Operating- and servicemanual
BAKER SF 550
PROCESS KP 60 / KP 82

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Application

This product is designed for storage of foodstuff at a constant temperature. The product may not be used for chilling or freezing of foodstuff.

The product is only to be used for the purpose for which it has been expressly designed (storage of cooled or frozen items). Any other use could cause that the products stored in the product are not kept at the right temperature.

The manufacturer will not be held liable or responsible for any damage caused by improper, incorrect or unreasonable use.

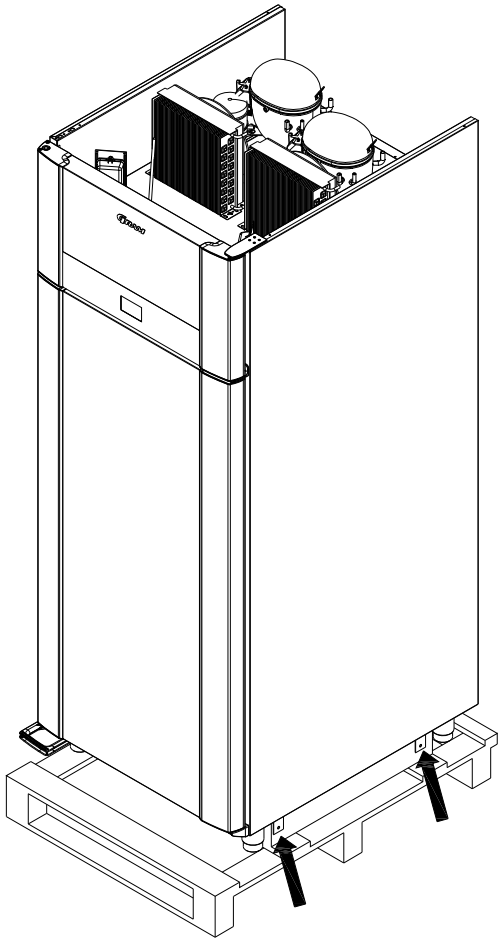
Location

When receiving the product, check the packaging material for damage.

If any damage occurs at the packaging material, it should be considered if the product might have been damaged too. If the damage is substantial, please contact your dealer.

The transport pallet can be removed by loosening the screws that fasten the pallet to the product.

This task requires at least 2 persons.The heaviest part of the product is at the top. Be aware of this, when removing the transport pallet.

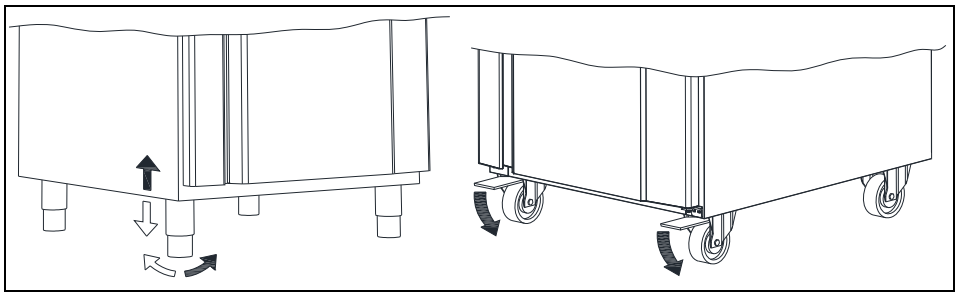


- If the cabinet has been transported in horizontal position it must stand upright at least 2 hours before it is started to allow the oil from the compressor to run back.
- Because of the heavy weight of the product, the floor might be damaged or scratched when moving the product.
- Correct set up gives the most effective operation.
- The product should be located in a dry and adequately ventilated room.
- To ensure efficient operation, it may not be placed in direct sunlight or against heat-emitting surfaces. The product is designed to operate in an ambient temperature between +16°C and +40°C.
- Avoid placement of the product in a chlorine/acid-containing environment (swimming bath etc.) due to risk of corrosion.
- The product and parts of the interior is equipped with a protecting film, which should be removed before use.
- Clean the product with a mild soap solution before use.

The set up place must be level and horizontal.

For versions with legs, use the adjustable legs to make sure that the product stands level and upright.

For versions with castors, the locking devices of the two front castors must be activated, when the product is in place. The base must be level, and the product may not be placed on frames or the like.



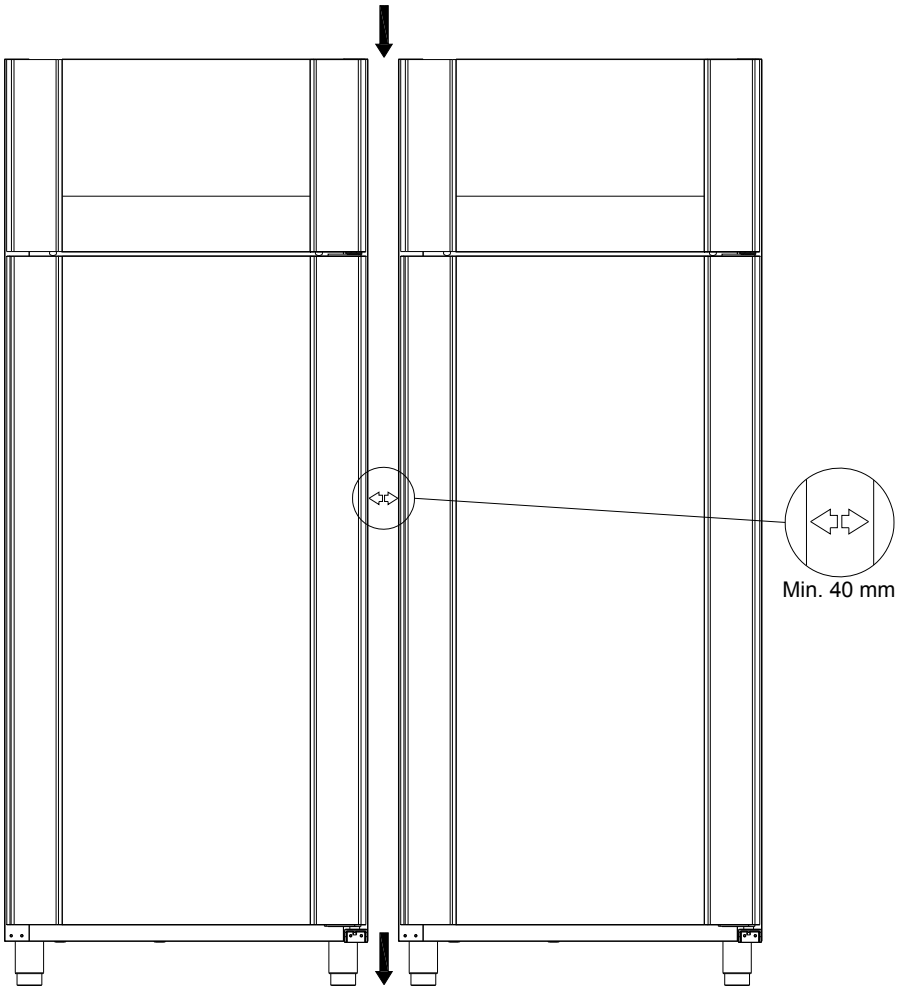
Placement of multiple units next to each other

Depending upon the temperature and humidity at the installation location as well as the correct values being set, water contained in the surrounding air may condense on the surface of a refrigerator (condensation formation) due to the design.

If multiple refrigerators or freezers are placed next to each other, then this condensation effect is stronger, plus a smaller amount of air would then circulate between the units. Hence, the minimum distance between the units must be **40 mm**.

This space must not be closed off at its top or bottom, however due to aesthetical considerations it may be covered in the front by, for example, a stainless steel panel. In order to be able to clean this space, the panel must be detachable.

If it is not possible to establish free air circulation at the bottom via, for example, installation on a pedestal, then the space must not be fully sealed at the front.

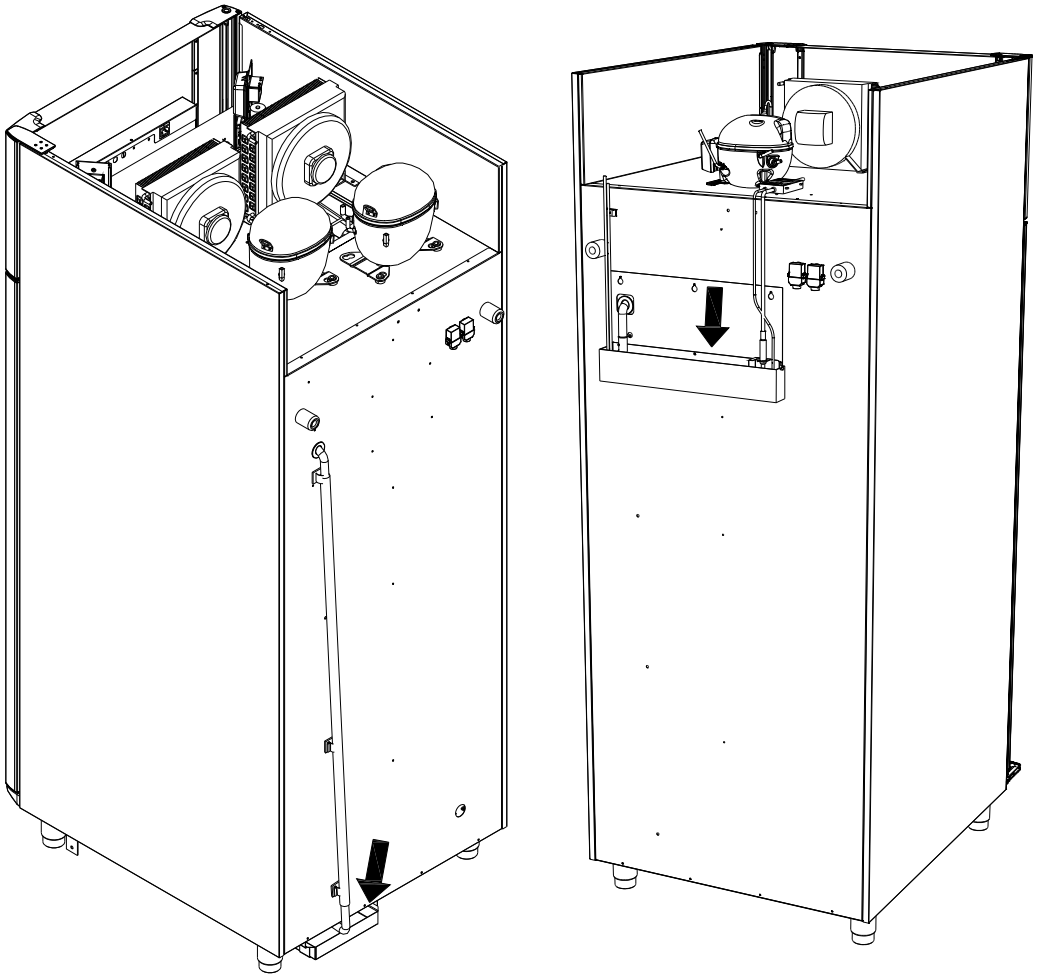

Min. 40 mm

Defrost water

The product produces water during defrosting, which is led into a tray under the product or at the back of the product.

