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**GRAM**  
 Biostorage you can depend on

## User manual - BioCompact / BioCompact II

Models: 210, 310, 410, 210/210, 610



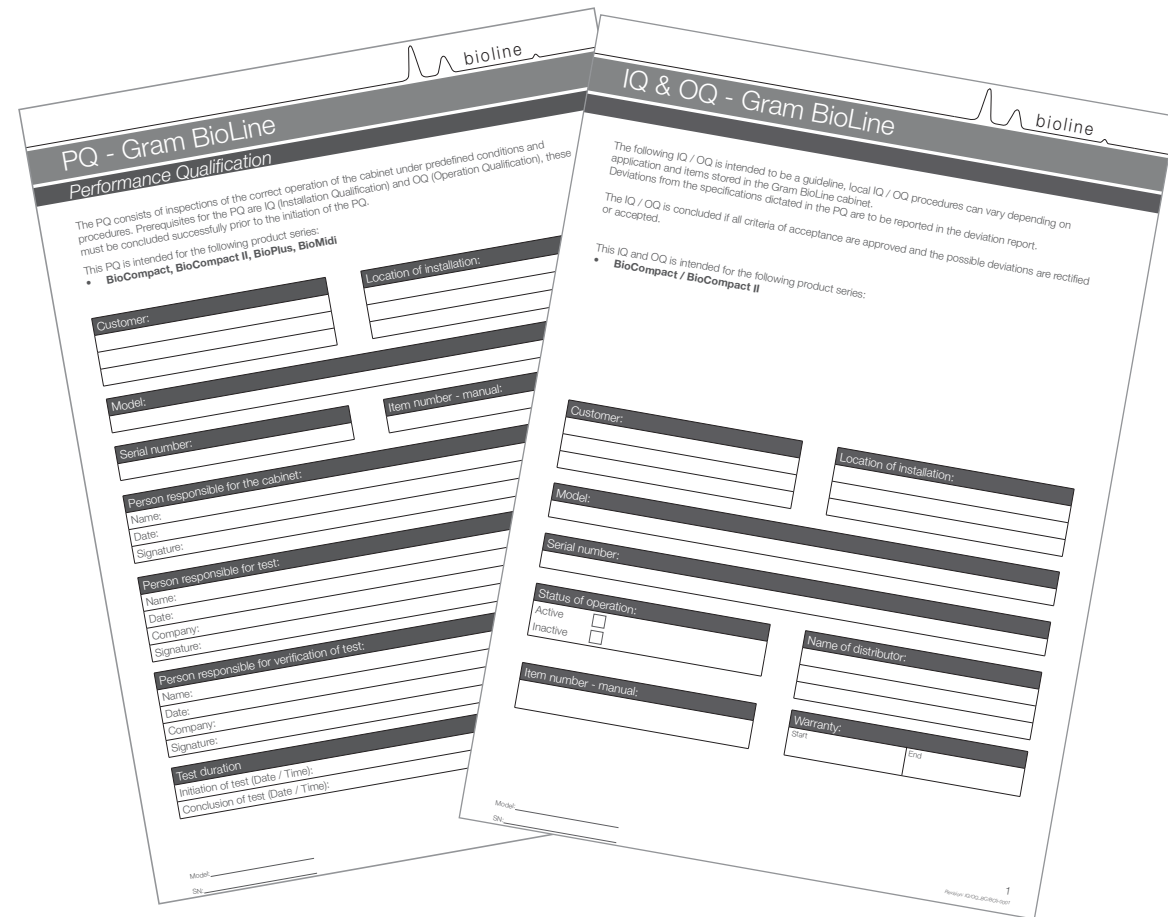
Original User manual

Item nr. 765041505  
 Revision nr. 14-12-14  
 English

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# GMP Documentation

## IQ, OQ & PQ

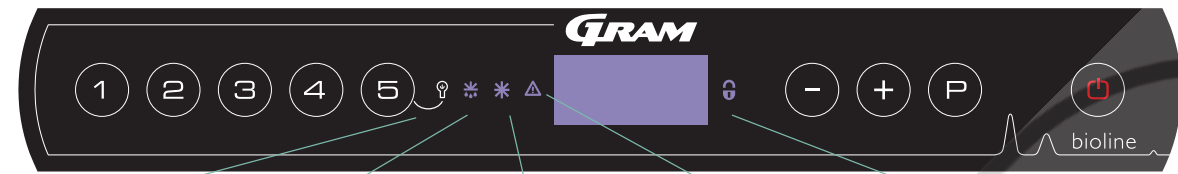


IQ, OQ and PQ documentation is readily available for all BioCompact II and BioCompact cabinets.

For Installation-, Operation- and Performance-Qualification documentation please go to our website.

## Quick Guide - BioCompact II

This applies to BioCompact II, please refer to the user manual for a guide to setting parameters for BioCompact.



Lighting setting (glass door models)    Defrost is running    Feature is not available    Low-temperature protection is or has been activated    Key pad lock is activated

### On/Off

Press the **⏻** button to turn the cabinet on. Press the **⏻** button for 6 seconds to turn the cabinet off. The software version of the cabinet will be shown when turning the cabinet on, followed by the variant and a displaytest.

The cabinet is ready when the temperature is displayed. The cabinet will automatically start a defrost-cycle when turned on, and terminate it again after a system check.

### Setting the temperature

Temperature adjustments are done by holding the **P** button and pressing either **-** or **+**. Confirm the settings by letting go of the buttons.

### Lighting inside the cabinet - Only applicable to BioLine cabinets with glass doors -

The settings for the lighting inside the cabinet can be turned off by pressing and holding **5** for 3 seconds.

There are two settings:   
 1) Light turns on when the door is open (off when closed)   
 2) Light is always on

### User menu and alarm settings

Menu Access	⏻ + 1 →	↵	→	↵	→	↵	
Local alarm settings	LAL	LHL	[° C]	Upper temperature limit. Code for activated alarm [A2]			
		LLL	[° C]	Lower temperature limit. Code for activated alarm [A3]			
		LHd	[min.]	Delay of upper temperature limit			
		LLd	[min.]	Delay of lower temperature limit			
		dA	On/off	Door alarm. Code for activated alarm [A1]. [1=on / 0=off]			
		dAd	[min.]	Delay of door alarm.			
		bU	On/off	Acoustic signal for alarm codes [A1], [A2] and [A3]. [1=on / 0=off]			
	Calibration of sensors	CAL	CA	[° K]	Offset setting for A-sensor. Reference sensor for the refrigeration system		
			CE	[° K]	Offset setting for E-sensor. Reference sensor for the display and alarms		
			CF	[° K]	Offset setting for F-sensor. Reference sensor for the low-temperature protection		
Low-temperature protection	FP	ACt	On/off	Activation/deactivation of low-temperature protection			
		tES	On	Test of low-temperature protection			
		SEt	[° C]	Setting of the cut-off temperature for the low-temperature protection			
		PrE	[...]	Read out of the real-time temperature of the F-sensor			
		ALL		Activation of escorted alarm limits. [FAS]= locked limits / [ESC] = follows setpoint			
		dEF		Number of defrosts per 24 hours			
		dPS		Reference sensor for the display (A, E or F).			

### Example: Setting the upper limits for the alarms; LHL

- ↳ Press and hold **⏻ + 1** until the display shows LAL
- ↳ Press **⏻** to select LAL, LHL is now shown in the display
- ↳ Press **⏻** to select LHL, 25 is shown in the display
- ↳ Press **-** or **+** to set the desired value for the upper temperature limit
- ↳ Press **⏻** to confirm the set value
- ↳ Press **⏻** to return to LAL
- ↳ Press **+** to reach the next level, LLL
- ↳ LHd, LLd, dA, dAd and bU are located on the same level
- ↳ Press **⏻** three times to leave the user menu

## Quick Guide - BioCompact II



### Alarms

Alarm codes	A1	A2	A3
	Door alarm	The upper alarm limits, (LHL) is or has been activated	The lower alarm limits, (LLL) alarm is or has been activated

### Cancelling an acoustic alarm

Cancelling a door alarm: [A1] flashes in the display. Press **⏻** to cancel.

Cancelling a temperature alarm: [A2 and/or A3] Flashes in the display. Press **⏻** to cancel.

The display will continue to flash if the temperature is outside the alarm limits, and will continue until the temperature has recovered.

### Reading Max/Min temperature

Read the highest recorded temperature inside the cabinet by holding down **+**. Read the lowest recorded temperature inside the cabinet by holding down **-**.

### Reading the alarm history - Example [A2]

[A2] flashes in the display - This means that the temperature has exceeded the set value for the upper temperature limit, LHL. Press **⏻** to cancel the [A2]. The display continues to flash, indicating that there is information in the alarm history. Press **+**, Htt (High temperature time) is shown, press **⏻** to see for how long the temperature was above the set alarm limit. Press **⏻** to return to Ht. Press **+** to reach Ht (Highest temperature). Press **⏻** to read the highest recorded temperature during Htt. Press **⏻** to return to Ht and press **⏻** again to leave the alarm history function.

The procedure for reading an [A3] alarm is identical, apart from entering the alarm history with the **-** button. When reading out temperatures below set limits, the parameters are Ltt and Lt.

A flashing display with no alarm codes indicates that the alarm codes have been canceled, but the alarm system contains information.

### Resetting Max/Min and alarm history

Resetting of the Max/Min and alarm history is done by holding **-** and **+** for more than 3 seconds, an acoustic signal will be given when reset is complete.

### Sensor read-out and error codes

Menu Access	⏻ + ⏻ →	↵	⏻ → [° C]	Display code and its message
Sensor for refrigeration system	P-A	Value on sensor for refrigeration system	F1	Error on sensor for refrigeration system
Sensor for evaporator	P-b	Value for evaporator sensor	F2	Error on evaporator sensor
Sensor for condenser	P-C	Value for condenser sensor	F3	Error on condenser sensor
Sensor 2 for condenser	P-d	Value for condenser sensor 2	F4	Error on condenser sensor 2
Sensor for display and alarms	P-E	Value for display and alarm sensor	F5	Error on sensor for display and alarm
Sensor for low-temperature protection	P-F	Value for low-temperature protection sensor	F6	Error on sensor for low-temperature protection
An overheated condenser can be caused by a clogged condenser - clean the condenser			F7	Overheated condenser
Open door indicator. Alarm [A1] will activate if the door is open longer than alarm limits.			-0-	Door open

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# Operating instructions

## Before you proceed

Make sure to read the user manual through thoroughly before using the cabinet for the first time.

Your feedback is much appreciated, feel free to email us at: [info@gram-bioline.com](mailto:info@gram-bioline.com)

## Before You proceed

This user manual is intended for the following product series: **BioCompact & BioCompact II**

We recommend that you read this user manual through thoroughly before using the cabinet for the first time. Gram Commercial A/S does not guarantee safe operation if the cabinet is used for anything other than its intended use. Contents of the manual can be subject to change without notice. No part of this manual may be reproduced in any form without expressed written consent of Gram Commercial A/S. Gram Commercial A/S guarantees the cabinet under certain warranty conditions. Gram Commercial A/S is in no way responsible for any loss or damage of content.

This manual should be considered an integral part of the cabinet, and should be stored close to the cabinet and be easy to access. If the manual is lost, please refer to your local distributor or Gram Commercial A/S for a replacement. For current versions of the manual, please go [www.gram-bioline.com](http://www.gram-bioline.com).

