bioline

BioCompact II
INSTRUCTIONS FOR USE

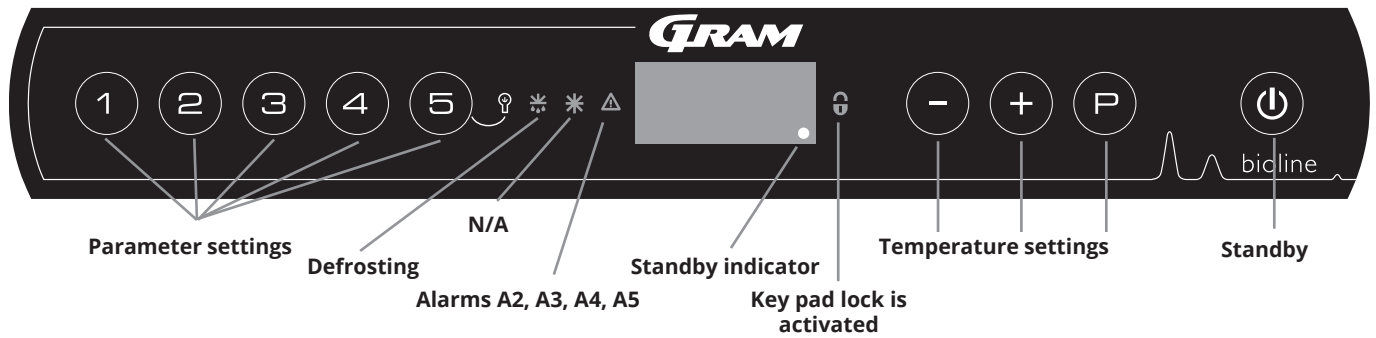**MODELS: 210/310/410/610**

Original Instructions for use

GRAM

Biostorage you can depend on

Quick guide – BioCompact II

Parameter settings   **Defrosting**   **N/A**   **Alarms A2, A3, A4, A5**   **Standby indicator**   **Key pad lock is activated**   **Temperature settings**   **Standby**

Standby

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 software variant. 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 Ⓟ button and pressing either – or +.
Confirm the settings by letting go of the buttons.

Lighting inside the cabinet – Only applicable to BioCompact II cabinets with glass door

The settings for the lighting inside the cabinet can be changed 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 ⇥	⤓	⇥		Display code and its message
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]
Offset 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 (4 is factory setting)
	dPS			Reference sensor for the display (A, E or F)

Example: Setting the upper limits for the alarms; LhL

↳   Press and hold ⓅPP + ①1 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 LhL
↳   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

Alarms

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

Acknowledging an acoustic alarm

Alarm code A1: Press Ⓟ to acknowledge. Temperature alarm codes A2 and/or A3: Flashes in the display. Press Ⓟ to acknowledge. The display will continue to flash if the temperature is outside the alarm limits.

Latching alarms: A2, A3, A4, A5

Due to the potential implications of alarms, the red alarm triangle icon will turn on along with the corresponding alarm code will flash in the display. The alarm state will remain on until acknowledged by pressing Ⓟ.

Reading Max/Min temperature

Read the higest 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 acknowledge 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 Htt. 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 acknowledged, 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 Ⓟ + ⑤ ↦	↴	Ⓟ ↦ [° 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 condensor	P-C	Value for condensor sensor	F3	Error on condensor sensor
Sensor 2 for condensor	P-d	Value for condensor sensor 2	F4	Error on condensor 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 condensor can be caused by a clogged condensor – clean the condensor			F7	Overheated condensor
Open door indicator. Alarm [A1] will activate if the door is open longer than alarm limits.			-0-	Door open

Table of Content

Before you proceed

This instructions for use is intended for the following product series:

BioCompact II

We recommend that you read this instructions for use through thoroughly before using the cabinet for the first time. Gram Scientific does not guarantee safe operation if the cabinet is used for anything other than its intended use. Contents of the instructions for use can be subject to change without notice. No part of this instructions for use may be reproduced in any form without expressed written consent of Gram Scientific. Gram Scientific guarantees the cabinet under certain warranty conditions. Gram Scientific is in no way responsible for any loss or damage of content. This instructions for use should be considered an integral part of the cabinet, and should be stored close to the cabinet and be easy to access. If the instructions for use is lost, please refer to your local distributor or Gram Scientific for a replacement. For current versions of the manual, please go to **www.gram-bioline.com.**

Intended use

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:

RR   +2/+20 °C
RF   -25/-5 °C

At the maximum ambient temperature specified in this instructions for use, and a maximum relative humidity of 70%. The user must ensure that the cabinet is used in accordance with its intended use.

Abnormal use or use conflicting with the intended use or guidelines stipulated in the product documentation can lead to: danger to patient safety, damage to stored items, damage to cabinet, danger to user.

Gram BioLine equipment is designed to be used in a system with monitored additional independent alarms to ensure timely reaction to alarms and thereby maximum item safety.

Symbols used throughout the instructions for use

⚠	Hazard	🔥	Risk of fire/flammable materials
⚡	Risk of electric shock	💥	Risk of explosion/explosive materials
⚙	Risk of material damage	ⓘ	Info
☟	Risk of personal injury	⟨Ɛx⟩	ATEX information
❄	Risk of burning/freezing		

Cabinet components

This part describes the main components pertinent to the user.

⚠️ **ATTENTION –**
In the event of technical difficulties or breakdown, always contact Gram BioLine technical support or a Gram BioLine authorized service partner.

1. **Shelves, drawers and wall rails**
    Ensure that the shelves are mounted according to this instructions for use, before exerting load on them.

2. **Door**
    Ensure that the door is closed completely after use.
    To minimize fluctuations in temperature, make the door openings as brief as possible.

3. **Gasket for door**
    Ensure that the gasket is pliable and in good working order.
    Keep clean, find instructions in this instructions for use.

4. **Base of cabinet**
    Ensure cabinets with legs are levelled properly and cabinets with castors are placed on a level surface and locked as specified in this instructions for use.

5. **Compressor**
    Ensure it is not dented or shows any other signs of damage.

6. **Condenser**
    Like the compressor, ensure it is not dented or shows any other signs of damage.

7. **Control box for refrigeration system**
    Enclosure for controller, sensors and other parts that monitor and manage the refrigeration system.
    Ensure it is not dented or shows any other signs of damage.

8. **Re-evaporator tray**
    Ensure it is not cracked or shows any other signs of damage.
    It is recommended to clean it before applying power to the cabinet first time.

9. **Access port**
    Used to lead sensors and similar into the cabinet.
    Ensure that the access port is sealed properly prior to start up.

10. **Preload cover to access mains terminal and voltage free contact**
    Used to connect to an external alarm system.
    Instructions for connection is found in this instructions for use.
    Remember to set external alarms (EAL).

11. **Defrost water tube**
    Outlet for the defrost water coming from the evaporator tray inside the cabinet.
    Ensure its not damaged or shows sign of damage.

12. **Pressure equalisation valve**
    Do not use as access port. Keep it as free of ice as possible.

13. **Equipotential bonding**
    To ensure compliance with ATEX regulations EN 60079-14.
    See installation section for specifications.

14. **Digital display for controller**
    Use the display to show the cabinet temperature and, to set the parameters described in this manual.

⚠ **ATTENTION –**
If parts show signs of damage; do not use cabinet and contact Gram BioLine or supplier for further aid.

BioCompact II 610

This part describes the main components pertinent to the user.

ATTENTION –

In the event of technical difficulties or breakdown, always contact Gram BioLine technical support or a Gram BioLine authorized service partner.
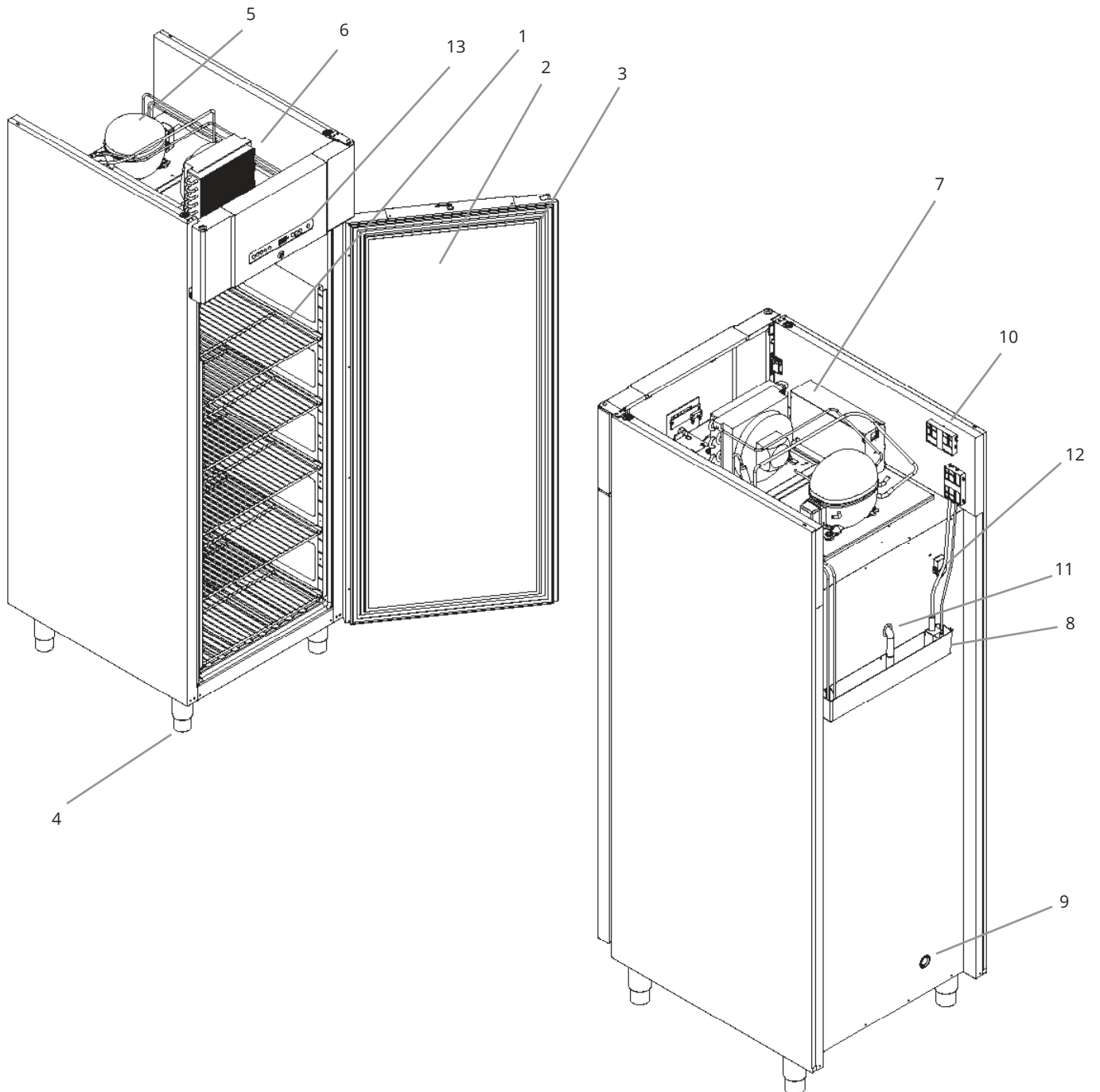
1. **Shelves, drawers and wall rails**
   Ensure that the shelves are mounted according to this instructions for use, before exerting load on them.

2. **Door**
   Ensure that the door is closed completely after use.
   To minimize fluctuations in temperature, make the door openings as brief as possible.

3. **Gasket for door**
   Ensure that the gasket is pliable and in good working order.
   Keep clean, find instructions in this instructions for use.

4. **Base of cabinet**
   Ensure cabinets with legs are levelled properly and cabinets with castors are placed on a level surface and locked as specified in this instructions for use.

5. **Compressor**
   Ensure it is not dented or shows any other signs of damage.

6. **Condenser and fan**
   Like the compressor, ensure it is not dented or shows any other signs of damage.

7. **Control box for refrigeration system**
   Enclosure for controller, sensors and other parts that monitor and manage the refrigeration system.
   Ensure it is not dented or shows any other signs of damage.

8. **Re-evaporator tray**
   Ensure it is not cracked or shows any other signs of damage.
   It is recommended to clean it before applying power to the cabinet first time.

9. **Access port**
   Used to lead sensors and similar into the cabinet.
   Ensure that the access port is sealed properly prior to start up.

10. **Access to voltage free contact**
    Used to connect to an external alarm system.
    Instructions for connection is found in this instructions for use.
    Remember to set external alarms (EAL).

11. **Defrost water tube**
    This is the outlet for the defrost water coming from the evaporator tray inside the cabinet.
    Ensure its not damaged or shows sign of damage.

12. **Pressure equalisation valve**
    Do not use as access port. Keep it as free of ice as possible.

13. **Digital display for controller**
    Use the display to show the cabinet temperature and, to set the parameters described in this manual.

ATTENTION –
If parts show signs of damage; do not use cabinet and contact Gram BioLine or supplier for further aid.

Installation

Initial setup steps

I-1*: Due to safety and operating considerations, the cabinet must not be used outdoors.

I-2*: The cabinet should be installed in a dry and sufficiently ventilated area.

I-3*: To ensure efficient operation, the cabinet should not be installed in direct sunlight or close to heat sources.

The cabinet interior must not be exposed to corrosive atmospheres.

I-5*: Avoid placement of the cabinet in a chloric/acidic environment due to risk of corrosion.

I-6*: The cabinet is shipped with a protective film that should be removed prior to use.
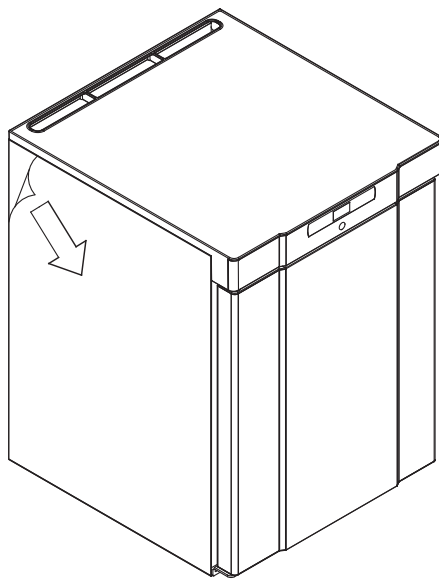
**WARNING –
Potential electrostatic hazard**
Removing protective packaging and film may cause electrostatic discharge. Protective packaging and film shall not be removed in ATEX zones.

I-7*: Clean the cabinet with a mild soap solution prior to use.

I-8*: The cabinet is only allowed to lay down for very short durations (for instance handling through a doorway). If the cabinet has been laying down, the cabinet must stand up-right for at least 24 hours prior to use. This enables oil in the compressors to run back into place.

*): Paragraph designation (I-1, I-2 etc) refers to the IQ (Installation Qualification)

I-4*: Ambient operating temperature range

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

*): Paragraph designation (I-1, I-2 etc) refers to the IQ (Installation Qualification)

I-9*: Cabinets equipped with legs should be levelled as shown in the illustration below.
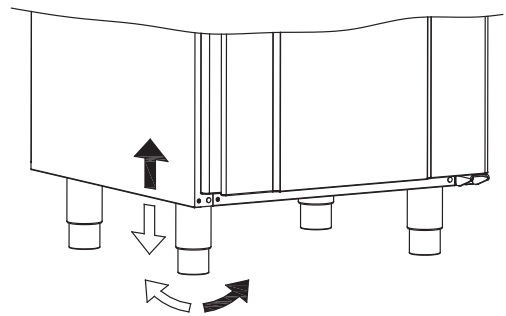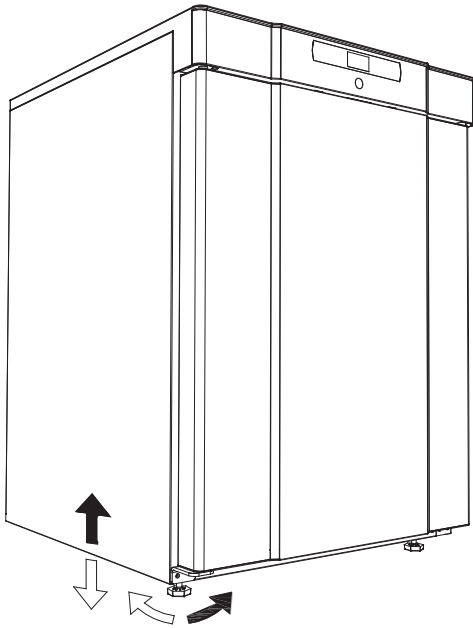
I-10-11*: For cabinets equipped with castors, the floor must be level to ensure stable positioning and safe use. When the cabinet is positioned, the 2 front castors should be locked.
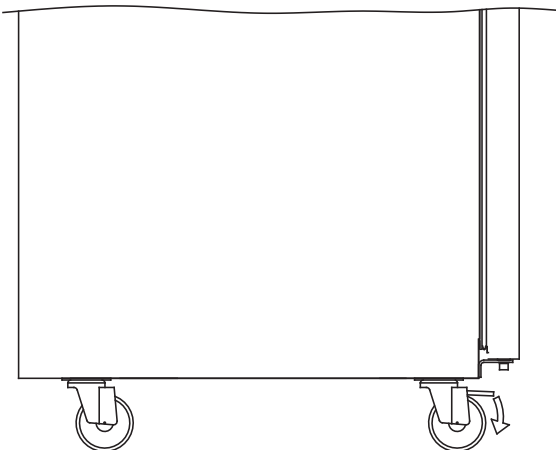
Reveral of door

