Appliance Documentation

GKPv 6520 / 1420 from index 40
GKPv 6570 / 1470 from index 40
BKPv 65.. / 84.. from index 40

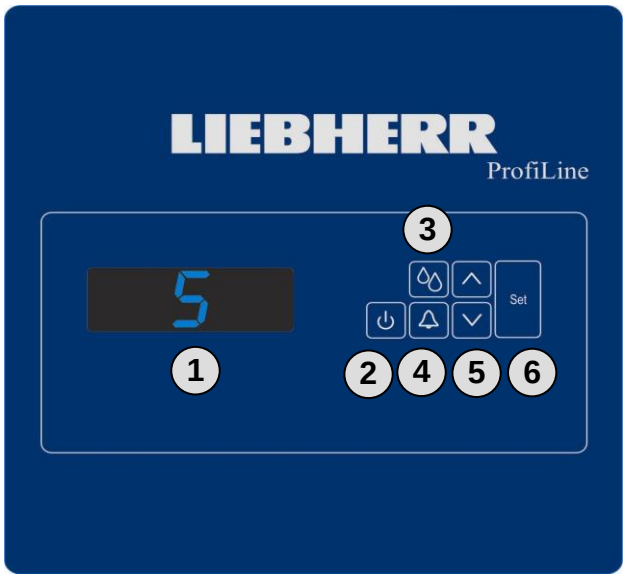
Gastronorm / bakery standard ProfiLine refrigerator, ventilated

GKPv 6520

BKPv 8420

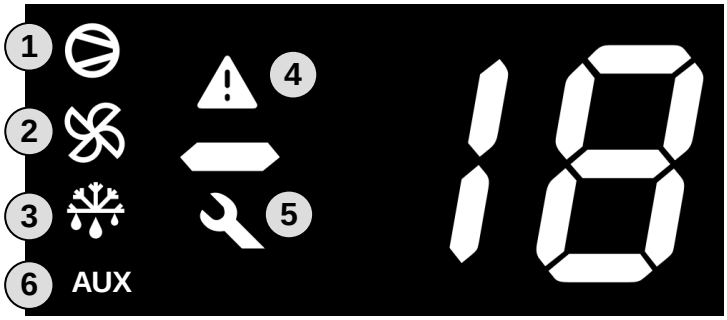
Contents

1.0 Operating and control elements



1 : Display for temperature readout and controls
2 : ON/OFF button
3 : Humidity control
4 : Alarm OFF button
5 : Temperature setting buttons
6 : Set button(Enter)

1.1 Meaning of the controls



1 : LED shines:	compressor is running.
1 : LED flashes:	switch-on delay of the compressor is active.
2 : LED shines:	evaporator fans are running.
2 : LED flashes:	switch-on delay of the fans is active (e.g. after defrosting).
3 : LED shines:	defrosting phase is active.
3 : LED flashes:	switch-on delay of the defrosting (e.g. defrost request during compressor standstill).
4 : LED shines:	alarm (e.g. door open, temperature too warm)
5 : LED shines:	fault (e.g. in case of sensor defect)
6 : LED shines:	humidity control active (= higher relative humidity) – *only at index 40*

2.0 Functions at a glance

Control:	Electronic control system
Temperature display:	Digital
Temperature range:	GKPv: +1°C to +15°C BKPv: -5°C to +15°C
Temperature alarm:	Visual and audible
Door alarm:	Visual and audible
Potential-free alarm contact:	Present
HACCP:	Not present (cannot be retrofitted either)
Interface:	Not present
Fan:	Present
Defrosting:	Automatic
Interior light:	Not present
Service menu:	Not present
Compressor:	Standard
Solenoid valve refrigeration circuit:	Present in BKPv (for defrosting) Not present in GKPv

