Full Auto

The MVE CryoSystem 6000 Full Auto combines the compact efficiency of aluminum dewars with the monitoring and auto fill features of the TEC3000 control system. The differential pressure-based level control allows this unit to easily be used for liquid or vapor storage with a -190°C top box temperature. The TEC3000 continually monitors and records temperature and LN2 levels, auto filling when needed, and providing audio/visual alarms with remote connectivity when necessary. The enhanced safety factor of not having to manually fill this unit also helps maintain a consistent temperature profile for vapor storage.

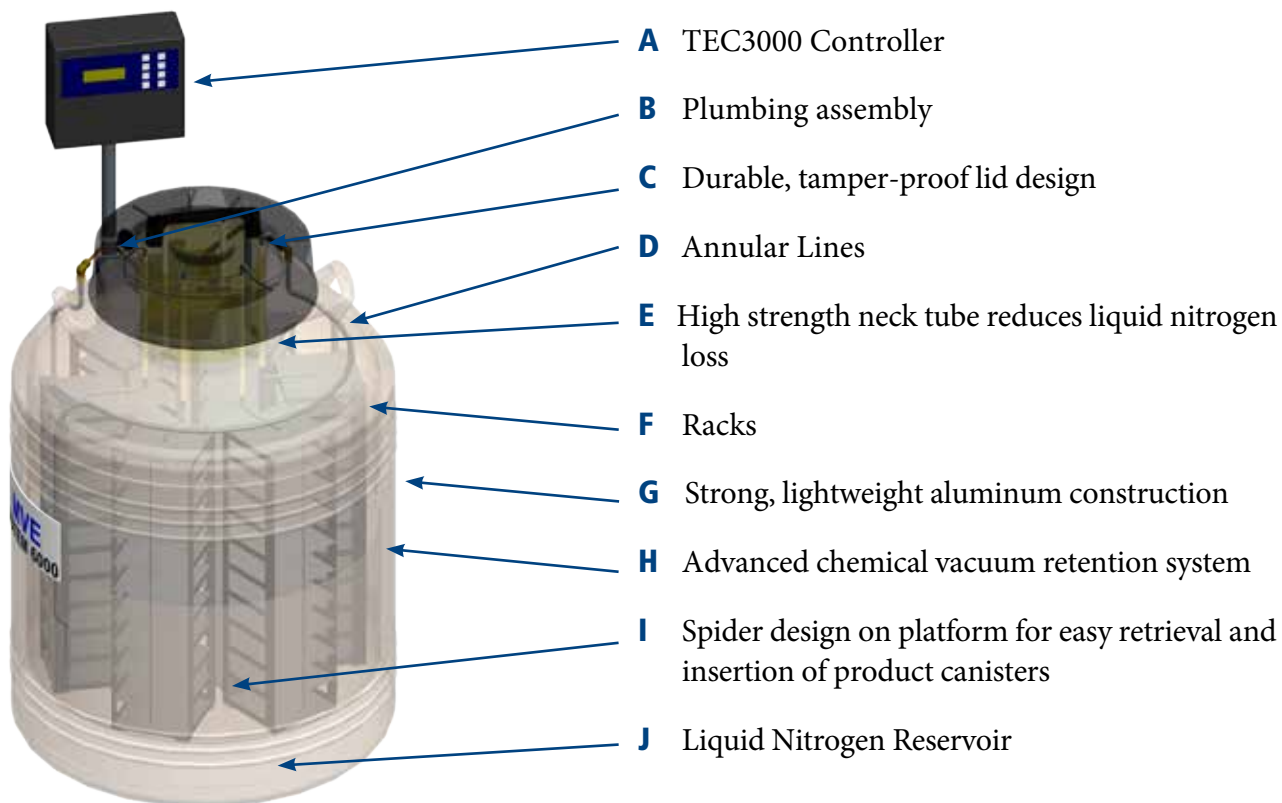
The CryoSystem 6000 Full Auto provides the convenience and security of high capacity stainless steel freezers for your average sized sample collection at a fraction of the price.

Features Include:

- Fully automatic LN2 level control and temperature monitoring
- Single temperature monitoring
- Can be used for liquid or vapor storage
- Tracks and displays LN2 consumption
- 17 user-defined audio / visual alarms including High Temperature, Low Level, Liquid Usage, Fill Time out, and more
- Remote monitoring and communication capabilities
- Electronically stores up to 10 years of unalterable, time-stamped data events for traceability and troubleshooting
- Transportable in emergencies or in the event of natural disasters
- Transfer hose included
- Optional Battery Backup



Tank Features



CryoSystem 6000 FA

Performance			
LN2 Capacity w/o Inventory L est.	175.0		
Static Evaporation Rate* L/day	4.0		
Unit Dimensions			
Neck Opening in. (mm)	8 (203)		
Overall Height with Auto Fill in. (mm)	47.1 (1196)		
Outer Diameter in. (mm)	26.5 (673)		
Weight Empty lb. (kg)	103 (47)		
Weight Full lb. (kg) est.	425 (193)		
Maximum Storage Capacity			
Box Size in.	2	3	3.75
Number of Racks	6	6	6
Number of vials 100/box est.	6,000 1.2 & 2 ml vials	4200 3 ml vials	3000 4 ml vials
Boxes per Rack	10	7	5

* 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.

TWO Year Parts Warranty • THREE Year Vacuum Warranty

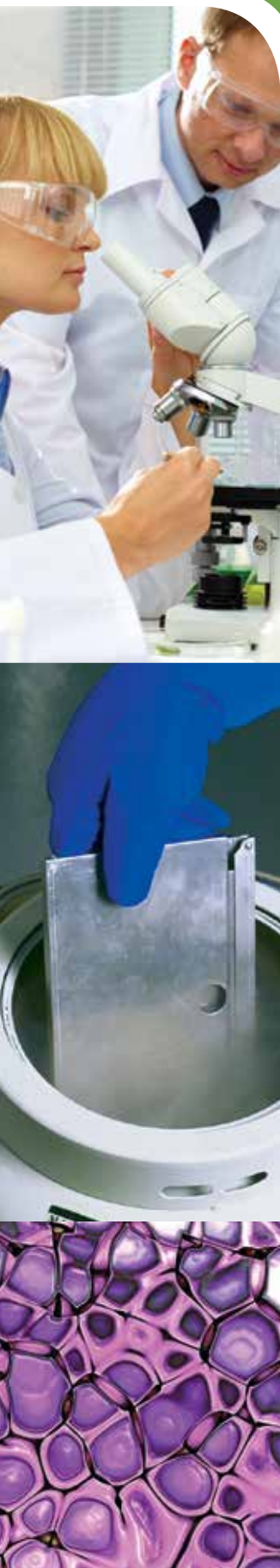
Conforms to MDD 93/42/EEC, the Medical Device Directive for the EU.

