

Life Science

It's in your hands.



Excellence in Biorepository



BIOBANKING

- Conceptual Design
- Engineering
- IQ / OQ
- ...

▶ p. 8

BIOBANKING
Transferlines

▶ See Brochure



APOLLO®
Nitrogen Storage
Vessel

50 - 350 l capacity

▶ p. 30



BIOSAFE® Rack-System

Standardised and
individual design

▶ p. 16



BIOSAFE®
Wide Neck Series

120 - 220 - 420 up to
23.000-vials, 2 ml

▶ p. 10



BIOSAFE® Narrow
Neck Series

500 - 800 - 1800 - 2400
up to 120.000-
vials, 2 ml

▶ p. 13

BIOSAFE® smart
The digital brain of
your biobank

▶ p. 9



BIOSAFE® iTrack

Intelligent sample
management
software

▶ p. 19



Cryopreservation using cryogenic liquefied nitrogen is an established and reliable practice in science, research, medicine, environmental research and engineering. The safe cooling down to -190°C in the gas phase as well as the inert atmosphere allow for optimal freezing and storage of valuable medical and biological samples and materials.

Cryotherm, a leading supplier of storage, transfer and transport systems, has been a renowned manufacturer of cryogenic technology products and services for more than 55 years.

BIOSAFE® by Cryotherm has long been synonymous with superior quality and safety. Experience, technology and our know-how make it easy for you to decide on BIOSAFE®. Advancing into the future with recent cutting-edge developments, we have expanded our BIOSAFE® line-up with new life science products.

Our BIOSAFE®-systems consist of:

- ▶ BIOSAFE® Cryogenic storage vessels; to freeze and store large quantities of samples.
- ▶ BIOSAFE® smart, a level controller device and container monitoring system for reliable supply of cryogenic liquefied nitrogen
- ▶ BIOSAFE® VENUS – an aluminum container series for small to medium sample volumes.
- ▶ BIOSAFE® MARATHON – a dry shipping container for safe transport of your biological samples.

BIOSAFE® - Systems

An overview of our life science family.

2 - 3

Safety equipment

Your safety is our priority.

6 - 7

Biobanking - BIOSAFE® smart

The 'digital brain' of your biobank.

8 - 9

BIOSAFE® 120 - 220 - 420

The secure BIOSAFE® wide neck storage vessel series.
(for up to 23,100 cryogenic vials 2 ml)

10 - 12

BIOSAFE® 500 - 800 - 1800 - 2400

The narrow neck BIOSAFE® Stainless Steel Series.
(for up to 120,000 cryogenic vials 2 ml)

13 - 15

BIOSAFE® inventory systems

Overview

16 - 17

BIOSAFE® iTrack

Your intelligent sample management.

19 - 21

APOLLO®

Vacuum super-insulated storage and transport vessel for liquid nitrogen.
(50 - 350 l capacity)

22 - 25



Body Protection



Cryo-Aprons	Beschreibung	Artikelnr.
length: approx. 920 mm, for protection from cryogenic fumes and splashes for temperature range to -160°C		77031519
length: approx. 1380 mm, for protection from cryogenic fumes and splashes for temperature down to -160°C		77031520
Cryo-Protective Shield and Goggles		
Cryo-protective sign and inspection Glass	head protection signs of vulcanized fibre foam padded dimensions: (WxH) 460 x 190 mm	78400851
Safety goggles with side protection	3	0794189
Schild		
"Wear eye protection"	6 Adhesive Foil Ø 20 cm Symbol	78210204
"Wear hand protection"	7 Adhesive Foil Ø 20 cm Symbol	78210205



Cryo-Protective Equipment Full Set



Description	Item No.
Incl. Cryo-Gloves 1, Cryo-Apron 4, Cryo-Protective sign 5 and 2 warning Signs 6 + 7	78400851