## Symbols used throughout the manual



Hazard



Risk of electric shock



Risk of material damage



Risk of personal injury



Risk of burning / freezing



Info

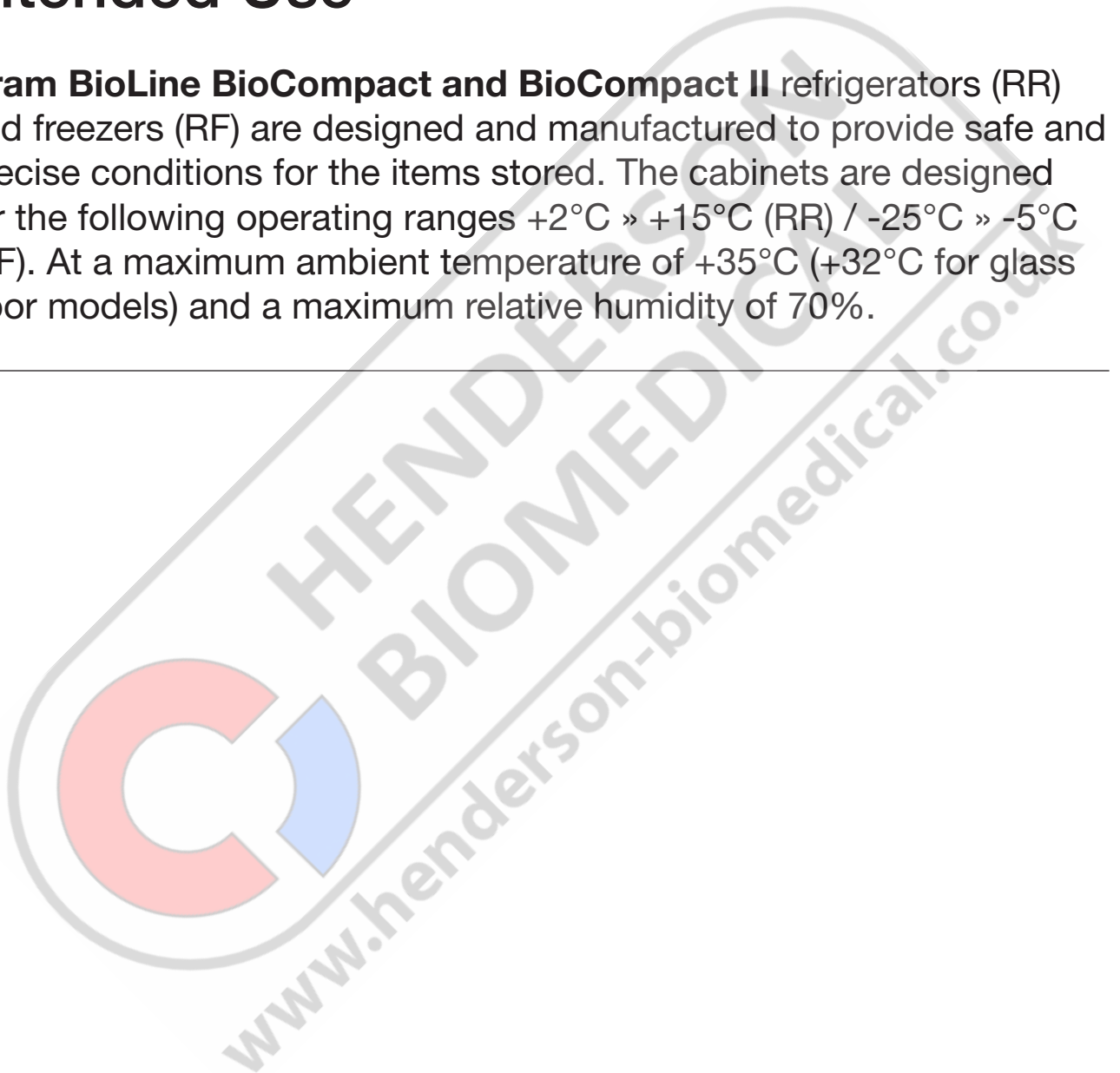
# Safety



Intended use	

## Intended Use

**Gram BioLine BioCompact and BioCompact II** refrigerators (RR) and freezers (RF) are designed and manufactured to provide safe and precise conditions for the items stored. The cabinets are designed for the following operating ranges  $+2^{\circ}\text{C} \gg +15^{\circ}\text{C}$  (RR) /  $-25^{\circ}\text{C} \gg -5^{\circ}\text{C}$  (RF). At a maximum ambient temperature of  $+35^{\circ}\text{C}$  ( $+32^{\circ}\text{C}$  for glass door models) and a maximum relative humidity of 70%.



# Installation

## Setting up

This part of the manual describes how to set up the cabinet.

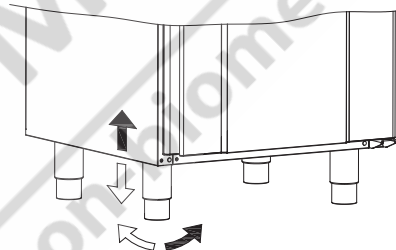
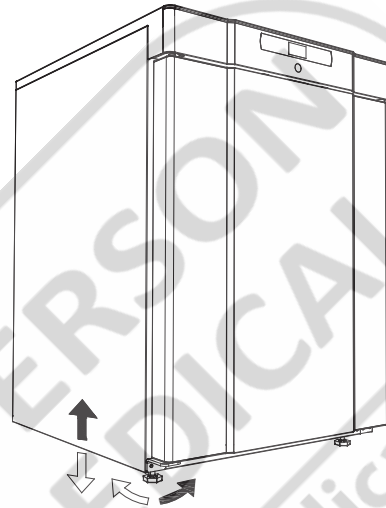
This part of the manual describes how to adjust legs / castors on the cabinet.

Due to safety and operating reasons, the cabinet must not be used outdoors. The cabinet should be installed in a dry and sufficiently ventilated area. To ensure efficient operation, the cabinet should not be installed in direct sunlight or close to heat sources.

Cabinets equipped with legs should be levelled as shown in the illustration below.

NB. The cabinets optimal operating range is:

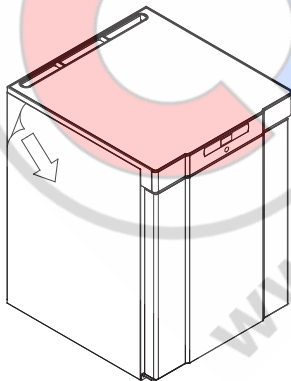
Cabinet	Minimum ambient operating temperature	Maximum ambient operating temperature
<b>BioCompact 210, 310, 410, 210/210</b>		
RR with solid door: +10/+35 °C	+10 °C	+35 °C
RR with glass door: +10/+32 °C	+10 °C	+32 °C
RF: +10/+35 °C	+10 °C	+35 °C
<b>BioCompact II 610</b>		
RR with solid door: +10/+43 °C	+10 °C	+43 °C
RR with glass door: +10/+38 °C	+10 °C	+38 °C
RF: +10/+43 °C	+10 °C	+43 °C



Avoid placement of the cabinet in a chloric/acidic environment due to risk of corrosion.



The cabinet is shipped with a protective film that should be removed prior to use.



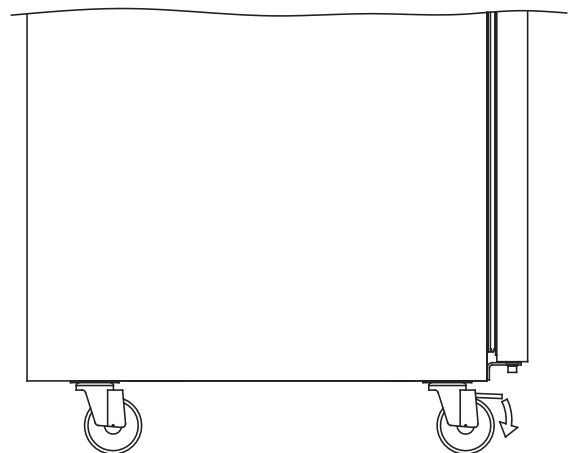
For cabinets equipped with castors, the floor must be level to ensure stable positioning and safe use. When the cabinet is positioned, the 2 front castors should be locked.



Clean the cabinet with a mild soap solution prior to use.



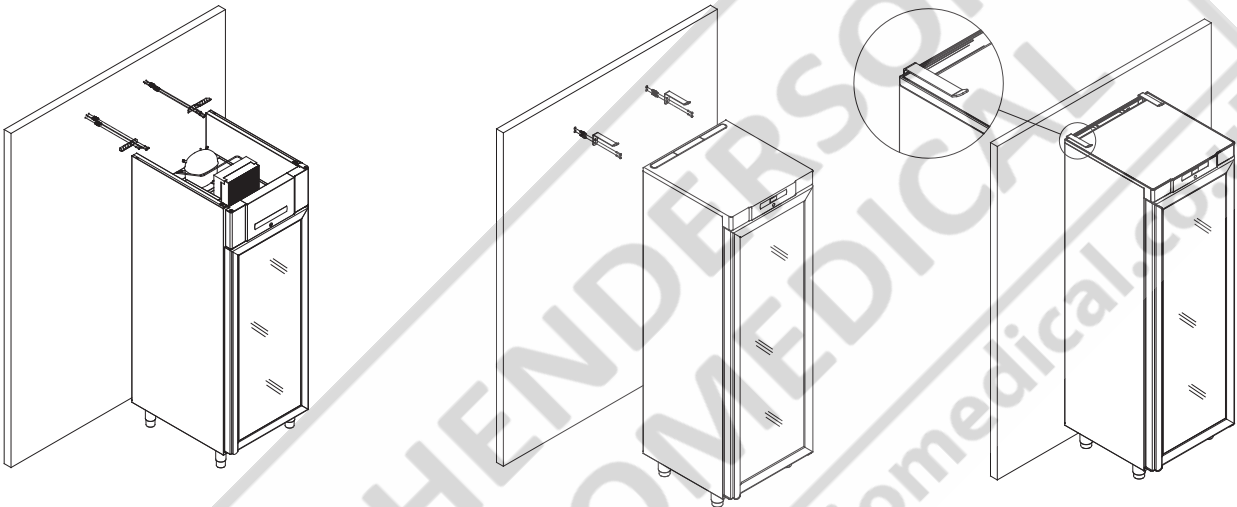
If the cabinet has been laying down (ex. during transport). Then the cabinet must stand up-right for 24 hours prior to use, This enables oil in the compressor to run back into place.





Cabinets with drawers and / or glass door must be secured to a stable vertical surface, ensuring that the cabinet can not tip over when the drawers are drawn to the outermost position, or the door is open. Brackets for securing is included.

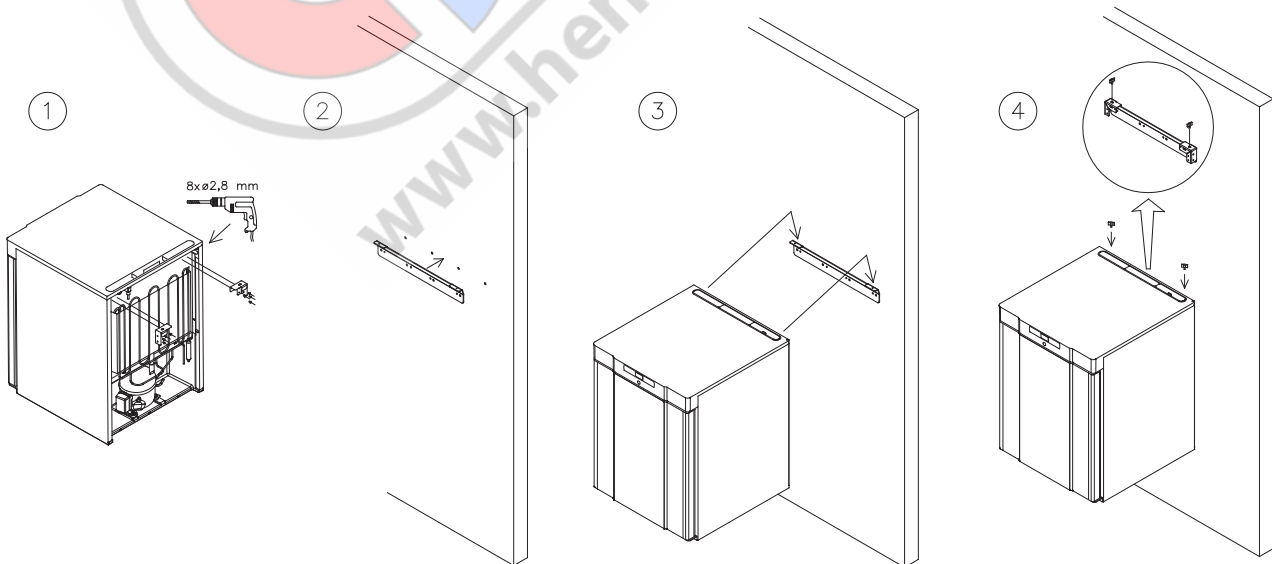
Find the instructions for the tilt bracket below.



The anti-tilt brackets must be fitted when installing the cabinet, ensuring that the users, surroundings and stored items are not damaged by a tilting cabinet.



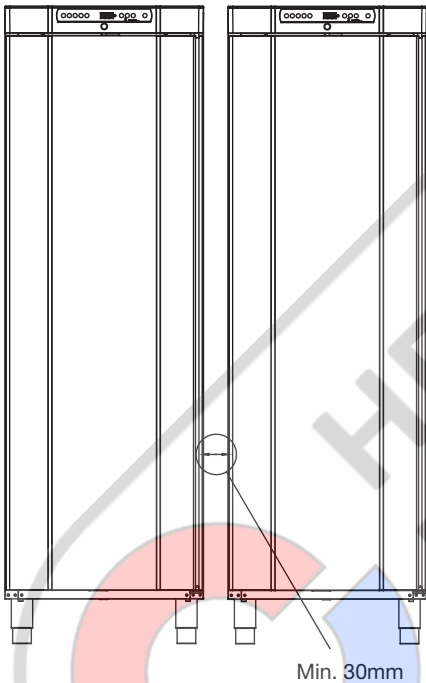
Find instructions on wall mounting of a BioCompact 210 below, the same procedure applies for mounting 310, 210/210 and 410



The cabinet must always be placed max. 75 mm from the wall while in use. It is optimal to install the cabinet as close to the wall as possible.



There must be at least a 30mm gap between cabinets.



Do not cover the upper part of the cabinet.



Do not use electrical appliances inside the cabinet.



The cabinet is not suited for storing items that emit vapours, as they might corrode the cabinet and its components.



All items in the cabinet that are not encapsulated, or wrapped, should be covered to reduce the risk of corrosion of the cabinet and its components.



A visual inspection of the cabinet must be conducted prior to putting the cabinet into service. Check the cabinets structural integrity, that door frames and doors don't have deformities, that gaskets seal properly and that the doors sit flush up against the door frame.





## Voltage-free contact

This part of the manual covers the voltage-free contact.

The illustration below shows the three connectors for the relay (used ex. in connecting to CTS or other external monitoring systems). The three connections, are respectively. Common, NO and NC.

