 <b>Cryo Diffusion</b>	<b>NU 013</b> <b>BR 2000 (M)</b>	<input checked="" type="checkbox"/> <b>Notice d'utilisation</b> <input type="checkbox"/> Français <input checked="" type="checkbox"/> <b>Anglais</b> <b>INDICE E</b>
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<b>VISAS</b>
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	Service	Nom	Date	Signature
TRADUCTION	Technique	C. Davin	19/01/2010	
APPROBATION	BE	V. Kleymenov		

## TABLEAU DE REVISION

INDICE	NATURE DE LA MODIFICATION	DATE	PAGE(S)
A	Edition originale	17/03/00	/
B	Chapitre 3 "Options"	31/10/03	Toutes
C	Modifications générales	20/10/06	toutes
D	Ajout BR2200	09/09/09	2-3-14
E	Suppression BR2075	19/01/2010	

## GRILLE DE DIFFUSION

SERVICE		NOM et Prénom du destinataire	N° de copies identifiées reçues	Date réception	VISA du destinataire
Bureau d'Etudes	BE	C. DAVIN	Original		

## **USER GUIDE**

**BR 2048 (M)**

**BR 2100 (M)**

**BR 2150 (M)**

**BR 2200 (M)**



**SUMMARY**

PARAGRAPH – TITLE	PAGE NUMBER
1. GENERAL INFORMATION	2
1.1. INTRODUCTION	2
1.2. PRESENTATION	2
1.3. GUARANTEES	2
1.4. SPECIFICATIONS	3
1.5. SAFETY MEASURES	4
1.6. CHECKING THE CONTAINER	5
2. CONTAINERS	5
2.1. STORAGE	5
2.2. CLEANING AND DISINFECTION	5
3. OPTIONS	5
3.1. NITROGEN LEVEL-DETECTOR	5
3.2. TEMPERATURE INDICATOR	5
4. DRAWINGS OF THE CONTAINERS	5

## 1. GENERAL INFORMATION

### 1.1. INTRODUCTION

The containers of the BR 2000 series are designed for storage of biological products in liquid nitrogen.

### 1.2. PRESENTATION

The containers of the BR 2000 series are made of aluminium with a fibreglass/epoxy neck and are vacuum multilayered high-insulated containers.

These lightweight, high-performance containers are designed to undergo rough conditions of use. However, strict precautions must be taken to protect the staff using these containers and increase the lifespan of the equipment.

These containers exist in seven different versions:

➤ BR 2048(M) - BR 2100(M) - BR 2150(M) – BR 2200 (M).

### 1.3. GUARANTEES

Cryo Diffusion guarantees, for two years from shipping date, for all the equipment it manufactures, the absence of any material or manufacturing defects, which could impede operating under normal operating conditions, except for the points mentioned in this document.

In the scope of this guarantee, our liability is limited to repairs, maintenance and setting at no cost to our factory, of any defective equipment or parts, returned to us, carriage paid and certified faulty after examination by one of our agents.



All transport charges incurred for equipment requiring repairs covered by the warranty are borne by the purchaser. Any defect caused to equipment or products, resulting from mishandling, bad installation, unauthorized repairs or modifications, the faultiness of the utilitarian or a contamination caused by the surroundings, is excluded from the warranty.

Materials used to manufacture Cryo Diffusion's equipment and other products are selected after undergoing intensive testing and experiments to determine their reliability and potential lifespan. However, these materials cannot be completely guaranteed against wear and/or decomposition caused by chemical action (corrosion), which could occur under normal use.

All repaired parts are guaranteed free from material and manufacturing defects for 90 days from shipping date. No equipment can be returned to Cryo Diffusion without prior notice.

Cryo Diffusion disengages itself from any guarantee obligation for repairs and modifications performed by people other than its own authorized personnel, unless Cryo Diffusion has authorized these repairs or modifications in writing.

If a component is found faulty while under warranty period, spare parts can be sent, decision taken by Cryo Diffusion, to be installed by the purchaser himself.