Cryo-Gloves, waterproof



Description Hand protection, 5 fingers, down to -160° C	Length	Size	Item No.
Length: ca. 300 mm 1	Wrist	S	78400613
Length: ca. 300 mm	Wrist	M	78213086
Length: ca. 300 mm	Wrist	L	77031450
Length: ca. 300 mm	Wrist	XL	78400823
Length: ca. 400 mm 2	Forearm	S	78400843
Length: ca. 400 mm	Forearm	M	78400180
Length: ca. 400 mm	Forearm	L	78400887
Length: ca. 400 mm	Forearm	XL	78400856
Length: ca. 500 mm	Elbow	M	78400899
Length: ca. 500 mm	Elbow	L	77031451
Length: ca. 500 mm	Elbow	XL	78211327



The one-stop Biobank



55 YEARS Ice cold experience

For over 55 years we have been working closely with scientists and researchers.



On-site consultation

Our experts are looking forward to consult with you!



Excellence in Engineering

Your Turnkey Biobank: Everything in one full package!



Service / 24/7 hotline and maintenance

Always close to our customers.



BIOSAFE® smart

The digital brain of your biobank.



4.0 Monitoring

Clever management of your entire biobank. Even from afar.

Biobanking 4.0

100 % in control

Thanks to optional electromechanical locking, your samples are protected against access. Twofold access control via RFID transponder and PIN code. Logs all activities according to GMP FDA CRF 21 part 11.

Big Data

From monitoring to recording to evaluation of the sample cycle - Let data speak.

Touch Screen

Intuitive multifunctional 8.8" panel with colored touch display. Bright and functional.

Conversion Kit*

Your existing BIOSAFE® repository freezer can be updated with new BIOSAFE® smart. Item no. 78221956

* Cryotherm verifies feasibility.

Best durable

Protected by a sturdy glass panel, ideal for aseptic and medical environments.



Extensive special equipment

Various options for linking components such as gas bypass, UPS battery, lid lock, additional temperature sensors and much more.

Select your Software-Package

Config-Version

On-site BIOSAFE® monitoring via color display (included).

Info.View

On-site and remote monitoring of BIOSAFE® including secure data analysis and transfer, with the ability to connect up to 254 BIOSAFE® units in up to 10 cryobanks. optional: Item no. 78216677

Info.Alarm

Includes all features of Smart + including Messenger function via encrypted SMS and / or eMail.

optional: Item no. 78216678

BIOSAFE® 120 - 220 - 420

Our secure BIOSAFE® Wide Neck Storage Vessel Series.

All Advantages at a Glance



Our BIOSAFE® systems 120 to 420 are optimised for maximum capacity with minimised external dimensions. The large, thermodynamically optimised, vacuum-insulated lid that comes with an attractive design makes it possible to access stored materials in just seconds.

Filling of samples takes place through the wide neck opening in the freely accessible storage compartment. The solid construction, made of polished, stainless steel, ensures maximum life time and a low evaporation rate. A combined vacuum closure and safety device for the vacuum chamber provides additional security.

BIOSAFE® 120 - 220 - 420

Our secure BIOSAFE® Wide Neck Storage Vessel Series.

All Advantages at a Glance



Distinctive & sophisticated:*

Ergonomic lifting and swivelling mechanism / Low, user-friendly vessel height

Ahead of the market:
Our integrated BIOSAFE® smart control for level control and vessel monitoring

Double the safety!
Mechanically and (optional) electronically lockable lid

TOP accessibility to your samples, ideal for frequent usage

Well-thought-out:
Depending on the vessel size, high nitrogen reserves below the shelf floor will last several days.

Optimised storage capacity by utilising space-saving high efficiency categorisation systems

High storage capacity for up to 23,100 samples, 2 ml vials

Low evaporation rates

Smooth surfaces, that are **easy to disinfect** - even on top of the lid.



* available for BIOSAFE® 220 / 420

BIOSAFE® 120 - 220 - 420

Ideal for Routine Work with biological-medical Samples.

