BioCryo Series

Controlled Rate Freezer

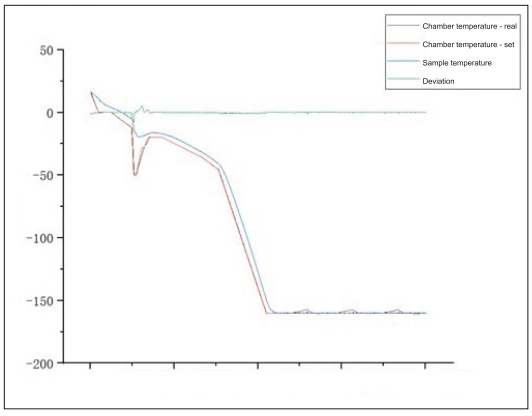


- Innovative technology for reproducible result and highest sample viability.
- In order to maintain cellular viability during the freezing process, certain cells – such as protist, mammalian, and plant cells – require precise control of the freezing rate in order to minimize the detrimental effects of undercooling and the heat liberated during the phase change process from water to ice.
- Controlled rate freezing is an established procedure for the cryopreservation of biologic material in research and clinical applications. In-line with GMP protocols, cell material can be frozen then stored at cryogenic temperatures.
- BioCryo controlled-rate freezer (CRF) achieve reliable, reproducible results with maximum operational safety. They are used for clinical, veterinary and research tasks for controlled rate freezing of samples.

Dependable sample protection

- For customers in research, cell and gene therapy , vaccine production, and biobanking, the Cr yoVita CRF provides precise, repeatable freezing results that protect the sample fr om intracellular freezing.
- Liquid nitrogen flows via a metal hose connection, as a gas, int o the freezing chamber. Predetermined cooling profiles are used to freeze samples prior to removal and storage at cryogenic temperatures. Data logging ensures continual monitoring of the entire process, including multiple temperature sensor set-points, actual values and the supply pressure of liquid nitrogen.





Reliable temperature performance for high-throughput usage

- Dual solenoid valves design, one for working, the other fo r backup. When one valve fails, switch to the other valve through touch screen controller
- Consistent temperature control and uniformity achieved via an air-handling system and liquid nitrogen injection device
- Type 304 stainless steel with exterior powder -coat finish

User-friendly operation with enhanced data traceability

- Intuitive touchscreen display allows for easy set-up, oper ation, and review of a freezing run
- Six pre-set freezing profiles and space for up to 20 user -defined, “custom” freeze profiles
- Convenient to create and edit a custom program on touch sc reen
- Record temperature cur ve of each cycle automatically
- External influences are avoided during freezing





Real-time run monitoring for sample protection

- Chamber and sample temperatures are monitored by T ype T thermocouples, eliminating lag time and providing “real time” responsiveness
- Standard alarms to alert users of thermocouple failures, heater malfunction, high/low temperature limits, temperature tracking, power failure, and completion of run
- RS232 Port
- USB port to download running data

Installation

BioCryoContainer series self-pressurized liquid nitrogen Container is recommended to supply liquid nitrogen BioCryo series controlled rate freezers.



- 0.1MPa pressure
- Pressure building regulator
- Liquid level meter (float type/ electric digital type)
- Casters for easy movement

Specifications (Vertical)



Model	BSCRYOV-18	BSCRYOV-34	BSCRYOV-49
Door type	Front open (upright)	Front open (upright)	Front open (upright)
Capacity (Liter)	18	34	51
2ml vial	380	810	1190
5ml vial	228	486	714
Cassette BBC-A/B	30	60	90
Cassette BBC-C	10	20	30
Cassette BBC-D	10	20	30
1/2 cc straw	450	900	1350
1/4 cc straw	594	1188	1782
Interior dimensions W x D x H (mm)	180 x 305 x 330	330 x 305 x 330	502 x 305 x 330
Exterior dimensionsW x D x H (mm)	860 x 540 x 550	1006 x 540 x 550	1190 x 540 x 550
Net weight (kg)	73	86	97
Heating power (W)	2500	3000	3000
Power supply	AC 100~240V, 50/60Hz		
Interior material	SUS304		
Door seal	Yes		
Temperature range (°C)	-190 ~ 50		
Freezing rate (°C/min)	0.1 ~ 60		
Heating rate (°C/min)	0.1 ~ 10		
Temperature deviation (°C)	<2		
Controller	Touch screen & microprocessor		
Freezing program storage	Up to 20 (6 default programs)		
Data storage and USB port	Yes		
Temperature display	Chamber & sample		
Remote alarm contact	Yes		
Door-operation safety interlock	Yes		
Printer	Optional		
Refrigerant	Liquid nitrogen		
Prefilter for liquid nitrogen	Yes		
Liquid nitrogen source pressure	14 ~ 22 PSI		
Pressure relief valve	Yes, 125 PSI		
Freezing racks	Optional		

