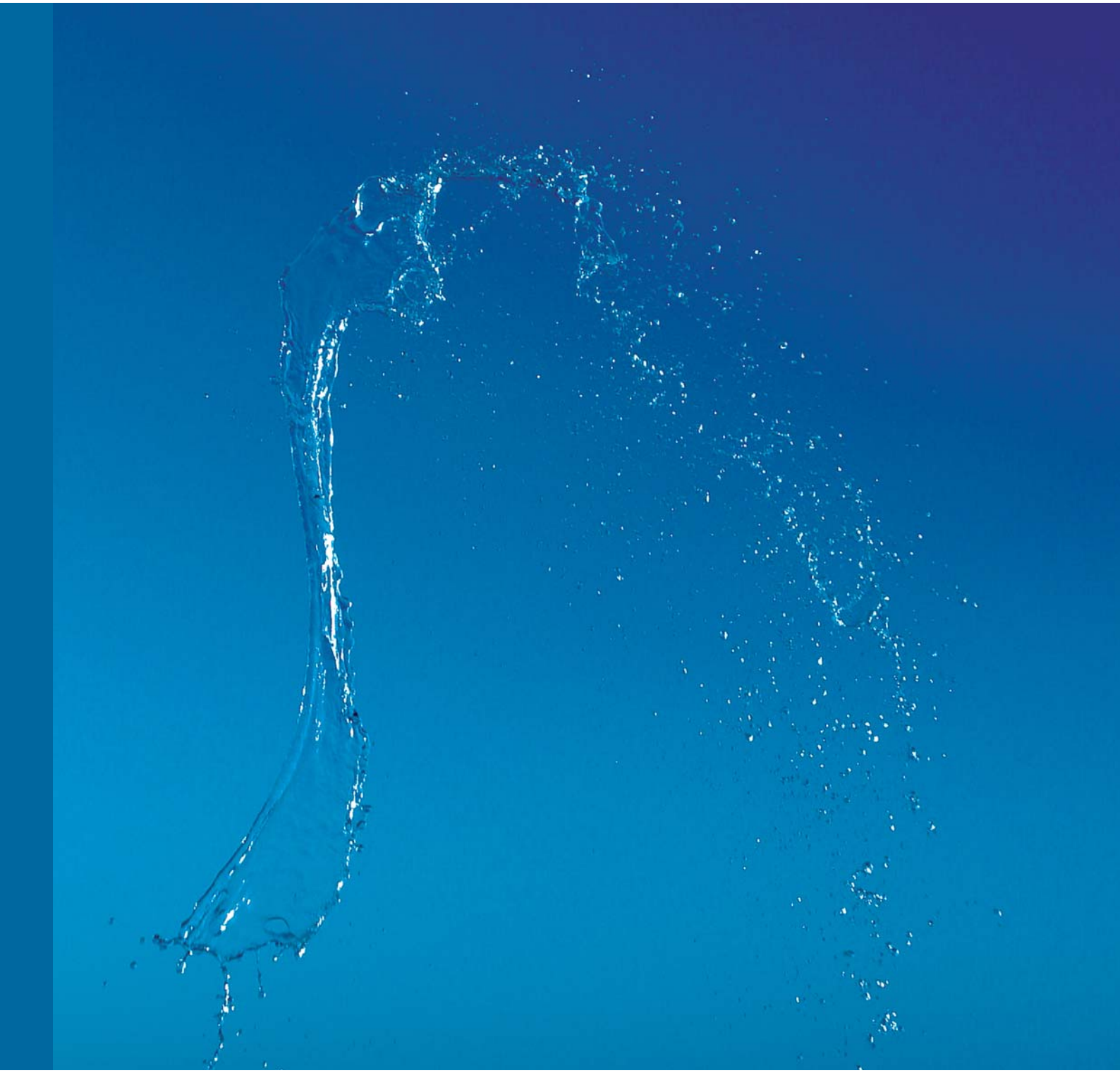



# Cryogenics

AIR LIQUIDE™



# Content

*AGIL*

*TR / TP*


*FREEZAL*

*GT*

The science of cryobiology is at the crossroads of physics and biology. It is the precise science that determines the conditions which permit the preservation of life and biological function of a variety of living systems at extreme low temperatures, e.g. -196°C.

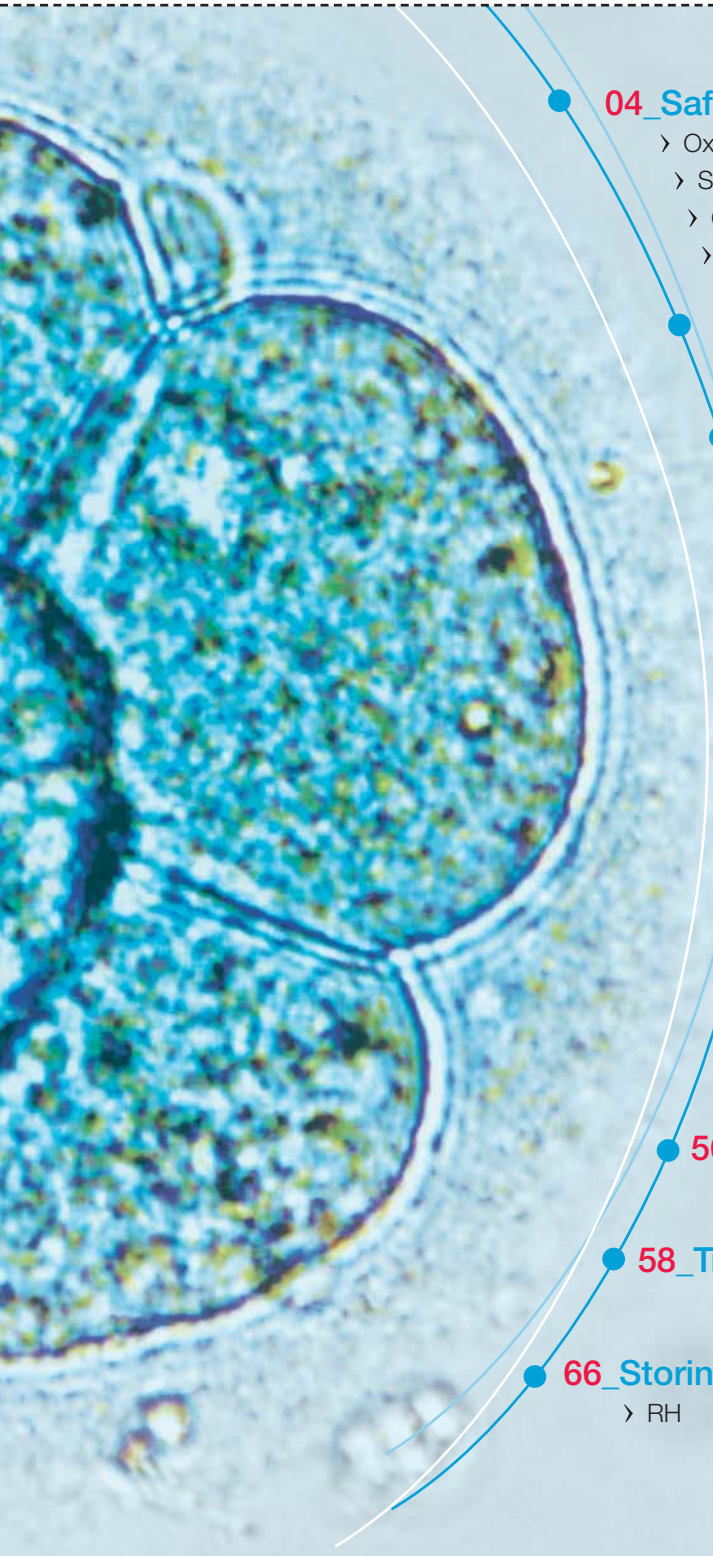
CRYOPAL develops, manufactures and commercializes a comprehensive line of cryogenic freezers and equipment dedicated to the transportation and storage of biological products in nitrogen.

*ARPEGE*

*ESPACE / RCB*

*VOYAGEUR*

*RH*



# Safety accessories

## Preventing and reducing risks in the work place

**Working with cryogenic liquids, and liquid nitrogen in particular (-196°C), requires strict rules to be followed. These rules are designed to prevent or reduce two major hazards: anoxia and cryogenic burns caused by contact with liquid nitrogen.**

## Anoxia

Oxygen is an essential element in maintaining life. Therefore, it is necessary to assure that the air one works in has an adequate level of oxygen. Anoxia, caused by insufficient levels of oxygen, is a real risk in all areas of cryogenic activities and applications, e.g. bio-repositories and cryogenic laboratories.

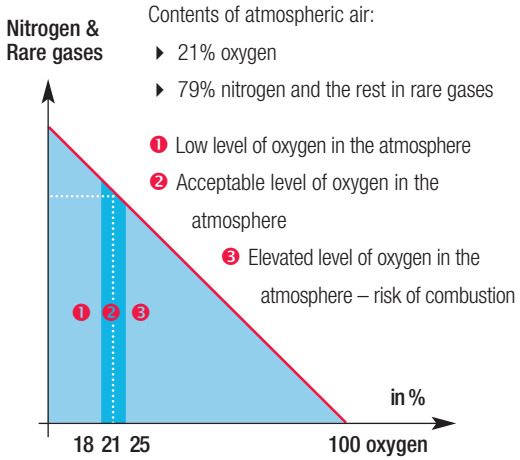
The response of an organism to under-oxygenation in the air is highly variable from one individual

to the next. In addition, human sensory organs are incapable of

detecting the dangers of low oxygen levels in the air.

## The cause of anoxia: a lack of oxygen in the air

The air we breathe is made up of 21% oxygen, 79% nitrogen and very small amounts of rare gases. At normal atmospheric pressure, liquid nitrogen will vaporize above -196°C. A decrease in oxygen levels, caused by an increase in the nitrogen levels in the air, can easily occur in any cryogenic area or room during routine activities and procedures, e.g. loading and unloading samples in cryogenic freezers and using vessels that store liquid nitrogen. In fact, the manipulation of liquid nitrogen will result in its vaporization and at normal atmospheric pressure 1 liter of liquid nitrogen will produce 691 liters of gas when warmed up to an ambient room temperature.



# Anoxia

## Detecting under – oxygenation
## WARNING!

Most of the gases used in cryogenic applications are undetectable by humans

Best method and practices for measuring oxygen levels:
A continuous method of measurement is necessary for areas and rooms where the concentration of oxygen may be dangerously altered during routine activities and procedures, e.g. loading and unloading samples in cryogenic freezers and using vessels that store liquid nitrogen.

A non-continuous method of measurement may be used if the time-lapse between two readings and analyses of the oxygen levels in the air are realized in a short enough time frame to signal an alarm is the oxygen levels are too low.

## Preventing anoxia: some precautions to take

A small amount of nitrogen gas in liquid phase has the potential to create a much larger volume in an atmospheric phase. Consequently, a liquid nitrogen leak or spill in a confined or inadequately ventilated space can very quickly result in a dangerously low level of atmospheric oxygen. To eliminate this risk, the user needs to make sure that where the nitrogen liquid or gas is present, both in the work and storage spaces, that there is sufficient ventilation and if needed permanent or portable oxygen detectors and for emergency situations portable individual respirators should be made easily accessible.

# Safety accessories

## Burns caused from splashing or contact

**Handling products stored in liquid nitrogen or working with cryogenic fluids create an extremely high risk factor for cryogenic burns.**

These burns can have serious consequences, especially when the eyes or face are involved.

Therefore, it is imperative to reduce the risks of burns from splashing or contact with liquid nitrogen.

## Recommendations and pictograms to use when working with liquid nitrogen

**Warning signs:** extreme low temperature

**Mandatory:** to read the user's manual

**Mandatory:** protection of hands by using correctly adapted cryogenic protective gloves or related equipment.

**Mandatory:** protection of the face and eyes by using correctly adapted cryogenic protective glasses, visor or related equipment.

**Mandatory:** make sure that all cryogenic work and storage rooms are correctly ventilated and have the appropriate oxygen level detectors and alarms and Anoxia safety masks

**Not allowed:** do not touch directly, at any time, items that have been in contact with liquid nitrogen

# Safety in the workplace






Wear safety glasses or a visor, gloves and protective accessories, e.g. cryo apron and gaiters.

A portable oxygen detector is also recommended for detecting dangerous levels of:

- carbon-monoxide
- hydrogen sulphide, oxygen
- nitrogen oxide
- sulphur dioxyde

**Prescription eye glasses are not protective.**

**The unprotected hand should never manipulate any items that have been in contact with liquid or gaseous nitrogen.**

**The hands, even when wearing the cryo-gloves, should never be submerged in a cryogenic liquid.**

| Safety accessories | | References |
|---|---|---|
| A: Visor | | ACC-SECU-1 |
| B: Protective glasses | | ACC-SECU-2 |
| C: Cryogenic gloves | size 8 | ACC-SECU-15 |
| | size 9 | ACC-SECU-16 |
| | size 10 | ACC-SECU-17 |
| | size 11 | ACC-SECU-18 |
| D: Gaiters | size M (38-42)[1] | ACC-SECU-12 |
| | size L (42-46)[2] | ACC-SECU-13 |
| E: Portable oxygen detector | | ACC-SECU-102 |
| F: Cryo-apron | unique size | ACC-SECU-19 |

1) M = diameter of calves 46.5 up to 48.5 cm.

2) L = diameter of calves 47.5 up to 49.5 cm.

# AGIL

The line of dewars designed for easy use of small volumes of liquid nitrogen


- **The AGIL line includes 6 models with capacities from 0.5 up to 6 litres**
- **Stainless steel, vacuum insulated**
- **Pouring handles**
- **Cork lids (optional)**
- **Use for temperatures ranging from - 200 °C /+ 200 °C**


Freezing embryos: the AGIL 3 is perfect for cooling down the seeding bar

Easy transportation of sample for short distances

## Using AGIL

- For transportation of biological samples in liquid nitrogen in the laboratory
- For cooling down a manual seeding bar for freezing applications like FREEZAL * page 14
- For holding small volumes of liquid nitrogen needed on a daily basis in a laboratory


Areas of use and applications include: Scientific, medical and pharmaceutical laboratories…

| AGIL | | AGIL 0.5 | AGIL 1 | AGIL 1/L | AGIL 2 | AGIL 3 | AGIL 6 |
|---|---|---|---|---|---|---|---|
| **FEATURES** | | | | | | | |
| **Volume capacity** | l | **0.5** | **1** | **1** | **2** | **3** | **6** |
| Interior diameter | mm | 65 | 85 | 100 | 100 | 185 | 185 |
| Daily evaporation at 20°C without lid | l/d[1)] | 1 | 0.9 | 1.6 | 1.1 | 3.1 | 2.9 |
| **Static autonomy at 20°C with out lid** | h[1)] | **12** | **26** | **15** | **43** | **23** | **49** |
| External diameter | mm | 87 | 107 | 122 | 122 | 200 | 200 |
| Weight empty | kg | 0.56 | 0.95 | 0.80 | 1.35 | 1.78 | 2.40 |
| Total height | mm | 203 | 231 | 177 | 312 | 190 | 300 |
| **PRODUCT REFERENCES** | | | | | | | |
| **AGIL (without cork lid)** | | AGIL05-2 | AGIL1-2 | AGIL1L-2 | AGIL2-2 | AGIL3-2 | AGIL6-2 |
| **PRODUCT ACCESSORIES** | | | | | | | |
| **A:** Cork Lid | | ACC-AGIL-1 | ACC-AGIL-2 | ACC-AGIL-3 | | ACC-AGIL-4 | |
| **B:** Protective eye glasses | | ACC-SECU-2 | | | | | |
| **C:** Protective gloves (size 8) | | ACC-SECU-15 | | | | | |
| Protective gloves (size 9) | | ACC-SECU-16 | | | | | |
| Protective gloves (size 10) | | ACC-SECU-17 | | | | | |
| Protective gloves (size 11) | | ACC-SECU-18 | | | | | |

1) Daily evaporation rate and static autonomy are based on 20°C working environment, 1013 mb, the dewar being stationary and with a lid. These values can vary depending on the working environment and condition of the dewar.
2) AIR LIQUIDE reserves the right to change the information in this document without prior notice.




## Main features

### Quality / Functionality

- Made in stainless steel for greater durability
- Ability to work with temperatures ranging from - 200 °C /+ 200 °C. The use of liquid oxygen is not permitted

### Easy to use

- Pouring handles
- Compact dewars easy to use and perfectly designed for use in laboratories

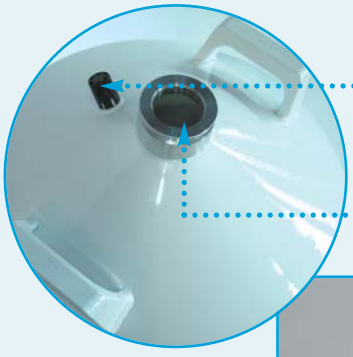
The AGIL can be filled using a TR

# TR

Non-pressurized vessels designed for the storage and transportation of liquid nitrogen


- **Capacity of 7 to 100 litres**
- **Static holding time up to 180 days**
- **6 year guarantee on the vacuum**

Insulated lid



Vacuum valve

Neck diameter 50 mm

## Main characteristics include

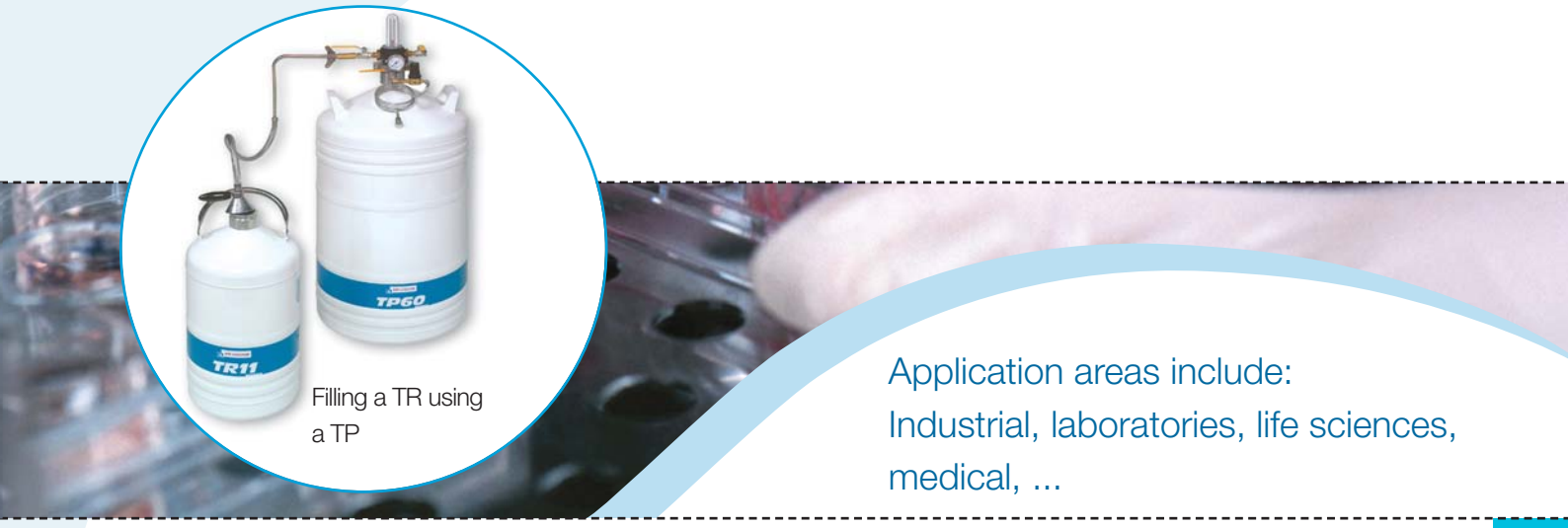
**Various dispensing systems can be fitted to the TR**

- Tipping handle C
- Tipping stand E
- The DL3 pressurized decanting system D

**Quality**

- Made out of aluminum and composite materials provides for low consumption and light weight
- High quality polyurethane paint for long life
- Standard neck diameter of Ø 50 mm
- Vacuum valve

Tipping handle C

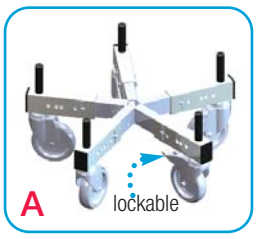


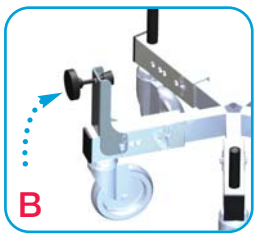

Filling a TR using a TP

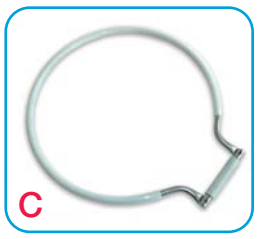
Application areas include:
Industrial, laboratories, life sciences, medical, ...

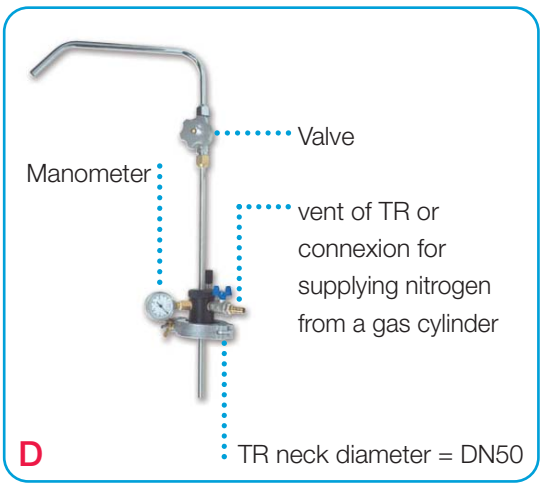
| Gamme TR | | TR11 | TR21 | TR26 | TR35 | TR60 | TR100 |
|---|---|---|---|---|---|---|---|
| **CHARACTERISTICS** | | | | | | | |
| **Liquid capacity** | l | **12.2** | **21.5** | **26** | **33.6** | **60** | **99** |
| **Diameter of neck** | mm | **50** | **50** | **50** | **50** | **50** | **50** |
| **Static holding time** | d[1] | **67** | **119** | **130** | **140** | **150** | **180** |
| Daily evaporation rate | l/d[1] | 0.18 | 0.18 | 0.2 | 0.24 | 0.4 | 0.55 |
| Weight empty | kg | 7.5 | 11.0 | 13.5 | 15.8 | 21.5 | 29.5 |
| Weight full | kg | 17.3 | 28.3 | 34.6 | 43 | 70 | 110 |
| External diameter | mm | 308 | 388 | 388 | 468 | 468 | 510 |
| Total height | mm | 584 | 605 | 669 | 655 | 869 | 986 |
| Total interior height | mm | 530 | 535 | 612 | 580 | 800 | 933 |
| **PRODUCT REFERENCES** | | | | | | | |
| **References to order** | | **TR11-1** | **TR21-1** | **TR26-1** | **TR35-1** | **TR60-1** | **TR100-1** |
| **MAIN ACCESSORY REFERENCES** | | | | | | | |
| **A:** Roller base | | ACC-ALU-29 | | | | | |
| **B:** Fixation kit for the roller base (3 parts) | | ACC-ALU-32 | | | | | |
| **C:** Tipping handle | | ACC-TR-15 | ACC-TR-16 | ACC-TR-16 | – | – | – |
| **D:** DL3 pressurized decanting system | | ACC-TR-5 | | | | | |
| **E:** Tipping stand | | – | ACC-TR-17 | ACC-TR-17 | ACC-TR-18 | – | – |
| **F:** Flexible transfer hose (DN10)[2] | 1.1 m | ACC-FL180180NL-11 | | | | | |
| Flexible avec canne de transfert (DN10)[3] [4] [5] | | **F + G1 ou F + G2** | | | | | |
| **G1:** Transfer cane with anti-splash nozzle | | ACC-FLTC-2 | | | | | |
| **G2:** Transfer cane without anti-splash nozzle | | ACC-FLTC-1 | | | | | |

1) Daily evaporation and static holding time are given for the following conditions: 20°C, 1 013 mb, and vessel is stationary with lid closed.
These are nominal values and may vary according to the history of the vessel and the manufacturing tolerances.
2) The flexible hoses are available in different lengths: 1.5, 2, 3 and 4 meters. If the length = 1.5 m the commercial reference = NL-15.
I If the length = 2 m the commercial reference = NL-20. If the length = 3 m the commercial reference = NL-30. If the length = 4 m the commercial reference = NL-40.