#### 1.4. SPECIFICATIONS

##### ➔ CONTAINERS:

Characteristics	BR2048 (M)	BR2100 (M)	BR2150 (M)	BR2200 (M)
Material	Alu	Alu	Alu	Alu
Working pressure	AP*	AP *	AP *	AP *
Net capacity (litres)	48.5	100	148	197
Empty weight with racks <sup>(1)</sup> (kg)	20.5	45	56	62
Full weight with racks <sup>(1)</sup> (kg)	62	126.5	174.5	221
Overall height (mm)	707	778	950	1076
Outer diameter(mm)	500	680	680	680
Neck diameter (mm)	120	215	215	215
Static loss rate <sup>(2)</sup> (l/day)	0.27	0.65	0.65	0.65

<sup>(1)</sup> with racks

<sup>(2)</sup> without racks

\* AP: Atmospheric pressure

##### ➔ APPLICABLE STANDARD:

Medical equipment: 93/42/EEC directive (BR2000 – M type).



**Any component modification or addition on a standard device leads to a rechecking of the conformity to this regulation.**



## 1.5. SAFETY MEASURES

1. The liquid nitrogen stored in your container has a boiling point of  $-196^{\circ}\text{C}$  and a very high refrigeration capacity. Strict safety measures must be taken to manipulate this fluid. Skin contact with liquid nitrogen may cause frostbite. The liquid must be handled, particularly during filling, in such a way to prevent splashing. While handling liquid nitrogen, **protect your eyes with glasses, your hands with appropriate gloves**. Wear clothes which completely cover your arms and legs.

If you are burnt with liquid nitrogen, proceed as for a burn. In any case, call a doctor. Do not rub the frostbitten part but bring it back to normal body temperature by placing it against a warm part of the body. Gaseous nitrogen, produced by evaporation of liquid nitrogen, is colourless and odourless. Concentration of gaseous nitrogen in a closed or poorly-ventilated room may cause asphyxiation by shortage of oxygen. The containers must be stored and used in well-ventilated areas. We recommend the use of an oxygen detector to prevent this shortage.

2. During filling cycles, the  $\text{LN}_2$  supply manifold (if option) becomes very cold and must only be touched with protective gloves. If this precaution is not taken, the operator risks serious burns and/or frostbite.
3. Any modification of original parts supplied by Cryo Diffusion can be dangerous for the operator. **The container MUST NEVER be hermetically sealed**, for this operation could impede normal evaporation of the liquid.
4. **ALWAYS TRANSPORT AND STORE THE CONTAINER IN A VERTICAL POSITION**, even when it is empty.
5. Avoid tipping up the container, even to draw off liquid nitrogen. To draw off liquid, use a transfer pump or an external or electrical pressure-building withdrawal pipe. If the container is not used, the nitrogen evaporates by itself. If you absolutely want to empty it, do so outside, on earth or gravel. Remember that liquid nitrogen makes most material breakable.
6. Beware, while handling the container, not to drop nor knock it on the ground.
7. The plug must be kept in the neck of the container. Should you not observe this rule, not only will the container's normal static consumption increase, but an ice plug may eventually build up in the neck.
8. Fill the container up by introducing, in the container's neck, either a transfer hose or a hand-filling pipe, connected to a liquid nitrogen storage container. If the installation comprises a transfer line, and if the latter is hot, the filling hose must only be introduced in the container's neck once liquid nitrogen appears at the end of the hose. Remove the container from its cardboard packaging before filling it with liquid nitrogen.
9. While filling a container, which inner vessel is at room temperature, pour the liquid nitrogen slowly, in such a way as to avoid liquid projections, caused by gaseous vaporization. Half-fill the container and leave the liquid nitrogen to stabilize a few hours before supplementing. The thermal stability is only reached after 48 hours.  
If you wish to reach the maximum holding time, fill up the container only 3 days after the first filling.
10. It is important not to let the liquid nitrogen flow over the top part of the container while filling it up. If so, check, for the following 24 hours that any sign of frost has disappeared before using the container.