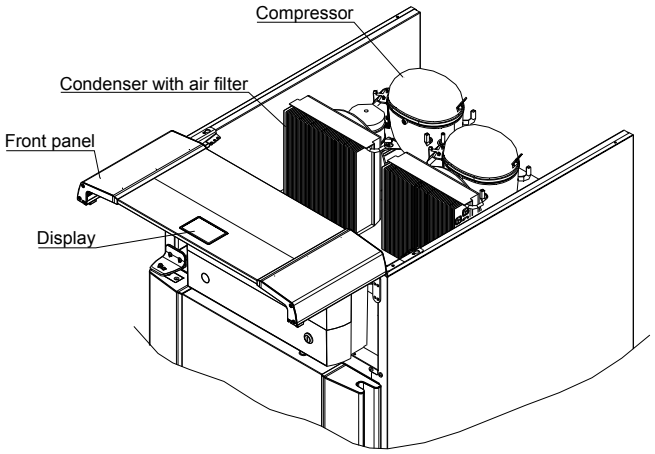
An electrical heating element, placed in the tray, re-evaporates the water.

It is recommended to clean the tray and corresponding parts at least once a year.
Remember to disconnect the cabinet before cleaning.
Be careful not to damage the heating element during cleaning.

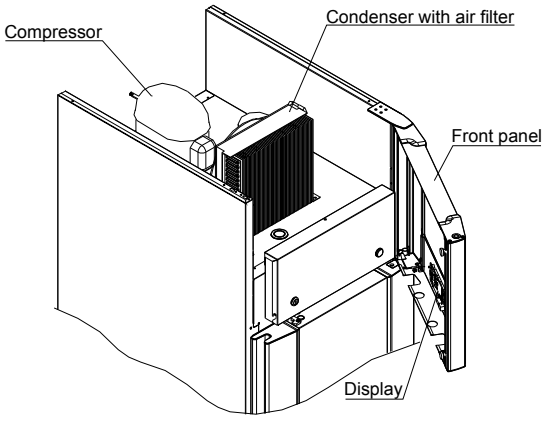


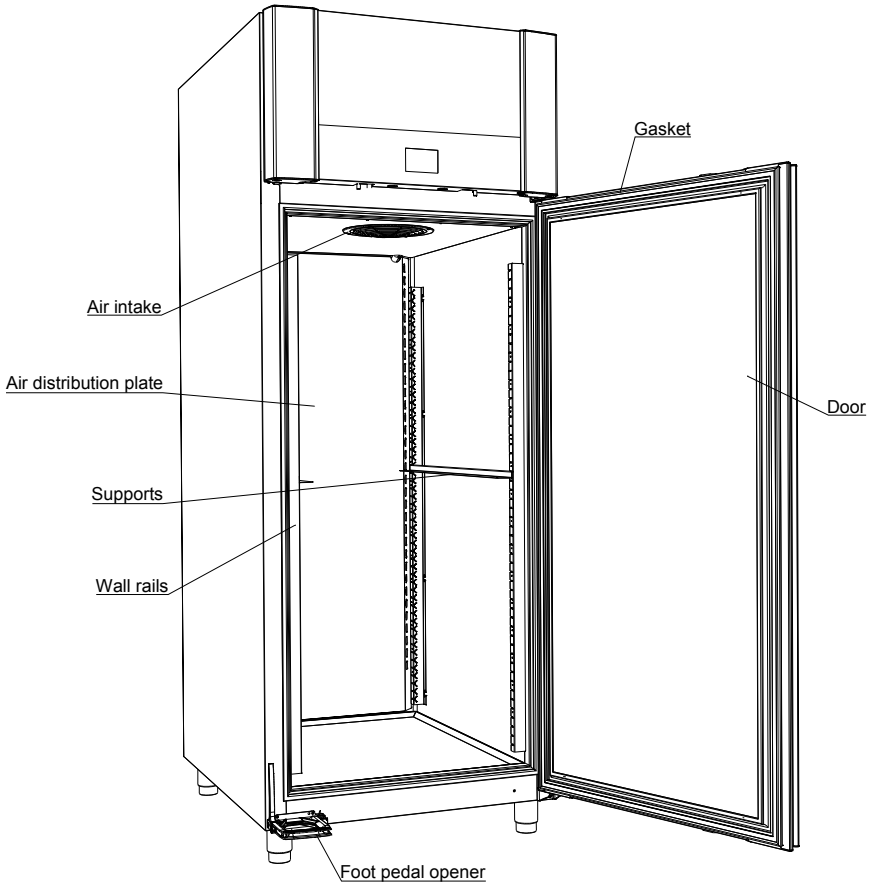
General description

KP 82



SF 550 / KP 60





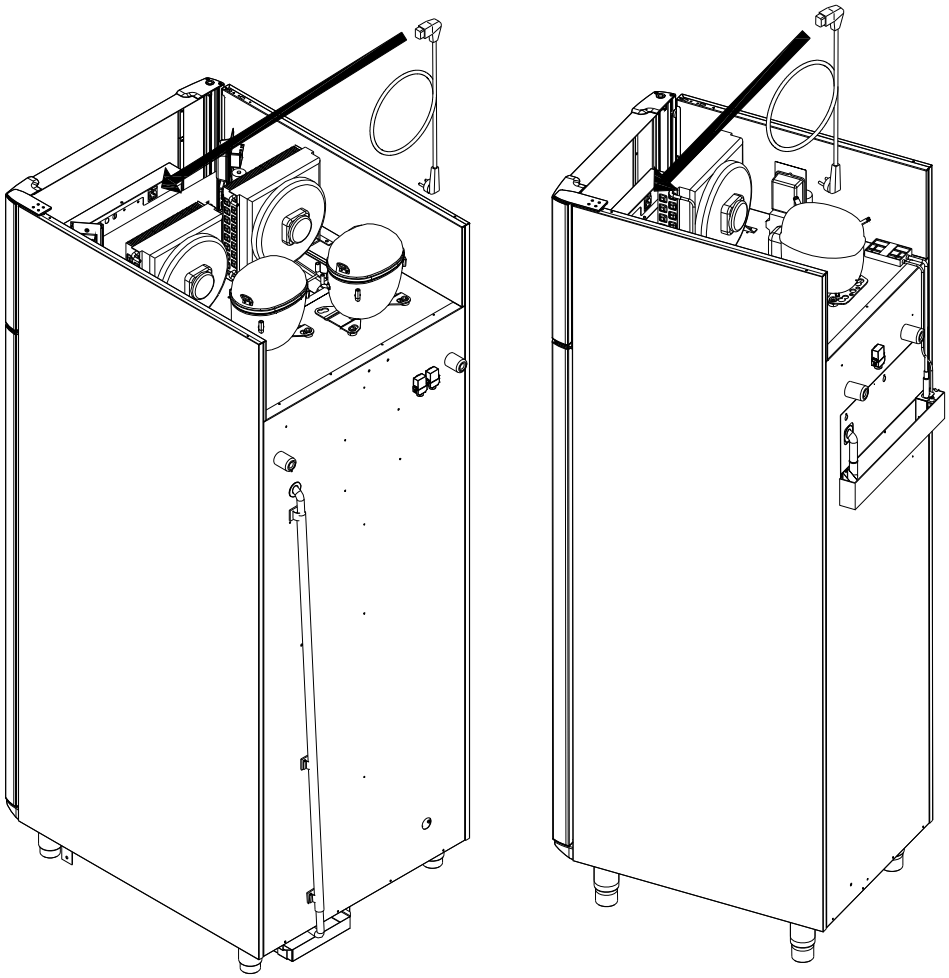
Electrical connection

Read the text below thoroughly before electrical connection.

The product is intended for connection to alternating current. The connection voltage (V) and frequency (Hz) are shown on the name plate in the cabinetOnly the supplied cord is to be used.

Never use an extension cord for this appliance!
If a wall socket is placed in a longer distance than the length of the supplied power cord, contact an electrician to establish a wall socket within the range of the supplied power cord.

If the product is defective, it must be examined by a service electrician advised by Gram Commercial during the guarantee period, if it is a product with built-in compressor.
If it is a product connected to an external compressor unit, it must be examined by the company who has connected the product to the unit.
Outside the guarantee period, it is advisable to use the service advised by Gram Commercial, if possible. If this is not the case, assistance is required from a refrigeration company with knowledge of Gram's products.



Always disconnect the power if interruptions in power supply occur, and when electrical parts are removed/put on, and before cleaning and maintenance of the product.

Repairing of electrical/technical parts may only be performed by a service electrician from Gram Commercial or an authorised refrigeration company with knowledge of Gram's products.

Do not use the product before all coverings are installed, so that live or rotating machine parts can not be touched.

The product is not to be used outdoor.

All earthing requirements stipulated by the local electricity authorities must be observed. The plug and wall socket should then give correct earthing. If necessary, contact an electrician.

Make sure the product is switched off at the socket before service is performed on electrical parts. It is not sufficient to switch off the product by the START/STOP key as there will still be voltage to some electrical parts of the product.

General use

Do not block vent holes in the front panel.

Do not damage the refrigeration system parts.

During normal operation, some parts of the refrigeration system in the compressor compartment might reach high temperatures, and could therefore cause burns if touching these components.

Do not use electrical devices inside the product.

To ensure correct and efficient air flow in the cabinet, the shaded areas must be kept free of items.

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

If any controller parameters are changed from default, this could cause that the product is not functioning normally, and harmful temperatures could damage items that are kept inside the product.