Storage Capacities



Wide-neck BIOSAFE®		120	220	420
Geometric content	[l]	151	251	420
2 ml vials	[max./up to]	7.000	13.000	23.100
Baxter 4R9951 bag 50 ml and 2 ml vials	[max./up to]	288	512	832
Baxter 4R9955 bag 500 ml and 2 ml vials	[max./up to]	144	240	480
Hemofreeze Gambro Z2003 bag 500 ml and 2 ml vials	[max./up to]	75	150	270
		750	500	500

Technical Data



Wide-neck BIOSAFE®		120	220	420
Neck diameter	[mm]	514	664	854
LIN Capacity under platform	[l]	21	35	57
Weight, empty	[kg]	100	175	225
Diameter, outside	[mm]	560	710	900
Diameter, inside	[mm]	514	664	854
Total height, closed	[mm]	1.045	1.070	1.070
Total height, opened	[mm]	1.140	1.180	1.190
Installation altitude	[mm]	625	625	625
Caster diameter	[mm]	-	80	80
Evaporation rate	[%/day]	2,3	2,0	1,5



BIOSAFE® 500 - 800 - 1800 - 2400

Our Narrow Neck BIOSAFE® Series



All Advantages at a Glance



picture of new BIOSAFE® 800

Cryogenic facilities with > 100 freezers

Our BIOSAFE® systems 500 to 2400 are optimised for maximum capacity with minimum consumption. In the range of 500 litres to 2400 litres and more, the containers can be easily loaded via the side-mounted vessel neck and the smooth-running carousel. Smooth-running castors ensure the mobility of our BIOSAFE® storage vessels and provide even more flexibility.

BIOSAFE® 500 - 800 - 1800 - 2400

Our Narrow Neck BIOSAFE® Stainless Steel Series.

All Advantages at a Glance



Zero-gravity lid technology

A convenient spring supported lid lets you open BIOSAFE® with one hand and zero effort.

Engineered for Excellence

Made in Germany to the highest standards for medical devices (MDD 93/42 EEC), BIOSAFE® features design and materials that are optimised for aseptic environments.

Double the safety!

Mechanically and (optional) electronically lockable lid.

Ahead of the market: Integrated BIOSAFE® smart-control

provides level control and vessel monitoring

Best in its class!

Store up to 120,000 2 ml samples in just one BIOSAFE® vessel. Unbeatable amount!

TOP-Handling

Smooth carousel for quick and safe usage.

Sophisticated ergonomics

Convenient steps, handles and a user-friendly low operating height ensure safe and comfortable handling.

More than just safe

Numerous options for redundant vessel monitoring for GMP-compliant applications.



BIOSAFE® 500 - 800 - 1800 - 2400

Our Narrow Neck BIOSAFE® Stainless Steel Series.



Storage Capacities



Narrow neck BIOSAFE®		500	800	1800	2400
Geometric content	[l]	490	960	1.800	2.400
2 ml vials	[max./up to]	28.280	43.120	91.200	120.000
Baxter 4R9951 bag 50 ml	[max./up to]	1.080	on request	on request	on request
and 2 ml vials		650	on request	on request	on request
Baxter 4R9955 bag 500 ml	[max./up to]	480	on request	on request	on request
and 2 ml vials		1.300	on request	on request	on request
Hemofreeze Gambro Z2003 bag 500 ml	[max./up to]	288	on request	on request	on request
and 2 ml Ampullen		1.300	on request	on request	on request

Technical Data



Narrow neck BIOSAFE®		500	800	1800	2400
Neck diameter	[mm]	450	520	830	830
LIN Capacity under platform	[l]	50	117		300
Weight, empty	[kg]	320	570	1.200	1.300
Diameter, outside	[mm]	890	1.058	1.500	1.650
Diameter, inside / carousel	[mm]	795	966	1.346	1.500
Total height, closed	[mm]	1.014	1.380	2.100	2.100
Total height, opened	[mm]	1.314	1.800	2.100	2.100
Installation altitude	[mm]	800	800	915	915
Caster diameter	[mm]	80	80	100	100
Evaporation rate	[%/day]	1,2	0,9		0,6



Picture of a BIOSAFE® 8800, with a capacity of 2 mil. vials 2 ml for individual cryobanking project.