Item numbers for door hinges

761222808

761222806

761222805

761222805
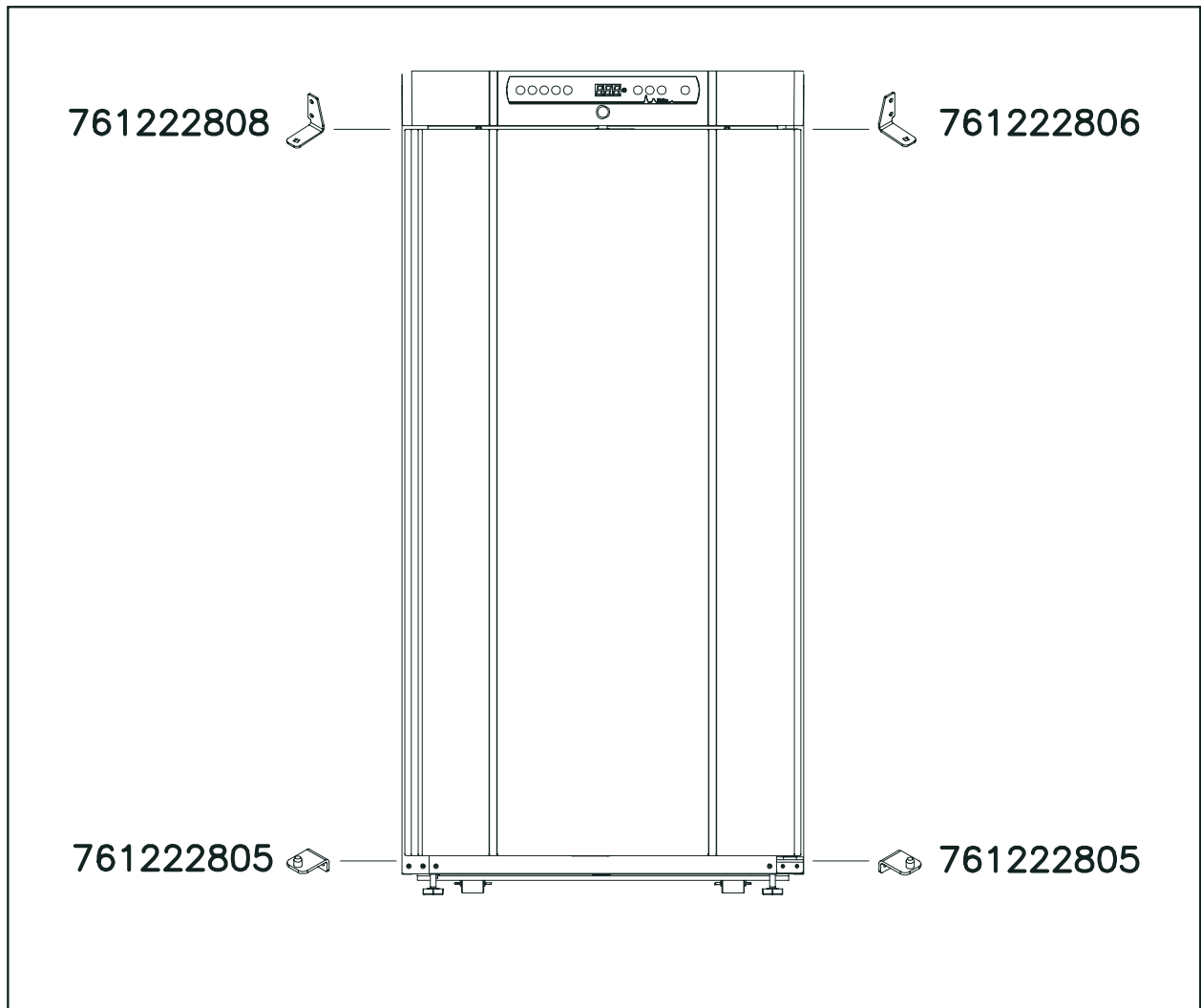
For replacement brackets, please contact your local Gram BioLine distributor

The cabinet must not be connected to a power source changing door hinging.
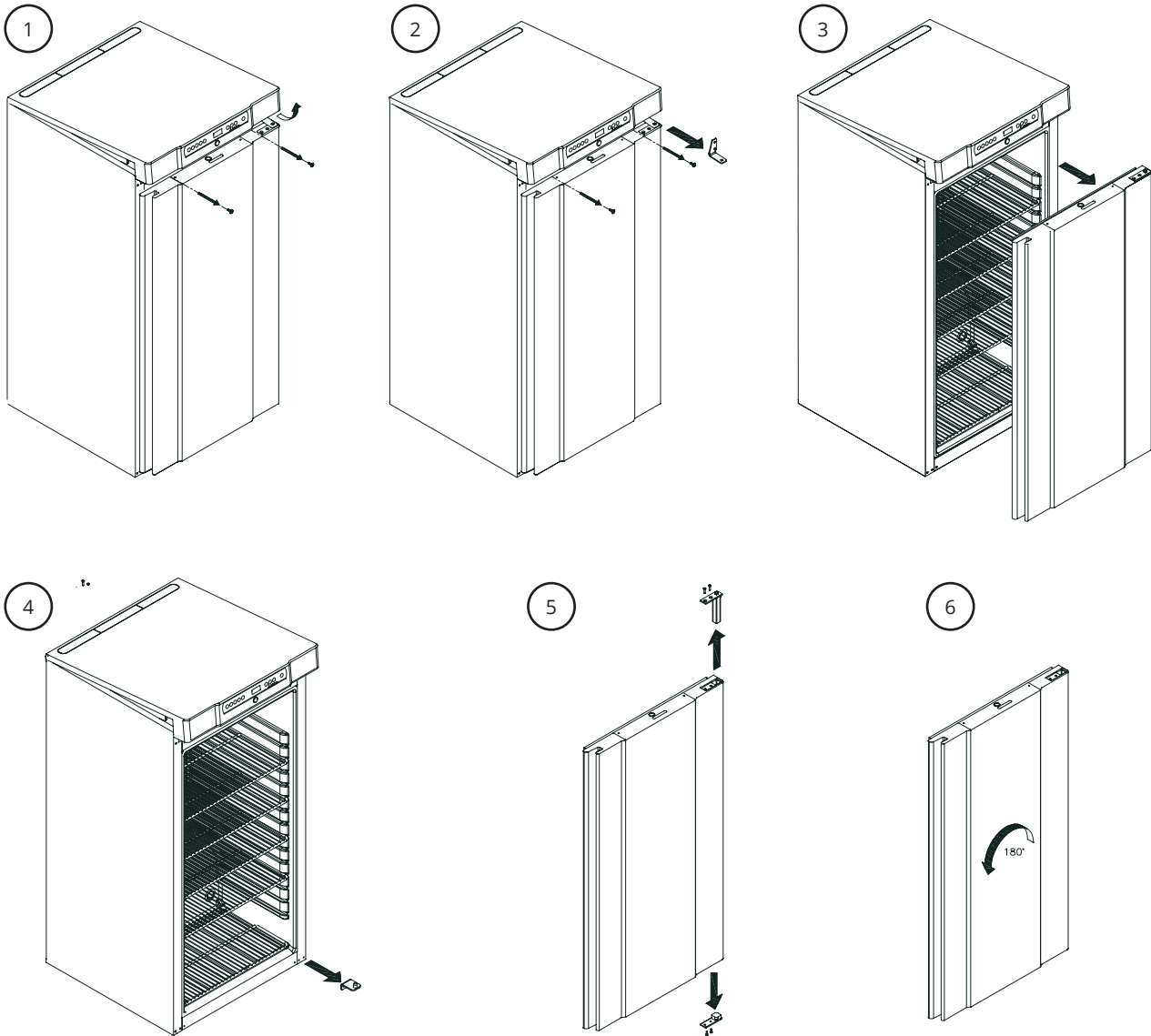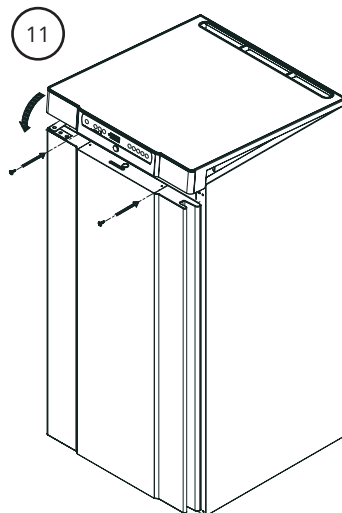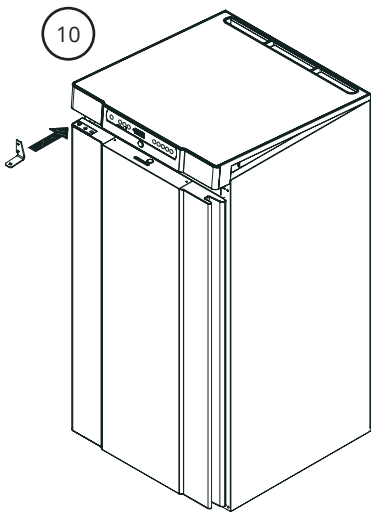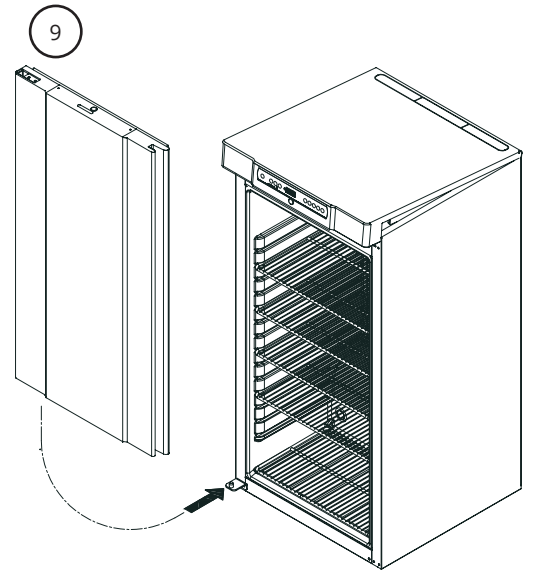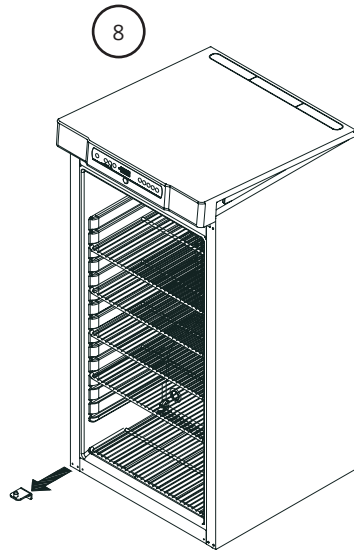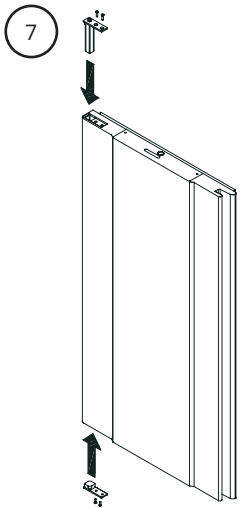
Anti tilt bracket

⚠️ **I-12*:** 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 anti-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.
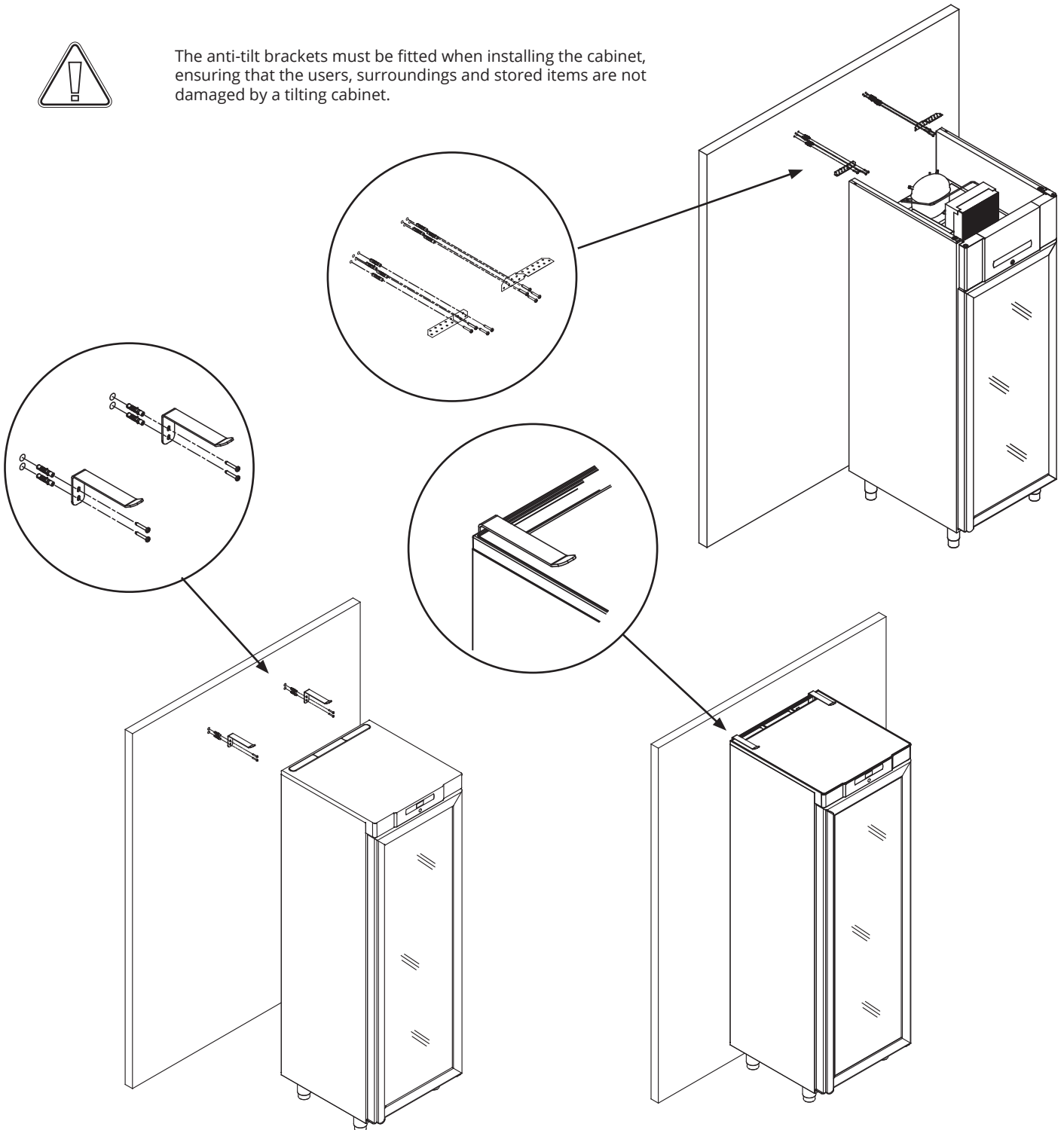
Wall mounting

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

CABINET TOP

A

① 8x⌀2,8 mm

②

A

③

④
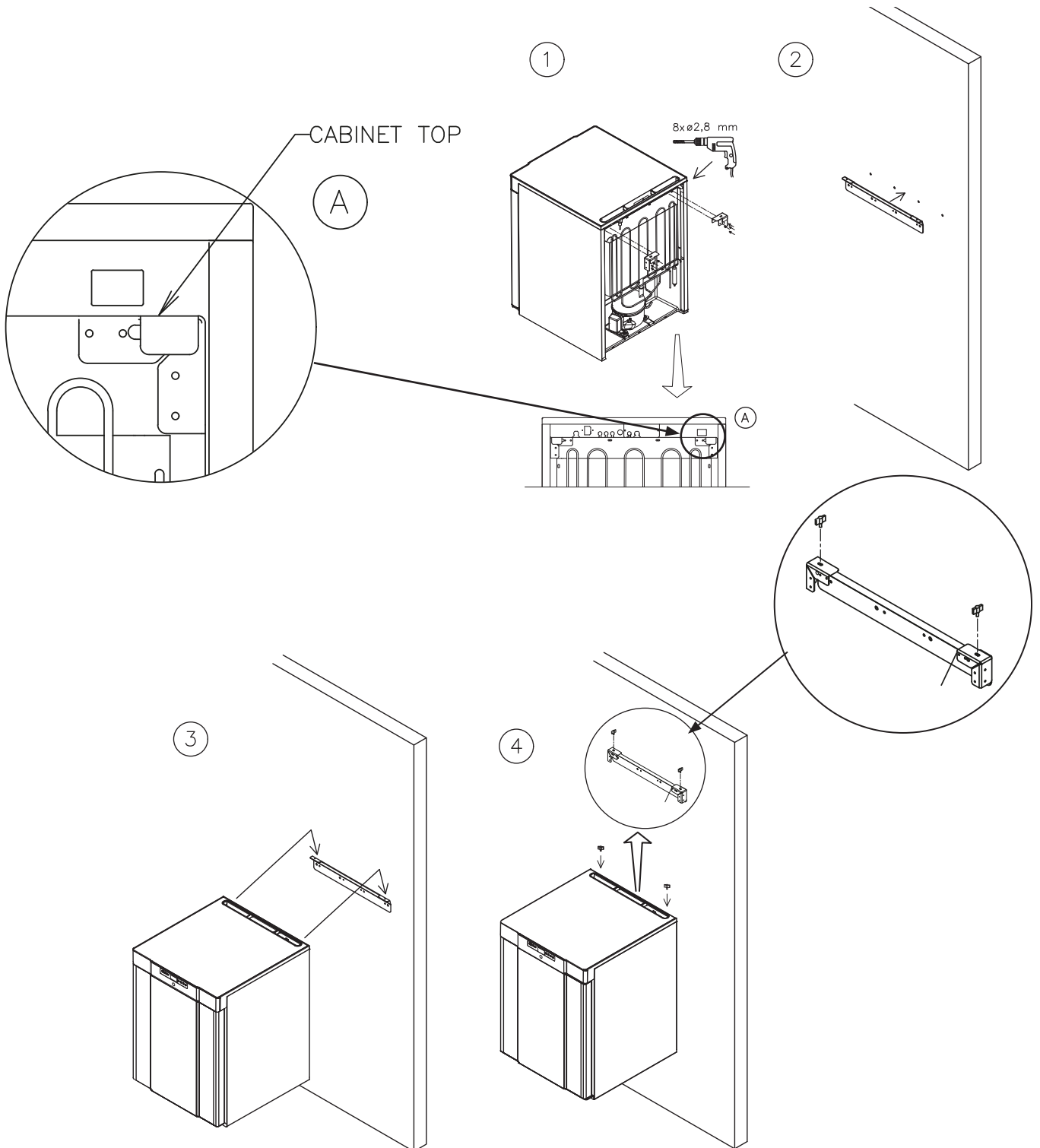
Surroundings

I-13-14*: The cabinet must be installed in accordance with the illustrations below.