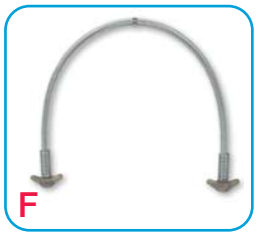


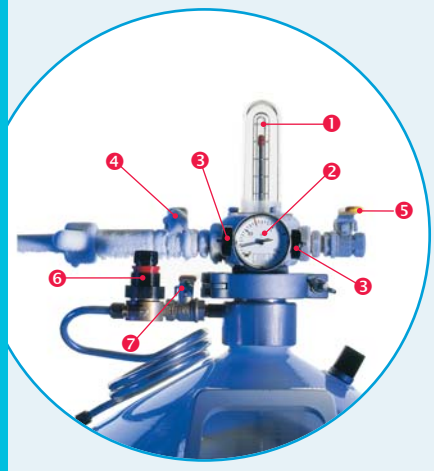





# TP

Self-pressurized (0.5 bar) liquid nitrogen storage and dispensing vessels.


- Capacity of 35 to 100 litres
- Self-pressurized vessel
- Delivered with or without the operating head*
- Static holding time up to 75 days
- 6 year guarantee on the vacuum




## * Operating head is removable

1. Float-type level indicator
2. Manometer
3. 2 safety valves for 0.5 bar
4. Dispensing / liquid use valve
5. Venting valve

## Self-pressurizing system

6. Pressure gauge
7. Pressurizing valve

## Main characteristics include

**Easy to use**

- Direct liquid nitrogen supply with the decanting valve
- The TP35 can fit easily under a laboratory bench or workstation
- A hand rail can be easily attached to protect the operating head and make it easier to move the vessel

**Easy to dispense liquid nitrogen**

- Double valve option for liquid use D

**Quality**

- Made out of aluminum and composite materials provides for low consumption and light weight
- High quality polyurethane paint for long life


Hand rail C

Flexible hose with dispensing cane G

Application areas include:
Industrial, laboratories, life sciences, medical, ...

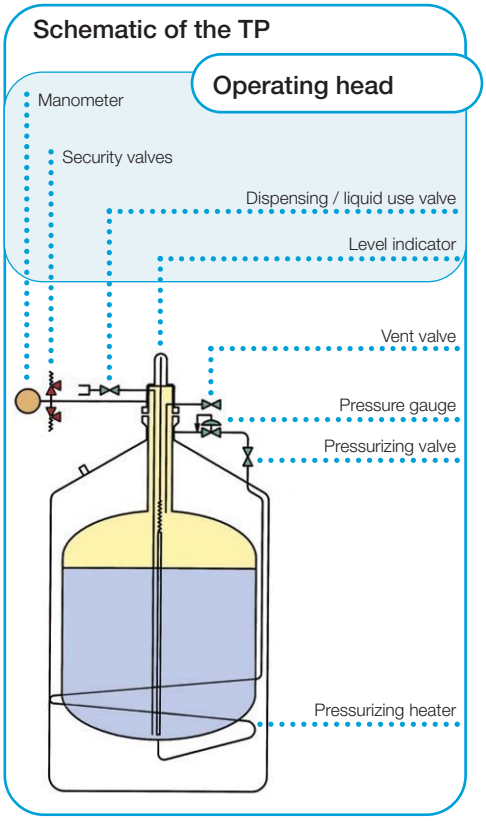
## TP

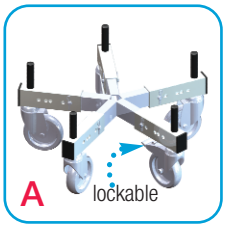
| | | TP35 | TP60 | TP100 |
|---|---|---|---|---|
| **CHARACTERISTICS** | | | | |
| **Liquid capacity** | l | **35** | **60** | **98** |
| **Diameter of neck** | mm | **50** | **50** | **50** |
| **Static holding time** | d[1] | **35** | **60** | **75** |
| Daily evaporation rate | l/d[1] | 1 | 1 | 1,3 |
| Weight empty with operating head | kg | 19.8 | 26.4 | 33.5 |
| Weight full with operating head | kg | 48 | 74.5 | 113.5 |
| External diameter | mm | 468 | 468 | 510 |
| Total height with operating head | mm | 853 | 1,080 | 1,213 |
| Total interior height | mm | 580 | 815 | 945 |
| Maximum operating pressure in standard bars | bar | 0.5 | 0.5 | 0.5 |
| Maximum flow rate | l/mn[2] | 2.4 (P=0.5b) | 3.5 (P=0.5b) | 5.2 (P=0.5b) |

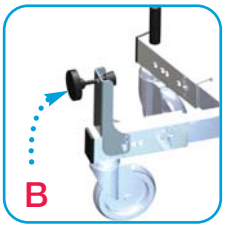
| **PRODUCT REFERENCES** | | | |
|---|---|---|---|
| **TP with operating head and pressure regulator** | TP35-1 | TP60-1 | TP100-1 |
| **TP without operating head (pressure regulator included)** | TP35-2 | TP60-2 | TP100-2 |

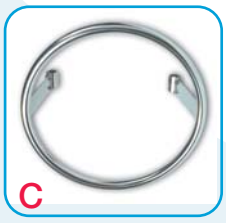
| **MAIN ACCESSORY REFERENCES** | | |
|---|---|---|
| **A1:** Roller base (height: 220 mm) | | ACC-ALU-29 |
| **A1:** Non magnetic roller base (height: 205 mm) | | ACC-ALU-31 |
| **B:** Fixation kit for the roller base (3 parts) | | ACC-ALU-32 |
| **C:** Hand rail | | ACC-ALU-21 |
| **D:** Withdrawal device with double valve | | ACC-TP-21 |
| **E:** Dispensing system with anti-splash nozzle | | ACC-TP-17 |
| **F:** Flexible transfer hose with (DN10)[4] | 1.1 m | ACC-FL180180NL-11 |
| Flexible transfer hose with cane (DN10)[3] [4] [5] | | F + G1 ou F + G2 |
| **G1:** Transfer cane with anti-splash nozzle | | ACC-FLTC-2 |
| **G2:** Transfer cane without anti-splash nozzle | | ACC-FLTC-1 |

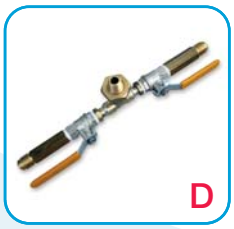
### Schematic of the TP



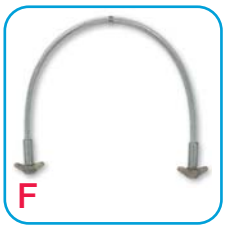





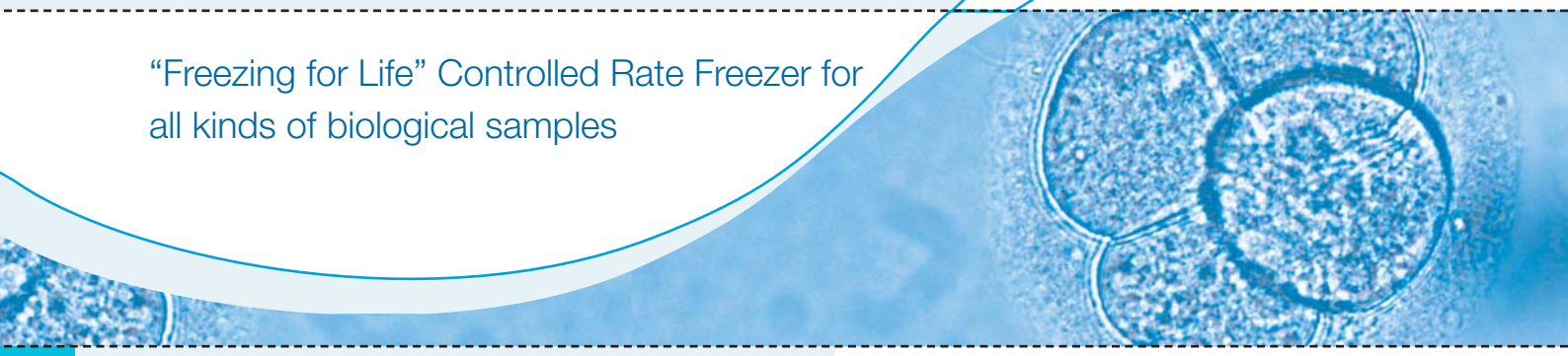




1) Daily evaporation and static holding time are given for the following conditions: 20°C, 1 013 mb, and vessel is stationary with lid closed. These are nominal values and may vary according to the history of the vessel and the manufacturing tolerances.
2) Indicative value that can vary greatly in accordance with the filling time of the vessel.
3) For dispensing liquid nitrogen in Voyageur, GT, Agil, or Arpege vessels – small volumes of nitrogen in non-pressurized vessels
4) The flexible hoses are available in different lengths: 1.5, 2, 3 and 4 meters. If the length = 1.5 m the commercial reference = NL-15. I If the length = 2 m the commercial reference = NL-20. If the length = 3 m the commercial reference = NL-30. If the length = 4 m the commercial reference = NL-40.
5) Available in length from 1.1 – 4 m and for connecting to pressurized vessels or vacuum lines with a maximum of 3 bar.

# FREEZAL

"Freezing for Life" Controlled Rate Freezer for all kinds of biological samples




- For straws, vials and bags
- Compliant to MDD 93/42/CEE and 21CFR part 11
- Easy to create and save protocols
- Print freezing graphs with USB commercial printers
- Intuitive programming (MS Windows XP™)

## Key characteristics

- Integrated industrial PC and industrial touch screen for reliability and safety
- Connection for a 2nd viewer screen for remote monitoring
- Language options: 7 languages available (EN, FR, DE, ES, PO, IT and NE), other available upon request
- Multi-programmable "seeding:" manual, semi-automatic and automatic
- Data is stored in the computer
- 3 USB ports
- Compact and light system

FREEZAL connection to the TP


Liquid nitrogen supply: self-pressurizing **TP** vessel

## Accessories


## Different freezing racks for different types of samples…

**The FREEZAL is a programmable cryogenic freezer designed to freeze all kinds of sensitive biological samples. The FREEZAL has been designed by CRYOPAL's research and development team to meet the evolving demands of our global customers.**

### Technical characteristics

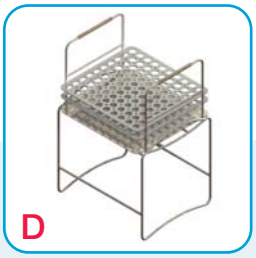
| SAMPLE CAPACITY PER FREEZING CYCLE | | A: vertical rack | B: horizontal rack |
|---|---|---|---|
| Straws 0.5ml (CBS™) | pc. | 196 | 28 |
| Straws 1ml (CBS™) | pc. | 169 | 20 |
| D: Vials 2ml / 5ml | pc. | 100 | |
| E: Vials 2ml / 5ml | pc. | 595 / 298 | |
| G: Bags (up to 700ml) | pc. | 10 + 1 (testimonial bag) | |
| Electricity consumption | W | 800 | |
| Electricity supply | V/Hz | 220/50 | |
| Measurement accuracy | °C | ± 0.1 | |
| **DIMENSIONS OF THE FREEZING CHAMBER** | | | |
| L x W x H | mm | 210 x 210 x 320 | |
| Temperature range | °C | 40 à -180 | |
| Cooling speed | °C/min | 0.1 à 25 | |
| **EXTERNAL DIMENSIONS** | | | |
| L x W x H | mm | 534 x 536 x 467 | |
| Weight | kg | 30 | |

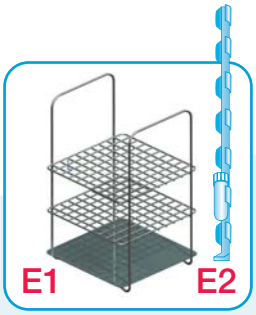
### FREEZAL references

| | Description |
|---|---|
| FREEZAL-1 | Nicool Freezal (220V)*) |
| A: ACC-FREEZAL-4 | Vertical freezing rack for straws |
| B: ACC-FREEZAL-3 | Horizontal freezing rack for straws |
| C: ACC-FREEZAL-5 | Seeding bar |
| D: ACC-FREEZAL-30 | Freezing rack for 100 2 ml / 5 ml vials |
| E1: ACC-FREEZAL-2 | Freezing rack for 2ml / 5ml vials on canes |
| E2: ACC-BOXTUBE-411 | Batch of 10 freezing canes for vials |
| G: ACC-FREEZAL-1 | Freezing rack for bags (up to 700ml) |

*) Included with the FREEZAL:

- Protective casing
- Integrated PC with software
- Electrical supply cable
- Stylets for the PC's touch screen
- Replacement fuses kit
- Maintenance kit (1 x solenoid valve + 2 x T° probes + 1 x TP connecter)
- Multiple language CD user's manual
- Customized FREEZAL cryogenic flexible connector hose H

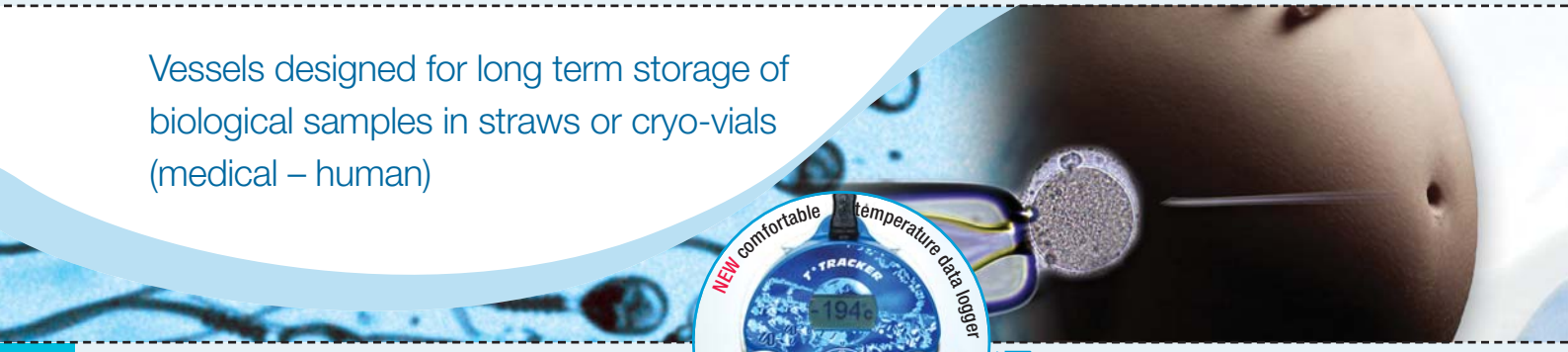





# GT

Vessels designed for long term storage of biological samples in straws or cryo-vials (medical – human)




* page 54

## GT line for extended holding time (Ø neck ≤ 50 mm)


- Maximum storage – 16,400 straws or 1,200 cryo-vials
- Vessels comply with the EC Medical Directive 93/42 EEC
- Level and temperature indicators on the NATAL 40
- Static holding time up to 350 days
- Plastic or stainless steel canisters
- Anti-float system for straws stored in plastic canisters
- Plastic level rod for measuring the liquid nitrogen level
- 6 year guarantee on the vacuum

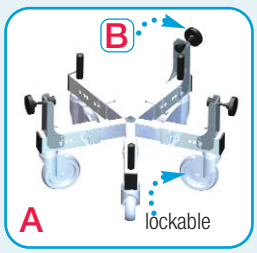
## Main characteristics include

- Aluminum vessels for both the long holding time and large capacity GT lines:
  - **Long holding time (Ø neck ≤ 50 mm)**
  - **large capacity (Ø neck ≥ 80 mm)**
- Light weight and resistant
- High quality polyurethane paint
- 14 different models

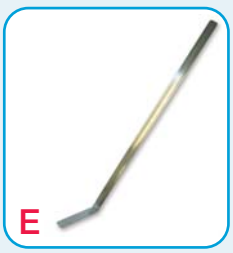
Carrying strap for GT2

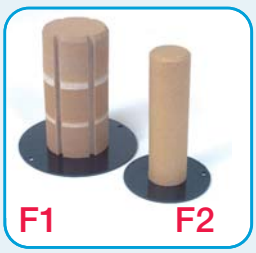
## Accessories

**A:** Roller base
**B:** Fixation kit for the roller base
**C:** Plastic goblet
**D:** Cryo-vial cane
**E:** Stainless steel lifter for goblets
**F1:** Lid for GTs with stainless steel canisters
**F2:** Lid for GTs with plastic canisters
**G:** Plastic level rod (included with GT except GT2)





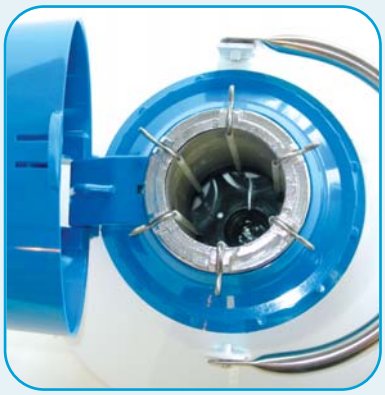




Application areas include:
Life sciences, insemination centers, egg and sperm banks, IVF, pharmaceutical labs...

## GT large capacity (Ø neck ≥ 80 mm)



The NATAL 40 is equipped with level and temperature indicator gauges and a RS485 connection box for traceability of recorded data.



Canister organization groove system in the upper part of the GT neck (canister organization system is standard on all GT 14 / 6, 18, 26, 38, 40 and NATAL.

The GTs (except the GT 2) can be closed with a security lock on the lid (the security lock is not included)

Easy to identify number and color code on the canisters in the long holding time GT 3, 9, 11, 21 and 35

# GT – for Animal Insemination

Vessels designed for storage and shipping of biological samples in straws or cryo-vials (veterinary – animal)


* page 54

## GT line for extended holding time (Ø neck ≤ 50 mm)

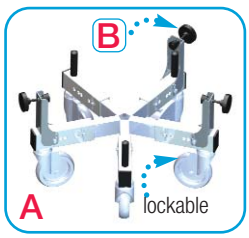

- Maximum storage 16,400 straws
- The GT line complies to international regulations for the transportation of dangerous materials by land, air, rail and water.
- Static holding time up to 350 days
- Plastic or stainless steel canisters with 1 or 2 levels
- Anti-float system for straws stored in plastic canisters
- Plastic level rod for measuring the liquid nitrogen level
- 6 year guarantee on the vacuum

## Main characteristics include

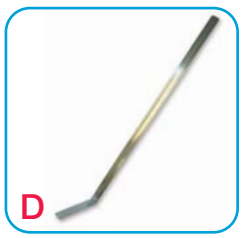
- Aluminum vessels for both the long holding time and large capacity GT lines:
  - **Long holding time (Ø neck ≤ 50 mm)**
  - **large capacity (Ø neck ≥ 80 mm)**
- Light weight and resistant
- High quality polyurethane paint
- 14 different models

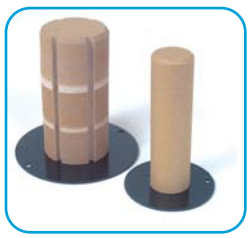
## Accessories

**A:** Roller base
**B:** Fixation kit for the roller base
**C:** Plastic goblet
**D:** Stainless steel lifter for goblets
**E1:** Lid for GTs with stainless steel canisters
**E2:** Lid for GTs with plastic canisters
**F:** Plastic level rod (included with GT / NATAL except GT2)







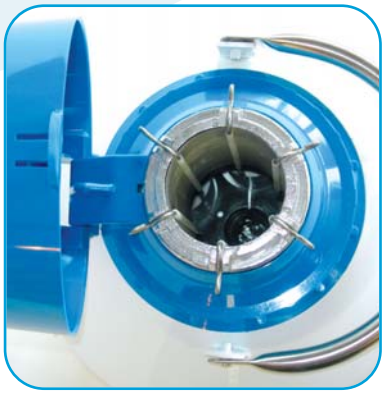





## GT large capacity (Ø neck ≥ 80 mm)


The GTs (except the GT 2) can be closed with a security lock on the lid (the security lock is not included)

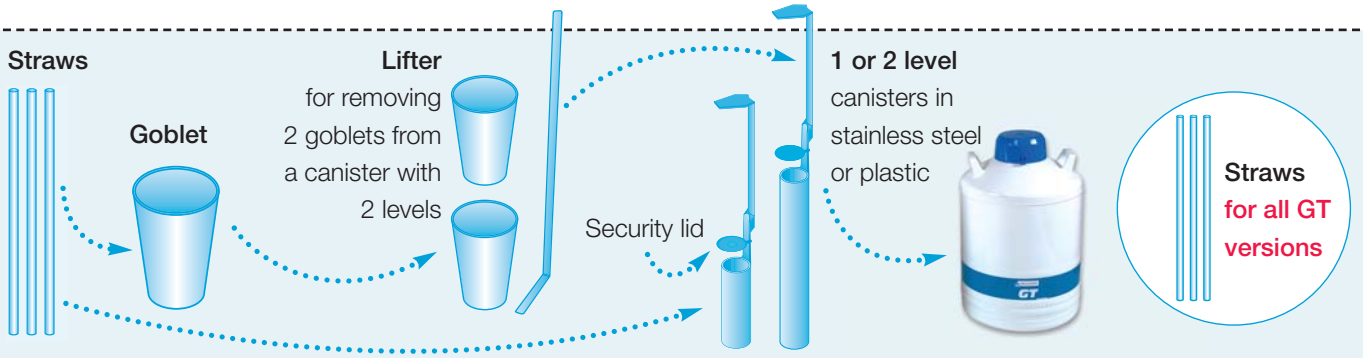
Canister organization groove system in the upper part of the GT neck (canister organization system is standard on all GT 14 / 6, 18, 26, 38, 40 and NATAL



Easy to identify number and color code on the canisters in the long holding time GT 3, 9, 11, 21 et 35

The security lid is standard on the GT line, for options see accessories; only available for GT 3, 9, 11, 21 and 35