Freezing Racks and Rack Holders

Image	Model	Dimensions	CryoVita 18	CryoVita 34	CryoVita 49
	BSCRYOF-V1	Small size rack system for 2ml vials: 5 layers, 76 vials per layer, 380 vials per rack	1 small	–	1 small & 1 large
	BSCRYOF-V2	Small size rack system for 5ml vials: 3 layers, 76 vials per layer, 228 vials per rack			
	BSCRYOF-V3	Large size rack system for 2ml vials: 5 layers, 162 vials per layer, 810 vials per rack	–	1 large	
	BSCRYOF-V4	Large size rack system for 5ml vials: 3 layers, 162 vials per layer, 486 vials per rack			
	BSCRYOF-B1	10 layer rack for 25ml blood bag	3	6	9
	BSCRYOF-B2	10 layer rack for 50ml blood bag	3	6	9
	BSCRYOF-B3	10 layer rack for 250ml blood bag	1	2	3
	BSCRYOF-B4	10 layer rack for 500ml blood bag	1	2	3
	BSCRYOF-B5	8 layer rack for 700ml blood bag	1	2	3

* Cassette BBC-A:Pall MEDSEPTM 25 mL, OriGen CS 25; Cassette BBC-B:Fenwal 4R9951, OriGen CS 50;
Cassette BBC-C:Fenwal 4R9953 & 4R5461, OriGen CS 25, BSCRYOFMACS 50 & 250, BSCRYOFPAC 025B & 050B;Cassette BBC-D:Fenwal 4R9955 & 4R5462, OriGen CS 500, BSCRYOFPAC 250B & 500B;
Cassette BBC-E:Gambro DF-200 or BSCRYOFMACS 50 & 250; Cassette BBC-F:Gambro DF-700, OriGen CS 1000, BSCRYOFMACS 500 & 750 &1000, BSCRYOFPAC 750B.

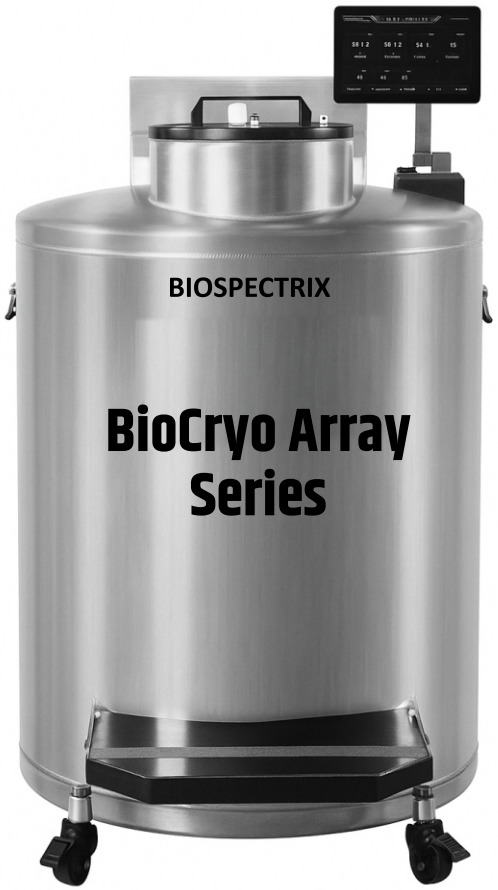
Specifications (Horizontal)



