# Appliance Documentation

## GKPv 6520 / 1420
## GKPv 6570 / 1470
## BKPv 65.. / 84..

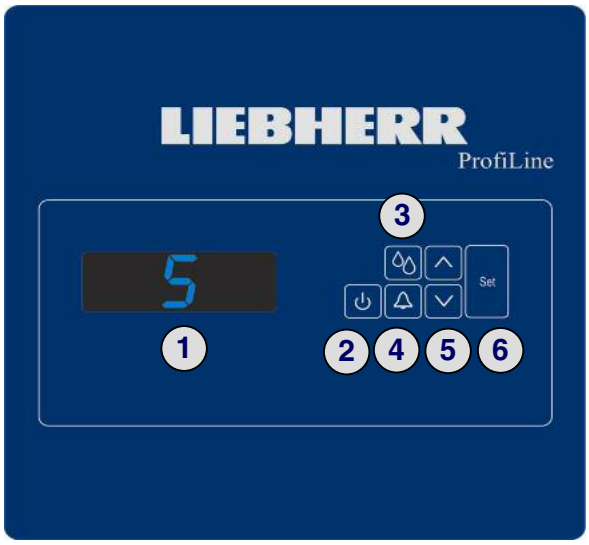
Gastronorm / bakery standard ProfiLine refrigerator, ventilated

GKPv 6520

BKPv 8420

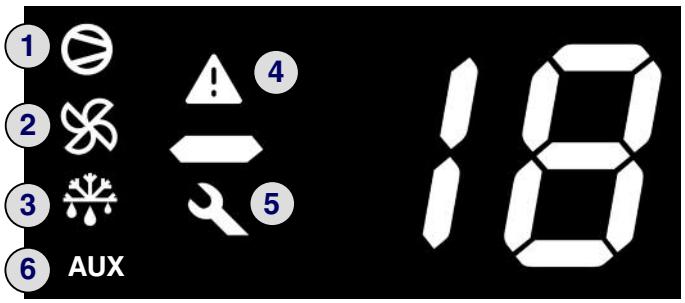
## Contents

## 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) |

## 2.0 Functions at a glance

| | |
|---|---|
| **Control:** | Electronic control system |
| **Temperature display:** | Digital |
| **Temperature range:** | GKPv: +1°C to +15°C<br>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)<br>Not present in GKPv |