11. When you receive your cryobiological container, only fill it with biological products 24 hours after filling it with liquid nitrogen, in order to detect any possible anomaly due to bad transport.

#### 1.6. CHECKING THE CONTAINER

1. If you have any doubts concerning the efficiency of the insulation of your container, the liquid level may be measured by means of a plastic graduated dipstick commercialized by Cryo Diffusion. Stand the dipstick at the bottom of the container and keep it in place for a few seconds. Remove the dipstick, then shake it in the air in such a way that the condensation of the air humidity indicates the amount of liquid remaining in the container. Should there be an anomaly, please inform Cryo Diffusion.
2. If signs of frost appear on the outer part of the container, or if the outer container is completely iced up, this means that the inner-space vacuum is broken or deteriorated. The liquid nitrogen will then evaporate very quickly. Inform Cryo Diffusion; we will give you the suitable instructions.

**NEVER REPAIR THE CONTAINER YOURSELF.**

## 2. CONTAINERS

### 2.1. STORAGE

Cryo Diffusion offers as a standard, a whole range of possible arrangements inside these containers, but combinations of different means of storage remain possible.

### 2.2. CLEANING AND DISINFECTION

The inner vessel may be cleaned and/or disinfected with a product, which causes no modification to the chemical and mechanical characteristics of the aluminium, the fibreglass and the epoxy. Ensure that the container is dry before filling it with liquid nitrogen.

## 3. OPTIONS

### 3.1. NITROGEN LEVEL-DETECTOR

These containers may be equipped with a DEN level-detector. This device is used to warn the operator if the nitrogen level is low; furthermore, it is equipped with a remote-alarm outlet. The temperature sensor (carbon probe) is placed at mid-height on the right part of the container (see schema).