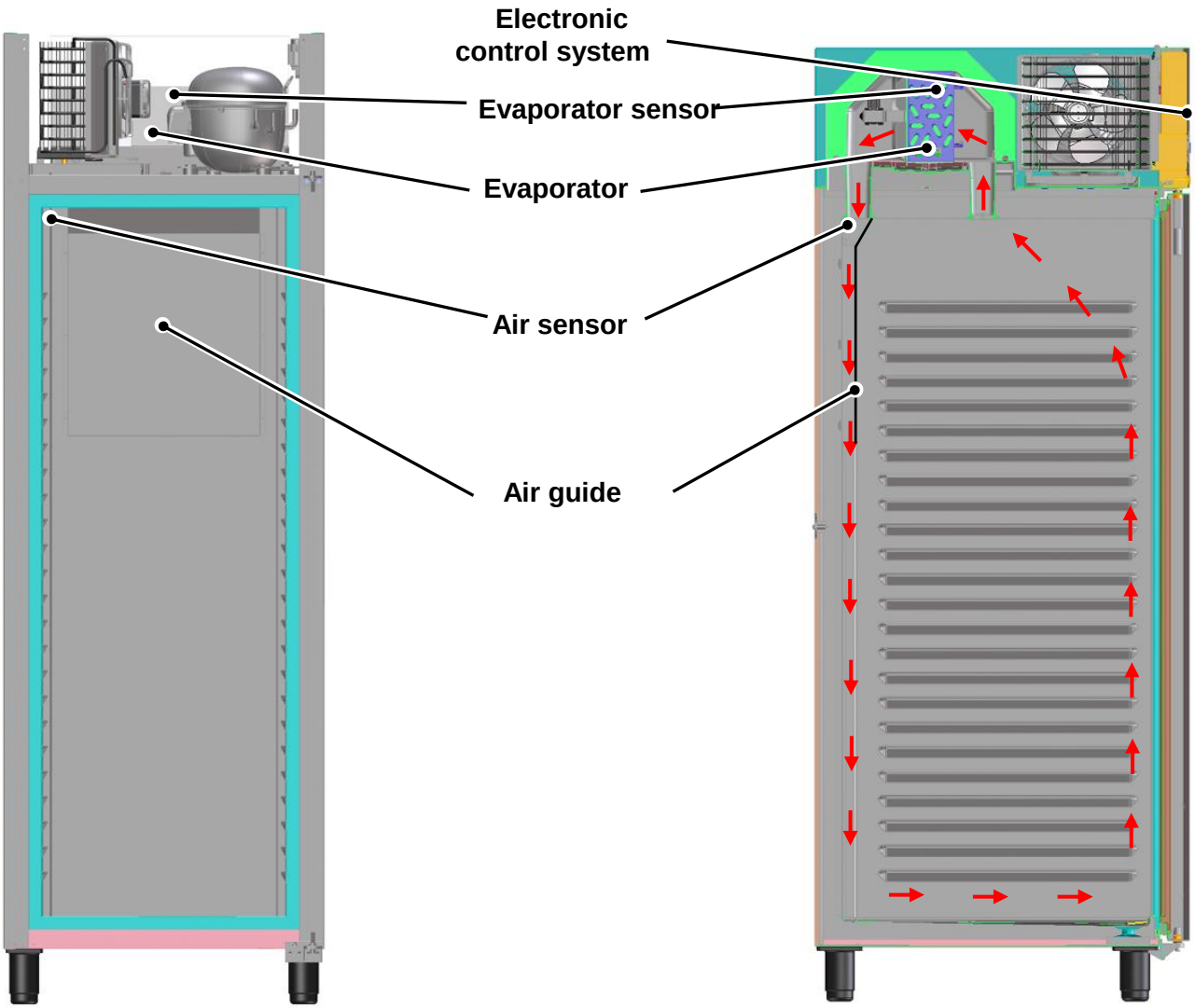
3.0 Description of the appliance

The GKPv ..20/70 and BKPv models are dynamically cooled refrigerators with lamellar evaporators. A double fan sucks air from the interior through the evaporator and blows the cold air back into the interior.

The temperature is controlled by an air sensor.

In the case of the GKPv the defrosting takes place by means of defined compressor standstill time.
In the case of the BKPv the defrosting takes place by means of hot gas.

3.1 Sensor positions, schematic diagrams



4.0 Main components and their functions

4.1 Electrical components and functions

Electronic control system	
Type:	Electronic microprocessor controller from **CAREL** with digital display The parameters are assigned to the electronic control system by LIEBHERR
Components:	Electronic control system casing
Adjusting range:	GKPv: +1°C to +15°C BKPv: -5°C to +15°C
Display range:	-50°C to +90°C
Functions	
Temperature alarm:	When: As soon as the temperature drops below or exceeds the set value by 5 K Audible: Intermittent beep (suppressed during start-up) Visual: The alarm symbol shines and either the code "HI" (too warm) or "LO" (too cold) appears in the display. To avoid unnecessary warnings (e.g. door opening) the temperature has to exceed/drop below the threshold for at least 30 minutes *(from index 40A at least 60 minutes).* After the defrosting phase has ended, the alarm is inactive for one hour.
Door alarm:	When: Door open longer than 4 minutes. Audible: Intermittent beep Visual: The alarm symbol shines and the code "dor" appears in the display When the door is open the alarm symbol immediately flashes and the temperature display flashes – the alarm proper is activated only after the above-stated time.
Humidity control: ***(index 40)***	Deactivated: (low) The evaporator fans run in parallel with the compressor -> lower humidity in the appliance Activated: (high) The evaporator fans also run during compressor stand still -> higher humidity in the appliance The AUX symbol shines as status display.
Humidity control: ***(from Index 40A)***	low: The evaporator fans run in parallel with the compressor -> lower humidity in the appliance middle: The evaporator fans run with the compressor and when compressor standstill, they run sometimes -> middle humidity in the appliance high: The evaporator fans also run during compressor standstill -> higher humidity in the appliance The chosen condition is display in a menu.
Potential-free alarm contact:	The potential-free contact takes the form of a changer and can be integrated into a central monitoring system if required. In a fault scenario (alarm, power failure) the contact gets activated.

Defrosting in GKPv:

Activation:
- Automatic, every 6 hours (irrespective of compressor run time).
- Manual, when the "down" button is depressed for 5 seconds.

Function: The compressor switches off, the evaporator fans however continue to run and suck the "warm" air from the interior through the evaporator. The ice melts as a result.