# GT 2 – 35 long holding time – straws / vials



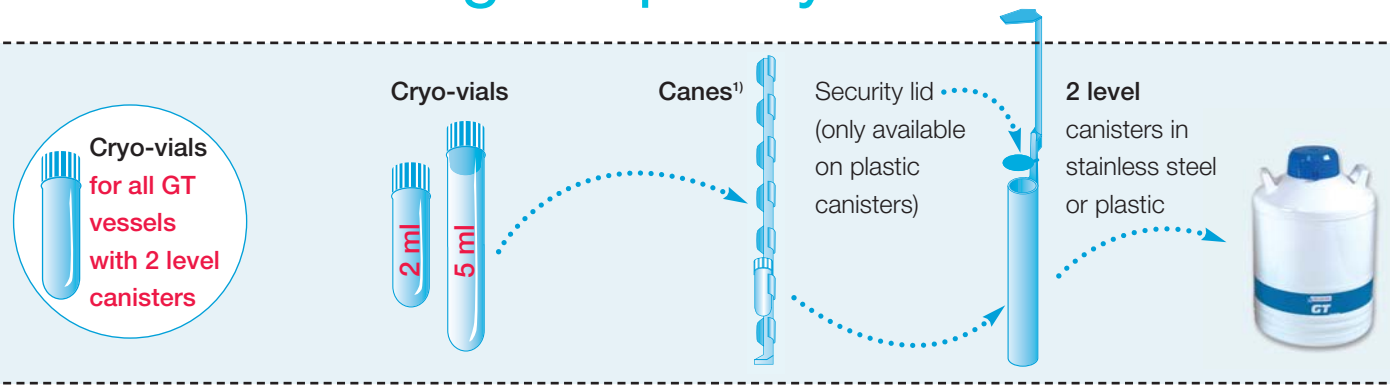

| Long holding time (Ø neck ≤ 50 mm | | GT 2 | GT 3 | GT 9 | GT 11 | GT 21 | GT 35 |
|---|---|---|---|---|---|---|---|
| **CHARACTERISTICS** | | | | | | | |
| **Liquid capacity** | l | **2** | **3.7** | **9.3** | **12.2** | **21.5** | **33.6** |
| **Diameter of neck** | mm | **30** | **50** | **50** | **50** | **50** | **50** |
| **Weight empty** | kg | **1.9** | **4.5** | **8.2** | **9.2** | **13** | **15** |
| Canisters can be identified and organized from the support on the top of the neck of the GT | | | | | | | |
| Weight full | kg | 3.5 | 7.5 | 15.7 | 19 | 30.4 | 43 |
| External diameter | mm | 174 | 248 | 358 | 308 | 388 | 468 |
| Total height | mm | 392 | 405 | 450 | 630 | 660 | 660 |
| Daily evaporation rate | l/d[1)] | 0.08 | 0.11 | 0.11 | 0.09 | 0.09 | 0.09 |
| **Static holding time** | d | **25** | **33** | **84** | **130** | **225** | **350** |
| Dynamic holding time | d[2)] | 15 | 21 | 50 | 80 | 140 | 219 |
| Number of canisters | | 3 | 6 | 6 | 6 | 6 | 6 |
| **STORAGE CAPACITY AND TYPE OD CANISTERS** | | | | | | | |
| **Plastic** | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Stainless steel** | | – | ✓ | ✓ | ✓ | ✓ | ✓ |
| Diameter of canisters | mm | 26 | 38 | 38 | 38 | 38 | 38 |
| Height of canisters | mm | 120 | 120 | 120 | 120 or 280 | 120 or 280 | 120 or 280 |
| Number of level of goblets[3)] | | 1 | 1 | 1 | 1 or 2 | 1 or 2 | 1 or 2 |
| **Max. capacity of 0.25 ml straws** | | **330** | **1,560** | **1,560** | **1,560/2,400** | **1,560/2,400** | **1,560/2,400** |
| Max. capacity of 0.5 ml straws | | 150 | 720 | 720 | 720/1,200 | 720/1,200 | 720/1,200 |
| Capacity of CBS™ straws (0.3 et 0.5 ml) | | 100 | 460 | 460 | 460/780 | 460/780 | 460/780 |
| CTotal capacity of 2 ml cryo-vials (on canes in canisters with 2 levels) | | – | – | – | 180 | 180 | 180 |
| **PRODUCT REFERENCES** | | | | | | | |
| **GT with** | | | | | | | |
| canisters – plastic and 1 level | | GT2-1 | GT3-1 | GT9-1 | GT11-1 | GT21-1 | GT35-1 |
| canisters – stainless steel and 1 level | | – | GT3-2 | GT9-2 | GT11-2 | GT21-2 | GT35-2 |
| canisters – stainless steel 2 levels | | – | – | – | GT11-3 | GT21-3 | GT35-3 |
| canisters – plastic and 2 levels | | – | – | – | GT11-4 | GT21-4 | GT35-4 |
| **MAIN ACCESSORY REFERENCES** | | | | | | | |
| **A:** Roller base | | – | – | – | – | ACC-ALU-29 | |
| **B:** Fixation kit for the roller base (3 parts) | | – | – | – | – | ACC-ALU-32 | |
| **C:** Goblet Ø 35 mm (20 per batch) | | – | ACC-BOXTUBE-300 | | | | |
| **D:** Canes for cryo-vials (10 per batch) | | – | – | – | ACC-BOXTUBE-411 | | |
| **E:** Lifter (for canister with 2 levels) | | – | – | – | ACC-BOXTUBE-405 | | |
| **F1:** Lid for GTs with stainless steel canisters | | – | ACC-GT-2 | | ACC-GT-1 | | |
| **F2:** Lid for GTs with plastic canisters | | ACC-ALU-18 | ACC-GT-4 | | ACC-GT-5 | | |
| **G:** Plastic level rod | | ACC-GT-103 | | | | | |

1) Daily evaporation and static holding time are given for the following conditions: 20°C, 1 013 mb, and vessel is stationary with lid closed. These are nominal values and may vary according to the history of the vessel and the manufacturing tolerances.

2) Indicative value may vary greatly based on the time the vessel did not have its lid closed.

3) Canister 1 level: number of straws stored loose.
Canister 2 levels: number of straws stored loose in goblet.

# GT 14 – 40 large capacity – Straws / Vials

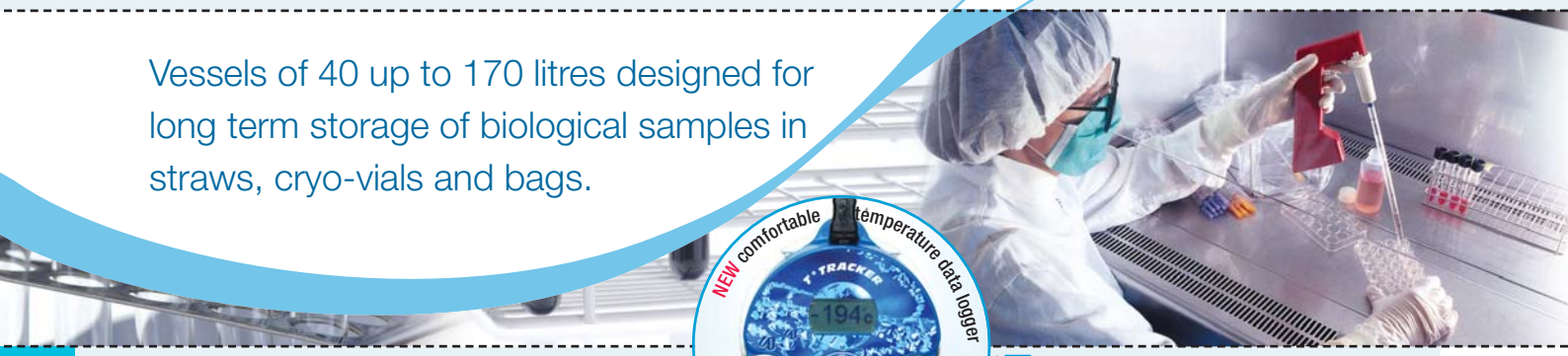



| GT large capacity (Ø neck ≥ 80 mm | | GT 14/6 | GT 18 | GT 26 | GT 38 | GT 40 | NATAL NT |
|---|---|---|---|---|---|---|---|
| **CHARACTERISTICS** | | | | | | | |
| **Liquid capacity** | l | **13.5** | **17.5** | **26.7** | **37** | **40** | **40** |
| **Diameter of neck** | mm | **80** | **80** | **80** | **80** | **120** | **120** |
| **Weight empty** | kg | **9.5** | **10.5** | **14.8** | **19** | **24** | **24** |
| Canisters can be identified and organized from the support grooves in the top of the neck of the GT | | | | | | | |
| Weight full | kg | 20.4 | 25 | 36 | 49 | 57 | 57 |
| External diameter | mm | 358 | 308 | 468 | 468 | 468 | 468 |
| Total height | mm | 455 | 580 | 460 | 715 | 710 | 710 |
| Daily evaporation rate | l/d[2)] | 0.24 | 0.26 | 0.29 | 0.15 | 0.29 | 0.29 |
| **Static holding time** | d | **57** | **69** | **90** | **245** | **140** | **140** |
| Dynamic holding time | d[3)] | 36 | 43 | 56 | 153 | 88 | 88 |
| Number of canisters **(only stainless steel)** | | 6 | 6 | 9 | 6 | 10 | 10 |
| **STORAGE CAPACITY AND TYPE OD CANISTERS** | | | | | | | |
| Diameter of canister | mm | 67 | 67 | 67 | 67 | 73 | 73 |
| Height of canister | mm | 120 | 280 | 110 | 280 | 280 | 280 |
| Number of level of goblets[4)] | | 1 | 2 | 1 | 2 | 2 | 2 |
| **Max. capacity of 0.25 ml straws** | | **4,920** | **9,840** | **7,380** | **9,840** | **16,400** | **16,400** |
| Max. capacity of 0.5 ml straws | | 2,190 | 4,380 | 3,285 | 4,380 | 7,300 | 7,300 |
| Capacity of CBS™ straws (0.3 et 0.5 ml) | | 1,350 | 2,700 | 2,025 | 2,700 | 4,500 | 4,500 |
| Total capacity of 2 ml cryo-vials (on canes in canisters with 2 levels) | | – | 612 | – | 612 | 1,200 | 1,200 |
| Total capacity of 5 ml cryo-vials (on canes in canisters with 2 levels) | | – | 306 | – | 306 | 600 | 600 |
| Capacity level indicator with alarm | | – | – | – | – | – | ✓ |
| Digital temperature indicator with alarm | | – | – | – | – | – | ✓ |
| **PRODUCT REFERENCES** | | | | | | | |
| **GT with** | | | | | | | |
| 1 level canister in stainless steel | | GT14-1 | – | GT26-1 | – | – | |
| 2 level canister in stainless steel | | – | GT18-1 | – | GT38-1 | GT40-1 | NATAL40-1 |
| **MAIN ACCESSORY REFERENCES** | | | | | | | |
| **A:** Roller base | | – | ACC-ALU-29 | | | | |
| **B:** Fixation kit for the roller base (3 parts) | | – | ACC-ALU-32 | | | | |
| **C:** Goblet Ø 65 mm (20 per batch) | | ACC-BOXTUBE-301 | | | | | |
| **C1:** Goblet perce Ø 65 mm with lid (10 per batch) | | ACC-BOXTUBE-415 | | | | | |
| **C2:** Goblet "Marguerite" Ø 65 with lid (5 per batch) | | ACC-BOXTUBE-302 | | | | | |
| **D:** Canes for cryo-vials (10 per batch) | | – | ACC-BOXTUBE-411 | – | ACC-BOXTUBE-411 | | |
| **E:** Lifter (for canister with 2 levels) | | – | ACC-BOXTUBE-405 | – | ACC-BOXTUBE-405 | | |
| **F1:** Lid for GTs with stainless steel canisters | | ACC-GT-6 | | ACC-GT-8 | ACC-GT-9 | ACC-GT-3 | ACC-GT-3 |
| **G:** Plastic level rod | | ACC-GT-103 | | | | | |

1) Max. 6 2 ml cryo-vials per cane. Max. 3 5 ml cryo-vials per cane.
2) Daily evaporation and static holding time are given for the following conditions: 20°C, 1 013 mb, and vessel is stationary with lid closed.
These are nominal values and may vary according to the history of the vessel and the manufacturing tolerances.
3) Indicative value may vary greatly based on the time the vessel did not have its lid closed.
4) Canister 1 level: number of straws stored loose.
Canister 2 levels: number of straws stored loose in goblet.

# ARPEGE

Vessels of 40 up to 170 litres designed for long term storage of biological samples in straws, cryo-vials and bags.




* page 54


- Maximum storage – 6000 cryo-vials
- Storage in Gas or Liquid phase
- Vessels comply with the EC Medical Directive 93/42 EEC
- Static holding time up to 246 days
- A variety of electronic options on all models
- Rack or canister storage systems for the samples
- AIR LIQUIDE patented clip system to secure the sample boxes in the racks
- 6 year guarantee on the vacuum

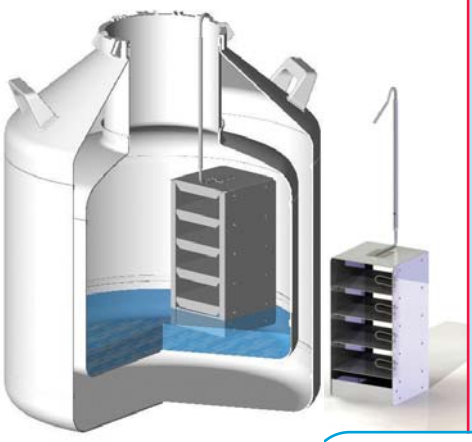
## Main characteristics include

- Vessels delivered with the racks or canisters inside
- **Option to buy the vessels without any electronic or storage system (see product table)**
- Security lid with a lock point (not available on ARPEGE 55 & 75, lock not included)
- Made out of aluminum and composite materials provides for light weight and longer holding time

Application areas include:
Life sciences, insemination centers, egg and sperm banks, IVF, pharmaceutical labs...

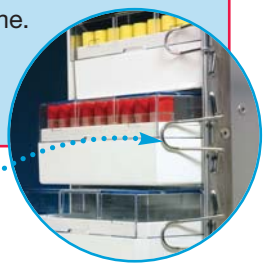
## ARPEGE liquid phase

## ARPEGE gas phase



Maximizing security when handling a rack and the sample boxes in the rack. Thanks to AIR LIQUIDE' s patented clip closure system ®, each level of the storage rack has its own clip system to secure and keep the storage boxes in each level of the rack allowing the user to access only one level of a rack at a time.

**A system designed to secure and keep each storage box in its place in the rack.**



### Electronic options

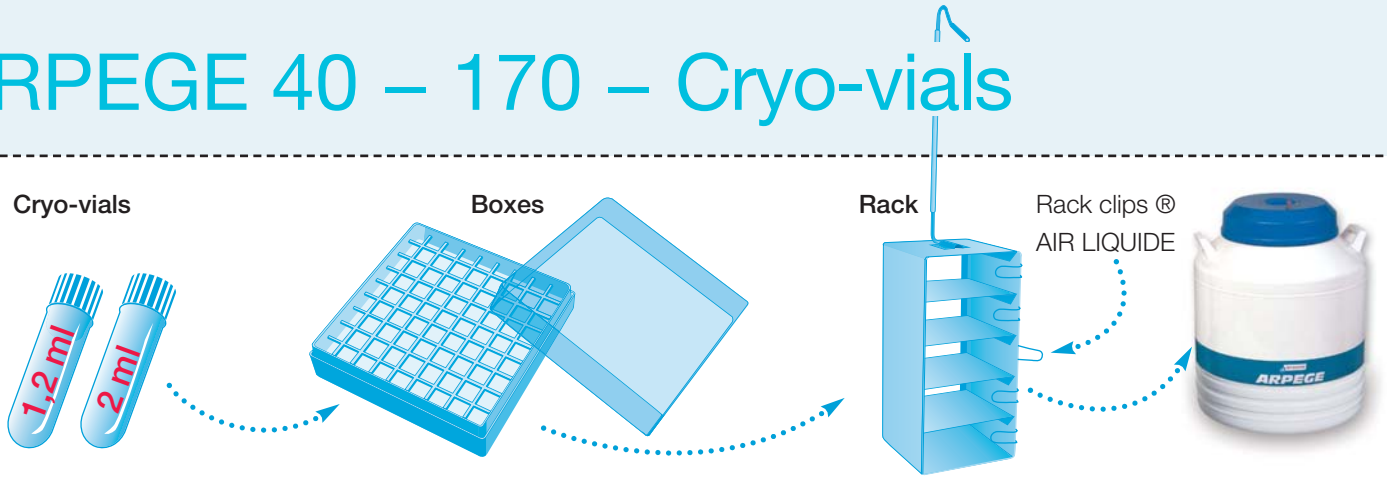
- Level indicator and / or regulation and…
- Temperature indicator
- Level indicator – regulation (except ARPEGE 40)

Liquid phase  Gas Phase

| ARPEGE | | | liquid | liquid and gas | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | **40** | **70** | **110** | **140** | **170** | **55** | **75** |
| CHARACTERISTICS | | | | | | | | | |
| Liquid capacity | l | | 40 | 72 | 116 | 144 | 172 | 55 | 72 |
| | | | | 15 | 15 | 20 | 20 | | |
| Weight empty | kg | | 57 | 91 | 136 | 166 | 195 | 75 | 95 |
| | | | | 50 | 60 | 73 | 77 | | |
| **Static holding time** | **d** | | **140** | **130** | **193** | **222** | **246** | **23** | **29** |
| | | | | 25 | 23 | 30 | 28 | | |
| Diameter of neck | mm | | 120 | 215 | 215 | 215 | 215 | 378 | 378 |
| Weight empty | kg | | 25 | 33 | 42 | 50 | 56 | 31 | 37 |
| External diameter | mm | | 467 | 586 | 586 | 683 | 683 | 468 | 468 |
| Total height | mm | | 735 | 738 | 962 | 911 | 1 028 | 755 | 930 |
| Daily evaporation rate | l/d[1)] | | 0.29 | 0.6 | 0.65 | 0.65 | 0.7 | 2.4 | 2.5 |

1) Daily evaporation and static holding time are given for the following conditions: 20°C, 1 013 mb, and vessel is stationary with lid closed.
These are nominal values and may vary according to the history of the vessel and the manufacturing tolerances.
2) Indicative value may vary greatly based on the time the vessel did not have its lid closed.

# ARPEGE 40 – 170 – Cryo-vials




| | OPTIMAL | | | Tele-Monitoring |
|---|---|---|---|---|
| | INITIAL / ESSENTIAL | | | |
| SIMPLE<br>without racks<br>without electronics | BASIC<br>including racks<br>without electronics | CHOICE I:<br>level indicator N<br>temperature indicator T<br>Automatic filling R | | CHOICE II:<br>4/20mA box<br>RS485 box |


* page 54

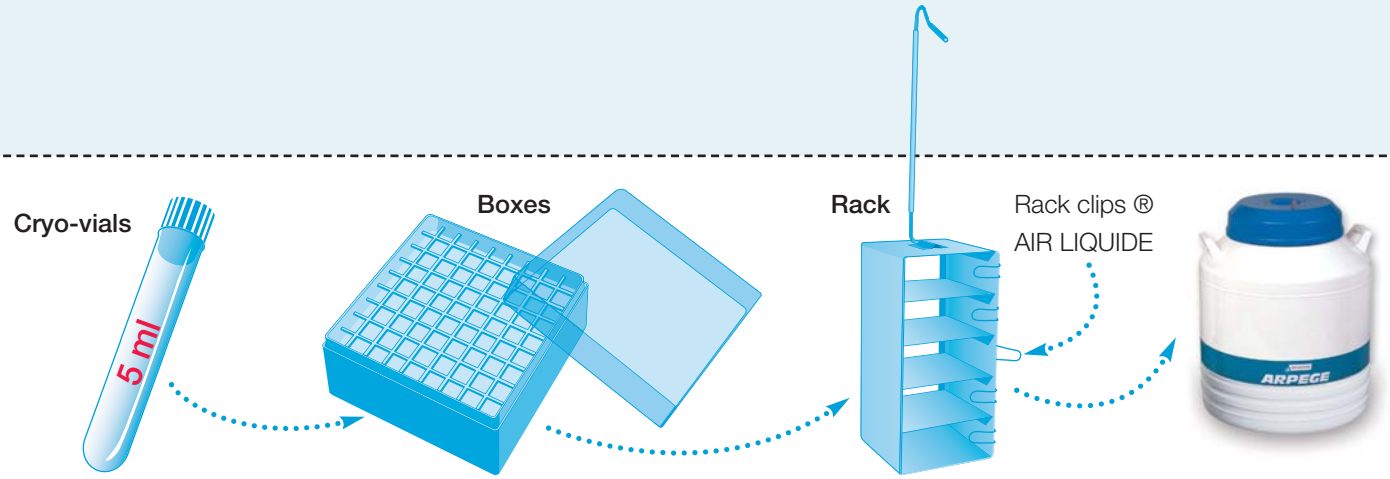
Liquid phase  Gas Phase

**Arpege – Rack for cryo-vials 1.2 / 2ml**

| | | 40 | 70 | 110 | 140 | 170 |
|---|---|---|---|---|---|---|
| Number of racks | | 6 | 4 | 4 | 6 | 6 |
| Number of cryo-vials per box of 25 | | 25 | 81/100 | 81/100 | 81/100 | 81/100 |
| Number of levels per rack | | 5 | 5 | 9 | 8 | 10 |
| | | – | 4 | 8 | 7 | 9 |
| Number of **cryo-vials 1.2 / 2ml** | | 750[1] | 2,000[2] | 3,600[2] | 4,800[2] | 6,000[2] |
| | | – | 1,600[2] | 3,200[2] | 4,200[2] | 5,400[2] |
| **SIMPLE** without racks, without electronics | | ARPEGE40-L-1 | ARPEGE70-L-1 | ARPEGE110-L-1 | ARPEGE140-L-1 | ARPEGE170-L-1 |
| | | – | ARPEGE70-G-1 | ARPEGE110-G-1 | ARPEGE140-G-1 | ARPEGE170-G-1 |
| **BASIC** includes: racks cryo-vials 2ml, without electronics | | ARPEGE40-L-100 | ARPEGE70-L-100 | ARPEGE110-L-100 | ARPEGE140-L-100 | ARPEGE170-L-100 |
| | | – | – | – | – | – |
| **INITIAL** N + T | | ARPEGE40-L-102 | ARPEGE70-L-102 | ARPEGE110-L-102 | ARPEGE140-L-102 | ARPEGE170-L-102 |
| | | – | – | – | – | – |
| **ESSENTIAL** N + T + R | | – | ARPEGE70-L-104 | ARPEGE110-L-104 | ARPEGE140-L-104 | ARPEGE170-L-104 |
| | | – | ARPEGE70-G-104 | ARPEGE110-G-104 | ARPEGE140-G-104 | ARPEGE170-G-104 |
| **OPTIMAL** N + T + R + 4/20mA box | | – | ARPEGE70-L-107 | ARPEGE110-L-107 | ARPEGE140-L-107 | ARPEGE170-L-107 |
| | | – | ARPEGE70-G-107 | ARPEGE110-G-107 | ARPEGE140-G-107 | ARPEGE170-G-107 |
| **OPTIMAL** N + T + R + RS485 box | | – | ARPEGE70-L-108 | ARPEGE110-L-108 | ARPEGE140-L-108 | ARPEGE170-L-108 |
| | | – | ARPEGE70-G-108 | ARPEGE110-G-108 | ARPEGE140-G-108 | ARPEGE170-G-108 |

| MAIN ACCESSORY REFERENCES | | |
|---|---|---|
| **A1:** Roller base (height: 220 mm) | ACC-ALU-29 | ACC-ALU-30 |
| **A1:** Non magnetic roller base (height: 205 mm) | ACC-ALU-31 | – |
| **B:** Fixation kit for the roller base (3 parts) | | ACC-ALU-32 |
| **C:** Flexible transfer hose with (DN10) – 180/180 for nitrogen length =1.5 m | –[3] | ACC-FL180180NL-15 |
| **D:** Set of boxes | ACC-BOXTUBE-105[4] | ACC-BOXTUBE-104[5] |

1) in boxes 76 x 76 x 51 mm (25)  2) in boxes 133 x 133 x 512 mm (81 or 100)  3) ARPEGE 40: automatic filling is not available
4) set of 8 boxes 76 x 76 x 51 mm (25)  5) set of 10 boxes 133 x 133x 512 mm (81 or 100)




| | | | |
|---|---|---|---|
| | | OPTIMAL | Tele-Monitoring |
| | INITIAL / ESSENTIAL | | |
| SIMPLE<br>without racks<br>without electronics | BASIC<br>including racks<br>without electronics | CHOICE I:<br>level indicator N<br>temperature indicator T<br>Automatic filling A | CHOICE II:<br>4/20mA box<br>RS485 box |

* page 52/53


* page 54

Liquid phase  Gas Phase

**Arpege – Rack for cryo-vials 5 ml**

| | | | 70 | 110 | 140 | 170 |
|---|---|---|---|---|---|---|
| Number of | racks | | 4 | 4 | 6 | 6 |
| Number of | cryo-vials per box | | 81 | 81 | 81 | 81 |
| Number of | levels per rack | | 3 | 5 | 4 | 5 |
| | | | 2 | 4 | 3 | 4 |
| Number of | cryo-vials 5 ml | | 972 | 1,620 | 1,944 | 2,430 |
| | | | 648 | 1,296 | 1,458 | 1,944 |
| **SIMPLE** | without racks, | | ARPEGE70-L-1 | ARPEGE110-L-1 | ARPEGE140-L-1 | ARPEGE170-L-1 |
| | without electronics | | ARPEGE70-G-1 | ARPEGE110-G-1 | ARPEGE140-G-1 | ARPEGE170-G-1 |
| **BASIC** | includes: racks for cryo-vials 5 ml | | ARPEGE70-L-200 | ARPEGE110-L-200 | ARPEGE140-L-200 | ARPEGE170-L-200 |
| | without electroncs | | – | – | – | – |
| **INITIAL** | N + T | | ARPEGE70-L-202 | ARPEGE110-L-202 | ARPEGE140-L-202 | ARPEGE170-L-202 |
| | | | – | – | – | – |
| **ESSENTIAL** | N + T + R | | ARPEGE70-L-204 | ARPEGE110-L-204 | ARPEGE140-L-204 | ARPEGE170-L-204 |
| | | | ARPEGE70-G-204 | ARPEGE110-G-204 | ARPEGE140-G-204 | ARPEGE170-G-204 |
| **OPTIMAL** | N + T + R + 4/20mA box | | ARPEGE70-L-207 | ARPEGE110-L-207 | ARPEGE140-L-207 | ARPEGE170-L-207 |
| | | | ARPEGE70-G-207 | ARPEGE110-G-207 | ARPEGE140-G-207 | ARPEGE170-G-207 |
| **OPTIMAL** | N + T + R + RS485 box | | ARPEGE70-L-208 | ARPEGE110-L-208 | ARPEGE140-L-208 | ARPEGE170-L-208 |
| | | | ARPEGE70-G-208 | ARPEGE110-G-208 | ARPEGE140-G-208 | ARPEGE170-G-208 |