MVE CryoSystem Series

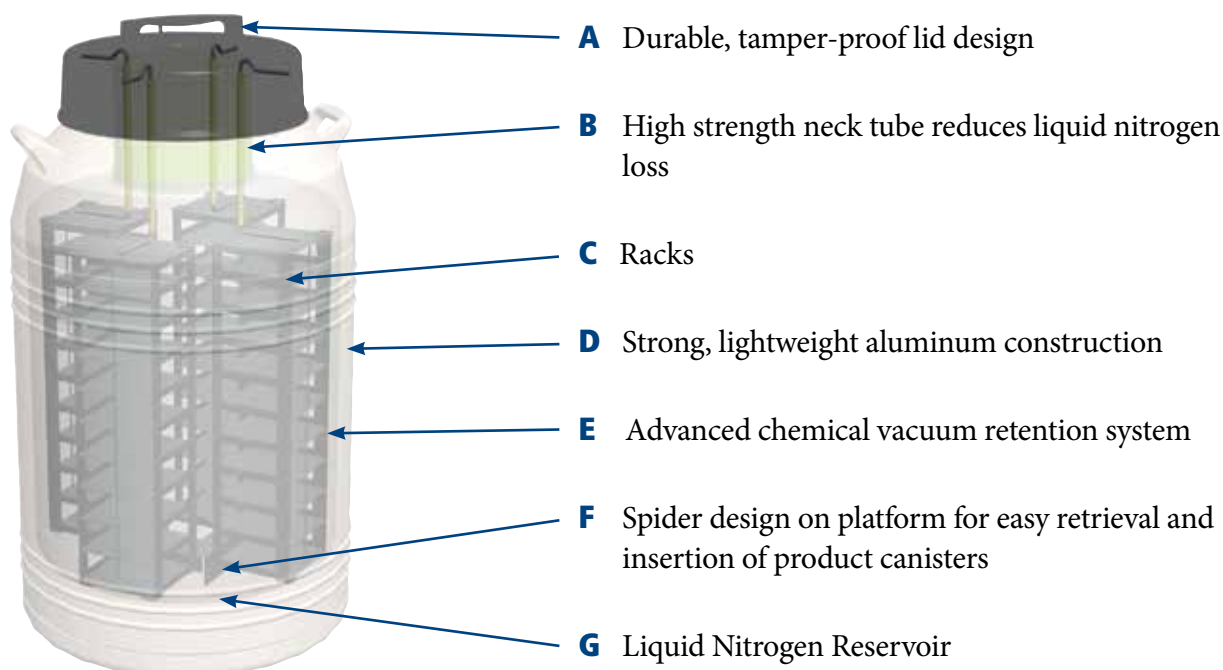
The MVE CryoSystem Series combines the benefits of low nitrogen consumption with mid-range vial capacity to meet the diverse needs of today's professionals worldwide. The lightweight and low-space demands of these containers make them the most economical units in their class.

Features Include:

- Designed for large capacity storage
- Low liquid nitrogen consumption
- Convenient lightweight package



Tank Features



	CryoSystem 750	CryoSystem 2000	CryoSystem 4000	CryoSystem 6000
Maximum Storage Capacity				
Number of Canisters	6	4	4	6
Number of 1.2 & 2.0 ml vials 100/box	-	2,000	4,000	6,000
Number of 1.2 & 2.0 ml vials 25/box	750	-	-	-
Boxes per Rack	5	5	10	10
Performance				
LN2 Capacity w/o Inventory L est.	47.4	61.0	121.0	175.0
LN2 Capacity w/Inv. L est.	45	51	111	150
Static Evaporation Rate* L/day	0.39	0.85	0.99	0.99
Working Duration** Full Days	76	38	70	104
Unit Dimensions				
Neck Opening in. (mm)	5.0 (127)	8.5 (216)	8.5 (216)	8.5 (216)
Overall Height in. (mm)	26.50 (673)	27.25 (692)	38.00 (965)	37.75 (959)
Outer Diameter in. (mm)	20 (508)	22 (559)	22 (559)	26 (665)
Weight Empty lb. (kg)	42 (19.0)	58 (26.3)	81 (36.7)	103 (46.7)
Weight Full lb. (kg)	126 (57)	182 (82.5)	300 (136)	425 (193)

* 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.

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

TWO Year Parts Warranty • THREE Year Vacuum Warranty

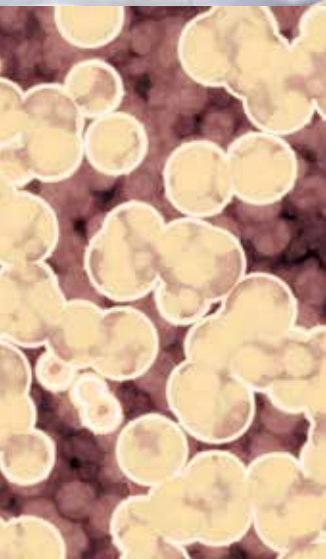
Conforms to MDD 93/42/EEC, the Medical Device Directive for the EU.

MVE Lab Series

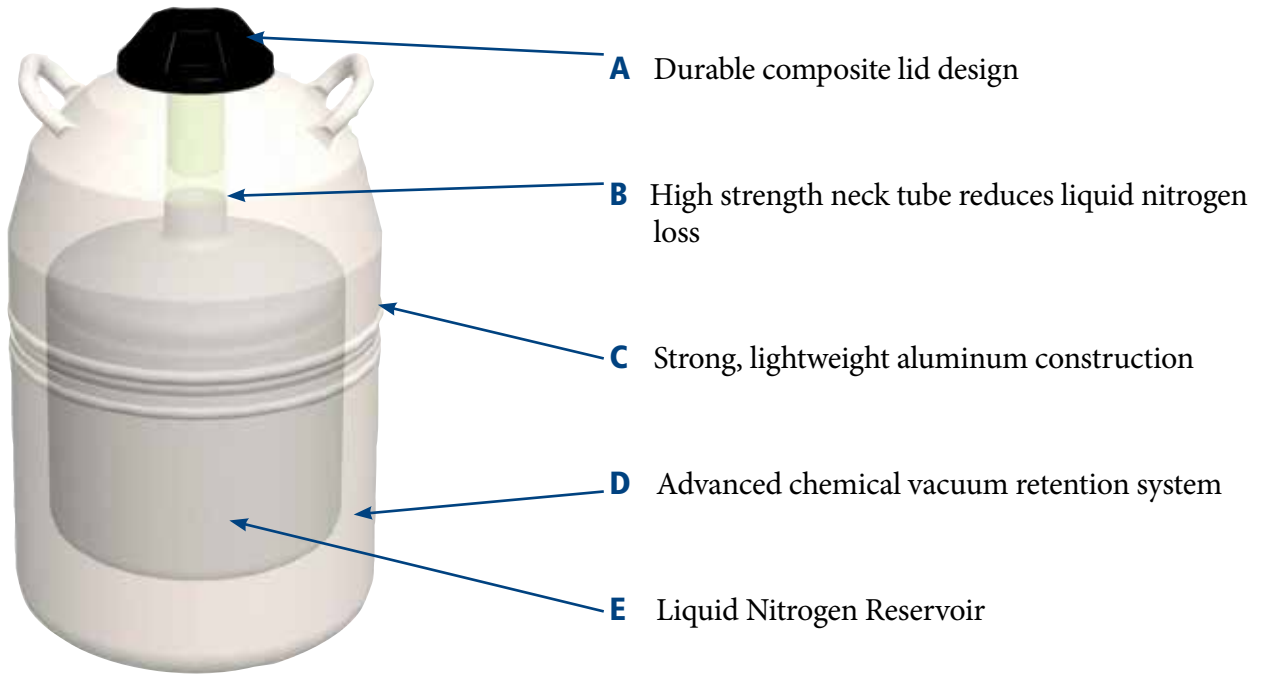
The Lab Series cryogenic liquid dewars are named for their acceptance in laboratories and medical facilities worldwide. These high-efficiency, super insulated dewars are the most convenient, economical way to store and dispense liquid nitrogen. Many lab units can be fitted with pouring spouts, pressurized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