15-75 mm

≥ 15 mm

≥ 30 mm
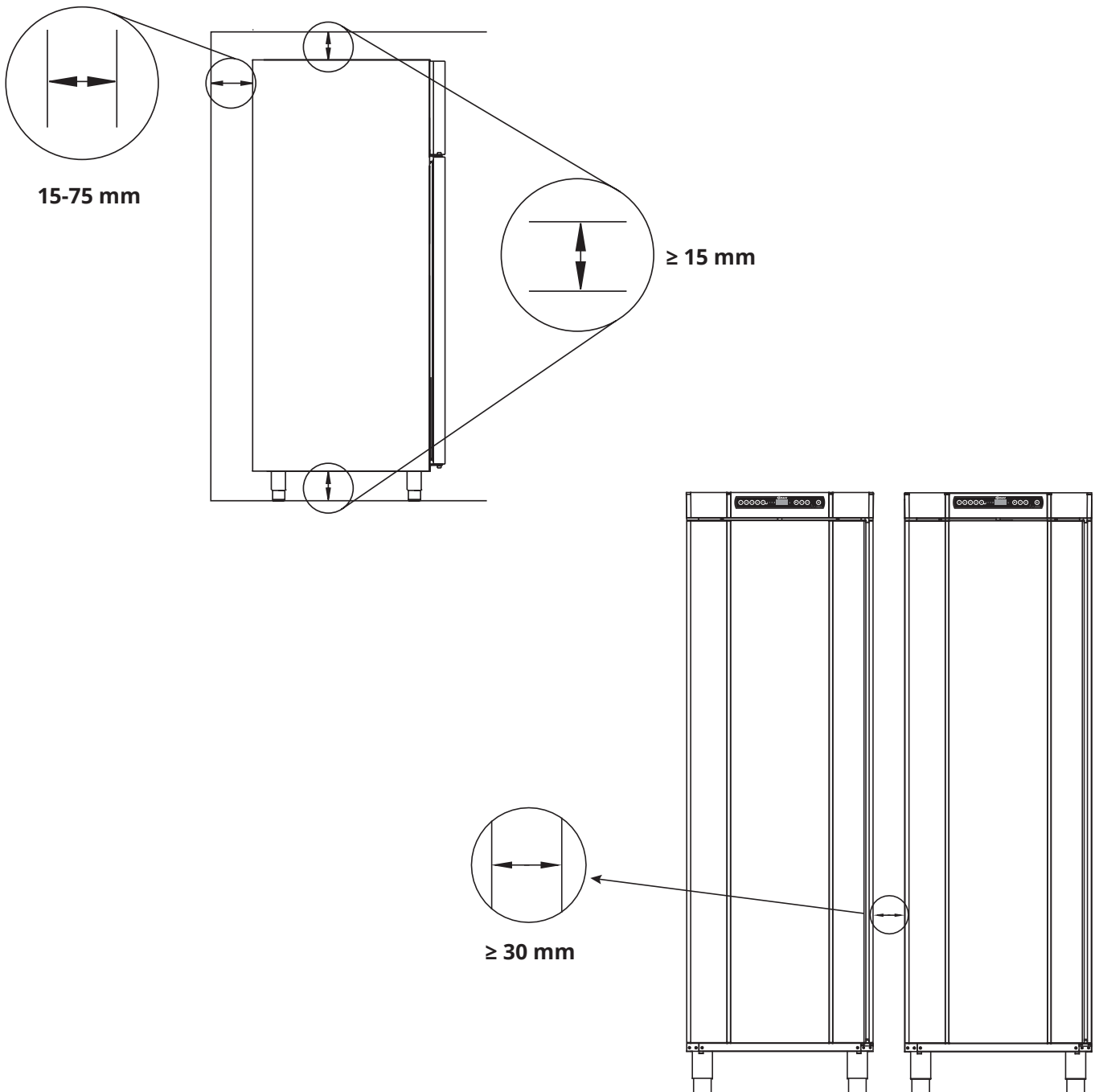
I-15*:   Do not cover the upper part of the cabinet.

I-16*:   Do not use electrical appliances inside the cabinet.

The cabinet is not suited for storing items that emit vapours, as this might lead to deterioration of cabinet performance and/or longevity.

All items in the cabinet that are not encapsulated, or wrapped, should be covered to reduce the risk of deterioration of cabinet performance and/or longevity.

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 do not have deformities, that gaskets seal properly and that the doors sit flush up against the door frame.

For Ex environments –
Open containers inside the storage chamber may impact the ATEX zone classification

For Ex environments –
Special conditions for safe use may apply to this product when installing in an EN 60079-14 environment. Please see corresponding Ex certificate for specifications.

*): Paragraph designation (I-1, I-2 etc) refers to the IQ (Installation Qualification)

Voltage free contact

I-17*:   The illustration 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 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.

Access to the voltage free contact is done according to the descriptions below:

BioCompact II 210, 310, 210/210, 310/210, 410
Unscrew the preload cover on the back of the cabient to access the voltage free contact block.

Two different sized strain reliefs are mounted into the preload cover for a secure fitment of the wire for the voltage free contact.

Ensure that the preload cover is reinstalled after installing the voltage free contact.
The leaf spring in the preload cover must engage and preload the power supply plug.

Consult the section "Connection to power" for further information.

BioCompact II 610
The voltage free contact secured in place by the press-fit plate that is pressed onto the block, thereby also preventing access to the electrical circuit.

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

Placement of voltage free contact

BioCompact II 610
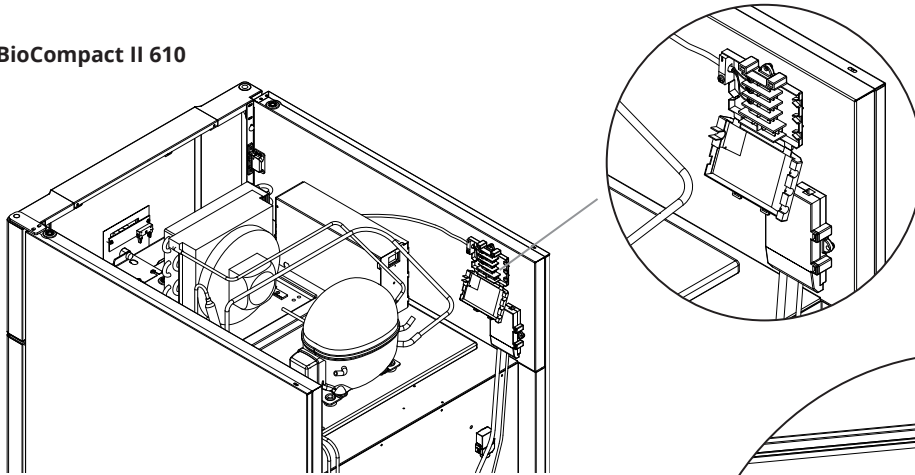
BioCompact II 210, 310, 210/210, 310/210, 410
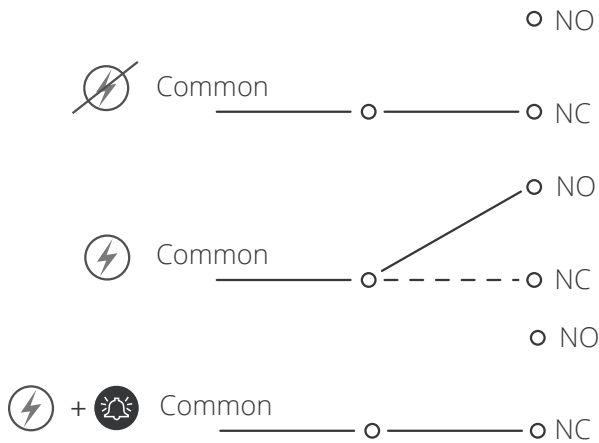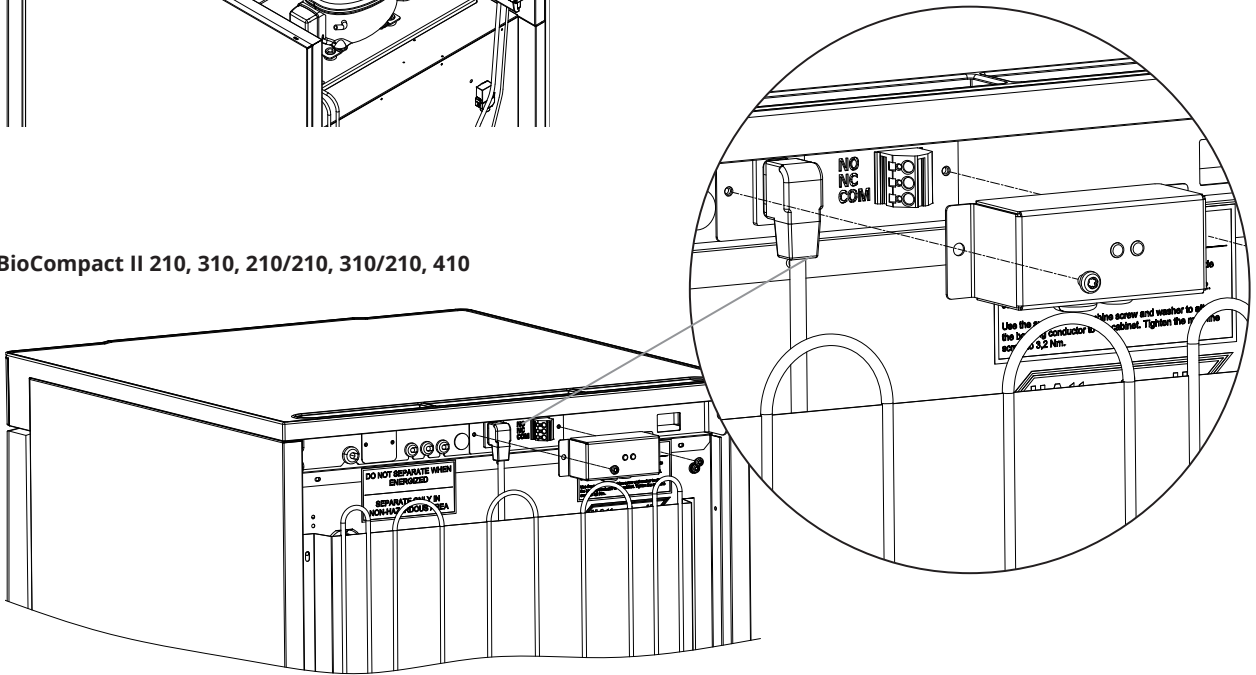
Normally closed circuit (NC)

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

When setting up in an ordinary scenario that is not subject to regulations for EN 60079-15 zone 2
The appliance may be connected in accordance with applicable local heavy current regulations.

Note that there are special regulations for products that are in accordance with EN 60079-15 zone 2 and EN 60079-14: Explosive atmospheres – Electrical installations design, selection and erection.

The appliance has been manufactured in accordance with EN 60079-15: Electrical apparatus for explosive gas atmospheres – Part 15: Type of protection II 3G Ex ec nC ic IIB Tx Gc. 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.

I-19*: 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.

I-20-1*: **BioCompact II 210, 310, 210/210, 310/210, 410**
The mains terminal is accessed via the preload cover on the back of the cabinet. Unscrew the preload cover to access the mains supply terminal.

Ensure that the preload cover is reinstalled after plugging in the power cord. The leaf spring in the preload cover must engage and preload the plug of the cord as shown in the illustrations below.

I-20-2*: **BioCompact II 610**
The power cord 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.

In all cases, ensure that the mains plug is seated completely in the terminal on the cabinet.

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.

I-21*: The connection must be labelled:
"DO NOT SEPARATE WHEN ENERGIZED"

ATTENTION

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.

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 BioLine 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 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.

For Ex environments –

Special conditions for safe use may apply to this product when installing in an EN 60079-14 environment. Please see corresponding Ex certificate for specifications.

Technical Support –

In the event of technical difficulties always contact Gram BioLine technical support or a Gram BioLine authorized service partner. Never dismantle the terminal box or any other elctrical component.

*): Paragraph designation (I-1, I-2 etc) refers to the IQ (Installation Qualification)
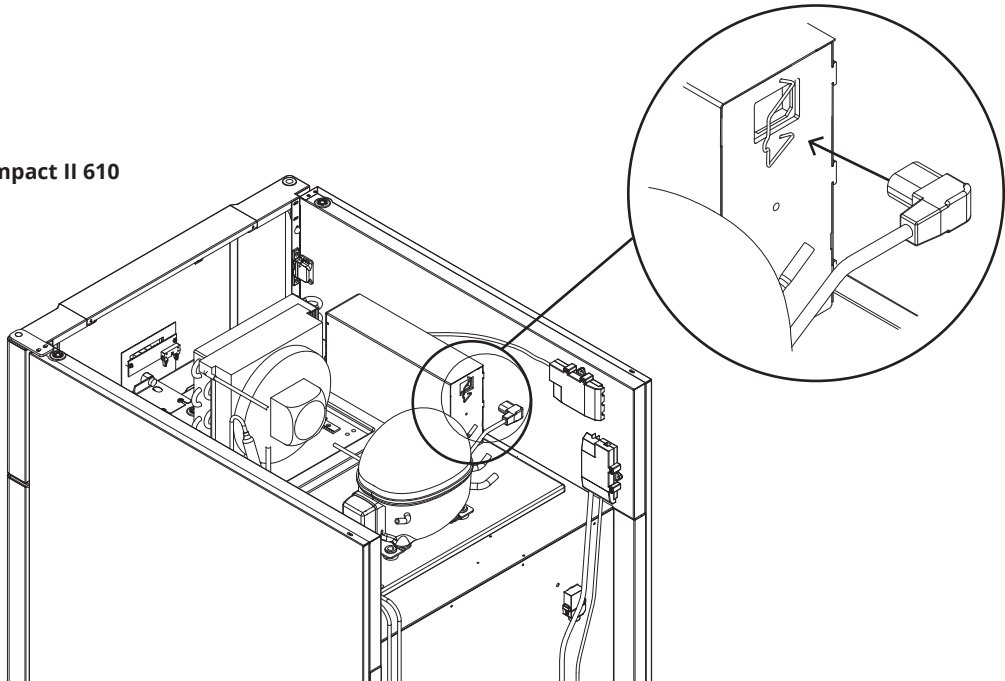
BioCompact II 610

BioCompact II 210, 310, 210/210, 310/210, 410
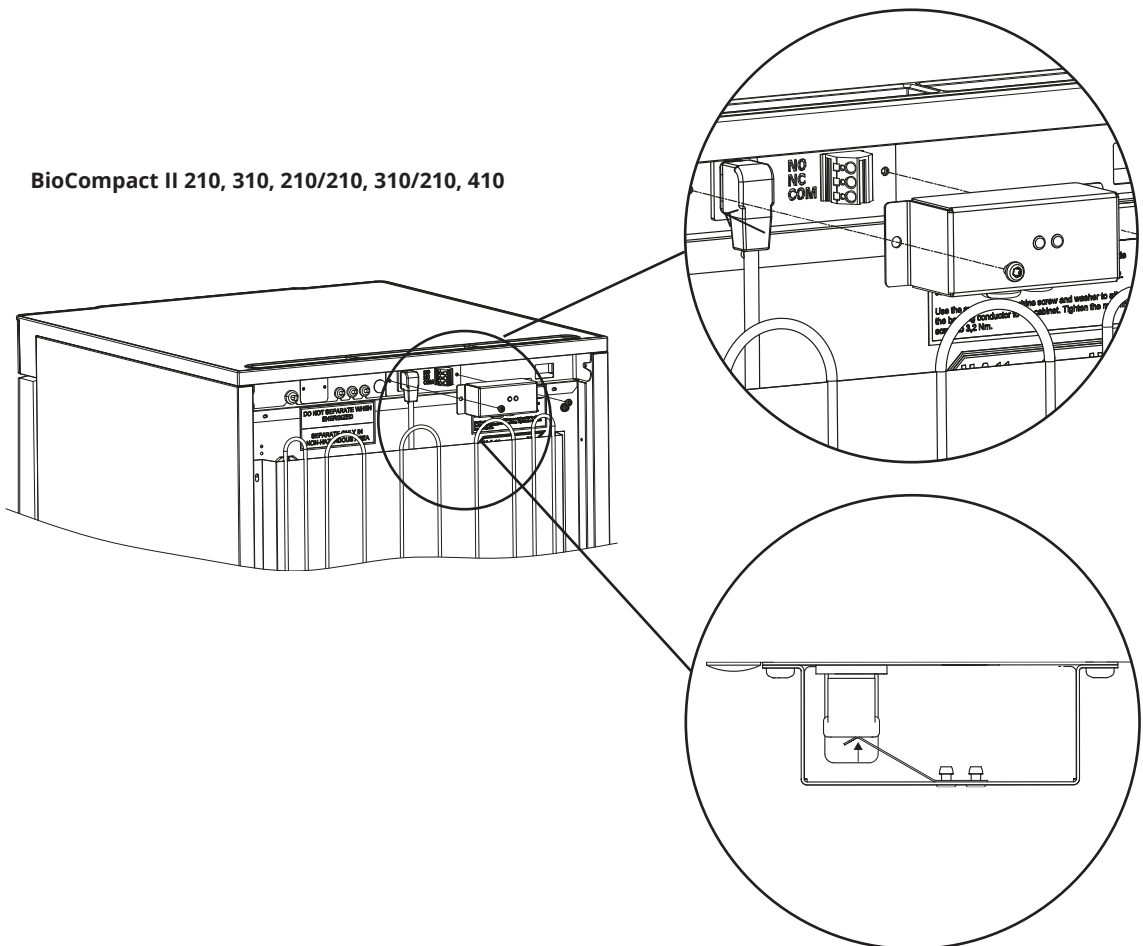
Equipotential bonding

Exclusively for the models – BioCompact II 210, 310, 410, 210/210, 310/210

I-22-1*: For installation in ATEX Cat. 3 Zone 2 areas, it is mandatory to have a equipotential bonding, it is not sufficient to use protective earth through the mains connection.

To secure equipotential bonding of the unit – the mounted external bonding conductor must be used in accordance with national installation requirements e.g. EN 60079-14.

- Mounting of the bonding conductor should be done according to the following illustrations.
- Please find location for connection facilities on the back of the cabinet marked with: "Attention – Equipotential bonding".
- The bonding conductor should be at least 4 mm^2 guage.
- Use a ring terminal to ensure adequate bonding.
- Use the supplied M5 machine screw and washer to attach the bonding conductor to the cabinet. Tighten the machine screw to 3.2 Nm.

Bonding of the cabinet is illustrated on the next page and the following.