If the product is turned off, wait minimum 3 minutes before turning it on again. This is to protect the compressor from damage

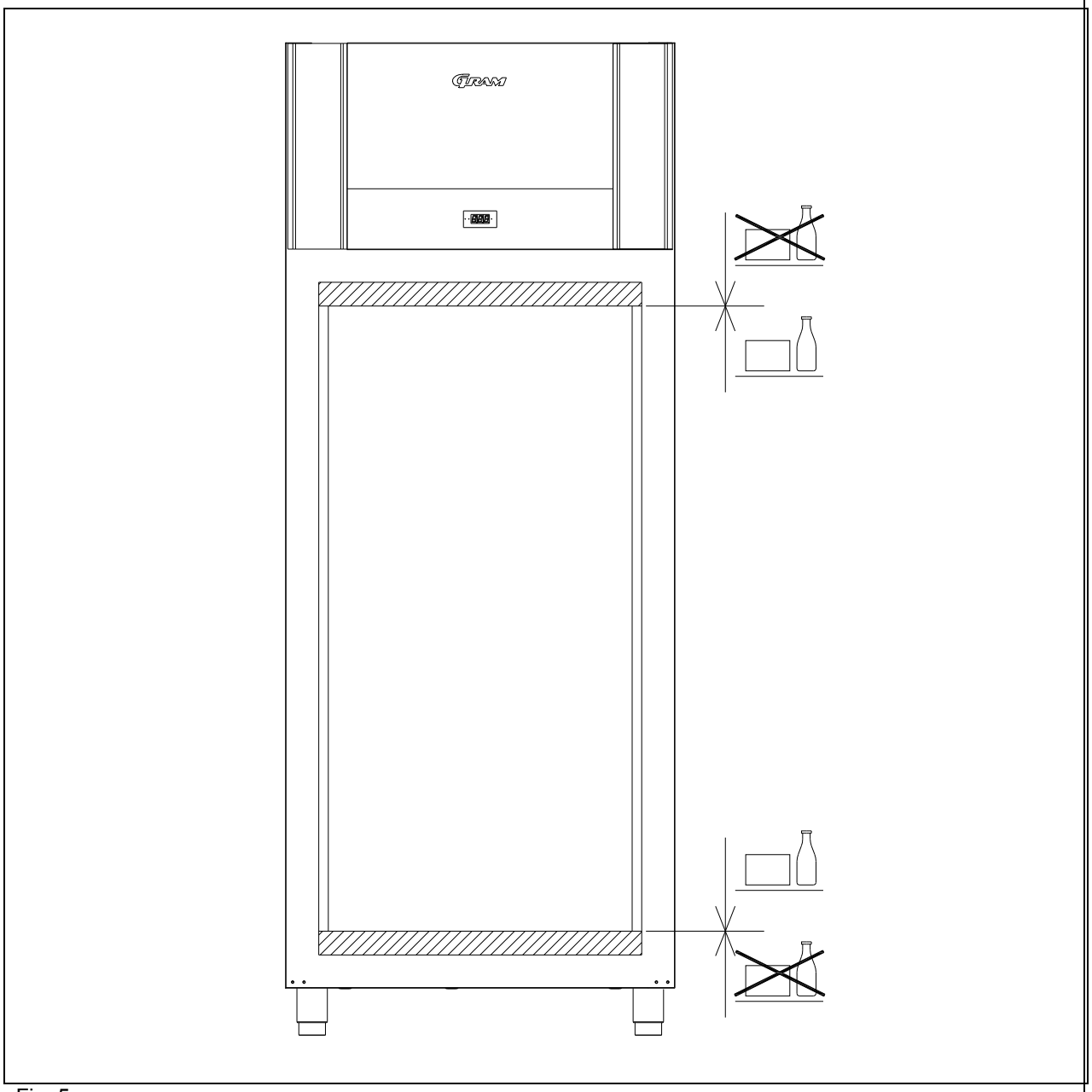
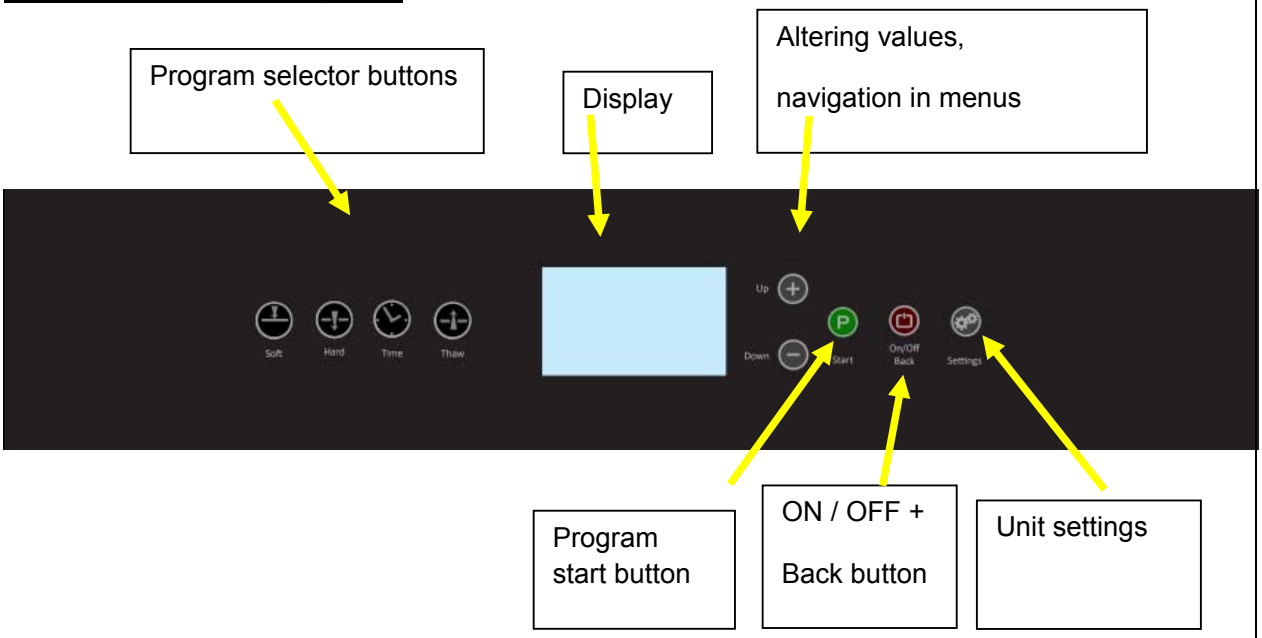


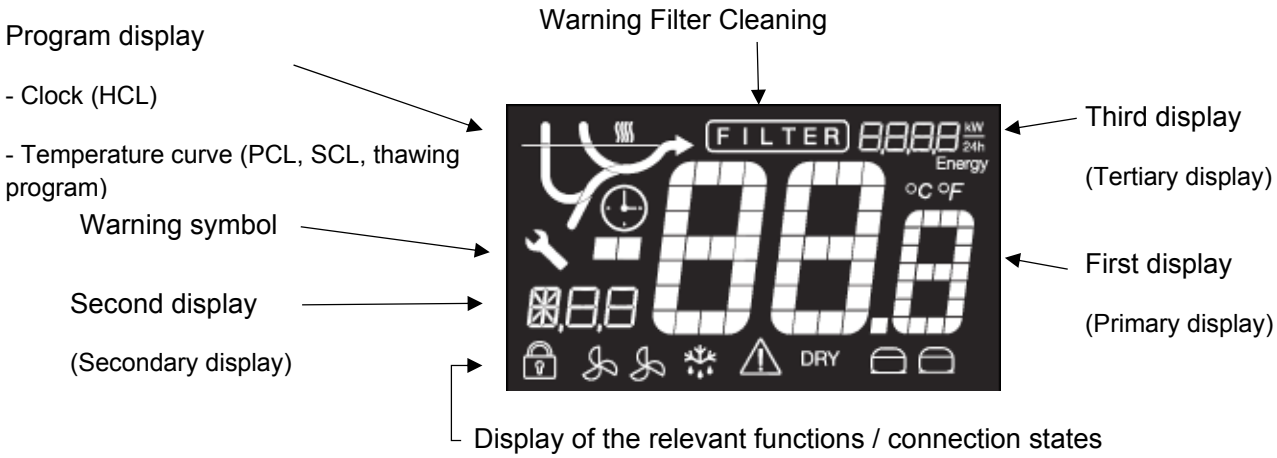
Fig. 5

Commissioning

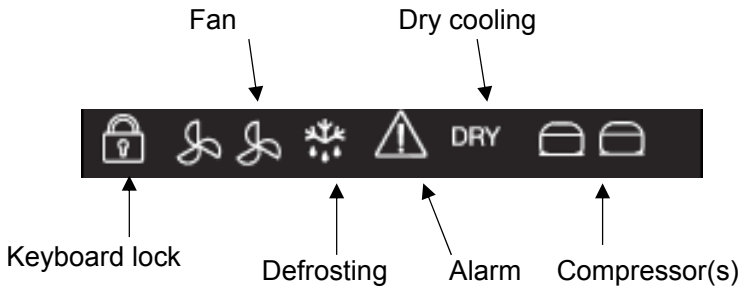
Overview of the control panel:



Overview of the display:



Function bar:

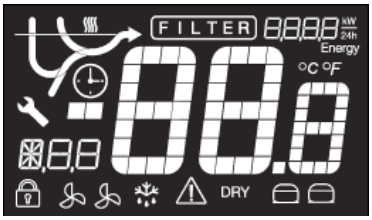
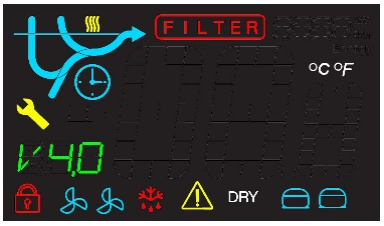
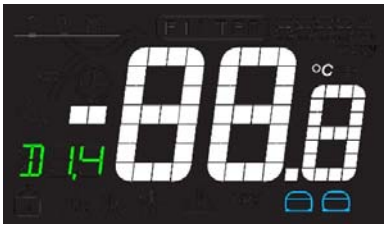


Connect the cabinet to the mains.

Please note! During maintenance and repairs, it must be ensured that the unit has no voltage applied to it. So take the plug out of the socket, or shut off the power! It is NOT sufficient to switch the unit off with the START/STOP button, since the unit in such case still has the mains voltage applied to it.

Connection, display and loading of the software

	Switch the unit on with the on/off button

Once the unit has been connected up, all segments in the display will light up in white for approx. 3 seconds (display test).	
Subsequently, the selected program will be shown on the secondary display - "P07" in this case. The program "P07" controls 2 compressors. Hence both compressor symbols will light up in blue.	
Afterwards, all used segments will be displayed in their respective colours. The secondary display will also show the software version - "4.0" in this case.	
Finally, the secondary display will show yet another version number for the software. When this display ends, the unit is ready for operation, and the temperature is shown in the primary display.	

Initial defrosting of the evaporator (connection when the unit is cold)

If the unit is in use and it is cold in the room, the program starts with a defrosting cycle:

In connection with this, the display shows the temperature internally within the unit.

The defrosting symbol is lit up:

⚠ Do not use pointed or sharp objects to make defrosting go faster!

Storage program (connection when the unit is warm)

If the unit is started in a warm state (normal room temperature internally inside the unit), then it will immediately switch to the storage program

In connection with this, the display shows the temperature internally within the unit.