The suitable inventory systems

Overview

Your needed Packaging



Our various Solutions



For your BIOSAFE® Repository Freezers



GAS PHASE: liquid under the platform; samples immersed in N2 vapours (temperatures around -180°C)

LIQUID PHASE: Samples completely immersed in liquid nitrogen (temperatures around -190°C)

Possibility of both types of cryopreservation through probe length adaptation

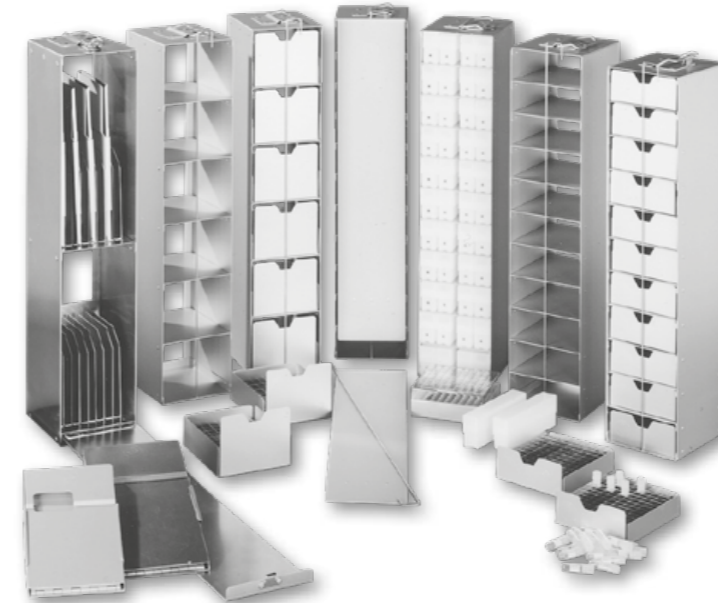


BIOSAFE® storage system

Overview



All Advantages at a Glance

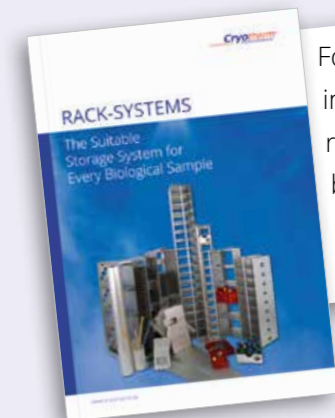
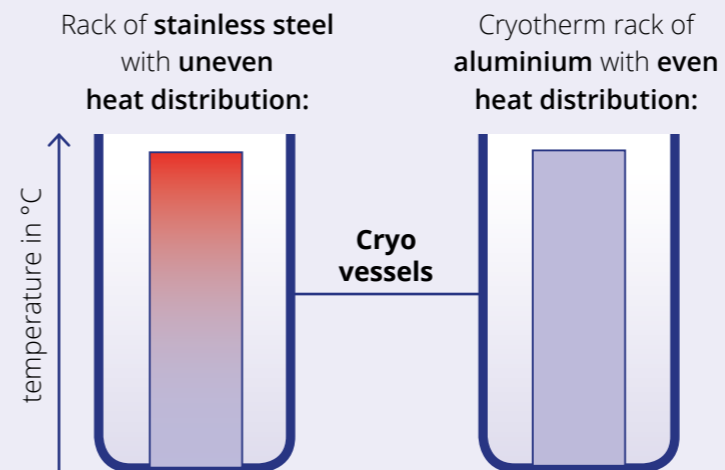


New High Efficiency racks

- ▶ High storage capacity with new High Efficiency system
- ▶ Safety fixation system
- ▶ Maximum protection for your samples
- ▶ Various heights for flexible use and compatibility with all biorepository freezers
- ▶ Variable arrangements for setting your own order system
- ▶ Low tare weight due to sturdy aluminium construction
- ▶ Transparency by means of sample management system



For more information
BIOSAFE® iTrack page 20



For detailed information please regard dedicated brochure for inventory systems.