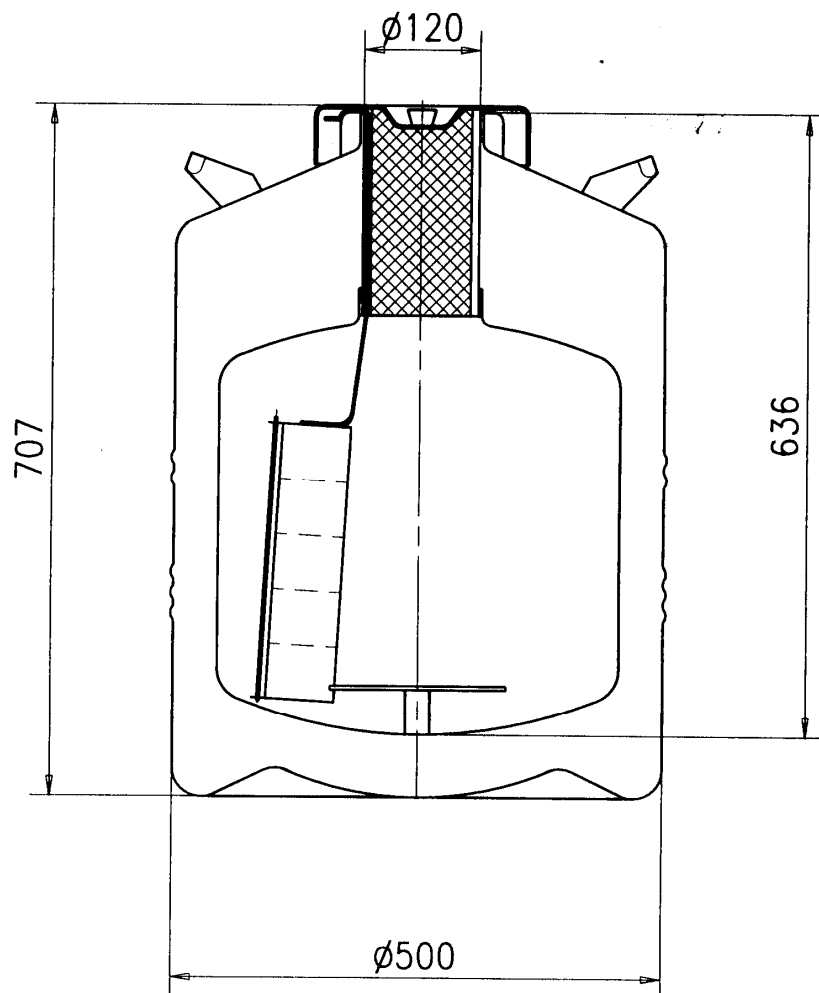
### 3.2. TEMPERATURE INDICATOR

The containers of the BR series may be equipped with a temperature indicator ITN 2003. In this case, the temperature sensor is a standard T thermocouple, placed on the top part of the racks.  
Both options may be installed together.

## 4. DRAWINGS OF THE CONTAINERS



## BR 2048 M



### SPECIFICATIONS:

Capacit  48.5 Litres  
Poids   vide 20.5 Kg  
Poids plein LN: 60 Kg  
Perte journali re 0.27 L/jour

### SPECIFICATIONS:

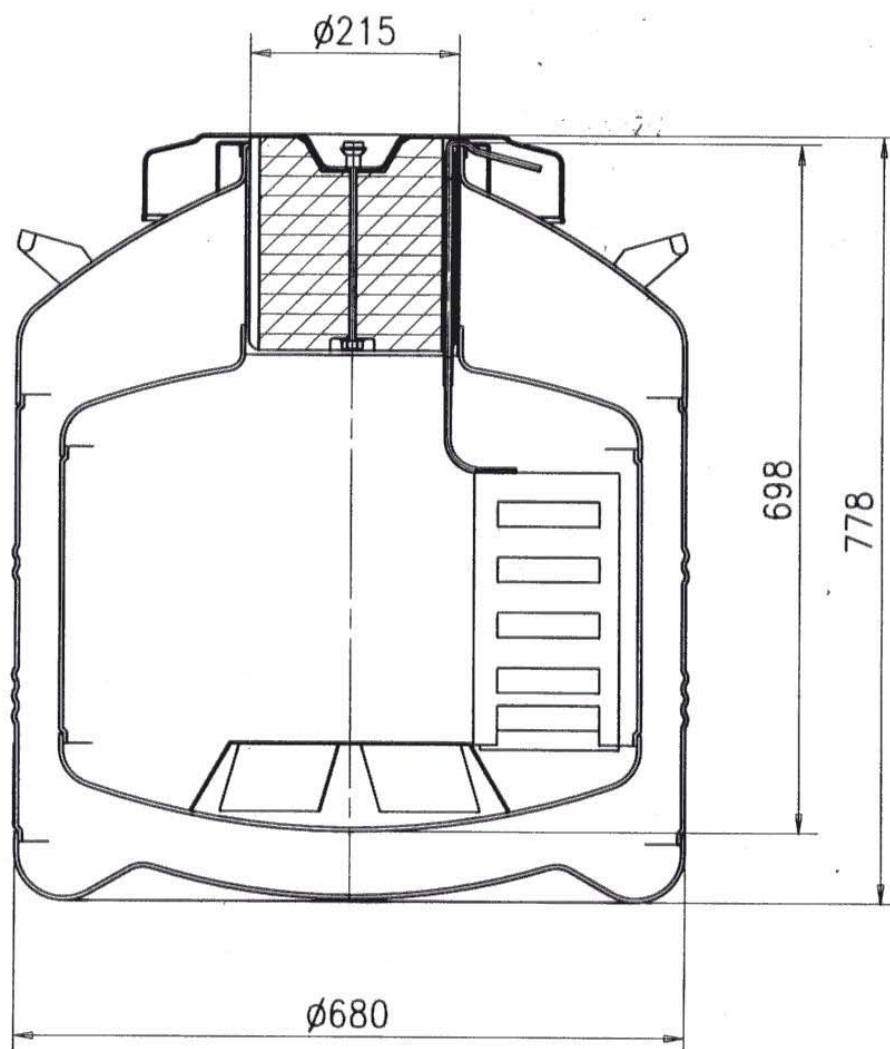
Capacity 48.5 Litres  
Weight empty 20.5 Kg  
Weight full LN: 60 Kg  
Daily loss 0.27 L/day