Model	BSCRYOV-26H	BSCRYOV-90H	BSCRYOV-150H
Door type	Top open (horizontal)	Top open (horizontal)	Top open (horizontal)
Capacity (Liter)	26	90	150
0.25ml Straw	1000	3000	5500
0.5ml Straw	750	2250	4125
Interior dimensions W x D x H (mm)	476 × 184 × 340	476 × 552 × 340	476 × 767 × 380
Exterior dimensions W x D x H (mm)	701× 769× 539	701× 1244 × 570	711× 1444 × 584
Net weight (kg)	40	62	140
Heating power (W)	2500	3000	3000
Power supply	AC 220~240V, 50/60Hz		
Interior material	SUS304		
Door seal	Yes		
Temperature range (°C)	-180 ~ 50		
Freezing rate (°C/min)	0.1 ~ 50		
Heating rate (°C/min)	0.1 ~ 10		
Temperature deviation (°C)	<2		
Controller	Touch screen & microprocessor		
Freezing program storage	Up to 20 (6 default programs)		
Data storage and USB port	Yes		
Chamber temperature display	Yes		
Sample sensor & temp display	Yes		
Freezing step display	Yes		
Running time display	Yes		
Remaining time display	Yes		
Remote alarm contact	Yes		
Door-operation safety interlock	Yes		
Printer	Optional		
Refrigerant	Liquid nitrogen		
Prefilter for liquid nitrogen	Yes		
Liquid nitrogen source pressure	14 ~ 22 PSI		
Pressure relief valve	Yes, 125 PSI		
Freezing racks	Optional		

BioCryo Array Series

Cryogenic Vapor Freezer

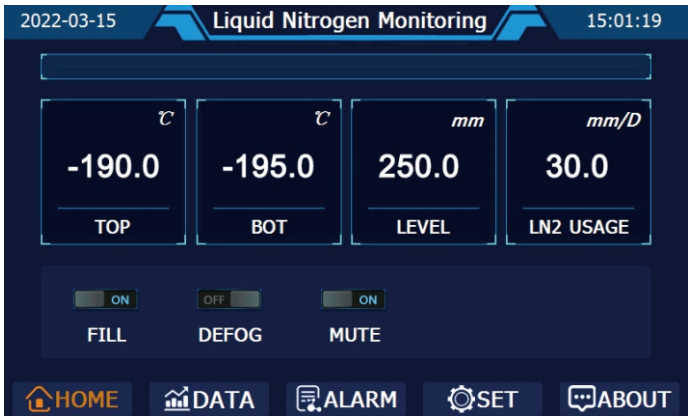


- BioCryo Array series high-efficiency vapor phase liquid nitrogen stora system provides the most ideal storage conditions for biological samples. The whole series realize -190°C vapor phase storage. Supported by LN_2 automatic filling system and temperature & LN_2 leve monitoring system, CryoMatrix freezers provide all-round protection t precious sample, assisting life science research and cell therapy applications.

- Based on the actual needs of users, Antech has innovatively optimize the performance, structure and control system of the vapor-phase cryogenic freezer to meet the user's highest standard of large-capaci vapor-phase cryogenic storage requirements

Advanced Control System

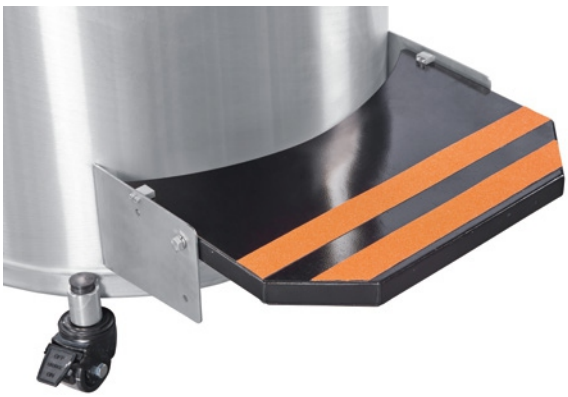
- HMI human-machine interactive touch screen, display temperature , liquid level, temperature cur ve and alarm information.
- Important events such as temperature, alarm, liquid nitrogen fill, can be checked, and can also download through USB disk.
- Various alarms, and the alarm information can be stored and downloaded through the USB disk.
- Operating data, such as temperature and liquid level, can be stored for up to 10 years.
- Optimized structure design to achieve the best sample storage density and save space.