Functional Favorite



for detailed information of BIOSAFE® smart system please take a look on page 9.

BIOSAFE® smart is an on-site vessel monitoring system with the following abilities:

- Level control and monitoring, automatic filling and temperature display
- Monitoring and evaluation of alarms and events
- Data analysis and transfer according to GMP FDA CRF 21 Part 11
- Double access control via RFID transponder and PIN code
- Temperature monitoring with up to 3 temperature sensors
- Visual and audible alarm on the display
- Forwarding of alarms and temperature
- Other optional equipment: battery backup, warm gas by-pass, software with alarms and messenger

BIOSAFE® smart biorepository freezer Scienceline



<input checked="" type="checkbox"/>	Item Number	Short text	Pcs
<input type="checkbox"/>	78221903	BIOSAFE® 120 SC-smart	
<input type="checkbox"/>	78221906	BIOSAFE® 220 SC-smart	
<input type="checkbox"/>	78221909	BIOSAFE® 420 SC-smart	
<input type="checkbox"/>	78221912	BIOSAFE® 500 ULTRA SC-smart	
<input type="checkbox"/>	78223148	BIOSAFE® 800 SC-smart	
<input type="checkbox"/>	78223480	BIOSAFE® 1800 SC-smart	
<input type="checkbox"/>	78221924	BIOSAFE® 2400 SC-smart	

Medical Device according to MDD 93/42/EWG Medical line

<input checked="" type="checkbox"/>	Item Number	Short text	Pcs
<input type="checkbox"/>	78221879	BIOSAFE® 120 MD-smart	
<input type="checkbox"/>	78221882	BIOSAFE® 220 MD-smart	
<input type="checkbox"/>	78221885	BIOSAFE® 420 MD-smart	
<input type="checkbox"/>	78221888	BIOSAFE® 500 ULTRA MD-smart	
<input type="checkbox"/>	78223145	BIOSAFE® 800 MD-smart	
<input type="checkbox"/>	78223473	BIOSAFE® 1800 MD-smart	
<input type="checkbox"/>	78221600	BIOSAFE® 2400 MD-smart	

BIOSAFE® smart OPTIONS

<input type="checkbox"/>	78216677	BIOSAFE®-view Info	
<input type="checkbox"/>	78216678	BIOSAFE®-view InfoAlarm	
<input type="checkbox"/>	78220035	MODBUS for BIOSAFE® smart	
<input type="checkbox"/>	78216670	Network switch 8x	
<input type="checkbox"/>	78216671	Network switch 24x	
<input type="checkbox"/>	78222361	Temperatur sensor for BIOSAFE® smart (additional)	
<input type="checkbox"/>	78222353	Battery backup 24VDC for BIOSAFE® smart	

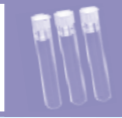
BIOSAFE® 120/220/420/500/800 Main accessories

<input type="checkbox"/>	78202845	Rollerbase for CHRONOS® 120	
<input type="checkbox"/>	78202830	Transport aid for CHRONOS® 220/420/500/800	
<input type="checkbox"/>	78206965	Low temperature booster for BIOSAFE® 120	
<input type="checkbox"/>	78207914	Low temperature booster for BIOSAFE® 220	
<input type="checkbox"/>	78206876	Low temperature booster for BIOSAFE® 420	

Flyer info: Exemplary illustration. Special equipment possible. At Info.Alarm, additional costs for sms can arise. Changes and availability of the special equipment reserved.



Tracking your Cryogenic Samples



Example of 2D Scanner

Not included in delivery.



BIOSAFE® iTrack is a central database that can manage your stored samples based on their storage position. It can easily be adapted to the individual needs of your biobank. The necessary basic information and additional user defined information is linked to each sample. This information may be different data templates, logistics information or process data.