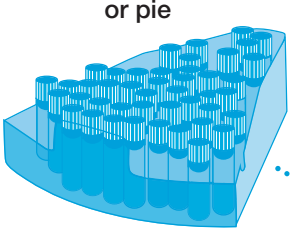
| MAIN ACCESSORY REFERENCES | | |
|---|---|---|
| A: Roller base lockable (height: 220 mm) | | ACC-ALU-30 |
| B: Fixation kit for the roller base (3 parts) | | ACC-ALU-32 |
| C: Flexible transfer hose with (DN10) – 180/180 for nitrogen length =1.5m -1 | | ACC-FL180180NL-15 |
| D: Set of 4 boxes 133 x 133 x 512 mm[1)] | | ACC-BOXTUBE-107 |

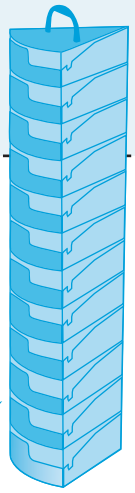
1) 81 boxes

# ARPEGE 55 and 75 Cryo-vials

Cryo-vials


Rack type “Camembert” or pie





Rack


| | OPTIMAL | | Tele-Monitoring |
|---|---|---|---|
| | INITIAL / ESSENTIAL | | |
| SIMPLE | BASIC | CHOICE I: | CHOICE II: |
| without racks | including racks | level indicator N | 4/20mA box |
| without electronics | without electronics | temperature indicator T | RS 485 box |
| | | Automatic filling A | |

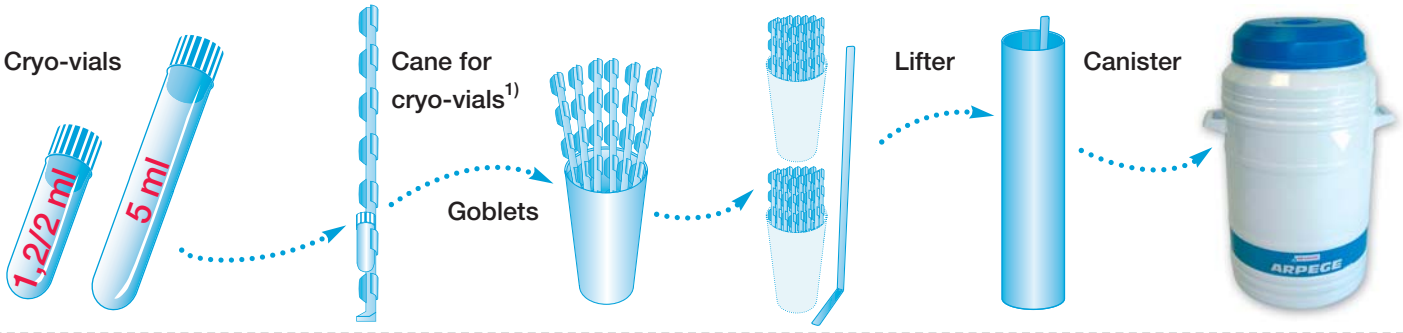

* page 54

Liquid phase

| Arpege – Rack for cryo-vials 1.2 / 2ml | | | 55 | 75 |
|---|---|---|---|---|
| Number of | racks | | 6[1)] | 6[1)] |
| Number of | levels per rack | | 9 | 12 |
| Number of | cryo-vials per box | | 67 | 67 |
| Number of | cryo-vials 1.2 / 2ml | | 3,618 | 4,824 |
| SIMPLE | without racks, without electronics | | ARPEGE55-L-1 | ARPEGE75-L-1 |
| BASIC | includes: racks for cryo-vials 1.2 / 2ml, without electronic | | ARPEGE55-L-100 | ARPEGE75-L-100 |
| INITIAL | N + T | | ARPEGE55-L-102 | ARPEGE75-L-102 |
| ESSENTIAL | N + T + R | | ARPEGE55-L-104 | ARPEGE75-L-104 |
| OPTIMAL | N + T + R + 4/20mA box | | ARPEGE55-L-107 | ARPEGE75-L-107 |
| OPTIMAL | N + RA + RS485 box | | ARPEGE55-L-108 | ARPEGE75-L-108 |

| MAIN ACCESSORY REFERENCES | | |
|---|---|---|
| A1: | Roller base – lockable (height: 220 mm) | ACC-ALU-29 |
| A1: | Non magnetic roller base – lockable (height: 205 mm) | ACC-ALU-31 |
| B: | Fixation kit for the roller base (3 parts) | ACC-ALU-32 |
| C: | Flexible transfer hose with (DN10) – 180/180 for nitrogen length =1.5m | ACC-FL180180NL-15 |

1) with electronic kit and maximum of 5 racks




| | OPTIMAL | | Tele-Monitoring |
|---|---|---|---|
| | INITIAL / ESSENTIAL | | |
| SIMPLE | BASIC | CHOICE I: | CHOICE II: |
| without racks | including racks | level indicator N | 4/20mA box |
| without electronics | without electronics | temperature indicator T | RS 485 box |
| | | automatic filling R | |

* page 52/53


* page 54

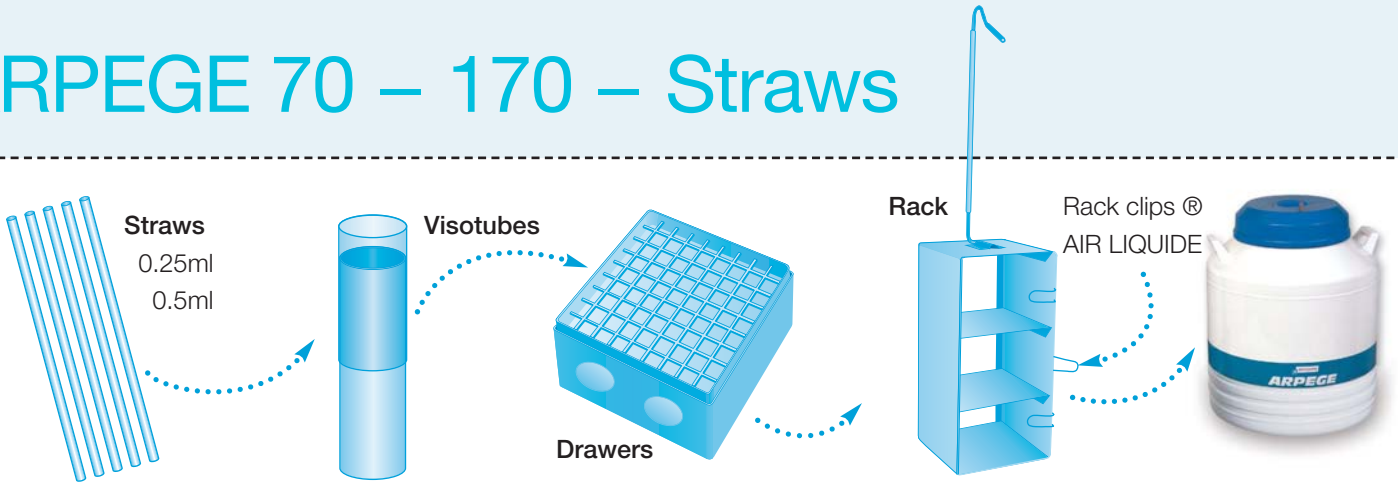
Liquid phase

| Arpege – Canisters pour cryo-tubes 2 / 5ml & gobelet | | | 55 | 75 |
|---|---|---|---|---|
| Number of | canisters | | 21 | 21 |
| Number of | goblets per canister | | 1 | 2 |
| Number of | cryo-vial canes per goblet | | 17 | 17 |
| Number of | cryo-vials 1.2 / 2ml | | 2,142 | 4,284 |
| Number of | cryo-vials 5ml | | 1,071 | 2,142 |
| **BASIC** | includes. canisters for cryo-vials 2 / 5ml + gobelts + lifter | | ARPEGE55-L-200 | ARPEGE75-L-200 |
| **INITIAL** | N + T | | ARPEGE55-L-202 | ARPEGE75-L-202 |
| **ESSENTIAL** | N + T + R | | ARPEGE55-L-204 | ARPEGE75-L-204 |
| **OPTIMAL** | N + T + R + 4/20mA box | | ARPEGE55-L-207 | ARPEGE75-L-207 |
| **OPTIMAL** | N + T + R + RS485 box | | ARPEGE55-L-208 | ARPEGE75-L-208 |

| MAIN ACCESSORY REFERENCES | |
|---|---|
| A1: Roller base – lockable (height: 220 mm) | ACC-ALU-29 |
| A2: Non magnetic roller base – lockable (height: 205 mm) | ACC-ALU-31 |
| B: Fixation kit for the roller base (3 parts) | ACC-ALU-32 |
| C: Flexible transfer hose with (DN10) – 180/180 for nitrogen length =1.5m | ACC-FL180180NL-15 |

1) Maximum 6 cryo-vials 2ml per cane. Maximum 3 cryo-vials 5ml per cane.

# ARPEGE 70 – 170 – Straws




| | OPTIMAL | | Tele-Monitoring |
|---|---|---|---|
| | INITIAL / ESSENTIAL | | |
| SIMPLE | BASIC | CHOICE I: | CHOICE II: |
| without racks | including racks | level indicators N | 4/20mA box |
| without electronics | without electronics | temperature indicator T | RS 485 box |
| | | automatic filling R | |

* page 52/53


* page 54

Liquid phase  Gas Phase

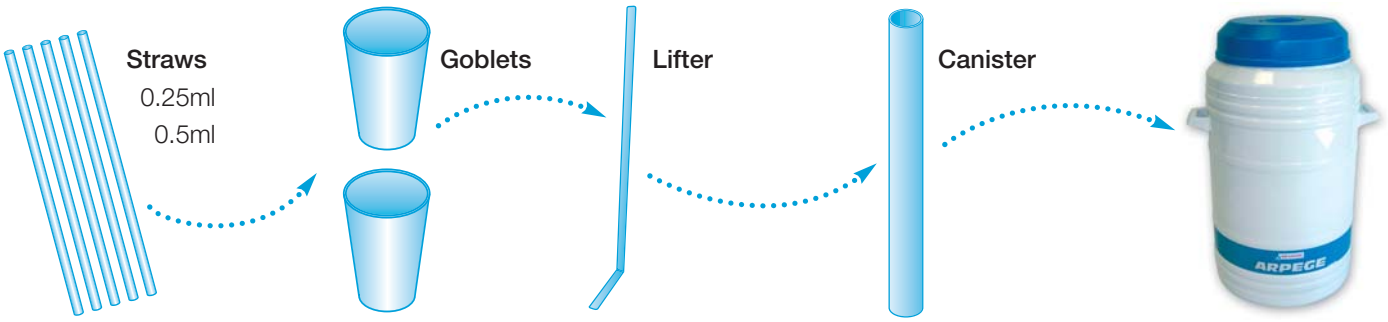
**Arpege – Racks pour paillettes**

| | | | 70 | 110 | 140 | 170 |
|---|---|---|---|---|---|---|
| Number of | racks | | 4 | 4 | 6 | 6 |
| Number of | levels per rack[1] | | 2 | 3 | 3 | 4 |
| Number of | visotubes[2] per level | | 85 | 85 | 85 | 85 |
| Number of | 0.25ml straws[1] | | 15,040 | 23,460 | 35,190 | 46,920 |
| Number of | 0.5ml straws[1] | | 6,120 | 9,180 | 13,770 | 18,360 |
| Number of | CBS™ (0.3ml – 0.5ml) straws[1] | | 4,080 | 6,120 | 9,180 | 12,240 |
| SIMPLE | without racks, without electronics | | ARPEGE70-L-1<br>– | ARPEGE110-L-1<br>– | ARPEGE140-L-1<br>– | ARPEGE170-L-1<br>– |
| BASIC | includes. racks for straws, without electronics | | ARPEGE70-L-300<br>– | ARPEGE110-L-300<br>– | ARPEGE140-L-300<br>– | ARPEGE170-L-300<br>– |
| INITIAL | N + T | | ARPEGE70-L-302<br>– | ARPEGE110-L-302<br>– | ARPEGE140-L-302<br>– | ARPEGE170-L-302<br>– |
| ESSENTIAL | N + T + R | | ARPEGE70-L-304<br>ARPEGE70-G-304 | ARPEGE110-L-304<br>ARPEGE110-G-304 | ARPEGE140-L-304<br>ARPEGE140-G-304 | ARPEGE170-L-304<br>ARPEGE170-G-304 |
| OPTIMAL | N + T + R + 4/20mA box | | ARPEGE70-L-307<br>ARPEGE70-G-307 | ARPEGE110-L-307<br>ARPEGE110-G-307 | ARPEGE140-L-307<br>ARPEGE140-G-307 | ARPEGE170-L-307<br>ARPEGE170-G-307 |
| OPTIMAL | N + T + R + RS485 box | | ARPEGE70-L-308<br>ARPEGE70-G-308 | ARPEGE110-L-308<br>ARPEGE110-G-308 | ARPEGE140-L-308<br>ARPEGE140-G-308 | ARPEGE170-L-308<br>ARPEGE170-G-308 |

| MAIN ACCESSORY REFERENCES | |
|---|---|
| A: Roller base lockable (height: 220 mm) | ACC-ALU-30 |
| B: Fixation kit for the roller base (3 parts) | ACC-ALU-32 |
| C: Flexible transfer hose with (DN10) – 180/180 for nitrogen length =1.5m | ACC-FL180180NL-15 |
| D: Batch of 100 Visotubes with lids | ACC-BOXTUBE-5 |

1) Storage capacity of straws in liquid phase vessels, please contact AL DMC for storage capacity of straws in gas phase vessels.
2) Visotubes ø 12 mm with lid

# ARPEGE 55 et 75 – Straws




| | OPTIMAL | | Tele-Monitoring |
|---|---|---|---|
| | INITIAL / ESSENTIAL | | |
| SIMPLE | BASIC | CHOICE I: | CHOICE II: |
| without canisters | includes: canisters | level indicator N | 4/20mA box |
| without electronics | without electronics | temperature indicator T | RS485 box |
| | | Automatic filling R | |

* page 52/53


* page 54

Liquid phase

| Arpege – Canisters pour paillettes & gobelets | | 55 | 75 |
|---|---|---|---|
| Number of canisters | | 21 | 21 |
| Number of goblets per canister | | 3 | 4 |
| Number of 0.25ml straws | | 51,660 | 68,880 |
| Number of 0.5ml straws | | 51,660 | 30,660 |
| Number of CBS™ (0.3ml – 0.5ml) straws | | 14,175 | 18,900 |
| SIMPLE without canisters, without electronics | | ARPEGE55-L-1 | ARPEGE75-L-1 |
| BASIC includes: canisters for straws + goblets + lifter | | ARPEGE55-L-300 | ARPEGE75-L-300 |
| INITIAL N + T | | ARPEGE55-L-302 | ARPEGE75-L-302 |
| ESSENTIAL N + T + R | | ARPEGE55-L-304 | ARPEGE75-L-304 |
| OPTIMAL N + T + R + 4/20mA box | | ARPEGE55-L-307 | ARPEGE75-L-307 |
| OPTIMAL N + T + R + RS485 box | | ARPEGE55-L-308 | ARPEGE75-L-308 |
| **MAIN ACCESSORY REFERENCES** | | | |
| A1: Roller base – lockable (height: 220 mm) | | ACC-ALU-29 | |
| A2: Non magnetic roller base – lockable (height: 205 mm) | | ACC-ALU-31 | |
| B: Fixation kit for the roller base (3 parts) | | ACC-ALU-32 | |
| C: Flexible transfer hose with (DN10) – 180/180 for nitrogen length =1.5m | | ACC-FL180180NL-15 | |
| D: Grouped (canisters + goblets) | | ACC-PLASCAN-109[1] | ACC-PLASCAN-107[2] |
| E: Set of 10 marguerite goblets ø 65mm + lids | | ACC-BOXTUBE-302 | |

1) ARPEGE 55: 21 canisters + 63 goblets
2) ARPEGE 55: 21 canisters + 84 goblets

# ESPACE

## ESPACE 151 661 liquid and gas phase


* page 54

- Large storage capacity for straws, cryo-vials and bags
- MDD 93/42/EEC compliant
- Storage in Gas or Liquid phase
- Easy to use. Immediate access to products and samples thanks to the wide neck opening of the ESPACE
- A variety of electronic options on all models
- 6 year guarantee on the vacuum

liquid phase | gas phase

| ESPACE | | | 151 | 331NC | 331C | 661 |
|---|---|---|---|---|---|---|
| **CHARACTERISTICS** | | | | | | |
| Liquid Nitrogen capacity | l | | 200 | 386 | 386 | 786 |
| | | | 33 | 68 | 68 | 222 |
| Weight full without racks and samples | kg | | 326 | 505 | 545 | 920 |
| | | | 192 | 245 | 285 | 465 |
| **Static holding time** | **d** | | **33** | **37** | **37** | **66** |
| | | | **5,5** | **7,5** | **7,5** | **19** |
| Daily evaporation rate | l/d*) | | 6 | 9 | 9 | 11,5 |
| Interior diameter | mm | | 538 | 771[1]/740[2] | 771[1]/740[2] | 1,003 |
| Weight empty | kg | | 165 | 190 | 230 | 305 |
| Access height | mm | | 1,205 | 1,172 | 1,172 | 1,355 |
| External height | mm | | 1,350 | 1,310 | 1,310 | 1,505 |
| External width | mm | | 650 | 886 | 932 | 1,150 |
| External depth | mm | | 940 | 1,100 | 1,100 | 1,375 |

1) without rotating tray
2) with rotating tray PT
*) Daily evaporation and static holding time are given for the following conditions: 20°C, 1 013 mb, and vessel is stationary with lid closed. These are nominal values and may vary according to the history of the vessel and the manufacturing tolerances.

## Main characteristics include

- Choice of rack storage systems base on product or sample type.
- Specific storage system can also be developed * page 38-41
- ESPACE 331 has the options of being fitted with or without casing and with or without a rotating tray
- Stainless steel construction

# RCB



* page 54

## RCB 500 1001
## phase liquid et gas phase

- Large storage capacity for straws, cryo-vials and bags
- MDD 93/42/EEC compliant
- Storage in Gas or Liquid phase
- Low consumption thanks to the narrow neck and opening design which greatly reduces evaporation of Nitrogen
- Specifically designed for the long term storage of samples and products
- A variety of electronic options on all models
- 6 year guarantee on the vacuum

liquid phase  gas phase

| RCB | | | 500 | 600 | 1000 | 1001 |
|---|---|---|---|---|---|---|
| **CHARACTERISTICS** | | | | | | |
| Liquid Nitrogen capacity | l | | 500 | 575 | 1 020 | 1,110 |
| | | | | 115 | | 280 |
| Weight full without racks | kg | | 654 | 735 | 1 239 | 1,641 |
| and samples | | | | 337 | | 671 |
| **Static holding time** | **d** | | **111** | **127** | **127** | **138** |
| | | | **–** | **25** | **–** | **35** |
| Daily evaporation rate | l/d*) | | 4,5 | 4,5 | 8 | 8 |
| Interior diameter | mm | | 850 | 850 | 1,150 | 1,150 |
| Weight empty | kg | | 250 | 270 | 415 | 445 |
| Access height | mm | | 1,260 | 1,440 | 1,300 | 1,377 |
| External height | mm | | 1,320 | 1,500 | 1,340 | 1,440 |
| External width | mm | | 1,100 | 1,100 | 1,320 | 1,320 |
| External depth | mm | | 1,200 | 1,200 | 1,400 | 1,400 |

*) Daily evaporation and static holding time are given for the following conditions: 20°C, 1 013 mb, and vessel is stationary with lid closed. These are nominal values and may vary according to the history of the vessel and the manufacturing tolerances.

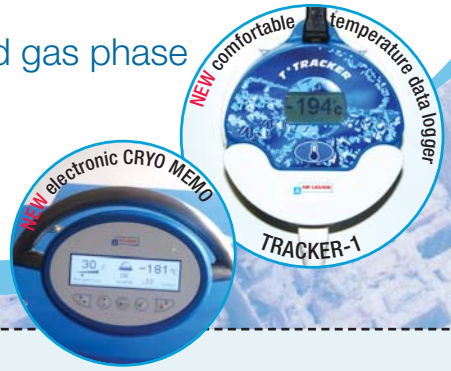
## Main characteristics include

- Choice of rack storage systems based on product or sample type
- Specific storage system can also be developed
- The RCB vessels can also be equipped with a compensated lid for easier use

* page 42-45

# ESPACE 151 and 331 with casing

## ESPACE liquid and gas phase with casing




* page 54

| OPTIMAL | | | |
|---|---|---|---|
| ESSENTIAL | | | |
| **BASIC** with: | **INITIAL** without racks, with: | with: | with: |
| T° Tracker T° | level & temperature indicator NT | overflow kit D | Memo Traceability M |
| | filling security R | output for 4/20 mA & rs485 SO | |
| | server option S | | |
| | second temperature 2T | | |

liquid phase gas phase

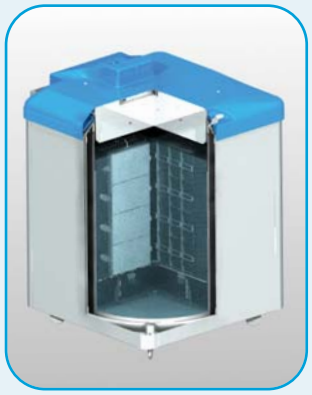
**ESPACE 151 liquid or gas – without rotating tray (PT)**

| | | 151 |
|---|---|---|
| BASIC | T° Tracker | ESP151N-LC-1 |
| INITIAL | NT + R + S + 2T | ESP151N-LC-2 |
| | | ESP151N-GC-1 |
| ESSENTIAL | NT + R + S + 2T + D + SO | ESP151N-LC-5 |
| | | ESP151N-GC-4 |
| OPTIMAL | NT + R + S + 2T + D + SO + M | ESP151N-LC-7 |
| | | ESP151N-GC-6 |

**ESPACE 331 liquid or gas – without rotating tray (PT)**

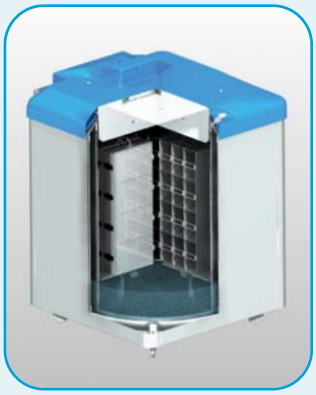
| | | 331 |
|---|---|---|
| BASIC | T° Tracker | ESP331N-LC-1 |
| INITIAL | NT + R + S + 2T | ESP331N-LC-3 |
| | | ESP331N-GC-1 |
| ESSENTIAL | NT + R + S + 2T + D + SO | ESP331N-LC-9 |
| | | ESP331N-GC-7 |
| OPTIMAL | NT + R + S + 2T + D + SO + M | ESP331N-LC-13 |
| | | ESP331N-GC-11 |

## ESPACE liquid



Samples and products are emerged completely in liquid Nitrogen.

## ESPACE gas



Samples and products have no contact with liquid Nitrogen.