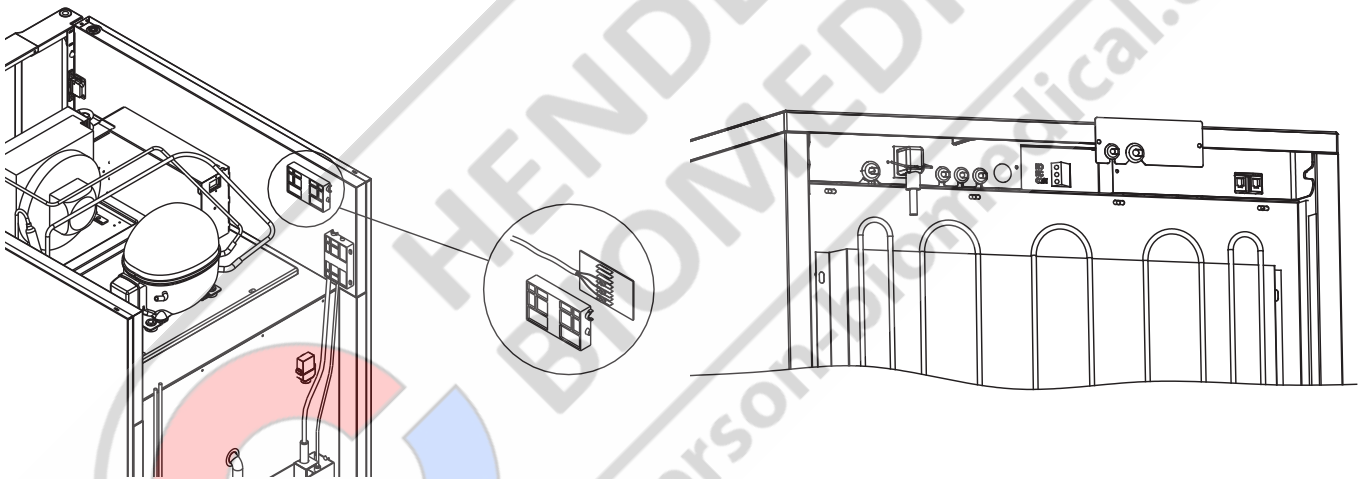
The moment when voltage is applied the controller draws the relay, this makes it possible for the controller to respond to both high and low temperature alarms, door alarms and power failures. Temperature alarms and door alarms must be configured in the external alarm settings (EAL) before they will activate the voltage-free contact. Find instructions on setting external alarms in the Parameter settings section.

**BioCompact II 610:** As seen below to the left

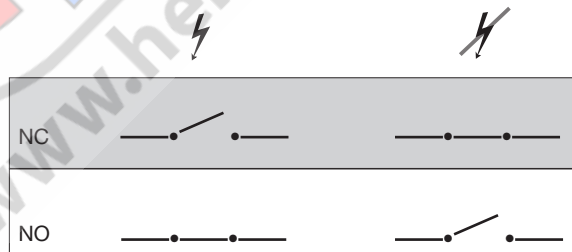
The wires that are connected in the connection block for the voltage-free contact, are secured in place by the press-fit plate that is pressed onto the block, thereby also preventing access to the electrical circuit.

**BioCompact 210, 310, 210/210, 410:** As seen below to the right

The wires that are connected in the connection block for the voltage-free contact, are secured in place by a securing plate that is screwed in place, this secures that there is not tension on the connection block and prevents access to the electrical circuit.



Connection of the voltage-free contact should be done by a qualified installer.



## Mechanical low temperature protection

*This part covers mechanical low temperature protection*

*The illustrations below depicts the locations of the low temperature protection on the different kinds of cabinets in the BioCompact / BioCompact II range.*

- Only applicable to models with mechanical low temperature protection -

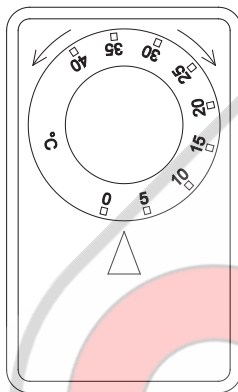
Mechanical low temperature protection is an independent module that is connected to the compressor.

It measures the cabinets temperature and turns off the compressor (cut-off) if the temperature in the cabinet drops below the set value, ensuring that the cabinet does not become colder.

Please note that low temperature protection is set to between +2 to +2.5°C as factory settings.

Ensure that the scale is set at the correct temperature prior to installation.

The scale of the low temperature protection is turned counterclockwise to adjust the "cut-off" down, and clockwise to adjust the "cut-off" up.

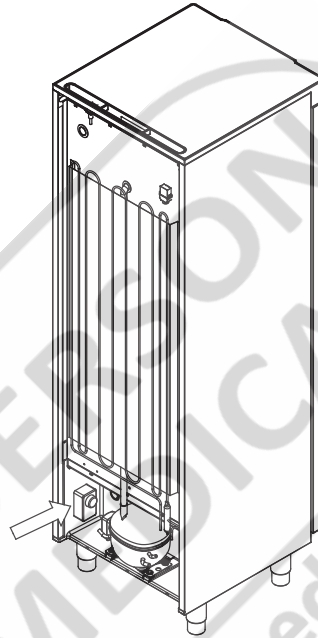


Example:

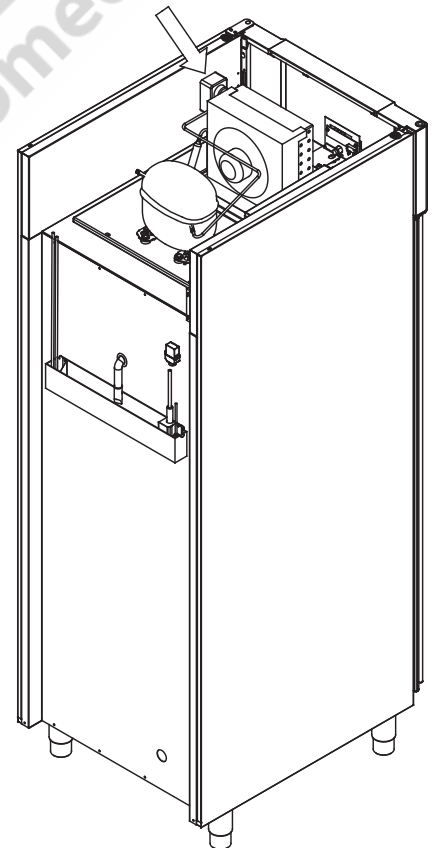
The compressor is turned off by the low temperature protection at 2.5 °C, the desired "cut-off" temperature is 1.5 °C.

Turn the scale on the low temperature protection counterclockwise until the desired value is set.

Applicable to 210, 310,  
210/210, 410



Applicable to 610



## Connection to electricity

Read the following part thoroughly before connecting the cabinet. Contact an qualified electrician if in doubt.

Note that there are special regulations for products that are in accordance with EN 60079-15 zone 2.



The appliance has been manufactured in accordance with EN 60079-15: Electrical apparatus for explosive gas atmospheres - Part 15: Type of protection "n". Zone 2 is the applicable zone. If the appliance is to be installed in a zone 2 environment, specialist personnel should perform the installation, or be consulted beforehand, in order to ensure that the appliance is installed in compliance with the guidelines currently contained in the standard.



The cabinet is intended for connection to alternating current. The connection values for voltage (V) and frequency (Hz) are given on the type/number-plate

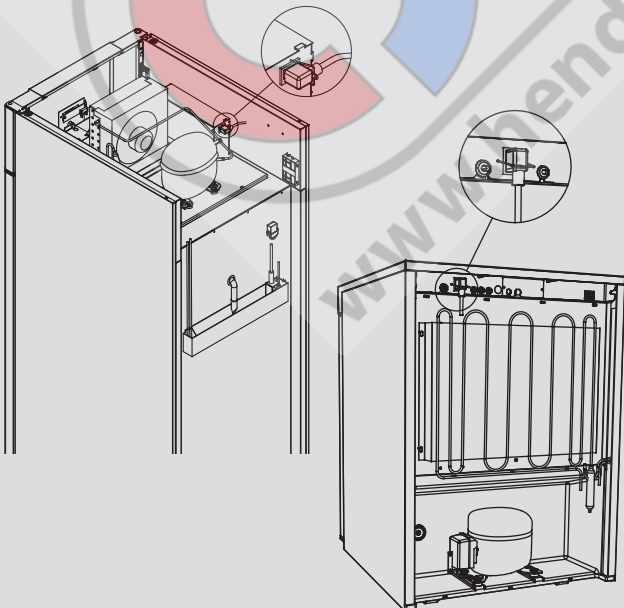


The power cord from the mains is plugged in the terminal box on the back of the cabinet. The plug is then fixated in place by the hanger that is built into the terminal box. Please note that the hanger should be fitted tightly around the plug, as shown below.



The appliance must be connected to the external power supply using a suitable device which mechanically prevents the plug and socket from being separated unintentionally. The connection must be labelled:

**"DO NOT SEPARATE WHEN ENERGIZED"**



IMPORTANT



Fuses and similar must never be removed or replaced while the appliance is connected to a power source.

The electrical terminal box must never be opened while the appliance is connected to a power source.

The compressor starting equipment must never be dismantled while the appliance is connected to a power source.

The LED lighting must never be dismantled while the appliance is connected to a power source.

Whenever electrical components are dismantled or replaced, the appliance must be moved to an area in which there is no risk of ignition caused by the electrical components or gases contained in the appliance.

Never use the cabinet if the plug is damaged. The cabinet should be examined by a Gram Commercial A/S service technician in such cases.

When setting up in an ordinary scenario that is not subject to regulations for Zone 2:

The appliance may be connected in accordance with applicable local heavy current regulations.

In both cases:

Use a three-wire plug, if the power outlet is intended for a three-wire plug, a the lead in green / yellow insulation should be connected to the ground terminal.

Power must be connected via a wall socket. The wall socket should be easily accessible.

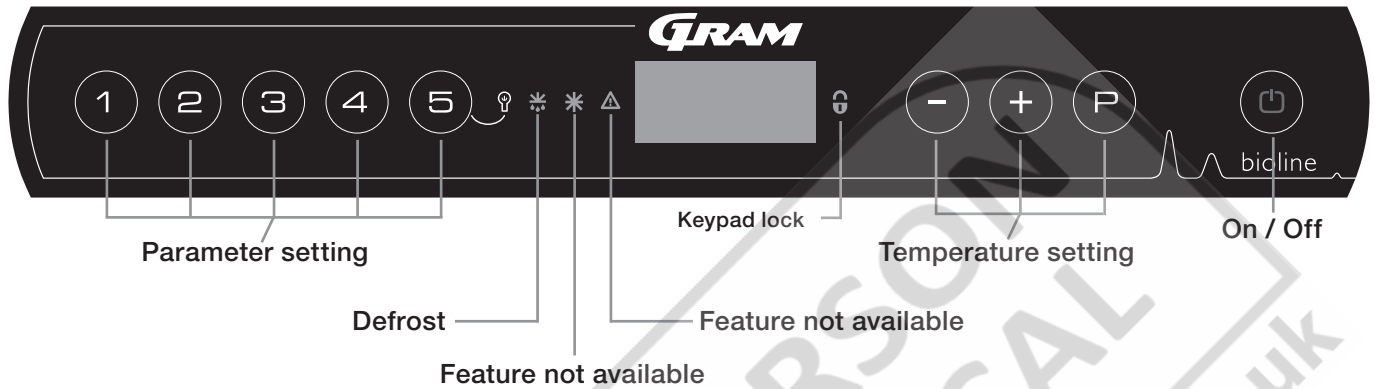
All earthing requirements stipulated by the local electricity authorities must be observed. The cabinet plug and wall socket should then give correct earthing. If in doubt, contact your local supplier or authorized electrician.

In case of technical difficulties or breakdowns always contact authorized service personnel. Never dismantle the terminal box or any other electrical component.

# Start-up: BioCompact II

## The digital display

The digital display depicted below, shows the cabinets temperature and indicates if the cabinet is connected to a power source.



- Parameter setting - Gives access to the cabinets configurable parameters.
- Defrost - Defrost in progress
- Keypad lock - Keypad is locked, no access to functions or menus
- Temperature setting - Setting of temperature setpoint and navigation in the menus
- On / Off - Turn the cabinet On or Off, and navigation in the menus

### All-round introduction to navigating the menu

Beyond setting the temperature and on/off, (P), (+), (-) and (⏪) are used to navigate the menu and set the parameters of the cabinet.

The buttons have following functions in the menu:

- (P) - Open a menu step / confirm a set value in the parameter settings.
- (+) - Scroll upwards in a given menu / raise a given value in parameter settings (alarm setpoint for instance).
- (-) - Scroll downwards in a given menu / lower a given value in parameter settings.
- (⏪) - Go a menu step back.

### On / Off

Press (⏪) to turn the cabinet on. Press (⏪) for 6 seconds to turn the cabinet off. The software version of the cabinet will be shown when turning the cabinet on, followed by the software variant and a display test.

The cabinet is ready when the temperature is displayed. The cabinet will automatically start a defrost-cycle when turned on, and terminate it again after a system check.

The cabinet will always commence operation when initially connected to a power supply. For instance after a power outage or when plugging the cabinet in for the first time.



Make sure the appliance is switched off at the socket before service is performed on electrical parts. It is not sufficient to switch off the cabinet on the (⏪) key, as current will persist in some electrical parts of the cabinet.

If fuses or similar are to be replaced, the appliance must be moved to a no-risk area.

### Temperature setting

Temperature adjustments are done by holding (P) and pressing either (+) or (-). Confirm the settings by letting go of the buttons.



## Walkthrough of menu

The menu below gives a quick overview of the parameter settings for the cabinet.