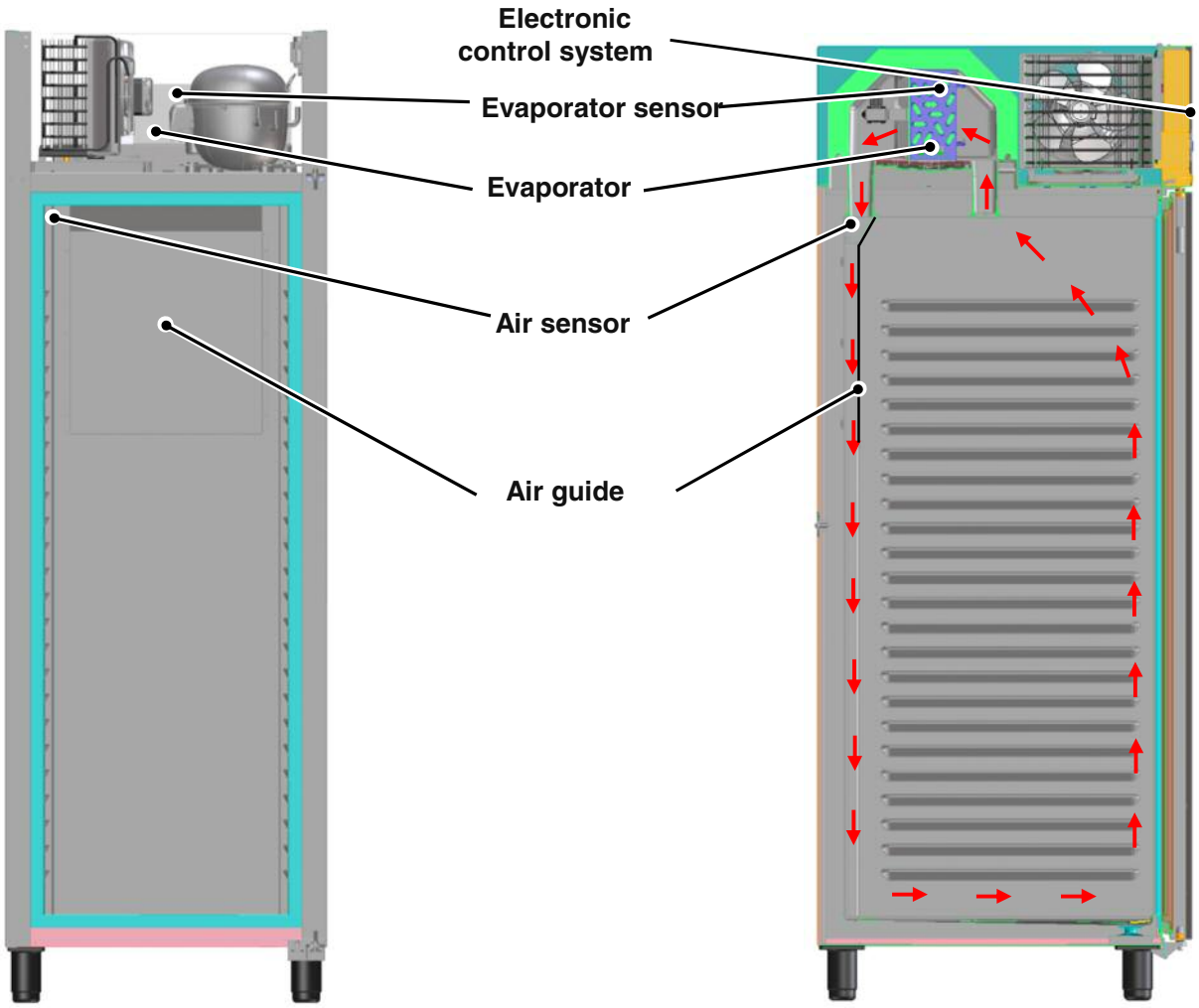
## 3.0 Description of the appliance

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<br>The parameters are assigned to the electronic control system by LIEBHERR |
| **Components:** | Electronic control system casing |
| **Adjusting range:** | GKPv: +1°C to +15°C<br>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<br>Audible: Intermittent beep (suppressed during start-up)<br>Visual: The alarm symbol shines and either the code "HI" (too warm) or "LO" (too cold) appears in the display.<br>To avoid unnecessary warnings (e.g. door opening) the temperature has to exceed/drop below the threshold for at least 30 minutes.<br>After the defrosting phase has ended, the alarm is inactive for one hour. |
| **Door alarm:** | When: Door open longer than 4 minutes.<br>Audible: Intermittent beep<br>Visual: The alarm symbol shines and the code "dA" appears in the display<br>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** | Deactivated: The evaporator fans run in parallel with the compressor<br>-> lower humidity in the appliance<br>Activated: The evaporator fans also run during compressor standstill<br>-> higher humidity in the appliance<br>The AUX symbol shines as status display. |
| **Potential-free alarm contact:** | The potential-free contact takes the form of a make contact and can be integrated into a central monitoring system if required.<br>In the normal condition the contact is closed (parameterized accordingly)<br>In a fault scenario (alarm, power failure) the contact is open (idle state). |

| | | |
|---|---|---|
| **Defrosting in GKPv:** | Activation: | - Automatic, every 6 hours (irrespective of compressor run time).<br>- 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.<br><br>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.<br><br>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.<br><br>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).<br>- Manual, when the "down" button is depressed for 5 seconds. |
| | Function: | Defrosting by hot gas (see section 4.2.2.2)<br><br>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) .<br>Should it not be ended thermally, the defrosting phase is terminated after 8 minutes.<br>- The compressor starts again after a drain time of 10 minutes.<br>- The evaporator fans start with a further 5-minute delay. |
| | Display: | The defrosting symbol shines during the defrosting phase<br>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.<br>(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.<br><br>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 |

**Temperature fuse (in BKPv up to idx.10C):**

Position: Screwed onto the front side of the evaporator.

Type: Safety fuse

Function: Acts as a pure safety device!
Is tripped and therefore interrupts the power supply of the compressor when the evaporator is heated above +72°C.