Features

- Multiple capacity freezers, from 370L to 1,800L, 2.0ml vials storage capacity from 15,600 to 94,500.
- Excellent temperature uniformity and stability, enabling samples to be stored at -190°C vapor phase environment.
- Excellent vacuum performance and structural design ensure minimum liquid nitrogen consumption and lower storage costs.
- Advanced temperature, liquid level monitoring and alarm system, and can realize remote monitoring.
- Automatic supply of liquid nitrogen, safe and labor-saving.
- The liquid nitrogen supply system is controlled by multiple solenoid valves, which can effectively prevent the overflow of liquid nitrogen and sample contamination caused by high LN_2 level.
- Manual filling available under special circumstances.
- Compatible with vapor phase and liquid phase storage modes, users can choose according to their needs.
- The optimized mechanism design realizes high-density storage to save space.

Humanized Design



- Defog function, easier to find samples and shorten lid opening time.
- After 48 hours of lid open, temperature in the freezer remains below -150°C (according to the factory test standard).
- The remote alarm interface can be connected to the central alarm system.
- Foldable step for convenient operation & space saving.
- Optional backup battery in case of power failure.
- Optional vacuum jacketed hose for lower liquid nitrogen consumption.

Why CryoMatrix?

- High density storage
- Compared with similar products, Cr yoMatrix freezers have a small footprint and can store a large number of samples. It truly realizes high-density storage, which not o nly saves space, but also reduces the storage cost per sample. Both horizontal and vertical rack systems avai lable.
- Excellent temperature uniformity
- Vacuum insulated stainless steel tank structure, high vacuum cov erage, to ensure excellent thermal insulation performance. When samples are stored at vapor phase, top level sample temperature is lower than -180°C.

- Stable opening temperature
- The innovative lid and vacuum insulated neck design reduce LN_2 evaporation. Even when the lid is opened for up to 48 hours, the inner temperature can remains stable.
- Advanced temperature monitoring system
- The monitoring system based on microprocessor and platinum temperature probe can display the maximum and minimum temperature inside the tank in real time with an accuracy of ±1°C. The user can set the alarm point by himself, with the option of alarm mute.
- Automatic LN_2 filling & level monitoring system
- The liquid level monitoring system based on high-precision differential pressure sensor displays the liquid level in real time to ensure the safety and reliability of the automatic filling of liquid nitrogen. The color touch screen can display: top temperature, bottom temperature, liquid level height, daily liquid nitrogen consumption and other parameters.



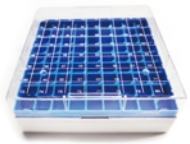
- Warm gas bypass
- The warm gas bypass design can remove the high temperature nitrogen (gas) in the pipeline before the liquid nitrogen is injected, so as to ensure that only ultra-low temperature liquid nitrogen is injected into freezer,
- which avoids the temperature fluctuation in the freezer & thermo shock to samples during filling process,

Rack for cryogenic boxes



Inventory racks for cryobox







Model	Description	Part Number
For 81/100-place 2" height box		
BSCRYOF-10-2	10-place	5122A93
BSCRYOF-12-2	12-place	5122C93
BSCRYOF-13-2	13-place	5122D93
BSCRYOF-14-2	14-place	5122E93
BSCRYOF-15-2	15-place	5122F93
For 25-place 2" height box		
BSCRYOF-10-2S	10-place	5121A93
BSCRYOF-12-2S	12-place	5121C93
BSCRYOF-13-2S	13-place	5121D93
BSCRYOF-14-2S	14-place	5121E93
BSCRYOF-15-2S	15-place	5121F93
For 81-place 3.75" height box		
BSCRYOF-5-3	5-place	5123153
BSCRYOF-6-3	6-place	5123163
BSCRYOF-8-3	8-place	5123183
Cryogenic box, polycarbonate material, LN2 duration		
BSCRYOF-25-2	25-place box, 2" height, for 1.5~2.0ml vials	5211110
BSCRYOF-81-2	81-place box, 2" height, for 1.5~2.0ml vials	5211120
BSCRYOF-100-2	100-place box, 2" height, for 1.5~2.0ml vials	5211130
BSCRYOF-81-3	81-place box, 3.75" height, for 5ml vials	5211140