All Advantages at a Glance



- User friendly storage management
- FDA 21 CFR Part 11 compliance
- Sample based temperature logging
- Highest degree of data encryption for your sensitive data
- Developed, tested and documented according to ISO 13485, ISO 62304, IEC 62366
- User-defined storage structures/layouts
- Comprehensive storage level access rights
- Barcode scanner and RFID support
- User-defined sample data templates
- Visualisation of storage locations and containers
- Single/Multiple sample check in/out
- Single/Multiple sample data modification
- Comprehensive reporting PDF
- Comprehensive data Exports PDF/CSV
- Multiple IDs possible
- Windows based system
- Multi-site/multi database support
- 2D Flatbed scanner support
- Lab OS Web Access /Customer requests
- Electronic signatures ("A face four eyes check" feature)



Item Numbers



For your BIOSAFE® iTrack we supply various equipment options and extensive accessories.

BIOSAFE® iTrack sales

<input checked="" type="checkbox"/> Item Number	
<input type="checkbox"/> 78223030	BIOSAFE® iTrack software installation fee (one-off payment)
<input type="checkbox"/> 78216916	BIOSAFE® iTrack Premium* Software installation fee (one-off payment)
<input type="checkbox"/> 78216917	BIOSAFE® iTrack Premium* Software installation fee with Webaccess (one-off payment)
<input type="checkbox"/> 78216918	BIOSAFE® iTrack Webaccess optional (one-off payment)
<input type="checkbox"/> 78217135	BIOSAFE® iTrack Premium Plus 3 year Software installation fee (one-off payment)
<input type="checkbox"/> 78217136	BIOSAFE® iTrack Premium Plus 5 year Software installation fee (one-off payment)
<input type="checkbox"/> 78217137	BIOSAFE® iTrack Premium Plus 3 year Webaccess optional (one-off payment)
<input type="checkbox"/> 78217138	BIOSAFE® iTrack Premium Plus 5 year Webaccess optional (one-off payment)
<input type="checkbox"/> 78217140	BIOSAFE® iTrack Premium CAL client access licence (one CAL for up to 5 user)
<input type="checkbox"/> 78217142	BIOSAFE® iTrack Premium Additional User
<input type="checkbox"/> 78217143	BIOSAFE® iTrack Training
<input type="checkbox"/> 78217144	BIOSAFE® iTrack Template Editor

* The Premium version also includes service assistance. Remote maintenance by telephone or remote access are limited to a maximum monthly hourly rate of three hours within the contract period.

All Advantages at a Glance



Best in it's class!
Evaporation rate for e.g.
APOLLO® 200: Only 0.6% per day!

A ball valve for comfortable
view: „Open or close“

Safety measures at eye level

Ideal operating height and
user-friendly fittings
(ball valves)

High stability
for secure and
smooth transport

Time savings through
increased uptime
for your application

Robust protective frame
for safe transport

Higher service life with the
following advantages:
Savings in transport and
handling costs

