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HETOFRIG CL410



-80 °C, 460 litres Upright Freezer is characterized by:

Maximum storage volume: of 415 litres, total volume being 460 L on 0.75 m² of floor space only.

Convenient to use – easy access to products through a unique draw-shelf system.

Minimum maintenance – maximum energy saving thanks to a heavy insulation and an efficient refrigeration system.

Maximum safety: – simple to operate via the touch sensitive membrane panel. The freezer is equipped with the most advanced microprocessor control and alarm system available today.

All commonly required parameters for running temperature and alarm limits are preset requiring no further adjustment unless specifically needed.



HETOFRIG CL410

-80 °C

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 with short, regular intervals, checking the temperature sensors, compressors, mains power, battery voltage, CO₂ 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 error 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 for 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 freeze start up or

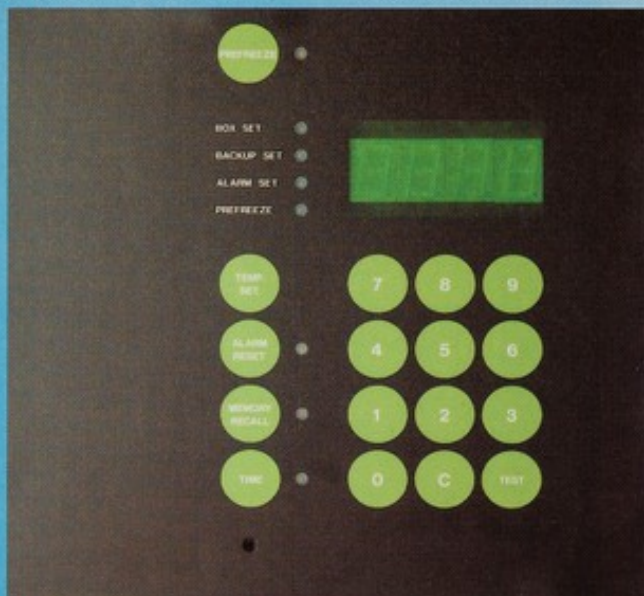
during long loading or unloading periods, when the door will be open, thus avoiding unnecessary alarm signal.



Printer:

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

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



Touch Sensitive Membrane Panel:

The freezer system is operated through a touch sensitive membrane panel with a smooth wipe surface.

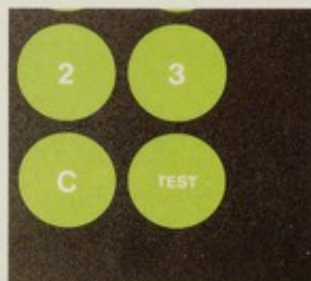
All temperature settings are protected by a password preventing unauthorized temperature changes.

Set points for operating temperatures, alarm, CO₂ back-up and pre-freezing are built-in with

pre-set values, and give safety against impractical settings.

Pre-freeze function:

The unique pre-freeze function raises the alarm and CO₂ 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.



Test button:

A test button allows checking of the alarm systems and the CO₂ back-up without opening the freezer door as required by the FDA authorities.



Refrigeration system:

The refrigeration system is a cascade, air-cooled, hermetically sealed system. Powerful step-starting Danfoss compressors ensure fast start-up. The step-starting function eliminates initial loading procedures, reduces power

drain and extends compressor life.

The system works in an excellent way even when the voltage variation exceeds $\pm 15\%$. It works at 30 °C and if ambient temperature constantly exceeds 32 °C, water-cooled refrigeration is recommended. Available as standard accessory.



Door Sealing:

The door sealing is a unique seal with 3 flanges. The rubber seal remains soft – even at temperatures inferior to -90 °C, thus ensuring minimum loss of cold to the surroundings and avoiding ice crystal formation. Should the door seal happen to be damaged, it can easily be replaced.

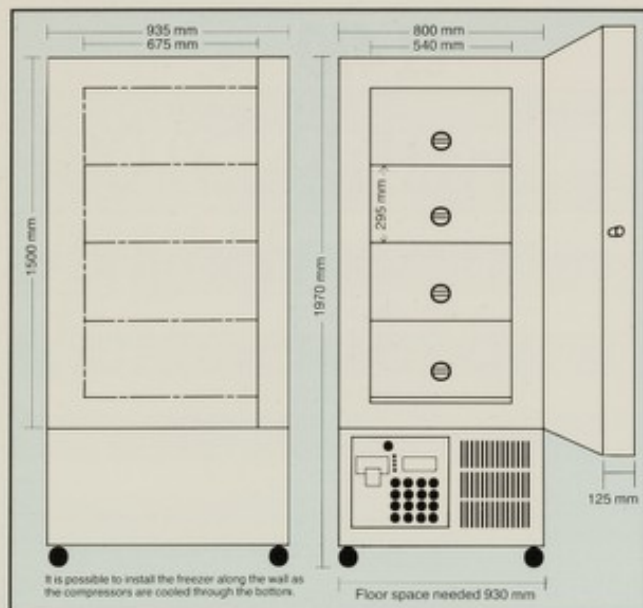


Insulation:

The insulation of the freezer is 125 mm foam-in-place polyurethane on all sides, which means minimum uptake of heat from the surroundings, saving energy, extending the durability of the compressors, and offering maximum temperature stability (± 0.5 °C).