Frame Rack & Cassette for Blood Bags



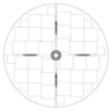
Blood bag cassette



Blood bag frame

Model	Description/capacity	Part Number
	Cassette & frame	
BBC-A	Pall MEDSEPTM 25 mL, OriGen CS 25[Dimensions(mm): 91*100*11]	5241100
BSCRYOF-A-3	3-place	5124135
BSCRYOF-A-4	4-place	5124145
BSCRYOF-A-5	5-place	5124155
BSCRYOF-A-6	6-place	5124165
BSCRYOF-A-7	7-place	5124175
BSCRYOF-A-8	8-place	5124185
BSCRYOF-A-9	9-place	5124195
	Cassette & Frame	
BBC-B	Fenwal 4R9951, OriGen CS 50[Dimensions(mm): 91*157*11]	5241200
BSCRYOF-B-3	3-place	5125135
BSCRYOF-B-4	4-place	5125145
BSCRYOF-B-5	5-place	5125155
BSCRYOF-B-6	6-place	5125165
BSCRYOF-B-7	7-place	5125175
BSCRYOF-B-8	8-place	5125185
BSCRYOF-B-9	9-place	5125195
BSCRYOF-B-10	10-place	51251A5
BSCRYOF-B-11	11-place	51251B5
	Cassette & Frame	
BBC-C	Fenwal 4R9953 & 4R5461, OriGen CS 250, CryoMACS 50 & 250, CryoPAC 025B & 050B [Dimensions(mm): 143*202*11]	5241300
BSCRYOF-C-3	3-place	5126135
BSCRYOF-C-4	4-place	5126145
BSCRYOF-C-5	5-place	5126155
BSCRYOF-C-6	6-place	5126165
BSCRYOF-C-7	7-place	5126175
	Cassette & Frame	
BBC-D	Fenwal 4R9955 & 4R5462, OriGen CS 500, CryoPAC 250B & 500B [Dimensions(mm): 143*277*11]	5241400
BSCRYOF-D-3	3-place	5127135
BSCRYOF-D-4	4-place	5127145
BSCRYOF-D-5	5-place	5127155
BSCRYOF-D-6	6-place	5127165
BSCRYOF-D-7	7-place	5127175
	Cassette & Frame	
BBC-E	Gambro DF-200 or CryoMACS 50 & 250[Dimensions(mm): 163*191*20]	5241500
BSCRYOF-E-3	3-place	5128135
BSCRYOF-E-4	4-place	5128145
BSCRYOF-E-5	5-place	5128155
	Cassette & Frame	
BBC-F	Gambro DF-700, OriGen CS 1000, CryoMACS 500 & 750 &1000, CryoPAC 750B[Dimensions(mm): 165*300*20]	5241600
BSCRYOF-F-3	3-place	5129135
BSCRYOF-F-4	4-place	5129145
BSCRYOF-F-5	5-place	5129155