Features Include:

- Designed for efficient storage of liquid nitrogen
- Low liquid nitrogen consumption
- Convenient lightweight package



Tank Features



	LAB 4	LAB 5	LAB 10	LAB 20	LAB 30	LAB 47	LAB 50
Performance							
LN2 Capacity w/o Inventory L est.	4	5	10	20	32	47	50
Static Evaporation Rate* L/day	0.19	0.15	0.18	0.18	0.22	0.39	0.49
Unit Dimensions							
Neck Opening in. (mm)	1.40 (35)	2.18 (56)	2.18 (56)	2.18 (56)	2.50 (64)	5.00 (127)	2.50 (64)
Overall Height in. (mm)	16.8 (426)	18.2 (462)	21.5 (546)	24.5 (622)	24.0 (610)	26.5 (673)	30.5 (775)
Usable Height in. (mm)	7.8 (198)	10.5 (266)	13.5 (343)	13.7 (348)	14.9 (378)	16.8 (427)	22.0 (559)
Outer Diameter in. (mm)	7.3 (185)	8.8 (222)	10.3 (260)	14.5 (368)	17.0 (432)	20.0 (508)	17.0 (432)
Internal Diameter in. (mm)	5.5 (139)	6.5 (165)	8.3 (210)	11.4 (289)	14.0 (356)	16.5 (419)	14.0 (356)
Weight Empty lb. (kg)	6 (2.7)	8 (4)	12 (5.4)	19 (9)	25 (11.4)	42 (19)	31 (14)
Weight Full lb. (kg)	13 (6)	17 (8)	31 (14)	55 (25)	82 (37.2)	120.4 (54.6)	120 (54.4)

* 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.

Note: The Lab Series is not intended for sample storage.

TWO Year Parts Warranty • FIVE Year Vacuum Warranty

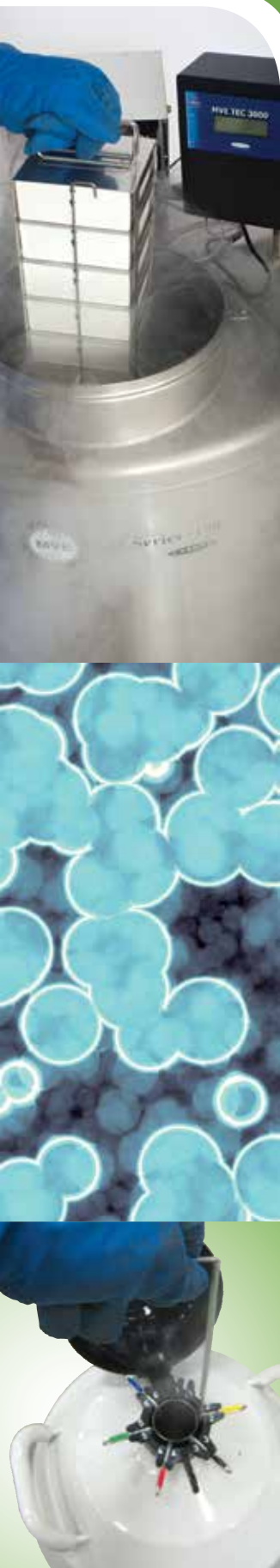
Conforms to MDD 93/42/EEC, the Medical Device Directive for the EU.

MVE SC Series

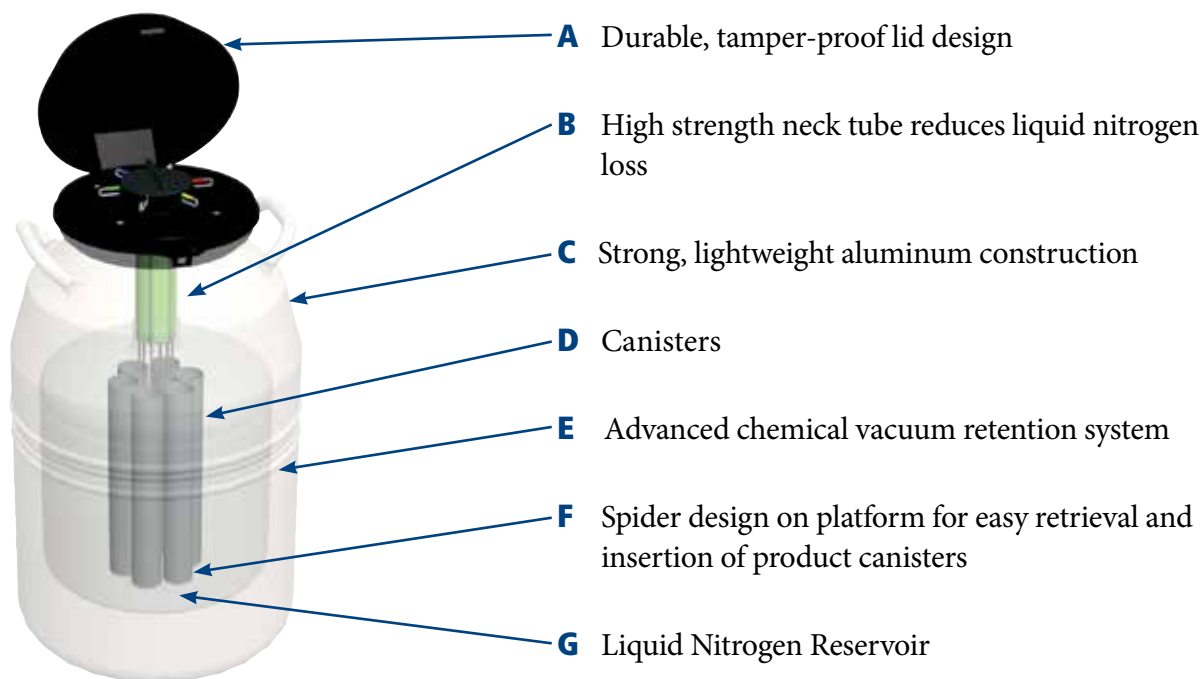
MVE offers the widest range of compact aluminum storage tanks available on the market today. Over the past 50 years, our product designs have improved through end-user input and evolved into a unique selection of units. The SC Series is designed for the user who has small capacity needs, but requires long-term storage and low liquid nitrogen consumption in a convenient lightweight package.