The defrost water is collected in the evaporator tray and is conducted through a drain pipe (trap) into the defrost water evaporation pan. During the next cooling phase this pan is heated by hot gas and the water evaporates.

End: The compressor starts operating again after the set defrosting period of 30 minutes has elapsed.

Display: The defrosting symbol shines during the defrosting phase.

During the defrosting phase the value last displayed before defrosting started is retained. The display is re-activated as soon as the set value is reached the first time after the end of the defrosting phase, at all events within the alarm delay (The temperature alarm is deactivated for one hour after the end of the phase).

Special feature: In case of power failure, defrosting takes place one hour after the power is restored – thereafter according to programmed interval.

If the appliance was switched off by the ON/OFF switch, all times are reset to 0! That is to say, after the power is restored the appliance operates normally and is defrosted the next time according to the programmed interval.

Defrosting in BKPv:

Activation:
- Automatic after 4 hours accumulated compressor run time (but at least 2x/day).
- Manual, when the "down" button is depressed for 5 seconds.

Function: Defrosting by hot gas (see section 4.2.2.2)

The defrost water is collected in the evaporator tray and is conducted through a drain pipe (trap) into the defrost water evaporation pan. During the next cooling phase this pan is heated by means of hot gas and the water evaporates.

End: The defrosting phase is usually ended thermally (+10°C).
Should it not be ended thermally, the defrosting phase is terminated after 8 minutes (*from index 40A after 13 minutes).*
- The compressor starts again after a drain time of 10 minutes.
- The evaporator fans start with a further 5-minute delay.

Display: The defrosting symbol shines during the defrosting phase
During the defrosting phase the value last displayed before the defrosting started is retained. The display is reactivated as soon as the set value is reached the first time after the end of the defrosting phase, at all events within the alarm delay.
(The temperature alarm is deactivated for one hour after the end of the phase).

Special feature: In case of power failure, defrosting takes place one hour after the power is restored – thereafter according to programmed interval.

If the appliance was switched off by the ON/OFF switch, all times are reset to 0! That is to say, after the power is restored the appliance operates normally and is defrosted the next time according to the programmed interval.

Sensors

Air sensor:

Position: In the interior, at the top back left corner.

Function: Supplies the switching values for the electronic control system and

- **generates the display value**.
The "*display update*" parameter was set to a medium value-> and is therefore a little damped in response!

- **Switches the compressor OFF/ON** The hysteresis is 2 K.
(Example: At a set value of 8°C the compressor switches on at +10°C and off at 8°C)

To reduce temperature fluctuations, the "*measuring stability*" parameter was set to the lowest value
-> sensor responds quickly!

In case of a **fault** (break or short circuit) the fault symbol lights up and the E0 code appears in the display.
-> The appliance operates in the **emergency mode**:
- **3 minutes** for BKPv or **5 minutes** for GKPv **on**
- **15 minutes off.**

Evaporator sensor (in BKPv):

Position: Slipped into the evaporator

Function: Supplies the switching values for the electronic control system and

- **ends the defrosting phase** at +10°C

In case of a **fault** (break or short circuit) the fault symbol lights up and the E1 code appears in the display.
-> The appliance continues to operate in the normal mode – however the defrosting is ended by way of the time limit

Switches

Door switch:

Position: In front panel.

Type: Push-button

Contact type: Make contact

Function: Operation by door

Switching signal when:

door closed:	door alarm	OFF
	evaporator fans	ON
door open:	door alarm	ON
	evaporator fans	OFF

Loads

Evaporator fans	Position:	Attached to the evaporator
	Function:	Suck the warm air through the evaporator and blow the cold air through the blow-out opening into the interior.
	Special feature:	The fans run depending on the humidity setting. In the case of the BKPv they start with a time delay after the end of the defrosting phase
Condenser fan:	Position:	Next to the condenser
	Function:	Cools the condenser and runs in parallel with the compressor
Solenoid valve (in BKPv):	Position:	Next to the compressor
	Function:	Opens a bypass for defrosting
	Type:	2/1 valve
Compressor:	Function:	**ON:** Air sensor switch-on value.
		OFF: Air sensor switch-off value.
	Special features:	**The on-delay time of the compressor is 4 minutes** . Should the compressor be addressed during this time, the compressor symbol flashes (compressor start request). As soon as the compressor runs, this LED shines
	Type:	Standard