Please note: electric low temperature protection is not applicable to BioCompact / BioCompact II cabinets

## User menu

Menu Access (P) + (1) →	↓	→		
Local alarm settings	LAL	LHL	[° C]	Upper alarm limit. Code for activated alarm [A2]
		LLL	[° C]	Lower alarm limit. Code for activated alarm [A3]
		LHd	[Min.]	Delay of upper alarm limit
		LLd	[Min.]	Delay of lower alarm limit
		dA	On/off	Door alarm. Code for activated alarm [A1]. [1=on / 0=off]
		dAd	[Min.]	Delay of door alarm
		bU	On/off	Acoustic signal for alarm codes [A1], [A2] and [A3]. [1=on / 0=off]
External alarm settings	EAL	EHL	[° C]	Upper alarm limit. Code for activated alarm [A4]
		ELL	[° C]	Lower alarm limit. Code for activated alarm [A5]
		EHLd	[Min.]	Delay of upper alarm limit
		ELd	[Min.]	Delay of lower alarm limit
		dA	On/off	Door alarm. Code for activated alarm [A1]. [1=on / 0=off]
		dAd	[Min.]	Delay of external door alarm
Calibration of sensors	CAL	CA	[° K]	Calibration of A-sensor. Reference sensor for the refrigeration system
		CE	[° K]	Calibration of E-sensor. Reference sensor for the display and alarms
		CF	[° K]	Calibration of F-sensor. Reference sensor for the low temperature protection
Electric low temperature protection	FP	ACt	On/off	Activation/deactivation of low-temperature protection
		tES	On	Test of low-temperature protection
		SEt	[° C]	Setting of the cut-off temperature for the low-temperature protection
		PrE	[...]	Read out of the real-time temperature of the F-sensor
	ALL			Activation of escorted alarm limits. [FAS]= locked limits / [ESC] = follows setpoint
	dEF			Number of defrosts per 24 hours (4 is factory setting)
	dPS			Reference sensor for the display (A, E or F) (E is factory setting)

## Other Shortcuts

Buttons:	Duration:	Function:
(P) + (⊕)	> 3 seconds	Start or stop a defrost
(⊕) + (1)	> 6 seconds	Activating / deactivating the keypad lock
(P)	-	Shows temperature setpoint value
(+)	-	Shows the highest registered temperature spike (since the last reset of alarm history)
(-)	-	Shows the lowest registered temperature spike (since the last reset of alarm history)
(+) + (-)	> 3 seconds	Clear and reset alarm history
(P) + (1) + (⊖)	> 6 seconds	Reset of set parameters. Restores factory settings
(P) + (1)	> 3 seconds	Access to user menu and alarm settings

### Lighting inside the cabinet - Only applicable to BioLine cabinets with glass doors -

The settings for the lighting inside the cabinet can be changed by pressing and holding (⊖) for 3 seconds.

- There are two settings:
- 1) Light turns on when the door is open(off when closed)
  - 2) Light is always on

# Error codes

The following table covers the different error codes that might occur.

Display code	Explanation
- 0 -	Door is open
A1	Door alarm "dAd" from LAL and/or EAL has been activated
A2	Local upper alarm LHL is or has been activated
A3	Local lower alarm LLL is or has been activated
A4	External upper alarm EHL is or has been activated
A5	External lower alarm ELL is or has been activated
F1	Error on the main cabinet sensor. The refrigeration system will use an emergency program to make the cabinet run. Temperature stability will be affected. Service is required
F2	Error on the evaporator sensor. Service is required
F3	Error on the 1. condenser sensor. Service is required
F5	Error on the extra sensor. Service is required
F7	F7 indicates that the temperature of the condenser is too high. Turn off the cabinet and check that the condenser is not covered by undesirable items, and insure that the condenser (and possibly filter) is clean. Service is required if the problem is not alleviated

## Cancelling an acoustic alarm

Cancelling a door alarm: [A1] flashes in the display. Press (P) to cancel.

Cancelling a temperature alarm: [A2 and/or A3] Flashes in the display. Press (P) to cancel.

The display will continue to flash if the temperature is outside the alarm limits, and will continue until the temperature has recovered.

## Reading the alarm history - Example [A2]

[A2] flashes in the display - This means that the temperature has exceeded the set value for the upper temperature limit, LHL.

Press (P) to cancel the [A2]. The display continues to flash, indicating that there is information in the alarm history. Press (+),

Htt (High temperature time) is shown, press (P) to see for how long the temperature was above the set alarm limit. Press (⊖) to return to Htt.

Press (+) to reach Ht (Highest temperature). Press (P) to read the highest recorded temperature during Htt. Press (⊖) to return to Ht and press (⊖) again to leave the alarm history function.

The procedure for reading an [A3] alarm is identical, apart from entering the alarm history with (-). When reading out temperatures below set limits, the parameters are Ltt and Lt.

A flashing display with no alarm codes indicates that the alarm codes have been cancelled, but the alarm history contains information.

# Local alarm settings



## Local high alarm

The following part covers the setting of upper and lower temperature alarm limits.

## Local low alarm

### LHL - Setting the upper alarm limit [° C]

- ↳ Press and hold **(P)** + **(1)** for more than 3 seconds
- ↳ Press **(P)** to select "LAL". "LHL" is now shown in the display
- ↳ Press **(P)** to select "LHL". The upper alarm limit is now shown in the display
- ↳ Press **(-)** or **(+)** to set the desired value for the upper alarm limit
- ↳ Press **(P)** to confirm the set value

- The upper alarm limit is now set, proceed to other parameters by pressing **(M)**, and then navigate by using **(-)** or **(+)**.

- ↳ Leave the user menu by pressing **(M)** several times until the cabinet temperature is shown in the display

### LLL - Setting the lower alarm limit [° C]

- ↳ Press and hold **(P)** + **(1)** for more than 3 seconds
- ↳ Press **(P)** to select "LAL". "LHL" is now shown in the display
- ↳ Press **(+)** to proceed to "LLL"
- ↳ Press **(P)** to select "LLL". The lower alarm limit is now shown in the display
- ↳ Press **(-)** or **(+)** to set the desired value for the lower alarm limit
- ↳ Press **(P)** to confirm the set value

- The lower alarm limit is now set, proceed to other parameters by pressing **(M)**, and then navigate by using **(-)** or **(+)**.

- ↳ Leave the user menu by pressing **(M)** several times until the cabinet temperature is shown in the display

## Local high alarm delay

The following part covers the setting of the delay for the local upper and lower temperature alarm limits.

## Local low alarm delay

### LHd - Setting the delay of the local upper alarm limit [min.]

- ↳ Press and hold (P) + (1) for more than 3 seconds
  - ↳ Press (P) to select "LAL". "LHL" is now shown in the display
  - ↳ Press (+) several times until "LHd" is shown in the display
  - ↳ Press (P) to select "LHd". The delay of the upper alarm limit is now shown in the display
  - ↳ Press (-) or (+) to set the desired value for the delay of the upper alarm limit
  - ↳ Press (P) to confirm the set value
- The delay of the upper alarm limit is now set, proceed to other parameters by pressing (⏏), and then navigate by using (-) or (+).
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display

### LLd - Setting the delay of the local lower alarm limit [min.]

- ↳ Press and hold (P) + (1) for more than 3 seconds
  - ↳ Press (P) to select "LAL". "LHL" is now shown in the display
  - ↳ Press (+) several times until "LLd" is shown in the display
  - ↳ Press (P) to select "LLd". The delay of the lower alarm limit is now shown in the display
  - ↳ Press (-) or (+) to set the desired value for the delay of the lower alarm limit
  - ↳ Press (P) to confirm the set value
- The delay of the lower alarm limit is now set, proceed to other parameters by pressing (⏏), and then navigate by using (-) or (+).
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display





## On / Off local door alarm

The following part covers the setting of the door alarm and the delay of the door alarm.

## Delay for local door alarm

### dA - Activate / deactivate of local door alarm

- ↳ Press and hold (P) + (1) for more than 3 seconds
  - ↳ Press (P) to select "LAL". "LHL" is now shown in the display
  - ↳ Press (+) several times until "dA" is shown in the display
  - ↳ Press (P) to select "dA".
  - ↳ Press (-) or (+) to activate / deactivate the local door alarm [1 = activated / 0 = deactivated]
  - ↳ Press (P) to confirm the set value
- The local door alarm is now configured, proceed to other parameters by pressing (⏏), and then navigate by using (-) or (+).
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display

### dAd - Setting the delay of the local door alarm [min.]

- ↳ Press and hold (P) + (1) for more than 3 seconds
  - ↳ Press (P) to select "LAL". "LHL" is now shown in the display
  - ↳ Press (+) several times until "dAd" is shown in the display
  - ↳ Press (P) to select "dAd". The delay of the local door alarm is now shown in the display
  - ↳ Press (-) or (+) to set the desired value for the delay of the local door alarm
  - ↳ Press (P) to confirm the set value
- The delay of the local door alarm is now configured, proceed to other parameters by pressing (⏏), and then navigate by using (-) or (+).
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display

## Local acoustic settings

The following part covers the setting of the acoustic local alarms.

### bU - Activation / deactivation of the acoustic local alarms

- ↳ Press and hold (P) + (1) for more than 3 seconds
  - ↳ Press (P) to select "LAL". "LHL" is now shown in the display
  - ↳ Press (+) several times until "bU" is shown in the display
  - ↳ Press (P) to select "bU".
  - ↳ Press (-) or (+) to activate / deactivate the local acoustic alarms [1 = activated / 0 = deactivated]
  - ↳ Press (P) to confirm the set value
- The local acoustic alarms is configured, proceed to other parameters by pressing (⏏), and then navigate by using (-) or (+).
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display



## IMPORTANT!

In order to assure the safety of the stored items, the local temperature alarms should be supported by independent external temperature alarms.

# External alarm settings



## External high alarm

The following part covers the setting of upper and lower external temperature alarm limits.

## External low alarm

### EHL - Setting the external upper alarm limit [° C]

- ↳ Press and hold **(P)** + **(1)** for more than 3 seconds
- ↳ Press **(+)** several times until “EAL” is shown in the display
- ↳ Press **(P)** to select “EAL”. “EHL” is now shown in the display
- ↳ Press **(P)** to select “EHL”. The external upper alarm limit is now shown in the display
- ↳ Press **(-)** or **(+)** to set the desired value for the external upper alarm limit
- ↳ Press **(P)** to confirm the set value

- The external upper alarm limit is now set, proceed to other parameters by pressing **(M)**, and then navigate by using **(-)** or **(+)**.

- ↳ Leave the user menu by pressing **(M)** several times until the cabinet temperature is shown in the display

### ELL - Setting the external lower alarm limit [° C]

- ↳ Press and hold **(P)** + **(1)** for more than 3 seconds
- ↳ Press **(+)** several times until “EAL” is shown in the display
- ↳ Press **(P)** to select “EAL”. “EHL” is now shown in the display
- ↳ Press **(+)** to proceed to “ELL”
- ↳ Press **(P)** to select “ELL”. The external lower alarm limit is now shown in the display
- ↳ Press **(-)** or **(+)** to set the desired value for the external lower alarm limit
- ↳ Press **(P)** to confirm the set value

- The external lower alarm limit is now set, proceed to other parameters by pressing **(M)**, and then navigate by using **(-)** or **(+)**.

- ↳ Leave the user menu by pressing **(M)** several times until the cabinet temperature is shown in the display

## External high alarm delay

The following parts covers the setting of the delay of the external upper and lower alarms.

## External low alarm delay

### EHD - Setting the delay of the external upper alarm limit [min.]

- ↳ Press and hold (P) + (1) for more than 3 seconds
  - ↳ Press (+) to proceed to "EAL"
  - ↳ Press (P) to select "EAL". "EHL" is now shown in the display
  - ↳ Press (+) several times until "EHD" is shown in the display
  - ↳ Press (P) to select "EHD". The external delay of the upper alarm limit is now shown in the display
  - ↳ Press (-) or (+) to set the desired value for the external delay of the upper alarm limit
  - ↳ Press (P) to confirm the set value
- The delay of the external upper alarm limit is now set, proceed to other parameters by pressing (⏏), and then navigate by using (-) or (+)
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display

### ELd - Setting the delay of the external lower alarm limit [min.]

- ↳ Press and hold (P) + (1) for more than 3 seconds
  - ↳ Press (+) to proceed to "EAL"
  - ↳ Press (P) to select "EAL". "EHL" is now shown in the display
  - ↳ Press (+) several times until "ELd" is shown in the display
  - ↳ Press (P) to select "ELd". The delay of the external lower alarm limit is now shown in the display
  - ↳ Press (-) or (+) to set the desired value for the delay of the lower alarm limit
  - ↳ Press (P) to confirm the set value
- The delay of the external lower alarm limit is now set, proceed to other parameters by pressing (⏏), and then navigate by using (-) or (+)
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display



## On / Off external door alarm

The following parts covers the setting and delay, of the external door alarm.