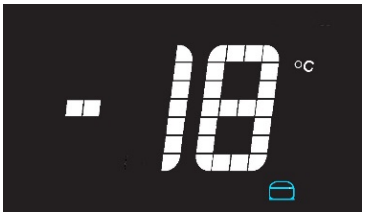
When the storage program has been activated, only one of the compressors will be working.

The fan will run at a low RPM figure (SF950plus).

Hence only one of the two compressor symbols will be lit. In addition, the symbol for the evaporator fan will be displayed.

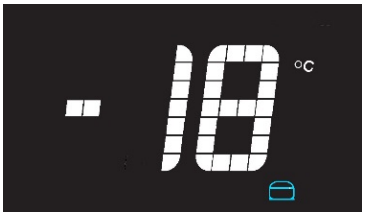
Display of the setpoint (temperature setting) in the storage program

Press the (P) button, and hold it in.
The display then shows the "desired value" and thereby the temperature setting.



Setting of the setpoint (temperature setting) in the storage program

Press the (P) button, and hold it in. The display then shows the "desired value" and thereby the temperature setting. When the (+) or (-) button is lightly pressed (the (P) button continues to be held in), the value is increased or lowered.



When the (P) button is released, an auditory signal is issued and the value is saved. The display once again will show the internal temperature within the unit.

Regulation in HCL, PCL, SCL

Under lagerkøling kører fordamperventilatorer ved lav hastighed. I programmer HCL, PCL og SCL tilkobles øjeblikkelig eller forsinket Kompressor 2 og der skiftes til høj blæserhastighed.

During storage, the evaporator fans run at low speed. In the programs HCL, PCL,and SCL compressor 2 is cut in immediately or delyed, and the fans start to run at hign speed.

Aggregates:

	Compressor 1	**Compressor 2**	**Fordamperventilator omdrejningstal**
Storage	ON / OFF Temperature controlled	OFF	100 % Temperature controlled
HCL (time controlled)	ON	ON	100 %
PCL (Hardchill)	ON	ON	100 %
SCL (Softchill)	ON / OFF Temperature controlled	ON / OFF Temperatue controlled	100 % Temperature controlled

Relay contacts:

	K1	**K3**	**K5**
Storage	ON / OFF Temperature controlled	ON / OFF Temperature controlled	OFF
HCL (time controlled)	ON	ON	ON
PCL (Hardchill)	ON	ON	ON
SCL (Softchill)	ON / OFF Temperature controlled	ON / OFF Temperature controlled	ON / OFF Temperature controlled

Time-controlled cooling "HCL"

This program is time-controlled only. The air temperature and the temperature of the contents of the cabinet are not taken into account. Both compressors perform the cooling in parallel. The second compressor starts 15 seconds after the first one.

The program is selected by pressing the button :

When the button is pressed, it will stay lit continuously, and the P, + and - buttons will blink. The symbol for the clock will light up. The secondary display will show the program name "HCL" and the tertiary display the selected duration in minutes. The symbols for a high fan RPM figure and operation with 2 compressors will be blinking.

The + and - buttons are used to change the time, and P for starting the program.

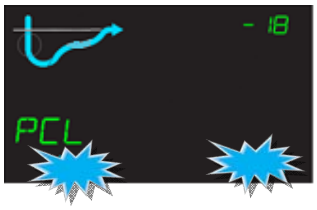
While the program is running, the time will count down on the tertiary display. The primary display will show the current temperature inside the unit. In addition, the connected elements will now be continuously lit: both compressors, both fan symbols.

After the preset period of time expires, an acoustic signal is emitted. After the signal, defrosting is commenced (if such is required based upon the evaporator sensor's temperature). Then it subsequently switches to the storage program. Hence the desired value for the storage program must always be set and checked before starting "HCL"!

Temperature-controlled cooling (Hard Chill)

	This program cools down to the selected, desired value at full motor power (controlled with the use of the extra sensor). **Both compressors perform the cooling in parallel. The second compressor starts 15 seconds after the first one.** **The program is selected by pressing the button :**

After pressing the button, it will be lit continuously. The P, + and - buttons will be blinking. The curve symbol for Hard Chill will light up. The secondary display shows the program name "PCL", and the tertiary display the selected, desired temperature value.



The + and - buttons are used to change the desired value, and P for starting the program.

The primary display will now show the current temperature in the room, the secondary display the program name "PCL" and the tertiary display the selected, desired temperature value. The curve symbol is now continuously displayed. In addition, the connected elements will now be continuously lit: both compressors, both fan symbols.

When the desired value is attained, an acoustic signal will be emitted.
After the signal, defrosting is commenced (if such is required based upon the evaporator sensor's temperature). Then it subsequently switches to the storage program. Hence the desired value for the storage program must always be set and checked before starting "PCL"!

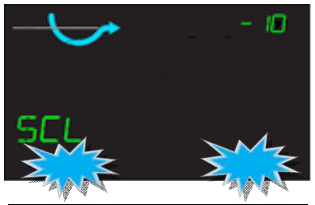
Temperature-controlled cooling (Soft Chill)

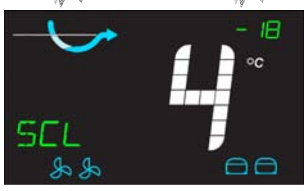
	This program gently cools down to the selected, desired value (controlled using room sensor).

Both compressors perform the cooling in parallel. The second compressor starts 15 seconds after the first one.
The program is started by pressing the button .

Temperature changes with Soft Chill: The program is governed solely by the room sensor. The air temperature and goods being chilled are thus taken into account. The elapsed time has no effect on the course of the program. The cooling system works with start/stop cycles with a gradient up to the preset storage temperature. The process stops as soon as the temperature value reaches 0 °C, and the controls switch to the storage program.

After pressing the button, it will be lit continuously. The P, + and - buttons will be blinking. The curve symbol for Soft Chill will light up. The secondary display shows the program name "SCL", and the tertiary display the selected, desired temperature value. The + and - buttons are used to change the desired value, and P for starting the program. The primary display will now show the current temperature in the room, the secondary display the program name "PCL" and the tertiary display the selected, desired temperature value. The curve symbol is now continuously displayed. In addition, the connected elements will now be continuously lit: both compressors, both fan.





When the desired value is attained, an acoustic signal will be emitted.
After the signal, defrosting is commenced (if such is required based upon the evaporator sensor's temperature). Then it subsequently switches to the storage program. Hence the desired value for the storage program must always be set and checked before starting "SCL"!

Thawing program

	In connection with thawing, a defrosting heating element is used, which is governed by the temperature that the room sensor measures. The thawing program is only able to start when the desired temperature value is set to between +2°C and +8°C. **The program is started by pressing the button .**

starts the function.

When the desired value is attained, an acoustic signal will be emitted. After the signal, defrosting is commenced (if such is required based upon the evaporator sensor's temperature). Afterwards, the storage program is switched to.

Manual defrosting of the evaporator

Manual defrosting is only possible as initial defrosting:

Start a program: Press on (wait for 10 seconds).

Press on in order to end/interrupt the program again. This then causes defrosting to be commenced

Do not use pointed or sharp objects to make defrosting go faster!

Automatic defrosting of the evaporator

The unit performs automatic defrosting 1 to 8 times daily, when the "PCL", "HCL" and "SCL" programs have finished. Defrosting cannot be concluded manually! In connection with this, the internal temperature inside the unit is shown before the defrosting process commences.

The user menu

	The user menu is opened by pressing the button for approx. 3 seconds.

Navigate through the menu using the using the (+) and (-) buttons, after which the selected menu item is opened with the button (P). The (+) and (-) buttons increase or decrease the value. They are also used to navigate around in the submenu ("LAL"). The manner of procedure is the same in the submenu. Altered values are saved by pressing on (P) (receipt acoustic signal!). The menu items or the menu are exited by pressing (⏻).

Menu item		**Description**	**Settings range**	Factory setting
DC		Dry cooling function *	Activation: "ON" Deactivation: "OFF"	OFF
LAL	**Local alarm (display)**			
	LHL	upper boundary value for LAL	+25 … -35 °C	+25 °C
	LHd	Delay for LHL	1 ... 120 min / in steps of 5 minutes	60 min
	DA	Door alarm	0 = off / 1 = on	1
	Dad	Delay for door alarm	0 … 15 min	1
	BU	Acoustic alarm for LAL	0 = off / 1 = on	1
CAL	**Temperature offset (sensor harmonisation)**			
	CA	Temperature offset sensor input A (room sensor)	-5 … +5 K / steps of 0.5 K	0.0 K
	CE	Temperature offset sensor input A (room sensor)	-5 … +5 K / steps of 0.5 K	0.0 K
ALL		Relative (escorted) or absolute (fixed) alarm limits	ESC = escorted / FAS = fixed	FAS
DEF		Number of defrosting cycles for each 24 hours	0 … 8	4

Dry cooling

DRY	**Dry cooling function may only be selected via the user menu. The user menu is opened by pressing the button for approx. 3 seconds. The function can now be switched in or out under the DC menu item, saved with (P) , after which the menu is exited with .**

Menu item	Description	Settings range	Factory setting
DC	Dry cooling function *	Activation : "ON" Deactivation: "OFF"	OFF

Alarm and error messages on the display

Display	Explanation
OP	The door is open (or the door switch is closed in another manner).
A1	Door alarm "dA" was activated.
A2	Local alarm, maximum value was activated (LHL)
F1	Room temperature sensor is defective. The sensor must be replaced by the service department. The cabinet will still approximately maintain the preset temperature with the use of an emergency program.
F2	If "F2" is shown, the evaporator sensor is defective, or there is extreme icing up of the evaporator. Initially, the unit must be completely defrosted one single time (disconnected, after which the cabinet must stand with an open door for 24 hours)**, Important - condensation container under the unit may run over in connection with this!).** If the fault subsequently continues to be displayed, then the service department must replace the sensor a quickly as possible. The preset temperature will continue to be maintained, and the defrosting phase will occur gradually without temperature restrictions.

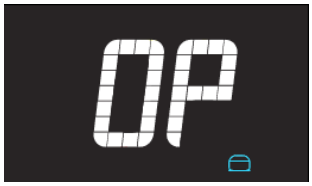
Display	Explanation
F3*	If "F3" is displayed, there are problems with the condensation sensor. This sensor only protects against overheating, and it has no influence on the temperature regulation in the cabinet. It ought however to be replaced as quickly as possible, so the protection against overheating is re-established
F4*	Faults in the second condensation sensor in connection with units with two cooling motors (see fault message "F3").
F5	Fault in the temperature sensor for PCL (hard chill). The sensor must be replaced, contact the service department. Affects only hard chill
F7*	Overheating of condenser or undercooling, filter mats or condenser fins plugged up, fan defective, ambient temperature too high or low (unit not in operation with ambient temperature of under +16°C)
	*does not apply for models with external cooling motors

Deleting alarm messages

A1	**The A1 alarm is deleted by pressing the button (P).** **!Door must be closed first**
A2	**The A2 alarm is deleted by pressing the button (P).** **!The temperature in the cabinet must first be under the desired maximum temperature (25°C Default)**

Door monitoring

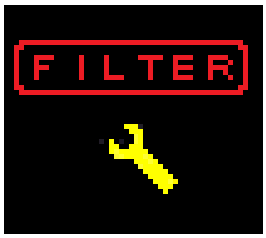
When the door is opened, "OP" is shown in the primary display.