4.2 Refrigeration components and functions

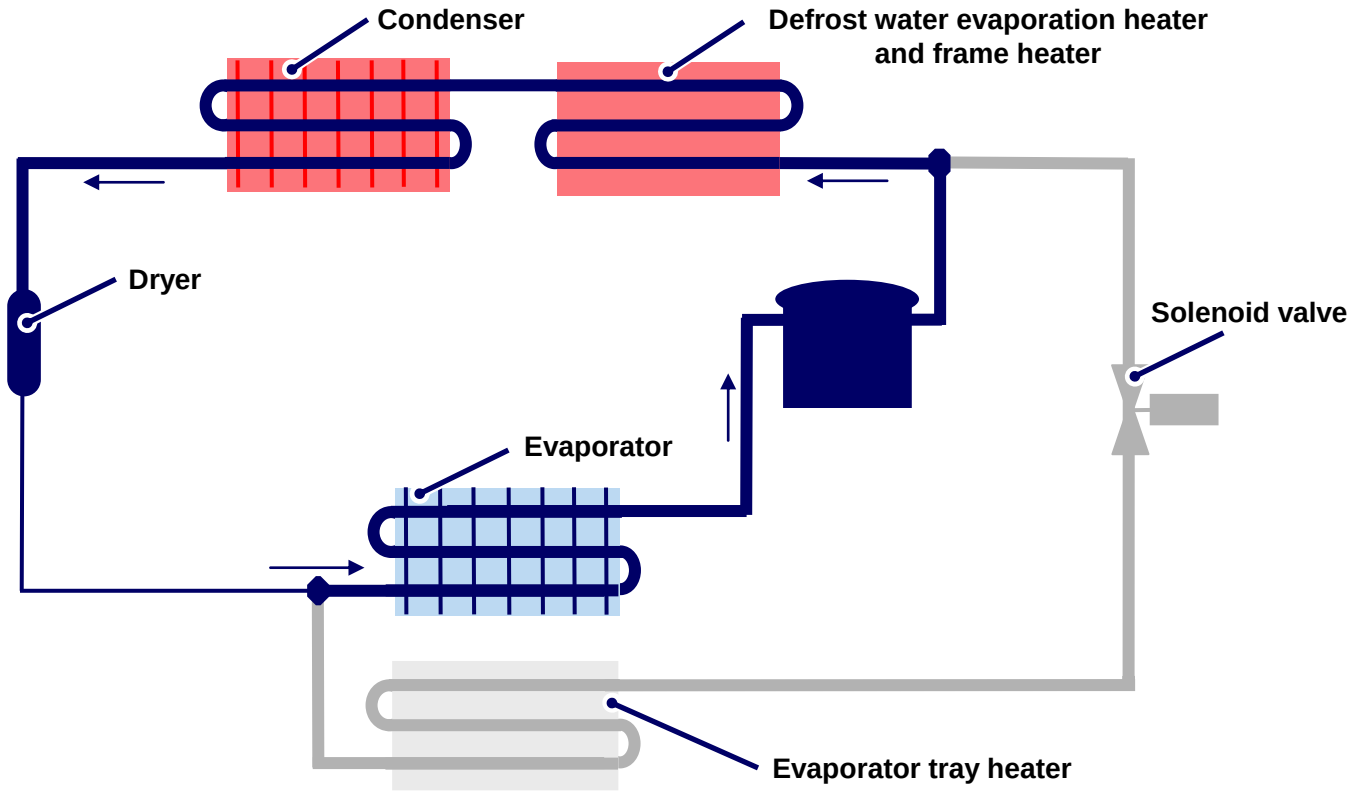
4.2.1 Components

Compressor:	Standard	
Solenoid valve (in BKPv):	2/1 valve	
Evaporator:	Design:	Lamellar evaporator.
	Type of installation:	On the evaporator tray
	Injection point:	Bottom
	Flow sequence:	From bottom to top
Evaporator tray heater (in BKPv):	Position:	Beneath the evaporator.
	Type:	Hot gas
Defrost water evaporation heater	Position:	Beneath the defrost water evaporation pan
	Type:	Hot gas
Condenser:	Design:	Unit-type wire on tube condenser
	Type of installation:	Fitted on the appliance behind the front panel
Refrigerant:	R290	