## 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, either permanently or in parallel with the compressor.<br>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.<br>**OFF:** Air sensor switch-off value. |
| | **Special features:** | **The on-delay time of the compressor is 4 minutes** .<br>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

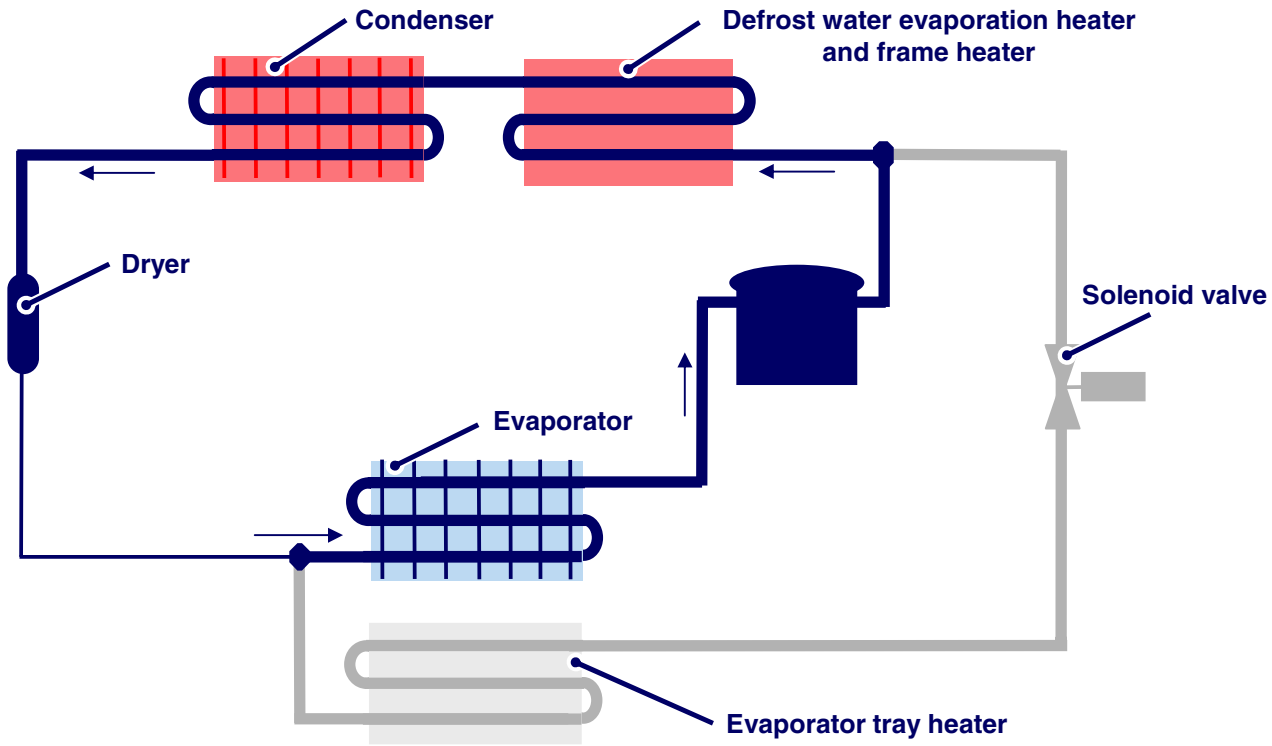
### 4.2.1 Components

| | | |
|---|---|---|
| **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:** | R134a | |