An acoustic signal is emitted, and the "A1" message is shown on the secondary display, if the door at a minimum is open in "**Dad**", and "**BU**" is connected.

The acoustic alarm is deleted by pressing (P). The alarm indicator only or first shuts off once the door has also been closed.

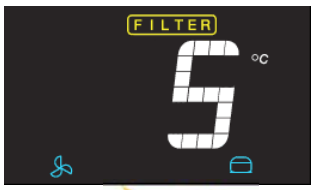
Cleaning the condenser filter / resetting the FILTER alarm



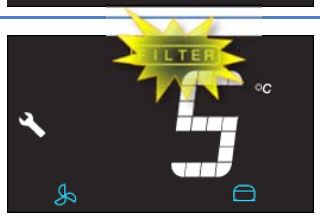
After 600 compressor running hours the filter must be cleaned.
After cleaning the air filter, the controller must be reset to remove the alarms.
It can only be reset by using a certain key combination.

Key combination: ⏻ ⏻ ⏻ P P P.

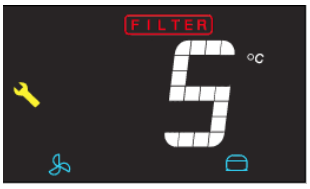
After 600 compressor running hours "FILTER" lights yellow.



After 625 compressor running hours "FILTER" begins to flash and the service symbol lights white.



After 650 compressor running hours "FILTER" flashes red and the service symbol lights lyser yellow.

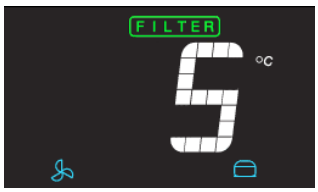


After 675 compressor running hours the alarm symbol ⚠ lights and an acoustic alarm sounds.

Push 3 x ⏻ and 3 x P :

⏻ ⏻ ⏻ P P P

FILTER symbol lights green for approx. 1 minute, and is then turned off.



Servicemenu

Service	**To enter the service menu, push P + simultaneously for about 6 seconds.**

The first menu option "A" (Alarm settings) is displayed at the secondary display. Menu options "A", "P", "C", "F", "D", "Ter" each have a submenu, options "P-A" …. "P-E" show the temperature of each sensor at the primary display.

The keys + and - are used to navigate through the menus, with P the actual menu option is selected. With + and - the settings are changed, navigation in submenus respectively . Changes are saved by pushing P (A beep sounds for confirmation). Push ⏻ to exit the menu/menu option.

	Alarm settings
	"Presentation", Display reading
	"Compressor", Control parameters for compressor
	"Fan", Control parameters for evaporator fan
	"Defrost", Defrost parameters
	"Test Relay" Manual test of relays
	"Probe - A" Room sensor temperature display (Conn. A)
…	**… B (evaporator sensor), C, D respectively (condenser sensor)**
	"Probe - E" Extra sensor temperature display (Conn. E)

Parameter list

Parameter		Description	Setting range	Default
A	**Alarm settings**			
	A1	Temperature limit for condenser sensor (Compressor stop, Cond.alarm)	0 … 99 °C	65
	A2	Reset temperature	0 ... 99 °C	40
	A3	Interval for alarm repetition	5 … 30 min	5

Parameter		Description	Setting range	Default
P	**"Presentation": Display**			
	P1	Display of setpoint after defrosting	0 … 99 min.	30
	P2	Tolerance for setpoint	00 = +0/-0 / 01 = +1/-1, 02 = +2/-2 / 03 = +3/-3, 04 = +4/-4 / 05 = +5/-5	3
	P3	Display refreshing	0 … 99 sek.	10
	P4	Temperature scale	Celsius = C / Fahrenheit = F	C

Parameter		Description	Setting range	Default
C	**Compressor**			
	C1	Hysteresis	1=0/-1, 2=+1/-1, 3=+1/-2 4=+2/-2, 5=+2/-3, 6=+3/-3	2
	C2	Upper temperature limit	+25 … -35 °C	+10
	C3	Lower temperature limit	+25 … -35 °C	-30
	C4	Pause time for compressor restart	0 … 30 min.	5
	C5	Condenser sensor configuration	0 = no sensor; 1 = 1 sensor (C); 2 = 2 sensors (C, D)	2
	C6	Compressor stop at door opening	0 … 15 min.	5

Parameter		Description	Setting range	Default
F	**Fan (evaporator fan)**			
	F1	Evaporator fan start after defrosting	0 … -10 °C	-1
	F2	Running- /pause time ratio for evaporator fan: Pause	0 … 10 min.	4
	F3	Running- /pause time ratio for evaporator fan: Running time	0 … 99 sek.	60

Parameter		Description	Setting range	Default
d	**"Defrost": Afrimning**			
	d1	No. of defrosts / 24 hours	1 … 8	4
	d2	Defrost temperature limit	0 til 30 °C	12
	d3	(”manual”) initial defrosting	0 = On / 1 = Off	0
	d4	Maximum defrost time	10 … 60 min.	30
	d5	Defrost mode	1 = automatic (depending on setting "d7") 2 = air 3 = electric (defrost heater)	3
	d6	Drip time	0 …10 min.	2.
	d7	Temperature limit at automatic defrosting	at "d5" = 1: +2 … +25°C	+4
	d8	Evaporator monitoring, if exceeding, forced defrosting follows	-5 .. -50 °C	-40
	d9	Defrosting by termination of "PCL", "HCL", "SCL"	0 =On ... 1 =Off	1

TEr	"Test Relay" Manual coupling of relays for testing

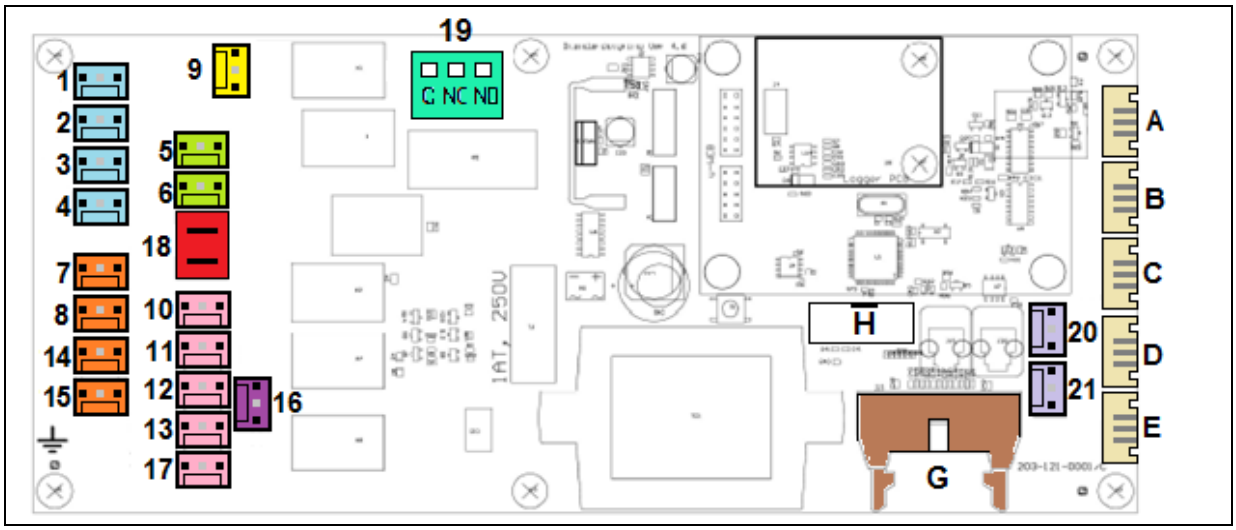
	Parameter	Description	Setting range
TEr	**Test Relay**		
	TC	Test Compressor 1 + condenser fan	ON ("on") - OFF ("TC")
	TF	Test Evaporator fan	ON ("on") - OFF ("TF")
	Td	Test Defrost heater	ON ("on") - OFF ("Td")
	TL	Test Light	ON ("on") - OFF ("TL")
	tC2	Test Compressor 2	ON ("on") - OFF ("tC2")
	TdP	Test Display and Piezo buzzer, then display of software version at the secondary diasplay.	ON (Start)

P-A .... P-E	Sensor display

Sensor	Description
P - A	Temperature sensor A (room sensor)
P - b	Temperature sensor B (evaporator sensor)
P - C	Temperature sensor C (condenser sensor 1)
P - d	Temperature sensor D (condenser sensor 2)
P - E	Temperature sensor E (extra sensor)

Sensor defective or not connected

Electronic controller, overview

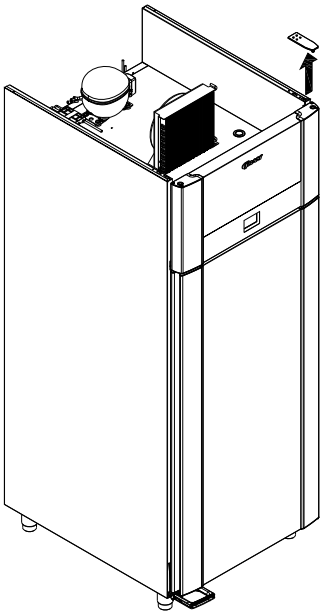


No	Description	Application
1	230V output Rel. K1	Compressor 1, cond.fan, re-evaporation heat (Standard)
2	230V output Rel. K1	Compressor 1, cond.fan, re-evaporation heat (Standard)
3	230V output Rel. K1	Compressor 1, cond.fan, re-evaporation heat (Standard)
4	230V output Rel. K1	Compressor 1, cond.fan, re-evaporation heat (Standard)
5	230V output Rel. K3	Evaporator fan
6	230V output Rel. K3	Evaporator fan
7	230V output Rel. K2	Defrost heat, drain line heat
8	230V output Rel. K2	Defrost heat, drain line heat
14	230V output Rel. K2	Defrost heat, drain line heat
15	230V output Rel. K2	Defrost heat, drain line heat
9	230V output Rel. K4	Light (LED)
10	230V output Rel. K7/K8	100% power, door frame-, drain line-, re-evaporation heat
11	230V output Rel. K7/8	100% power, door frame-, drain line-, re-evaporation heat