07/03/00	Delisle	Leicher
DATE	DESSINE	VERIFIE

<b>CRYO</b> DIFFUSION	49 Rue de verdun 27690 L�RY Telephone 32 59 03 68 Telecopie 32 61 00 03	
	<b>T 3083</b>	<b>A</b>



## BR 2100 M



### SPECIFICATIONS:

Capacité	100	Litres
Poids à vide	45	Kg
Poids plein LN <sub>2</sub>	126.5	Kg
Perte journalière	0.65	L/jour

### SPECIFICATIONS:

Capacity	100	Litres
Weight empty	45	Kg
Weight full LN <sub>2</sub>	126.5	Kg
Daily loss	0.65	L/day

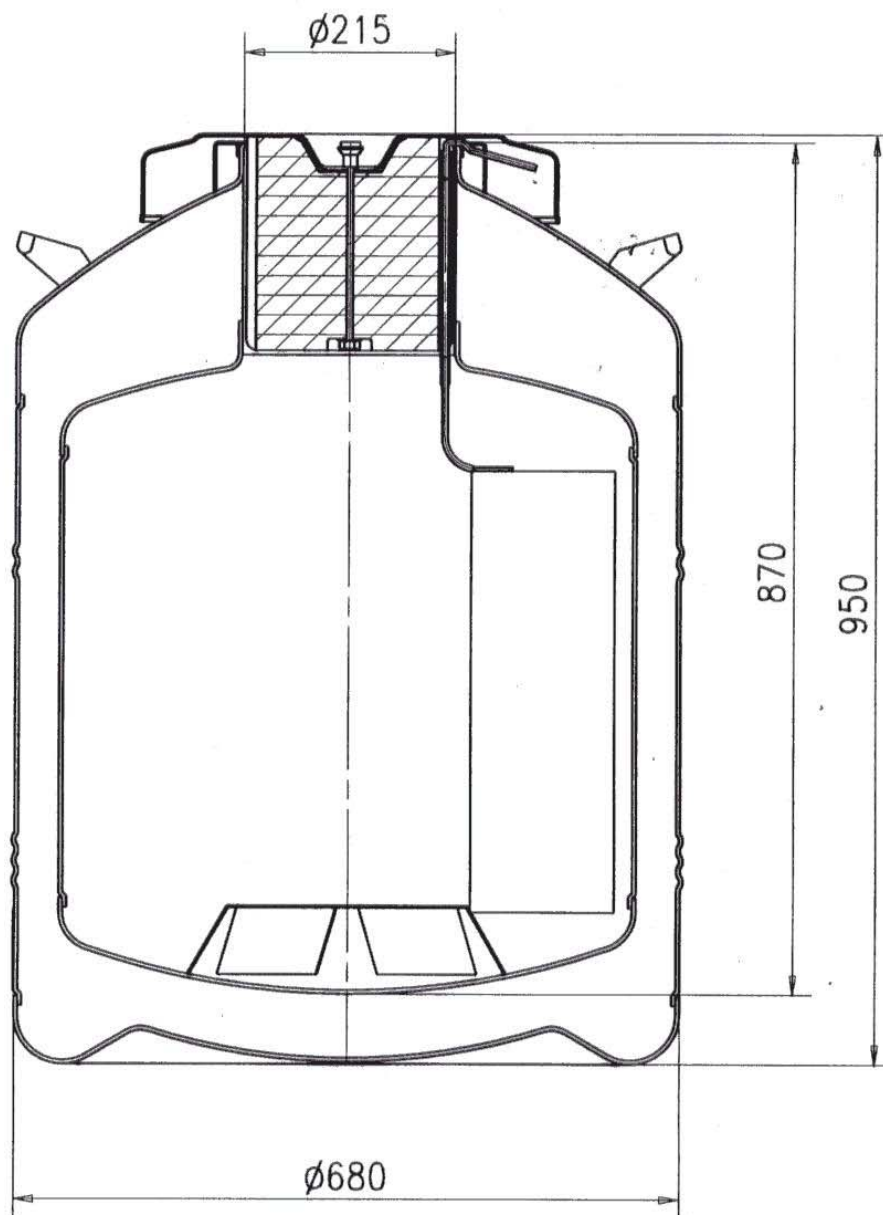
08/03/00	Delisle	Leicher
DATE	DESSINE	VERIFIE