4.2.2 Principle of operation

4.2.2.1 Cooling

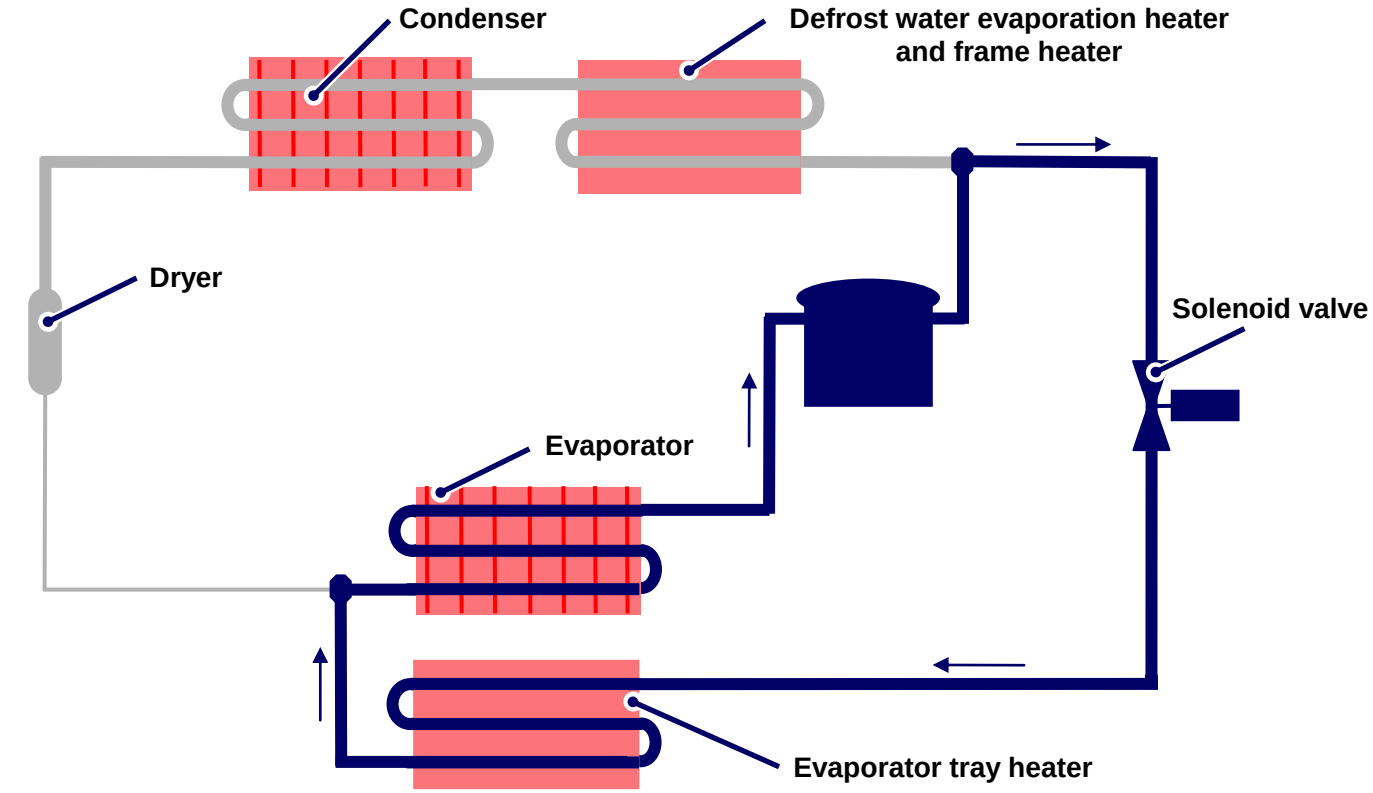
The solenoid valve is closed. The refrigerant is routed through the usual circuit.



4.2.2.2 Defrosting by hot gas in BKPv

The evaporator is defrosted by means of hot gas. The compressor has to run before the defrosting phase. If a defrosting request is made during compressor standstill, the appliance therefore cools in the normal way for two minutes before the solenoid valve is addressed.

When the defrosting phase starts, the solenoid valve opens and the hot gas flows via the bypass into the evaporator tray heater and evaporator. Then the refrigerant is briefly cooled by the iced evaporator and hence liquefied, and is subsequently evaporated in the compressor enclosure by its heat. The gaseous refrigerant heated by the dissipated heat of the compressor is subsequently pumped through the circuit.



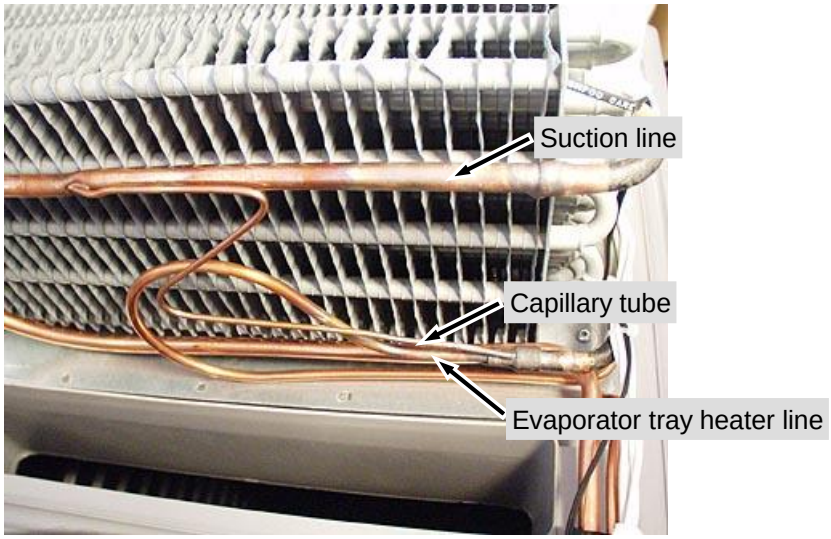


Fig. 4.2.2.2 / 1

4.3 Pressure compensating valve

The pressure compensating valve is fitted on the evaporator hood and enables rapid pressure compensation. Ambient warmth is supplied via the aluminium body so that the valve does not have to be electrically heated.