## External door alarm delay

### dA - Activation / deactivation of external door alarm

- ↳ Press and hold (P) + (1) for more than 3 seconds
  - ↳ Press (+) to proceed to "EAL"
  - ↳ Press (P) to select "EAL". "EHL" is now shown in the display
  - ↳ Press (+) several times until "dA" is shown in the display
  - ↳ Press (P) to select "dA"
  - ↳ Press (-) or (+) to activate / deactivate the external door alarm [1 = activated / 0 = deactivated]
  - ↳ Press (P) to confirm the set value
- The external door alarm is now configured, proceed to other parameters by pressing (⏏), and then navigate by using (-) or (+).
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display

### dAd - Setting the delay of the external door alarm [min.]

- ↳ Press and hold (P) + (1) for more than 3 seconds
  - ↳ Press (+) to proceed to "EAL"
  - ↳ Press (P) to select "EAL". "EHL" is now shown in the display
  - ↳ Press (+) several times until "dAd" is shown in the display
  - ↳ Press (P) to select "dAd". The delay of the external door alarm is now shown in the display
  - ↳ Press (-) or (+) to set the desired value for the delay of the external door alarm
  - ↳ Press (P) to confirm the set value
- The delay of the external door alarm is now configured, proceed to other parameters by pressing (⏏), and then navigate by using (-) or (+).
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display

## External acoustic settings

The following part covers the setting of the acoustic external alarms.

### bU - Activation / deactivation of the acoustic external alarms

- ↳ Press and hold (P) + (1) for more than 3 seconds
  - ↳ Press (+) to proceed to "EAL"
  - ↳ Press (P) to select "EAL". "EHL" is now shown in the display
  - ↳ Press (+) several times until "bU" is shown in the display
  - ↳ Press (P) to select "bU"
  - ↳ Press (-) or (+) to activate / deactivate the external acoustic alarms [1 = activated / 0 = deactivated]
  - ↳ Press (P) to confirm the set value
- The external acoustic alarms is configured, proceed to other parameters by pressing (P), and then navigate by using (-) or (+).
- ↳ Leave the user menu by pressing (P) several times until the cabinet temperature is shown in the display



# Parameter settings



## Sensor calibration

The following part covers the calibration of the A- and E-sensor.

The temperature sensors connected to MPC controller can be calibrated independently of each other in the parameter cAL.

Calibration is used in cases where there are deviations in the cabinets actual operation compared to the display and / or control measurements by independent temperature monitoring.

The cabinet is equipped with a sensor (A-sensor) and an extra sensor (E-sensor).

The A-sensor is used to manage the cabinets refrigeration system and is fixated in a given position in the cabinet, not in storage space. The location of the A sensor must not be altered.

The E-sensor is placed in the cabinet storage space and can be moved around in the cabinet to get the desired reference point for temperature. The E-sensor is the default display sensor and reference for the alarms. The E-sensor has no effect on control of the refrigeration system.

The A-sensor is calibrated if the actual temperature in the cabinet does not match the setpoint, despite taking the hysteresis into consideration. Calibration of A sensor is named "cA".

The E-sensor is calibrated if the actual temperature in the cabinets display, provided that the display sensor for reference is the E-sensor, does not match the independent temperature monitoring used for control. Calibration of E-sensor is named "cE".

### Practical example of calibration:

Example 1 - The temperature in the cabinet is operating colder than the actual setpoint.

With a setpoint of +4°C, the actual temperature inside the cabinet is between +2 and +4°C. The desired temperature range is between +3 and +5°C. This means that "cA", in this case, should be -1,0K, so that the refrigeration system stops 1,0K before and starts 1,0K later than the setpoint normally otherwise would dictate.

Example 2 - The temperature in the cabinet is operating warmer than the actual setpoint.

With a setpoint of +4°C, the actual temperature inside the cabinet is between +4 and +6°C. The desired temperature range is between +3 and +5°C. This means that "cA", in this case, should be 1,0K, so that the refrigeration system stops 1,0K later and starts 1,0K earlier than the setpoint normally otherwise would dictate.

## Calibration of the A-sensor

- ↳ Press and hold  $\text{P} + \text{1}$  for more than 3 seconds
- ↳ Press  $\text{+}$  several times until "cAL" is shown in the display
- ↳ Press  $\text{P}$  to select "cAL". "cA" is shown in the display
- ↳ Press  $\text{P}$  to select "cA"
- ↳ Press  $\text{-}$  or  $\text{+}$  to calibrate the A-sensor
- ↳ Press  $\text{P}$  to confirm the set value

-The A-sensor is now calibrated, proceed to other parameters by pressing  $\text{⏏}$ , and then navigate by using  $\text{-}$  or  $\text{+}$

- ↳ Leave the user menu by pressing  $\text{⏏}$  several times until the cabinet temperature is shown in the display

## Calibration of the E-sensor

- ↳ Press and hold  $\text{P} + \text{1}$  for more than 3 seconds
- ↳ Press  $\text{+}$  several times until "cAL" is shown in the display
- ↳ Press  $\text{P}$  to select "cAL". "cA" is shown in the display
- ↳ Press  $\text{+}$  until "cE" is shown in the display
- ↳ Press  $\text{P}$  to select "cE"
- ↳ Press  $\text{-}$  or  $\text{+}$  to calibrate the E-sensor
- ↳ Press  $\text{P}$  to confirm the set value

- The E-sensor is now calibrated, proceed to other parameters by pressing  $\text{⏏}$ , and then navigate by using  $\text{-}$  or  $\text{+}$

- ↳ Leave the user menu by pressing  $\text{⏏}$  several times until the cabinet temperature is shown in the display

## Escorted / set alarm limits

The following part covers the setting of escorted or set alarm limits.

### ALL - Setting of escorted / set alarm limits

- ↳ Press and hold (P) + (1) for more than 3 seconds
- ↳ Press (+) several times until "ALL" is shown in the display
- ↳ Press (P) to select "ALL"
- ↳ Press (-) or (+) to select set or escorted alarm limits
- ↳ Press (P) to confirm the set value
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display

## Defrosts / 24 hours

The following part covers the setting of the amount of defrosts per 24 hours.

### dEF - Number of defrosts

- ↳ Press and hold (P) + (1) for more than 3 seconds
- ↳ Press (+) several times until "dEF" is shown in the display
- ↳ Press (P) to select "dEF"
- ↳ Press (-) or (+) to set the desired amount of defrosts per 24 hours (factory setting is 4)
- ↳ Press (P) to confirm the set value
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display



**Please note:** It is very important that defrosts should not be set to 0 for a prolonged period of time, as this will reduce the cooling capacity of the cabinet.

"Set alarm" is fixed limits working independently from the setpoint.

The temperature alarm limits will remain the selected values regardless of the setpoint being altered.

"Escorted alarm" is fixed limits locked to the setpoint. The temperature alarm limits will change according to the altered setpoint.





## Display sensor

The following part covers the setting of which sensor to be shown in the display.

### dPS - Selection of reference sensor for the display

- ↳ Press and hold (P) + (1) for more than 3 seconds
- ↳ Press (+) several times until "dPS" is shown in the display
- ↳ Press (P) to select "dPS"
- ↳ Press (-) or (+) to select either the A- or E-sensor
- ↳ Press (P) to confirm the set value
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display



**Please note:** that dPS only changes the reference sensor for the display, and not the reference sensor for the alarms.



**Please note:** that the reference sensor for the refrigeration system is the A-sensor, this can not be altered.



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## Electric low temperature protection

*Electric low temperature protection is not available for BioCompact / BioCompact II.*

### FP - Activation / deactivation of low temperature protection

- ↳ Press and hold (P) + (1) for more than 3 seconds
- ↳ Press (+) several times until "FP" is shown in the display
- ↳ Press (P) to select "FP". "Act" is now shown in the display
- ↳ Press (P) to select "Act"
- ↳ Press (-) or (+) to activate / deactivate [1 = activated / 0 = deactivated]
- ↳ Press (P) to confirm the set value
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display

### FP - Setpoint of low temperature protection

- ↳ Press and hold (P) + (1) for more than 3 seconds
- ↳ Press (+) several times until "FP" is shown in the display
- ↳ Press (P) to select "FP". "Act" is now shown in the display
- ↳ Press (+) several times until "SEt" is shown in the display
- ↳ Press (P) to select "SEt"
- ↳ Press (-) or (+) to select the setpoint temperature for the low temperature protection
- ↳ Press (P) to confirm the set value
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display

### FP - Test of low temperature protection

- ↳ Press and hold (P) + (1) for more than 3 seconds
- ↳ Press (+) several times until "FP" is shown in the display
- ↳ Press (P) to select "FP". "Act" is now shown in the display
- ↳ Press (+) to progress to "tES"
- ↳ Press (P) to select "tES" - test will then be performed
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display

### FP - Temperature of low temperature protection sensor

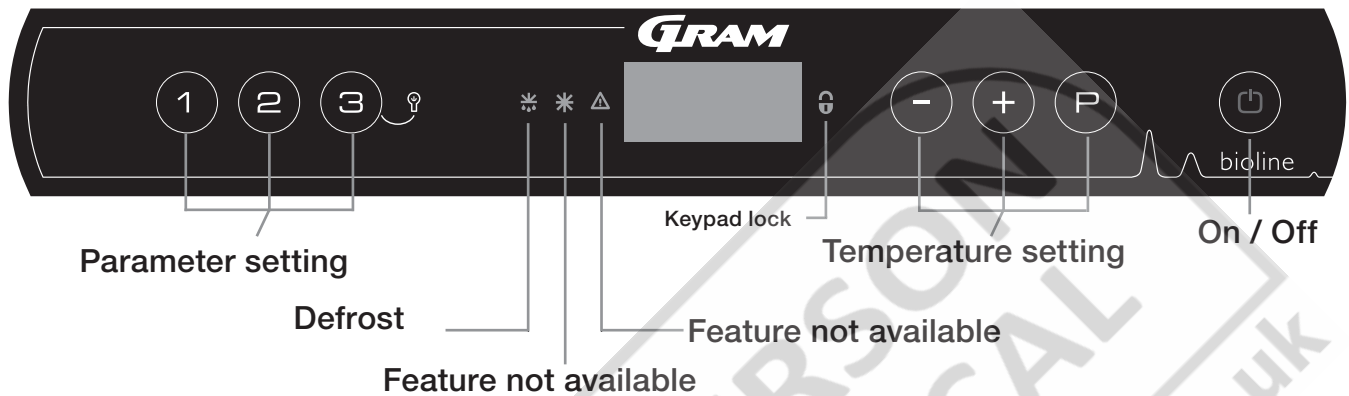
- ↳ Press and hold (P) + (1) for more than 3 seconds
- ↳ Press (+) several times until "FP" is shown in the display
- ↳ Press (P) to select "FP". "Act" is now shown in the display
- ↳ Press (P) to select "Pre"
- ↳ Press (P) to show the low temperature protection sensor temperature
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display



# Start-up: BioCompact

## The digital display

The digital display depicted below, shows the cabinets temperature and indicates if the cabinet is connected to a power source.



- Parameter setting - Gives access to the cabinets configurable parameters.
- Defrost - Defrost in progress
- Keypad lock - Keypad is locked, no access to functions or menus
- Temperature setting - Setting of temperature setpoint and navigation in the menus
- On / Off - Turn the cabinet On or Off, and navigation in the menus

### All-round introduction to navigating the menu

Beyond setting the temperature and on/off, (P), (+), (-) and (⏪) are used to navigate the menu and set the parameters of the cabinet.

The buttons have following functions in the menu:

- (P) - Open a menu step / confirm a set value in the parameter settings.
- (+) - Scroll upwards in a given menu / raise a given value in parameter settings.
- (-) - Scroll downwards in a given menu / lower a given value in parameter settings.
- (⏪) - Go a menu step back

### On / Off

Press (⏪) to turn the cabinet on. Press (⏪) for 6 seconds to turn the cabinet off. The software version of the cabinet will be shown when turning the cabinet on, followed by the software variant and a display test.

The cabinet is ready when the temperature is displayed. The cabinet will automatically start a defrost-cycle when turned on, and terminate it again after a system check.

The cabinet will always commence operation when initially connected to a power supply. For instance after a power outage or when plugging the cabinet in for the first time.



Make sure the appliance is switched off at the socket before service is performed on electrical parts. It is not sufficient to switch off the cabinet on the (⏪) key, as current will persist in some electrical parts of the cabinet.

If fuses or similar are to be replaced, the appliance must be moved to a no-risk area.

### Temperature setting

Temperature adjustments are done by holding (P) and pressing either (-) or (+). Confirm the settings by letting go of the buttons.



## Walkthrough of menu

The menu below gives a quick overview of the parameter settings for the cabinet.

Please note: electric low temperature protection is not applicable to BioCompact / BioCompact II cabinets

## User menu

Menu Access (P) + (1) →	↓	→		
Local alarm settings	LAL	dA	On/off	Door alarm. Code for activated alarm [ A1]. [1=on / 0=off]
		dAd	[Min.]	Delay of door alarm
		bU	On/off	Acoustic signal for alarm codes [ A1], [ A2] and [ A3]. [1=on / 0=off]
External alarm settings	EAL	dA	On/off	Door alarm. Code for activated alarm [ A1]. [1=on / 0=off]
		dAd	[Min.]	Delay of door alarm
		bU	On/off	Acoustic signal for alarm codes [ A1], [ A4], [ A5]. [1=on / 0=off]
Calibration of sensors	CAL	CA	[° K]	Calibration of A-sensor. Reference sensor for the refrigeration system
		CF	[° K]	Calibration of F-sensor. Reference sensor for the low temperature protection
Electric low temperature protection	FP	ACt	On/off	Activation/deactivation of low-temperature protection
		tES	On	Test of low-temperature protection
		SEt	[° C]	Setting of the cut-off temperature for the low-temperature protection
		PrE	[...]	Read out of the real-time temperature of the F-sensor
	ALL			Activation of escorted alarm limits. [FAS]= locked limits / [ESC] = follows setpoint
	dEF			Number of defrosts per 24 hours (4 is factory setting)
	dPS			Reference sensor for the display

## Other Shortcuts

Buttons:	Duration:	Function:
(P) + (P)	> 3 seconds	Start or stop a defrost
(P) + (1)	> 6 seconds	Activating / deactivating the keypad lock
(P)	-	Shows temperature setpoint value
(+) + (-)	> 3 seconds	Reset of alarm history
(P) + (1) + (P)	> 6 seconds	Reset of set parameters. Restores factory settings
(P) + (1)	> 3 seconds	Access to user menu and alarm settings

### Lighting inside the cabinet - Only applicable to BioLine cabinets with glass doors -

The settings for the lighting inside the cabinet can be changed by pressing and holding (P) for 3 seconds.