<b>CRYO</b> DIFFUSION	49 Rue de verdun 27690 LERY Telephone 32 59 03 68 Telecopie 32 61 00 03	
	<b>T 3087</b>	<b>A</b>





# BR 2150 M



## SPECIFICATIONS:

Capacité 148 Litres  
Poids à vide 56 Kg  
Poids plein LN 174.5 Kg  
Perte journalière 0.65 L/jour

## SPECIFICATIONS:

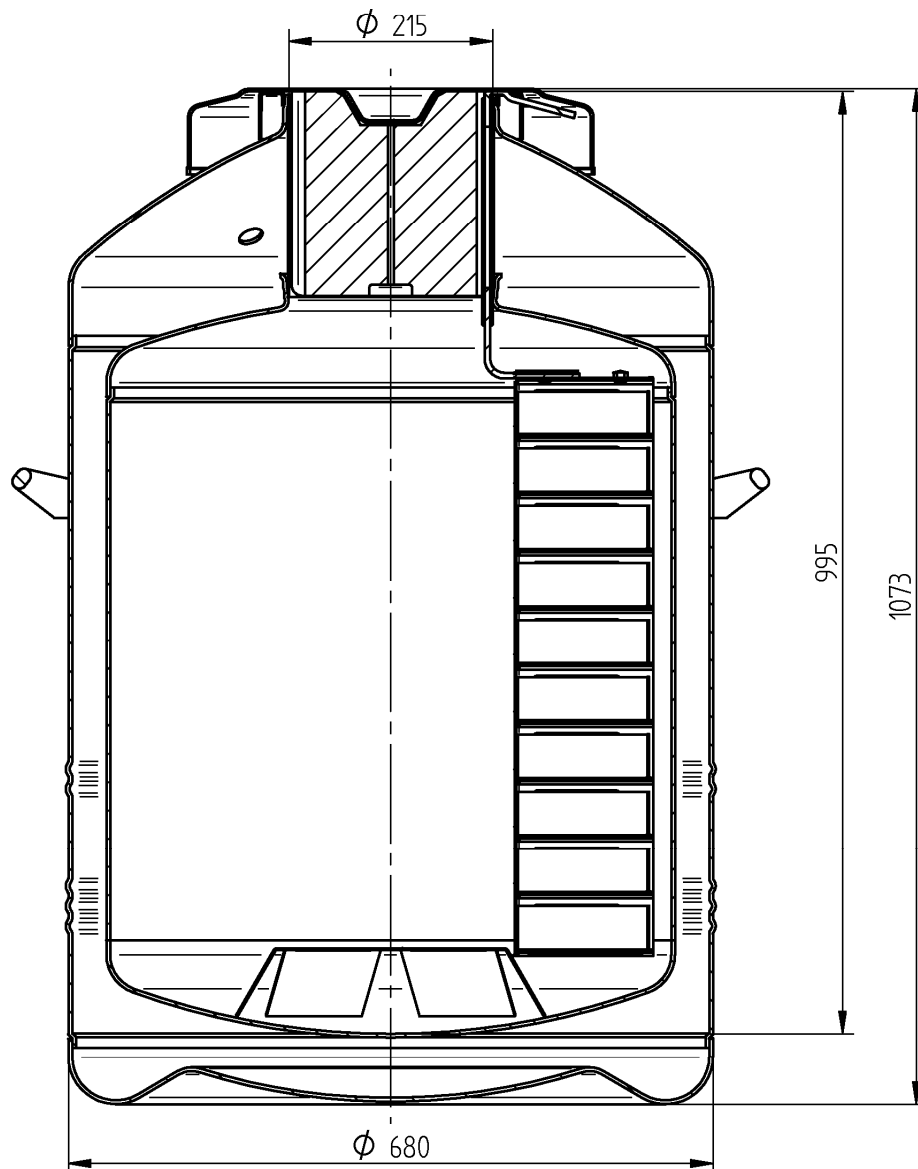
Capacity 148 Litres  
Weight empty 56 Kg  
Weight full LN 174.5 Kg  
Daily loss 0.65 L/day