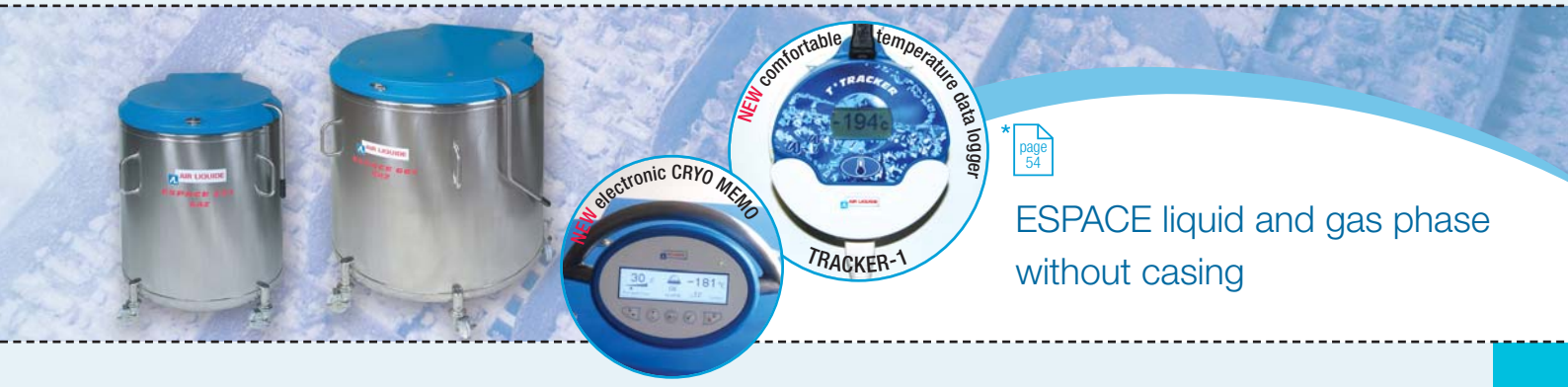
## ESPACE 331 with rotating tray PT

**ESPACE 331 liquid or gas – with rotating tray (PT)**

| | | 331 |
|---|---|---|
| BASIC | T° Tracker | ESP331N-LC-2 |
| INITIAL | NT + R + S + 2T | ESP331N-LC-4 |
| | | ESP331N-GC-2 |
| ESSENTIAL | NT + R + S + 2T + D + SO | ESP331N-LC-10 |
| | | ESP331N-GC-8 |
| OPTIMAL | NT + R + S + 2T + D + SO + M | ESP331N-LC-14 |
| | | ESP331N-GC-12 |

Other storage configurations are possible, please contact CRYOPAL directly.

# ESPACE 331 and 661 without casing




* page 54

ESPACE liquid and gas phase without casing

| | OPTIMAL | | |
|---|---|---|---|
| | ESSENTIAL | | |
| **BASIC** with: | **INITIAL** without racks, with: | with: | with: |
| T° Tracker T° | level & temperature indicator NT | overflow kit D | Memo Traceability M |
| | filling security R | output for 4/20 mA & RS485 SO | |
| | server option S | | |
| | second temperature 2T | | |

liquid phase gas phase

**ESPACE 331 liquid or gas – without rotating tray (PT)**

| | | 331 |
|---|---|---|
| BASIC | T° Tracker | ESP331N-LNC-1 |
| INITIAL | T + R + S + 2T | ESP331N-LNC-3 |
| | | ESP331N-GNC-1 |
| ESSENTIAL | NT + R + S + 2T + D + SO | ESP331-LNC-9 |
| | | ESP331-GNC-7 |
| OPTIMAL | NT + R + S + 2T + D + SO + M | ESP331-LNC-13 |
| | | ESP331-GNC-11 |

**ESPACE 661 liquid or gas – with rotating tray (PT)**

| | | 661 |
|---|---|---|
| BASIC | T° Tracker | ESP661N-LNC-1 |
| INITIAL | T + R + S + 2T | ESP661N-LNC-2 |
| | | ESP661N-GNC-1 |
| ESSENTIAL | NT + R + S + 2T + D + SO | ESP661N-LNC-5 |
| | | ESP661N-GNC-4 |
| OPTIMAL | NT + R + S + 2T + D + SO + M | ESP661N-LNC-7 |
| | | ESP661N-GNC-6 |

## ESPACE 331 with rotating tray PT

**ESPACE 331 liquid or gas – with rotating tray (PT)**

| | | 331 |
|---|---|---|
| BASIC | T° Tracker | ESP331N-LNC-2 |
| INITIAL | T + R + S + 2T | ESP331N-LNC-4 |
| | | ESP331N-GNC-2 |
| ESSENTIAL | NT + R + S + 2T + D + SO | ESP331N-LNC-10 |
| | | ESP331N-GNC-8 |
| OPTIMAL | NT + R + S + 2T + D + SO + M | ESP331N-LNC-14 |
| | | ESP331N-GNC-12 |

Other storage configurations are possible, please contact

## ESPACE liquid

Samples and products are emerged completely in liquid Nitrogen.

## ESPACE gas

Samples and products have no contact with liquid Nitrogen.

# RCB 500 and 600

## RCB liquid or gas with rotating tray


* page 54

| BASIC with: | | OPTIMAL | | | |
|---|---|---|---|---|---|
| T° Tracker | T° | ESSENTIAL | | | |
| SIMPLE with: | | INITIAL without racks, with: | | with: | |
| standard lid | | compensated lid | B | overflow kit | D |
| without racks | | level & temperature indicator | NT | output for 4/20 mA & RS485 | SO |
| without electronics | | filling security | R | | |

| RCB 500 liquid – with rotating tray (PT) | | | 500 |
|---|---|---|---|
| SIMPLE | | liquid | RCB500N-L-1 |
| BASIC | T° | liquid | RCB500N-L-3 |
| INITIAL | B + NT + R | liquid | RCB500N-L-6 |
| ESSENTIAL | B + NT + R + D + SO | liquid | RCB500N-L-12 |
| OPTIMAL | B + NT + R + D + SO + M | liquid | RCB500N-L-16 |

| RCB 600 liquid – with rotating tray (PT) | | | 600 |
|---|---|---|---|
| SIMPLE | | liquid | RCB600N-L-1 |
| BASIC | T° | liquid | RCB600N-L-3 |
| INITIAL | B + NT + R | liquid | RCB600N-L-6 |
| ESSENTIAL | B + NT + R + D + SO | liquid | RCB600N-L-12 |
| OPTIMAL | B + NT + R + D + SO + M | liquid | RCB600N-L-16 |

### RCB liquid

Samples and products are emerged completely in liquid Nitrogen.

### RCB gas

Samples and products have no contact with liquid Nitrogen.

gas phase

| RCB 600 gas – with rotating tray (PT) | | | 600 |
|---|---|---|---|
| INITIAL | B + NT + R | gas | RCB600N-G-2 |
| ESSENTIAL | B + NT + R + D + SO | gas | RCB600N-G-8 |
| OPTIMAL | B + NT + R + D + SO + M | liquid | RCB600N-G-12 |

Other storage configurations are possible, please contact CRYOPAL directly.

# RCB 1000 and 1001


* page 54

## RCB liquid or gas with rotating tray

| BASIC with: | | OPTIMAL | | | | |
|---|---|---|---|---|---|---|
| T° Tracker | T° | ESSENTIAL | | | | |
| SIMPLE with: | | INITIAL without racks, with: | | with: | | with: |
| standard lid | | compensated lid | B | overflow kit | D | Memo Traceability | M |
| without racks | | level & temperature indicator | NT | output for 4/20 mA & RS485 | SO | | |
| without electronics | | filling security | R | | | | |

liquid phase

| RCB 1000 liquid – with rotating tray (PT) | | | 1000 |
|---|---|---|---|
| SIMPLE | | | RCB1000N-L-1 |
| BASIC | T° | | RCB1000N-L-3 |
| INITIAL | B + NT + R | | RCB1000N-L-6 |
| ESSENTIAL | B + NT + R + D + SO | | RCB1000N-L-12 |
| OPTIMAL | B + NT + R + D + SO + M | | RCB1000N-L-16 |

liquid phase

| RCB 1001 liquid – with rotating tray (PT) | | | 1001 |
|---|---|---|---|
| SIMPLE | | | RCB1001N-L-1 |
| BASIC | T° | | RCB1001N-L-3 |
| INITIAL | B + NT + R | | RCB1001N-L-6 |
| ESSENTIAL | B + NT + R + D + SO | | RCB1001N-L-12 |
| OPTIMAL | B + NT + R + D + SO + M | | RCB1001N-L-16 |

### RCB liquid

Samples and products are emerged completely in liquid Nitrogen.

### RCB gas

Samples and products have no contact with liquid Nitrogen.

gas phase

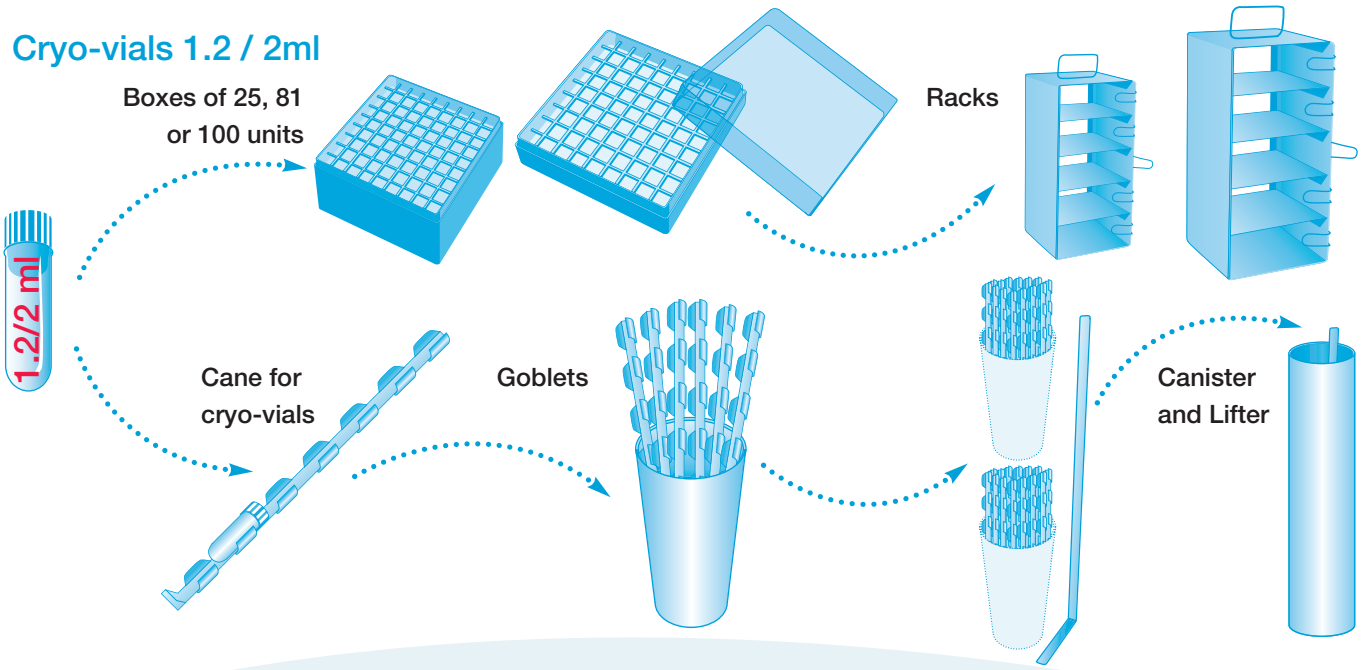
| RCB 1001 gas – with rotating tray (PT) | | | 1001 |
|---|---|---|---|
| INITIAL | B + NT + R | | RCB1001N-G-2 |
| ESSENTIAL | B + NT + R + D + SO | | RCB1001N-G-8 |
| OPTIMAL | B + NT + R + D + SO + M | | RCB1001N-G-12 |

Other storage configurations are possible, please contact CRYOPAL directly.

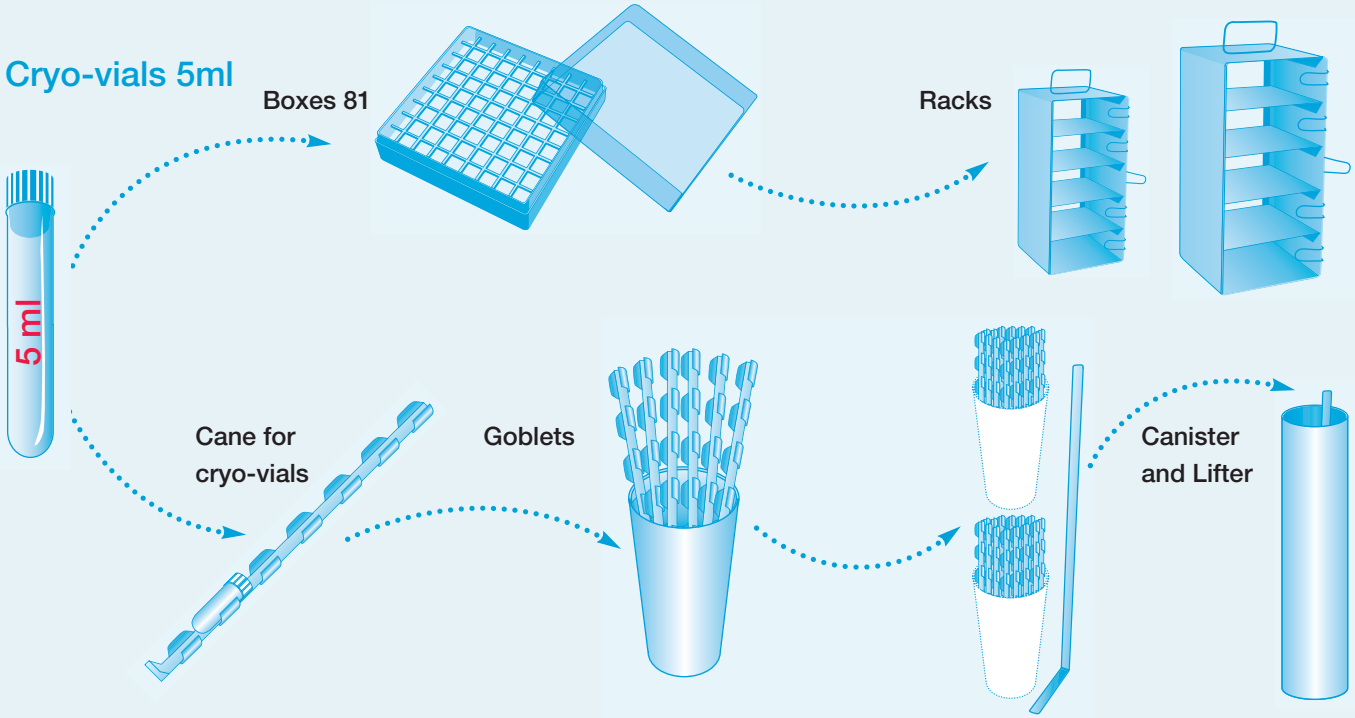
# ESPACE et RCB – Storage systems

Storage systems
cryo-vials 2ml / 5ml

## Cryo-vials 1.2 / 2ml

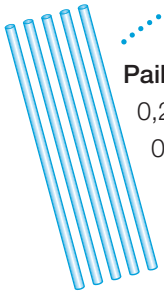



## Cryo-vials 5ml



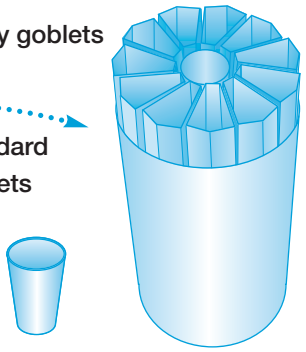
# Storage systems straws and bags

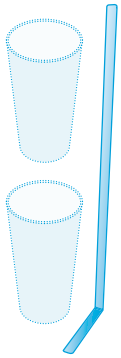
## Straws 0.25 / 0.5ml



**Paillettes**
0,25 ml
0,5 ml
CBS

**Daisy goblets**
**or**
**standard goblets**

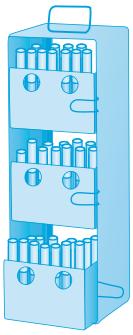




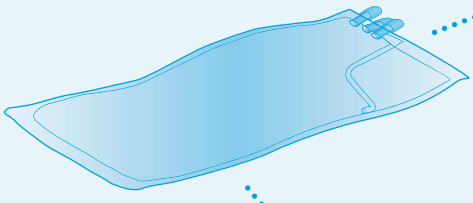
**Canister and Lifter**

**Visotubes**

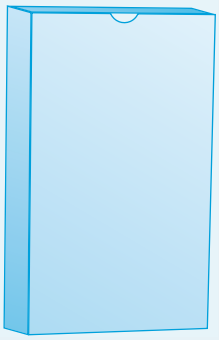
**Rack**



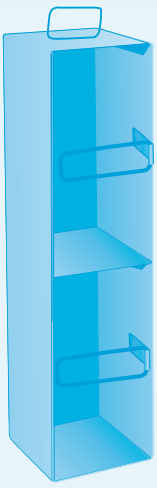
## Bags 25 – 1000ml



**Cassette types:**
- aluminum
- half-aluminum
  half-plastic
- cardboard



**Rack**



# ESPACE 151 / 331 / 661

## Storage systems for cryo-vials

1.2/2 ml

| Storage systems for Cryo-vials 1.2 / 2ml | ESPACE 151 without PT[1] | ESPACE 331 without PT[1] | ESPACE 331 with PT[1] | ESPACE 661 with PT[1] |
|---|---|---|---|---|
| Number of racks | 7 + 4[2] | 17 + 6[3] | 15 + 6[4] | 31 + 4[5] |
| Number of levels per rack | 13 | 12 | 12 | 12 |
| Number of cryo-vials | 10,400[6] | 22,200[6] | 19,800[6] | 38,400[6] |
| **MAIN ACCESSORY REFERENCES** | | | | |
| **Complete set of racks** | **ACC-RACK-146** | **ACC-RACK-148** | **ACC-RACK-150** | **ACC-RACK-152** |
| Rack for cryo-vial boxes 81 / 100 (units per box) | ACC-RACK-6 | ACC-RACK-5 | ACC-RACK-5 | ACC-RACK-5 |
| Rack for cryo-vial boxes 25 (units per box) | ACC-RACK-9 | ACC-RACK-8 | ACC-RACK-8 | ACC-RACK-8 |
| **Boxes** | | | | |
| complete set of 10 boxes 133 x 133 x 51 (100 units per box) | ACC-BOXTUBE-104 | | | |
| complete set of 8 boxes 76 x 76 x 51 (25 units per box) | ACC-BOXTUBE-105 | | | |
| complete set of 4 boxes 133 x 133 x 51 (81 units per box) | ACC-BOXTUBE-106 | | | |
| Cryo-vials 1.2 / 2ml | on request | | | |

1) PT: rotating tray
2) 7 racks (81 / 100 boxes) and 4 racks (25 boxes)
3) 17 racks (81 / 100 boxes) and 6 racks (25 boxes)
4) 15 racks (81 / 100 boxes) and 6 racks (25 boxes)
5) 31 racks (81 / 100 boxes) and 4 racks (25 boxes)
6) ESPACE 151: 10,400 cryo-vials 2ml (100 boxes) **or** 8,671 cryo-vials 2ml (81 boxes)
ESPACE 331: 22,200 cryo-vials 2ml (100 boxes) **or** 18,324 cryo-vials 2ml (81 boxes)
ESPACE 331 PT: 19,800 cryo-vials 2ml (100 boxes) **or** 16,380 cryo-vials 2ml (81 boxes)
ESPACE 661: 38,400 cryo-vials 2ml (100 boxes) **or** 31,332 cryo-vials 2ml (81 boxes)

5 ml

| Storage systems for Cryo-vials 5ml | ESPACE 151 without PT | ESPACE 331 without PT | ESPACE 331 with PT | ESPACE 661 with PT |
|---|---|---|---|---|
| Number of racks | 7 | 17 | 15 | 31 |
| Number of levels per rack | 7 | 6 | 6 | 6 |
| Number of cryo-vials | 3,969 | 8,262 | 7,290 | 15,066 |
| **MAIN ACCESSORY REFERENCES** | | | | |
| **Complete set of racks** | **ACC-RACK-147** | **ACC-RACK-149** | **ACC-RACK-151** | **ACC-RACK-153** |
| Rack for cryo-vial boxes 81 (units per box) | ACC-RACK-29 | ACC-RACK-28 | ACC-RACK-28 | ACC-RACK-28 |
| **Boxes** | | | | |
| complete of 4 boxes 133 x 133 x 95 (81 units per box) | ACC-BOXTUBE-107 | | | |
| Cryo-vials 5ml | on request | | | |

# Storage systems for straws

| Storage systems for straws with visotubes / racks | ESPACE 151 without PT[1] | ESPACE 331 without PT[1] | ESPACE 331 with PT[1] | ESPACE 661 with PT[1] |
|---|---|---|---|---|
| Number of racks | 7 | 17 | 15 | 31 |
| Number of levels per rack | 4 | 4 | 4 | 4 |
| Number of visotubers per rack | 85 | 85 | 85 | 85 |
| Number of 0.25 ml straws | 54,740 | 132,940 | 117,300 | 242,420 |
| Number of 0.25 ml straws per visotube Ø 12 mm | 28 | 28 | 28 | 28 |
| Number of 0.5 ml straws | 21,420 | 52,020 | 45,900 | 94,860 |
| Number of 0.5 ml straws per visotube Ø 12 mm | 10 | 10 | 10 | 10 |
| Number of 0.3 – 0.5ml CBS™ | 14,280 | 34,680 | 30,600 | 63,240 |
| Number of 0.3 – 0.5ml CBS™ per visotube Ø 12 mm | 7 | 7 | 7 | 7 |
| **MAIN ACCESSORY REFERENCES** | | | | |
| **Complete set of racks** | **ACC-RACK-196** | **ACC-RACK-197** | **ACC-RACK-198** | **ACC-RACK-199** |
| Individual rack per unit | ACC-RACK-39 | | | |
| Visotube with lid Ø 12 mm (batch of 100 units) | ACC-BOXTUBE-5 | | | |

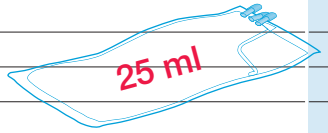
| Storage systems for straws in goblets / canisters | ESPACE 151 sans PT[1] | ESPACE 331 sans PT[1] | ESPACE 331 avec PT[1] | ESPACE 661 avec PT[1] |
|---|---|---|---|---|
| Number of canisters | 46 | 97 | 88 | 163 |
| Number of goblets | 230 | 485 | 440 | 815 |
| Number of levels of goblets | 5 | 5 | 5 | 5 |
| Number of 0.25 ml straws per vessel | 188,600 | 397,700 | 360,800 | 668,300 |
| Number of 0.25 ml straws per goblet | 820 | 820 | 820 | 820 |
| Number of 0.5 ml straws | 83,950 | 177,025 | 160,600 | 297,475 |
| Number of 0.5 ml straws per goblet | 365 | 365 | 365 | 365 |
| Number of 0.3 – 0.5ml CBS™ straws | 51,750 | 109,125 | 99,000 | 183,375 |
| Number of 0.3 – 0.5ml CBS™ straws per goblet | 225 | 225 | 225 | 225 |
| **MAIN ACCESSORY REFERENCES** | | | | |
| **Complete set of canisters and goblets** | **ACC-PLASCAN-116** | **ACC-PLASCAN-105** | **ACC-PLASCAN-104** | **ACC-PLASCAN-106** |
| Plastic canisters per unit | ACC-PLASCAN-3 | | | |
| Goblet Ø 65 mm (batch of 20) | ACC-BOXTUBE-301 | | | |
| Goblet Ø 65 mm “Daisy” (batch of 5) | ACC-BOXTUBE-302 | | | |
| Goblet with whole Ø 65 mm + lid (batch of 10) | ACC-BOXTUBE-415 | | | |