12	230V output Rel. K7/8	100% power, door frame-, drain line-, re-evaporation heat
13	230V output Rel. K7/8	100% power, door frame-, drain line-, re-evaporation heat
17	230V output Rel. K7/8	100% power, door frame-, drain line-, re-evaporation heat
18	230V output.-/input (K2)	Bridge (safety thermostat for defrost heater)
19	Output Rel. K5	Connection for 1 or 2 compressor operation, high or low fan RPM
16	230V Input	230 Volt input (power supply for controller and relays)
20	digital input	Door switch 1 (NC door open=contact off, 5V)
21	digital input	Door switch 2 (not used)
A	analog input	Room sensor, M2020 (NT 5000)
B	analog input	Evaporator sensor, M2020 (NT 5000)
C	analog input	Condenser sensor 1, M2020 (NT 5000)
D	analog input	Condenser sensor 2, M2020 (NT 5000)
E	analog input	Extra sensor (Soft Chill), M2020 (NT 5000)
G	14 pole Interface	Connection for Display (I2C) and keyboard (Matrix 3x3)
H	10 pole Interface	Programming port ISP

Changing the door hinge side

1



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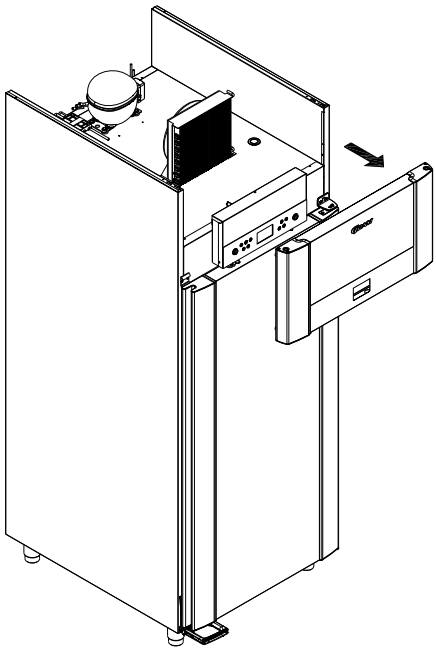

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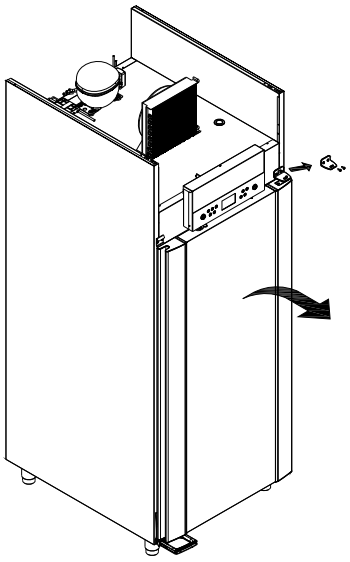

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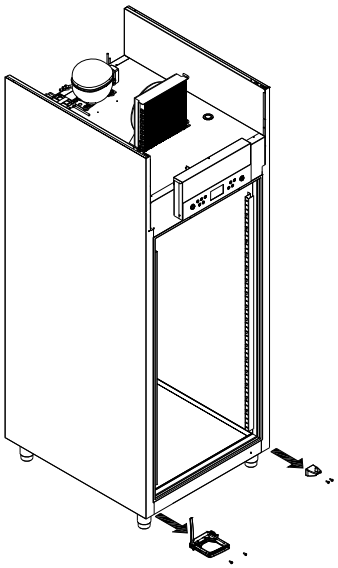

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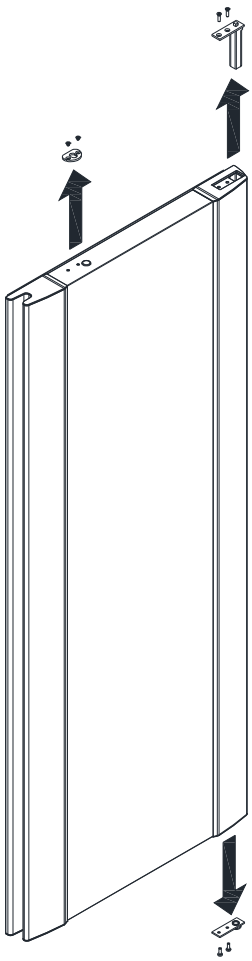

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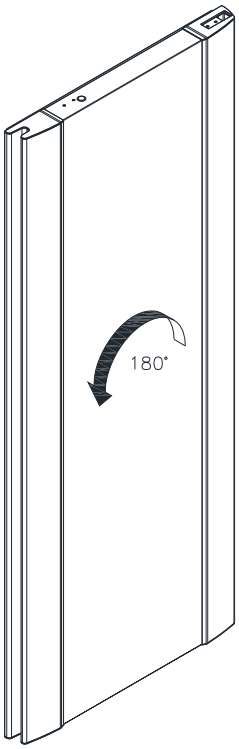

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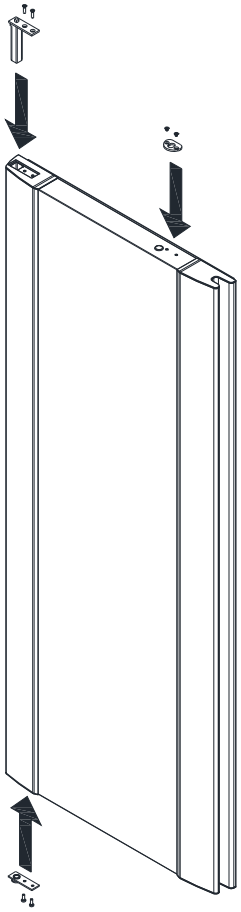

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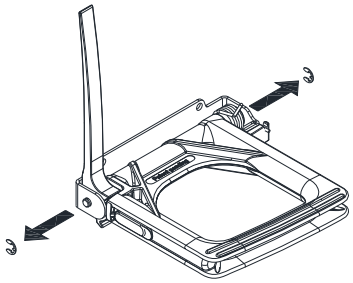

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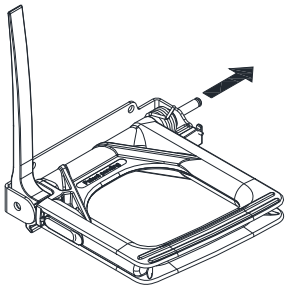

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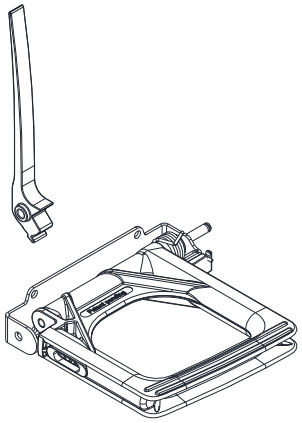

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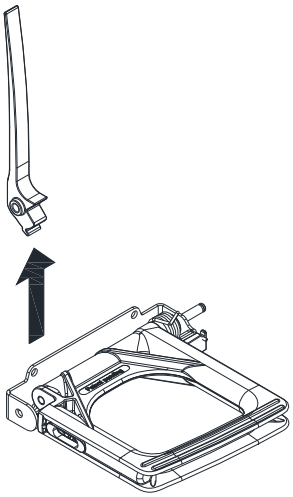

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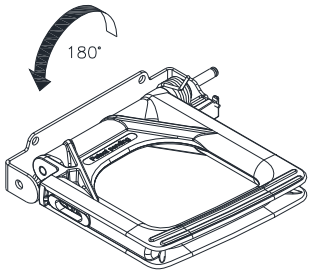

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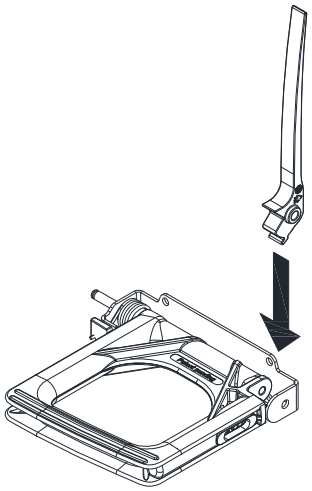

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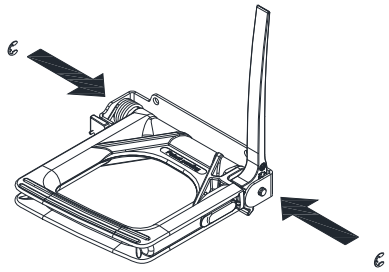

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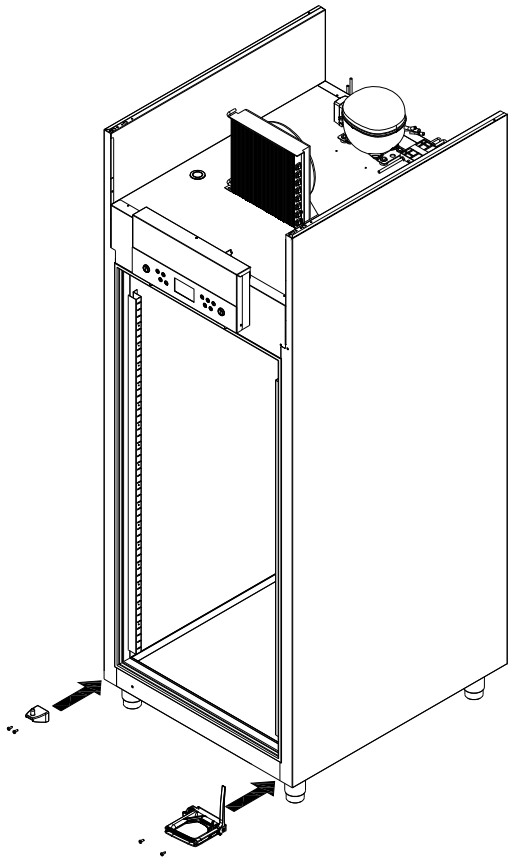

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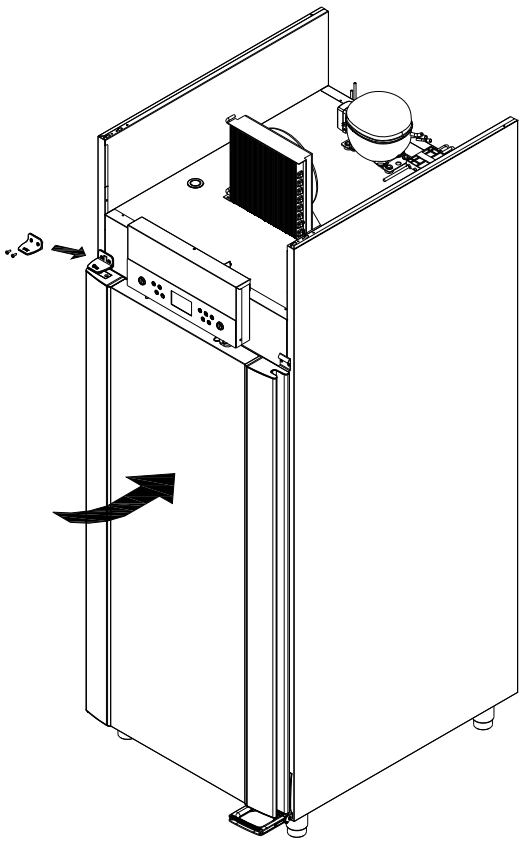