### 4.2.2 Principle of operation

#### 4.2.2.1 Cooling

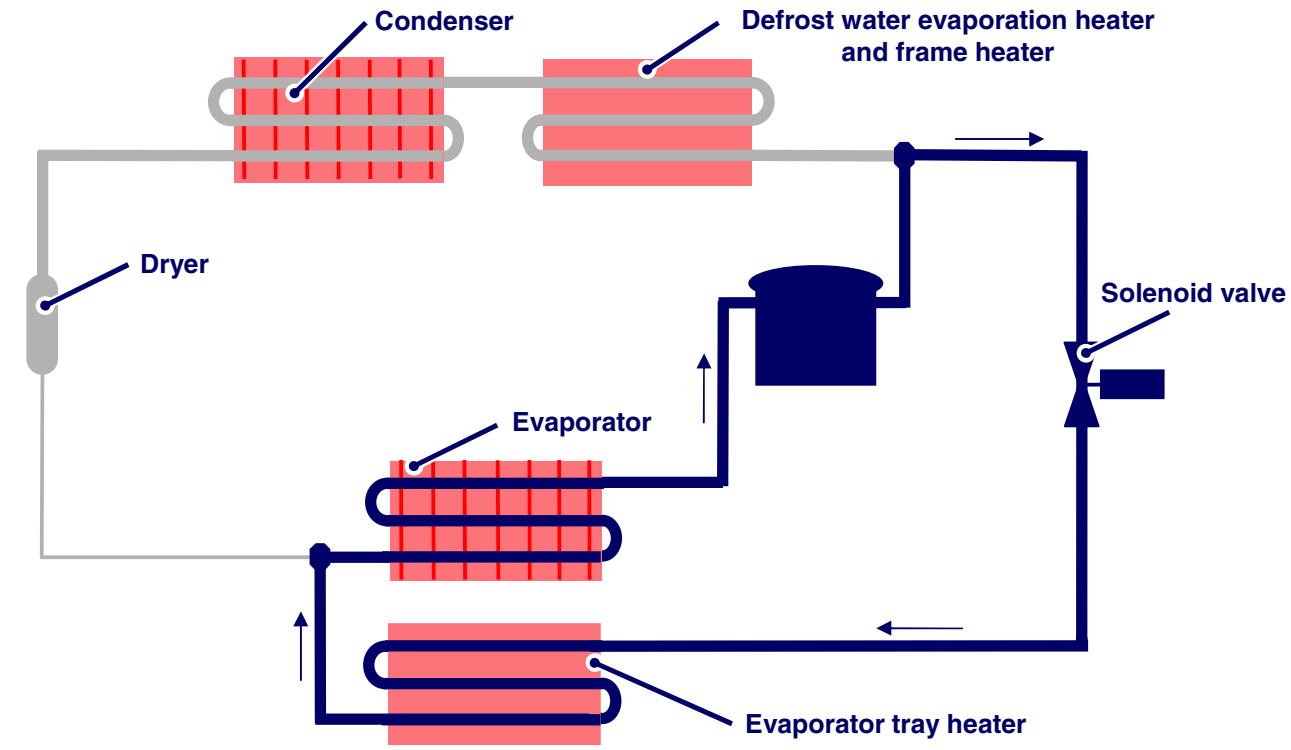
The solenoid valve is closed. The refrigerant is routed through the usual circuit.