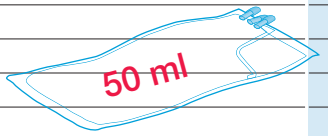
1) PT: rotating tray

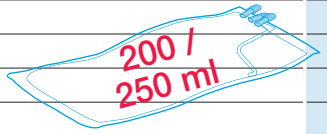
# ESPACE 151 / 331 / 661

## Storage systems for bags

| | ESPACE 151 – 331 – 661 – Bags | ESPACE 151 without PT[1] | ESPACE 331 without PT[1] | ESPACE 331 with PT[1] | ESPACE 661 with PT[1] |
|---|---|---|---|---|---|
| | **25ml – maximum capacity bags / bags with cassette** | | | | |
| PALL | Number of racks | 15 | 36 | 32 | 62 |
| PALL | Number of levels per rack | 7 | 6 | 6 | 7 |
| PALL | Number of bags with cassettes | 735 | 1,512 | 1,344 | 3,038 |
| PALL | **Rack per unit** | **ACC-RACK-204** | **ACC-RACK-203** | **ACC-RACK-203** | **ACC-RACK-204** |
| THERMOGENISIS | Number of racks | 24 | 57 | 52 | 99 |
| THERMOGENISIS | Number of levels per rack | 8 | 7 | 7 | 7 |
| THERMOGENISIS | Number of bags with cassettes | 960 | 1,995 | 1,820 | 3,465 |
| THERMOGENISIS | **Rack per unit** | **ACC-RACK-195** | **ACC-RACK-202** | **ACC-RACK-202** | **ACC-RACK-202** |
| BIOSAFE | Number of racks | 24 | 57 | 52 | 99 |
| BIOSAFE | Number of levels per rack | 8 | 7 | 7 | 7 |
| BIOSAFE | Number of bags with cassettes | 768 | 1,596 | 1,456 | 2,772 |
| BIOSAFE | **Rack per unit** | **ACC-RACK-195** | **ACC-RACK-202** | **ACC-RACK-202** | **ACC-RACK-202** |
| | Cardboard cassette (9 x 76 x 92 mm) batch of 700 units | ACC-BOXTUBE-254 | | | |
| | Rack number labels for ESPACE / RCB (1 to 100) | ACC-RACK-223 | | | |
| | **50ml – maximum capacity bags / bags with cassette** | | | | |
| Baxter R4R9951 | Number of racks | 14 | 30 | 29 | 56 |
| Baxter R4R9951 | Number of levels per rack | 7 | 7 | 7 | 7 |
| Baxter R4R9951 | Number of bags with cassettes | 294 | 630 | 609 | 1,176 |
| Baxter R4R9951 | Number of bags without cassettes | 392 | 840 | 812 | 1,568 |
| Baxter R4R9951 | **Complete set of racks** | **ACC-RACK-119** | **ACC-RACK-127** | **ACC-RACK-135** | **ACC-RACK-142** |
| Baxter R4R9951 | **Rack per unit** | **ACC-RACK-37** | | | |
| | Cardboard cassettes (14 x 83 x 166 mm) batch of 600 units | ACC-BOXTUBE-250 | | | |
| | Aluminum-plastic cassettes (17 x 92 x 173 mm) per unit | ACC-BOXTUBE-203 | | | |
| | Aluminum cassettes (17 x 92 x 173 mm) per unit | ACC-BOXTUBE-200 | | | |
| | Rack number labels for ESPACE / RCB (1 to 100) | ACC-RACK-223 | | | |
| | **200ml / 250ml – maximum capacity bags / bags with cassette** | | | | |
| Gambro DF200 / Baxter R4R9954 | Number of racks | 12 | 27 | 25 | 50 |
| Gambro DF200 / Baxter R4R9954 | Number of levels per rack | 4 | 4 | 4 | 4 |
| Gambro DF200 / Baxter R4R9954 | Number of bags with cassettes | 144 | 324 | 300 | 600 |
| Gambro DF200 / Baxter R4R9954 | Number of bags without cassettes | 192 | 432 | 400 | 800 |
| Gambro DF200 / Baxter R4R9954 | **Complete set of racks** | **ACC-RACK-115** | **ACC-RACK-123** | **ACC-RACK-131** | **ACC-RACK-138** |
| Gambro DF200 / Baxter R4R9954 | **Rack per unit** | **ACC-RACK-38** | | | |
| | Cardboard cassettes (14 x 155 x 188 mm) batch of 380 units | ACC-BOXTUBE-251 | | | |
| | Aluminum-plastic cassettes (17 x 164 x 194 mm) per unit | ACC-BOXTUBE-204 | | | |
| | Aluminum cassettes (17 x 164 x 194 mm) per unit | ACC-BOXTUBE-205 | | | |
| | Rack number labels for ESPACE / RCB (1 to 100) | ACC-RACK-223 | | | |



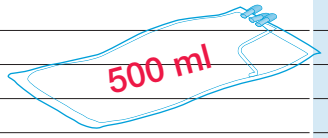



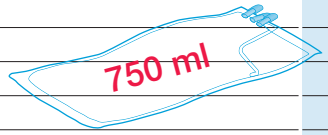



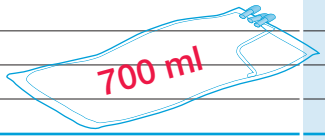

1) PT: rotating tray

# Storage systems for bags

| ESPACE 151 – 661 – Bags | ESPACE 151 without PT[1] | ESPACE 331 without PT[1] | ESPACE 331 with PT[1] | ESPACE 661 with PT[1] |
|---|---|---|---|---|
| **500ml – maximum capacity bags / bags with cassette** | | | | |
| Baxter R4R9955 — Number of racks | 7 | 16 | 16 | 28 |
| Number of levels per rack | 4 | 4 | 4 | 4 |
| Number of bags with cassettes | 140 | 320 | 320 | 560 |
| Number of bags without cassettes | 168 | 384 | 384 | 672 |
| **Complete set of racks** | **ACC-RACK-121** | **ACC-RACK-129** | **ACC-RACK-129** | **ACC-RACK-129** |
| **Rack per unit** | **ACC-RACK-34** | | | |
| Cardboard cassettes (12 x 138 x 236 mm) batch of 300 units | ACC-BOXTUBE-252 | | | |
| Aluminum-plastic cassettes (15 x 147 x 244 mm) per unit | ACC-BOXTUBE-202 | | | |
| Aluminum cassettes (15 x 147 x 244 mm) per unit | ACC-BOXTUBE-201 | | | |
| Rack number labels for ESPACE / RCB (1 to 100) | ACC-RACK-223 | | | |
| **750ml – maximum capacity bags / bags with cassette** | | | | |
| Baxter R4R9957 — Number of racks | 7 | 13 | 12 | 23 |
| Number of levels per rack | 4 | 4 | 4 | 4 |
| Number of bags with cassettes | 0 | 0 | 0 | 0 |
| Number of bags without cassettes | 112 | 208 | 192 | 368 |
| **Complete set of racks** | **ACC-RACK-122** | **ACC-RACK-130** | **ACC-RACK-137** | **ACC-RACK-144** |
| **Rack per unit** | **ACC-RACK-35** | | | |
| Cardboard cassettes (15 x 155 x 281 mm) batch of 300 units | ACC-BOXTUBE-253 | | | |
| Aluminum-plastic cassettes (17 x 164 x 288 mm) per unit | | | | |
| Aluminum cassettes (17 x 164 x 288 mm) per unit | | | | |
| Rack number labels for ESPACE / RCB (1 to 100) | ACC-RACK-223 | | | |
| **700ml – maximum capacity bags / bags with cassette** | | | | |
| Gambro DF700 — Number of racks (vertical / horizontal) | 10 / 8 | 21 / 18 | 20 / 16 | 38 / 32 |
| Number of levels per rack (vertical / horizontal) | 2 / 4 | 2 / 4 | 2 / 4 | 2 / 4 |
| Number of bags per cassette (vertical / horizontal) | / 96 | / 216 | / 192 | / 384 |
| Number of bags without (vertical / horizontal) | 120 / 128 | 252 / 288 | 240 / 256 | 456 / 512 |
| **Complete set of vertical racks** | **ACC-RACK-116** | **ACC-RACK-124** | **ACC-RACK-132** | **ACC-RACK-139** |
| **Complete set of horizontal racks** | **ACC-RACK-174** | **ACC-RACK-175** | **ACC-RACK-176** | **ACC-RACK-177** |
| **Vertical racks per unit** | **ACC-RACK-32** | | | |
| **Horizontal racks per unit** | **ACC-RACK-36** | | | |
| Cardboard cassettes (15 x 155 x 281 mm) batch of 300 units | ACC-BOXTUBE-253 | | | |
| Aluminum-plastic cassettes (17 x 164 x 288 mm) per unit horizontal format | ACC-BOXTUBE-207 | | | |
| Aluminum cassettes (17 x 164 x 288 mm) per unit horizontal format | ACC-BOXTUBE-206 | | | |
| Rack number labels for ESPACE / RCB (1 to 100) | ACC-RACK-223 | | | |




1) PT: rotating tray

# RCB 500 / 600 / 1000 / 1001

## Storage systems for cryo-vials

1.2/2 ml

| Storage systems for Cryo-vials 1.2 ml / 2ml | RCB 500 | RCB 600 | RCB 1000 | RCB 1001 |
|---|---|---|---|---|
| | | with rotating tray | | |
| Number of racks | 20 + 4[1] | 20 + 4[1] | 40[2] | 40[2] |
| Number of levels per rack | 13 | 14 | 12 | 12 |
| Number of cryo-vials | 27,300[4] | 29,400[3] [4] | 48,000[4] | 48,000[4] |
| **MAIN ACCESSORY REFERENCES** | | | | |
| **Complete set of racks** | **ACC-RACK-168** | **ACC-RACK-170** | **ACC-RACK-172** | **ACC-RACK-172** |
| Vertical racks per unit | ACC-RACK-6 | ACC-RACK-30 | ACC-RACK-5 | ACC-RACK-5 |
| **Boxes** | | | | |
| complete set of 10 boxes 133 x 133 x 51 (100 units per box) | ACC-BOXTUBE-104 | | | |
| complete set of 8 boxes 76 x 76 x 51 (25 units per box) | ACC-BOXTUBE-105 | | | |
| complete set of 4 boxes 133 x 133 x 51 (81 units per box) | ACC-BOXTUBE-106 | | | |
| Cryo-vials 1.2 / 2ml | on request | | | |

* page 36

1) 20 racks (81/100 boxes) and 4 racks (25 boxes)
2) 40 racks (81/100 boxes)
3) RCB 600 gas: 27,300 cryo-vials 2ml
4) RCB 500: 26,000 cryo-vials 2ml (100 boxes) **or** 21,600 cryo-vials 2ml (81 boxes) **et** 1,300 cryo-vials 2ml (25 boxes)
RCB 600: 28,000 cryo-vials 2ml (100 boxes) **or** 22,680 cryo-vials 2ml (81 boxes) **et** 1,400 cryo-vials 2ml (25 boxes)
RCB 1000 / 1001: 48,000 cryo-vials 2ml (100 boxes) **or** 38,800 cryo-vials 2ml (81 boxes)

5 ml

| Storage systems for Cryo-vials 5ml | RCB 500 | RCB 600 | RCB 1000 | RCB 1001 |
|---|---|---|---|---|
| | | with rotating tray | | |
| Number of racks | 20 | 20 | 40 | 40 |
| Number of levels per rack | 7 | 8 | 7 | 7 |
| Number of cryo-vials | 11,340 | 12,960*) | 22,680 | 22,680 |
| **MAIN ACCESSORY REFERENCES** | | | | |
| **Complete set of racks** | **ACC-RACK-169** | **ACC-RACK-171** | **ACC-RACK-173** | **ACC-RACK-173** |
| Vertical racks per unit | ACC-RACK-29 | ACC-RACK-3 | ACC-RACK-29 | ACC-RACK-29 |
| **Boxes** | | | | |
| complete set of 4 boxes 133 x 133 x 95 (81 units per box) | ACC-BOXTUBE-107 | | | |
| Cryo-tubes 5ml | on request | | | |

*) RCB 600 gas: 11,340 cryo-vials 2ml

# Storage systems for straws

| Storage systems for straws with visotubes / racks | RCB 500 | RCB 600 | RCB 1000 | RCB 1001 |
|---|---|---|---|---|
| | | with rotating tray | | |
| Number of racks | 20 | 20 | 40 | 40 |
| Number of levels per rack | 4 | 4 | 4 | 4 |
| Number of visotubes per rack | 85 | 85 | 85 | 85 |
| Number of 0.25 ml straws | 156,400 | 156,400 | 312,800 | 312,800 |
| Number of 0.25 ml straws per visotube | 28 | 28 | 28 | 28 |
| Number of 0.5 ml straws | 61,200 | 61,200 | 122,400 | 122,400 |
| Number of 0.5 ml straws per visotube | 10 | 10 | 10 | 10 |
| Number of 0.3 – 0.5ml CBS™ | 40,800 | 40,800 | 81,600 | 81,600 |
| Number of 0,3 – 0,5ml CBS™ per visotube | 6 | 6 | 6 | 6 |
| **MAIN ACCESSORY REFERENCES** | | | | |
| **Rack per unit** | **ACC-RACK-200** | **ACC-RACK-200** | **ACC-RACK-201** | **ACC-RACK-201** |
| Vertical racks per unit | ACC-RACK-39 | | | |
| Visotube with lid Ø 10 mm (batch of 100 units) | ACC-BOXTUBE-5 | | | |

* page 37

| Storage systems for straws in goblets / canisters | RCB 500 | RCB 600 | RCB 1000 | RCB 1001 |
|---|---|---|---|---|
| | | with rotating tray | | |
| Number of canisters | 120 | 120 | 225 | 225 |
| Number of goblets | 575 | 580 | 1,125 | 1,125 |
| Number of levels of goblets | 5 | 6 | 5 | 5 |
| Number of 0.25 ml straws per vessel | 471,500 | 570,720 | 922,500 | 922,500 |
| Number of 0.25 ml straws per goblet | 164 | 164 | 164 | 164 |
| Number of 0.5 ml straws | 209,875 | 254,040 | 410,625 | 410,625 |
| Number of 0.5 ml straws per goblet | 73 | 73 | 73 | 73 |
| Number of 0.3 – 0.5ml CBS™ straws | 129,375 | 156,600 | 253,125 | 253,125 |
| Number of 0.3 – 0.5ml CBS™ straws per goblet | 45 | 45 | 45 | 45 |
| **MAIN ACCESSORY REFERENCES** | | | | |
| **Complete set of canisters and goblets** | **ACC-PLASCAN-100** | **ACC-PLASCAN-101** | **ACC-PLASCAN-102** | **ACC-PLASCAN-102** |
| Plastic canisters per unit | ACC-PLASCAN-3 | ACC-PLASCAN-5 | ACC-PLASCAN-3 | ACC-PLASCAN-3 |
| Goblet Ø 65 mm (batch of 20) | ACC-BOXTUBE-301 | | | |
| Goblet Ø 65 mm “Daisy” (batch of 5) | ACC-BOXTUBE-302 | | | |
| Goblet with whole Ø 65 mm + lid (batch of 10) | ACC-BOXTUBE-415 | | | |

# RCB 500 / 600 / 1000 / 1001

## Storage systems for bags

liquid phase  gas phase

| RCB 500 – 600 – 1000 – 1001 – Bags | RCB 500 | RCB 600 | RCB 600 with rotating tray | RCB 1000 | RCB 1001 | RCB 1001 |
|---|---|---|---|---|---|---|
| **25ml – maximum capacity bags / bags with cassette** | | | | | | |
| PALL – Number of racks | 42 | 42 | 42 | 82 | 82 | 82 |
| PALL – Number of levels per rack | 7 | 8 | 8 | 7 | 7 | 7 |
| PALL – Number of bags with cassettes | 2,058 | 2,352 | 2,352 | 4,018 | 4,018 | 4,018 |
| PALL – **Rack per unit** | **ACC-RACK-204** | **ACC-RACK-206** | **ACC-RACK-205** | **ACC-RACK-204** | **ACC-RACK-205** | **ACC-RACK-204** |
| THERMOGENISIS – Number of racks | 68 | 68 | 68 | 126 | 126 | 126 |
| THERMOGENISIS – Number of levels per rack (25 ml) | 8 | 9 | 9 | 8 | 8 | 8 |
| THERMOGENISIS – Nombre de poches avec étuis | 2,720 | 3,060 | 3,060 | 5,040 | 5,040 | 5,040 |
| THERMOGENISIS – **Rack per unit** | **ACC-RACK-195** | **ACC-RACK-193** | **ACC-RACK-194** | **ACC-RACK-195** | **ACC-RACK-194** | **ACC-RACK-195** |
| BIOSAFE – Number of racks | 68 | 68 | 68 | 126 | 126 | 126 |
| BIOSAFE – Number of levels per rack | 8 | 9 | 9 | 8 | 8 | 8 |
| BIOSAFE – Number of bags with cassettes | 2,176 | 2,448 | 2,448 | 4,032 | 4,032 | 4,032 |
| BIOSAFE – **Rack per unit** | **ACC-RACK-195** | **ACC-RACK-193** | **ACC-RACK-194** | **ACC-RACK-195** | **ACC-RACK-194** | **ACC-RACK-195** |
| * page 37 – Cardboard cassette (9 x 76 x 92 mm) batch of 700 units | ACC-BOXTUBE-254 | | | | | |
| Rack number labels for ESPACE / RCB (1 to 100) | ACC-RACK-223 | | | | | |
| **50ml – maximum capacity bags / bags with cassette** | | | | | | |
| Baxter R4R9951 – Number of racks | 36 | 36 | 30 | 70 | 70 | 70 |
| Baxter R4R9951 – Number of levels per rack | 7 | 7 | 7 | 7 | 7 | 7 |
| Baxter R4R9951 – Number of bags with cassettes | 756 | 756 | 756 | 1,470 | 1,470 | 1,470 |
| Baxter R4R9951 – Number of bags without cassettes (50 ml) | 1,008 | 1,008 | 1,008 | 1,960 | 1,960 | 1,960 |
| Baxter R4R9951 – **Complete set of racks** | **ACC-RACK-157** | **ACC-RACK-157** | **ACC-RACK-157** | **ACC-RACK-164** | **ACC-RACK-164** | **ACC-RACK-164** |
| Baxter R4R9951 – **Rack per unit** | **ACC-RACK-37** | | | | | |
| Cardboard cassettes (14 x 83 x 166 mm) batch of 600 units | ACC-BOXTUBE-250 | | | | | |
| Aluminum-plastic cassettes (17 x 92 x 173 mm) per unit | ACC-BOXTUBE-203 | | | | | |
| Aluminum cassettes (17 x 92 x 173 mm) per unit | ACC-BOXTUBE-200 | | | | | |
| Rack number labels for ESPACE / RCB (1 to 100) | ACC-RACK-223 | | | | | |
| **200ml / 250ml – maximum capacity bags / bags with cassette** | | | | | | |
| Gambro DF200 / Baxter R4R9954 – Number of racks | 32 | 32 | 32 | 62 | 62 | 62 |
| Gambro DF200 / Baxter R4R9954 – Number of levels per rack | 4 | 4 | 4 | 4 | 4 | 4 |
| Gambro DF200 / Baxter R4R9954 – Number of bags with cassettes | 384 | 384 | 384 | 749 | 749 | 749 |
| Gambro DF200 / Baxter R4R9954 – Number of bags without cassettes (200 / 250 ml) | 512 | 512 | 512 | 992 | 992 | 992 |
| Gambro DF200 / Baxter R4R9954 – **Complete set of racks** | **ACC-RACK-154** | **ACC-RACK-154** | **ACC-RACK-154** | **ACC-RACK-161** | **ACC-RACK-161** | **ACC-RACK-161** |
| Gambro DF200 / Baxter R4R9954 – **Rack per unit** | **ACC-RACK-38** | | | | | |
| Cardboard cassettes (14 x 155 x 188 mm) batch of 380 units | ACC-BOXTUBE-251 | | | | | |
| Aluminum-plastic cassettes (17 x 164 x 194 mm) per unit | ACC-BOXTUBE-204 | | | | | |
| Aluminum cassettes (17 x 164 x 194 mm) per unit | ACC-BOXTUBE-205 | | | | | |
| Rack number labels for ESPACE / RCB (1 to 100) | ACC-RACK-223 | | | | | |

# Storage systems for bags

iquid phase gas phase

| RCB 500 – 600 – 1000 – 1001 – Bags | RCB 500 | RCB 600 | RCB 600 with rotating tray | RCB 1000 | RCB 1001 | RCB 1001 |
|---|---|---|---|---|---|---|
| **500ml – maximum capacity bags / bags with cassette** | | | | | | |
| Baxter R4R9955 — Number of racks | 18 | 18 | 18 | 36 | 36 | 36 |
| Number of levels per rack | 4 | 4 | 4 | 4 | 4 | 4 |
| Number of bags with cassettes (500 ml) | 360 | 360 | 360 | 720 | 720 | 720 |
| Number of bags without cassettes | 432 | 432 | 438 | 864 | 864 | 864 |
| **Complete set of racks** | **ACC-RACK-159** | **ACC-RACK-159** | **ACC-RACK-159** | **ACC-RACK-166** | **ACC-RACK-166** | **ACC-RACK-166** |
| **Rack per unit** | **ACC-RACK-34** | | | | | |
| Cardboard cassettes (12x138x236 mm) batch of 300 units | ACC-BOXTUBE-252 | | | | | |
| Aluminum-plastic cassettes (15x147x244 mm) per unit | ACC-BOXTUBE-202 | | | | | |
| Aluminum cassettes (15x147x244 mm) per unit | ACC-BOXTUBE-201 | | | | | |
| Rack number labels for ESPACE / RCB (1 to 100) | ACC-RACK-223 | | | | | |
| **750ml – maximum capacity bags / bags with cassette** | | | | | | |
| Baxter R4R9957 — Number of racks | 14 | 14 | 14 | 30 | 30 | 30 |
| Number of levels per rack | 4 | 4 | 4 | 4 | 4 | 4 |
| Number of bags with cassettes (750 ml) | | | | | | |
| Number of bags without cassettes | 224 | 224 | 224 | 480 | 480 | 480 |
| **Complete set of racks** | **ACC-RACK-160** | **ACC-RACK-160** | **ACC-RACK-160** | **ACC-RACK-167** | **ACC-RACK-167** | **ACC-RACK-167** |
| **Rack per unit** | **ACC-RACK-35** | | | | | |
| Cardboard cassettes (15x155x281 mm) batch of 300 units | ACC-BOXTUBE-253 | | | | | |
| Aluminum-plastic cassettes (17x164x288 mm) per unit | | | | | | |
| Aluminum cassettes (17x164x288mm) per unit | | | | | | |
| Rack number labels for ESPACE / RCB (1 to 100) | ACC-RACK-223 | | | | | |
| **700ml – maximum capacity bags / bags with cassette** | | | | | | |
| Gambro DF700 — Number of racks (vertical / horizontal) | 26 / 20 | 26 / 20 | 26 / 20 | 50 / 38 | 50 / 38 | 50 / 38 |
| Number of levels per rack (vertical / horizontal) | 2 / 4 | 2 / 4 | 2 / 4 | 2 / 4 | 2 / 4 | 2 / 4 |
| Number of bags per cassette (vertical / horizontal) | / 240 | / 240 | / 240 | / 1456 | / 1456 | / 1456 |
| Number of bags without (vertical / horizontal) | 312 / 320 | 312 / 320 | 312 / 320 | 600 / 608 | 600 / 608 | 600 / 608 |
| **Complete set of vertical racks** | **ACC-RACK-156** | **ACC-RACK-156** | **ACC-RACK-156** | **ACC-RACK-163** | **ACC-RACK-163** | **ACC-RACK-163** |
| **Complete set of horizontal racks** (700 ml) | **ACC-RACK-178** | **ACC-RACK-178** | **ACC-RACK-178** | **ACC-RACK-179** | **ACC-RACK-179** | **ACC-RACK-179** |
| **Vertical racks per unit** | **ACC-RACK-32** | | | | | |
| **Horizontal racks per unit** | **ACC-RACK-36** | | | | | |
| Cardboard cassettes (15x155x281 mm) batch of 300 units | ACC-BOXTUBE-253 | | | | | |
| Aluminum-plastic cassettes (17x164x288 mm) per unit(horizontal) | ACC-BOXTUBE-207 | | | | | |
| Aluminum cassettes (17x164x288mm) per unit (horizontal) | ACC-BOXTUBE-206 | | | | | |
| Rack number labels for ESPACE / RCB (1 to 100) | ACC-RACK-223 | | | | | |

# ESPACE and RCB

## Options and accessoires

Rotating tray makes it easier to store and access samples and products (ESPACE 331 option ??? ESPACE 661 and included in the RCB line).