High quality design
made of corrosion-resistant
stainless steel

Low maintenance

**Large, stable and
smooth-running wheels**
(Ø 125-160 mm) without
sharp edges

Great mobility
through compact design

Long-term vacuum protection through
high-quality adsorption and getter materials



Including Accessories



Gloves



Item No.: 07794111

Safety glasses with side protection



Item No.: 07794189

Transport plug



Item No.: 78202417

Applications

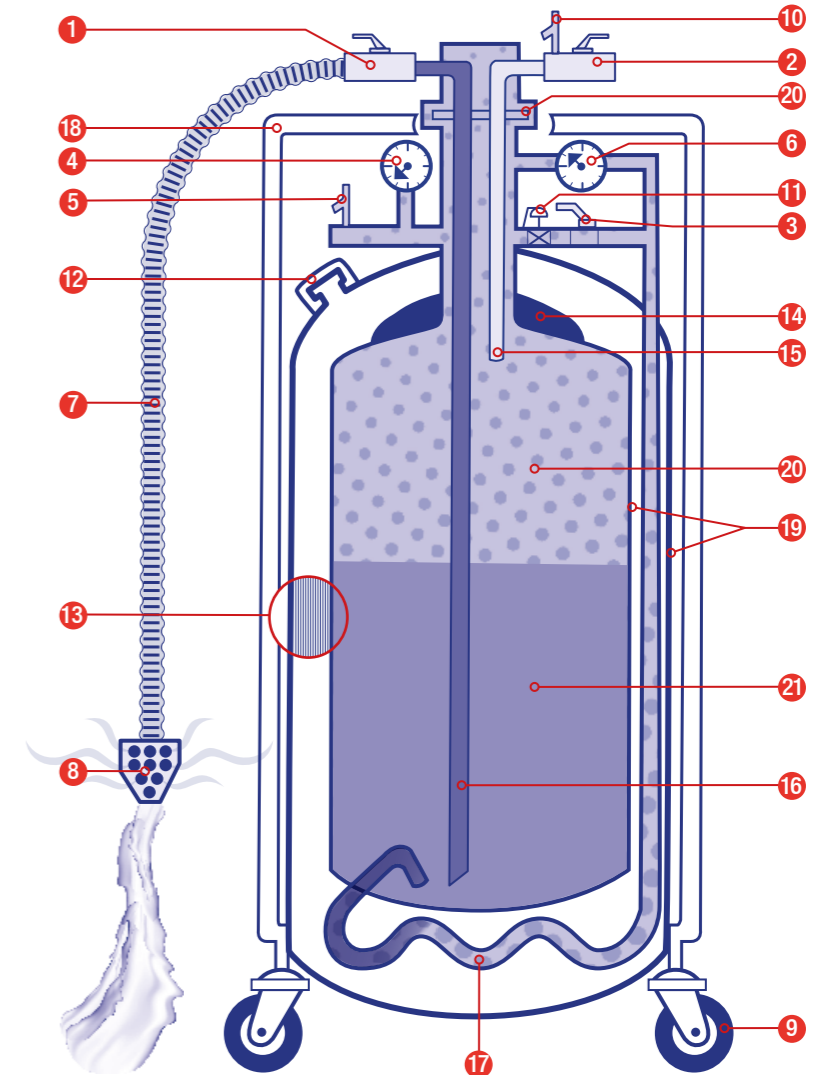
APOLLO®



compatible

- ▶ Analysers
- ▶ Cryogenic mills
- ▶ Cryogenic saunas
- ▶ Freezers
- ▶ Biobanks
- ▶ BIOSAFE®

...



Essential Construction Elements and Equipment



- | | |
|--------------------------------|---|
| 1 Extraction valve | 12 Vacuum sealing and safety valve |
| 2 Exhaust and overflow valve | 13 Superinsulation |
| 3 Pressure build-up valve | 14 Absorbents (long-term vacuum protection) and special getters |
| 4 Pressure gauges | 15 Exhaust and overflow line |
| 5 Safety valve | 16 Sampling line |
| 6 Level indicator | 17 Pressure build-up line |
| 7 Filling hose | 18 Chassis and protective frame |
| 8 Phase separator | 19 Indoor and outdoor vessel |
| 9 Castors | 20 Gaseous nitrogen |
| 10 Pressure regulator | 21 Liquid nitrogen |
| 11 Pressure build-up regulator | |

Standard equipment

- Integrated safety device on the vessel neck
- Vacuum seal and safety device
- Smooth-running castors and transport protection frame
- Level and pressure gauge
- EK lift with exhaust and overflow valve
- Integrated pressure build-up
- Filling hose (1.5 m) with phase separator
- Transport plug **1** with safety
- Cold protection gloves **2** and safety glasses **3** with side protection