### 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.



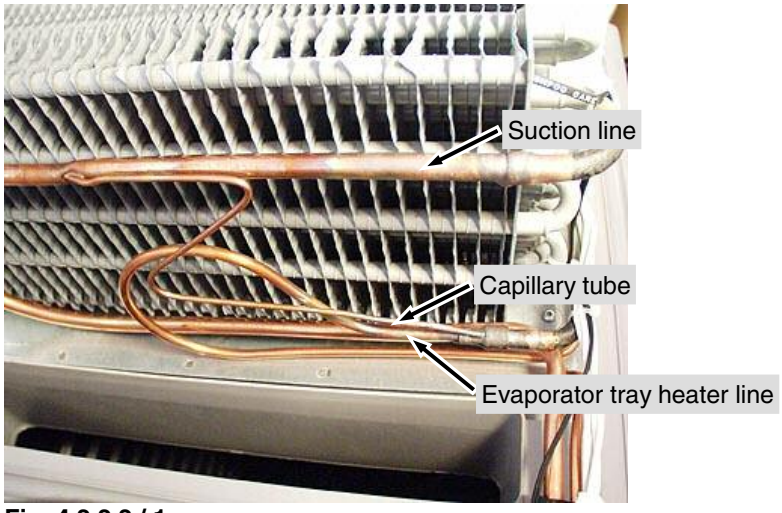




**Fig. 4.2.2.2 / 1**

## 4.3 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.

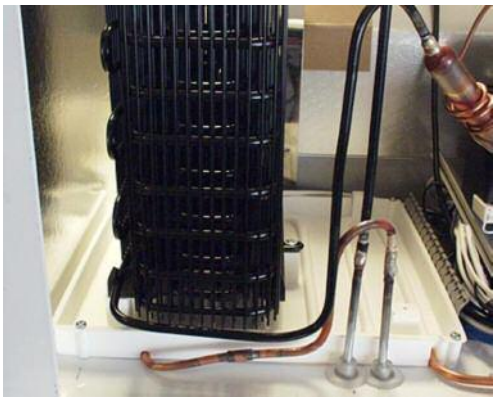


**Fig. 4.3 / 1**

## 4.4 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.

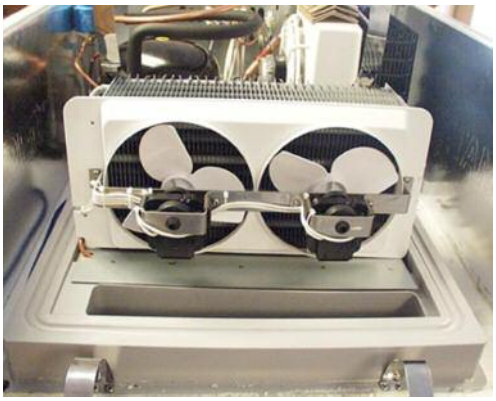


**Fig. 4.4 / 1** Fitted evaporator

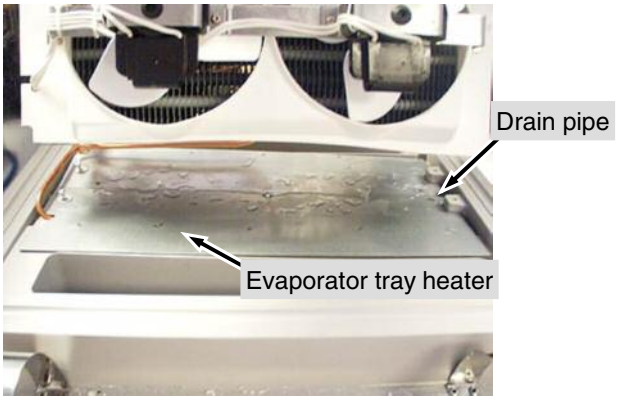



**Fig. 4.4 / 2** Detached evaporator

# 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

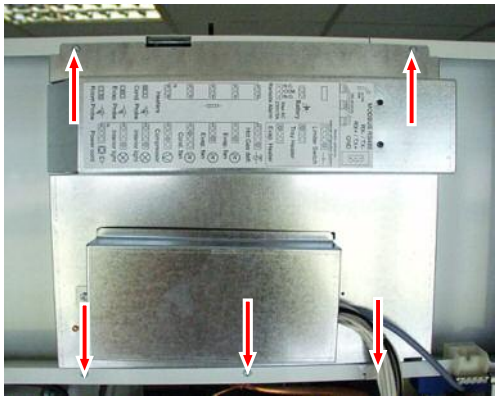


**Fig. 5.1. / 3**

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

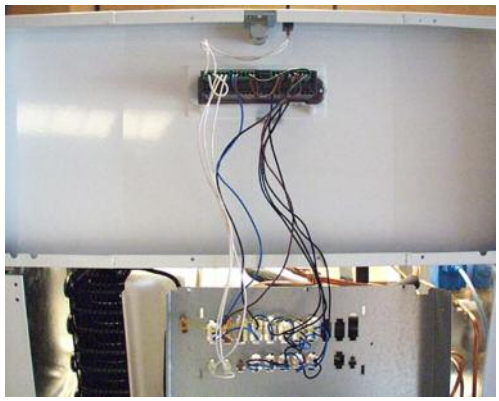


**Fig. 5.1 / 4**

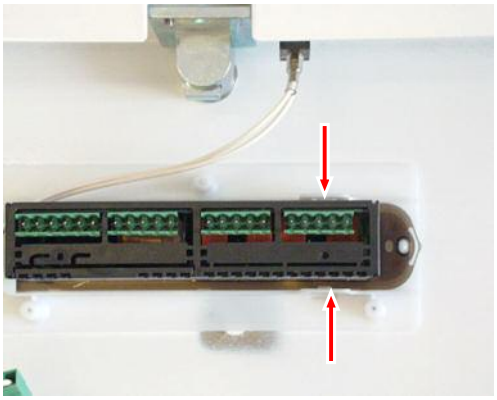


**Fig. 5.1 / 5**

## 5.2 Air sensor

**Terminal block:**

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

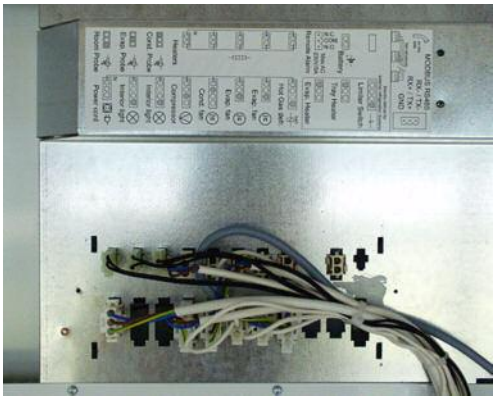


**Fig. 5.2 / 1**

**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**

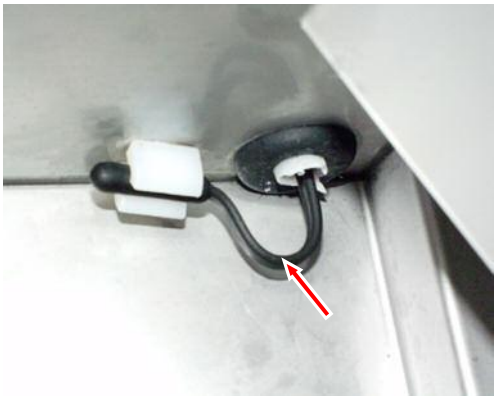


**Fig. 5.2 / 3**

## 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.

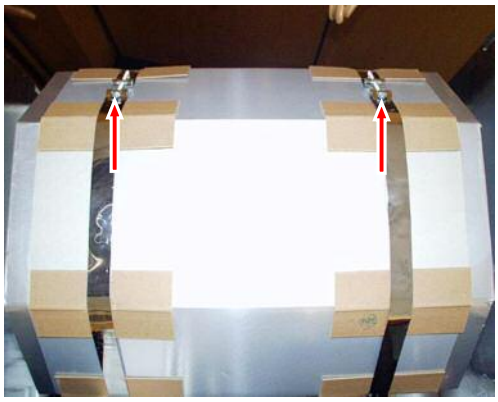