Flexible cryogenic hose to connect the storage vessels to the Nitrogen source.
1.1 m: ACC-FL180180NL-11
1.5 m: ACC-FL180180NL-15
2.0 m: ACC-FL180180NL-20
3.0 m: ACC-FL180180NL-30
4.0 m: ACC-FL180180NL-40

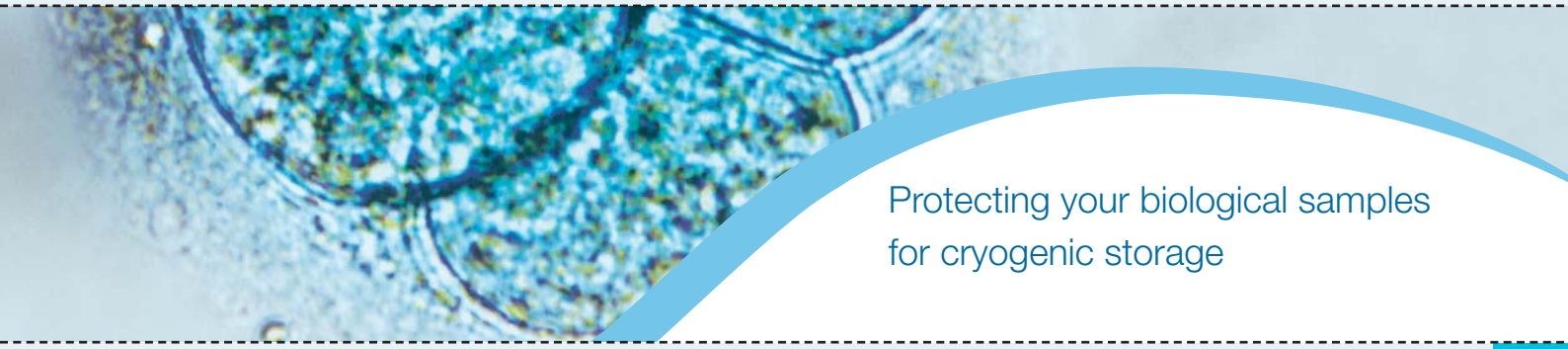
Portable step platform making it easier to store and access samples and products (available for ESPACE 661 and the RCB line).
ESPACE 661: ACC-ESP-341
RCB 600: ACC-RCB-213
RCB 1000/1001: ACC-RCB-212

Manual level ruler for measuring the liquid Nitrogen level in a vessel.
ACC-BOXTUBE-412

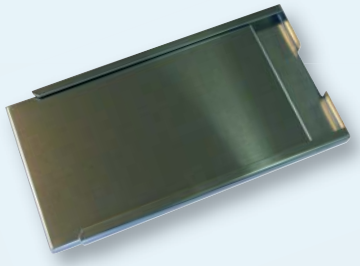
Compensated lid for easier use.
RCB 500 / 600: ACC-RCB-215
RCB 1001 / 1001: ACC-RCB-214

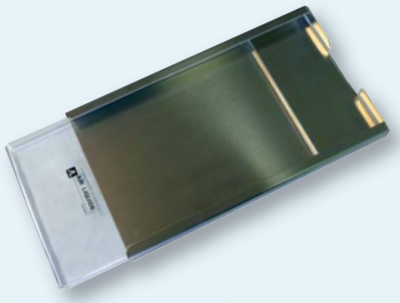
Tank dividers to facilitate sample and product storage management and traceability. **RCB 500 / 600**
double partition: ACC-RCB-5
triple partition: ACC-RCB-6
quadruple partition: ACC-RCB-7
**RCB 1000 / 1001**
double partition: ACC-RCB-8
triple partition: ACC-RCB-9
quadruple partition: ACC-RCB-10

# Storage cassettes



Protecting your biological samples for cryogenic storage



- **Less expensive and disposable: available in cardboards**
- **For all types of bio-storage bags: from 25 ml up to 1000 ml**
- **Compact and easy to stock**

## Main Characteristics

- 6 times lighter than traditional aluminum cassettes making it much easier and safer for operators when handling the storage racks
- Use in all types of cryogenic storage freezers and freezer racks, in liquid and gas phase
- Easy to identify: bar code, specific label or hand written with a standard ink pen
- Printing option to personalize the cassettes (minimum order of 20,000 units)

**Storal**

| | Bag Size | Manufacturer | Bags | Ref of Article |
|---|---|---|---|---|
| **CHARACTERISTICS** | | | | |
| Set of 700 Cardboard cassette | 25 ml | PALL | PALL25 | ACC-BOXTUBE-254 |
| Set of 600 Cardboard cassette | 50 ml | BAXTER<br>MACO-PHARMA | CRYOCYTE 50<br>GSR1000AU | ACC-BOXTUBE-250 |
| Set of 380 Cardboard cassette | 200/250 ml | BAXTER<br>GAMBRO<br>MACO-PHARMA | CRYOCYTE 250<br>DF200<br>GSR2000AU | ACC-BOXTUBE-251 |
| Set of 380 Cardboard cassette | 500 ml | BAXTER<br>GAMBRO<br>MACO-PHARMA | CRYOCYTE 500<br>DF170<br>GSR5000AU | ACC-BOXTUBE-252 |
| Set of 300 Cardboard cassette | 700/750 ml | BAXTER<br>GAMBRO<br>MACO-PHARMA | CRYOCYTE 750<br>DF700<br>GSR7000AU | ACC-BOXTUBE-253 |
| Set of 300 Cardboard cassette | 1,000 ml | GAMBRO | DF1000 | ACC-BOXTUBE-255 |
| Aluminium cassette | 50 ml | BAXTER | BAXTER 50 | ACC-BOXTUBE-200 |
| Aluminium cassette | 200 ml | | DF200 | ACC-BOXTUBE-205 |
| Aluminium cassette | 500 ml | BAXTER | BAXTER 500 | ACC-BOXTUBE-201 |
| Aluminium cassette | 700 ml | | DF 700 | ACC-BOXTUBE-206 |
| Mid-Aluminium mid-Plastic cassette | 50 ml | BAXTER | BAXTER 50 | ACC-BOXTUBE-203 |
| Mid-Aluminium mid-Plastic cassette | 200 ml | | DF200 | ACC-BOXTUBE-204 |
| Mid-Aluminium mid-Plastic cassette | 500 ml | BAXTER | BAXTER 500 | ACC-BOXTUBE-202 |
| Mid-Aluminium mid-Plastic cassette | 700 ml | | DF 700 | ACC-BOXTUBE-207 |
| Mid-Aluminium mid-Plastic cassette | 1,000 ml | | DF 1000 | ACC-BOXTUBE-208 |

# VOYAGEUR – Dry Shippers (2 – Plus)

A dedicated line of transportation vessels for biological and pharmaceutical samples (straws, cryo-tubes, bags…)


- Maximum storage – 500 cryo-tubes 2 ml
- Vessels comply with the EC Medical Directive 93/42 EEC
- Vessels comply with the international regulations applicable to the transport of dangerous materials by land (ADR) air (IATA-OACI) and rail (RID)
- No risk during transportation – the liquid nitrogen is absorbed
- Samples are transported in a gaseous or “dry” phase
- Liquid nitrogen use is reduced
- 6 year guarantee on the vacuum

## T°Tracker C

- Option: comfortable temperature data logger


Voyageur 5 with T"TRACKER

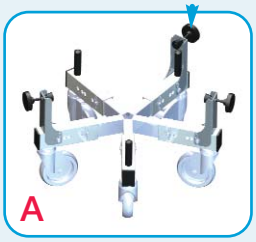
## Protective shipping cases B

## Main characteristics include:

- Made out of aluminum with insulating resin
- Lightweight and very resistant
- High quality polyurethane paint
- 4 different models

The Voyageur’s lids are designed to be locked (except for Voyageur 2, the locks are not included)

Fixation kit for the roller bases (optional): ACC-ALU-32



# Storage racks


| VOYAGEUR | | VOYAGEUR 2 | VOYAGEUR 5 | VOYAGEUR 12 | VOYAGEUR PLUS |
|---|---|---|---|---|---|
| **CHARACTERISTICS** | | | | | |
| Liquid capacity | l | 1,75 | 6,5 | 15 | 20,6 |
| Absorbed capacity | l | 1,35 | 4,8 | 10,5 | 7,2 |
| Diameter of neck | mm | 30 | 50 | 80 | 215 |
| Weight empty | kg | 2,4 | 7,5 | 11,6 | 14,2 |
| Weight full | kg | 3,5 | 11,3 | 20 | 20 |
| External diameter | mm | 174 | 248 | 308 | 356 |
| Total height | mm | 395 | 550 | 570 | 575 |
| Daily evaporation rate | l/d | 0,1 | 0,13 | 0,24 | 0,8 |
| Dynamic holding time[1] | d | 8 | 23 | 28 | 6 |
| Number of canisters | | 2 | 2 | 2 | |
| **STORAGE CAPACITY AND TYPE OF CANISTERS** | | | | | |
| Diameter of canisters | mm | 26 | 41 | 71 | |
| Height of canisters | mm | 120 | 280 | 280 | |
| Number of level of goblets | | 1 | 2 | 2 | |
| Max. capacity of 0.25 ml straws | | 220 | 1,040 | 3,280 | 9,840 |
| Max. capacity of 0.5 ml straws | | 100 | 400 | 1,320 | 4,380 |
| Total capacity of 2 ml cryo-vials on canes | | | 84 | 252 | 612[2] |
| Total capacity of 5 ml cryo-vials on canes | | | 42 | 126 | 306 |
| Total capacity of (2 ml / 5 ml) cryo-vials in box | | | | | 500/162 |
| For the different capacities for bags, e.g. Baxter, Gambro, etc | | | | | please contact us |
| **PRODUCT REFERENCES** | | | | | |
| VOYAGEUR with T°Tracker, including 2 canisters | | VOYAGEUR2-3 | VOYAGEUR5-3 | VOYAGEUR12-3 | VOYAGEUR20-3 |
| VOYAGEUR including 2 canisters | | VOYAGEUR2-2 | VOYAGEUR5-2 | VOYAGEUR12-2 | VOYAGEUR20-2[3] |
| **MAIN ACCESSORY REFERENCES** | | | | | |
| **A:** Roller base | | | | | ACC-ALU-29 |
| **B:** Plastic protective shipping case | | ACC-VOY-100 | ACC-VOY-101 | ACC-VOY-102 | ACC-VOY-103 |
| **C:** T°Tracker | | TRACKER-1 | | | |
| **D:** Lid | | ACC-ALU-18 | ACC-VOY-4 | ACC-VOY-5 | ACC-VOY-6 |
| **E:** Staight canister | | ACC-PLASCAN-7 | ACC-PLASCAN-10 | ACC-PLASCAN-11 | |
| **E1:** Off-centered canister | | ACC-PLASCAN-6 | ACC-PLASCAN-9 | ACC-PLASCAN-8 | |
| **F:** Rack with 5 levels for 2 ml cryo-tubes 75x75 (box for 25 units) | | | | | ACC-RACK-7 |
| **G:** Rack with 5 levels for 2 ml cryo-tubes 133x133 (box for 100 units) | | | | | ACC-RACK-4 |
| **G1:** Rack with 2 levels for 5 ml cryo-tubes 133x133 | | | | | ACC-RACK-2 |
| **H:** Rack with 3 levels for 25 ml bags | | | | | ACC-RACK-316 |





Rack for 2 ml cryo-tubes 2 ml (in boxes of 25 units) F

Rack for 2 ml cryo-tubes (in boxes of 100 units) G

Rack for bags

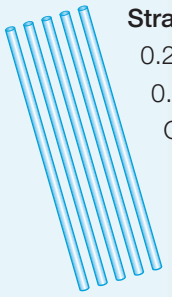
Carrying strap VOYAGEUR 2

1) VOYAGEURS 2, 5, 12 include canisters
2) Cryo-tube box for 100 units
3) VOYAGEUR PLUS without canisters

# VOYAGEUR

## Storage systems

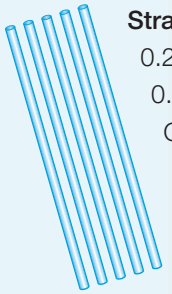
## VOYAGEUR 2



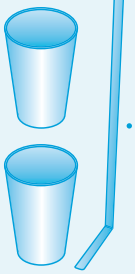
**Straws**
0.25ml
0.5ml
CBS

**Canister**
plastic 1 level


## VOYAGEUR 5 and 12



**Straws**
0.25ml
0.5ml
CBS



**Goblets**
ø 35 VOYAGEUR 5
ø 65 VOYAGEUR 12

**Lifter**
for removing
2 goblets from
a canister with
2 levels

**Canister in stainless steel**



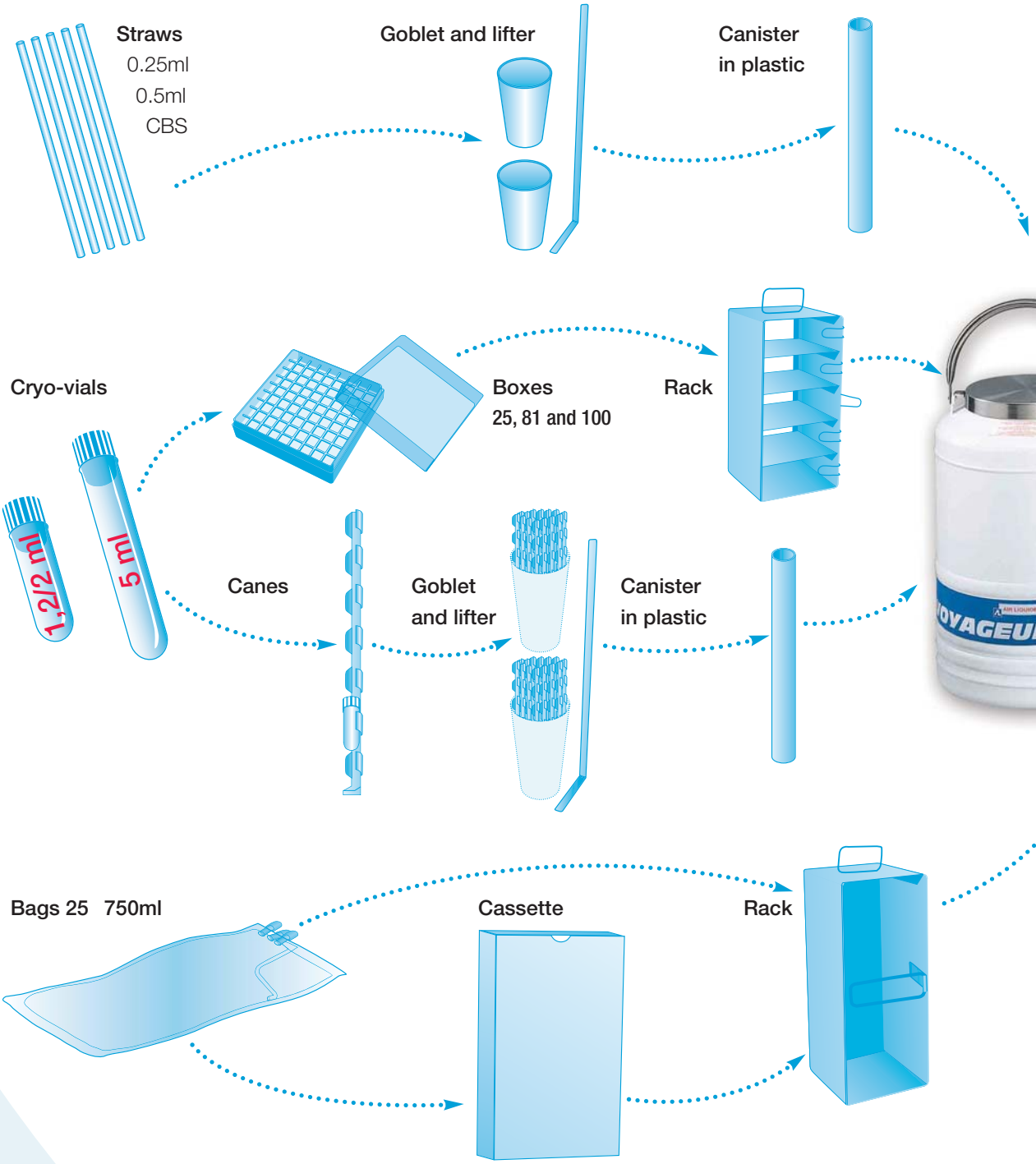
**Cryo-vials**

**Canes**

**Canister in stainless steel**

# Storage systems

## VOYAGEUR PLUS

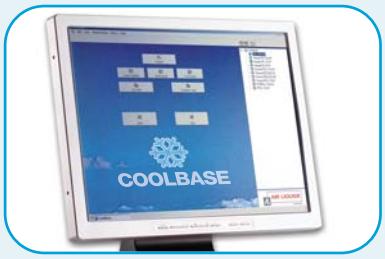


# Information management

## Temperature monitoring, level monitoring, control and traceability

**A comprehensive line of electronic kits designed for recording the key information linked to the required specifications of stored products, e.g. temperature, liquid and gas levels, and automatic filling of the vessels. The principal configurations for this monitoring include:**

| | |
|---|---|
| A : NT | level and temperature indicators |
| B : NT + R | A + auto-filling to maintain correct level of liquid nitrogen |
| C : NT + R + 4-20mA | B + 4-20mA unit |
| D : NT + R + RS485 | B + RS485 unit |

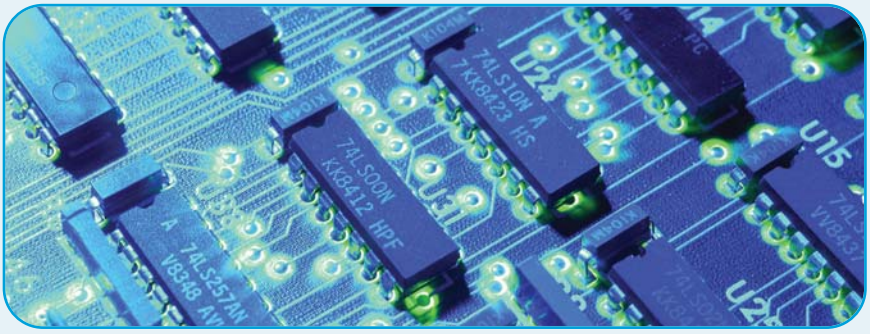




**Temperature indicator ( T )**
Records and displays temperature in °C or °F. The indicator includes a programmable alarm that is both audible and visual, dry contacts that record the alarms and open and close a solenoid valve for auto-filling (available on the NATAL40 and the ARPEGE, ESPACE and RCB lines).

**Level indicator ( N )**
Records and displays the level of liquid nitrogen in % via a capacity gauge placed inside of the vessel. The indicator includes a programmable alarm based on a specified level that is both audible and visual, dry contacts that record the alarms and open and close solenoid valve for auto-filling and over flow of liquid nitrogen (available on the NATAL40 and the ARPEGE, ESPACE and RCB lines).

**T"TRACKER**
The T"TRACKER is a traceability device, hardware with integrated software, which shows and records the interior temperature of a shipping vessel, e.g. during the transportation of samples. T"TRACKER shows, measures, records and stores the temperature readings at regular intervals using a PT100 sensor. The recorded data is convertible to EXCEL. Available on the GT, ARPEGE, ESPACE, RCB and VOYAGEUR lines.

**COOLBASE – sample management software**
COOLBASE is a software package designed to organize and track the inventory of individual samples. COOLBASE is a complete sample management system, simple in design and easy to use allowing for the definition, visualization, placement and


retrieval of each sample in its storage vessel. The vessel configuration can be adapted or customized for each inventory system. The user defines the fields which characterize the samples, e.g. project reference, donor name, sample type... Profiles can be established to secure and determine the users' function and access to the data. Easy sample "search and find" function and reporting forms for easy printouts to maximize sample traceability. COOLBASE can be installed in a single work station and on and network.

**Level indicator and regulator (R)**
Mandatory for gas or vapor phase vessels, the level indicator and regulator system works in parallel with the automatic filling of liquid nitrogen between two predetermined levels. The system also includes a solenoid valve and a cryogenic flexible hose connection to the supply of liquid nitrogen, e.g. a vacuum jacketed line, TP or TPED liquid nitrogen storage vessels. The liquid nitrogen level reading and display is in % and comes from the capacity gauge of the vessel. The display box also shows the high and low level % for the liquid nitrogen, a programmable visual and audio alarm, and dry contacts for recording the alarm reports (classic version available on the ARPEGE; for ESPACE and RCB lines: CryoMemo).

**4-20mA electronic unit**
The 4-20mA unit is a peripheral option to the standard electronics supplied with cryogenic containers such as the level and temperature gauges in the form of two blue units. The 4-20 unit is used to regulate the nitrogen level within a container fitted with level and temperature gauges for storing in a liquid or gas phase. This unit is also used to monitor the level and temperature remotely using two 4-20mA loops. The unit is able to use the signals coming from the level and temperature indicators, generate alarms, manage operating functions and the dry contacts, control the solenoid valve and transmit data to remote monitoring boards (measurements) in an analogue manner on a 4-20mA connection (classic version available on the ARPEGE; for ESPACE and RCB lines: CryoMemo).

**RS485 level controller and remote control unit**
The RS485 unit is a peripheral option to the standard electronics supplied with cryogenic containers such as the level and temperature gauges in the form of two blue units. The RS485 unit is used to regulate the nitrogen level within a container fitted with level and temperature gauges for storing in the liquid or gas phase. This product is also used to monitor via an RS485 modebus link, the interface can transmit temperature and level data and the status of the various alarms and controls. Alarm and data hard contacts are available for local operation (classic version available on the ARPEGE; for ESPACE and RCB lines: CryoMemo).

# T° TRACKER

Powerful and easy to use
temperature traceability tool

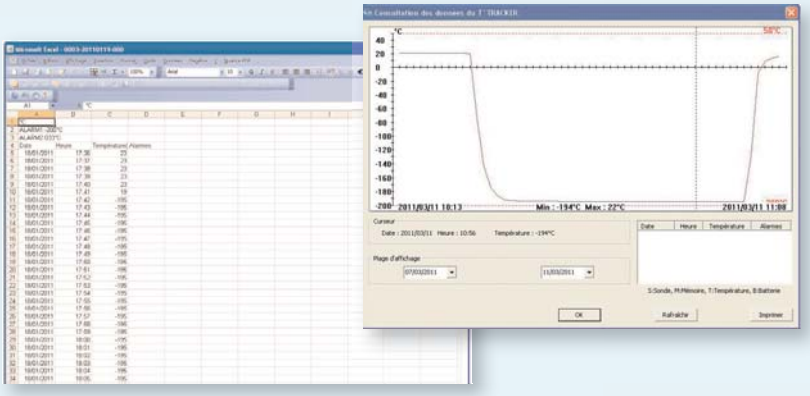
## Easy to affix to all our vessels...