08/03/00	Delisle	Leicher
DATE	DESSINE	VERIFIE

<b>CRYO</b> DIFFUSION	49 Rue de verdun 27690 LERY Telephone 32 59 03 68 Telecopie 32 61 00 03	
	<b>T 3088</b>	<b>A</b>



## BR 2200 M



### Spécifications :

Capacité	197	Litres
Poids à vide	62	kg
Poids plein LN2	221	kg
Perte journalière	0.65	L/jour

### Specifications :

Capacity	197	Litres
Weight empty	62	kg
Weight full LN2	221	kg
Daily loss	0.65	L/day

09/09/2009	cdavin	
DATE	DESSINE	VERIFIE
Cryo Diffusion S.A. 49, rue de Verdun 27690 LÉRY-FRANCE Phone : +33.2.32.59.03.68 Fax : +33.2.32.59.76.26 info@cryodiffusion.fr		
T4052		A





Réservoirs de la série BR  
Containers of the BR séries

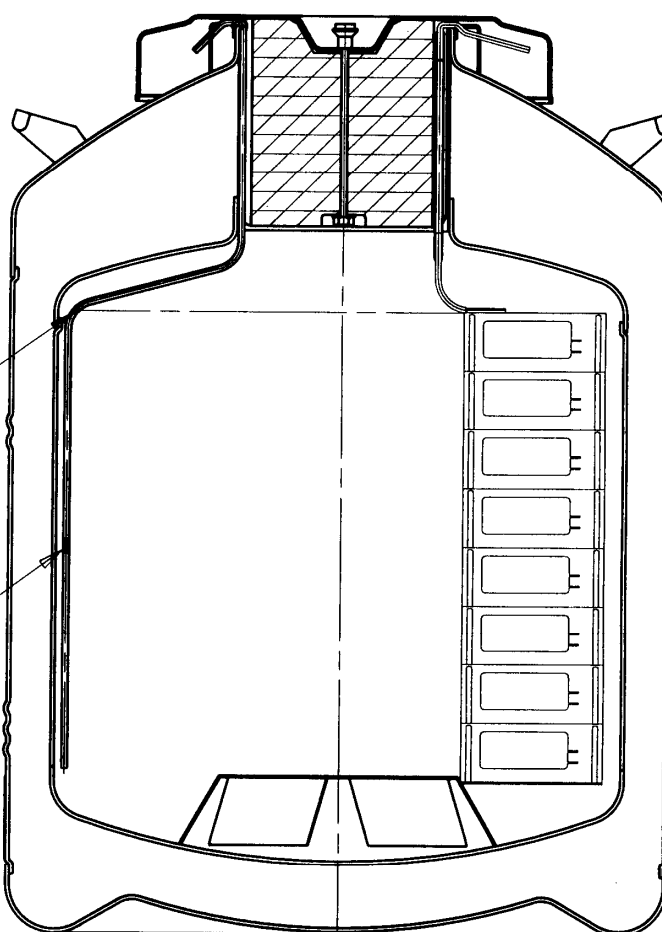
POSITIONNEMENT DES SONDES  
POSITION OF THE PROBES

**Position du  
capteur ITN 2003**

Position of the  
ITN 2003 sensor

**Position sonde  
du DEN**

Position  
of the DEN probe



23/10/03	Leicher	Leicher
DATE	DESSINE	VERIFIE

**CRYO**  
DIFFUSION

49 Rue de verdun  
27690 LERY  
Telephone 32 59 03 68  
Telecopie 32 61 00 03

**T 3447**

**A**