**Fig. 5.3 / 1**

**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.

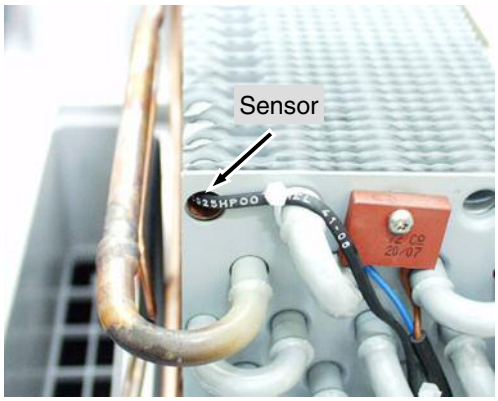



**Fig. 5.3 / 2**

**Temperature fuse:**

- Detach temperature fuse from the evaporator and disconnect at the compressor terminal board.

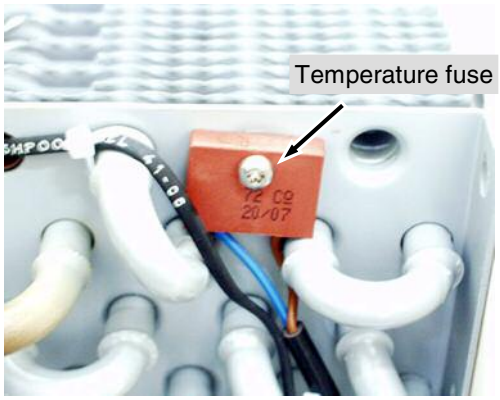



**Fig. 5.3 / 3**

## 5.4 Evaporator fans

**Fans:**

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

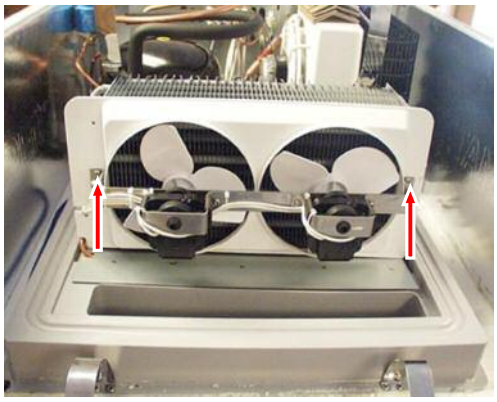


**Fig. 5.4 / 1**

## 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.

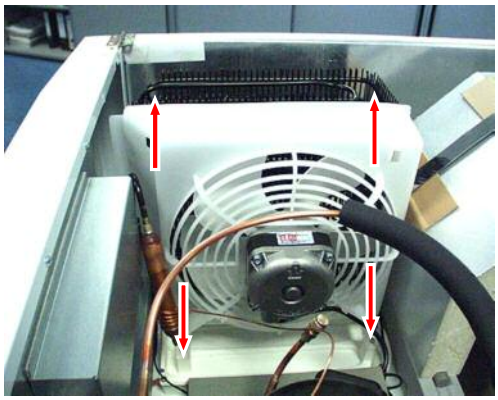


**Fig. 5.5 / 1**

**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 Checking the evaporator temperature

- The first parameter level is reached by pressing the "Alarm" button (5 seconds).
- Press the "Down" button until the “d/1 “parameter is displayed.
- After the "Set" button has been pressed the current **temperature of the evaporator is** displayed.

## 7.2 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.

## 7.3 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 |

## 7.4 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 | |