ATTENTION –
Please note, this location is the only manufacturerer-approved location for Equipotential bonding.
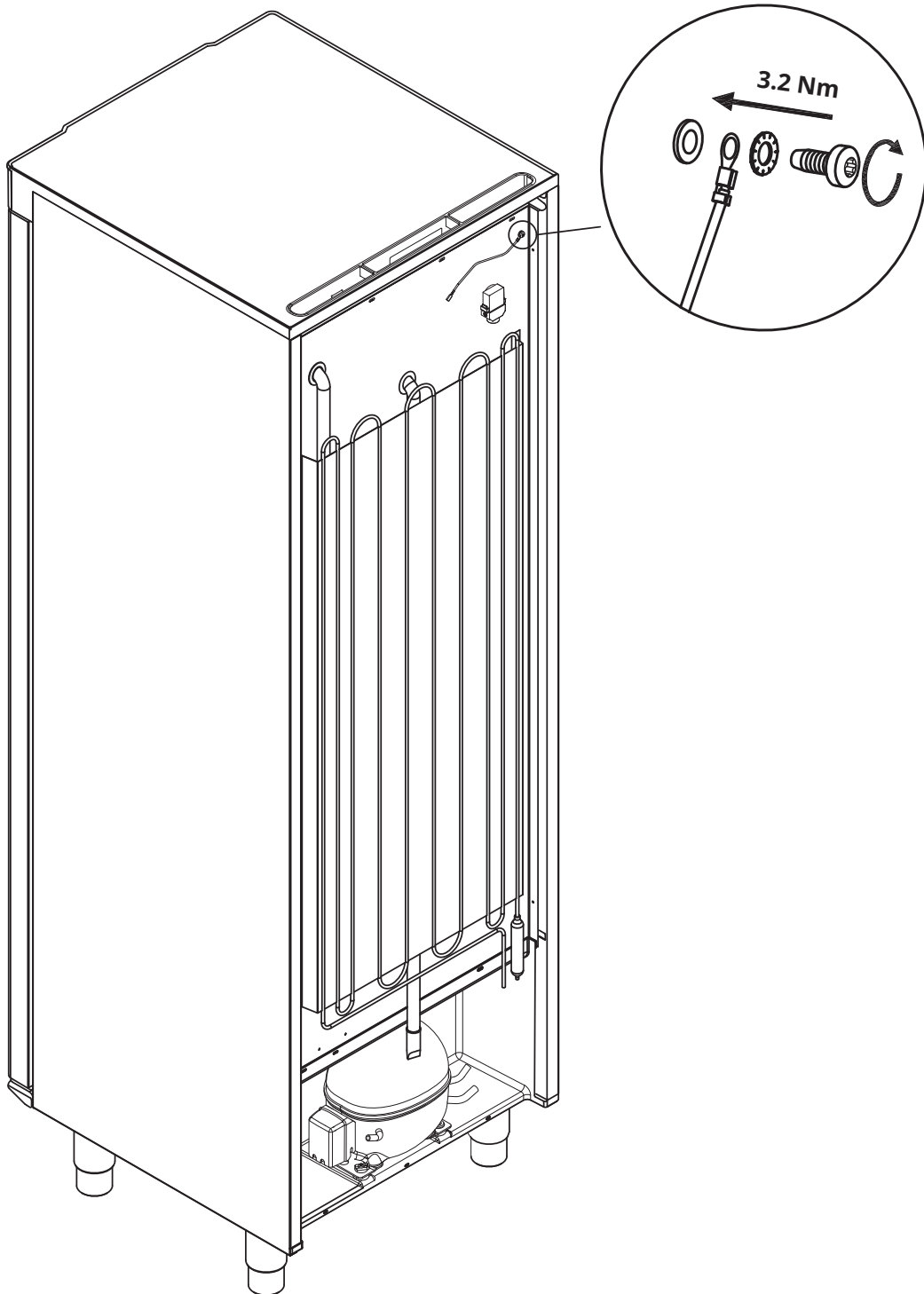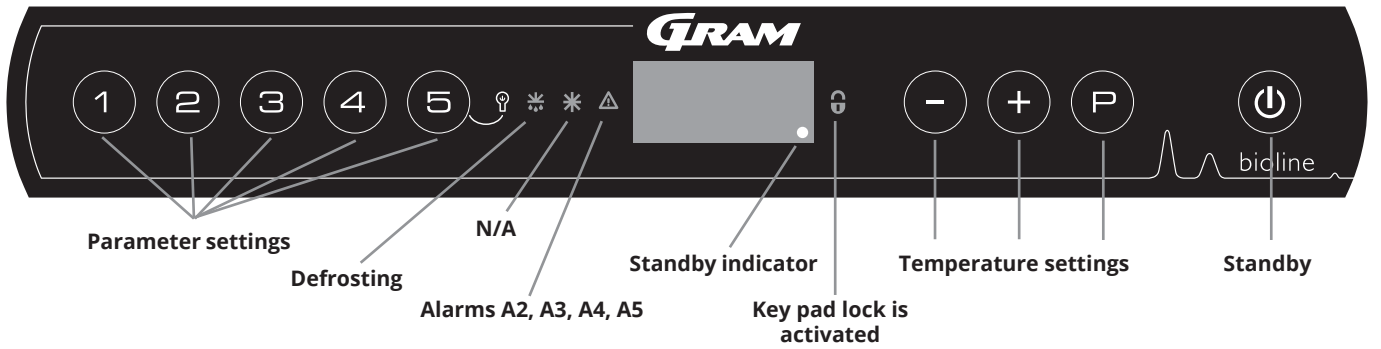
*): Paragraph designation (I-1, I-2 etc) refers to the IQ (Installation Qualification)

3.2 Nm

Start-up

The digital display

Parameter settings

N/A

Defrosting

Alarms A2, A3, A4, A5

Standby indicator

Key pad lock is activated

Temperature settings

Standby

O-1*: Standby

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. The cabinet is ready when the temperature is displayed.

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 cabinet 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 cabinet must be moved to a no-risk area.

> **WARNING –**
> DO NOT OPEN, MAINTAIN OR SERVICE IN AN AREA WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT

> **ATTENTION –**
> High and low temperature alarms set up in the cabinets' controller (including EAL alarms) must be accompanied by additional redundant independent external alarms to ensure maximum item safety.

- **Parameter setting**
  Gives access to the cabinets configurable parameters, such as alarms, test program and sensor values.

- **Defrost**
  Defrost in progress.

- **Key pad lock**
  Keypad is locked, no access to functions or menus.

- **Temperature setting**
  Setting of temperature setpoint and navigation in the menus.

- **Standby**
  Turn the cabinet On or Standby, and navigation in the menus.

O-2*: Temperature setting

Temperature adjustments are done by holding ⓟ and pressing either ⊕ or ⊖. Confirm the settings by letting go of the buttons.

All-round introduction to navigating the menu

Beyond setting the temperature and Standby, ⓟ, ⊕, ⊖ and ⏻ is used to navigate the menus and set the parameters for the cabinet.

The buttons have following functions in the menus:

ⓟ 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 limit for instance).

⊖ Scroll downwards in a given menu/lower a given value in parameter settings (alarm limit for instance).

⏻ Go a menu step back.

): Paragraph designation (O-1, O-2 etc) refers to the OQ (Operation Qualification)

Walkthrough of menu

Menu Access Ⓟ + 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]
		Ehd	[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
		BU	On/off	Acoustic signal for external alarm codes [A1], [A4], [A5]. [1=on/0=off]
Offset of sensors	CAL	cA	[° K]	Offset setting of A-sensor. Reference sensor for the refrigeration system
		cE	[° K]	Offset setting of E-sensor. Reference sensor for the display and alarms
		cF	[° K]	Offset setting 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)

Buttons	Duration	Function
Ⓟ + ⏻	> 3 seconds	Start or stop a defrost
⏻ + ①	> 6 seconds	Activating/deactivating the keypad lock
Ⓟ	-	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	Reset alarm history
Ⓟ + ① + ③	> 6 seconds	Restore to factory settings
Ⓟ + ①	> 3 seconds	Access to user menu and alarm settings

Lighting inside the cabinet – Only applicable to BioCompact ll 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

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
F6	Error on low temperature protection 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 ensure that the condenser (and possibly filter) is clean. Service is required if the problem is not alleviated

Acknowledge an acoustic alarm

Alarm code A1: Press (P) to acknowledge.
Temperature alarm codes A2 and/or A3: Flashes in the display. Press (P) to acknowledge.
The display will continue to flash if the temperature is outside the alarm limits.

Latching alarms: A2, A3, A4, A5

Due to the potential implications of alarms, the red alarm triangle icon will turn on along with the corresponding alarm code will flash in the display. The alarm state will remain on until acknowledged by pressing (P).

Reading the alarm history – Example [A2]

[A2] flashes in the display – The temperature has exceeded the set value for the upper temperature limit, LhL.

Press (P) to acknowledge 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.

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 acknowledged, but the alarm history 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.

Local alarm settings

Local high alarm
Local low alarm

O-3*:   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 (⏻), and then navigate by using (−) or (+).

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

O-4*:   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 (⏻), and then navigate by using (−) or (+).

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

⚠ **ATTENTION –**
High and low temperature alarms set up in the cabinets' controller (including EAL alarms) must be accompanied by additional redundant independent external alarms to ensure maximum item safety.

Local alarm settings

O-5*: 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

O-6*: 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

ATTENTION –

High and low temperature alarms set up in the cabinets' controller (including EAL alarms) must be accompanied by additional redundant independent external alarms to ensure maximum item safety.

*): Paragraph designation (O-1, O-2 etc) refers to the OQ (Operation Qualification)

O-7*:   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

O-8*:   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

⚠ **ATTENTION –**
High and low temperature alarms set up in the cabinets' controller (including EAL alarms) must be accompanied by additional redundant independent external alarms to ensure maximum item safety.

*): Paragraph designation (O-1, O-2 etc) refers to the OQ (Operation Qualification)

Local acoustic settings

O-9*: 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

ATTENTION –

High and low temperature alarms set up in the cabinets' controller (including EAL alarms) must be accompanied by additional redundant independent external alarms to ensure maximum item safety.

*): Paragraph designation (O-1, O-2 etc) refers to the OQ (Operation Qualification)

External alarm settings

External high alarm
External low alarm

O-10*: 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 (⏻), and then navigate by using (−) or (+).

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

O-11*: 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 (⏻), and then navigate by using (−) or (+).

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

⚠ **ATTENTION –**
   High and low temperature alarms set
   up in the cabinets' controller (including
   EAL alarms) must be accompanied by
   additional redundant independent
   external alarms to ensure maximum
   item safety.

External high alarm delay
External low alarm delay

O-12*: 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

O-13*: 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

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ATTENTION –

High and low temperature alarms set up in the cabinets' controller (including EAL alarms) must be accompanied by additional redundant independent external alarms to ensure maximum item safety.

*): Paragraph designation (O-1, O-2 etc) refers to the OQ (Operation Qualification)

On/off external door
External door alarm delay alarm

O-14*: 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

O-15*: 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

⚠️ **ATTENTION –**
High and low temperature alarms set up in the cabinets' controller (including EAL alarms) must be accompanied by additional redundant independent external alarms to ensure maximum item safety.

External acoustic settings

O-16*: 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

ATTENTION –

⚠ High and low temperature alarms set up in the cabinets' controller (including EAL alarms) must be accompanied by additional redundant independent external alarms to ensure maximum item safety.

*): Paragraph designation (O-1, O-2 etc) refers to the OQ (Operation Qualification)

Parameter settings

Sensor offset

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

Offset 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 A-sensor, an extra sensor E-sensor and an optional F-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 F-sensor is placed inside the storage space, close to the airflow of the cold air exiting the air distribution system. The location of the F-sensor must not be altered as this will have an effect on when the low temperature protection activates.

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

The E-sensor should be offset 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. Offset of E-sensor is named "cE"

T**he F-sensor** should be offset if the cut-off temperature for the low temperature protection, does not match the setpoint temperature for the low temperature protection. Offset of the F-sensor is named "cF".

Practical example of offset

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 °C and +4 °C. The desired temperature range is between +3 °C 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 °C and +6 °C. The desired temperature range is between +3 °C 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.

Offset of the A-sensor

↳ Press and hold ⓟ + ① for more than 3 seconds

↳ Press ⊕ several times until "cAL" is shown in the display

↳ Press ⓟ to select "cAL". "cA" is shown in the display

↳ Press ⓟ to select "cA"

↳ Press ⊖ or ⊕ to offset the A-sensor

↳ Press ⓟ to confirm the set value

   – The A-sensor is now offset, 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

Offset of the E-sensor

↳ Press and hold ⓟ + ① for more than 3 seconds

↳ Press ⊕ several times until "cAL" is shown in the display

↳ Press ⓟ to select "cAL". "cA" is shown in the display

↳ Press ⊕ until "cE" is shown in the display

↳ Press ⓟ to select "cE"

↳ Press ⊖ or ⊕ to offset the E-sensor

↳ Press ⓟ to confirm the set value

   – The E-sensor is now offset 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

Offset of the F-sensor

↳ Press and hold ⓟ + ① for more than 3 seconds

↳ Press ⊕ several times until "cAL" is shown in the display

↳ Press ⓟ to select "cAL". "cA" is shown in the display

↳ Press ⊕ until "cF" is shown in the display

↳ Press ⓟ to select "cF"

↳ Press ⊖ or ⊕ to offset the F-sensor

↳ Press ⓟ to confirm the set value

   – The F-sensor is now offset 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

Escorted/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.

> **ATTENTION –**
> High and low temperature alarms set up in the cabinets' controller (including EAL alarms) must be accompanied by additional redundant independent external alarms to ensure maximum item safety.

Defrosts/24 hours

O-17*: 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.

⚠ **ATTENTION –**

High and low temperature alarms set up in the cabinets' controller (including EAL alarms) must be accompanied by additional redundant independent external alarms to ensure maximum item safety.

*): Paragraph designation (O-1, O-2 etc) refers to the OQ (Operation Qualification)

Display sensor

O-18*: dPS – Display sensor

↳   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.

⚠ **ATTENTION –**

High and low temperature alarms set up in the cabinets' controller (including EAL alarms) must be accompanied by additional redundant independent external alarms to ensure maximum item safety.

Electric low temperature protection

FP – Activation/deactivation of low temperature protection

↳   Press and hold ⓟ + ① for more than 3 seconds

↳   Press ⊕ several times until "FP" is shown in the display

↳   Press ⓟ to select "FP". "Act" is now shown in the display

↳   Press ⓟ to select "Act"

↳   Press ⊖ or ⊕ to activate/deactivate [1 = activated / 0 = deactivated]

↳   Press ⓟ 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 ⓟ + ① for more than 3 seconds

↳   Press ⊕ several times until "FP" is shown in the display

↳   Press ⓟ to select "FP". "Act" is now shown in the display

↳   Press ⊕ several times until "SEt" is shown in the display

↳   Press ⓟ to select "SEt"

↳   Press ⊖ or ⊕ to select the setpoint temperature for the low temperature protection

↳   Press ⓟ 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 ⓟ + ① for more than 3 seconds

↳   Press ⊕ several times until "FP" is shown in the display

↳   Press ⓟ to select "FP". "Act" is now shown in the display

↳   Press ⊕ to progress to "tES"

↳   Press ⓟ 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 ⓟ + ① for more than 3 seconds

↳   Press ⊕ several times until "FP" is shown in the display

↳   Press ⓟ to select "FP". "Act" is now shown in the display

↳   Press ⊕ several times until "Pre" is shown in the display

↳   Press ⓟ to select "Pre"

↳   Press ⓟ 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

Ordinary use

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

Do not place items beneath the lowest shelf bracket. 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.

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.

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

The cabinet interior must not be exposed to corrosive atmospheres.
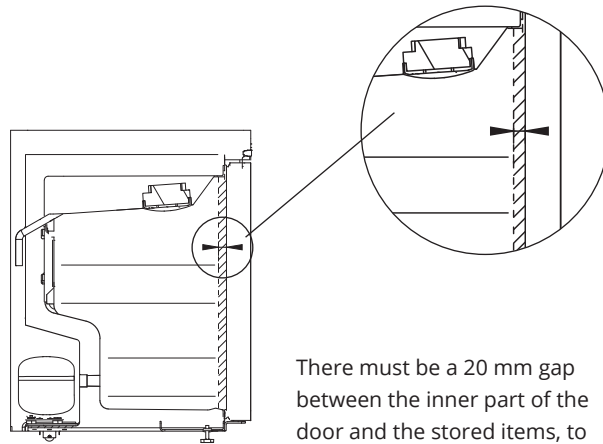
There must be a 20 mm gap between the inner part of the door and the stored items, to enable airflow at the front of the cabinet.

BioCompact II 410

Load limit   Limite de chargement
              Maximale Beladungshöhe

BioCompact II 610

Load limit   Limite de chargement
              Maximale Beladungshöhe
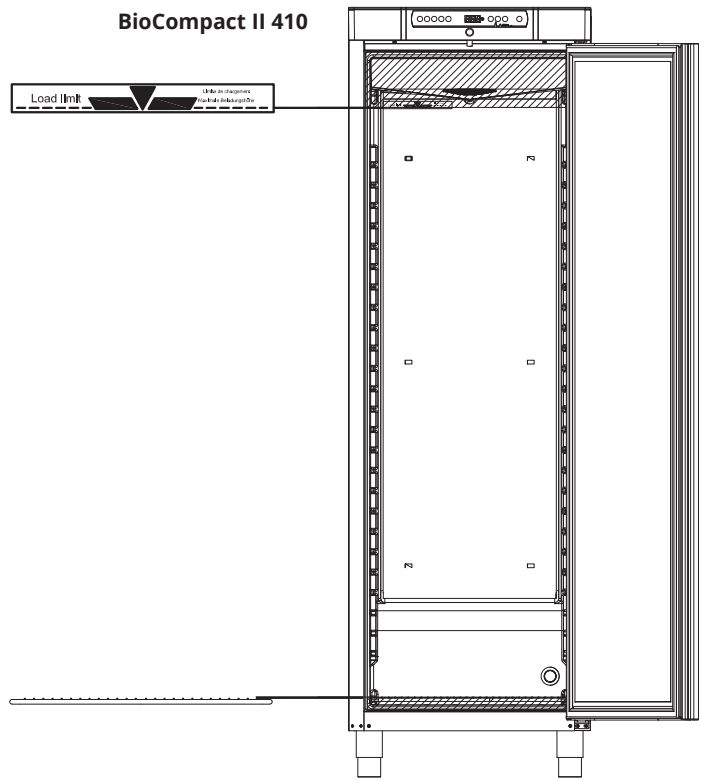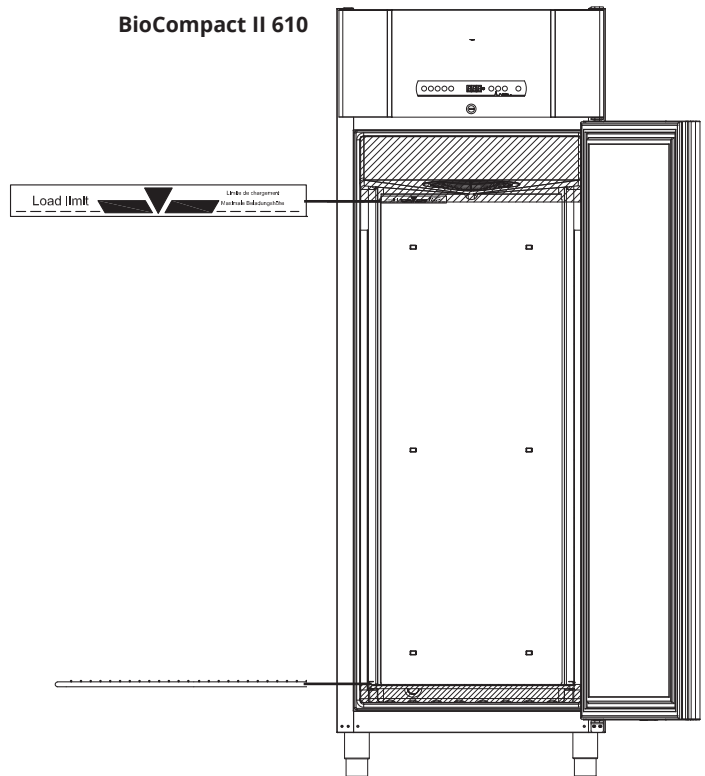
Regular maintenance

Cleaning

The cabinet must not be connected to a power source while 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.

It is recommended that the re-evaporation tray is checked regularly for foreign objects and cleaned accordingly.

Do not flush compressor compartment or evaporator with water.

Cleaning agents containing chlorine or compounds of chlorine as well as other corrosive agents, may not be used, as they may cause corrosion.