Features Include:

- Designed for large capacity storage
- Low liquid nitrogen consumption
- Convenient lightweight package



Tank Features



	SC 3/3	SC 8/5	SC 11/7	SC 20/20 Signature	SC 33/26	SC 36/32	Super 2
Maximum Storage Capacity							
Number of Canisters	6	6	6	6	6	6	6
Number of 1/2 cc Straws 10/ cane	-	-	660	540	540	540	660
Number of 1/2 cc Straws 1 Level Bulk	1122	1122	879	780	780	780	1122
Number of 1.2 & 2.0 ml vials 5/cane	-	-	150	-	150	150	210
Performance							
LN2 Capacity w/o Inventory L est.	3.6	8.4	11.0	20.5	33.0	36.5	24.5
Static Evaporation Rate* L/ day	0.13	0.15	0.16	0.09	0.13	0.10	0.085
Working Duration** Full Days	17	35	43	142	182	224	180
Unit Dimensions							
Neck Opening in. (mm)	2.18 (55)	2.18 (55)	2.18 (55)	2.16 (55)	2.18 (55)	2.18 (55)	2.18 (55.4)
Overall Height in. (mm)	16.0 (406)	18.5 (470)	21.6 (549)	26.0 (660)	25.9 (657)	27.2 (690)	28.2 (716)
Outer Diameter in. (mm)	8.7 (222)	10.2 (260)	10.2 (260)	14.5 (368)	18.2 (464)	18.2 (464)	14.5 (368)
Canister Height in. (mm)	5.0 (127)	5.0 (127)	11.0 (279)	11.0 (279)	11.0 (279)	11.0 (279)	11.0 (279)
Canister Diameter in. (mm)	1.65 (41.9)	1.65 (41.9)	1.65 (41.9)	1.65 (41.9)	1.50 (38)	1.50 (38)	1.65 (41.9)
Weight Empty lb. (kg)	8 (3.6)	12 (5.3)	17 (7.7)	26 (11.8)	34 (15.4)	34 (15.4)	26.5 (12)
Weight Full lb. (kg)	14.4 (65)	27.0 (12.1)	36.6 (16.6)	62.4 (28.3)	93.4 (42.4)	100.0 (44.8)	68.4 (31)

* 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.

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

TWO Year Parts Warranty • FIVE Year Vacuum Warranty

Conforms to MDD 93/42/EEC, the Medical Device Directive for the EU.

MVE XC Series

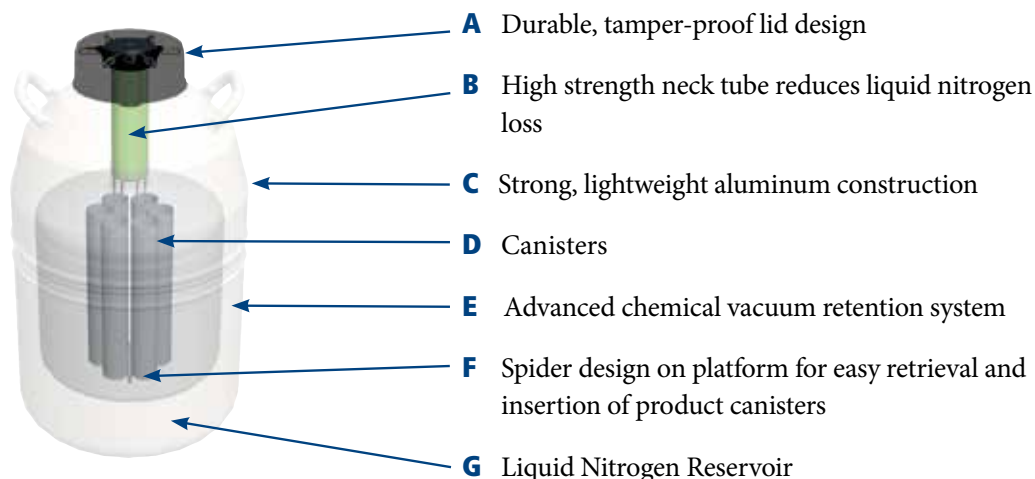
MVE XC Series tanks have capacities ranging from 700–5000 straws, and 210 to over 1000 vials. Manufactured to a world class level of excellence and backed by an industry-leading 5-year vacuum warranty, these durable, lightweight units can be relied on to perform in the most demanding of environments.

Features Include:

- Designed for large capacity storage
- Low liquid nitrogen consumption
- Convenient lightweight package



Tank Features



	XC 20 Millennium	XC 21/6	XC 22/5	XC 32/8	XC 33/22	XC 34/18	XC 34/18 Plus***	XC 43/28	XC 47/11- 65Q	XC 47/11-6	XC 47/11- 10
Maximum Storage Capacity											
Number of Canisters	6	9	6	9	6	6	6	6	6 sq.	6	10
Number of 1/2 cc Straws 10/cane	660	N/A	2,400	2,520	1,260	2,100	2,100	1,260	-	3,900+	3200
Number of 1/2 cc Straws 1 Level Bulk	879	3,870	3,666	3,960	1,764	3,300	3,300	1,764	-	6,200	5,000
Number of 1.2 & 2.0 ml vials 5/cane	210	N/A	810	855	360	630	630	360	-	1,320	1,050
Number of Racks 25 Vials	-	-	-	-	-	-	-	-	750	-	-
Performance											
LN2 Capacity w/o Inven- tory L est.	20.5	21.0	22.4	32.0	33.4	34.8	67.5	42.2	47.4	47.4	47.4
LN2 Capacity w/o Inven- tory Below Spider L est.						-	32.7	-	-	-	
Static Evaporation Rate* L/day	.095	0.35	0.35	0.35	0.14	0.18	0.31	0.14	0.39	0.39	0.39
Working Duration** Full Days	135	38	40	57	154	123	136	193	76	76	76
Unit Dimensions											
Neck Opening in. (mm)	2.18 (55)	3.50 (89)	3.81 (97)	3.81 (97)	2.75 (70)	3.50 (89)	3.50 (89)	2.75 (70)	5.00 (127)	5.00 (127)	5.00 (127)
Overall Height in. (mm)	25.7 (652)	17.2 (438)	22.0 (559)	21.5 (546)	26.0 (660)	26.6 (675)	37.5 (952)	26.4 (670)	26.5 (673)	26.5 (673)	26.5 (673)
Overall Inner Height in. (mm)	-	-	-	-	-	-	33.5 (850)	-	-	-	-
Outer Diameter in. (mm)	14.5 (368)	18.2 (464)	14.5 (368)	18.2 (464)	18.2 (464)	18.2 (464)	18.2 (464)	20.0 (508)	20.0 (508)	20.0 (508)	20.0 (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)
Canister Diameter in. (mm)	1.65 (41)	2.59 (68)	3.09 (79)	2.62 (67)	2.22 (56)	2.8 (71)	2.81 (71)	2.22 (56)	-	4.00 (102)	2.81 (71)
Distance: Platform to Top of Neck in. (mm)	-	-	-	-	-	-	21 (533)	-	-	-	-
Weight Empty lb. (kg)	23 (10.5)	24 (10.9)	26 (11.8)	30 (13.6)	34 (15.4)	34 (15.4)	45.9 (20.8)	36 (16.4)	42 (19.0)	42 (19.0)	42 (19.0)
Weight with Canisters lb. (kg)	-	-	-	-	-	-	45.9 (20.8)	-	-	-	-
Weight Full lb. (kg)	59.5 (27.0)	61.4 (27.9)	66.0 (30)	87.0 (39.5)	94.0 (42.5)	96.0 (43.5)	104.4 (47.3)	111.0 (50.5)	120.4 (54.6)	120.4 (54.6)	120.4 (54.6)