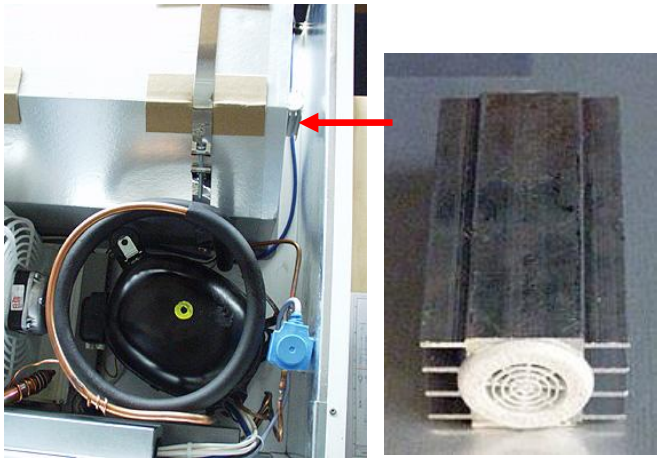


Fig. 4.3 / 1

4.4 Defrost water evaporation pan

The pan is fitted beneath the condenser. During the cooling phase the pan is heated by hot gas to evaporate the defrost water.

Fig. 4.3 / 1

4.5 Evaporator tray heater (in BKPv)

The evaporator tray is fitted under the evaporator and secured by a screw. During the defrosting phase, hot gas flows through the heater and hence ensures that the defrost water can flow into the drain pipe.

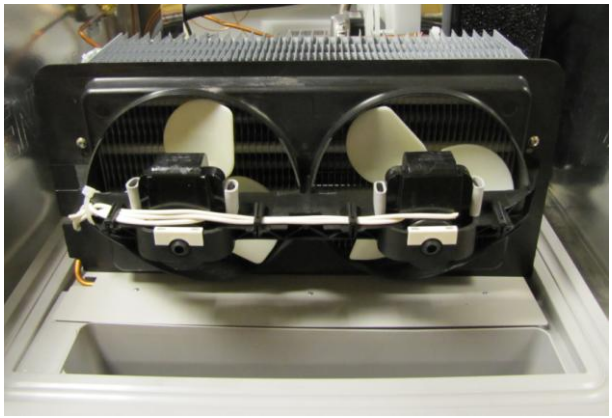


Fig. 4.4 / 1 Fitted evaporator

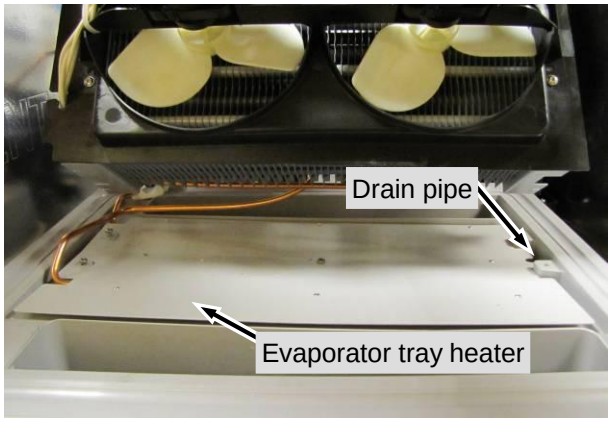


Fig. 4.4 / 2 Detached evaporator

5.0 Assembly instructions / replacement of parts

5.1 Electronic control system

Front casing: Remove screw on the underside and fold up the housing.

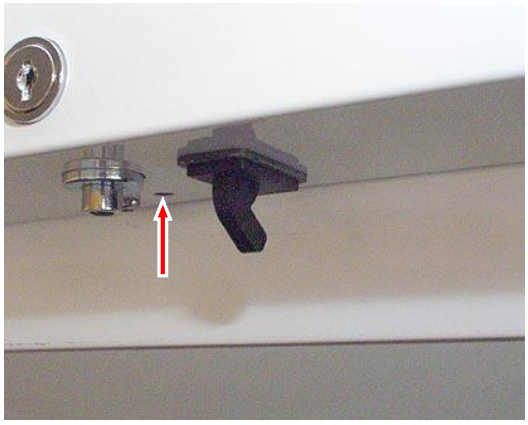


Fig. 5.1 / 1

Fig. 5.1 / 2

Cover of electronic control system: Remove screws fastening the cover and detach the cover

Fig. 5.1. / 3

Electronic control system: - Detach connector from the electronic control system.
ATTENTION: No coding – possibly mark beforehand
- Unclip electronic control system from the holder.

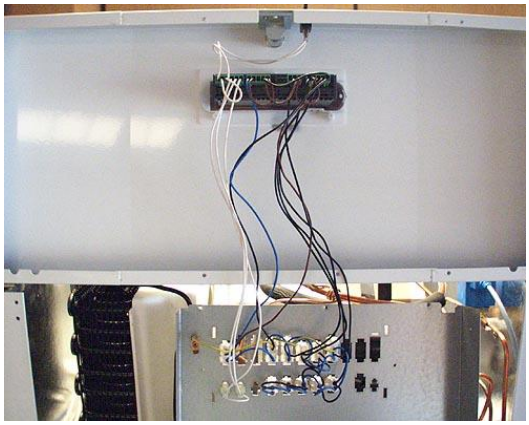


Fig. 5.1 / 4

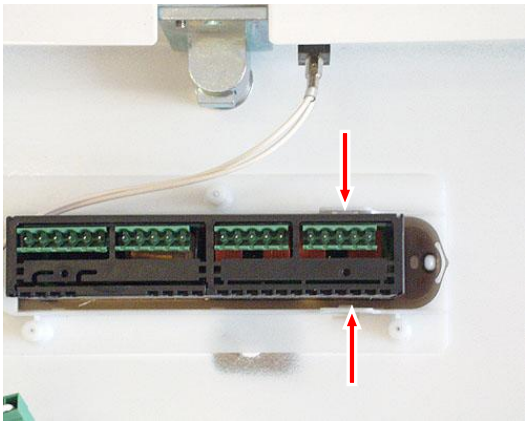


Fig. 5.1 / 5

5.2 Air sensor

Terminal block:

- Remove cover.
- Disconnect sensor at terminal block.
- Press connector assembly out of the connector.