It gives minimum CO₂ consumption during power failure and hence extends the time the products can be kept at a safe temperature. Normal CO₂ consumption at room temperature: Aprox 1-2 kg CO₂/hour.

460 LITRES UPRIGHT FREEZER



Cryo storage system

A new generation of cryo storage racks is available for storage in the -80°C freezers. The racks 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 optimum use of the whole rack.
- change from e.g. 2" cryo box to 3" without the need of investing in other rack sizes.

The Heto cardboard or plastic boxes fit the racks perfectly, minimizing the dead volume in the racks and in the freezer. The most cost-effective solution available today.



Vacuum release:

The automatic vacuum release system quickly equalizes the pressure in the freezer with the surroundings giving an easy opening of the door.



One-hand operation:

The door lock is made of stainless steel and is operated with one hand. It ensures perfect door-sealing and a key lock ensures safe storage of valuable products.



CO₂ back-up:

A CO₂ back-up system is available as an accessory (cat. No. 003360). The CO₂ back-up system is fully controlled and monitored through the control system. CO₂ back-up temperature level and flow regulation are selected through the control system.

Balance for CO₂ vessel is also available as an accessory (cat. No. 868320). It ensures precise control of CO₂ vessel content and max. safety for the products.

Sliding shelves:

The shelves are constructed so that they can be used as fixed shelves. A simple lock system opens the door to the shelf.

The shelves can also be easily drawn more than halfway out of the freezer thanks to a rail system enabling easy access even to the products stored on the rear of the shelves.

This makes loading and unloading of sample very easy and saves a lot of time and trouble in routine use.

The shelves are made of stainless steel (AISI 316). The four shelves are standard equipment.



-80°C Freezers

Heto offer a wide range of -80°C Freezers in upright and chest-freezer versions. The chest-freezer range comprises volumes from 123

to 420 litres. All freezers are equipped with the advanced control and alarm system. -40°C chest freezers are also available. (Please contact us for further information).



HETOFRIG CL 410

Technical specifications	Model:	CL 410	
Cat. No.		003405	003355
Temperature range,	°C	-85 to -45	
Temperature stability,	°C	±0.5	
Uniformity,	°C	±1	
Storage volume/Total volume,	L	415/460	
External dimensions D×W×H,	mm	935×800×1970	
Internal dimensions D×W×H,	mm	675×540×1500	
Shelf dimensions D×W×H,	mm	615×510×300	
Refrigeration		2 Danfoss Compressors SC 18 C, Cascade	
Refrigerant		R502/R170	
Internal material		stainless steel (AISI 316)	
External material		painted steel	
Insulation		125 mm polyurethane foam on all sides	
Power consumption, average,	W	600	600
Power consumption, max.,	W	1300	1300
Power,	V/Hz	115/60	220/50
Weight,	Kg	294	

NB! The freezer is as standard delivered with a right-hand door. But the construction of the freezer enables an easy change from right-hand to left-hand door, which gives you a greater flexibility when deciding where to install the freezer.

Accessories

Cat. No.	Description
868310	Alpha-numeric data printer
868311	Paper reeler for printer
868312	Paper roll for printer, one pc.
868313	Ink ribbon for printer
003360	CO ₂ connection kit incl. all connections and 12 V battery back-up
868320	Balance for CO ₂ vessel
003361	CL-flex-0 for upright freezer CL 410. Includes hand grip, bottom and extension clips Dim: D137 × W137 × H285 mm
003362	One shelf for cryo storage racks, excl. clips Dim: D137 × W137 mm
336106	Extension clips for 10 shelves, made of stainless steel
801040	CLB-5 2"5 cm cardboard cryo box without insert Dim: D135 × W135 × H50 mm
801041	CLB-7 3"7 cm cardboard cryo box without insert DIM: D135 × W135 × H70 mm

Cat. No.	Description
801042	CLB-10 4"10 cm cardboard cryo box without insert Dim: D135 × W135 × H100 mm
822565	CLB I 49 cardboard insert for 49 cryo tubes
822544	CLB I 64 cardboard insert for 64 cryo tubes
822543	CLB I 81 cardboard insert for 81 cryo tubes
822542	CLB I 100 cardboard insert for 100 cryo tubes
822541	CLP-5 2"5 cm plastic cryo box for 100 cryo tubes Dim: D135 × W135 × H50 mm
822555	CLP-7 3"7 cm plastic cryo box for 100 cryo tubes Dim: D135 × W135 × H70 mm
822535	PRS 13 test tube rack for 13 mm tubes, D102 × W102 mm
822536	PRS 16 test tube rack for 16 mm tubes, D126 × W126 mm
822537	PRS 20 test tube rack for 20 mm tubes, D128 × W103 mm
822539	PRS 25 test tube rack for 25 mm tubes, D122 × W122 mm
822556	PRS 30 test tube rack for 30 mm tubes, D109 × W109 mm

Heto
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Cat. No. 620011

Heto reserves the right to make changes without notice!