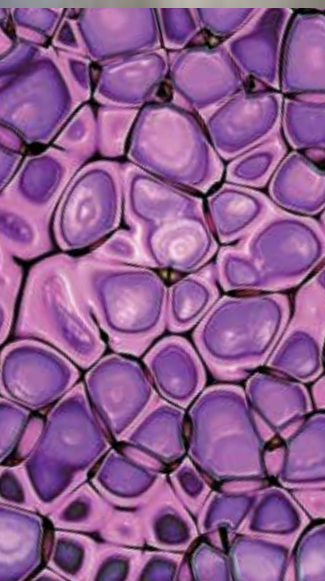
* Static evaporation rate and static holding time are nominal. Actual rate and holding time will be affected by the nature of container use, atmospheric conditions, and manufacturing tolerances.

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

***Optional center absorbent added to center canister (3 week holding time).

TWO Year Parts Warranty • FIVE Year Vacuum Warranty

Conforms to MDD 93/42/EEC, the Medical Device Directive for the EU.



MVE Doble Series

Featuring Advanced QWick™ Charge Technology

The Doble Series cryogenic liquid dewars are the first units to be designed for both vapor shipment and liquid storage. The Doble QWick Series utilizes an absorbent wicking material that charges with liquid nitrogen in two hours, providing the capacity for same-day vapor shipping. A unique absorbent layer in the base of the storage tanks of both series enables them to be charged with nitrogen and employed as dry shippers with hold times of up to 30 days. Once at the final destination, the tanks can be filled with liquid and used for long term storage, therefore avoiding the need for return shipments.

Features Include:

- Liquid and vapor storage options
- Low liquid nitrogen consumption
- Convenient lightweight package
- **CHARGES IN TWO HOURS**

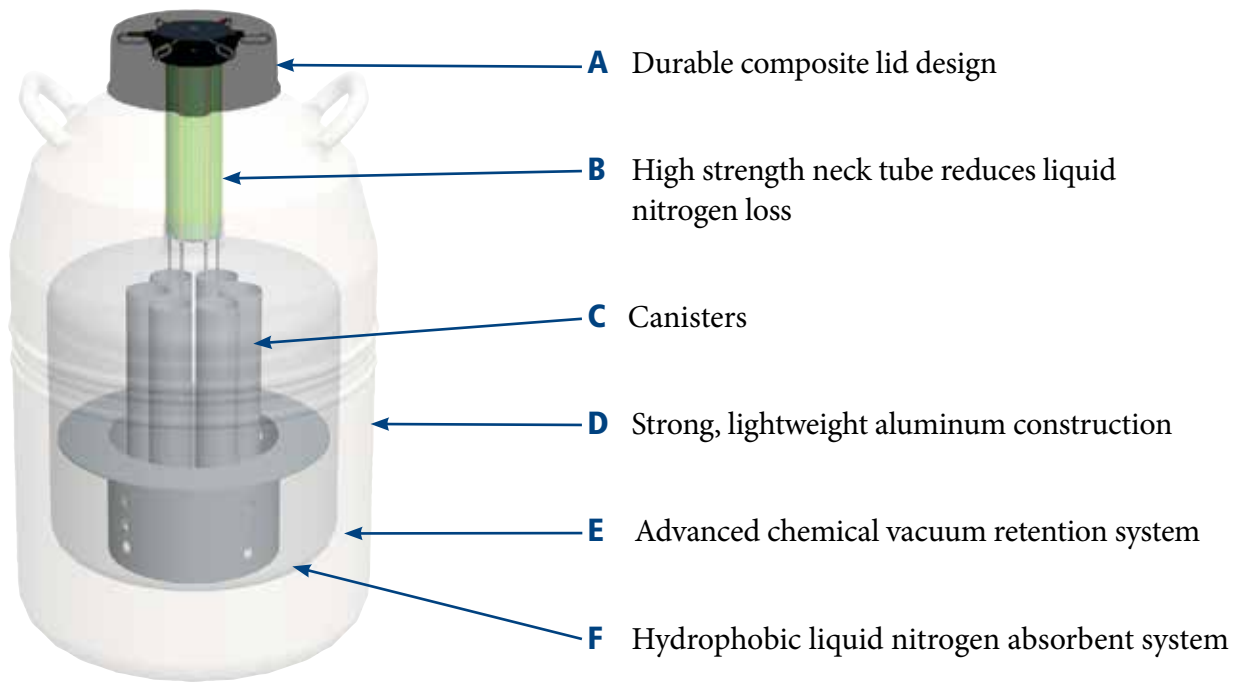


ADVANCED
QWick Charge Technology

Charges in under 2 hours

Ref 20888994 Rev A

Tank Features



	Doble 11	Doble 20	Doble 22	Doble 28	Doble 34	Doble 47	Doble 47-10
Maximum Storage Capacity							
Number of Canisters	6	6	6	6	6	6	10
No. of 1/2 cc Straws 10/cane	660	660	2400	2,400	2,100	4,500	3,500
Vial Capacity	210	210	810	810	630	1,320	1,050
Performance							
LN2 Capacity w/o Inventory w/o Inventory L est.	10.0	18.5	20.0	28.0	32.0	46.0	46.0
Vapor Capacity L	3.1	2.8	6.7	8.4	6.7	8.4	9.6
Static Evaporation Rate L/day	0.17	0.10	0.35	0.35	0.20	0.40	0.40
Working Duration days for liquid	37	116	40	50	100	74	72
Working Duration days for vapor	17	21	18	24	20	21	21
Unit Dimensions							
Neck Opening in (mm)	2.18 (55)	2.18 (55)	3.81 (97)	3.81 (97)	3.50 (89)	5.00 (127)	5.00 (127)
Overall Height in (mm)	21.6 (549)	25.7 (652)	22.0 (559)	22 (559)	26.6 (676)	26.5 (673)	26.5 (673)
Outside Diameter in (mm)	10.2 (260)	14.5 (368)	14.5 (368)	18.2 (462)	18.2 (462)	20.0 (508)	20.0 (508)
Canister Height in (mm)	11 (279)	11 (279)	11 (278)	11 (279)	11 (279)	11 (279)	11 (279)
Canister Diameter in (mm)	1.65 (41)	1.65 (42)	3.09 (79)	3.09 (78)	2.81 (72)	4.00 (101)	2.81 (72)
Weight Empty lb. (kg)	14.5 (6.6)	22.7 (10.3)	30.0 (13.6)	33.0 (15.0)	34.0 (15.4)	40.0 (18.1)	40.0 (18.1)
Weight Charged vapor lb. (kg)	18.5 (8.4)	29.7 (13.5)	40.0 (18.2)	47.0 (21.3)	48.5 (22.0)	53.5 (24.3)	53.5 (24.3)
Weight Full liquid lb. (kg)	32 (14.5)	56 (25.4)	68 (30.8)	89 (40.4)	92 (41.7)	117 (53.1)	117 (53.1)