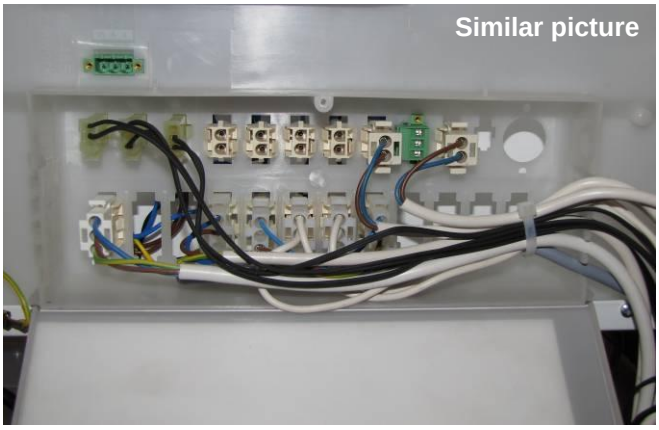


Fig. 5.2 / 1

Sensor:

- Unclip sensor and draw it out of the gland.
- Disconnect sensor at terminal block.
- When fitting the new sensor, pay attention that the cable forms a loop between bead and gland (see Fig. 5.2 / 3).

Fig. 5.2 / 2

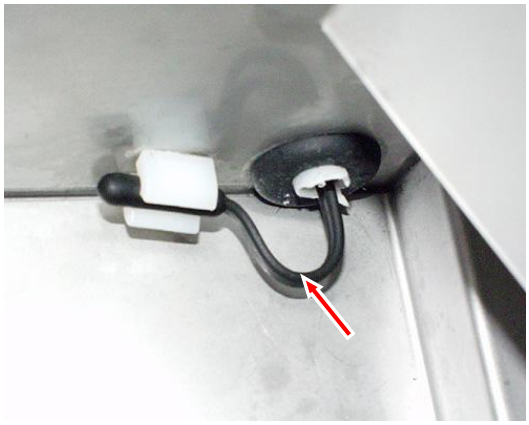


Fig. 5.2 / 3

5.3 Evaporator sensor and temperature fuse (in BKPv)

Evaporator hood:

- Undo screws and ties. Remove evaporator hood.
- When fitting the hood, pay attention that it seals all the way round.

Fig. 5.3 / 1

Sensor:

- Draw sensor out of the evaporator and disconnect at the terminal block.
- When fitting, pay attention that the sensor is slipped halfway into the evaporator and is located in position with a cable tie.

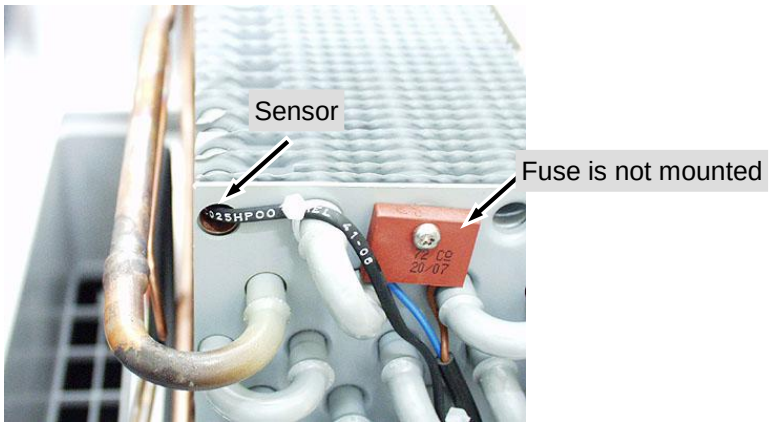


Fig. 5.3 / 2

5.4 Evaporator fans

Fans:

- Remove evaporator hood.
- Undo screw of the fan holder and remove fans.

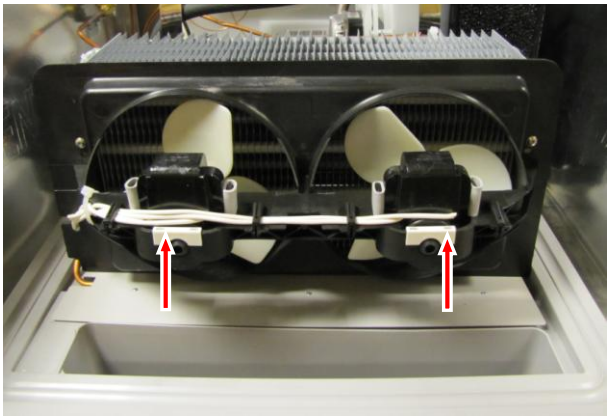


Fig. 5.4 / 1

5.5 Condenser fan

Fan:

- Remove screw fastening the fan holder.
- Unhook the holder from the condenser at the top and remove it.
- Unscrew motor holder.