There are two settings: 1) Light turns on when the door is open(off when closed)  
2) Light is always on

# Error codes

The following table covers the different error codes that might occur.

Display code	Explanation
- 0 -	Door is open
A1	Door alarm "dAd" from LAL and/or EAL has been activated
F1	Error on the main cabinet sensor. The refrigeration system will use an emergency program to make the cabinet run. Temperature stability will be affected. Service is required
F2	Error on the evaporator sensor. Service is required
F3	Error on the 1. condenser sensor. Service is required

## Cancelling an acoustic alarm

Cancelling a door alarm: [A1] flashes in the display. Press  to cancel.



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# Local alarm settings



## On / Off local door alarm

The following part covers the setting of the door alarm and the delay of the door alarm.

## Local door alarm delay

### dA - Activate / deactivate of local door alarm

- ↳ Press and hold (P) + (1) for more than 3 seconds
  - ↳ Press (+) to proceed to "LAL"
  - ↳ Press (P) to select "LAL". "LHL" is now shown in the display
  - ↳ Press (+) several times until "dA" is shown in the display
  - ↳ Press (P) to select "dA".
  - ↳ Press (-) or (+) to activate / deactivate the local door alarm [1 = activated / 0 = deactivated]
  - ↳ Press (P) to confirm the set value
- The local door alarm is now configured, proceed to other parameters by pressing (⏪), and then navigate by using (-) or (+).
- ↳ Leave the user menu by pressing (⏩) several times until the cabinet temperature is shown in the display

### dAd - Setting the delay of the local door alarm [min.]

- ↳ Press and hold (P) + (1) for more than 3 seconds
  - ↳ Press (+) to proceed to "LAL"
  - ↳ Press (P) to select "LAL". "LHL" is now shown in the display
  - ↳ Press (+) several times until "dAd" is shown in the display
  - ↳ Press (P) to select "dAd". The delay of the local door alarm is now shown in the display
  - ↳ Press (-) or (+) to set the desired value for the delay of the local door alarm
  - ↳ Press (P) to confirm the set value
- The delay of the local door alarm is now configured, proceed to other parameters by pressing (⏪), and then navigate by using (-) or (+).
- ↳ Leave the user menu by pressing (⏩) several times until the cabinet temperature is shown in the display

## Local acoustic settings

The following part covers the setting of the acoustic local alarms.

### bU - Activation / deactivation of the acoustic local alarms

- ↳ Press and hold (P) + (1) for more than 3 seconds
  - ↳ Press (+) to proceed to "LAL"
  - ↳ Press (P) to select "LAL". "LHL" is now shown in the display
  - ↳ Press (+) several times until "bU" is shown in the display
  - ↳ Press (P) to select "bU".
  - ↳ Press (-) or (+) to activate / deactivate the local acoustic alarms [1 = activated / 0 = deactivated]
  - ↳ Press (P) to confirm the set value
- The local acoustic alarms is configured, proceed to other parameters by pressing (⏏), and then navigate by using (-) or (+).
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display



## IMPORTANT!

In order to assure the safety of the stored items, the local temperature alarms should be supported by independent external temperature alarms.



# External alarm settings



## On / Off external door alarm

The following parts covers the setting and delay, of the external door alarm.

## External door alarm delay

### dA - Activation / deactivation of external door alarm

- ↳ Press and hold (P) + (1) for more than 3 seconds
  - ↳ Press (+) to proceed to "EAL"
  - ↳ Press (P) to select "EAL". "EHL" is now shown in the display
  - ↳ Press (+) several times until "dA" is shown in the display
  - ↳ Press (P) to select "dA"
  - ↳ Press (-) or (+) to activate / deactivate the external door alarm [1 = activated / 0 = deactivated]
  - ↳ Press (P) to confirm the set value
- The external door alarm is now configured, proceed to other parameters by pressing (⏪), and then navigate by using (-) or (+).
- ↳ Leave the user menu by pressing (⏪) several times until the cabinet temperature is shown in the display

### dAd - Setting the delay of the external door alarm [min.]

- ↳ Press and hold (P) + (1) for more than 3 seconds
  - ↳ Press (+) to proceed to "EAL"
  - ↳ Press (P) to select "EAL". "EHL" is now shown in the display
  - ↳ Press (+) several times until "dAd" is shown in the display
  - ↳ Press (P) to select "dAd". The delay of the external door alarm is now shown in the display
  - ↳ Press (-) or (+) to set the desired value for the delay of the external door alarm
  - ↳ Press (P) to confirm the set value
- The delay of the external door alarm is now configured, proceed to other parameters by pressing (⏪), and then navigate by using (-) or (+).
- ↳ Leave the user menu by pressing (⏪) several times until the cabinet temperature is shown in the display

## External acoustic settings

The following part covers the setting of the acoustic external alarms.

### bU - Activation / deactivation of the acoustic external alarms

- ↳ Press and hold (P) + (1) for more than 3 seconds
  - ↳ Press (+) to proceed to "EAL"
  - ↳ Press (P) to select "EAL". "EHL" is now shown in the display
  - ↳ Press (+) several times until "bU" is shown in the display
  - ↳ Press (P) to select "bU"
  - ↳ Press (-) or (+) to activate / deactivate the external acoustic alarms [1 = activated / 0 = deactivated]
  - ↳ Press (P) to confirm the set value
- The external acoustic alarms is configured, proceed to other parameters by pressing (⏏), and then navigate by using (-) or (+).
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display



# Parameter settings



## Sensor calibration

The following part covers the calibration of the A-sensor.

The temperature sensors connected to MPC controller can be calibrated independently of each other under the parameter cAL.

Calibration is used in cases where there are deviations in the cabinets actual operation compared to the display and / or control measurements by independent temperature monitoring.

The cabinet is equipped with a sensor (A-sensor).

The A-sensor is used to manage the cabinets refrigeration system and is fixated in a given position in the cabinet, not in storage space. The location of the A sensor must not be altered.

The A-sensor is calibrated if the actual temperature in the cabinet does not match the setpoint, despite taking the hysteresis into consideration. Calibration of A sensor is named "cA".

## Calibration of the A-sensor

- ↳ Press and hold  $\text{P} + \text{1}$  for more than 3 seconds
- ↳ Press  $\text{+}$  several times until "cAL" is shown in the display
- ↳ Press  $\text{P}$  to select "cAL". "cA" is shown in the display
- ↳ Press  $\text{P}$  to select "cA"
- ↳ Press  $\text{-}$  or  $\text{+}$  to calibrate the A-sensor
- ↳ Press  $\text{P}$  to confirm the set value

-The A-sensor is now calibrated, proceed to other parameters by pressing  $\text{E}$ , and then navigate by using  $\text{-}$  or  $\text{+}$

- ↳ Leave the user menu by pressing  $\text{E}$  several times until the cabinet temperature is shown in the display

### Practical example of calibration:

Example 1 - The temperature in the cabinet is operating colder than the actual setpoint.

With a setpoint of  $+4^{\circ}\text{C}$ , the actual temperature inside the cabinet is between  $+2$  and  $+4^{\circ}\text{C}$ . The desired temperature range is between  $+3$  and  $+5^{\circ}\text{C}$ . This means that "cA", in this case, should be  $-1,0\text{K}$ , so that the refrigeration system stops  $1,0\text{K}$  before and starts  $1,0\text{K}$  later than the setpoint normally otherwise would dictate.

Example 2 - The temperature in the cabinet is operating warmer than the actual setpoint.

With a setpoint of  $+4^{\circ}\text{C}$ , the actual temperature inside the cabinet is between  $+4$  and  $+6^{\circ}\text{C}$ . The desired temperature range is between  $+3$  and  $+5^{\circ}\text{C}$ . This means that "cA", in this case, should be  $1,0\text{K}$ , so that the refrigeration system stops  $1,0\text{K}$  later and starts  $1,0\text{K}$  earlier than the setpoint normally otherwise would dictate.

## Escorted alarm limits

The following part covers the setting of escorted or set alarm limits.

### ALL - Setting of escorted / set alarm limits

- ↳ Press and hold (P) + (1) for more than 3 seconds
- ↳ Press (+) several times until "ALL" is shown in the display
- ↳ Press (P) to select "ALL"
- ↳ Press (-) or (+) to select set or escorted alarm limits
- ↳ Press (P) to confirm the set value
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display

"Set alarm" is fixed limits working independently from the setpoint. The temperature alarm limits will remain the selected values regardless of the setpoint being altered.

"Escorted alarm" is fixed limits locked to the setpoint. The temperature alarm limits will change according to the altered setpoint.

## Defrosts / 24 hours

The following part covers the setting of the amount of defrosts per 24 hours.

### dEF- Number of defrosts

- ↳ Press and hold (P) + (1) for more than 3 seconds
- ↳ Press (+) several times until "dEF" is shown in the display
- ↳ Press (P) to select "dEF"
- ↳ Press (-) or (+) to set the desired amount of defrosts per 24 hours (factory setting is 4)
- ↳ Press (P) to confirm the set value
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display



**Please note:** It is very important that defrosts should not be set to 0 for a prolonged period of time, as this will reduce the cooling capacity of the cabinet.



## Electric low temperature protection

*Electric low temperature protection is not available for BioCompact / BioCompact II.*

### FP - Activation / deactivation of low temperature protection

- ↳ Press and hold (P) + (1) for more than 3 seconds
- ↳ Press (+) several times until "FP" is shown in the display
- ↳ Press (P) to select "FP". "Act" is now shown in the display
- ↳ Press (P) to select "Act"
- ↳ Press (-) or (+) to activate / deactivate [1 = activated / 0 = deactivated]
- ↳ Press (P) to confirm the set value
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display

### FP - Setpoint of low temperature protection

- ↳ Press and hold (P) + (1) for more than 3 seconds
- ↳ Press (+) several times until "FP" is shown in the display
- ↳ Press (P) to select "FP". "Act" is now shown in the display
- ↳ Press (+) several times until "SEt" is shown in the display
- ↳ Press (P) to select "SEt"
- ↳ Press (-) or (+) to select the setpoint temperature for the low temperature protection
- ↳ Press (P) to confirm the set value
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display

### FP - Test of low temperature protection

- ↳ Press and hold (P) + (1) for more than 3 seconds
- ↳ Press (+) several times until "FP" is shown in the display
- ↳ Press (P) to select "FP". "Act" is now shown in the display
- ↳ Press (+) to progress to "tES"
- ↳ Press (P) to select "tES" - test will then be performed
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display

### FP - Temperature of low temperature protection sensor

- ↳ Press and hold (P) + (1) for more than 3 seconds
- ↳ Press (+) several times until "FP" is shown in the display
- ↳ Press (P) to select "FP". "Act" is now shown in the display
- ↳ Press (P) to select "Pre"
- ↳ Press (P) to show the low temperature protection sensor temperature
- ↳ Leave the user menu by pressing (⏏) several times until the cabinet temperature is shown in the display

# Reversing of door

*The following part covers the process of reversing a door on a BioCompact II 610. Not applicable to models with glass door.*

1. Disconnect the cabinet at the wall socket. Remove the hinge in position "A". You are now able to remove the front panel (remember to disconnect cables to the display).
2. Now remove the hinge in position B, lift the door out of the bottom hinge in position "C".
3. Move the hinge from position "C" to position "F", the nylon washer is attached.
4. Rotate the door 180 ° relative to the original installation.
5. Set the door in the hinge at position "F". Adjust the door and finally fasten the hinge in position "E".
6. Drop the front panel into the hinge in position "E". Attach the hinge from position "A" to position "D".
7. Re-connect the cables for the front panel and close the panel. Reconnect the power at the wall socket.

*The following part covers the process of reversing a door on a BioCompact 210, the same procedure applies to 310, 210/210 and 410. Not applicable to models with glass door.*

1. Switch off the power at the mains socket.
2. Dismantle the two screws that hold the control panel at front and back, pull the panel a little forward, and then tilt it upwards.
3. Dismantle the hinge at pos. A, and lift off the door.
4. Dismantle the hinge at pos. B, and mount it at pos. F.
5. Turn the door 180°, and fix it at the hinge pos. F.
6. Mount the hinge from pos. A in pos. D, and move bracket from pos. C to pos. E.
7. Fasten the control panel again. Apply power to the cabinet.