TWO Year Parts Warranty • THREE Year Vacuum Warranty

Conforms to MDD 93/42/EEC, the Medical Device Directive for the EU.

MVE CryoShipper Series

Featuring Advanced QWick™ Charge Technology

The MVE CryoShipper Series is designed for the safe transportation of biological samples at cryogenic (-150°C or colder) temperatures. MVE CryoShipper Series utilizes the Advanced QWick Charge Technology that will charge the vapor shipper in two hours, providing the benefit of same-day vapor shipping. Manufactured from durable, lightweight aluminum, the vapor shippers employ a hydrophobic compound which absorbs the liquid nitrogen to ensure dry, spill-free vapor-phase shipping. Protective shipping containers are available for most models.

A protective shipping carton is available for most models. These containers may be used to ship your samples with a “non-hazardous” classification throughout the world, thus reducing costs and helping to assure sample viability.

Features Include:

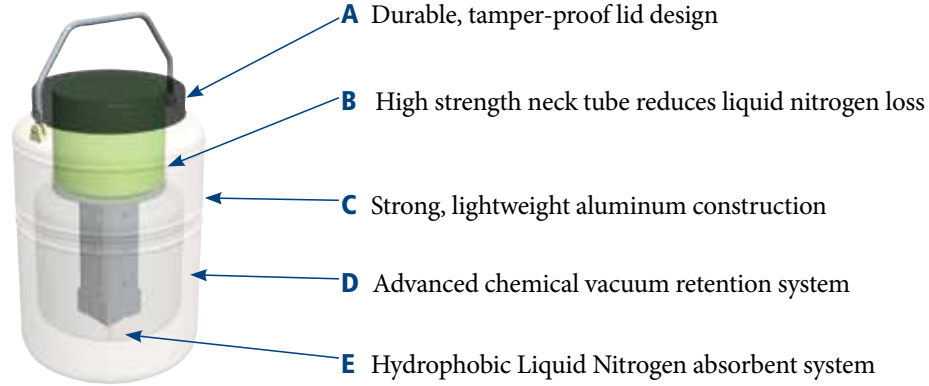
- Protective shipping containers ensure upright shipping
- Low liquid nitrogen consumption
- Convenient lightweight package
- **CHARGES IN TWO HOURS**



ADVANCED
QWick Charge Technology
Charges in under 2 hours

Ref 20888994 Rev A

Tank Features



	SC 2/1V	SC 4/2V	SC 4/3V	SC 20/12V	XC 20/3V**	Mini Moover	Cryo-Moover	Cryo Shipper Mini	Cryo Shipper	CryoShipper XC	IATA
Maximum Storage Capacity											
No. of Canisters	1	1	1	6	4 + 1 Center	1	7	-	1 Rack	-	Stainless Steel Secondary Container
No. of 1/2 cc Straws 10/cane	-	280	120	540	2500/2000**	60	3080	-		-	
No. of 1/2 cc Straws 1 Level Bulk	88	440	210	780	3750/3000**	88	4354	-		-	
No. of 1/4 cc Straws 1 Level Bulk	182	938	452	1630	7410/6000	185	-	-		-	
No. of 1.2 & 2.0 ml Vials 5/cane	-	95	40	150	675/560**	20	945	-		-	
No. of 1.2 & 2.0 ml Vials 6/cane	-	102	48	180	840/672**	24	1134	-	500	966 (Bulk)	
No. of blood bags stored 4R9953	-	-	-	-	-	-	-	-	10	10	
Performance											
Liquid Nitrogen Capacity L est.	1.5	3.6	4.3	12.3	6.8	2.9	4.2	5.9	8.5	10.0	11.8
Static Holding Time Days	8	13	21	85	16	14	12	7	10	14	14
Static Evaporation Rate* L/day	0.19	0.26	0.20	0.09	0.35	0.20	0.35	0.84	0.85	0.85	0.80
Unit Dimensions											
Neck Opening in (mm)	1.40 (35.0)	2.75 (70.0)	2.00 (51.0)	2.00 (51.0)	3.81 (96.7)	1.40 (35.0)	3.80 (97.0)	8.50 (216.0)	8.50 (216.0)	8.50 (216.0)	8.50 (216.0)
Overall Height in (mm)	13.5 (343)	18.4 (468)	19.4 (492)	25.7 (652)	25.0 (635)	19.5 (495)	22.0 (558)	20.0 (508)	21.5 (546)	23.0 (584)	24.0 (610)
Outside Diameter in (mm)	7.25 (184)	8.70 (222)	8.70 (222)	14.50 (368)	14.50 (368)	7.20 (184)	18.30 (464)	11.60 (295)	14.50 (369)	15.00 (381)	15.00 (381)
Canister Height in (mm)	5.0 (127)	11.0 (278)	11.0 (278)	11.0 (278)	11.0 (278)	11.0 (278)	11.0 (278)	-	-	12.5 (317.5±)	8.5 (215)
Canister Diameter in (mm)	1.20 (31)	2.62 (67)	1.81 (46)	1.50 (38)	3.20 (80)	1.20 (31)	3.10 (79)	-	-	-	7.50 (190)
Weight Empty lb. (kg)	6.0 (2.7)	10.0 (4.5)	11.6 (5.3)	25.7 (11.6)	24.1 (10.9)	9.0 (4.1)	30.5 (13.8)	23 (10.4)	26.1 (11.8)	33.0 (15.0)	33.0 (15.0)
Weight Charged vapor lb. (kg)	8.0 (3.6)	17.1 (7.7)	19.1 (8.7)	41.3 (18.7)	34.0 (15.4)	13.7 (6.2)	40.9 (18.6)	32 (14.5)	39.0 (17.7)	49.0 (22.2)	50.5 (22.9)
Weight Full liquid lb. (kg)	9.0 (4.1)	20.0 (9.1)	21.0 (9.5)	56.5 (25.6)	38.4 (17.4)	15.5 (7.0)	87 (39.5)	45 (20.4)	54.5 (24.7)	73.0 (33.1)	73.0 (33.1)