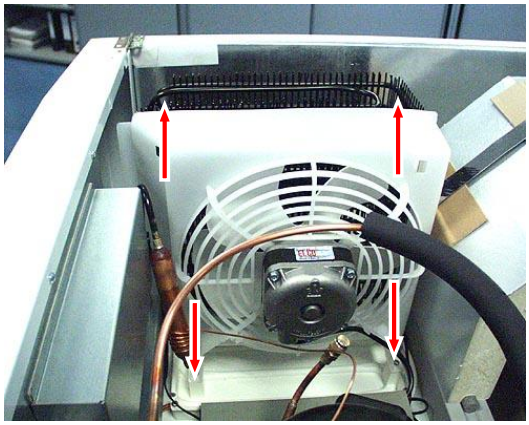


Fig. 5.5 / 1

Fig. 5.5 / 2

5.6 Solenoid valve (BKPv)

Coil:

- The coil of the solenoid valve can be drawn off upwardly (i.e. no intervention in the refrigeration circuit is necessary).

Fig. 5.6 / 1

Fig. 5.6 / 2

6.0 Technical data

Condenser fan:	Wattage:	approx. 38 watts
	Speed:	1300 rpm.
	Voltage:	220 - 240 volts
Evaporator fan:	Wattage:	approx. 29 watts
	Speed:	2200 rpm.
	Voltage:	220 volts

Sensor values:

Temperature °C	Resistance value kOhm
+50	approx. 4
+45	approx. 4.9
+40	approx. 5.8
+35	approx. 6.9
+30	approx. 8.3
+25	approx. 10
+20	approx. 12
+15	approx. 14.7
+10	approx. 18
+5	approx. 22
0	approx. 27
-5	approx. 33.9
-10	approx. 42.3
-15	approx. 53.4
-20	approx. 67
-25	approx. 86,4
-30	approx. 111,3
-35	approx. 144
-40	approx. 185

7.0 Messages and error codes

7.1 1st level parameters (no password necessary)

- The first parameter level is reached by pressing the "Alarm" button (5 seconds).
- Press the "Down" button to navigate within this level.
- After the "Set" button has been pressed, the current value of the chosen parameter is displayed.
- Press “Set” button again to get back into the parameter level.
- Press the “Alarm” button for 5 seconds to leave the parameter level.

Parameter		**value**	**notes**
/3	Refresh of displayed temperature	6	Refreshing every 30 Sec.
St	setpoint	2°C	
r5	Logger activated	1	see 7.1.1
rt	Period of logged temperature	---	999
rH	Max. value of temperature logger	---	
rL	Min. value of temperature logger	---	
d5	Defrost delay	60 min.	
d/1	Value of evaporator sensor	---	
AL	Lower alarm treshold	5K	
AH	Upper alarm treshold	5K	
Ad	Alarm delay	30 min.	*60 mintutes from Idx.40A*
H0	adress	1	

The LIEBHERR-ASS-organisation must be consulted, before any parameters get changed!

7.1.1 Calling up the min. and max. internal temperature

- The first parameter level is reached by pressing the "Alarm" button (5 seconds).

- Press the "Down" button until the "rt" parameter is displayed.
-> After the "Set" button has been pressed the **period** in which the internal temperature was measured is displayed.

- Press the "Down" button until the "rL" parameter is displayed.
-> After the "Set" button has been pressed the **coldest internal temperature** within the period is displayed.

- Press the "Down" button until the "rH" parameter is displayed.
-> After the "Set" button has been pressed the **warmest internal temperature** within the period is displayed.

To delete the saved values:

The first parameter level is reached by pressing the "Alarm" button (5 seconds).

- Press the "Down" button until the "rt" parameter is displayed.
-> After the "Set" button has been pressed, the period in which the internal temperature was measured is displayed.

- Keep the "Down" button depressed for five seconds -> rES appears in the display.

7.2 Error codes

Error code	Defective component	Audible alarm/alarm contact	Emergency operation
E0	Air sensor	ON/ON	5 or 3 minutes ON, 15 minutes OFF
E1	Evaporator sensor	ON/ON	Normal mode
EE	Electronic control system defective (operating parameters)	ON/ON	All OFF
EF	Electronic control system defective (control parameters)	ON/ON	All OFF
EHt	Evaporator too hot	ON/ON	All OFF

To reset the alarm „EHt“, first the appliance must be switched off and then then it must be unplugged.

7.3 Status messages

Message	Status	Audible alarm/alarm contact
HI	Overtemperature alarm	ON/ON
LO	Undertemperature alarm	ON/ON
Ed1	Defrosting phase ended by time	ON/ON
dA	Door alarm	ON/ON
dFb	Defrosting manual started	
dFE	Defrosting manual ended	
ON	Appliance switched on	
OFF	Appliance switched off	