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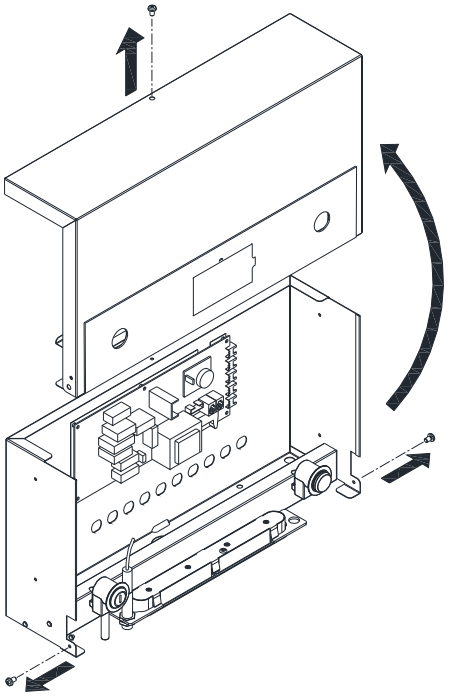

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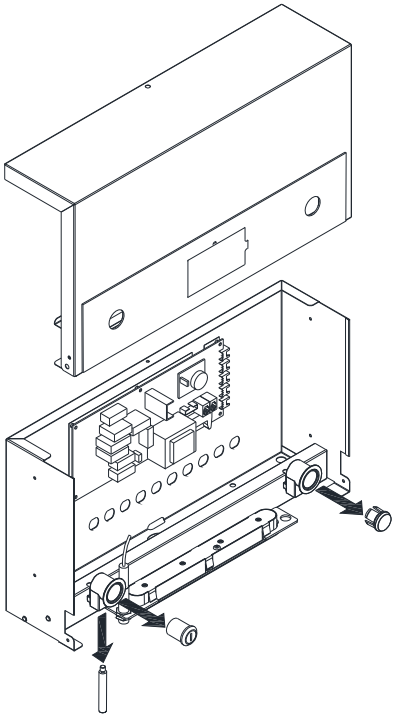

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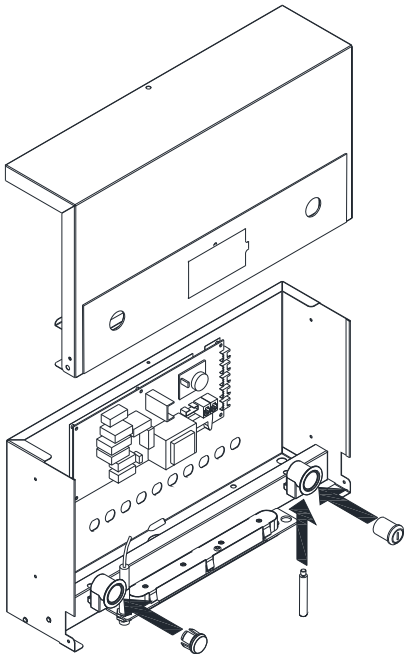

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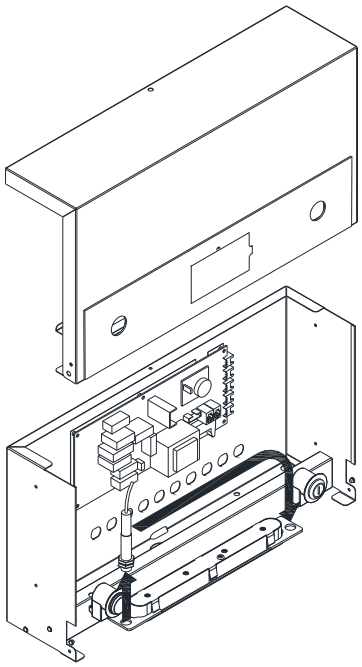

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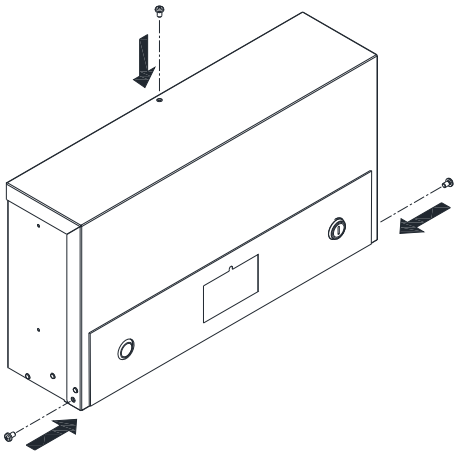

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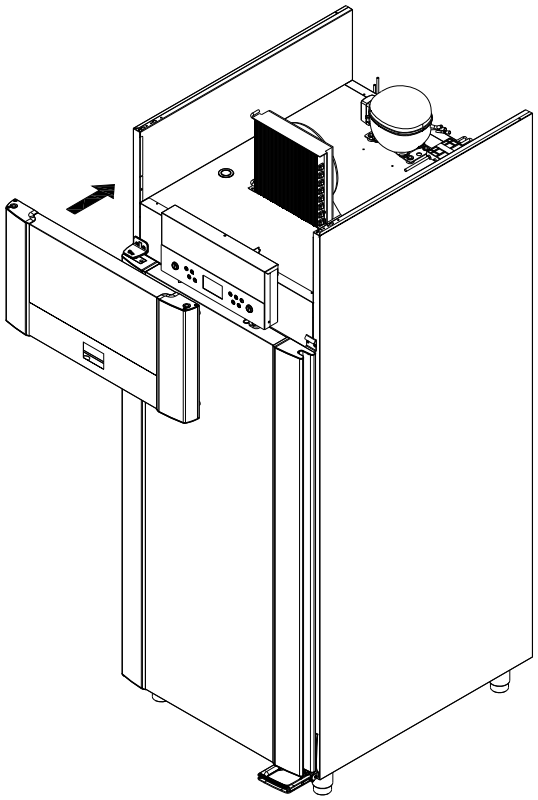