* Without inventory

** Optional center absorbent added to center canister (3 week holding time).

TWO Year Parts Warranty • THREE Year Vacuum Warranty

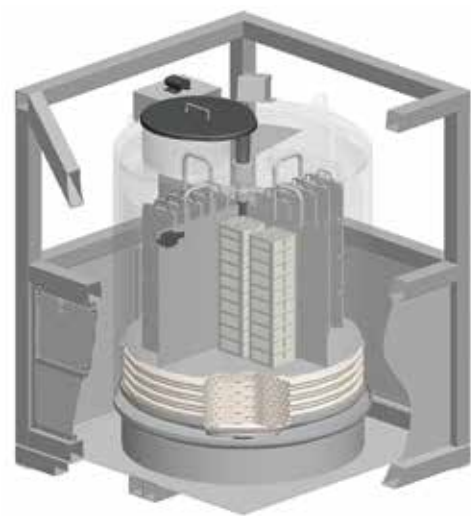
Conforms to MDD 93/42/EEC, the Medical Device Directive for the EU.

MVE 1536 Dry Shipper

The MVE 1536PD Dry Shipper is specifically designed to provide peace of mind when shipping and/or relocating samples.

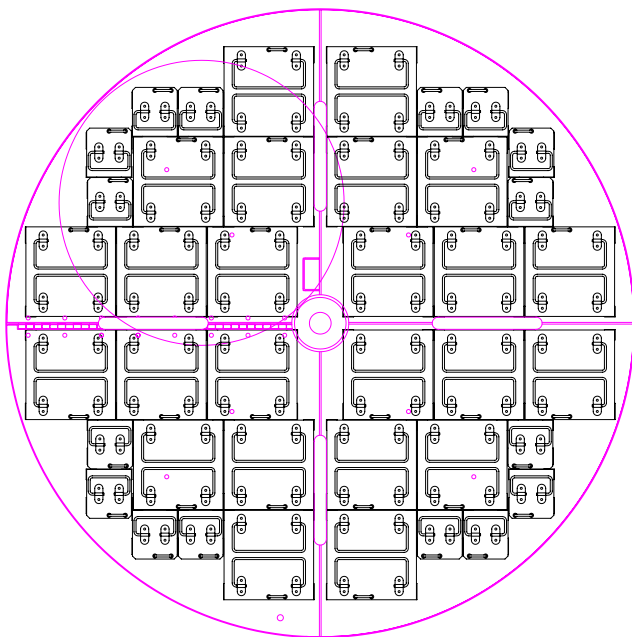
Features Include:

- Liquid Nitrogen absorbent can be charged for dry shipment
- Hold time up to 20 days when properly charged
- Rigid steel frame can be moved with pallet jack/forklift
- Sized to fit in a wide-body aircraft
- Inventory tray locks to prevent rotation during transit
- Locking lid
- Includes data logger to monitor and record sample temperature during shipment or relocation
- Inner vessel may be decontaminated after shipping if necessary



Rack Layout

Square Rack Layout



Tank Features



Top View



Cabosil Under Tray

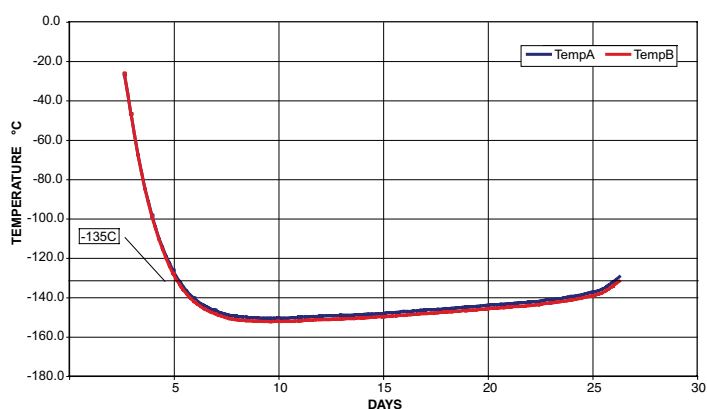


Locking Cabinet



Data Logger

TEMPERATURE TEST*



Temperature Test Graph

* Temp Test indicates typical performance of MVE 1536PD freezer with full inventory system and factory recommended level settings. Actual performance may vary with atmospheric conditions and usage.

MVE 1536PD

Maximum Storage Capacity

1.2 & 2 ml Vials (Internally Threaded)	34600
Quantity of Large Racks 100 cell boxes	24
Quantity of Mini Racks 25 cell boxes	16
Number of Shelves per Rack	13

Performance

Absorbed LN2 Capacity L est.	133
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Unit Dimensions

Neck Opening in. (mm)	17.5 (444)
Usable Internal Height in. (mm)	30 (762)
Inner Diameter in. (mm)	30 (762)
Overall Height including Frame** in. (mm)	64 (1625)
Liftover Height in. (mm)	42.1 (1070)
Step Height in. (mm)	20.5 (521)
Depth of Fold Down Step in. (mm)	10.8 (274)
Footprint in. (mm)	52x52 (1321x1321)
Weight Empty* lb. (kg)	1600 (726)
Weight Liquid Full* lb. (kg) est.	2044 (927)

TWO Year Parts Warranty • FIVE Year Vacuum Warranty

Conforms to MDD 93/42/EEC, the Medical Device Directive for the EU. Freezer systems UL/C-UL Listed.

* Without inventory

** Contact Tech Service for detailed drawings.

PDF Logger®

With the PDF Logger®, you require only one single device and no specific software or cables to monitor temperature during the global transfer of cryobiological goods. After the datalogger has been in service for one year, simply discard the logger and purchase a new one for about the same cost of recalibration and battery replacement. Your PDF Logger is always under warranty!

Features Include:

- Records and stores up to 16,000 data points
- High and Low Alarm Settings
- No recalibrations
- 1 year lifespan
- No additional software or cables needed!
- ISO 19005-1
- Compliant: FDA 21 CFR Part 11, GMP, GLP
- CE marked



PDF Logger®

Specifications

Dimensions L, W, H in (mm)	3.7 x 1.6 x 0.5 (95 x 40 x 12)
Weight oz (g)	1.4 (40)
Temperature Range	-200°C to +200°C
Accuracy	± 0.5°C [-200°C, -10.1°C]
Resolution	0.1°C
Display	Multifunction LCD, 23.5 x 23.5 mm
Case	ABS plastic
Battery	3.6V
Battery Life	400 days
Sensor	Pt100 3-wire class 0.5
Memory	16,000 data points
Interface	USB – PC Universal Serial Bus
Evaluation Report	Built-in PDF file generator that automatically establishes an evaluation file including graph. Complies to the ISO Standard 19005-1 Document Management for the long-term preservation of electronic documents

1 Year Warranty — No Returns

Visit www.chartbiomed.com for more information.

