

**Hetofrig CL : -80°C Hetofrig chest freezers are characterized by... / Heto-Holten A/S.**

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Heto-Holten.

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# HETOFRIG CL

## *-80°C Hetofrig Chest Freezers are characterized by:*

**A wide working temperature range** to as low as  $-85^{\circ}\text{C}$  even when ambient temperature is above  $30^{\circ}\text{C}$ . The recommended temperature for Hetofrig is  $-85^{\circ}\text{C}$  to  $-45^{\circ}\text{C}$  ensuring long durability.

A temperature accuracy as good as  $\pm 0.7^{\circ}\text{C}$  gives an optimum temperature control.

**Storage volumes from 123 L to 420 L** permit the use of small freezers as satellite freezers. Suitable for preparation of cryogenic storage. The large storage volume gives a maximum cost-efficiency.

**Maximum safety:** All freezers are equipped with the most intelligent control and alarm system available today. It offers high safety, high flexibility, documentation of all important parameters and is still easy to operate by use of a touch sensitive membrane panel.



# HETOFRIG CL

**Control system:** consists of two independent controllers – a master and a back-up. The freezer temperature is constantly monitored and controlled, and a comprehensive self-check routine is carried out at short, regular intervals, checking the temperature sensors, compressors, mains power, battery voltage, CO<sub>2</sub> vessel content and the function of the back-up controller.

When detecting a fault, the system immediately starts the alarm and, in case of a faulty controller, switches over to the operative controller. 12 possible sources of errors are checked and diagnosed.

A powerful self-charging battery back-up ensures that all important information is available, even after 72 hours' power failure.

**Alarm system:** consists of an acoustic and a visual alarm. Connection to external alarm possible. Memory for several sets of alarms, each comprising type, date and time of the alarm, as well as the highest freezer temperature during each alarm state. The acoustic alarm can be interrupted by a password. This is particularly useful on freezer start up or during long loading or unloading periods, when the door is open, thus avoiding unnecessary alarm signal.



**Touch Sensitive Membrane Panel:** The freezer system is operated through a touch sensitive membrane panel which offers easy cleaning with a smooth wipe surface.

All temperature settings are protected by a password preventing unauthorized temperature changes.

Set points for operating temperatures, alarm, CO<sub>2</sub> back-up and pre-freezing are built in with pre-set values, and give safety against impracticable settings.

The unique pre-freeze function raises the alarm and CO<sub>2</sub> back-up temperatures to a selected level for a limited, selectable period of time to avoid activating the alarm when loading large volumes of unfrozen material.



#### Printer:

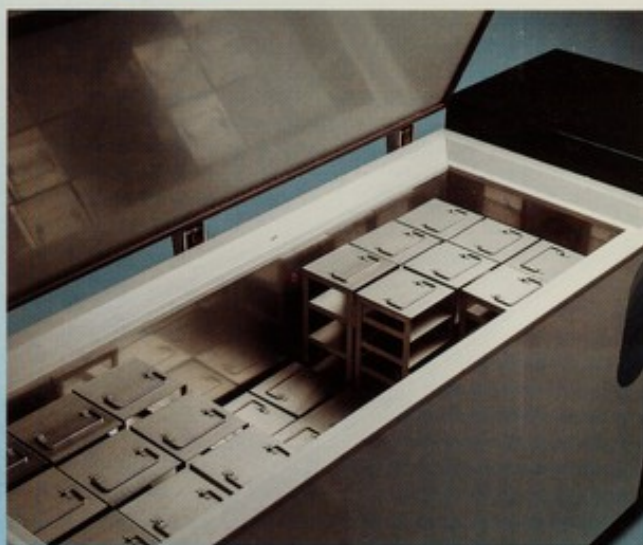
An alpha-numeric data printer is available as an accessory (cat. No. 868310). The printer enables full documentation of cabinet temperature, time, date, and control parameter settings. It prints the time/date and diagnoses for the alarms as well as the max. temperature during alarm.

A paper reeler for the data printer is also available (cat. No. 868311).



#### Test button:

A test button allows checking of the alarm systems and the CO<sub>2</sub> back up without opening the freezer door as required by the FDA authorities.



#### Insulation

The insulation of the freezers is 80 mm foam-in-place polyurethane on all sides, which gives minimum uptake of heat from the surroundings, saving energy, extending the durability of the compressors and offering a maximum temperature accuracy ( $\pm 0.7$  °C).