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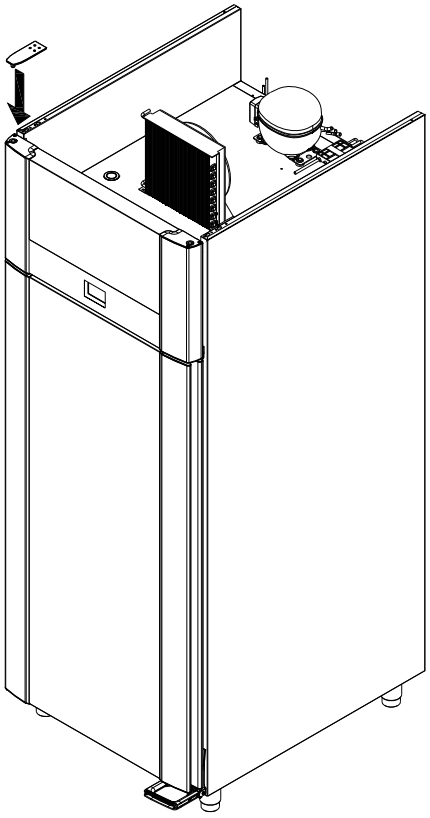
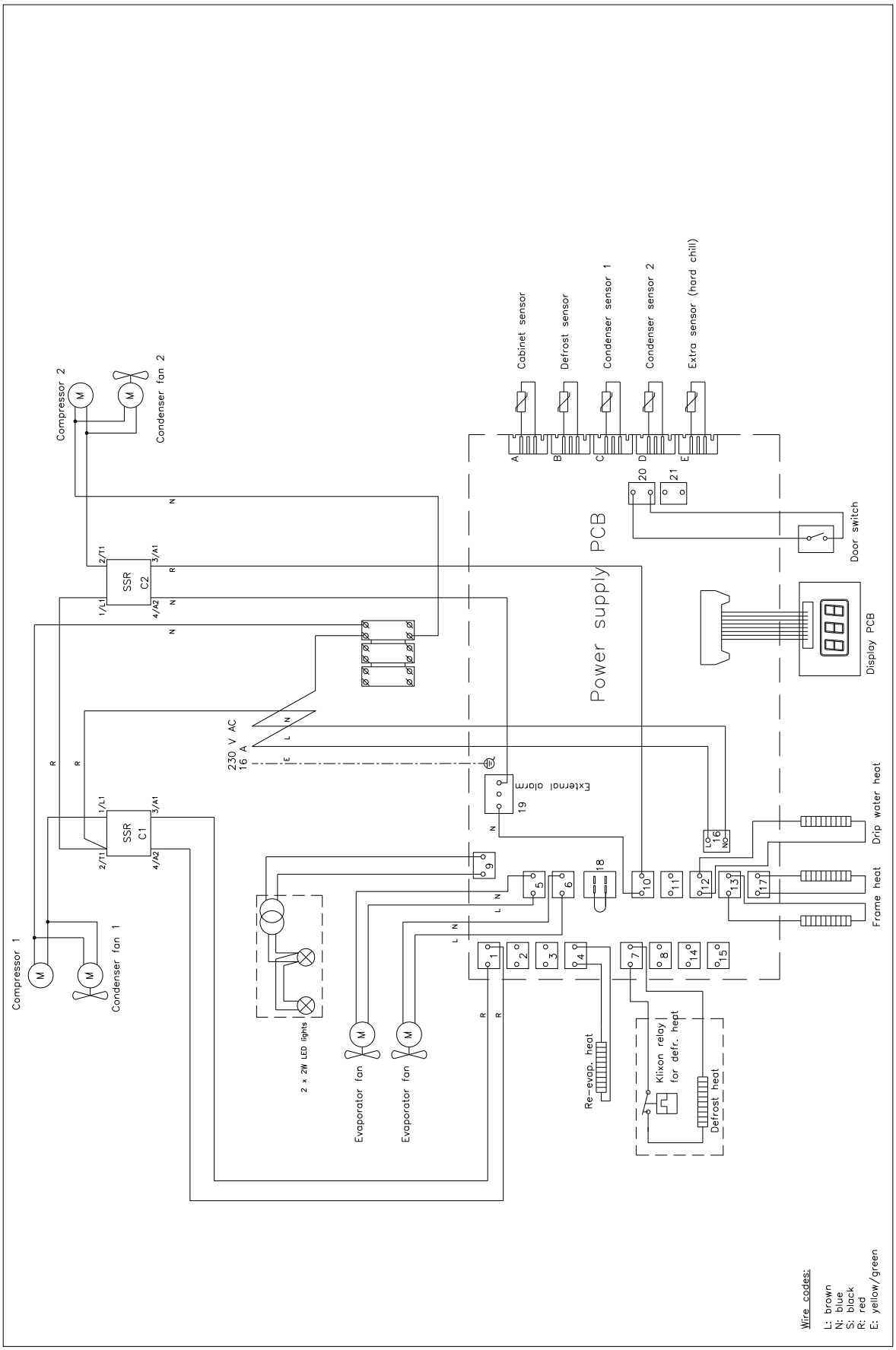
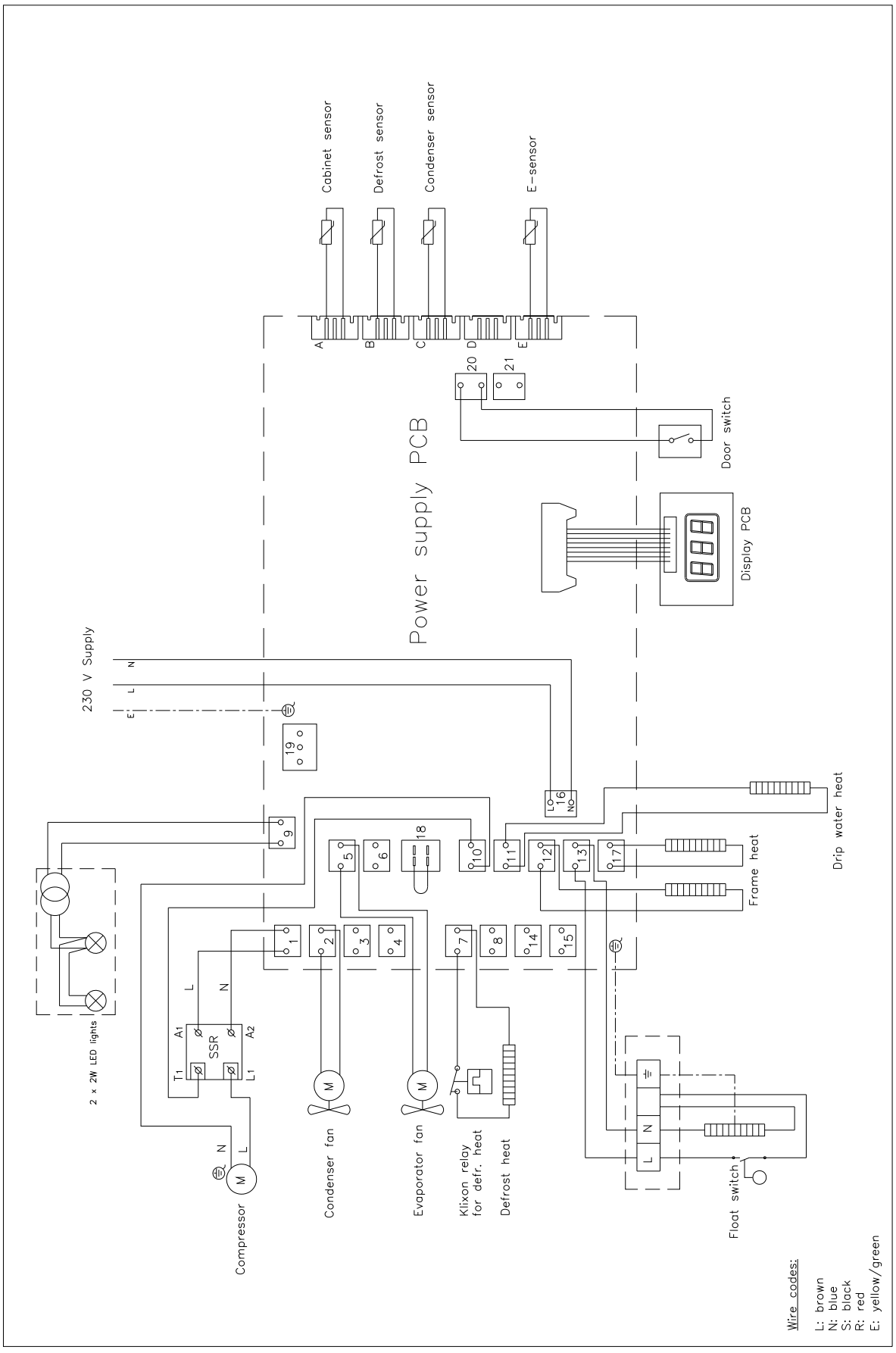


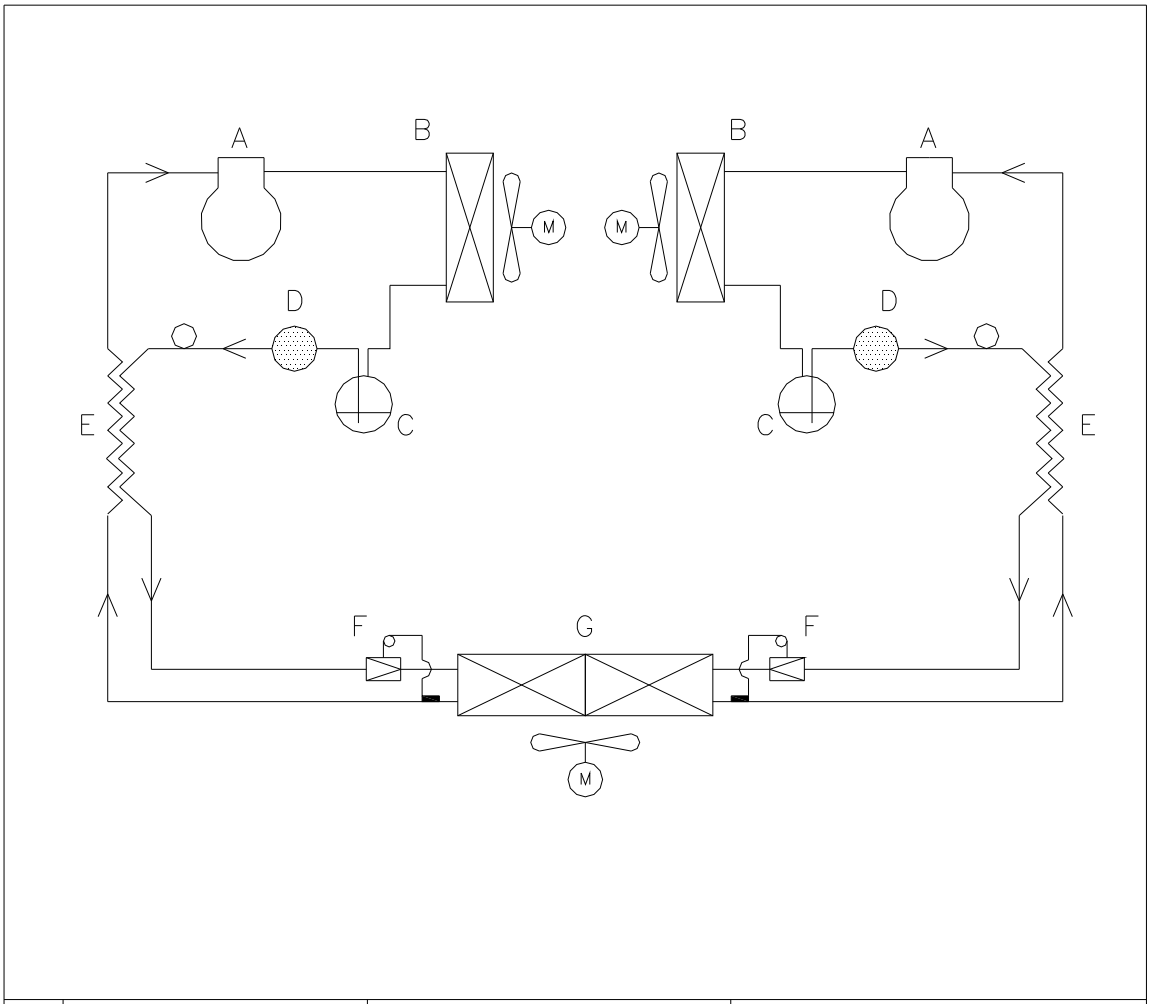
Wiring diagram KP 82



Wiring diagram SF 550 / KP 60

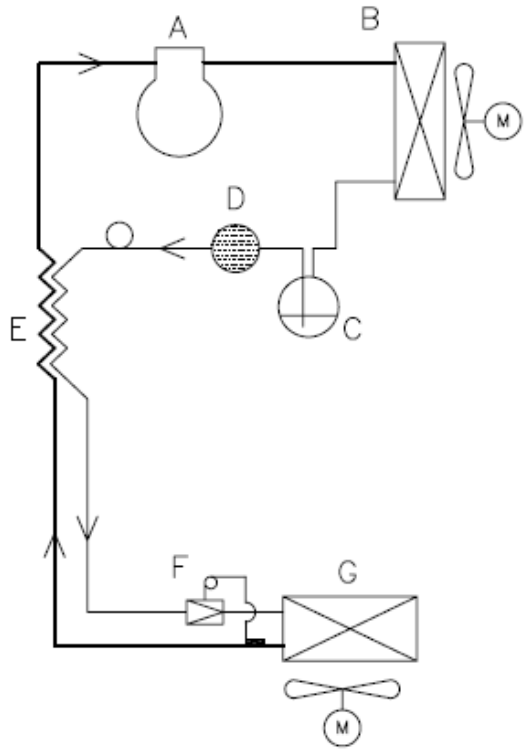


Piping diagram KP 82



	DK	GB	D
A	Kompressor	Compressor	Kompressor
B	Kondensator	Condenser	Verflüssiger
C	Recipient	Receiver	Flüssigkeitssammler
D	Tørrefilter	Filter drier	Trockenfilter
E	Varmeudveksler	Heat exchanger	Wärmeaustauscher
F	Ekspansionsventil	Expansion valve	Ekspansionsventil
G	Fordamper	Evaporator	Verdampfer

Piping diagram SF 550 / KP 60



	DK	GB	D
A	Kompressor	Compressor	Kompressor
B	Kondensator	Condenser	Verflüssiger
C	Recipient	Receiver	Flüssigkeitssammler
D	Tørrefilter	Filter drier	Trockenfilter
E	Varmeudveksler	Heat exchanger	Wärmeaustauscher
F	Ekspansionsventil	Expansion valve	Ekspansionsventil
G	Fordamper	Evaporator	Verdampfer