Inventory & Layout

Model	BSCRYOV-15K	BSCRYOV-19K	BSCRYOV-28K	BSCRYOV-39K	BSCRYOV-44K	BSCRYOV-55K	BSCRYOV-95K
2ml vial (square rack)							
Rack layout							
Maximum capacity	15600	19500	28000	39200	42900	51000	94875
Large rack model x rack qty	BSCRYOF-12-2 x 12	BSCRYOF-15-2 x 12	BSCRYOF-10-2 x 24	BSCRYOF-14-2 x 24	BSCRYOF-13-2 x 32	BSCRYOF-15-2 x 32	BSCRYOF-15-2 x 60
Small rack model x rack qty	BSCRYOF-12-2S x 4	BSCRYOF-15-2S x 4	BSCRYOF-10-2S x 16	BSCRYOF-14-2S x 16	BSCRYOF-13-2S x 4	BSCRYOF-15-2S x 8	BSCRYOF-15-2S x 13
5ml vial (square rack)							
Maximum capacity	5832	6840	9720	13608	15552	18144	34020
Rack model x rack qty	BSCRYOF-6-3 x 12	BSCRYOF-7-3 x 12	BSCRYOF-5-3 x 24	BSCRYOF-7-3 x 24	BSCRYOF-6-3 x 32	BSCRYOF-7-3 x 32	BSCRYOF-7-3 x 60
25ml blood bag (Pall MEDSEPTM 25 mL, OriGen CS 25)							
Maximum capacity	1176	1568	2448	3264	2996	3852	7218
Cassette model x qty	BBC-A x 1176	BBC-A x 1568	BBC-A x 2448	BBC-A x 3264	BBC-A x 2996	BBC-A x 3852	BBC-A x 7218
Rack model x rack qty	BSCRYOF-A-6 x 196	BSCRYOF-A-8 x 196	BSCRYOF-A-6 x 408	BSCRYOF-A-8 x 408	BSCRYOF-A-7 x 428	BSCRYOF-A-9 x 428	BSCRYOF-A-9 x 802
50ml blood bag (Fenwal 4R9951, OriGen CS 50)							
Maximum capacity	720	960	1488	1984	1904	2394	4446
Cassette model x qty	BBC-B x 720	BBC-B x 960	BBC-B x 1488	BBC-B x 1984	BBC-B x 1904	BBC-B x 2394	BBC-B x 4446
Rack model x rack qty	BSCRYOF-B-6 x 120	BSCRYOF-B-8 x 120	BSCRYOF-B-6 x 248	BSCRYOF-B-8 x 248	BSCRYOF-B-7 x 272	BSCRYOF-B-9 x 266	BSCRYOF-B-9 x 494
250ml blood bag (Fenwal 4R9953 & 4R5461, OriGen CS 25 or CryoMACS 50 & 250)							
Maximum capacity	276	460	588	980	832	1020	1940
Cassette model x qty	BBC-C x 276	BBC-C x 460	BBC-C x 588	BBC-C x 980	BBC-C x 832	BBC-C x 1020	BBC-C x 1940
Rack model x rack qty	BSCRYOF-C-3 x 92	BSCRYOF-C-5 x 92	BSCRYOF-C-3 x 196	BSCRYOF-C-5 x 196	BSCRYOF-FB-C-4 x 208	BSCRYOF-C-5 x 204	BSCRYOF-C-5 x 388
500ml blood bag (Fenwal 4R9955 & 4R5462, OriGen CS 500)							
Maximum capacity	156	260	396	660	464	670	1090
Cassette model x qty	BBC-D x 156	BBC-D x 260	BBC-D x 396	BBC-D x 660	BBC-D x 464	BBC-D x 670	BBC-D x 1090
Rack model x rack qty	BSCRYOF-D-3 x 52	BSCRYOF-D-5 x 52	BSCRYOF-D-3 x 132	BSCRYOF-D-5 x 132	BSCRYOF-D-4 x 116	BSCRYOF-D-5 x 134	BSCRYOF-D-5 x 218
200ml blood bag (Gambro DF-200 or CryoMACS 50 & 250)							
Maximum capacity	144	240	348	464	576	800	1250
Cassette model x qty	BBC-E x 144	BBC-E x 240	BBC-E x 348	BBC-E x 464	BBC-E x 576	BBC-E x 800	BBC-E x 1250
Rack model x rack qty	BSCRYOF-E-3 x 48	BSCRYOF-E-5 x 48	BSCRYOF-E-3 x 116	BSCRYOF-E-4x 116	BSCRYOF-E-4 x 144	BSCRYOF-E-5 x 160	BSCRYOF-E-5 x 250
700ml blood bag (Gambro DF-700, OriGen CS 1000 or CryoMACS 500& 750 &1000)							
Maximum capacity	96	160	204	272	336	480	690
Cassette model x qty	BBC-F x 96	BBC-F x 160	BBC-F x 204	BBC-F x 272	BBC-F x 336	BBC-F x 480	BBC-F x 690
Rack model x rack qty	BSCRYOF-F-3 x 32	BSCRYOF-F-5 x 32	BSCRYOF-F-3 x 68	BSCRYOF-F-4 x 68	BSCRYOF-F-4 x 84	BSCRYOF-F-5 x 96	BSCRYOF-F-5 x 138