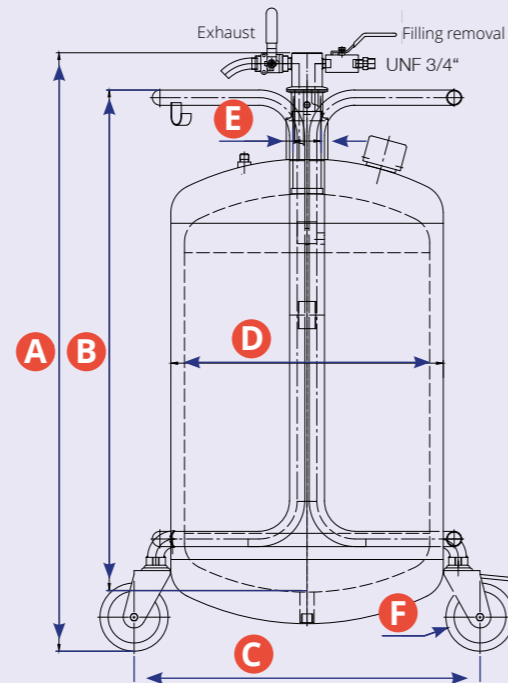


for a fixed connection of an APOLLO® urgently required!



Our APOLLO® -Series is available with a capacity of 50 to 350 litres

For dimensions see table.



Technical Data



Vessel name		APOLLO® 50 1,3 bar	APOLLO® 100 1,3 bar	APOLLO® 150 1,3 bar	APOLLO® 200 2,0 bar	APOLLO® 350 2,0 bar
Vessel material		Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Approval mark		CE	CE	CE	CE0035	CE0035
Geometrical capacity	[l]	49,5	99,2	149,5	198,5	348
Operating overpressure	max. [bar]	1,3	1,3	1,3	2,0	2,0
Weight, empty	[kg]	44	62	79	100	160
Weight, full LIN	[kg]	85	145	204	266	450
Stat. evaporation rate LIN	[%/day]	2	1,2	1	0,6	0,5
Total height	A [cm]	80	114	146	117	165
Diameter, outer	D [cm]	50	50	50	70	70
Total width	C [cm]	65	65	65	80	80
Depth of immersion	B [cm]	58,5	92	122	91	135
Castor diameter	F [mm]	125	125	125	160	160
Neck diameter	E [mm]	50	50	50	50	50
Siphon connection		KF 50	KF 50	KF 50	KF 50	KF 50

Upon request the APOLLO® series is also available for other types of gas.

Options

- Pressure build-up regulator (Item No. 78202710)
- Pressure reduction regulator (Item No. 78203080)
- Double extraction liquid side (Item No. 79415416)
- Double extraction gas side (Item No. 78203081)
- Triple extraction liquid side (Item No. 79418082)
- Triple extraction gas side (Item No. 78203082)
- Safety spacer **4** (Item No. 78206124)
- Level indicator, capacitive, battery
- Forklift pockets **7**
- Set of castors, antimagnetic

Further options available upon request.



Item Numbers



APOLLO® liquid nitrogen vessel	50	100	150	200	350
with analog display 5	78202700	78202701	78202702	78202748	78202749
with digital display 6	78223343	78223344	78223345	78223346	78223347
ASME Stamp 1,5 bar 8	78221094	78220960	78221095	78221811	78221812
Options for APOLLO® line					
Forklift pockets 7	78203083	78203083	78203083	78203975	78203900
Set of castors, antimagnetic	78200474	78200474	78200474	78203992	78203992

*) Further vessel dimensions and custom vessels available upon request.

Accessories



6



The **digital display** – the capacitive level indicator for your APOLLO®

- ▶ Display and probe in one device
- ▶ Easy to use
- ▶ High precision

7



Practical **forklift pockets** facilitate the handling of your APOLLO®

▶ Our APOLLO® series complies with the European Pressure Equipment Directive 2014/68 / EU

▶ For USA, 1,5 bar:

8





Notes



55
YEARS
1964 - 2019

**Excellence
in Engineering**

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Version 2011