It gives minimum CO<sub>2</sub> consumption during power failure and hence extends the time the products can be kept at a safe temperature. Normal CO<sub>2</sub> consumption at room temperature is less than 1 kg CO<sub>2</sub>/hour. The CL 4008 E is covered with stainless steel plates (AISI 316) inside the box for easy cleaning and maintenance as well as high durability.



#### CO<sub>2</sub> back-up:

A CO<sub>2</sub> back-up system is available as an accessory (cat. No. 003425) installed in the compressor compartment of the freezer. The CO<sub>2</sub> back-up system is fully controlled and monitored through the control system. CO<sub>2</sub> back-up temperature level and flow regulation are selected through the control system. Alternatively LN<sub>2</sub> can be used as a refrigerant.

Balance for CO<sub>2</sub> vessel is also available as an accessory (cat. No. 868320). It ensures precise control of CO<sub>2</sub> vessel content and max. safety to the products.



#### Refrigeration system:

Powerfull, step-starting Danfoss compressors ensure fast start-up. The step-starting function eliminates initial loading procedures, reduces power drain and extends the life of the compressor.

The refrigeration system is a cascade, air-cooled, hermetically sealed system. It works even at temperatures exceeding 30 °C. If ambient temperature constantly exceeds 32 °C, water-cooled refrigeration is recommended. Water-cooled refrigeration freezers available on request.



#### Lock:

The very strong key system on the CL 4008 E lock ensures safe storage of valuable products.

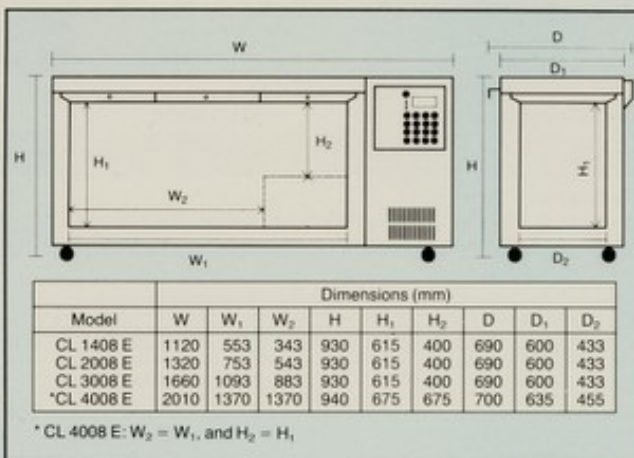
# -80 °C CHEST FREEZER



## Cryo storage system

A new generation of cryo storage racks is available for storage in the 80 °C freezers. The rack are easily assembled with strong extension nuts and can be disassembled when needed. This gives possibilities to:

- have different cryo box sizes in the same cryo rack, giving an optimum use of the whole rack.
- change from e.g. 2" cryo box to 3" without the need of investing in other rack sizes.



## Cryo storage system

Cat. No.	Designation	Description	Dim., mm	Freezer model
003349	CL-flex-1	Cryo including hand grip, bottom and extension clips	D137 × W137 × H348	1408-3008
003348	CL-flex-2	Cryo rack including hand grip, bottom and extension clips	D137 × W137 × H600	1408-4008
003362	CLH	Shelves for racks	D137 × W137	
336106	CLC	Extra extension clips made of stainless steel. 20 pcs.		

## Cryo racks with boxes ( ) = with 1 shelf per 3 boxes

Rack	Suits Heto Freezer	Max. no of racks	Max. cryo boxes in each rack				
			CLB-5	CLB-7	CLB-10	CLP-5	CLP-7
CL-flex-1	CL 1408	9	6	4	3	6	4
	CL 2008	12					
	CL 3008	21	(5)	(3)	(3)	(5)	(3)
CL-flex-2	CL 1408	6	11	8	5	11	8
	CL 2008	9					
	CL 3008	18					
	CL 4008	27	(10)	(7)	(5)	(10)	(7)

## Cardboard cryo boxes

Cat. No.	Designation	Description	Dimensions, mm
801040	CLB-5	2 7/8 cm cardboard cryo box without insert	D135 × W135 × H50
801041	CLB-7	3 7/8 cm cardboard cryo box without insert	D135 × W135 × H70
801042	CLB-10	4 7/10 cm cardboard cryo box without insert	D135 × W135 × H100