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

BioCompact II 610
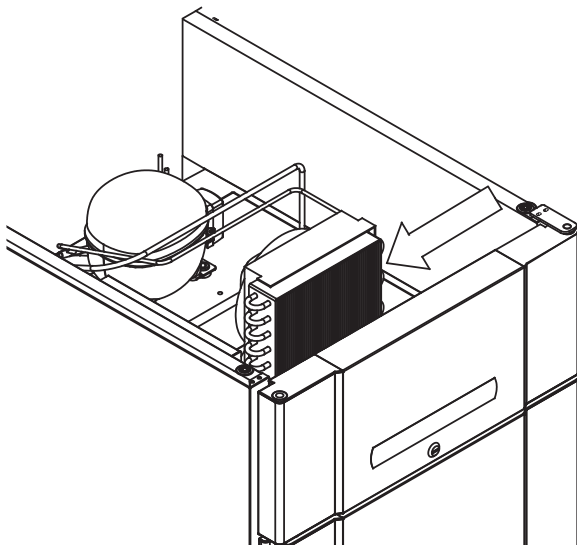
BioCompact II 210, 310, 410, 210/210
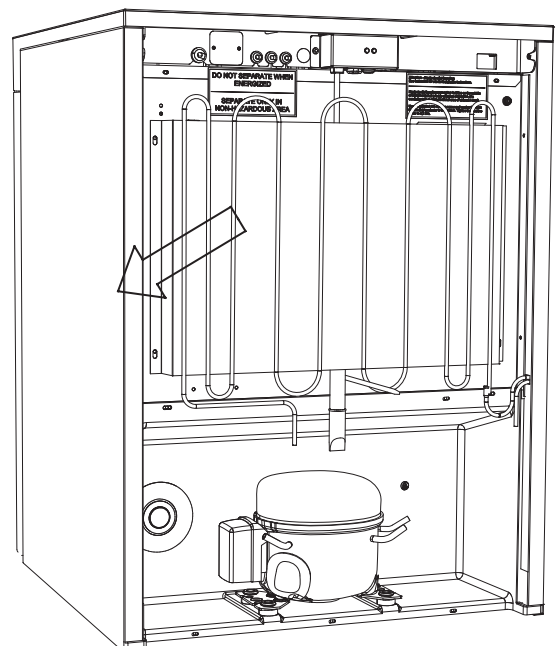
Door gasket

Door gaskets are an important part of a cabinet. Impaired door gaskets can lead to increased humidity, iced up evaporator (and thus reduced cooling capacity), and in some cases, decreased longevity 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 door gasket on a BioCompact II 410.

Door gasket
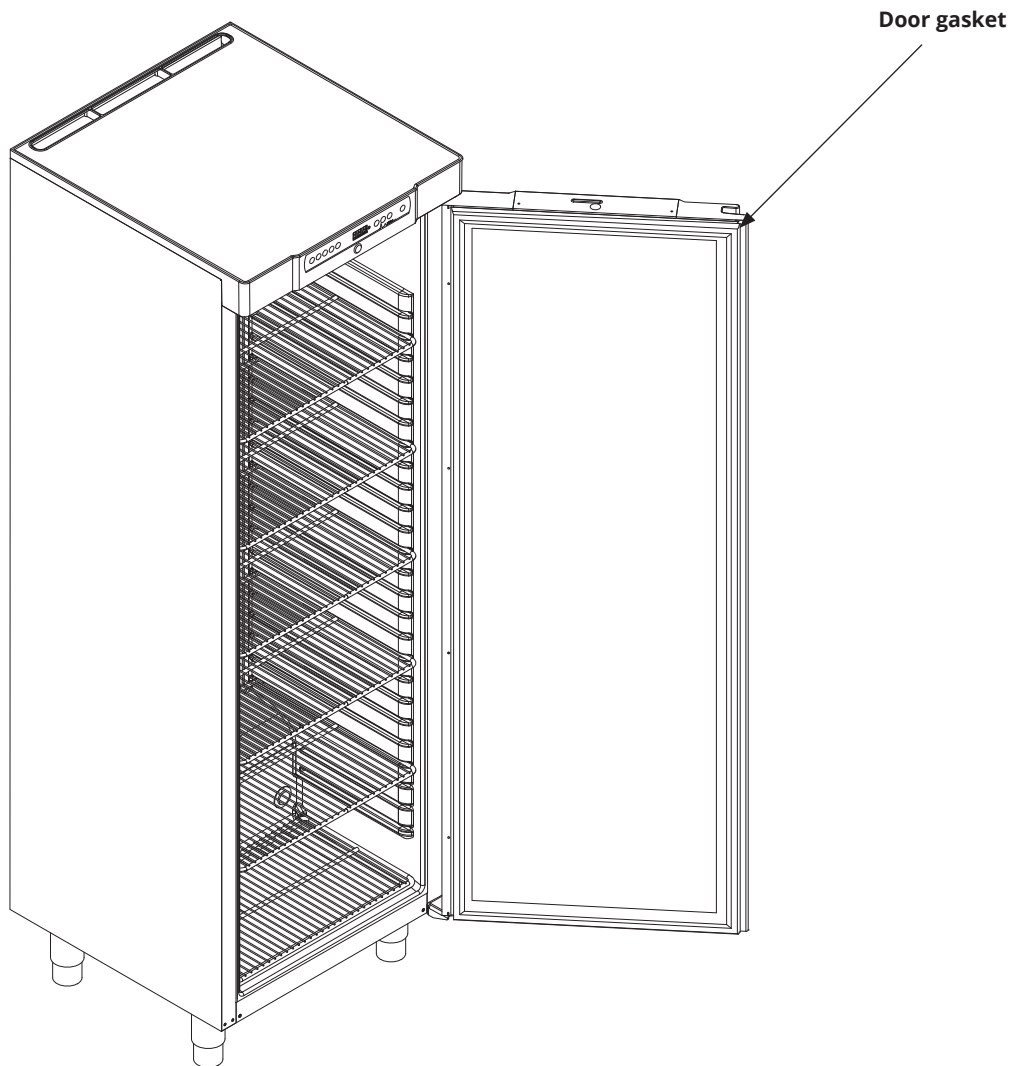
General info

Service

Read the following carefully, for information on technical safety and responsibility on Gram BioLine products.

WARNING –
DO NOT OPEN, MAINTAIN OR SERVICE
IN AN AREA WHEN AN EXPLOSIVE
ATMOSPHERE IS PRESENT

When servicing –
Make sure the appliance is switched Off at the socket before service is performed on the cabinet.

It is not sufficient to switch Off the cabinet on the Standby ⏻ button, as current will persist in some electrical parts of the cabinet.

Warranty may be void in the instance the cabinet is being used for applications other than its intended use, or otherwise not in accordance with the guidelines stipulated in the instructions for use.

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

The cabinet should be checked at least once yearly by a Gram BioLine-authorized technician.
The refrigeration system and the hermetically sealed compressor require no maintenance. However the condenser requires regular cleaning.

Be aware that cabinets using hydrocarbons (HC) as refrigerant, may require special handling by qualified technicians.

Type/number plate

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.
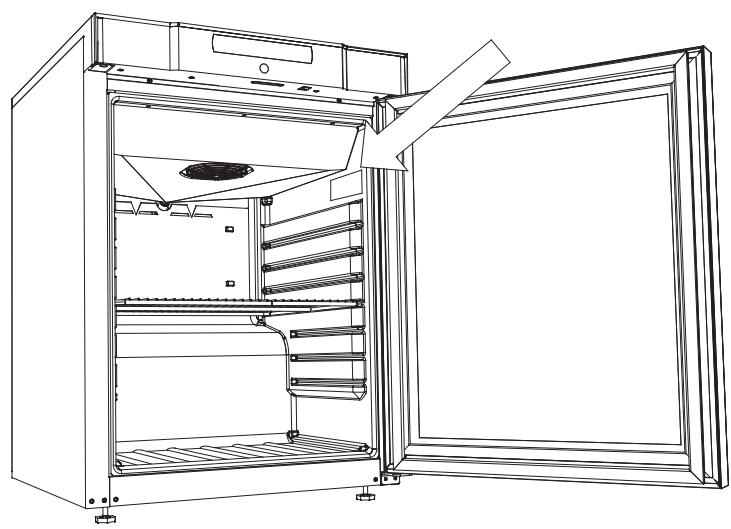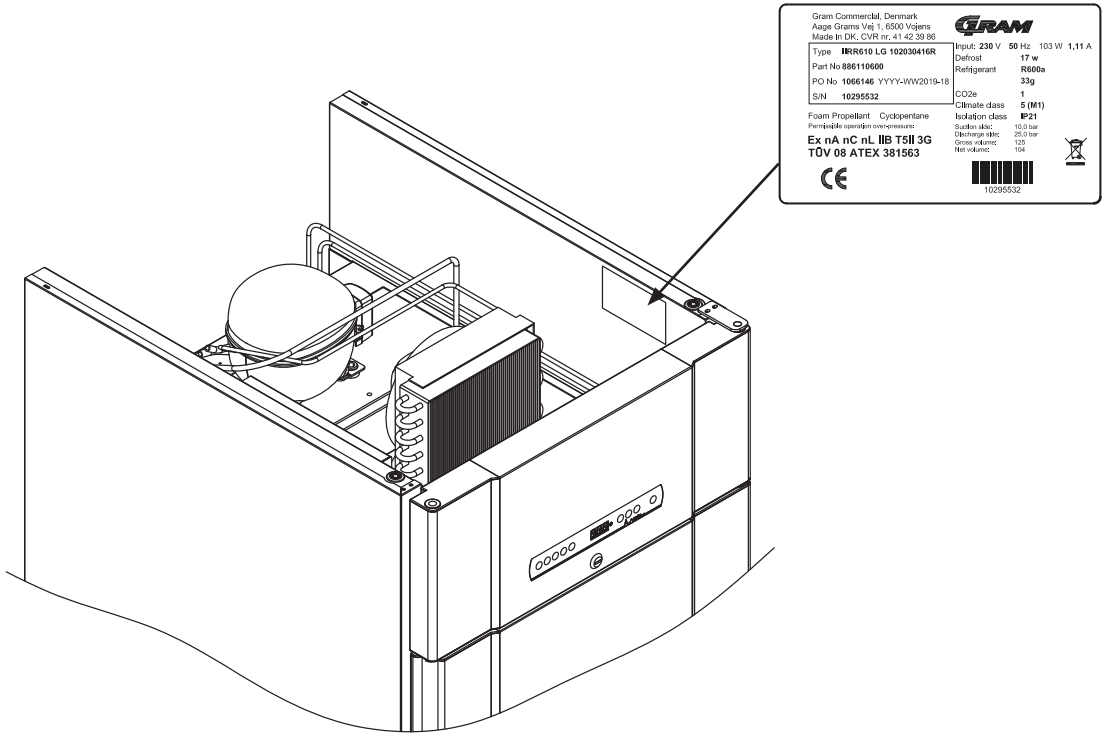
Defrost water

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 II 210, 310, 210/210, 310/210, and 410
Defrost water is led through a tube in the insulation to a re-evaporation tray in the compressor room in the cabinet.

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

⚠️ It is recommended that the re-evaporation tray is checked regularly for foreign objects and cleaned accordingly. 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.

BioCompact II 410
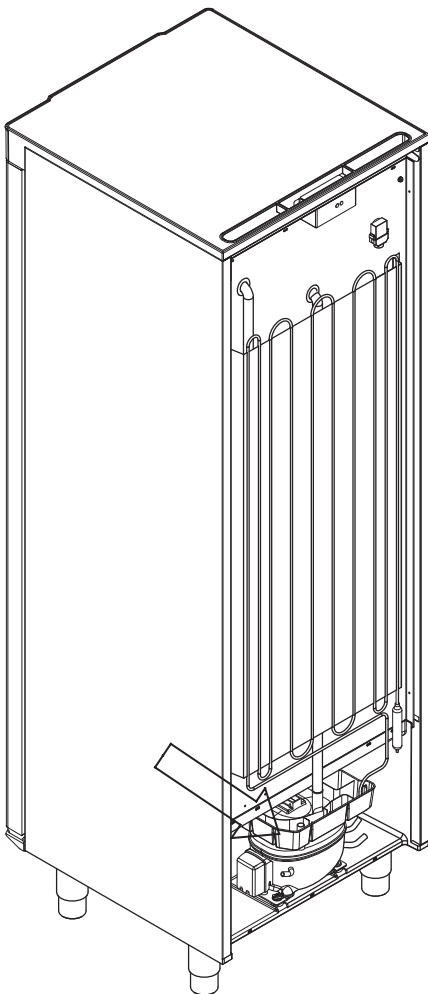
BioCompact II 610
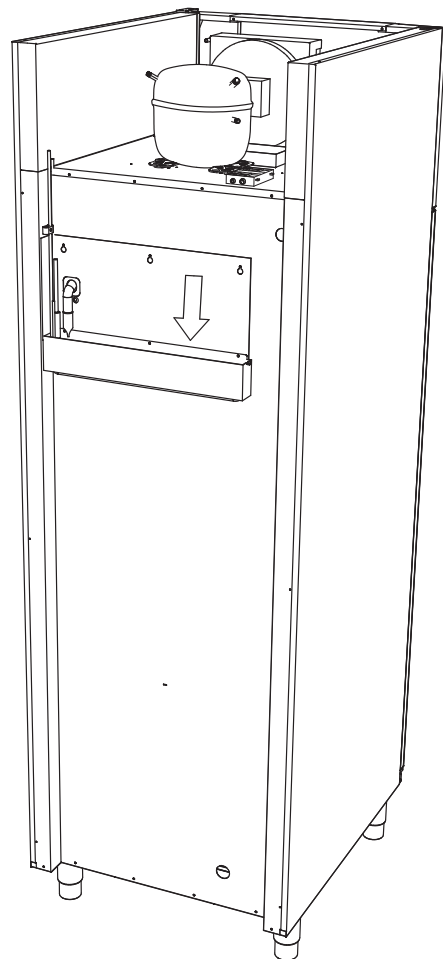
Access port

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

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 malfunction of the cabinet.

Access ports are clearly marked "Access port" on the cabinet. Find the location on this page.
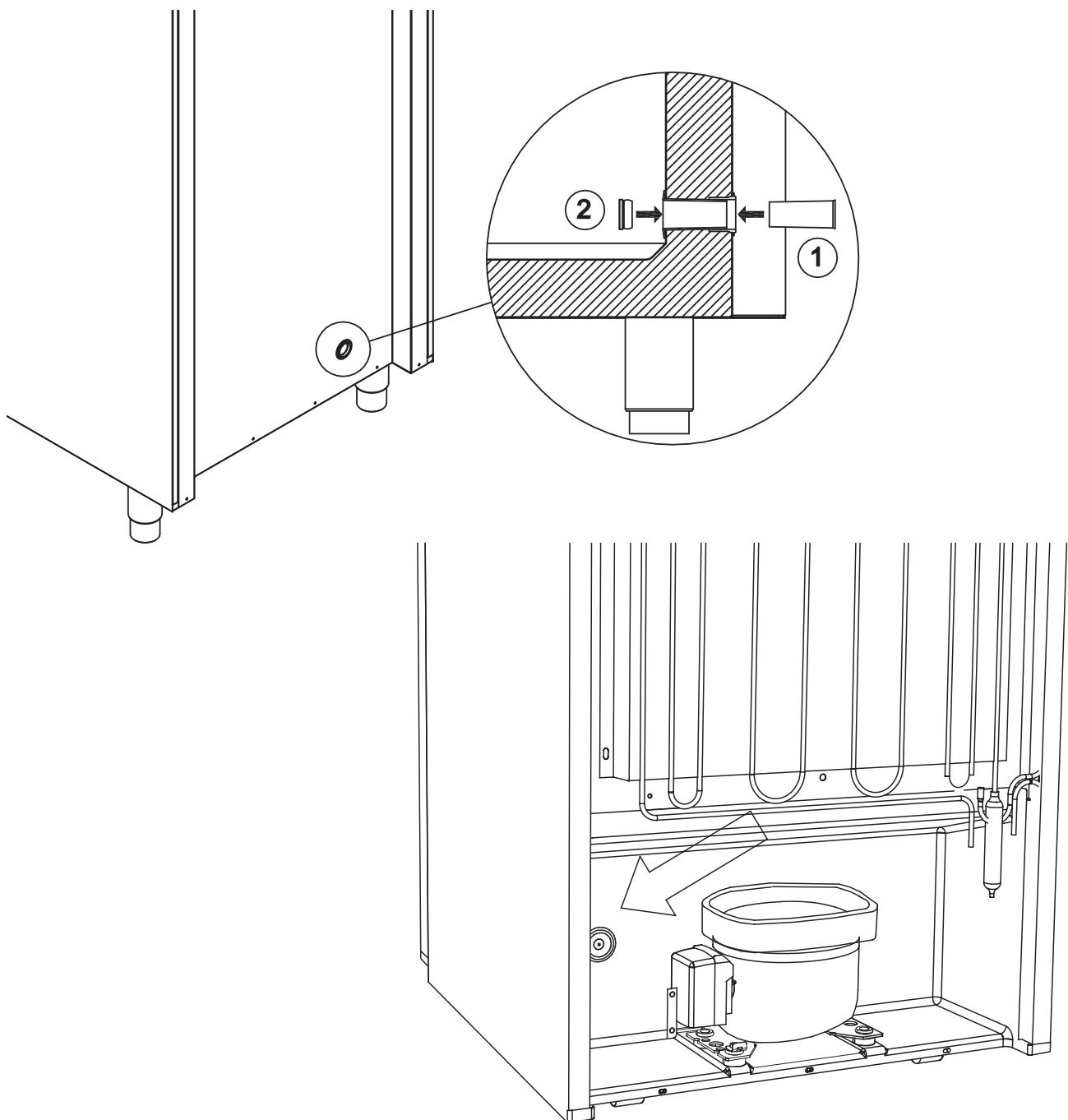
Important

⚠

IMPORTANT!

1. There may be sharp edges on the cabinet housing, compressor room, and interior, 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. Be particularly vigilant in relation to closing doors with self-close mechanism as these are spring-loaded. Negligence of these precautions can lead to injuries.

5. Unlocked castors can lead to unexpected movements of the cabinet. Lock the castors after installation. Negligence of these precautions can lead to injuries.

6. 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.

7. 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.

8. 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.

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.

Contact you local BioLine distributor when the cabinet needs to be disposed of.
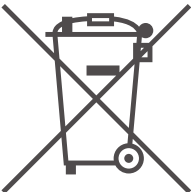
Products that are labelled with a "crossed-out wheelie bin 'is electric and electronic equipment.
The crossed out wheelie bin symbolizes that waste of this type can not be disposed of with unsorted municipal waste, but must be collected separately.

