MVE Eterne Series

-190°C Vapor Storage

There is a critical temperature for most biological samples that are cryopreserved. This temperature, known as the Glass Transition Temperature (Tg), is widely accepted as being in the order of -130 to -135°C. The long term viability of frozen samples can be seriously compromised if stored above this temperature. Further, if they experience several transitions through the temperature, in either thermal direction additional deterioration may occur. It is important that the LN_2 freezer maintain a lower temperature, even during filling and sample retrieval cycles. This is much more likely to be achieved if the freezer maintains -190°C than if the system is at or near the critical temperature at normal equilibrium. Chart's approach to this problem was to improve the fundamental design of freezers used in vapor phase and to design and build a nitrogen vapor freezer which addresses the previous issues associated with storage in vapor.

- The offset neck and guaranteed free moving sample turn tray offer incredible user convenience and sample access. The single sample retrieval point is incredibly ergonomic compared to the reaching and stretching required with standard freezers.
- Specifically designed for vapor storage.
- Efficient thermal design ensures 95% of system surface area enclosed by vacuum - compare to typical 60% in standard freezers.
- Lowest sample temperature in the industry with minus 190°C. This ensures an increased safety margin below the Glass Transition Temperature and better long term sample viability in true vapor storage.
- Lowest liquid usage - typically 40% below equivalent standard tanks of similar capacity. Note that NER's for competitive tanks are calculated before the addition of the vapor sleeve, which will increase consumption of LN_2 by 50% or more.
- No artificial aids required to lower and maintain temperature as with competitive tanks. Eterne achieves the lowest running cost/sample.
- Liquid reservoir below sample platform will typically maintain temperature for more than 20 days in vapor use.
- Validated to maintain temperature of samples for at least two hou s with the lid removed.
- Compact design means highest number of vials stored per square foot of laboratory space.
- Differential pressure level measurement - seamless measurement is important in vapor systems as the LN_2 level is small range - typically 4 to 8 inches.
- Temperature measurement by RTD, the most accurate system available. 2 point calibration ensures compliance with GLP and GMP.

SECURITY THROUGH MVE SYSTEMS

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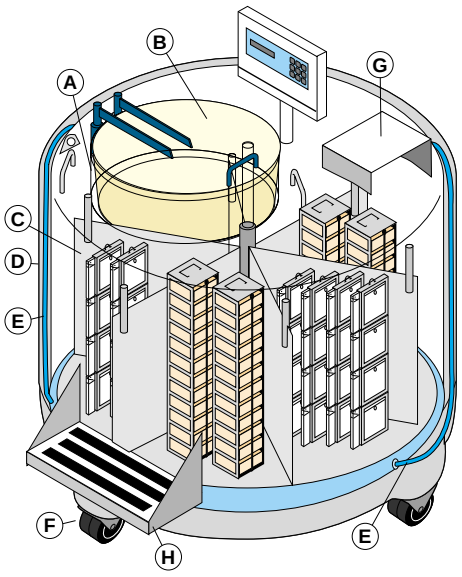
-190° Vapor Storage

Specifications

	MVE 810 Eterne	MVE1520 Eterne	MVE1830 Eterne
Unit Dimensions			
LN2 Capacity (Liters)	370	756	1612
LN2 Capacity Under Platform (L)	52	133	260
Neck Opening (Inches)	12.5	17.5	25
Useable Internal Height (Inches)	28.8	28.6	28.6
Inner Diameter (Inches)	28.5	38.5	56.3
Overall Height (Inches)	47.3	53.2	58.4
Outer Diameter (Inches)	32	42	60
Weight Empty (Lbs.)	475	600	1500
Unit Capacities - Vials			
Number of Racks (100 cell boxes)	12	24	54
Number of Racks (25 cell boxes)	4	16	30
Number of Stages per Rack	12	13	13
Total Vial Capacity	*15,600*	*36,400*	*79,950*
Number of Racks (100 cell boxes)	12	24	54
Number of Racks (25 cell boxes)	4	16	30
Number of Stages per Rack	7	8	8
Total Vial Capacity	*9,100*	*22,400*	*49,200*



A Offset neck design to maintain -190°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 cryobiological samples

D Low Maintenance, all-stainless steel construction

E Annular filling lines reduces frost and ice formation near lid

F Super-tough, durable casters

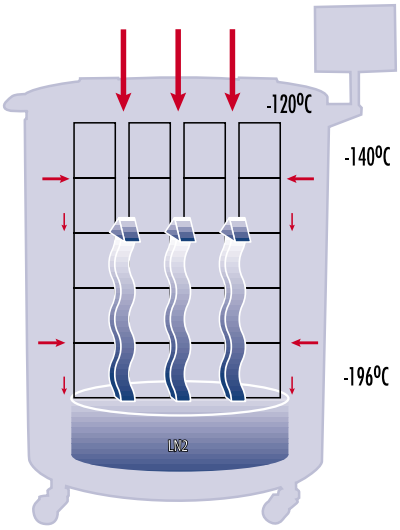
G Rack Stand

H Step-up platform (MVE 1520 and 1830)

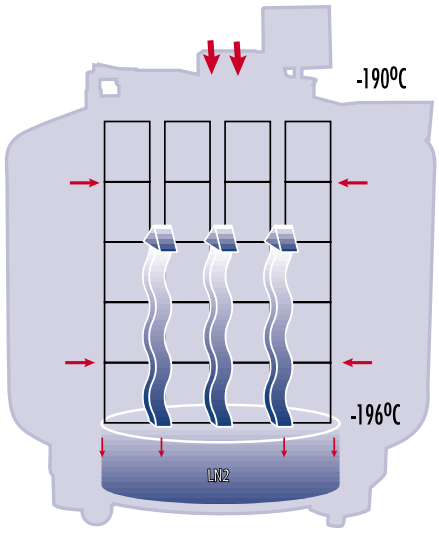
LN_2 Source Removed

Five Year Vacuum

MVE Eterne



Heat path into standard LN2 refrigerator in vapor phase mode fitted with vapor sleeve. Note additional heat path into liquid reservoir provided by sleeve.



MVE-190HE system in vapor mode. Note that only internal heat paths are created to improve the temperature gradient giving -190°C below the lid.

BLOOD BAG CAPACITIES

Unit Capacities - MVE 810HE Blood Bags	Frame Ht"	Bags/Frame	No. Frames	Total Bags
4R9951	25.5	6	108	648
4R9953	26	4	91	364
4R9955	26	4	70	280
DF200	26	4	54	216
DF700	26	4	N/A	N/A
C7005	23.5	3	72	216
C7400	28.5	3	72	216
Unit Capacities - MVE 1520HE Blood Bags				
4R9951	25.5	6	228	1,368
4R9953	26	4	190	760
4R9955	26	4	136	544
DF200	26	4	108	432
DF700	26	4	60	240
C7005	23.5	3	152	456
C7400	28.5	3	152	456
Unit Capacities - MVE 1830HE Blood Bags				
4R9951	25.5	6	480	2,880
4R9953	26	4	390	1,560
4R9955	26	4	282	1,128
DF200	26	4	246	984
DF700	26	4	132	528
C7005	23.5	3	306	918
C7400	28.5	3	306	918

MVE Bio-Medical Division, Chart Industries, Inc.
3505 County Road 42 West, Burnsville, MN 55306-3803 U.S.A.
Phone: 952-882-5000 . 888-683-2796 Local Fax: 952-882-5172 . www.chartbiomed.com

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