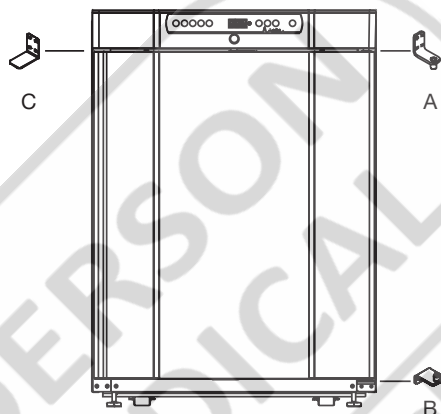
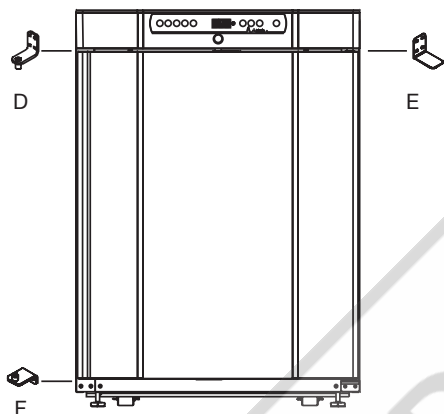




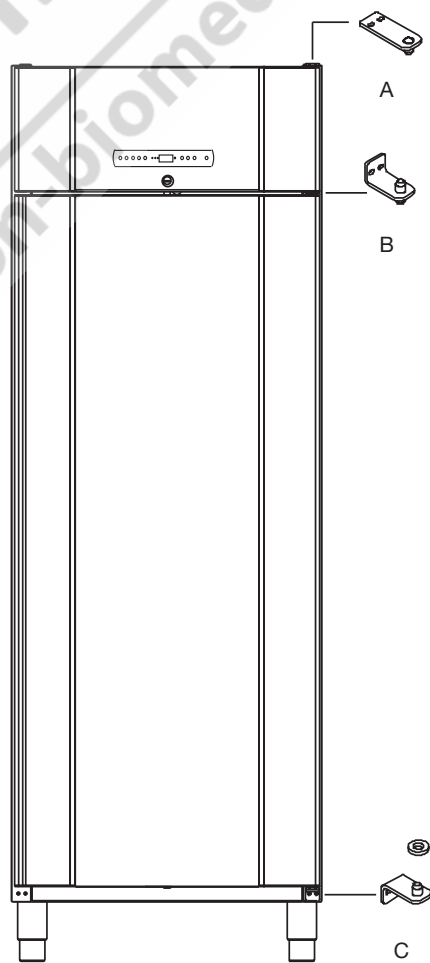
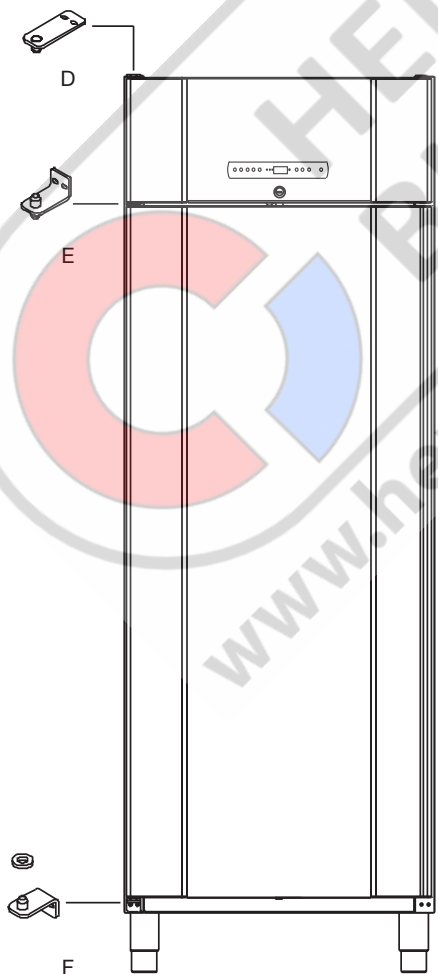
### Left hinged

### Right hinged

BioCompact 210



BioCompact II 610



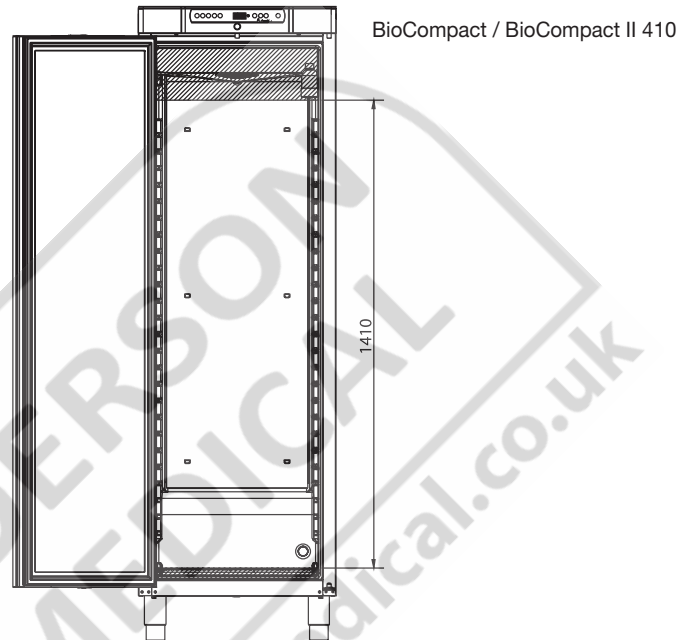
# Ordinary use

The following part shows how items should be placed and stored in the cabinet.

Keep the marked areas in the cabinet (shown on this page) clear of all items, thereby ensuring adequate air circulation, and therein cooling.

Do not place items beneath the lowest shelf bracket.

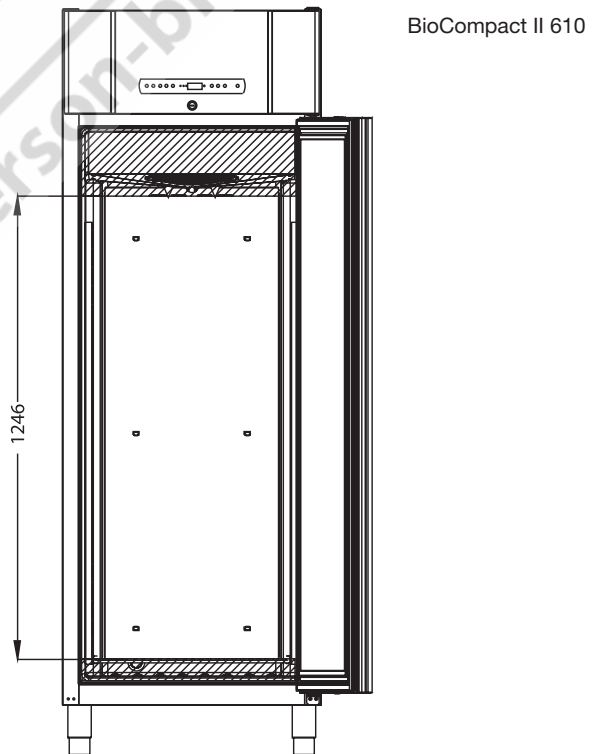
All products to be stored, that are not wrapped or packed, must be covered in order to avoid unnecessary corrosion of the inner parts of the cabinet.



Items placed on the bottom of the cabinet will cause the air circulation to be impeded, which reduces the cabinets performance.



The items should be evenly distributed in the cabinet, with minimum layer-thickness / maximum surface. And at the same time, the air should be able to circulate freely between the items.





# Regular maintenance

## Cleaning

*Inadequate cleaning can lead to the cabinet not functioning properly or at all.*

Always disconnect the cabinet before cleaning.

The cabinet should be cleaned internally with a mild soap solution (max. 85°C) at suitable intervals and checked thoroughly before it is put into operation again.

The compressor compartment and in particular the condenser must be kept free from dust and dirt. This is best done with a vacuum cleaner and a brush.

The re-evaporation tray should be emptied and cleaned at least once a year.

Do not flush compressor compartment or evaporator with water as this may cause short-circuits in the electrical system.

Cleaning agents containing chlorine or compounds of chlorine as well as other corrosive agents, may not be used, as they might cause corrosion to the stainless panels of the cabinet and the evaporator system.

The location of the condensers for both bottom- and top-mounted cabinets is illustrated below.

## Door gasket

*The following part covers the importance of a properly functioning door gasket.*

Door gaskets are an important part of a cabinet, door gaskets with impaired functionality reduces a cabinets seal with the door. Impaired seals can lead to increased humidity, iced evaporator (and thus reduced cooling capacity), and in some cases, decreased lifetime expectancy of the cabinet.

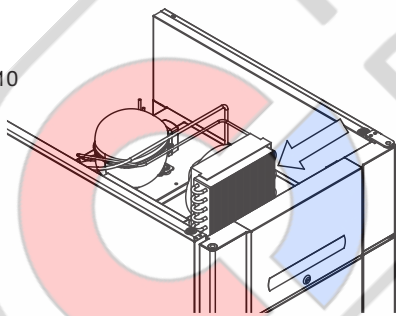
It is therefore very important to be aware of the door gaskets condition. Regular inspection is recommended.

The door gasket should be cleaned regularly with a mild soap solution.

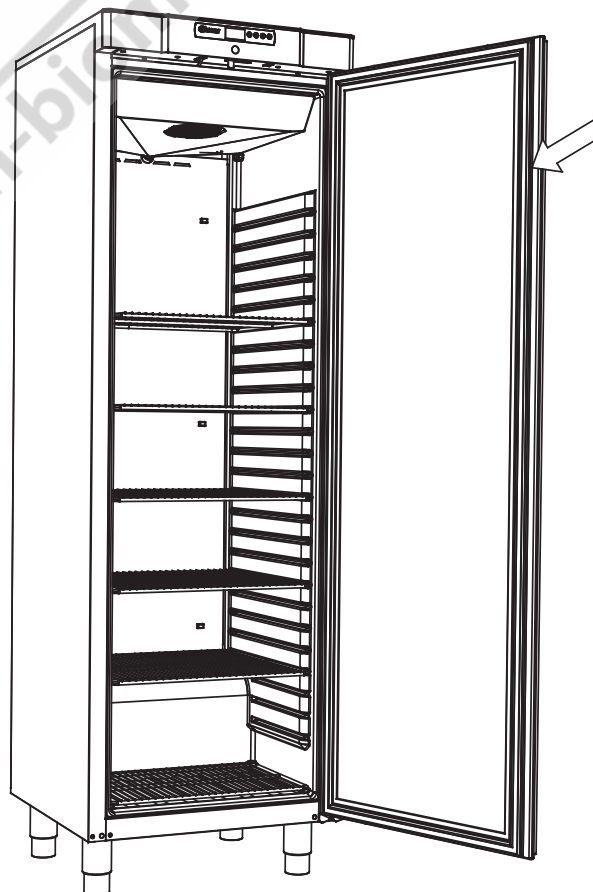
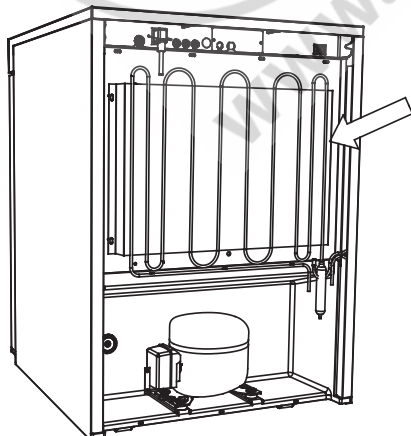
If a gasket is to be replaced, please contact your local Gram BioLine distributor.

The illustration below shows the location of the seal on a BioCompact 410

BioCompact II 610



BioCompact 210



# General info

## Responsibility

Read the following carefully, for information on technical safety and responsibility on Gram Commercial A/S products.

Is the cabinet being used for purposes other than its intended use, or use of the cabinet is not, in accordance with guidelines specified in the user manual, the user bears full responsibility for any consequences thereof.

Defective parts must be replaced with original parts from Gram Commercial A/S. Gram Commercial A/S can only guarantee functional and safety requirements on the cabinets, if above mentioned is adhered to.



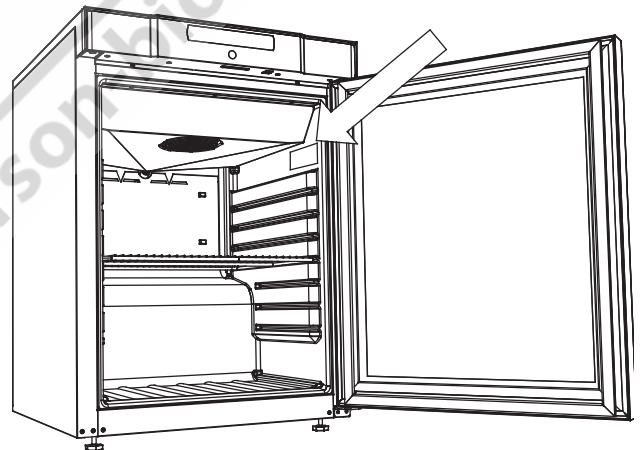
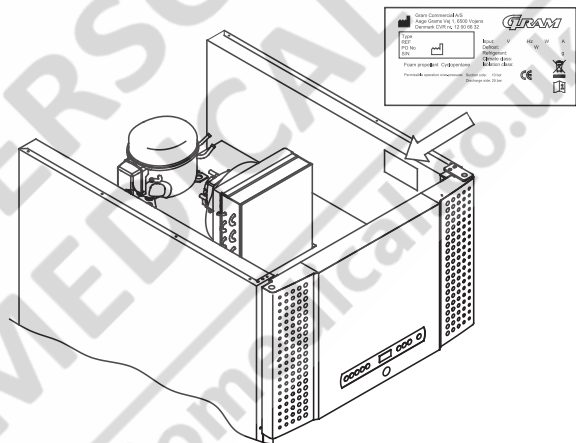
The cabinets' refrigeration components should at least be checked once a year by a Gram Commercial A/S technician or a similar professional.