## 6 reasons to use the T° TRACKER

- **Covers a wide range of temperatures**
  - Real-time display on the T° TRACKER's backlit LCD for temperature levels between +50°C and -200°C.
- **Large memory capacity**
  - Temperature history from 91 days up to 14 years.
- **Real-time display of the different alarms:**
  - Temperature
  - Temperature probe default
  - Memory capacity full
  - Battery level
  - Annual calibration
- **One complete, compact tool for mobile or fixed temperature traceability:**
  - Runs on 3 AAA batteries for period of 15 months when the batteries will need to be replaced or the units can be connected to a standard electrical outlet.
- **Easy to affix on different surfaces:**
  - Compact and easy to affix, (the T° TRACKER can be affixed with screws, rivets and industrial Velcro), the units can be attached to all types of vessels or surfaces.
- **Reliability**
  - Alarm for annual factory calibration
  - Certificate of factory calibration

## The operating software

- **User friendly and available in 7 different languages.**
- **Download and store the collected data using a USB cable.**
- **Transform the collected data from table format into graph format.**



# CRYOMEMO

Your choice of electronic option will be simplipied and facilitated



## The advantages of CRYOMEMO?

- An interface man machine friendlier,
- A new design for more pleasant use,
- An easy access to the data,
- Intuitive menus, multilingual,
- A global offer of traceability and supervision,
- An integration of several options of safety,
- An Internet server for a display and a remote surveillance on all the versions

# GT for dermatology (2 – 21)

Vessels designed for storage of liquid nitrogen for dermatological applications

## GT equipped with 2 ladle type canisters


Canister height
25 and 50 mm

Hook fixed on the canister


CRYAL JET maxi

- Compliant to the European Medical Directive 93/42 EEC
- Available in 4 sizes: 2, 9, 11 and 21 litres
- Light and easy to handle
- Secure hook system on the canisters
- Allows operator to use both hands reducing risks
- 6 year guarantee on the vacuum

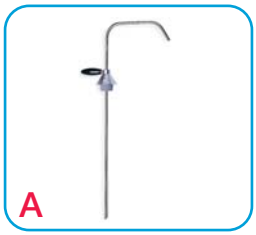
# CRYAL JET

Cryogenic spray vessel
for liquid nitrogen equipped with
different spray nozzles for the treatment
of different types of topical skin lesions

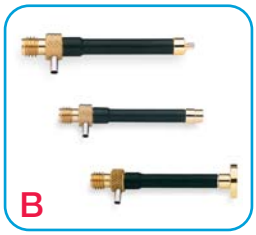
Easy to fill the Cryal Jet by using a TR simplified decanting system A
TR line, see page 10


- **Compliant to the European Medical Directive 93/42 EEC**
- **Available in 2 sizes: 0.3 and 0.5 litres**
- **Easy to use**
- **Stainless steel**
- **Immediate liquid nitrogen spray**
- **Supplied with a set of six nozzles, designed for treating the most common lesions**

## Accessories




Simplified decanting system
Ref.: ACC-DERMATO-1




Contact probe

Ref. : ACC-CRYALJET-204


Nozzles Buses

Ref. : ACC-CRYALJET-105


Gloves cryo * page 7

Ref.: ACC-SECU-15 / 18


Visor

Ref. : ACC-SECU-1


Polypro disques

Ref. : ACC-CRYALJET-3

| DERMATO | | CRYAL JET | | | | |
|---|---|---|---|---|---|---|
| | | GT 2 | GT 9 | GT 11 | GT 21 | MAXI |
| **MAIN CHARACTERISTICS INCLUDE** | | | | | | |
| Volume capacity | l | 2 | 9.3 | 12.2 | 21.5 | 0.5 |
| Neck diameter | mm | 30 | 50 | 50 | 50 | 68.5 |
| **Static holding time** | **d** | **25** | **84** | **130** | **225** | **24** |
| Weight empty | kg | 1.9 | 8.2 | 9.2 | 13 | 0.62 |
| Weight full | kg | 3.5 | 15.7 | 19 | 30.4 | 0.94 |
| Total height | mm | 392 | 450 | 630 | 660 | 285 |
| Canister diameter | mm | 26 | 31 | 31 | 31 | |
| **PRODUCT REFERENCES** | | | | | | |
| GT DERMATO with 2 stainless steel canisters[1) 2)] | | GT2-DERMATO-1 | GT9-DERMATO-1 | GT11-DERMATO-1 | GT21-DERMATO-1 | |
| CRYAL JET MAXI 0.5 l (with 6 nozzles) | | | | | | CRYALJET50-1 |

1) GT 2 DERMATO: with 1 stainless steel canister 2) GT 9 / 11 / 21 DERMATO: with 1 25 mm high ladle canister and 1 50 mm high ladle canister – stainless steel.

# How to transfer cryogenic fluids

## Standard flexible hoses

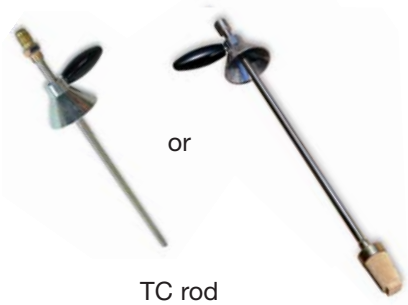
### You want to fill A from B

**B**


TP 35, 60, 100

Ranger 180

**Manual Filling (using a withdrawal rod)**



or

TC rod

+

180/180 hose

**A**

AGIL

VOYAGEUR

GT

TP

ARPEGE

TR

**Remplissage Automatique (connexion directe)**

Flexible 180/180

**A**

ARPEGE

TP


RANGER 180

# Standard flexible hoses

**B**

RANGER 450

RANGER 630

**Manual Filling (using a withdrawal rod)**

Hose or TC rod

Flexible 630/180

**A**

AGIL

VOYAGEUR

GT

TP

ESPACE

ARPEGE

TR

RCB

**Automatic Filling (direct connection)**

630/180 Hose

**A**

ESPACE

RCB

ARPEGE

RANGER 180

**B**


Storage tank

**Automatic Filling (direct connection)**

630/180 Hose

**A**

RANGER 180

630/630 Hose

**A**

RANGER 450

RANGER 630

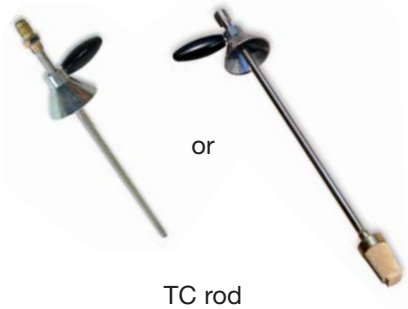
# How to transfer cryogenic fluids

## Standard flexible hoses

**B**

Vacuum line

**Manual Filling (using a withdrawal rod)**



or

TC rod

+

180/180 hose

**A**

AGIL

VOYAGEUR

GT

TP

ARPEGE

TR

**Automatic Filling (direct connection)**

180/180 hose

**A**

ARPEGE

ESPACE

TP

RCB

# BBO "Boyer" hoses

**Use BBO hoses (insulated hoses) for transferring cryogenic fluids (nitrogen or argon) more efficiently than with non-insulated hoses.**

## Main advantages

- Stays frost-free for longer
- Reduces liquid nitrogen loss (good thermal performance)
- Connects using a 180NL (wing nuts) or a 3-part connector
- 304L/316L stainless steel
- Tighter bend radius
- Stainless steel protective outer cover

## Applications

- Cryobiology (healthcare, pharmaceutical products etc.)
- Chemicals
- Electronics (semiconductors etc.)
- Food industry
- Industry, steel making...

3-part connector

180NL connector

**BBO hose - Standard**

| Ø | Raccordement | Long. m | AL DMC Reference |
|---|---|---|---|
| DN8 | 1/4 BSP-T (gas connection) | 1 | ACC-FLBBONL-DN8-1 |
| | | 2 | ACC-FLBBONL-DN8-2 |
| | | 3 | ACC-FLBBONL-DN8-3 |
| DN8 | 180 NL | 1 | ACC-FLBBONL-DN8-4 |
| | | 2 | ACC-FLBBONL-DN8-5 |
| | | 3 | ACC-FLBBONL-DN8-6 |
| DN15 | 1/2 BSP-T (gas connection) | 1 | ACC-FLBBONL-DN15-1 |
| | | 2 | ACC-FLBBONL-DN15-2 |
| | | 3 | ACC-FLBBONL-DN15-3 |

# How to transfer cryogenic fluids

## Vacuum lines

**Superinsulated vacuum lines, whether rigid or flexible, optimise the cryogenic fluid transfer process (nitrogen, oxygen, argon, CO2).**
**Made-to-measure at our factory, they are designed to be site-installed by welding or using male-female couplings**

### They have the following benefits

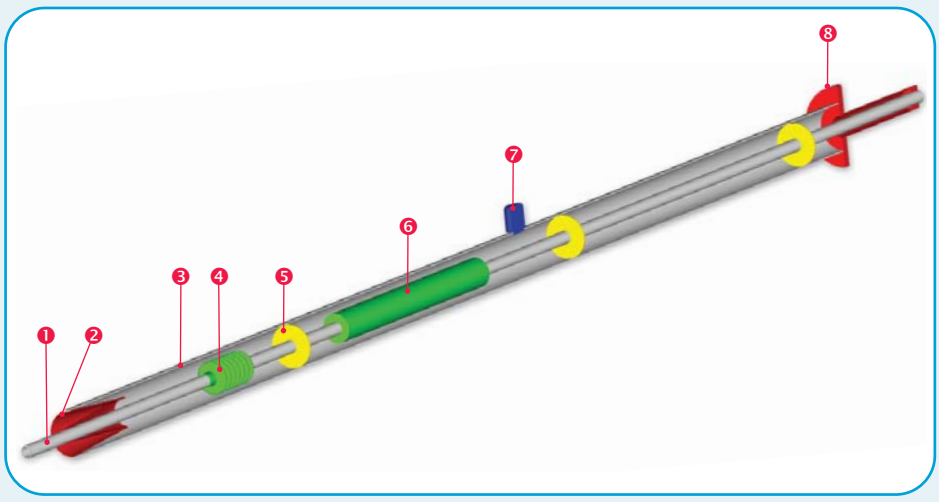
- Excellent thermal performance (low consumption)
- No need for maintenance
- Maximum security
- 304L stainless steel
- Small form factor
- Frost-free (vacuum sections)

### Applications

- Cryobiology (healthcare, pharmaceutical products etc.)
- Chemicals
- Electronics (semiconductors etc.)
- Food industry
- Space industry (cryogenic food storage - Ariane 4 and Ariane 5)
- Industry, steel making...

### Technical solutions

- Flexible or rigid lines
- Internal diameter: DN10 to DN100
- Operating pressure: PN6 to PN15
- Welded or screwed (Johnston couplings)
- Accessories: purger, phase separator, valves, hoses etc.




### Diagram of a vacuum line

1. Inner tube
2. Thermal barrier
3. Outer jacket
4. Contraction compensator
5. Centering ring
6. Adsorbent
7. Vacuum and safety clack valve
8. Male Johnston connector (see couplings, page 64)

# Description of a vacuum line
# Flexible vacuum line

| Rigid VL | | 10 | 20 | 32 | 50 | 80 | 100 |
|---|---|---|---|---|---|---|---|
| SPECIFICATIONS | | | | | | | |
| ø inner | mm | 16x1 | 26,9x1,6 | 42,4x1,6 | 60,3x1,6 | 88,9x1,6 | 114,3x2 |
| ø outer | mm | 60,3 | 76,1 | 88,9 | 114,3 | 139,7 | 168,3 |
| Performance | W/m | 0,38 | 0,53 | 0,73 | 1 | 1,4 | 1,75 |
| Weight | Kg/m | 2,9 | 4,2 | 5,5 | 8,5 | 11,5 | 15 |

| Flexible VL | | 10 | 20 | 32 | 50 |
|---|---|---|---|---|---|
| SPECIFICATIONS | | | | | |
| ø inner | mm | 14 | 23,7 | 39,2 | 57,1 |
| ø outer | mm | 68 | 84 | 103 | 130 |
| Performance | W/m | 0,6 | 0,85 | 1,2 | 1,6 |
| Weight | Kg/m | 1,2 | 3,7 | 4,8 | 9,2 |

## Applications

Flexible vacuum lines can be used to transfer your cryogenic fluids such as liquid argon and nitrogen from a storage tank to the point of use without interruption.

They come in three diameters and different lengths. Maximum operating pressure is 6 bar.

## Advantages

Lines kept in stock for hire or sale.Lines reinforced with a protective coil.

## Connection

Coupling using butt-welding and PU sleeve

| Vacuum line | | AL DMC Reference |
|---|---|---|
| DN | Length (m) | |
| DN10 | 2 | NH99410-2M |
| | 5 | NH99410-5M |
| | 10 | NH99410-10M |
| | 20 | NH99410-20M |
| DN20 | 2 | NH99420-2M |
| | 5 | NH99420-5M |
| | 10 | NH99420-10M |
| | 20 | NH99420-20M |
| DN32 | 5 | NH99532-5M |
| | 10 | NH99532-10M |

## $Co_2$ vacuum line

- Simplified version of the standard lines
- Rigid lines only
- PN25
- DN10 to 50 (others available on request)
- Coupling using butt-welding and PU sleeve * page xx

**Must not be used with oxygen**

# Connections and couplings

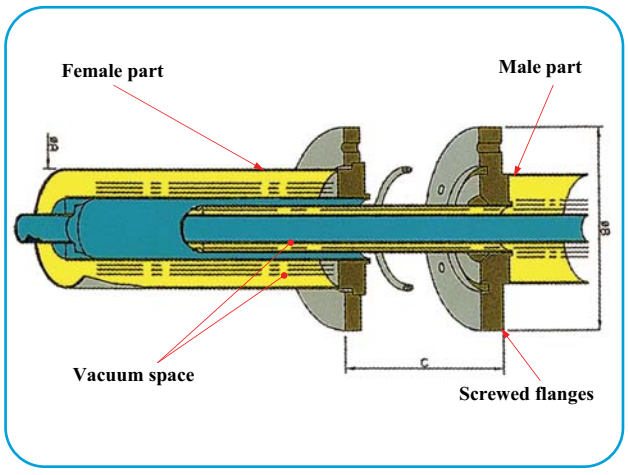
## Johnston connections (vacuum)

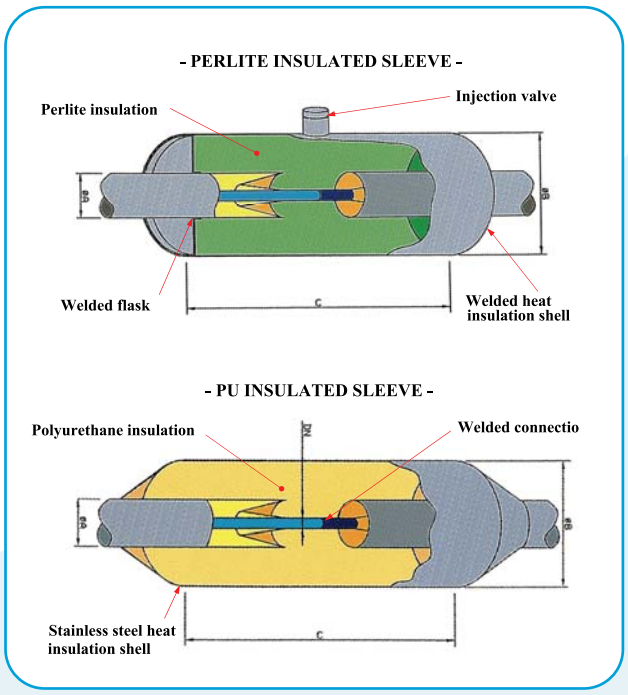
Weld-free connections, rapid assembly and dismantling thanks to interlocking parts (screw, collar or clamps).
Guaranteed no disruption to thermal performance.
Available in DN10, 20, 32 (HP), 50.

## Welded connections

Available in DN10 to 100.

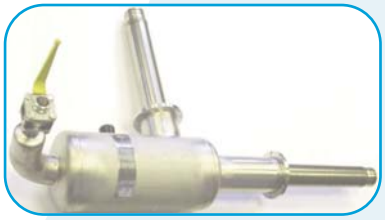
- Perlite & PU sleeve: on-site assembly of sections by butt-welding. Length can be adjusted during installation.
  Filled with Perlite (oxygen) or polyurethane foam injection (nitrogen and argon).
- Vacuum sleeve: on-site assembly of sections and sleeve by butt-welding. Length can be adjusted during installation.
  On-site superinsulation and creation of the vacuum in the sleeve.
  Guaranteed no disruption to thermal performance.



## Gas trap

- Purges any gas that forms in the distributor line
- Keeps the line cold
- Vacuum insulated



## Flexible vacuum lines

- Nitrogen and argon compatible
- Available for sale and for hire
- DN10, 20 and 32 – PN10
- Different lengths (2 to 20 m, depending on DN)
- Butt-welded coupling
- Lines reinforced with a protective coil.

## Vacuum insulated valve

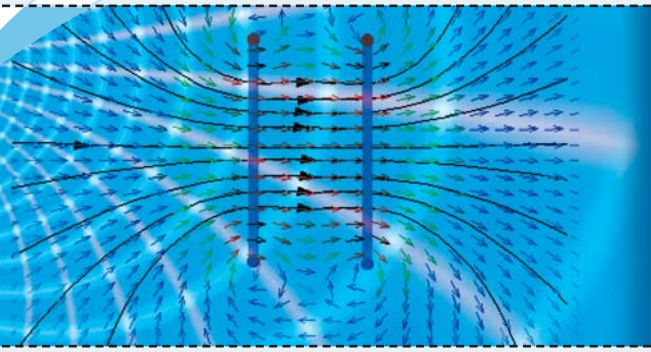
- Manual or electro-pneumatic control D10, 20 and 32
- (others available on request)

## Distribution kit

- For connecting to 1-4 applications. Assembled at the end of the vacuum line
- 1- to 4-way


# The RH Range

## Store and transport liquid helium



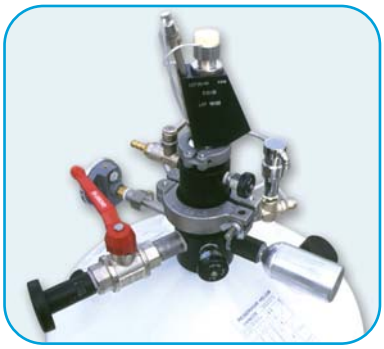

- 65 to 450 litre capacity
- Non-magnetic
- Can be used in close proximity to strong magnetic fields
- Ultra lightweight
- Sturdy and efficient

## Quality

- Light-weight alloy and composite construction
- ADR, RID and ICAO compliant
- Capacity without a liquefier
- Suitable for MRI systems
- Liquid draw-off and distribution

| RH Range | |
|---|---|
| RH65-1 | RH65 laboratory and road transport version |
| RH100-1 | RH100 laboratory and road transport version |
| RH250-1 | RH250 laboratory and road transport version |
| RH450-1 | RH450 laboratory and road transport version |
| | |
| RH65-2 | RH65 laboratory and air transport version |
| RH100-2 | RH100 laboratory and air transport version |
| RH250-2 | RH250 laboratory and air transport version |
| RH450-2 | RH450 laboratory and air transport version |

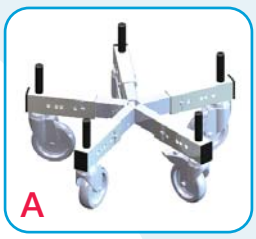
Series hand rail.

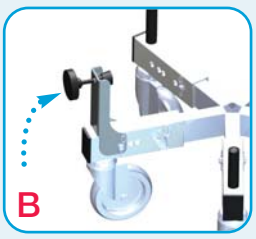


BHK head as standard across the whole RH range.

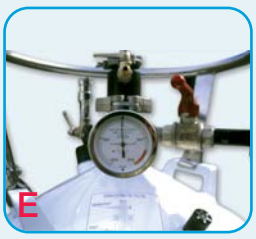
BHUL head option for attaching syphon, level gauge and level indicator.

| RH Range | | RH 65 | RH 100 | RH 250 | RH 450 |
|---|---|---|---|---|---|
| **CONTAINER SPECIFICATIONS** | | | | | |
| **Working capacity** | l | **64** | **96** | **240** | **428** |
| **Water capacity** | l | **68** | **101** | **253** | **451** |
| 24-hour evaporation loss with BHK head | % | 1,5 | 1,0 | 0,7 | 0,5 |
| Empty weight | kg | 32 | 38 | 89 | 151 |
| Full weight | kg | 40 | 50 | 119 | 204,5 |
| External diameter | mm | 503 | 503 | 802 | 1 000 |
| Total height | mm | 1 150 | 1 360 | 1 560 | 1 635 |
| Total height with dolly base | mm | 1 180 | 1 390 | | |
| Total height with pallet and retractable wheels | mm | | | 1 670 | 1 745 |
| Minimum service temperature | °C | - 269 | - 269 | - 269 | - 269 |
| Maximum working pressure | bar | 0,7 | 0,7 | 0,7 | 0,7 |
| Gaseous phase | % | 5 | 5 | 5 | 5 |
| **MAIN ACCESSORIES** | | | | | |
| **A1:** A1:Dolly base (lockable) height 220mm, max floor space Ø 602mm | | ACC-ALU-29 | ACC-ALU-29 | | |
| **A2:** Non-magnetic base (lockable) height 205mm, max floor space Ø 602mm | | ACC-ALU-31 | ACC-ALU-31 | | |
| **B:** Recipient lock kit (3 units) | | ACC-ALU-32 | ACC-ALU-32 | | |
| **C:** Protection (Aluminium bar system to protect the container from impacts) | | ACC-RH-106 | ACC-RH-107 | ACC-RH-108 | ACC-RH-109 |
| **D:** Hand rail | | ACC-ALU-21 | ACC-ALU-21 | | |
| **E1:** BHUL head for siphon Ø 10 with complete Pneurop fitting | | ACC-RH-3 | | | |
| **E1:** BHUL head for siphon Ø 12 with complete Pneurop fitting | | ACC-RH-4 | | | |
| **E1:** BHUL head for siphon Ø 12.7 with complete Pneurop fitting | | ACC-RH-5 | | | |



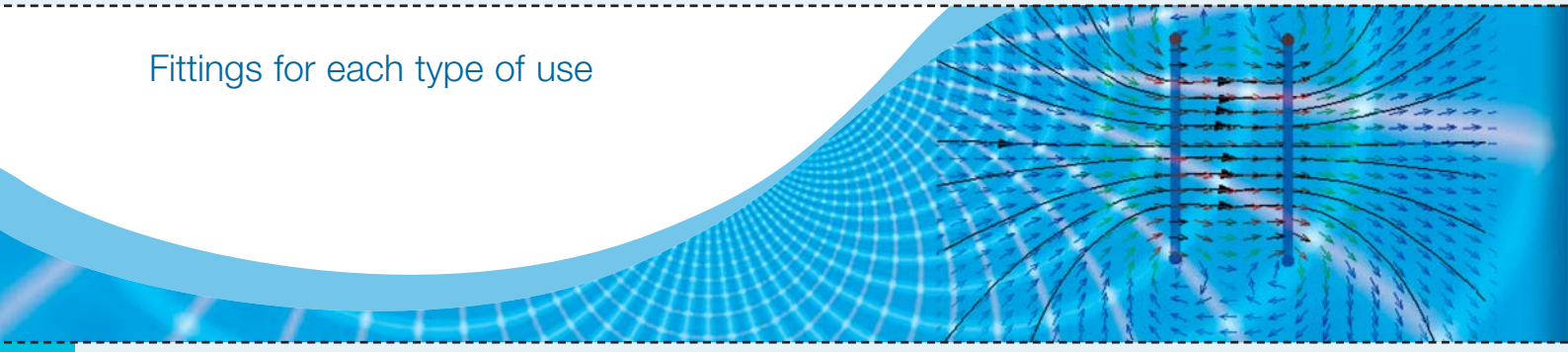





# The RH Range

## Fittings for each type of use



**LR :** For laboratory use + road transport

**LA :** For laboratory use + air transport

| RH Range | RH 65 | | RH 100 | | RH 250 | | RH450 | |
|---|---|---|---|---|---|---|---|---|
| FITTINGS FOR EACH TYPE OF USE | LR | LA | LR | LA | LR | LA | LR | LA |
| DN80/DN50 reduction flange | | | | | ✓ | ✓ | ✓ | ✓ |
| Complete BHK head with 0.7 bar pressure relief valve and Pneurop fitting | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full stopper for BHK head | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 3/4" blowdown valve with DN40 Pneurop flange | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mano-vacuometer | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Two 0.7 bar relief valves for (1/2" for RH65, 100 and 1" for RH250 and 450) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Anti-oscillator | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Hand rail | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Transport relief valve tared to 6g/cm2 with shut-off valve | ✓ | | ✓ | | ✓ | | ✓ | |
| Absolute taring relief valve 1 160mbar with shut-off valve | | ✓ | | ✓ | | ✓ | | ✓ |
| Protection hood | | ✓ | | ✓ | | ✓ | | ✓ |
| Non-retractable dolly base | | | | | | | | |
| Palettable non-magnetic base with retractable wheels | | | | | ✓ | ✓ | ✓ | ✓ |


Notes

Notes

Notes

Local contact