Specification

Model		BSCRYOV-15K	BSCRYOV-19K	BSCRYOV-28K	BSCRYOV-39K	BSCRYOV-44K	BSCRYOV-55K	BSCRYOV-95K
Maximum Storage Capacity								
1.2 & 2ml vial	1.2 &2ml vial	15600	19500	28000	39200	42900	51000	94875
	Number of large rack (81/100-place box)	12	12	24	24	32	32	60
	Number of small rack (25-place box)	4	4	16	16	4	8	13
	2" Boxes per rack	12	15	10	14	13	15	15
5ml vial	5ml vial (81-place)	5832	6804	9720	13608	15552	18144	34020
	Number of racks	12	12	24	24	32	32	60
	3.75" Boxes per rack	6	7	5	7	6	7	7
Cassette BBC-A	Numbers of blood bag	1176	1568	2448	3264	2996	3852	7218
	Layers per rack	6	8	6	8	7	9	9
	Number of racks	196	196	408	408	428	428	802
Cassette BBC-B	Numbers of blood bag	720	960	1488	1984	1904	2394	4446
	Layers per rack	6	8	6	8	7	9	9
	Number of racks	120	120	248	248	272	266	494
Cassette BBC-C	Numbers of blood bag	276	460	588	980	832	1020	1940
	Layers per rack	3	5	3	5	4	5	5
	Number of racks	92	92	196	196	208	204	388
Cassette BBC-D	Numbers of blood bag	156	260	396	660	464	670	1090
	Layers per rack	3	5	3	5	4	5	5
	Number of racks	52	52	132	132	116	134	218
Cassette BBC-E	Numbers of blood bag	144	240	348	464	576	800	1250
	Layers per rack	3	5	3	4	4	5	5
	Number of racks	48	48	116	116	144	160	250
Cassette BBC-F	Numbers of blood bag	96	160	204	272	336	480	690
	Layers per rack	3	5	3	4	4	5	5
	Number of racks	32	32	68	68	84	96	138
LN_2 Capacity								
LN_2 capacity (L)		370	460	588	800	890	1031	1854
LN_2 capacity at vapor platform (L)		55	55	125	133	165	165	295
Dimensions								
Neck opening (mm)		320	320	445	445	465	465	635
Usable internal height (mm)		708	914	590	840	765	889	906
Inner diameter (mm)		758	758	1012	1012	1113	1130	1467
External diameter (mm)		820	820	1090	1090	1190	1190	1565
Overall height (mm)		1400	1600	1400	1650	1600	1700	1750
Door width limit (mm)		850	850	1140	1140	1210	1300	1615
Weight empty (kg)		212	264	310	394	400	495	805
Weight full, vapor charged (kg)		513	638	750	1040	1112	1319	2270
Functions								
Controller		Touch screen	Touch screen	Touch screen	Touch screen	Touch screen	Touch screen	Touch screen
Full auto fill		Standard	Standard	Standard	Standard	Standard	Standard	Standard
Data storage / USB port / RS485 port		Standard	Standard	Standard	Standard	Standard	Standard	Standard
Defog		Standard	Standard	Standard	Standard	Standard	Standard	Standard
Foldable step		Standard	Standard	Standard	Standard	Standard	Standard	Standard
Backup battery		Optional	Optional	Optional	Optional	Optional	Optional	Optional
Vacuum jacketed hose		Optional	Optional	Optional	Optional	Optional	Optional	Optional
Inventory rack		Optional	Optional	Optional	Optional	Optional	Optional	Optional
Wi-Fi connection & cloud access		Optional	Optional	Optional	Optional	Optional	Optional	Optional

* Cassette BBC-A:Pall MEDSEPTM 25 mL, OriGen CS 25; Cassette BBC-B:Fenwal 4R9951, OriGen CS 50;
Cassette BBC-C:Fenwal 4R9953 & 4R5461, OriGen CS 25, BSCRYOFMACS 50 & 250, BSCRYOFPAC 025B & 050B;Cassette BBC-D:Fenwal 4R9955 & 4R5462, OriGen CS 500, BSCRYOFPAC 250B & 500B;
Cassette BBC-E:Gambro DF-200 or BSCRYOFMACS 50 & 250; Cassette BBC-F:Gambro DF-700, OriGen CS 1000, BSCRYOFMACS 500 & 750 &1000, BSCRYOFPAC 750B.