Datasheet

BioCompact II 210, 310, 410, 210/210, 310/210

General data:
BioCompact II 210, 310, 410, 210/210, 310/210

Technical specifications	Data
Connection	230 VAC, 50 Hz
Control Unit	Gram Control Unit with voltage free contact, alarms and offset function
Alarms	Acoustic and visual, High/Low temperature alarms and door alarm
Alarm ports	Voltage free contact
Access port	1 pcs. ø24.5 mm
Door	Right or left hinged
Material interior	PS lining
Material exterior	White lacquered steel or stainless steel finish
Wall thickness	52 mm
Insulation	50 mm polyurethane with HFC-free cyclopentane propellant
Air system	BioLine ventilated air distribution system
Defrost system	Automatic smart defrost with re-evaporation of defrost water
IP class	IP21

BioCompact II RR210H

BioCompact II RR210H
Solid door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+35 °C
Software variant	K82
K-Value	0.35 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T5 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	125 litres
Net volume	104 litres
Dimensions – W x D x H	595 x 640 x 801/1001mm
Refrigerant	R134a
Refrigerant charge	80 g
Refrigeration capacity at -10 °C	150 Watt
GWP – CO2e	114.4
Energy consumption – default setpoint	0.68 kWh/24h
Heat emission 100 %	111 Watt
Heat emission default setpoint	28 Watt
Nominal consumption	110 Watt
Start current	6.9 A
Sound level	36.5 dB(A)

BioCompact II RR210H
Glass door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+32 °C
Software variant	K82
K-Value	0.49 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T5 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	125 litres
Net volume	104 litres
Dimensions – W x D x H	595 x 640 x 801/1001 mm
Refrigerant	R134a
Refrigerant charge	80 g
Refrigeration capacity at -10 °C	150 Watt
GWP – CO2e	114.4
Energy consumption – default setpoint	1.22 kWh/24h
Heat emission 100 %	190 Watt
Heat emission default setpoint	51 Watt
Nominal consumption	200 Watt
Start current	9.7 A
Sound level	36.5 dB(A)

BioCompact II RR310H

BioCompact II RR310H
Solid door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+35 °C
Software variant	K82
K-Value	0.35 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T5 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	218 litres
Net volume	189 litres
Dimensions – W x D x H	595 x 640 x 1190/1390 mm
Refrigerant	R134a
Refrigerant charge	115 g
Refrigeration capacity at -10 °C	173 Watt
GWP – CO2e	164.45
Energy consumption – default setpoint	0.79 kWh/24h
Heat emission 100 %	145 Watt
Heat emission default setpoint	33 Watt
Nominal consumption	145 Watt
Start current	8.6A
Sound level	36.8 dB(A)

BioCompact II RR310H
Glass door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+32 °C
Software variant	K92
K-Value	0.50 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T5 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	218 litres
Net volume	189 litres
Dimensions – W x D x H	595 x 640 x 1190/1390 mm
Refrigerant	R134a
Refrigerant charge	95 g
Refrigeration capacity at -10 °C	173 Watt
GWP – CO2e	135.85
Energy consumption – default setpoint	1.30 kWh/24h
Heat emission 100 %	180 Watt
Heat emission default setpoint	56 Watt
Nominal consumption	183 Watt
Start current	9.7A
Sound level	36.8 dB(A)

BioCompact II RR410H

BioCompact II RR410H
Solid door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+35 °C
Software variant	K82
K-Value	0.35 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T4 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	346 litres
Net volume	312 litres
Dimensions – W x D x H	595 x 640 x 1776/1976 mm
Refrigerant	R134a
Refrigerant charge	120 g
Refrigeration capacity at -10 °C	173 Watt
GWP – CO2e	171.6
Energy consumption – default setpoint	0.96 kWh/24 h
Heat emission 100 %	140 Watt
Heat emission default setpoint	40 Watt
Nominal consumption	140 Watt
Start current	8.6A
Sound level	35.1 dB(A)

BioCompact II RR410H
Glass door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+32 °C
Software variant	K92
K-Value	0.51 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T4 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	346 litres
Net volume	312 litres
Dimensions – W x D x H	595 x 640 x 1776/1976 mm
Refrigerant	R134a
Refrigerant charge	120 g
Refrigeration capacity at -10 °C	173 Watt
GWP – CO2e	171.6
Energy consumption – default setpoint	1.58 kWh/24h
Heat emission 100 %	199 Watt
Heat emission default setpoint	66 Watt
Nominal consumption	197 Watt
Start current	5.9A
Sound level	35.1 dB(A)

BioCompact II RF210H

BioCompact II RF310H

BioCompact II RF210H
Solid door

Technical specifications	Data
Temperature range	-25/-5 °C
Ambient temperature range	+10/+35 °C
Software variant	F52
K-Value	0.35 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	125 litres
Net volume	104 litres
Dimensions – W x D x H	595 x 640 x 801/1001 mm
Refrigerant	R134a
Refrigerant charge	70 g
Refrigeration capacity at -25 °C	156 Watt
GWP – CO2e	100.1
Energy consumption – default setpoint	1.53 kWh/24h
Heat emission 100 %	159 Watt
Heat emission default setpoint	81 Watt
Nominal consumption	158 Watt
Start current	8.6 A
Sound level	39.7 dB(A)

BioCompact II RF310H
Solid door

Technical specifications	Data
Temperature range	-25/-5 °C
Ambient temperature range	+10/+35 °C
Software variant	F52
K-Value	0.35 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	218 litres
Net volume	189 litres
Dimensions – W x D x H	595 x 640 x 1190/1390 mm
Refrigerant	R134a
Refrigerant charge	80 g
Refrigeration capacity at -25 °C	216 Watt
GWP – CO2e	114.4
Energy consumption – default setpoint	1.99 kWh/24h)
Heat emission 100 %	185 Watt
Heat emission default setpoint	83 Watt
Nominal consumption	187 Watt
Start current	N/A
Sound level	39.9 dB(A)

BioCompact II RF410H

BioCompact II RF410H
Solid door

Technical specifications	Data
Temperature range	-25/-5 °C
Ambient temperature range	+10/+35 °C
Software variant	F52
K-Value	0.35 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	346 litres
Net volume	312 litres
Dimensions – W x D x H	595 x 640 x 1776/1976 mm
Refrigerant	R134a
Refrigerant charge	95 g
Refrigeration capacity at -25 °C	216 Watt
GWP – CO2e	135.85
Energy consumption – default setpoint	2.66 kWh/24h
Heat emission 100 %	190 Watt
Heat emission default setpoint	111 Watt
Nominal consumption	191 Watt
Start current	11.3 A
Sound level	38.6 dB(A)

BioCompact II RR210/RR210H

BioCompact II RR210/RR210H
Solid door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+35 °C
Software variant	K82
K-Value	0.35 W/(m2*K);
ATEX marking	II 3G Ex ec nC ic llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	2 x 125 litres
Net volume	2 x 104 litres
Dimensions – W x D x H	595 x 640 x 1602/1802 mm
Refrigerant	R134a
Refrigerant charge	160 g
Refrigeration capacity at -10 °C	150 Watt
GWP – CO2e	228.8
Energy consumption – default setpoint	1.36 kWh/24h
Heat emission 100 %	222 Watt
Heat emission default setpoint	56 Watt
Nominal consumption	220 Watt
Start current	13.8 A
Sound level	39.1 dB(A)

BioCompact II RR210/RR210H
Glass door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+32 °C
Software variant	K92
K-Value	0.49 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	2 x 125 litres
Net volume	2 x 104 litres
Dimensions – W x D x H	595 x 640 x 1602/1802 mm
Refrigerant	R134a
Refrigerant charge	160 g
Refrigeration capacity at -10 °C	150 Watt
GWP – CO2e	228.8
Energy consumption – default setpoint	2.44 kWh/24h
Heat emission 100 %	376 Watt
Heat emission default setpoint	102 Watt
Nominal consumption	376 Watt
Start current	13.8 A
Sound level	39.1 dB(A)

BioCompact II RR210/RF210H

BioCompact II RR210/RF210H Solid door

Technical specifications	Data
Temperature range	+2/+20 °C and -25/-5 °C
Ambient temperature range	+10/+35 °C
Software variant	K82/F52
K-Value	0.35 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	2 x 125 litres
Net volume	2 x 104 litres
Dimensions – W x D x H	595 x 640 x 1602/1802 mm
Refrigerant	R134a
Refrigerant charge	150 g
Refrigeration capacity at -10 °C	150 Watt
Refrigeration capacity at -25 °C	149 Watt
GWP – CO2e	214.5
Energy consumption – default setpoint	2.63 kWh/24h
Heat emission 100 %	271 Watt
Heat emission default setpoint	109 Watt
Nominal consumption	268 Watt
Start current	12.8 A
Sound level	41.4 dB(A)

BioCompact II RR210/RF210H Glass door (RR)

Technical specifications	Data
Temperature range	+2/+20 °C and -25/-5 °C
Ambient temperature range	+10/+32 °C
Software variant	K92/F52
K-Value	0.49 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	2 x 125 litres
Net volume	2 x 104 litres
Dimensions – W x D x H	595 x 640 x 1602/1802 mm
Refrigerant	R134a
Refrigerant charge	150 g
Refrigeration capacity at -10 °C	150 Watt
Refrigeration capacity at -25 °C	149 Watt
GWP – CO2e	214.2
Energy consumption – default setpoint	3.17 kWh/24h
Heat emission 100 %	271 Watt
Heat emission default setpoint	190 Watt
Nominal consumption	346 Watt
Start current	12.8 A
Sound level	41.4 dB(A)

BioCompact II RF210/RF210H
Solid door

Technical specifications	Data
Temperature range	-25/-5 °C
Ambient temperature range	+10/+35 °C
Software variant	F52
K-Value	0.35 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	2 x 125 litres
Net volume	2 x 104 litres
Dimensions – W x D x H	595 x 640 x 1602/1802 mm
Refrigerant	R134a
Refrigerant charge	140 g
Refrigeration capacity at -25 °C	149 Watt
GWP – CO2e	200.2
Energy consumption – default setpoint	3.9 kWh/24h
Heat emission 100 %	320 Watt
Heat emission default setpoint	81 Watt
Nominal consumption	316 Watt
Start current	11.8 A
Sound level	42.1 dB(A)

BioCompact II RR310/RF210H

BioCompact II RR310/RF210H Solid door

Technical specifications	Data
Temperature range	+2/+20 °C and -25/-5 °C
Ambient temperature range	+10/+35 °C
Software variant	K82/F52
K-Value	RR310: 0.50 W/(m2*K) RF210: 0.35 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	RR310: 218 litres RF210: 125 litres
Net volume	RR310: 189 litres RF210: 104 litres
Dimensions – W x D x H	595 x 640 x 1991/2191 mm
Refrigerant	R134a
Refrigerant charge	85 g
Refrigeration capacity at -10 °C	173 Watt
Refrigeration capacity at -25 °C	149 Watt
GWP – CO2e	264.55
Energy consumption – default setpoint	2.74 kWh/24h
Heat emission 100 %	305 Watt
Heat emission default setpoint	114 Watt
Nominal consumption	303 Watt
Start current	–
Sound level	42.2 dB(A)

BioCompact II RR310/RF210H Glass door (RR)

Technical specifications	Data
Temperature range	+2/+20 °C and -25/-5 °C
Ambient temperature range	+10/+32 °C
Software variant	K82/F52
K-Value	RR310: 0.50 W/(m2*K) RF210: 0.35 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	RR310: 218 litres RF210: 125 litres
Net volume	RR310: 189 litres RF210: 104 litres
Dimensions – W x D x H	595 x 640 x 1991/2191 mm
Refrigerant	R134a
Refrigerant charge	185 g
Refrigeration capacity at -10 °C	173 Watt
Refrigeration capacity at -25 °C	149 Watt
GWP – CO2e	264.45
Energy consumption – default setpoint	4.04 kWh/24h
Heat emission 100 %	305 Watt
Heat emission default setpoint	114 Watt
Nominal consumption	341 Watt
Start current	8.6A +
Sound level	42.2 dB(A)

BioCompact II RR210G

BioCompact II RR210G
Solid door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+35 °C
Software variant	K82
K-Value	0.35 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T6 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	125 litres
Net volume	104 litres
Dimensions – W x D x H	595 x 640 x 801/1001 mm
Refrigerant	R600a
Refrigerant charge	33 g
Refrigeration capacity at -10 °C	154 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	0.61 kWh/24h
Heat emission 100 %	97 Watt
Heat emission default setpoint	26 Watt
Nominal consumption	95 Watt
Start current	7.6 A
Sound level	33.3 dB(A)

BioCompact II RR210G
Glass door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+32 °C
Software variant	K92
K-Value	0.49 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T6 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	125 litres
Net volume	104 litres
Dimensions – W x D x H	595 x 640 x 801/1001 mm
Refrigerant	R600a
Refrigerant charge	33 g
Refrigeration capacity at -10 °C	154 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	0.98 kWh/24h
Heat emission 100 %	102 Watt
Heat emission default setpoint	41 Watt
Nominal consumption	100 Watt
Start current	7.6 A
Sound level	35 dB(A)

BioCompact II RR310G

BioCompact II RR310G
Solid door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/35 °C
Software variant	K82
K-Value	0.35 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic IIB T6 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	218 litres
Net volume	189 litres
Dimensions – W x D x H	595 x 640 x 1190/1390 mm
Refrigerant	R600a
Refrigerant charge	45 g
Refrigeration capacity at -10 °C	154 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	0.63 kWh/24h
Heat emission 100 %	94 Watt
Heat emission default setpoint	28 Watt
Nominal consumption	95 Watt
Start current	7.6 A
Sound level	36.8 dB(A)

BioCompact II RR310G
Glass door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+32 °C
Software variant	K92
K-Value	0.50 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic IIB T6 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	218 litres
Net volume	189 litres
Dimensions – W x D x H	595 x 640 x 1190/1390 mm
Refrigerant	R600a
Refrigerant charge	45 g
Refrigeration capacity at -10 °C	154 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	0.98 kWh/24h
Heat emission 100 %	103 Watt
Heat emission default setpoint	44 Watt
Nominal consumption	101 Watt
Start current	7.6 A
Sound level	36.8 dB(A)

BioCompact II RR410G
Solid door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+35 °C
Software variant	K82
K-Value	0.35 W/(m2*K)
ATEX marking	3G Ex ec nC ic llB T6 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	346 litres
Net volume	312 litres
Dimensions – W x D x H	595 x 640 x 1776/1976 mm
Refrigerant	R600a
Refrigerant charge	51 g
Refrigeration capacity at -10 °C	207 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	0.59 kWh/24h
Heat emission 100 %	110 Watt
Heat emission default setpoint	30 Watt
Nominal consumption	109 Watt
Start current	6.4 A
Sound level	35.1 dB(A)

BioCompact II RR410G
Glass door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+32 °C
Software variant	K92
K-Value	0.51 W/(m2*K)
ATEX marking	3G Ex ec nC ic llB T6 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	346 litres
Net volume	312 litres
Dimensions – W x D x H	595 x 640 x 1776/1976 mm
Refrigerant	R600a
Refrigerant charge	51 g
Refrigeration capacity at -10 °C	207 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	1.31 kWh/24h
Heat emission 100 %	165 Watt
Heat emission default setpoint	60 Watt
Nominal consumption	162 Watt
Start current	6.4 A
Sound level	35.1 dB(A)

BioCompact II RF210G

BioCompact II RF310G

BioCompact II RF210G
Solid door

Technical specifications	Data
Temperature range	-25/-5 °C
Ambient temperature range	+10/+35 °C
Software variant	F52
K-Value	0.35 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	125 litres
Net volume	104 litres
Dimensions – W x D x H	595 x 640 x 801/1001 mm
Refrigerant	R600a
Refrigerant charge	30 g
Refrigeration capacity at -25 °C	156 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	1.47 kWh/24h
Heat emission 100 %	146 Watt
Heat emission default setpoint	64 Watt
Nominal consumption	144 Watt
Start current	8.6 A
Sound level	37.7 dB(A)

BioCompact II RF310G
Solid door

Technical specifications	Data
Temperature range	-25/-5 °C
Ambient temperature range	+10/+35 °C
Software variant	F52
K-Value	0.35 W/(m2*K)
ATEX marking	3G Ex ec nC ic llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	218 litres
Net volume	189 litres
Dimensions – W x D x H	595 x 640 x 1190/1390 mm
Refrigerant	R600a
Refrigerant charge	35 g
Refrigeration capacity at -25 °C	204 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	1.69 kWh/24h
Heat emission 100 %	142 Watt
Heat emission default setpoint	71 Watt
Nominal consumption	143 Watt
Start current	8 A
Sound level	39.9 dB(A)

BioCompact II RF410G
Solid door

Technical specifications	Data
Temperature range	-25/-5 °C
Ambient temperature range	+10/+35 °C
Software variant	F52
K-Value	0.35 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	346 litres
Net volume	312 litres
Dimensions – W x D x H	595 x 640 x 1776/1976 mm
Refrigerant	R600a
Refrigerant charge	47 g
Refrigeration capacity at -25 °C	204 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	2.13 kWh/24h
Heat emission 100 %	153 Watt
Heat emission default setpoint	89 Watt
Nominal consumption	155 Watt
Start current	8 A
Sound level	38.6 dB(A)

BioCompact II RR210/RR210G

BioCompact II RR210/RR210G Solid door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+35 °C
Software variant	K82/K82
K-Value	0,35 W/(m2*K)
ATEX marking	II 3G Ex nA nC nL llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	2 x 125 litres
Net volume	2 x 104 litres
Dimensions – W x D x H	595 x 640 x 1602/1802 mm
Refrigerant	R600a
Refrigerant charge	66 g
Refrigeration capacity at -10 °C	154 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	1,22 kWh/24 t
Heat emission 100 %	194 Watt
Heat emission default setpoint	26 Watt
Nominal consumption	190 Watt
Start current	15,2 A
Sound level	36.3 dB(A)

BioCompact II RR210/RR210G Glass door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+32 °C
Software variant	K92/K92
K-Value	0.49 W/(m2*K)
ATEX marking	II 3G Ex nA nC nL llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	2 x 125 litres
Net volume	2 x 104 litres
Dimensions – W x D x H	595 x 640 x 1602/1802 mm
Refrigerant	R600a
Refrigerant charge	66 g
Refrigeration capacity at -10 °C	154 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	1.83 kWh/24h
Heat emission 100 %	204 Watt
Heat emission default setpoint	82 Watt
Nominal consumption	195 Watt
Start current	15.2 A
Sound level	39.1 dB(A)

BioCompact II RR210/RF210G

BioCompact II RR210/RF210G Solid door

Technical specifications	Data
Temperature range	+2/+20 °C and -25/-5 °C
Ambient temperature range	+10/+35 °C
Software variant	K82/F52
K-Value	0.35 W/(m2*K)
ATEX marking	II 3G Ex nA nC nL llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	2 x 125 litres
Net volume	2 x 104 litres
Dimensions – W x D x H	595 x 640 x 1602/1802 mm
Refrigerant	R600a
Refrigerant charge	63 g
Refrigeration capacity at -10 °C	154 Watt
Refrigeration capacity at -25 °C	156 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	2.07 kWh/24h
Heat emission 100 %	243 Watt
Heat emission default setpoint	90 Watt
Nominal consumption	239 Watt
Start current	16.2 A
Sound level	39.0 dB(A)

BioCompact II RR210/RF210G Glass door (RR)

Technical specifications	Data
Temperature range	+2/+20 °C and -25/-5 °C
Ambient temperature range	+10/+32 °C
Software variant	K92/F52
K-Value	Solid door 0.35 W/(m2*K) Glass door 0.49 W/(m2*K)
ATEX marking	II 3G Ex nA nC nL llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	2 x 125 litres
Net volume	2 x 104 litres
Dimensions – W x D x H	595 x 640 x 1602/1802 mm
Refrigerant	R600a
Refrigerant charge	63 g
Refrigeration capacity at -10 °C	154 Watt
Refrigeration capacity at -25 °C	156 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	2.14 kWh/24h
Heat emission 100 %	243 Watt
Heat emission default setpoint	105 Watt
Nominal consumption	244 Watt
Start current	16.2 A
Sound level	41.4 dB(A)