MVE CryoCube™

The MVE CryoCube is a secure cryogenic shipping option for your biological samples. In keeping with MVE tradition, the CryoCube incorporates creative engineering and simplistic design to allow shipping in any orientation without sacrificing temperature or hold time. Improved welded construction provides the CryoCube with consistent, high quality design with every unit. **One way shipping saves on dry ice storage and shipping.**

Features include:

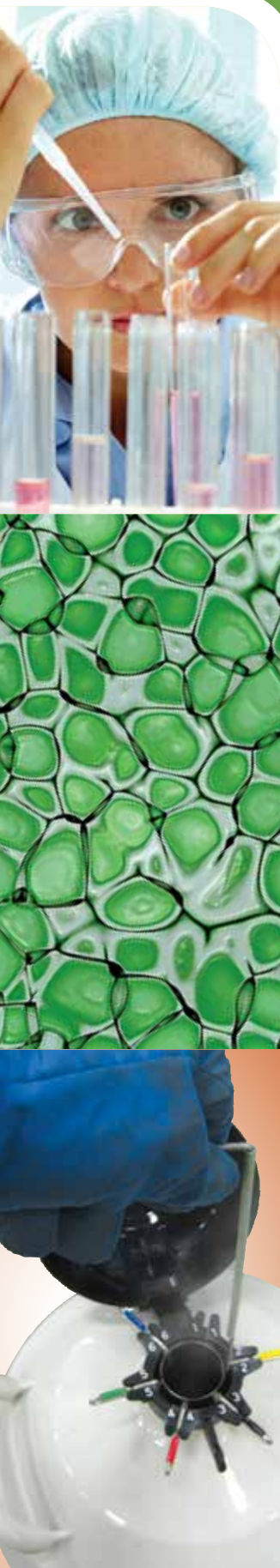
- Charges in 1 hour
- Operates as a dry shipper
- -150° C temperature
- 5-day holding time
- Safe shipping in any orientation
- Safe for international shipping
- Welded construction for added integrity



Above:
CryoCube insert

MVE CryoCube™	
Maximum Storage Capacity	
Number of Canisters	1
Number of 1/2 cc Straws in Bulk	88
Number of 1/4 cc Straws in Bulk	182
Number of 1.2 & 2.0 ml vials	6
Performance	
LN2 Capacity w/o Inventory (min) L est.	1.5
Static Holding Time days	5
Unit Dimensions	
Neck Opening in. (mm)	1.4 (35)
Overall Height in. (mm)	12.5 (317.5)
Overall Width in. (mm)	12 (305)
Overall Depth in. (mm)	12 (305)
Inner Canister Height in. (mm)	4.72 (120)
Inner Canister Diameter in. (mm)	1.25 (32)
Weight Empty lb. (kg)	7.5 (3.41)
Weight Charged lb. (kg)	10.2 (4.63)

ONE Year Vacuum Warranty



MVE Cryo-Cyl Series

The MVE Cryo-Cyl Series is part of Chart's Supply System designed specifically for low pressure, liquid applications. The Cryo-Cyl Series has a low center of gravity and a polished, stainless steel outer shell, making these cylinders perfect for laboratory and hospital applications. They can be equipped with stainless-steel casters.

Features include:

- Available in 35 and 50 L tanks
- Extended stem liquid valve
- Rugged, oversized casters
- Optional stainless-steel casters (MRI applications)



	Cryo-Cyl 35	Cryo-Cyl 50
Maximum Storage Capacity		
Liquid (Gross) L	35	50
Performance		
Static Evaporation Rate %	4	4
Working Duration days for liquid	37	116
Working Duration days for vapor	17	21
Unit Dimensions		
Overall Height in (mm)	34.75 (882.7)	40.5 (1035.1)
Outside Diameter in (mm)	16 (406)	16 (406)
Weight Empty lb. (kg)	88.5 (38.78)	98.5 (47.68)
Weight Full liquid lb. (kg)	152.5 (69.2)	188.5 (85.5)
Relief Valve Setting psig/bar	22 (1.5)	22 (1.5)

90 Day Parts Warranty • FIVE Year Vacuum Warranty

MVE Research Dewars

The MVE Research Dewars are developed specifically for easy and safe transport of liquid nitrogen and samples within facilities. These units are vacuum insulated for superior thermal performance and long hold times.



Features Include:

- All stainless steel construction
- Insulated lid
- Wide mouth for easy access
- Convenient carrying handle (except .5L)
- Meets laboratory safety requirements that prohibit glass lined dewars



	RD-6	RD-3	RD-2	RD-1	RD-1W	RD-0.5
Performance						
Liquid Nitrogen Capacity <i>L est.</i>	6	3	2	1	1	0.5
Handle	yes	yes	yes	yes	yes	no
Unit Dimensions						
Neck Opening in. (mm)	7.3 (185)	7.3 (185)	3.9 (99)	3.3 (84)	3.9 (99)	2.6 (66)
Inner Diameter in. (mm)	7.3 (185)	7.3 (185)	3.9 (99)	3.3 (84)	3.9 (99)	2.6 (66)
Outside Diameter in. (mm)	7.8 (198)	7.8 (198)	4.8 (122)	4.3 (109)	4.8 (122)	3.4 (86)
Usable Internal Height in. (mm)	10.6 (269)	6.3 (160)	7.1 (180)	6.2 (157)	6.1 (155)	7.1 (180)
Overall Height in. (mm)	11.8 (300)	7.5 (191)	12.3 (312)	9.1 (231)	7.0 (178)	8.0 (203)
NER without Cover Days	0.4	0.2	0.1	0.1	0.2	0.1

90-Day Warranty

Chart: Total Cryogenic Solutions

Air Separation



Distribution & Storage



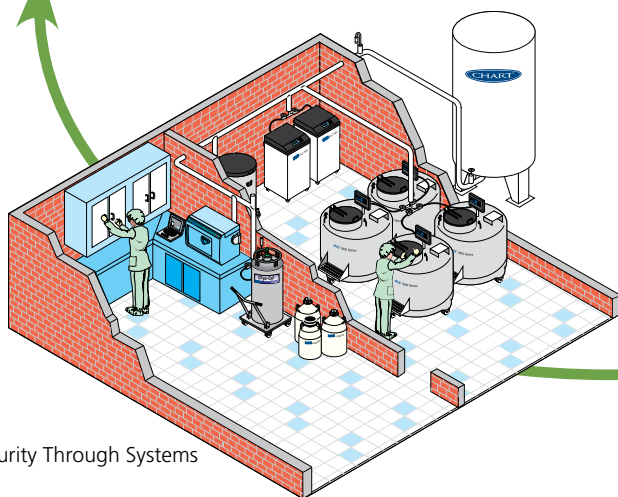
Bulk Storage Tanks



Dewars



Liquid Cylinders



Security Through Systems



Freezers

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Ball Ground, GA 30107
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Fax 770-721-7758
customerservice.usa@chartindustries.com

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