## Service

The refrigeration system and the hermetically sealed compressor require no maintenance. However, the condenser and air filter require regular cleaning.

If refrigeration fails, first look to see whether the cabinet has been unintentionally switched off, or whether a fuse has blown.

If the cause of failure cannot be found, contact your supplier quoting Type and S/N. This information can be found on the type/number-plate.



The cabinet has to be disconnected at the mains if service is to be done on electrical components of the cabinet.



It is not sufficient to switch the cabinet off on the front panel, due to the fact that there is still a possibility that there is electrical current in some of the components of the cabinet.

## Defrost water

*The cabinet creates defrost water, that is directed out into a re-evaporation tray at the back of the cabinet.*

### BioCompact II 610:

Defrost water is led through a tube in the insulation to a re-evaporation tray at the back of the cabinet.

### BioCompact / BioCompact II 210, 310, 210/210, 410:

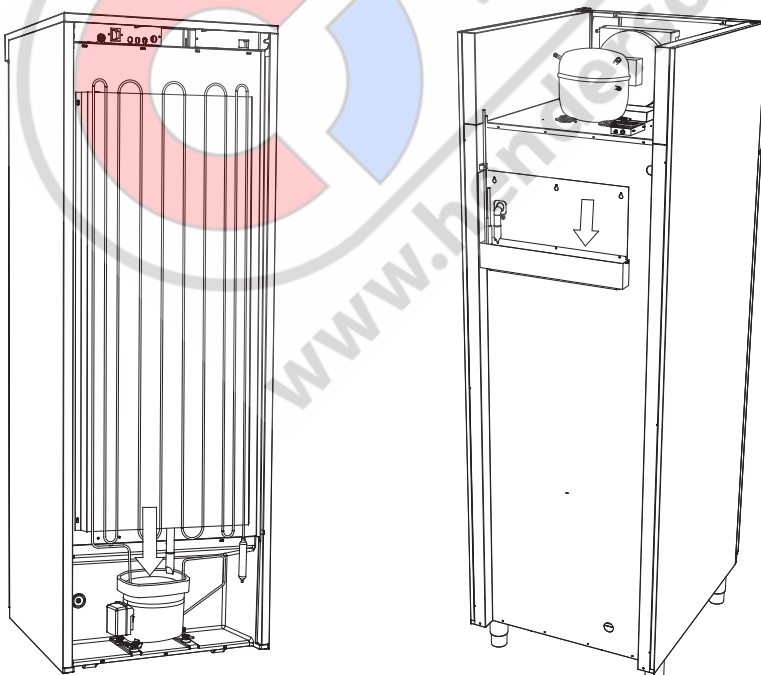
Defrost water is led through a tube in the insulation to a re-evaporation tray in the compressor room in the cabinet.



It is recommended that the re-evaporation tray is cleaned at least once a year. This shall only be done while the cabinet is turned off.

Be careful not to damage the defrost water tube and heating element (located in the tray) when cleaning.

Below are the re-evaporation trays for a BioCompact 410 and BioCompact II 610 shown



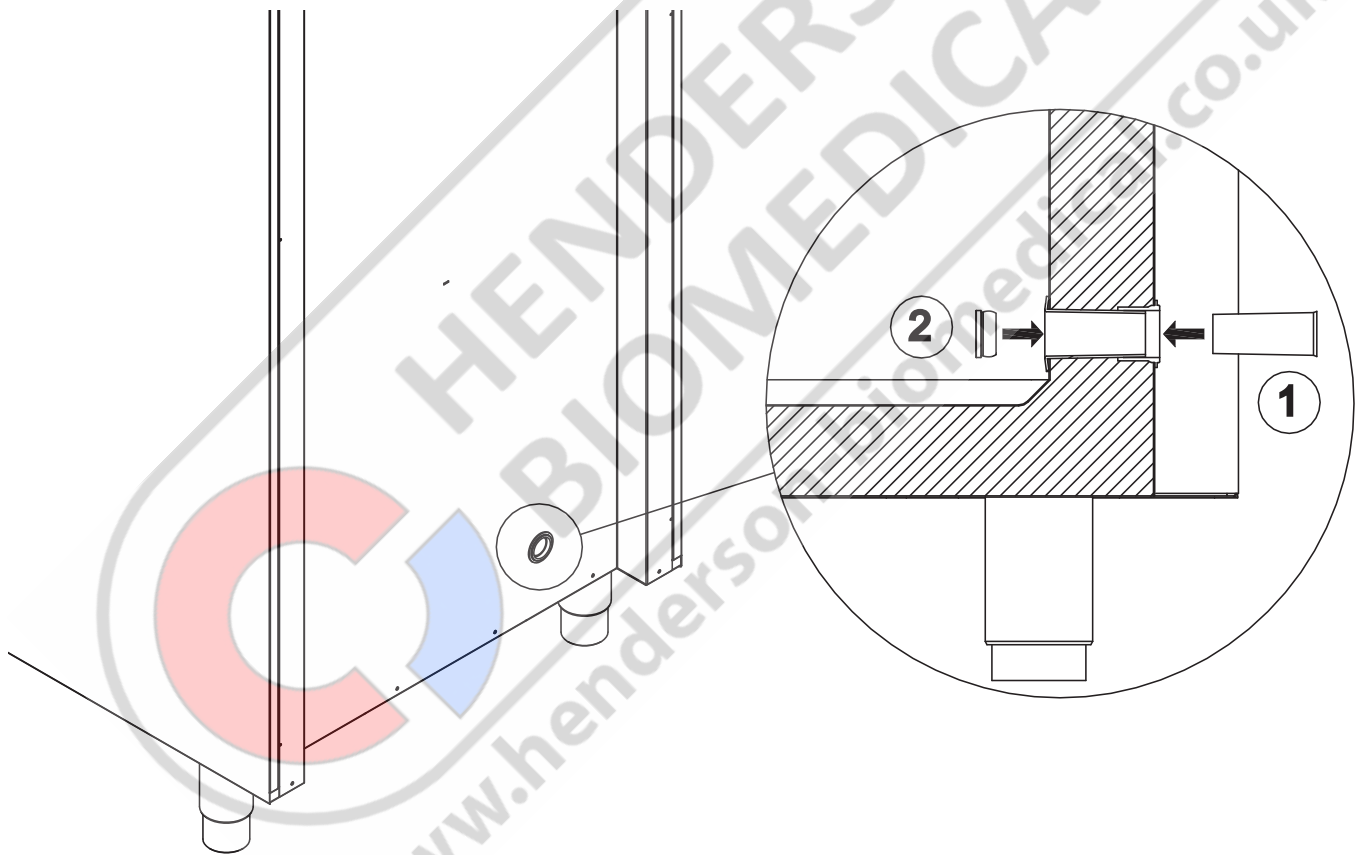
## Access port

All BioLine cabinets are equipped with an access port on the back of the cabinets, this can be used to easily fit external sensors and the like.

The illustration below shows an access port on a BioCompact II 610 cabinet.

All access ports are constructed in the same fashion, with a conical polystyrene plug ( fitted from the back of the cabinet ) and a plastic cap ( fitted from the inside of the cabinet ).

Please note, it is very important to re-fit the polystyrene plug and plastic cap after mounting sensor, probe etc. Failing to do so can result in lowered performance or break-down of the cabinet.





## Important

## Declaration of conformity



# IMPORTANT!

1. There may occur sharp edges on the cabinet housing, compressor room, and interior furnishings. Show due diligence when handling the cabinet, neglect of these precautions can lead to injuries.
2. Danger of wedging of body parts in the frame slot between the door and the cabinet, show due diligence when opening and closing the cabinet door. Negligence of these precautions can lead to injuries.
3. Danger of wedging of body parts in the drawer column between the drawers and interior of the cabinet, show due diligence when using the drawers. Negligence of these precautions can lead to injuries.
4. Unlocked castors can lead to unexpected movements of the cabinet. Lock the castors after installation. Negligence of these precautions can lead to injuries.
5. The re-evaporation tray, re-evaporation tray heating element, pressure pipes and compressors develops considerable heat during operation. Assure yourself that these components are sufficiently tempered before touching. Negligence of these precautions can lead to injuries.
6. The evaporator develops considerable cold during operation. Reassure yourself that the evaporator is sufficiently tempered before touching. Negligence of this precaution may lead to injuries.
7. The fan may cause injury during operation, avoiding touching the fans while the cabinet is connected to the mains. Negligence of these precautions can lead to injuries.

Declaration of conformity is readily available for all BioLine cabinets.

Find declaration of conformity for the cabinet at: [www.gram-bioline.com](http://www.gram-bioline.com)



## Disposal

Electrical and electronic equipment (EEE) contains materials, components and substances that can be dangerous and harmful to human health and the environment if the waste (WEEE) is not disposed of properly.

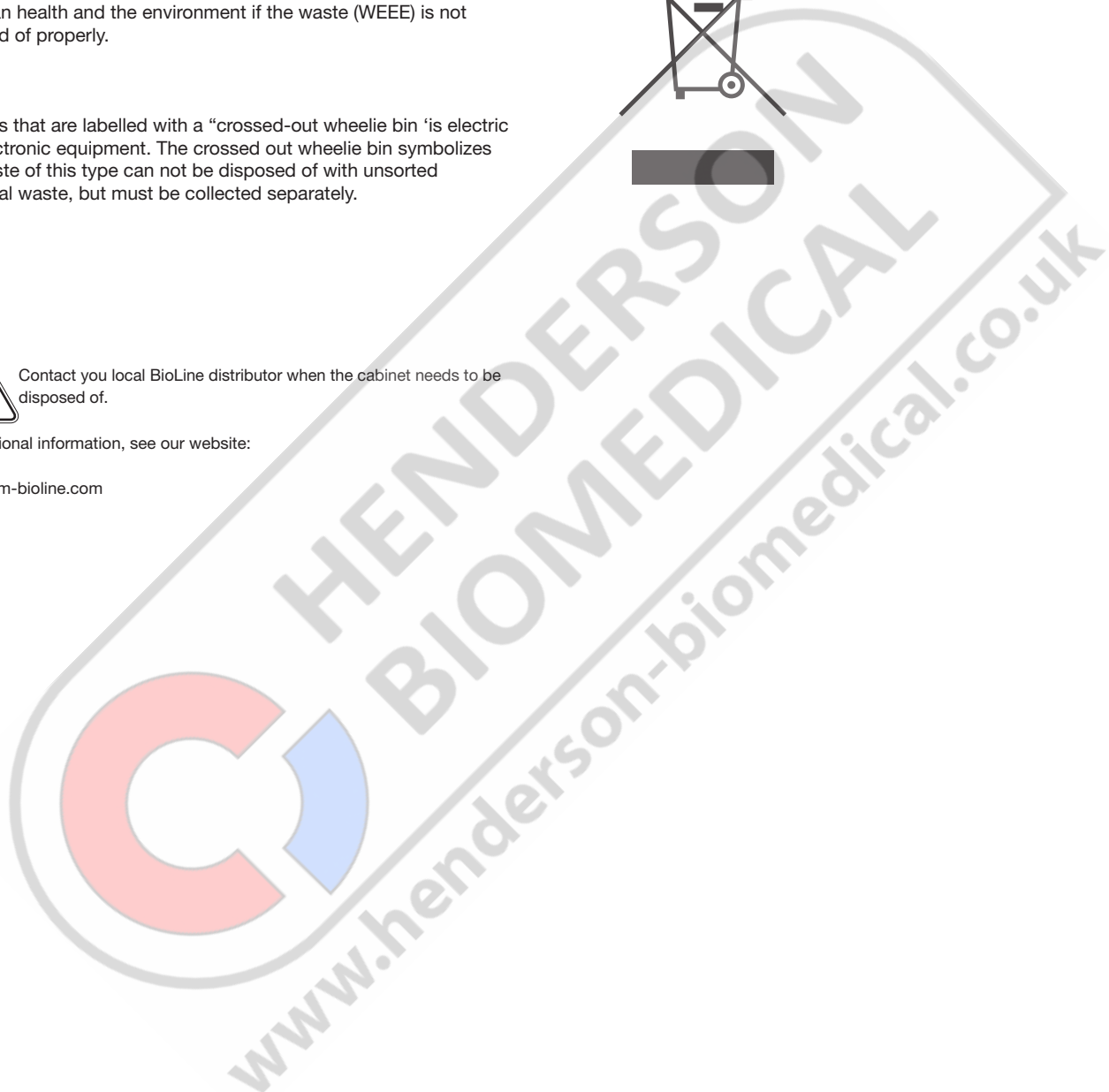
Products that are labelled with a “crossed-out wheelie bin” is electric and electronic equipment. The crossed out wheelie bin symbolizes that waste of this type can not be disposed of with unsorted municipal waste, but must be collected separately.



Contact you local BioLine distributor when the cabinet needs to be disposed of.

For additional information, see our website:

[www.gram-bioline.com](http://www.gram-bioline.com)













**LABORATORY EQUIPMENT MAINTENANCE, REPAIR, CALIBRATION AND SALES**

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