BioCompact II RF210/RF210G

BioCompact II RF210/RF210G
Solid door

Technical specifications	Data
Temperature range	-25/-5 °C
Ambient temperature range	+10/+35 °C
Software variant	F52
K-Value	0.35 W/(m2*K)
ATEX marking	II 3G Ex nA nC nL llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	2 x 125 litres
Net volume	2 x 104 litres
Dimensions – W x D x H	595 x 640 x 1602/1802 mm
Refrigerant	R600a
Refrigerant charge	60 g
Refrigeration capacity at -25 °C	156 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	3.06 kWh/24h
Heat emission 100 %	292 Watt
Heat emission default setpoint	128 Watt
Nominal consumption	288 Watt
Start current	17.2 A
Sound level	42.1 dB(A)

BioCompact II RR310/RF210G Solid door

Technical specifications	Data
Temperature range	+2/+20 °C and -25/-5 °C
Ambient temperature range	+10/+35 °C
Software variant	K82/F52
K-Value	RR310: 0.35 W/(m2*K) RF210: 0.35 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	RR310: 218 litres RF210: 125 litres
Net volume	RR310: 189 litres RF210: 104 litres
Dimensions – W x D x H	595 x 640 x 1991/2191 mm
Refrigerant	R600a
Refrigerant charge	75 g
Refrigeration capacity at -10 °C	154 Watt
Refrigeration capacity at -25 °C	156 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	1.98 kWh/24h
Heat emission 100 %	240 Watt
Heat emission default setpoint	92 Watt
Nominal consumption	289 Watt
Start current	7.6A + 8.6A
Sound level	39.3 dB(A)

BioCompact II RR310/RF210G Glass door (RR)

Technical specifications	Data
Temperature range	+2/+20 °C and -25/-5 °C
Ambient temperature range	+10/+32 °C
Software variant	K92/F52
K-Value	RR310: 0.50 W/(m2*K) RF210: 0.35 W/(m2*K)
ATEX marking	II 3G Ex ec nC ic llB T3 Gc
ATEX certificate	DTI 22ATEX0251X
Gross volume	RR310: 218 litres RF210: 125 litres
Net volume	RR310: 189 litres RF210: 104 litres
Dimensions – W x D x H	595 x 640 x 1991/2191 mm
Refrigerant	R600a
Refrigerant charge	75 g
Refrigeration capacity at -10 °C	154 Watt
Refrigeration capacity at -25 °C	156 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	2.67 kWh/24h
Heat emission 100 %	249 Watt
Heat emission default setpoint	108 Watt
Nominal consumption	327 Watt
Start current	–
Sound level	42.2 dB(A)

General data:
BioCompact II 610

Technical specifications	Data
Connection	230 VAC, 50 Hz
Control Unit	Gram Control Unit with voltage free contact, alarms and offset function
Alarms	Acoustic and visual, High/Low temperature alarms and door alarm
Alarm ports	Voltage free contact
Access port	1 pcs. ø24.5 mm
Door	Right or left hinged
Material interior	PS lining with wall rails in stainless steel
Material exterior	White lacquered steel or stainless steel finish
Wall thickness	60 mm
Insulation	60 mm polyurethane with HFC-free cyclopentane propellant
Air system	BioLine ventilated air distribution system
Defrost system	Automatic smart defrost with re-evaporation of defrost water
IP class	IP21

BioCompact II RF610H

BioCompact II RR610H
Solid door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+43 °C
Software variant	K2+
K-Value	0.31 W/(m2*K)
ATEX marking	II 3G Ex nA nC nL llB T6 Gc
ATEX certificate	–
Gross volume	583 litres
Net volume	419 litres
Dimensions – W x D x H	695 x 875 x 1874/2075 mm
Refrigerant	R134a
Refrigerant charge	230 g
Refrigeration capacity at -10 °C	314 Watt
GWP – CO2e	328.9
Energy consumption – default setpoint	1.36 kWh/24h
Heat emission 100 %	257 Watt
Heat emission default setpoint	56 Watt
Nominal consumption	314 Watt
Start current	11.4 A
Sound level	44.2 dB(A)

BioCompact II RR610H
Glass door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+38 °C
Software variant	K6+
K-Value	0.46 W/(m2*K)
ATEX marking	II 3G Ex nA nC nL llB T6 Gc
ATEX certificate	–
Gross volume	583 litres
Net volume	419 litres
Dimensions – W x D x H	695 x 875 x 1874/2075 mm
Refrigerant	R134a
Refrigerant charge	230 g
Refrigeration capacity at -10 °C	314 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	2.02 kWh/24h
Heat emission 100 %	334 Watt
Heat emission default setpoint	269 Watt
Nominal consumption	329 Watt
Start current	11.4 A
Sound level	44.2 dB(A)

BioCompact II RF610H
Solid door

Technical specifications	Data
Temperature range	-25/-5 °C
Ambient temperature range	+10/+43 °C
Software variant	F51
K-Value	0.31 W/(m2*K)
ATEX marking	II 3G Ex nA nC nL llB T2 Gc
ATEX certificate	–
Gross volume	583 litres
Net volume	419 litres
Dimensions – W x D x H	695 x 875 x 1874/2075 mm
Refrigerant	R404a
Refrigerant charge	220 g
Refrigeration capacity at -25 °C	616 Watt
GWP – CO2e	862.85
Energy consumption – default setpoint	4.2 kWh/24h
Heat emission 100 %	583 Watt
Heat emission default setpoint	175 Watt
Nominal consumption	613 Watt
Start current	19.6 A
Sound level	48.6 dB(A)

BioCompact II RR610G

BioCompact II RR610G
Solid door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+43 °C
Software variant	K2+
K-Value	0.31 W/(m2*K)
ATEX marking	II 3G Ex nA nC nL llB T6 Gc
ATEX certificate	–
Gross volume	583 litres
Net volume	419 litres
Dimensions – W x D x H	695 x 875 x 1874/2075 mm
Refrigerant	R600a
Refrigerant charge	102 g
Refrigeration capacity at -10 °C	354 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	1.15 kWh/24h
Heat emission 100 %	205 Watt
Heat emission default setpoint	48 Watt
Nominal consumption	291 Watt
Start current	9.3 A
Sound level	44.2 dB(A)

BioCompact II RR610G
Glass door

Technical specifications	Data
Temperature range	+2/+20 °C
Ambient temperature range	+10/+38 °C
Software variant	K6+
K-Value	0.46 W/(m2*K)
ATEX marking	II 3G Ex nA nC nL llB T6 Gc
ATEX certificate	–
Gross volume	583 litres
Net volume	419 litres
Dimensions – W x D x H	695 x 875 x 1874/2075 mm
Refrigerant	R600a
Refrigerant charge	102 g
Refrigeration capacity at -10 °C	354 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	1.9 kWh/24h
Heat emission 100 %	240 Watt
Heat emission default setpoint	79 Watt
Nominal consumption	315 Watt
Start current	8 A
Sound level	44.2 dB(A)

BioCompact II RF610G
Solid door

Technical specifications	Data
Temperature range	-25/-5 °C
Ambient temperature range	+10/+43 °C
Software variant	F51
K-Value	0.31 W/(m2*K)
ATEX marking	II 3G Ex nA nC nL llB T2 Gc
ATEX certificate	–
Gross volume	583 litres
Net volume	419 litres
Dimensions – W x D x H	695 x 875 x 1874/2075 mm
Refrigerant	R290
Refrigerant charge	92 g
Refrigeration capacity at -25 °C	512 Watt
GWP – CO2e	N/A
Energy consumption – default setpoint	3.88 kWh/24h
Heat emission 100 %	472 Watt
Heat emission default setpoint	162 Watt
Nominal consumption	485 Watt
Start current	13.1 A
Sound level	48.6 dB(A)

Declaration of conformity

BioCompact II 210, 310, 410, 210/210 & 310/210

GRAM

English EC Declaration of Conformity

We, **Gram Scientific ApS** declare under sole responsibility that the following products:

Range:	**BioCompact II**
Model:	210, 310, 410, 210/210 & 310/210
Refrigeration:	R600a & R134a
Product description:	Refrigerators and freezer for laboratory and biostorage
Valid from (Year/Week):	2023/01

To which this declaration relates, is in compliance with all the applicable essential requirements, and other provisions of the European Council Directive and regulations.

Directives and Regulations of the European Parliament and of the Council:

Machinery Directive 2006/42/EC
- ATEX Directive 2014/34/EU
- Pressure Equipment Directive 2014/68/EU
- Low Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU
- RoHS Directive 2011/65/EU
- REACH EC No.1907/2006
- F-Gas Regulation (EU) No 517/2014

Product compliance has been demonstrated on the basis of:

Harmonized Standards:	Text:
EN 60601-1:2006	Medical electrical equipment – Part 1: General requirements for basic safety and essential performance
EN 60601-1-2:2015	Medical electrical equipment – Part 1-2: General requirements for basic safety and essential performance – Collateral Standard: Electromagnetic disturbances – Requirements and tests
EN 61010-1:2010	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements
EN 61326-1:2013	Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements
EN IEC 61000-3-2:2019	Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current =16 A per phase)
EN 61000-3-3:2013	Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection
EN IEC 60079-0:2018 EN IEC 60079-0:2018/AC:2020	Explosive atmospheres – Part 0: Equipment – General requirements
EN 60079-7:2015 EN 60079-7:2015/A1:2018	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"
EN 60079-11:2012	Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"
EN IEC 60079-15:2019	Explosive atmospheres – Part 15: Equipment protection by type of protection "n"
EN 60079-18:2015	Explosive atmospheres – Part 18: Equipment protection by encapsulation "m"
EN ISO 3744:2010	Acoustics – Determination of sound power levels and sound energy levels of noise sources using sound pressure – Engineering methods for an essentially free field over a reflecting plane
EN ISO 9001:2015	Quality management systems – Requirements
EN ISO 14001:2015	Environmental management systems – Requirements with guidance for use

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Vojens, 13.12.2022

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Approval Manager

Rev. 006 – 13.12.2022

GRAM

English EC Declaration of Conformity

We, **Gram Scientific ApS** declare under sole responsibility that the following products:

Range:	**BioCompact II**
Model:	610
Refrigeration:	R600a, R290, R404A & R134a
Product description:	Refrigerators and freezer for laboratory and biostorage
Valid from (Year/Week):	2023/01

To which this declaration relates, is in compliance with all the applicable essential requirements, and other provisions of the European Council Directive and regulations.

Directives and Regulations of the European Parliament and of the Council:

Machinery Directive 2006/42/EC
 - ATEX Directive 2014/34/EU
 - Pressure Equipment Directive 2014/68/EU
 - Low Voltage Directive 2014/35/EU
 - EMC Directive 2014/30/EU
 - RoHS Directive 2011/65/EU
 - REACH EC No.1907/2006
 - F-Gas Regulation (EU) No 517/2014

Product compliance has been demonstrated on the basis of:

Harmonized Standards:	Text:
EN 61010-1:2010	Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements
EN 60601-1:2006	Medical electrical equipment. General requirements for basic safety and essential performance
EN 60601-1-2:2015	Medical electrical equipment – Part 1-2: General requirements for basic safety and essential performance - Collateral standard: Electromagnetic compatibility - Requirements and tests
EN 60079-0:2012	Electrical apparatus for explosive atmospheres – Part 0: General requirements
EN 60079-11:2012	Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"
EN 60079-15:2010	Explosive atmospheres – Part 15: Equipment protection by type of protection "n"
EN 60079-25:2010	Explosive atmospheres – Part 25: Intrinsically safe systems
EN ISO 3744:2010	Acoustics – Determination of sound power levels of noise sources using sound pressure - Engineering method in an essentially free field over a reflecting plane
EN ISO 9001:2015	Quality management systems
EN ISO 14001:2015	Enviroment management systems – Requirements with guidance for use

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Vojens, 13.12.2022

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Rev. 007 – 13.12.2022

GRAM

English EC Declaration of Conformity

We, **Gram Scientific ApS** declare under sole responsibility that the following products:

Range:	**BioCompact II (Accessorie code 69)**
Model:	210, 310, 410, 210/210 & 310/210
Refrigeration:	R600a & R134a
Product description:	Refrigerators and freezer for laboratory and biostorage
Valid from (Year/Week):	2023/01

To which this declaration relates, is in compliance with all the applicable essential requirements, and other provisions of the European Council Directive and regulations.

Directives and Regulations of the European Parliament and of the Council:

Machinery Directive 2006/42/EC
 - Pressure Equipment Directive 2014/68/EU
 - Low Voltage Directive 2014/35/EU
 - EMC Directive 2014/30/EU
 - RoHS Directive 2011/65/EU
 - REACH EC No.1907/2006
 - F-Gas Regulation (EU) No 517/2014

Product compliance has been demonstrated on the basis of:

Harmonized Standards:	Text:
EN 60601-1:2006	Medical electrical equipment – Part 1: General requirements for basic safety and essential performance
EN 60601-1-2:2015	Medical electrical equipment – Part 1-2: General requirements for basic safety and essential performance – Collateral Standard: Electromagnetic disturbances – Requirements and tests
EN 61010-1:2010	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements
EN 61326-1:2013	Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements
EN IEC 61000-3-2:2019	Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current =16 A per phase)
EN 61000-3-3:2013	Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection
DIN 13277:2022-05	Refrigerators and freezers for laboratory and medical applications – Terminology, requirements, testing
EN ISO 3744:2010	Acoustics – Determination of sound power levels and sound energy levels of noise sources using sound pressure – Engineering methods for an essentially free field over a reflecting plane
EN ISO 9001:2015	Quality management systems – Requirements
EN ISO 14001:2015	Environmental management systems – Requirements with guidance for use

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Vojens, 12.04.2023

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Approval Manager

Rev. 007 – 12.04.2023

GRAM

English EC Declaration of Conformity

We, **Gram Scientific ApS** declare under sole responsibility that the following products:

Range:	**BioCompact II (Accessorie code 69)**
Model:	610
Refrigeration:	R600a, R290, R404A & R134a
Product description:	Refrigerators and freezer for laboratory and biostorage
Valid from (Year/Week):	2023/01

To which this declaration relates, is in compliance with all the applicable essential requirements, and other provisions of the European Council Directive and regulations.

Directives and Regulations of the European Parliament and of the Council:

Machinery Directive 2006/42/EC
 - Pressure Equipment Directive 2014/68/EU
 - Low Voltage Directive 2014/35/EU
 - EMC Directive 2014/30/EU
 - RoHS Directive 2011/65/EU
 - REACH EC No.1907/2006
 - F-Gas Regulation (EU) No 517/2014

Product compliance has been demonstrated on the basis of:

Harmonized Standards:	Text:
EN 61010-1:2010	Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements
EN 60601-1:2006	Medical electrical equipment. General requirements for basic safety and essential performance
EN 60601-1-2:2015	Medical electrical equipment – Part 1-2: General requirements for basic safety and essential performance - Collateral standard: Electromagnetic compatibility - Requirements and tests
DIN 13277:2022-05	Refrigerators and freezers for laboratory and medical applications – Terminology, requirements, testing
EN ISO 3744:2010	Acoustics – Determination of sound power levels of noise sources using sound pressure - Engineering method in an essentially free field over a reflecting plane
EN ISO 9001:2015	Quality management systems
EN ISO 14001:2015	Enviroment management systems – Requirements with guidance for use

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Vojens, 12.04.2023

John B. S. Petersen
Approval Manager

Rev. 008 – 12.04.2023

Wiring diagram

BioCompact II 210/310/410

Wiring diagram BioCompact II RR 210/310/410 LTP

BioCompact II RR610 – with solid door

Wire colors:
N: blue
L: brown
S: black
E: yellow/green

Compressor

Evaporator fan
Condenser fan

Float switch
S3

R1
Re-evaporation heater

SSR

230 V Supply

Controller keypad
EMC layer
Display PCB
S2
Door switch

E1
Power supply PCB

Alarm
NC
NO
19

NO
Common
NC
N
NO
S
L

E sensor
Condenser sensor
Defrost sensor
Cabinet sensor

Revision:
Description: Wiring diagram RR 610
Gram Scientific ApS
Vojens
Denmark

Date: 02-01-2023
Sign.: JHP
Sheet size: 3

Drawing no. 765072867
Sheet no. 1 / 002

Inspection / Important
Dimension marked with (X.XX)
General Tolerance:
ISO 2768-m · ISO 286-2

bioline
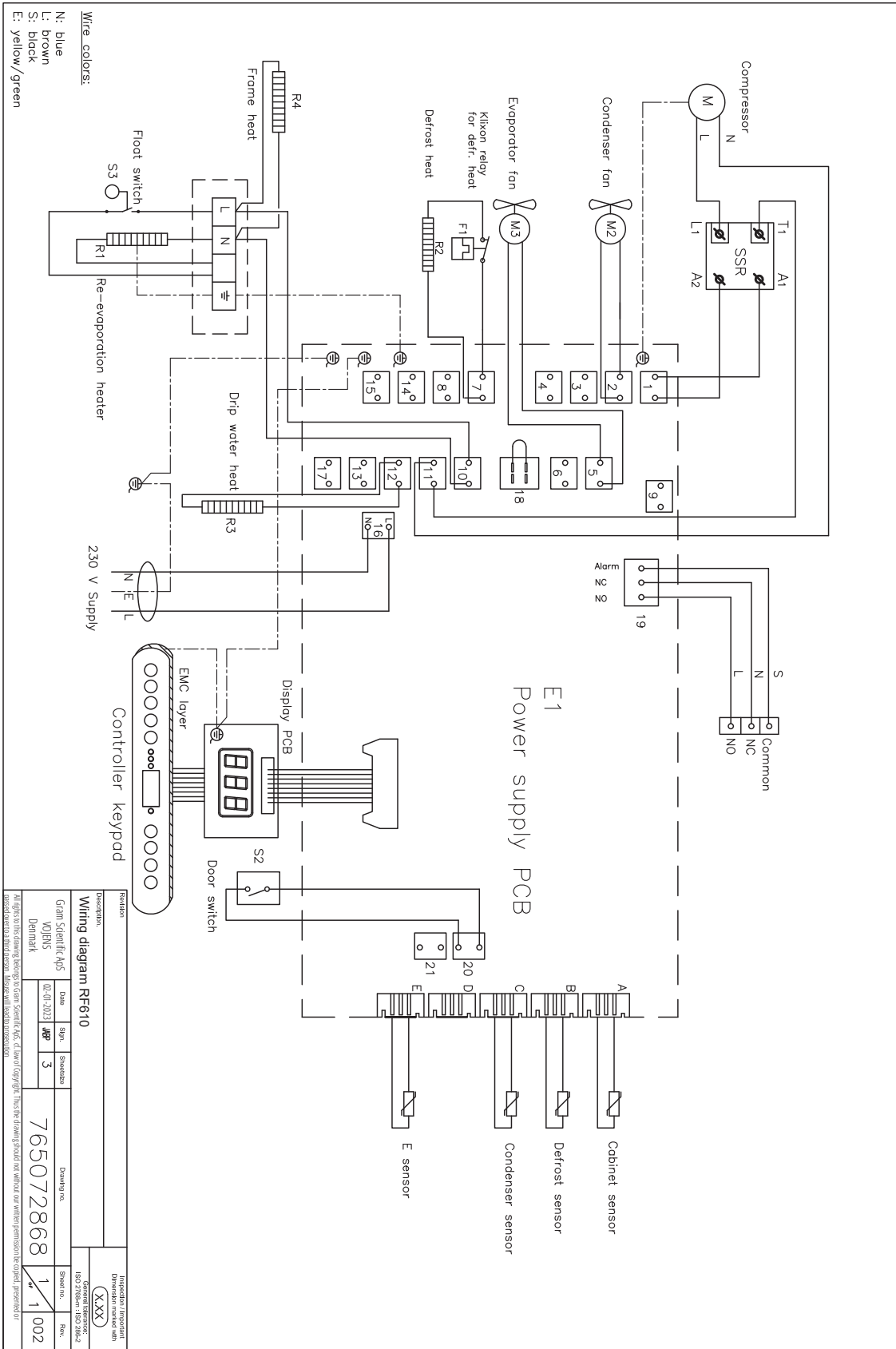
BioCompact II RR610 – with glass door