## Plastic cryo boxes

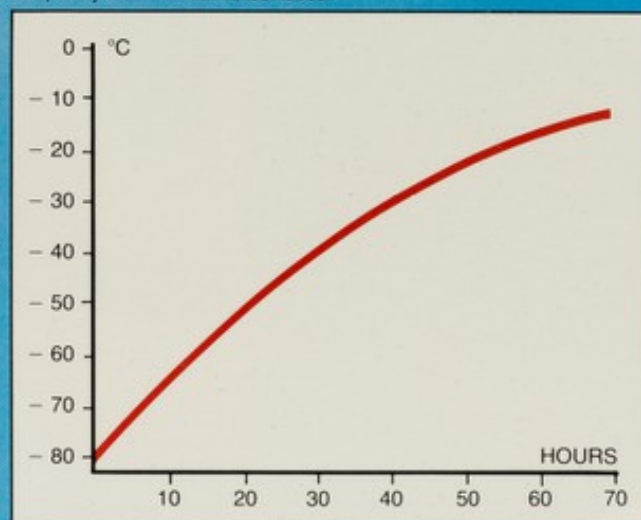
Cat. No.	Designation	Description	Dimensions, mm
822541	CLP-5	2 7/8 cm cryo box incl. insert for 100 2 ml cryo tubes and identification labels	D135 × W135 × H50
822555	CLP-7	3 7/8 cm cryo box incl. insert for 100 2 ml cryo tubes and identification labels	D135 × W135 × H70

## Cardboard inserts

Cat. No.	Designation	Description	Tube volume, mL
822565	CLB I 49	Cardboard insert for 49 cryo tubes	10.0
822544	CLB I 64	Cardboard insert for 64 cryo tubes	4.5
822543	CLB I 81	Cardboard insert for 81 cryo tubes	3.6
822542	CLB I 100	Cardboard insert for 100 cryo tubes	1.0, 1.8

## Illustration of the temperature raise in a CL 3008 E without CO<sub>2</sub> back-up

The curve shows the temperature raise in a freezer containing 92 L of water. 92 litres is equivalent to the maximum net volume when the freezer is completely filled with 10 mL test tubes.



## -80 °C Freezers

Heto offer a wide range of -80 °C freezers in upright and chest-freezer versions. The upright freezer offers a total volume of 460 litres. All

freezers are equipped with the intelligent control and alarm system. (Please contact us for further information).

# HETOFRIG CL



Technical specifications:	CL 1408 E		CL 2008 E		CL 3008 E		CL 4008 E	
Cat. No.	003401	003451	003402	003452	003403	003453	003404	003454
Temperature range, °C	-85 to -45							
Temperature accuracy, °C	±0.7							
Storage volume, L	123		178		268		420	
External dimensions D×W×H, mm	690×1120×930		690×1320×930		690×1660×930		700×2010×940	
Internal dimensions D×W×H, mm	*433×553×615		*433×753×615		*433×1093×615		455×1370×675	
Refrigeration 2 Danfoss Compressors	SC 10C		SC 12C		SC 15C		SC 18C	
Refrigerant	R 502/R 170							
Internal material	Teflon coated steel						Stainless steel (AISI 316)	
External material	Painted steel						Painted steel	
							Lid of stainless steel (AISI 316)	
Insulation	80 mm polyurethane foam on all sides							
Power consumption, average W	300		380		480		440	
Power, V/Hz	220/50	115/60	220/50	115/60	220/50	115/60	220/50	115/60
Weight, kg	110		117		132		170	

\* See the illustration on page 3.

## Accessories:

Cat. No.	Description
868310	Alpha-numeric data printer
868311	Paper reeler for printer
868312	Paper roll for printer, one piece
868313	Ink ribbon for printer
868320	Balance for CO <sub>2</sub> vessel
003425	CO <sub>2</sub> back-up kit incl. all connections and 12 V battery back-up

Please ask for our separate leaflet on accessories.

## Heto are experts in temperature regulation and control.

Today, Heto has a wide range of products, covering a broad field of applications.



Thermostats Water baths Cooling baths Shaking baths	-40°C, -80°C freezers Plasma freezers	Laboratory freeze dryers Vacuum concentrators	Industrial freeze dryers
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(Please contact us to get our separate catalogue)

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Heto reserves the right to make changes without notice!