Gram Scientific ApS
Vojens
Denmark

Description.
Wiring diagram RR 610 with glass door

Revision

Date	Sign.	Sheetsize
02-01-2023	JMBP	3

Drawing no.
765072885

Inspection / Important
Dimension marked with

X.XX

General tolerance:
ISO 2768-m : ISO 286-2

Sheet no.
1 of 1

Rev.
002

Wire colors:

N: blue
L: brown
S: black
E: yellow/green

Compressor

SSR

Float switch

Re-evaporation heater

Evaporator fan

Condenser fan

Ferrite core

230 V Supply

Ferrite core

Ferrite core

Low temp. protection PCB

IN

OUT

F-sensor

E3

Display PCB

E2

EMC layer

Controller keypad

Door switch

Ferrite core

Power supply PCB

E1

Alarm
NC
NO

19

Common
NC
NO

S
N
L

Programming connector

E sensor

Condenser sensor

Defrost sensor

Cabinet sensor

Revision

Description:
Wiring diagram RR 610 with LTP

Gram Scientific ApS
VOJENS
DENMARK

Date: 02-01-2023

Sign. JMP

Sheetsize: 3

Drawing no.
765072890

Sheet no. 1

Rev. 002

Inspection / Important
Dimension marked with
(X.XX)

General Tolerance:
ISO 2768-m : ISO 286-2

Piping diagram

BioCompact II

	DK	GB	D
A	Kompressor	Compressor	Kompressor
B	Kondensator	Condenser	Verflüssiger
C	Tørrefilter	Filter drier	Trockenfilter
D	Varmeudveksler	Heat exchanger	Wärmeaustauscher
E	Fordamper	Evaporator	Verdampfer

Revision

Inspection / important Dimension marked with

X.XX

Description.
Piping diagram BioCompact II

Generel tolerance:
ISO 2768-m : ISO 286-2

Gram Scientific ApS (CVR-nr. 43122193) Aage Grams Vej 1 6500 Vojens	Date	Sign.	Sheetsize	Drawing no.	Sheet no.	Rev.
	02-01-2023	JABP	4	765042593	1 of 1	000

IQ & OQ

Installation Qualification
Operation Qualification

The following IQ / OQ is intended to be a guideline, local IQ / OQ procedures can vary depending on application and items stored in the Gram BioLine cabinet.

Deviations from the specifications dictated in the PQ are to be reported in the deviation report.

The IQ / OQ is concluded if all criteria of acceptance are approved and the possible deviations are rectified or accepted.

Organisation:

_____

_____

_____

Location of installation:

_____

_____

_____

Model:

_____

Serial number:

_____

Item and revision number of instructions for use:

_____

Status of operation:

○ Active

○ Inactive

Name of vendor:

_____

_____

_____

Warranty:

Start: _____

End: _____

Model: _____   SN: _____

bioline

Instructions on use to starting the cabinet:

1. Training of the responsible party   Date: _____ By: _____

2. Operational test of the cabinet   Date: _____ By: _____

3. Responsible party   _____ Tel: _____

Instructions to users:

The responsible party is trained in use of the cabinet in reference to the user manual

○ General use of cabinet

○ Service & maintenance

○ The cabinet was delivered without defects/damage.
   The cabinet started as specified in the user manual

Objections to the mentioned:

_____

_____

_____

_____

Set values:

○ Setpoint temperature   _____ °C

Local alarm settings

○ High temperature alarm   _____ °C
○ Low temperature alarm   _____ °C

External alarm settings
(See voltage free contact in user manual)

○ High temperature alarm   _____ °C
○ Low temperature alarm   _____ °C

Factory settings:

Model / Setpoint temperature		LhL	LLL	EhL	ELL
RF	-20 °C	+25 °C	-35 °C	+25 °C	-35 °C
RR	+5 °C	+25 °C	0 °C	+25 °C	0 °C

Date:	Name of trained user:	Signature:	Name of instructor:	Signature:
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Model: _____   SN:_____

Installation Qualification – IQ

ID	Description of installation	Reference in manual	Comply		Attachment	Notes
			Yes	No		
I-1	Ensure the cabinet is installed in-doors.	page 10				
I-2	Ensure the cabinet is installed in a dry and sufficiently ventilated area.	page 10				
I-3	Ensure the cabinet is not in direct contact with sunlight or other heat sources.	page 10				
I-4	Ensure that the ambient operating temperature is within the allowed range.	page 11				
I-5	Ensure that the cabinet is not installed in a chloric/acidic environ-ment.	page 10				
I-6	Ensure that the protective film on the cabinet is removed.	page 10				
I-7	Ensure that the cabinet is cleaned with a mild soap solution	page 10				
I-8	Ensure that the cabinet has stood upright for 24 hours if the cabinet has been laying down.	page 10				
I-9	Ensure that the cabinet is levelled if it is equipped with legs.	page 12				
I-10	Ensure a level surface if the cabinet is equipped with wheels/castors.	page 12				
I-11	If equipped with wheels/castors: Ensure wheels/castors are locked after positioning	page 12				
I-12	If equipped with drawers and/or glass door: Ensure that tilt-bracket is mounted.	page 16				
I-13	Ensure a distance of 15-75 mm between cabinet and back wall.	page 18				
I-14	Ensure that there is minimum a gap of 30 mm between cabinets.	page 18				
I-15	Ensure that the upper part of the cabinet is not covered.	page 19				
I-16	Ensure that electrical appliances are not being used inside the cabinet.	page 19				
I-17	Ensure connection from voltage-free contact to external monitoring system (optional).	page 20				

Model: _____   SN: _____

Installation Qualification – IQ

ID	Description of installation	Reference in manual	Comply		Attachment	Notes
			Yes	No		
I-18	Ensure that the inner doors can operate in accordance with the instructions.	N/A				
I-19	Ensure the correct electrical connection (compare local values with type/nr plate)	page 22				
I-20-1	Ensure that the power cord is secured by the preload cover	page 22				
I-20-2	Ensure that the power cord is secured by the hanger	page 22				
I-21	Mark power cord with: "Do not separate when energized".	page 22				
I-22-1	Ensure equipotential bonding (applicable for ATEX Cat.3 Zone 2 areas)	page 24				

Model: _____   SN: _____

Operation Qualification – OQ

ID	Description of operation	Reference in manual	Comply Yes	Comply No	Attachment	Notes
O-1	Turn on the cabinet – Display test (software version and variant).	page 27				
O-2	Set/adjust set-point temperature.	page 27				
O-3	Set/adjust LhL – Upper alarm limit (local).	page 30				
O-4	Set/adjust LLL – Lower alarm limit (local).	page 30				
O-5	Set/adjust Lhd – Delay of the upper alarm limit (local).	page 31				
O-6	Set/adjust LLd – Delay of the lower alarm limit (local).	page 31				
O-7	Activate / deactivate dA – Door alarm (local).	page 32				
O-8	Set/adjust dAd – Delay of the door alarm (local).	page 32				
O-9	Activate / deactivate BU – Acoustic alarms (local).	page 33				
O-10	Set/adjust EhL – Upper alarm limit (external).	page 34				
O-11	Set/adjust ELL – Lower alarm limit (external).	page 34				
O-12	Set/adjust Ehd – Delay of the upper alarm limit (external).	page 35				
O-13	Set/adjust ELd – Delay of the lower alarm limit (external).	page 35				
O-14	Activate / deactivate dA – Door alarm (external)	page 36				
O-15	Set/adjust dAd – Delay of the door alarm (external).	page 36				
O-16	Activate / deactivate BU – Acoustic external alarms.	page 37				
O-17	Set/adjust defrost cycles (deF) per 24 hours (factory setting: 4).	page 41				
O-18	Select reference sensor for the display (dPs) (A or E).	page 42				

Model: _____   SN: _____

Deviation Report:

Deviations to the criteria of acceptance are to be documented in the deviation report. A separate deviation report shall be made for each deviation. Mark the entry with the relevant "-ID" specified in the left column in the test specifications.

-ID: _____

Description of deviation:

_____

_____

_____

_____

Extent to which the deviation has been alleviated:

_____

_____

_____

_____

Additional notes:

_____

_____

_____

_____

Person responsible for test: Person responsible for verification of test:

Name: _____   Name: _____

Date: _____   Date: _____

Organisation: _____   Organisation: _____

Signature: _____   Signature: _____

Model: _____   SN: _____

Approval of test results – Installation Qualification (IQ)

○ The steps in the Installation Qualification – IQ were completed with positive results

○ The steps in the Installation Qualification – IQ were completed with negative results

ID of steps with negative results: _____

Approval of test results – Operation Qualification (OQ)

○ The steps in the Operation Qualification – OQ were completed with positive results

○ The steps in the Operation Qualification – OQ were completed with negative results

ID of steps with negative results: _____

Organisation / Responsible party: _____

_____
Stamp & Signature

_____
Tel.

_____
E-mail

_____
Location & Date

Trainer / Responsible party: _____

_____
Stamp & Signature

_____
Tel.

_____
E-mail

_____
Location & Date

Model: _____   SN: _____

NOTES:

bioline

PQ

Performance Qualification

Organisation:

_____

_____

_____

Location of installation:

_____

_____

_____

Model: _____

SN: _____

Item number: _____
(manual)

The PQ consists of inspections of the correct operation of the cabinet under predefined conditions and procedures.

Prerequisites for the PQ are IQ (Installation Qualification) and OQ (Operation Qualification), these must be concluded successfully prior to the initiation of the PQ.

Person responsible for the cabinet:

Name: _____

Date: _____

Signature: _____

Person responsible for test:

Name: _____

Date: _____

Organisation: _____

Signature: _____

Person responsible for verification of test:

Name: _____

Date: _____

Organisation: _____

Signature: _____

Test duration:

Initation (date/time): _____

Conclusion (date/time): _____

Date: _____

Organisation: _____

Signature: _____

Model: _____   SN: _____

List of names – Persons involved in the test procedure and subsequent report			
Date	Name	Organisation	Signature

Model: _____   SN: _____

Deviations from the specifications dictated in the PQ, are to be reported in the deviation report.
The PQ is concluded if all criteria of acceptance are approved and the possible deviations are rectified or accepted.

Measurement – Prerequisites

ID	Description	Accepted	
		Yes	No
P-1	The cabinet must be empty while conducting tests, ie without interior fittings such as drawers, shelves etc. Attachment: Notes:		
P-2	The measurements must be conducted in accordance to IEC 60068-3-5. Attachment: Notes:		
P-3	The positioning of the sensors in the cabinet must be documented with a sketch and/or a photograph. Attachment: Notes:		

	Name:	Signature:	Approved (Yes / No):	Date:
Conducted by:	_____	_____	_____	_____
Inspected / verified by:	_____	_____	_____	_____

Model: _____   SN: _____

Deviations from the specifications dictated in the PQ, are to be reported in the deviation report.
The PQ is concluded if all criteria of acceptance are approved and the possible deviations are rectified or accepted.

Measurement – Prerequisites

ID	Description	Accepted	
		Yes	No
P-4	Measurements made during the PQ tests must be documented and attached to the PQ. Attachment: Notes:		
P-5	Specify setpoint temperature: _____ °C Specify the ambient temperature: _____ °C Attachment: Notes:		
P-6	Allowed tolerances – *Select the tolerance, according to the model being tested.* *Find model-specific tolerances in appendix.* Tolerance: +/- _____ K Attachment: Notes:		

	Name:	Signature:	Approved (Yes / No):	Date:
Conducted by:	_____	_____	_____	_____
Inspected / verified by:	_____	_____	_____	_____

Model: _____   SN: _____

Deviations from the specifications dictated in the PQ are to be reported in the deviation report.
The PQ is concluded if all criteria of acceptance are approved and the possible deviations are rectified or accepted.

Measurement – Temperature stabilization

ID	Description	Accepted	
		Yes	**No**
P-7	The test is intended to provide substantiation for the temperature stability inside the cabinet during normal operation. The temperature inside the cabinet must be stabilized – where all the points in the working space have reached and maintained the same temperature. When the system is stable, document ordinary operation of the cabinet at the setpoint temperature and ambient temperature specified in P-5. Duration: _____ The measurements throughout the operation test, must be documented and attached the PQ. Attachment: Notes:		
P-8	Are the measurements inside the allowed tolerances specified in P-6 ? Attachment: Notes:		

	Name:	Signature:	Approved (Yes / No):	Date:
Conducted by:	_____	_____	_____	_____
Inspected / verified by:	_____	_____	_____	_____

Model: _____   SN: _____

Deviations from the specifications dictated in the PQ are to be reported in the deviation report.
The PQ is concluded if all criteria of acceptance are approved and the possible deviations are rectified or accepted.

Measurement – Door opening test

ID	Description	Accepted	
		Yes	**No**
P-9	The test is intended to provide substantiation for the temperature recovery time inside the cabinet subsequently after a door opening. The temperature inside the cabinet must be stabilized – where all the points in the working space have reached and maintained the same temperature, the setpoint temperature is specified in P-5. When the system is stable, open the door at 90° for 60 seconds. The measurements, throughout the door opening test, must be documented and attached the PQ. Duration: _____ Attachment: Notes:		
P-10	Has the setpoint temperature specified in P-5, measured in the absolute centre of the cabinet, been achieved within the set time-frame specified in the appendix? Attachment: Notes:		

	Name:	Signature:	Approved (Yes / No):	Date:
Conducted by:	_____	_____	_____	_____
Inspected / verified by:	_____	_____	_____	_____

Model: _____   SN: _____

Deviations from the specifications dictated in the PQ, are to be reported in the deviation report.
The PQ is concluded if all criteria of acceptance are approved and the possible deviations are rectified or accepted.

Measurement – Pull-down

ID	Description	Accepted	
		Yes	No
P-11	The test is intended to provide substantiation for the time it takes for the inside of the cabinet to reach the setpoint temperature specified in P-5. The initial temperature in the working space is the ambient temperature specified in P-5. The temperature inside the cabinet must be stabilized in all points of the working space. When the system is stable. Turn on the power to the cabinet. The measurements, throughout the pull-down test, must be documented and attached the PQ. Duration: _____ Attachment: Notes:		
P-12	The time it takes the inside of the cabinet to achieve the setpoint temperature measured in the absolute centre, must not exceed the time-frame specified in the appendix. Have the criteria been met? Attachment: Notes:		

	Name:	Signature:	Approved (Yes / No):	Date:
Conducted by:	_____	_____	_____	_____
Inspected / verified by:	_____	_____	_____	_____

Model: _____   SN: _____

Deviations from the specifications dictated in the PQ, are to be reported in the deviation report.
The PQ is concluded if all criteria of acceptance are approved and the possible deviations are rectified or accepted.

Measurement – Hold-over

ID	Description	Accepted	
		Yes	No
P-13	The test is intended to provide substantiation for the time it takes for the temperature inside the cabinet to reach the end temperature specified in the appendix. Ambient temperature and setpoint temperature is specified in P-5. The temperature inside the cabinet must be stabilized – where all the points in the working space have reached and maintained the same temperature throughout, the tolerances are specified in P-6. When the system is stable, turn off the power to the cabinet. The measurements, throughout the hold-over test, must be documented and attached the PQ. Attachment: Notes:		
P-14	The times it takes the inside of the cabinet to reach the end temperature, must at least be the time specified in the appendix. Duration: _____ Have the criteria been met? Attachment: Notes:		

Conducted by: Name: Signature: Approved   Date:
                                                                                   (Yes / No):

                       _____   _____   _____   _____

Inspected / verified by: _____   _____   _____   _____

Model: _____   SN:_____

Deviation Report

Deviations to the criteria of acceptance are to be documented in the deviation report. A separate deviation report shall be made for each deviation. Mark the entry with the relevant "P-ID" specified in the left column in the test specifications.

P-ID: _____

Description of deviation:

_____
_____
_____
_____
_____

Extent to which the deviation has been alleviated:

_____
_____
_____
_____
_____

Additional notes:

_____
_____
_____
_____
_____

Person responsible for test:

Name: _____

Date: _____

Organisation: _____

Signature: _____

Person responsible for verification of test:

Name: _____

Date: _____

Organisation: _____

Signature: _____

Model: _____   SN: _____

Approval of test results – Performance Qualification (PQ)

◯ The steps in the Performance Qualification – PQ were completed with positive results

◯ The steps in the Performance Qualification – PQ were completed with negative results

ID of steps with negative results: _____

Additional notes:

_____

_____

_____

_____

_____

Organisation / Responsible party: _____

Trainer / Responsible party: _____

_____
Stamp & Signature

_____
Stamp & Signature

_____
Tel.

_____
Tel.

_____
E-mail

_____
E-mail

_____
Location & Date

_____
Location & Date

Model: _____   SN: _____

NOTES:

Model: _____   SN: _____

Appendix

BioCompact II	Tolerances	Door opening recovery time (minutes)	Permissable deviation	Pull-down (minutes)	Permissable deviation	Hold-over range*	Hold-over	Permissable deviation
REFRIGERATORS (RR)								
210 (Solid door)		4	35 %	23	5 %		66	5 %
210 (Glass door)		4	10 %	28	5 %		43	5 %
310 (Solid door)		4	35 %	24	5 %		55	5 %
310 (Glass door)	+/- 3K	4	20 %	28	5 %	5 °C → 10 °C	42	10 %
410 (Solid door)		8	15 %	21	5 %		47	10 %
410 (Glass door)		7	10 %	22	5 %		33	5 %
610 (Solid door)		6	35 %	15	5 %		**	10 %
610 (Glass door)		6	35 %	**	5 %		**	10 %
FREEZERS (RF)								
210 (Solid door)		15	20 %	53	10 %		56	5 %
310 (Solid door)	**	11	10 %	62	5 %	-20 °C → -10 ° C	56	5 %
410 (Solid door)		19	10 %	71	10 %		42	10 %
610 (Solid door)		10	20 %	40	10 %		**	10 %

* The temperature span between the initial temperature and the end temperature in the hold-over test P-13,14.

** Please contact your local distributor for current information.

Note:

RR: Ambient temperature +25 °C
Setpoint temperature   +5 °C

RF: Ambient temperature +25 °C
Setpoint temperature -20 °C

	Name:	Signature:	Approved (Yes / No):	Date:
Conducted by:	_____	_____	_____	_____
Inspected / verified by:	_____	_____	_____	_____

Model: _____   SN: _____

Biostorage you can depend on

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